Computer algebra independent integration tests

5-Inverse-trig-functions/5.1-Inverse-sine/5.1.4-f-x-^m-d+e-x^2-^p-a+b-arcsin-c-x-^n

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Contents

Chapter 1

Introduction

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

The number of integrals in this report is [703]. This is test number [143].

1.1 Listing of CAS systems tested

The following systems were tested at this time.

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

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

Sympy was called directly using Python.

1.2 Results

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

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

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

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

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

System	solved	Failed
Rubi	% 99.57 (700)	% 0.43 (3)
Mathematica	% 98.72 (694)	% 1.28 (9)
Maple	% 78.81 (554)	% 21.19 (149)
Maxima	% 35.70 (251)	% 64.30 (452)
Fricas	% 37.70 (265)	% 62.30 (438)
Sympy	% 28.73 (202)	% 71.27 (501)
Giac	% 33.29 (234)	% 66.71 (469)
Mupad	% 20.77 (146)	% 79.23 (557)

Table 1.1: Percentage solved for each CAS

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

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

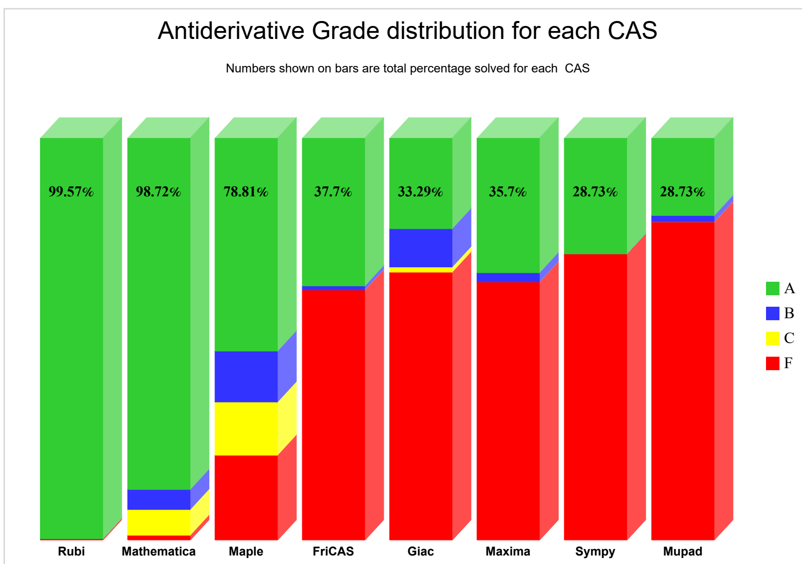
Table 1.2: Description of grading applied to integration result

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

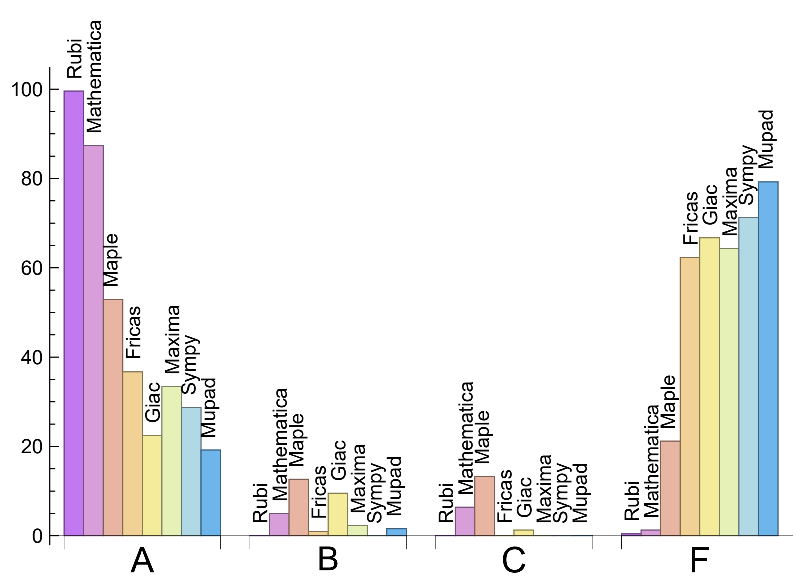
System	% A grade	% B grade	% C grade	% F grade
Rubi	99.57	0.00	0.00	0.43
Mathematica	87.34	4.98	6.40	1.28
Maple	52.92	12.66	13.23	21.19
Maxima	33.43	2.28	0.00	64.30
Fricas	36.70	1.00	0.00	62.30
Sympy	28.73	0.00	0.00	71.27
Giac	22.48	9.53	1.28	66.71
Mupad	19.20	1.56	0.00	79.23

Table 1.3: Antiderivative Grade distribution of each CAS

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



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



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

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

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

System	Number failed	Percentage normal failure	Percentage timeout failure	Percentage exception failure
Rubi	3	100.00 %	0.00 %	0.00 %
Mathematica	9	100.00 %	0.00 %	0.00 %
Maple	149	100.00 %	0.00 %	0.00 %
Maxima	452	81.64 %	7.52 %	10.84 %
Fricas	438	84.93 %	0.23 %	14.84 %
Sympy	501	69.66 %	28.94 %	1.40 %
Giac	469	55.65 %	5.12 %	39.23 %
Mupad	557	100.00 %	0.00 %	0.00 %

Table 1.4: Time and leaf size performance for each CAS

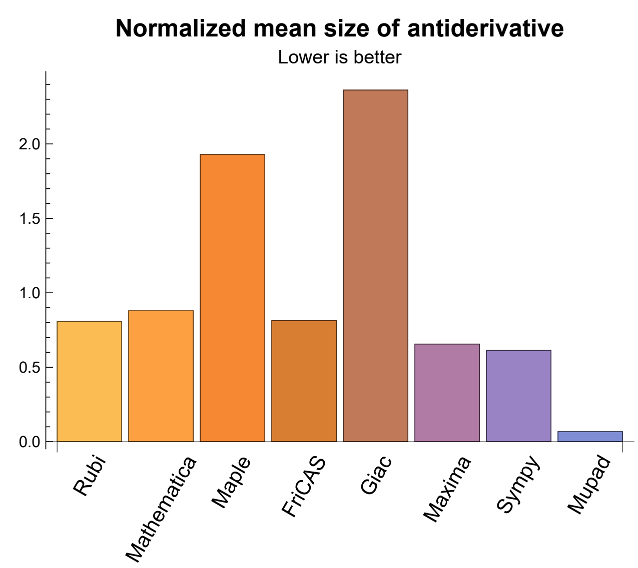
1.3 Performance

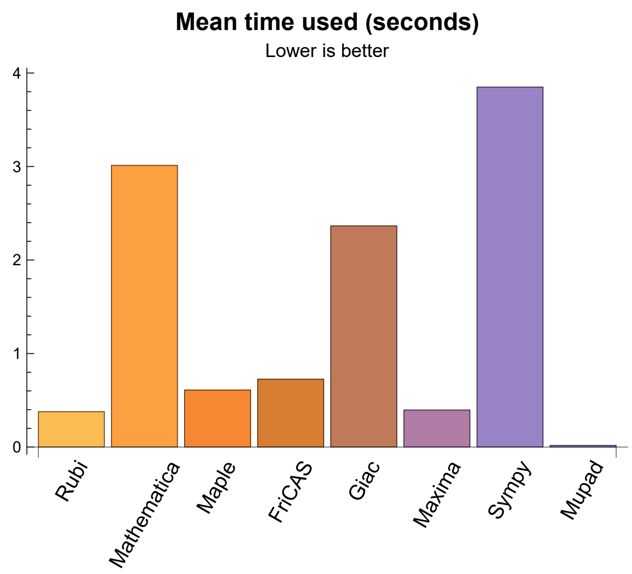
The table below summarizes the performance of each CAS system in terms of CPU time and leaf size of results.

System	Mean time (sec)	Mean size	Normalized mean	Median size	Normalized median
Rubi	0.38	224.50	0.81	188.50	1.00
Mathematica	3.01	244.98	0.88	166.00	0.83
Maple	0.61	549.86	1.93	241.00	1.34
Maxima	0.40	120.12	0.66	53.00	0.70
Fricas	0.73	139.80	0.81	55.00	0.75
Sympy	3.85	109.97	0.61	0.00	0.00
Giac	2.36	426.42	2.36	80.50	1.03
Mupad	0.02	1.84	0.07	-1.00	-0.03

Table 1.5: Time and leaf size performance for each CAS

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





1.4 list of integrals that has no closed form antiderivative

{146, 147, 148, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 302, 314, 315, 321, 322, 323, 324, 329, 330, 331, 332, 337, 338, 339, 340, 347, 348, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 377, 378, 380, 385, 386, 387, 388, 389, 394, 395, 396, 397, 398, 403, 404, 405, 406, 407, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 435, 440, 445, 446, 450, 454, 458, 459, 463, 469, 470, 475, 476, 480, 481, 485, 486, 490, 491, 495, 496, 497, 502, 503, 649, 650, 657, 658, 664, 665, 666, 667, 671, 672, 673, 674, 675, 676, 680, 681, 682, 683, 684, 685, 689, 690, 693, 694, 698, 699, 702, 703}

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

Rubi {}

Mathematica {}

Maple {}

Maxima {}

Fricas {}

Sympy {}

Giac {}

Mupad {}

1.6 list of integrals solved by CAS but failed verification

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

Rubi {}

Mathematica {6, 8, 15, 17, 24, 26, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 41, 42, 43, 44, 45, 46, 48, 50, 51, 52, 53, 54, 65, 67, 81, 82, 83, 96, 97, 98, 106, 108, 115, 117, 136, 138, 161, 162, 163, 164, 170, 171, 172, 173, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 196, 197, 198, 199, 200, 201, 203, 205, 206, 207, 208, 209, 214, 215, 216, 217, 222, 223, 224, 225, 230, 231, 232, 233, 240, 241, 242, 243, 245, 246, 247, 249, 251, 252, 253, 254, 255, 257, 258, 259, 260, 261, 262, 263, 269, 271, 294, 308, 309, 310, 328, 431, 432, 433, 434, 436, 437, 438, 439, 442, 443, 447, 448, 451, 452, 455, 456, 460, 461, 464, 465, 466, 467, 471, 472, 477, 478, 515, 529, 534, 535, 545, 551, 557, 562, 563, 566, 567, 569, 570, 571, 572, 573, 574, 575, 579, 580, 584, 585, 589, 590, 595, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 637, 638, 639, 640, 641, 646, 647, 648, 651, 652, 653, 655, 656, 663, 686, 687, 688, 691, 692, 695, 696, 697, 700, 701}

Maple Verification phase not implemented yet.

Maxima Verification phase not implemented yet.

Fricas Verification phase not implemented yet.

Sympy Verification phase not implemented yet.

Giac Verification phase not implemented yet.

Mupad Verification phase not implemented yet.

1.7 Timing

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

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

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

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

1.8 Verification

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

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

1.9 Important notes about some of the results

1.9.1 Important note about Maxima results

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

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

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

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

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

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

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

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

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

1.9.2 Important note about FriCAS and Giac/XCAS results

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

These will fail With error `Exception raised: NotImplementedError`

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

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

1.9.3 Important note about finding leaf size of antiderivative

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

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

```
def tree_size(expr):
    r"""
    Return the tree size of this expression.
    """
```

```
    if expr not in SR:
        # deal with lists, tuples, vectors
        return 1 + sum(tree_size(a) for a in expr)
    expr = SR(expr)
    x, aa = expr.operator(), expr.operands()
    if x is None:
        return 1
    else:
        return 1 + sum(tree_size(a) for a in aa)
```

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

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

  except Exception as ee:
         leafCount =1
```

1.9.4 Important note about Mupad results

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

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

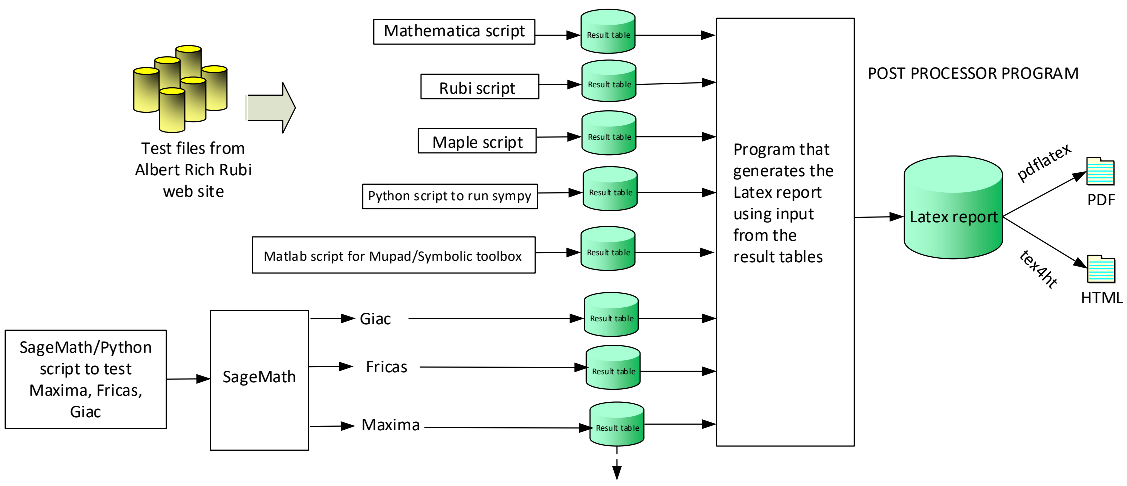
The following is an example of using Matlab's symbolic toolbox (Mupad) to solve an integral

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

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

1.10 Design of the test system

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



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

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

    The following field present only in Rubi and Mathematica Tables

13. integer. 1 if result was verified or 0 if not verified.

    The following fields present only in Rubi Tables

14. integer. Number of rules used.
15. integer. Integrand leaf size.
16. real number. Ratio of field 14 over field 15
17. integer. 1 if result was verified or 0 if not verified.
18. String of form "{n,n,..}" which is list of the rules used by Rubi

High level overview of the CAS independent integration test build system

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May 11, 2021

Chapter 2

detailed summary tables of results

2.1 List of integrals sorted by grade for each CAS

2.1.1 Rubi

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703 }

B grade: { }

C grade: { }

F grade: { 276, 277, 278 }

2.1.2 Mathematica

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 30, 33, 35, 37, 40, 42, 43, 44, 45, 47, 49, 51, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 120, 122, 123, 124, 125, 126, 127, 128, 129, 131, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 185, 186, 187, 188, 189, 190, 194, 195, 196, 197, 199, 201, 202, 203, 204, 205, 206, 208, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 435, 440, 444, 445, 446, 449, 450, 453, 454, 457, 458, 459, 462, 463, 468, 469, 470, 473, 474, 475, 476, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 522, 523, 524, 525, 526, 527, 528, 530, 531, 532, 533, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 552, 553, 554, 555, 558, 559, 560, 562, 563, 565, 566, 567, 569, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 589, 590, 592, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 637, 638, 639, 640, 641, 642, 643, 646, 647, 648, 649, 650, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 689, 690, 693, 694, 698, 699, 702, 703 }

B grade: { 29, 31, 32, 34, 36, 38, 39, 41, 46, 48, 50, 52, 184, 191, 192, 193, 198, 200, 207, 209, 294, 521, 529, 534, 551, 556, 557, 561, 564, 568, 570, 571, 588, 591, 593 }

C grade: { 119, 121, 130, 132, 431, 432, 433, 434, 436, 437, 438, 439, 442, 443, 447, 448, 451, 452, 455, 456, 460, 461, 464, 465, 466, 467, 471, 472, 477, 478, 651, 652, 653, 655, 656, 686, 687, 688, 691, 692, 695, 696, 697, 700, 701 }

F grade: { 276, 277, 278, 441, 635, 636, 644, 645, 654 }

2.1.3 Maple

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 36, 37, 38, 39, 40, 41, 43, 44, 45, 46, 48, 50, 52, 54, 65, 67, 81, 96, 97, 98, 99, 100, 101, 102, 103, 105, 106, 107, 108, 114, 115, 125, 127, 136, 138, 146, 147, 148, 156, 157, 158, 159, 160, 162, 164, 165, 166, 167, 168, 169, 171, 173, 174, 175, 176, 177, 178, 179, 180, 182, 184, 186, 189, 191, 240, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 293, 294, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 444, 445, 446, 449, 450, 453, 454, 457, 458, 459, 462, 463, 464, 468, 469, 470, 474, 475, 476, 479, 480, 481, 485, 486, 490, 491, 495, 496, 497, 501, 502, 503, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 649, 650, 657, 658, 661, 662, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703 }

B grade: { 35, 42, 47, 49, 51, 53, 56, 57, 66, 68, 82, 83, 104, 110, 112, 117, 161, 163, 170, 172, 181, 187, 188, 190, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 211, 213, 214, 215, 216, 217, 222, 223, 224, 225, 230, 231, 232, 233, 235, 237, 239, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 634, 642, 643, 659, 660, 691, 692 }

C grade: { 55, 58, 59, 60, 61, 62, 63, 64, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 109, 111, 113, 116, 118, 119, 120, 121, 122, 123, 124, 126, 128, 129, 130, 131, 132, 133, 134, 135, 137, 139, 140, 210, 212, 218, 219, 220, 221, 226, 227, 228, 229, 234, 236, 238, 295, 296, 297, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 635, 636, 637, 638, 639, 640, 641, 644, 645, 646, 647, 648 }

F grade: { 141, 142, 143, 144, 145, 149, 150, 151, 152, 153, 154, 155, 183, 185, 276, 277, 278, 292, 379, 441, 442, 443, 447, 448, 451, 452, 455, 456, 460, 461, 465, 466, 467, 471, 472, 473, 477, 478, 482, 483, 484, 487, 488, 489, 492, 493, 494, 498, 499, 500, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 651, 652, 653, 654, 655, 656, 663 }

2.1.4 Maxima

A grade: { 1, 2, 3, 4, 5, 7, 9, 11, 12, 14, 16, 18, 23, 25, 27, 59, 60, 61, 62, 63, 64, 73, 74, 75, 76, 77, 78, 79, 80, 90, 91, 92, 93, 94, 95, 99, 101, 102, 103, 104, 105, 107, 109, 111, 113, 114, 116, 118, 121, 124, 126, 132, 133, 135, 139, 140, 146, 147, 148, 156, 158, 210, 212, 218, 220, 226, 228, 234, 236, 238, 239, 265, 267, 268, 272, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 298, 299, 300, 302, 304, 306, 307, 314, 315, 321, 322, 323, 324, 329, 330, 331, 332, 337, 338, 339, 340, 346, 347, 348, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 380, 385, 386, 387, 388, 389, 394, 395, 396, 397, 403, 404, 405, 406, 407, 413, 414, 415, 417, 418, 419, 420, 421, 422, 425, 427, 429, 430, 435, 440, 485, 486, 490, 491, 495, 496, 501, 509, 525, 526, 527, 531, 532, 533, 536, 537, 538, 539, 561, 577, 582, 587, 588, 596, 597, 598, 599, 600, 602, 604, 605, 606, 607, 608, 609, 611, 613, 614, 615, 616, 617, 618, 620, 622, 623, 649, 650, 657, 658, 659, 660, 661, 662, 664, 665, 667, 671, 672, 673, 674, 675, 676, 689, 690, 693, 694, 698, 699, 702, 703 }

B grade: { 10, 13, 19, 20, 21, 22, 40, 160, 165, 167, 169, 174, 176, 178, 195, 379 }

C grade: { }

F grade: { 6, 8, 15, 17, 24, 26, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 65, 66, 67, 68, 69, 70, 71, 72, 81, 82, 83, 84, 85, 86, 87, 88, 89, 96, 97, 98, 100, 106, 108, 110, 112, 115, 117, 119, 120, 122, 123, 125, 127, 128, 129, 130, 131, 134, 136, 137, 138, 141, 142, 143, 144, 145, 149, 150, 151, 152, 153, 154, 155, 157, 159, 161, 162, 163, 164, 166, 168, 170, 171, 172, 173, 175, 177, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 211, 213, 214, 215, 216, 217, 219, 221, 222, 223, 224, 225, 227, 229, 230, 231, 232, 233, 235, 237, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 266, 269, 270, 271, 273, 274, 275, 276, 277, 278, 295, 296, 297, 301, 303, 305, 308, 309, 310, 311, 312, 313, 316, 317, 318, 319, 320, 325, 326, 327, 328, 333, 334, 335, 336, 341, 342, 343, 344, 345, 349, 350, 351, 352, 353, 374, 375, 376, 377, 378, 381, 382, 383, 384, 390, 391, 392, 393, 398, 399, 400, 401, 402, 408, 409, 410, 411, 412, 416, 423, 424, 426, 428, 431, 432, 433, 434, 436, 437, 438, 439, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 487, 488, 489, 492, 493, 494, 497, 498, 499, 500, 502, 503, 504, 505, 506, 507, 508, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 528, 529, 530, 534, 535, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 578, 579, 580, 581, 583, 584, 585, 586, 589, 590, 591, 592, 593, 594, 595, 601, 603, 610, 612, 619, 621, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 651, 652, 653, 654, 655, 656, 663, 666, 668, 669, 670, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 691, 692, 695, 696, 697, 700, 701 }

2.1.5 FriCAS

A grade: { 1, 2, 3, 4, 5, 7, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 21, 22, 23, 25, 27, 40, 47, 49, 60, 61, 62, 63, 64, 73, 74, 75, 76, 77, 78, 79, 80, 90, 91, 92, 93, 94, 95, 99, 101, 102, 103, 104, 105, 107, 109, 111, 113, 116, 118, 119, 121, 123, 130, 132, 134, 146, 147, 148, 156, 157, 158, 159, 160, 165, 166, 167, 168, 169, 174, 175, 176, 177, 178, 195, 202, 204, 210, 212, 218, 220, 226, 228, 234, 236, 238, 264, 265, 266, 267, 268, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 302, 303, 304, 305, 306, 307, 314, 315, 321, 322, 323, 324, 329, 330, 331, 332, 337, 338, 339, 340, 346, 347, 348, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 377, 378, 379, 380, 385, 386, 387, 388, 389, 394, 395, 396, 397, 398, 403, 404, 405, 406, 407, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 457, 462, 474, 479, 485, 486, 490, 491, 495, 496, 497, 501, 502, 503, 509, 526, 527, 531, 536, 537, 577, 582, 587, 596, 597, 598, 599, 600, 602, 604, 605, 606, 607, 608, 609, 611, 613, 614, 615, 616, 617, 618, 620, 622, 623, 649, 650, 657, 658, 659, 660, 661, 662, 664, 665, 666, 667, 671, 672, 673, 674, 675, 676, 680, 681, 682, 683, 684, 685 }

B grade: { 59, 634, 642, 643, 651, 652, 653 }

C grade: { }

F grade: { 6, 8, 15, 17, 24, 26, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 41, 42, 43, 44, 45, 46, 48, 50, 51, 52, 53, 54, 55, 56, 57, 58, 65, 66, 67, 68, 69, 70, 71, 72, 81, 82, 83, 84, 85, 86, 87, 88, 89, 96, 97, 98, 100, 106, 108, 110, 112, 114, 115, 117, 120, 122, 124, 125, 126, 127, 128, 129, 131, 133, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 149, 150, 151, 152, 153, 154, 155, 161, 162, 163, 164, 170, 171, 172, 173, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 196, 197, 198, 199, 200, 201, 203, 205, 206, 207, 208, 209, 211, 213, 214, 215, 216, 217, 219, 221, 222, 223, 224, 225, 227, 229, 230, 231, 232, 233, 235, 237, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 308, 309, 310, 311, 312, 313, 316, 317, 318, 319, 320, 325, 326, 327, 328, 333, 334, 335, 336, 341, 342, 343, 344, 345, 349, 350, 351, 352, 353, 374, 375, 376, 381, 382, 383, 384, 390, 391, 392, 393, 399, 400, 401, 402, 408, 409, 410, 411, 412, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 458, 459, 460, 461, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 475, 476, 477, 478, 480, 481, 482, 483, 484, 487, 488, 489, 492, 493, 494, 498, 499, 500, 504, 505, 506, 507, 508, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 528, 529, 530, 532, 533, 534, 535, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 578, 579, 580, 581, 583, 584, 585, 586, 588, 589, 590, 591, 592, 593, 594, 595, 601, 603, 610, 612, 619, 621, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 635, 636, 637, 638, 639, 640, 641, 644, 645, 646, 647, 648, 654, 655, 656, 663, 668, 669, 670, 677, 678, 679, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703 }

2.1.6 Sympy

A grade: { 1, 2, 3, 4, 5, 7, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 21, 22, 23, 25, 27, 99, 101, 102, 103, 104, 105, 146, 147, 156, 157, 158, 159, 160, 165, 166, 167, 168, 169, 174, 175, 176, 177, 178, 264, 265, 266, 267, 268, 279, 280, 284, 285, 286, 288, 289, 290, 291, 302, 303, 304, 305, 306, 307, 314, 315, 321, 322, 323, 324, 329, 330, 331, 332, 337, 338, 339, 340, 346, 347, 348, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 368, 369, 370, 371, 372, 373, 377, 378, 380, 385, 386, 387, 388, 389, 394, 395, 396, 397, 403, 404, 405, 406, 407, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 435, 440, 445, 446, 450, 458, 459, 463, 469, 470, 475, 485, 486, 490, 497, 501, 502, 503, 596, 597, 598, 599, 600, 602, 604, 605, 606, 607, 608, 609, 611, 613, 614, 615, 616, 617, 618, 620, 622, 623, 649, 650, 657, 659, 660, 661, 662, 664, 665, 666, 667, 671, 673, 674, 675, 676, 680, 682, 683, 684, 685, 689, 690, 693, 698, 699, 702 }

B grade: { }

C grade: { }

F grade: { 6, 8, 15, 17, 24, 26, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 100, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 148, 149, 150, 151, 152, 153, 154, 155, 161, 162, 163, 164, 170, 171, 172, 173, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 281, 282, 283, 287, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 308, 309, 310, 311, 312, 313, 316, 317, 318, 319, 320, 325, 326, 327, 328, 333, 334, 335, 336, 341, 342, 343, 344, 345, 349, 350, 351, 352, 353, 367, 374, 375, 376, 379, 381, 382, 383, 384, 390, 391, 392, 393, 398, 399, 400, 401, 402, 408, 409, 410, 411, 412, 431, 432, 433, 434, 436, 437, 438, 439, 441, 442, 443, 444, 447, 448, 449, 451, 452, 453, 454, 455, 456, 457, 460, 461, 462, 464, 465, 466, 467, 468, 471, 472, 473, 474, 476, 477, 478, 479, 480, 481, 482, 483, 484, 487, 488, 489, 491, 492, 493, 494, 495, 496, 498, 499, 500, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 601, 603, 610, 612, 619, 621, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 651, 652, 653, 654, 655, 656, 658, 663, 668, 669, 670, 672, 677, 678, 679, 681, 686, 687, 688, 691, 692, 694, 695, 696, 697, 700, 701, 703 }

2.1.7 Giac

A grade: { 1, 2, 3, 4, 5, 10, 11, 12, 13, 14, 19, 20, 21, 22, 23, 40, 47, 99, 101, 103, 104, 105, 140, 146, 147, 148, 156, 158, 160, 166, 169, 175, 264, 266, 267, 268, 279, 280, 281, 285, 287, 288, 289, 290, 291, 302, 303, 305, 306, 307, 311, 312, 313, 314, 315, 319, 320, 322, 324, 328, 330, 332, 338, 340, 341, 343, 344, 345, 346, 347, 348, 350, 352, 353, 354, 356, 357, 359, 361, 362, 364, 366, 370, 371, 372, 373, 374, 375, 376, 377, 378, 386, 388, 395, 397, 404, 406, 407, 413, 415, 416, 418, 420, 422, 423, 425, 427, 429, 430, 441, 445, 446, 450, 454, 457, 458, 459, 462, 463, 469, 470, 475, 476, 480, 481, 501, 502, 503, 597, 599, 600, 609, 649, 650, 657, 658, 662, 664, 665, 666, 667, 668, 669, 670, 671, 673, 674, 675, 676, 680, 682, 683, 684, 685, 689, 693, 698, 702 }

B grade: { 7, 9, 16, 18, 25, 49, 107, 157, 159, 165, 167, 168, 174, 176, 177, 178, 195, 202, 204, 316, 318, 325, 326, 327, 333, 334, 335, 336, 379, 382, 383, 384, 390, 391, 392, 393, 399, 400, 401, 402, 409, 411, 412, 596, 598, 602, 604, 605, 606, 607, 608, 611, 613, 614, 615, 616, 617, 618, 620, 622, 623, 659, 660, 661, 677, 678, 679 }

C grade: { 464, 686, 687, 688, 691, 692, 695, 696, 697 }

F grade: { 6, 8, 15, 17, 24, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 41, 42, 43, 44, 45, 46, 48, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 100, 102, 106, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 141, 142, 143, 144, 145, 149, 150, 151, 152, 153, 154, 155, 161, 162, 163, 164, 170, 171, 172, 173, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 196, 197, 198, 199, 200, 201, 203, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 265, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 282, 283, 284, 286, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 304, 308, 309, 310, 317, 321, 323, 329, 331, 337, 339, 342, 349, 351, 355, 358, 360, 363, 365, 367, 368, 369, 380, 381, 385, 387, 389, 394, 396, 398, 403, 405, 408, 410, 414, 417, 419, 421, 424, 426, 428, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 442, 443, 444, 447, 448, 449, 451, 452, 453, 455, 456, 460, 461, 465, 466, 467, 468, 471, 472, 473, 474, 477, 478, 479, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 601, 603, 610, 612, 619, 621, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 651, 652, 653, 654, 655, 656, 663, 672, 681, 690, 694, 699, 700, 701, 703 }

2.1.8 Mupad

A grade: { 146, 147, 148, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 302, 314, 315, 321, 322, 323, 324, 329, 330, 331, 332, 337, 338, 339, 340, 347, 348, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 377, 378, 380, 385, 386, 387, 388, 389, 394, 395, 396, 397, 398, 403, 404, 405, 406, 407, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 435, 440, 445, 446, 450, 454, 458, 459, 463, 469, 470, 475, 476, 480, 481, 485, 486, 490, 491, 495, 496, 497, 502, 503, 649, 650, 657, 658, 664, 665, 666, 667, 671, 672, 673, 674, 675, 676, 680, 681, 682, 683, 684, 685, 689, 690, 693, 694, 698, 699, 702, 703 }

B grade: { 7, 105, 268, 307, 346, 354, 413, 430, 501, 602, 662 }

C grade: { }

F grade: { 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 303, 304, 305, 306, 308, 309, 310, 311, 312, 313, 316, 317, 318, 319, 320, 325, 326, 327, 328, 333, 334, 335, 336, 341, 342, 343, 344, 345, 349, 350, 351, 352, 353, 374, 375, 376, 379, 381, 382, 383, 384, 390, 391, 392, 393, 399, 400, 401, 402, 408, 409, 410, 411, 412, 431, 432, 433, 434, 436, 437, 438, 439, 441, 442, 443, 444, 447, 448, 449, 451, 452, 453, 455, 456, 457, 460, 461, 462, 464, 465, 466, 467, 468, 471, 472, 473, 474, 477, 478, 479, 482, 483, 484, 487, 488, 489, 492, 493, 494, 498, 499, 500, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 651, 652, 653, 654, 655, 656, 659, 660, 661, 663, 668, 669, 670, 677, 678, 679, 686, 687, 688, 691, 692, 695, 696, 697, 700, 701 }

2.2 Detailed conclusion table per each integral for all CAS systems

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

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

Problem 1	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	87	130	189	101	151	195	-1
normalized size	1	1.00	0.68	1.02	1.48	0.79	1.18	1.52	-0.01
time (sec)	N/A	0.120	0.147	0.012	0.556	0.446	5.556	1.025	0.000

Problem 2	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	89	118	169	96	138	144	-1
normalized size	1	1.00	0.72	0.96	1.37	0.78	1.12	1.17	-0.01
time (sec)	N/A	0.096	0.116	0.010	0.447	0.547	3.545	0.705	0.000

Problem 3	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	85	110	148	91	126	142	-1
normalized size	1	1.00	0.81	1.05	1.41	0.87	1.20	1.35	-0.01
time (sec)	N/A	0.103	0.105	0.008	0.533	0.425	1.977	0.526	0.000

Problem 4	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	77	98	128	86	117	100	-1
normalized size	1	1.00	0.86	1.09	1.42	0.96	1.30	1.11	-0.01
time (sec)	N/A	0.042	0.113	0.009	0.598	0.496	1.058	0.478	0.000

Problem 5	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	88	82	97	71	90	80	-1
normalized size	1	1.00	1.14	1.06	1.26	0.92	1.17	1.04	-0.01
time (sec)	N/A	0.061	0.098	0.006	0.528	0.407	0.518	0.567	0.000

Problem 6	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	99	164	0	0	0	0	-1
normalized size	1	1.00	0.82	1.36	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.116	0.133	0.235	0.000	0.642	0.000	0.000	0.000

Problem 7	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	78	67	82	98	82	856	71
normalized size	1	1.00	1.13	0.97	1.19	1.42	1.19	12.41	1.03
time (sec)	N/A	0.076	0.050	0.009	0.508	0.528	4.085	1.475	0.233

Problem 8	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	110	195	0	0	0	0	-1
normalized size	1	1.00	0.79	1.40	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.121	0.121	0.411	0.000	0.514	0.000	0.000	0.000

Problem 9	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	93	91	123	109	178	296	-1
normalized size	1	1.00	1.15	1.12	1.52	1.35	2.20	3.65	-0.01
time (sec)	N/A	0.086	0.058	0.014	0.752	1.022	5.013	6.094	0.000

Problem 10	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	186	186	119	172	328	153	230	284	-1
normalized size	1	1.00	0.64	0.92	1.76	0.82	1.24	1.53	-0.01
time (sec)	N/A	0.207	0.127	0.014	0.476	0.532	15.839	0.654	0.000

Problem 11	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	184	184	115	160	298	149	218	205	-1
normalized size	1	1.00	0.62	0.87	1.62	0.81	1.18	1.11	-0.01
time (sec)	N/A	0.170	0.102	0.010	0.531	0.956	10.591	0.630	0.000

Problem 12	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	161	161	111	152	267	141	202	227	-1
normalized size	1	1.00	0.69	0.94	1.66	0.88	1.25	1.41	-0.01
time (sec)	N/A	0.170	0.119	0.007	0.488	0.498	5.928	0.603	0.000

Problem 13	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	94	140	237	137	190	157	-1
normalized size	1	1.00	0.76	1.13	1.91	1.10	1.53	1.27	-0.01
time (sec)	N/A	0.065	0.078	0.007	0.539	1.151	3.925	0.654	0.000

Problem 14	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	95	122	196	121	165	158	-1
normalized size	1	1.00	0.73	0.93	1.50	0.92	1.26	1.21	-0.01
time (sec)	N/A	0.104	0.112	0.005	0.503	0.685	2.141	0.561	0.000

Problem 15	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	184	184	142	224	0	0	0	0	-1
normalized size	1	1.00	0.77	1.22	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.202	0.175	0.301	0.000	0.471	0.000	0.000	0.000

Problem 16	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	126	117	160	152	182	2717	-1
normalized size	1	1.00	1.02	0.95	1.30	1.24	1.48	22.09	-0.01
time (sec)	N/A	0.155	0.106	0.011	0.465	0.627	5.863	8.431	0.000

Problem 17	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	201	201	162	278	0	0	0	0	-1
normalized size	1	1.00	0.81	1.38	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.208	0.179	0.566	0.000	0.474	0.000	0.000	0.000

Problem 18	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	136	115	170	162	235	1409	-1
normalized size	1	1.00	1.06	0.90	1.33	1.27	1.84	11.01	-0.01
time (sec)	N/A	0.162	0.113	0.013	0.525	0.566	6.910	84.141	0.000

Problem 19	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	232	232	143	214	479	189	289	353	-1
normalized size	1	1.00	0.62	0.92	2.06	0.81	1.25	1.52	-0.00
time (sec)	N/A	0.291	0.209	0.027	0.503	0.513	37.037	0.427	0.000

Problem 20	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	139	202	439	185	280	250	-1
normalized size	1	1.00	0.67	0.98	2.13	0.90	1.36	1.21	-0.00
time (sec)	N/A	0.179	0.210	0.016	0.498	0.520	26.927	0.366	0.000

Problem 21	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	207	207	135	194	398	177	265	296	-1
normalized size	1	1.00	0.65	0.94	1.92	0.86	1.28	1.43	-0.00
time (sec)	N/A	0.258	0.192	0.007	0.455	0.498	16.145	0.429	0.000

Problem 22	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	150	150	110	182	358	173	253	202	-1
normalized size	1	1.00	0.73	1.21	2.39	1.15	1.69	1.35	-0.01
time (sec)	N/A	0.076	0.099	0.007	0.468	0.456	10.893	0.525	0.000

Problem 23	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	175	175	119	164	307	157	221	224	-1
normalized size	1	1.00	0.68	0.94	1.75	0.90	1.26	1.28	-0.01
time (sec)	N/A	0.171	0.266	0.005	0.539	0.548	6.086	0.348	0.000

Problem 24	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	235	235	183	266	0	0	0	0	-1
normalized size	1	1.00	0.78	1.13	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.283	0.232	0.352	0.000	0.486	0.000	0.000	0.000

Problem 25	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	164	164	166	155	250	188	287	5513	-1
normalized size	1	1.00	1.01	0.95	1.52	1.15	1.75	33.62	-0.01
time (sec)	N/A	0.231	0.127	0.011	0.485	0.574	8.120	48.644	0.000

Problem 26	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	263	263	203	326	0	0	0	0	-1
normalized size	1	1.00	0.77	1.24	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.298	0.190	0.681	0.000	0.473	0.000	0.000	0.000

Problem 27	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	178	178	175	161	242	196	326	0	-1
normalized size	1	1.00	0.98	0.90	1.36	1.10	1.83	0.00	-0.01
time (sec)	N/A	0.251	0.158	0.013	0.471	0.550	8.927	0.000	0.000

Problem 28	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	172	172	286	270	0	0	0	0	-1
normalized size	1	1.00	1.66	1.57	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.238	0.360	0.271	0.000	0.518	0.000	0.000	0.000

Problem 29	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	294	181	0	0	0	0	-1
normalized size	1	1.00	2.04	1.26	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.188	0.144	0.163	0.000	0.533	0.000	0.000	0.000

Problem 30	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	238	218	0	0	0	0	-1
normalized size	1	1.00	1.92	1.76	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.137	0.120	0.109	0.000	0.469	0.000	0.000	0.000

Problem 31	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	244	118	0	0	0	0	-1
normalized size	1	1.00	2.98	1.44	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.105	0.088	0.068	0.000	0.519	0.000	0.000	0.000

Problem 32	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	207	170	0	0	0	0	-1
normalized size	1	1.00	2.46	2.02	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.067	0.244	0.145	0.000	0.505	0.000	0.000	0.000

Problem 33	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	105	164	0	0	0	0	-1
normalized size	1	1.00	1.48	2.31	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.110	0.098	0.089	0.000	0.572	0.000	0.000	0.000

Problem 34	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	259	236	0	0	0	0	-1
normalized size	1	1.00	2.23	2.03	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.151	0.369	0.194	0.000	0.691	0.000	0.000	0.000

Problem 35	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	149	296	0	0	0	0	-1
normalized size	1	1.00	1.20	2.39	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.187	0.362	0.329	0.000	0.544	0.000	0.000	0.000

Problem 36	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	173	173	350	303	0	0	0	0	-1
normalized size	1	1.00	2.02	1.75	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.244	0.152	0.255	0.000	0.606	0.000	0.000	0.000

Problem 37	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	187	187	332	305	0	0	0	0	-1
normalized size	1	1.00	1.78	1.63	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.237	0.438	0.405	0.000	0.511	0.000	0.000	0.000

Problem 38	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	155	155	334	251	0	0	0	0	-1
normalized size	1	1.00	2.15	1.62	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.184	0.510	0.449	0.000	0.584	0.000	0.000	0.000

Problem 39	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	463	263	0	0	0	0	-1
normalized size	1	1.00	3.22	1.83	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.136	0.193	0.266	0.000	0.545	0.000	0.000	0.000

Problem 40	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	50	98	136	55	0	89	-1
normalized size	1	1.00	0.88	1.72	2.39	0.96	0.00	1.56	-0.02
time (sec)	N/A	0.048	0.047	0.012	0.478	0.479	0.000	1.176	0.000

Problem 41	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	141	141	334	260	0	0	0	0	-1
normalized size	1	1.00	2.37	1.84	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.096	0.840	0.109	0.000	0.511	0.000	0.000	0.000

Problem 42	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	122	122	153	335	0	0	0	0	-1
normalized size	1	1.00	1.25	2.75	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.173	0.411	0.293	0.000	0.562	0.000	0.000	0.000

Problem 43	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	186	186	348	330	0	0	0	0	-1
normalized size	1	1.00	1.87	1.77	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.193	0.910	0.266	0.000	0.479	0.000	0.000	0.000

Problem 44	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	159	159	213	367	0	0	0	0	-1
normalized size	1	1.00	1.34	2.31	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.264	0.799	0.274	0.000	0.480	0.000	0.000	0.000

Problem 45	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	259	285	426	426	0	0	0	0	-1
normalized size	1	1.10	1.64	1.64	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.308	0.904	0.329	0.000	0.603	0.000	0.000	0.000

Problem 46	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	204	204	445	389	0	0	0	0	-1
normalized size	1	1.00	2.18	1.91	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.241	0.936	0.553	0.000	0.810	0.000	0.000	0.000

Problem 47	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	79	212	0	91	0	124	-1
normalized size	1	1.00	0.79	2.12	0.00	0.91	0.00	1.24	-0.01
time (sec)	N/A	0.084	0.077	0.022	0.000	0.534	0.000	0.319	0.000

Problem 48	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	202	202	445	386	0	0	0	0	-1
normalized size	1	1.00	2.20	1.91	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.184	0.773	0.412	0.000	0.449	0.000	0.000	0.000

Problem 49	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	62	151	0	88	0	172	-1
normalized size	1	1.00	0.75	1.82	0.00	1.06	0.00	2.07	-0.01
time (sec)	N/A	0.054	0.112	0.010	0.000	0.621	0.000	0.359	0.000

Problem 50	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	196	196	501	384	0	0	0	0	-1
normalized size	1	1.00	2.56	1.96	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.134	1.610	0.187	0.000	0.473	0.000	0.000	0.000

Problem 51	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	173	173	201	503	0	0	0	0	-1
normalized size	1	1.00	1.16	2.91	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.252	1.028	0.306	0.000	0.471	0.000	0.000	0.000

Problem 52	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	242	242	512	461	0	0	0	0	-1
normalized size	1	1.00	2.12	1.90	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.242	1.551	0.327	0.000	0.417	0.000	0.000	0.000

Problem 53	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	248	248	256	635	0	0	0	0	-1
normalized size	1	1.00	1.03	2.56	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.346	1.686	0.412	0.000	0.547	0.000	0.000	0.000

Problem 54	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	317	369	587	576	0	0	0	0	-1
normalized size	1	1.16	1.85	1.82	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.382	1.657	0.420	0.000	0.566	0.000	0.000	0.000

Problem 55	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	262	262	169	1690	0	0	0	0	-1
normalized size	1	1.00	0.65	6.45	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.282	0.152	0.714	0.000	0.431	0.000	0.000	0.000

Problem 56	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	189	189	140	373	0	0	0	0	-1
normalized size	1	1.00	0.74	1.97	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.191	0.113	0.293	0.000	0.477	0.000	0.000	0.000

Problem 57	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	111	260	0	0	0	0	-1
normalized size	1	1.00	0.96	2.24	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.055	0.059	0.144	0.000	0.406	0.000	0.000	0.000

Problem 58	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	142	308	0	0	0	0	-1
normalized size	1	1.00	1.29	2.80	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.110	0.467	0.280	0.000	0.548	0.000	0.000	0.000

Problem 59	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	134	1117	137	414	0	0	-1
normalized size	1	1.00	1.21	10.06	1.23	3.73	0.00	0.00	-0.01
time (sec)	N/A	0.093	0.235	0.398	0.439	0.893	0.000	0.000	0.000

Problem 60	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	187	187	162	1902	140	501	0	0	-1
normalized size	1	1.00	0.87	10.17	0.75	2.68	0.00	0.00	-0.01
time (sec)	N/A	0.134	0.158	0.481	0.535	1.100	0.000	0.000	0.000

Problem 61	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	263	263	187	2748	199	567	0	0	-1
normalized size	1	1.00	0.71	10.45	0.76	2.16	0.00	0.00	-0.00
time (sec)	N/A	0.169	0.187	0.564	0.465	1.076	0.000	0.000	0.000

Problem 62	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	256	256	157	880	197	177	0	0	-1
normalized size	1	1.00	0.61	3.44	0.77	0.69	0.00	0.00	-0.00
time (sec)	N/A	0.208	0.191	0.518	0.610	0.593	0.000	0.000	0.000

Problem 63	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	183	183	134	544	138	150	0	0	-1
normalized size	1	1.00	0.73	2.97	0.75	0.82	0.00	0.00	-0.01
time (sec)	N/A	0.168	0.127	0.291	0.506	0.575	0.000	0.000	0.000

Problem 64	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	70	343	75	116	0	0	-1
normalized size	1	1.00	0.64	3.12	0.68	1.05	0.00	0.00	-0.01
time (sec)	N/A	0.068	0.093	0.181	0.468	0.546	0.000	0.000	0.000

Problem 65	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	203	203	187	413	0	0	0	0	-1
normalized size	1	1.00	0.92	2.03	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.210	0.618	0.236	0.000	0.441	0.000	0.000	0.000

Problem 66	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	225	225	239	462	0	0	0	0	-1
normalized size	1	1.00	1.06	2.05	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.208	2.355	0.358	0.000	0.855	0.000	0.000	0.000

Problem 67	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	301	301	321	571	0	0	0	0	-1
normalized size	1	1.00	1.07	1.90	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.294	4.564	0.454	0.000	0.514	0.000	0.000	0.000

Problem 68	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	340	340	193	600	0	0	0	0	-1
normalized size	1	1.00	0.57	1.76	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.405	0.208	0.683	0.000	0.560	0.000	0.000	0.000

Problem 69	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	265	265	170	1725	0	0	0	0	-1
normalized size	1	1.00	0.64	6.51	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.320	0.178	0.352	0.000	0.460	0.000	0.000	0.000

Problem 70	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	188	188	210	1167	0	0	0	0	-1
normalized size	1	1.00	1.12	6.21	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.105	0.615	0.167	0.000	0.536	0.000	0.000	0.000

Problem 71	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	185	185	222	464	0	0	0	0	-1
normalized size	1	1.00	1.20	2.51	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.168	0.619	0.308	0.000	0.519	0.000	0.000	0.000

Problem 72	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	191	191	211	1289	0	0	0	0	-1
normalized size	1	1.00	1.10	6.75	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.229	0.846	0.410	0.000	0.542	0.000	0.000	0.000

Problem 73	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	154	154	144	2350	172	525	0	0	-1
normalized size	1	1.00	0.94	15.26	1.12	3.41	0.00	0.00	-0.01
time (sec)	N/A	0.114	0.258	0.470	0.722	0.768	0.000	0.000	0.000

Problem 74	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	231	231	173	3383	151	599	0	0	-1
normalized size	1	1.00	0.75	14.65	0.65	2.59	0.00	0.00	-0.00
time (sec)	N/A	0.164	0.216	0.569	0.557	1.233	0.000	0.000	0.000

Problem 75	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	308	308	197	4560	210	671	0	0	-1
normalized size	1	1.00	0.64	14.81	0.68	2.18	0.00	0.00	-0.00
time (sec)	N/A	0.213	0.255	0.691	0.527	0.896	0.000	0.000	0.000

Problem 76	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	385	385	221	5881	269	743	0	0	-1
normalized size	1	1.00	0.57	15.28	0.70	1.93	0.00	0.00	-0.00
time (sec)	N/A	0.301	0.271	0.868	0.473	0.807	0.000	0.000	0.000

Problem 77	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	375	375	174	1781	267	249	0	0	-1
normalized size	1	1.00	0.46	4.75	0.71	0.66	0.00	0.00	-0.00
time (sec)	N/A	0.293	0.220	0.817	0.988	1.014	0.000	0.000	0.000

Problem 78	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	301	301	150	1254	208	219	0	0	-1
normalized size	1	1.00	0.50	4.17	0.69	0.73	0.00	0.00	-0.00
time (sec)	N/A	0.238	0.200	0.542	0.558	2.061	0.000	0.000	0.000

Problem 79	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	227	227	126	727	149	189	0	0	-1
normalized size	1	1.00	0.56	3.20	0.66	0.83	0.00	0.00	-0.00
time (sec)	N/A	0.200	0.166	0.296	0.512	0.547	0.000	0.000	0.000

Problem 80	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	153	153	84	524	87	159	0	0	-1
normalized size	1	1.00	0.55	3.42	0.57	1.04	0.00	0.00	-0.01
time (sec)	N/A	0.087	0.066	0.188	0.573	0.628	0.000	0.000	0.000

Problem 81	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	278	278	278	525	0	0	0	0	-1
normalized size	1	1.00	1.00	1.89	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.327	1.207	0.281	0.000	0.679	0.000	0.000	0.000

Problem 82	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	297	297	389	574	0	0	0	0	-1
normalized size	1	1.00	1.31	1.93	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.330	2.041	0.351	0.000	0.680	0.000	0.000	0.000

Problem 83	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	307	307	494	601	0	0	0	0	-1
normalized size	1	1.00	1.61	1.96	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.324	5.969	0.438	0.000	0.655	0.000	0.000	0.000

Problem 84	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	430	430	220	3481	0	0	0	0	-1
normalized size	1	1.00	0.51	8.10	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.553	0.279	0.748	0.000	1.382	0.000	0.000	0.000

Problem 85	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	351	351	196	2828	0	0	0	0	-1
normalized size	1	1.00	0.56	8.06	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.473	0.229	0.380	0.000	1.473	0.000	0.000	0.000

Problem 86	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	265	265	266	1985	0	0	0	0	-1
normalized size	1	1.00	1.00	7.49	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.157	1.066	0.194	0.000	0.691	0.000	0.000	0.000

Problem 87	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	268	268	257	1391	0	0	0	0	-1
normalized size	1	1.00	0.96	5.19	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.240	1.365	0.348	0.000	0.612	0.000	0.000	0.000

Problem 88	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	277	277	243	1527	0	0	0	0	-1
normalized size	1	1.00	0.88	5.51	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.304	1.650	0.476	0.000	3.442	0.000	0.000	0.000

Problem 89	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	277	277	234	2615	0	0	0	0	-1
normalized size	1	1.00	0.84	9.44	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.354	1.598	0.506	0.000	0.777	0.000	0.000	0.000

Problem 90	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	203	203	156	4031	205	655	0	0	-1
normalized size	1	1.00	0.77	19.86	1.01	3.23	0.00	0.00	-0.00
time (sec)	N/A	0.125	0.311	0.576	0.456	0.768	0.000	0.000	0.000

Problem 91	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	282	282	184	5323	162	747	0	0	-1
normalized size	1	1.00	0.65	18.88	0.57	2.65	0.00	0.00	-0.00
time (sec)	N/A	0.179	0.263	0.730	0.536	0.858	0.000	0.000	0.000

Problem 92	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	361	361	209	6758	221	831	0	0	-1
normalized size	1	1.00	0.58	18.72	0.61	2.30	0.00	0.00	-0.00
time (sec)	N/A	0.223	0.300	0.934	0.797	0.958	0.000	0.000	0.000

Problem 93	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	354	354	160	1644	219	291	0	0	-1
normalized size	1	1.00	0.45	4.64	0.62	0.82	0.00	0.00	-0.00
time (sec)	N/A	0.246	0.246	0.641	0.553	1.221	0.000	0.000	0.000

Problem 94	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	278	278	137	1063	160	255	0	0	-1
normalized size	1	1.00	0.49	3.82	0.58	0.92	0.00	0.00	-0.00
time (sec)	N/A	0.203	0.232	0.378	0.424	0.533	0.000	0.000	0.000

Problem 95	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	202	202	93	717	98	215	0	0	-1
normalized size	1	1.00	0.46	3.55	0.49	1.06	0.00	0.00	-0.00
time (sec)	N/A	0.091	0.087	0.226	0.496	0.713	0.000	0.000	0.000

Problem 96	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	361	361	394	652	0	0	0	0	-1
normalized size	1	1.00	1.09	1.81	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.463	2.032	0.337	0.000	1.571	0.000	0.000	0.000

Problem 97	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	386	386	484	704	0	0	0	0	-1
normalized size	1	1.00	1.25	1.82	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.458	5.699	0.418	0.000	0.686	0.000	0.000	0.000

Problem 98	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	389	389	640	727	0	0	0	0	-1
normalized size	1	1.00	1.65	1.87	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.455	6.458	0.479	0.000	0.748	0.000	0.000	0.000

Problem 99	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	30	31	30	26	48	27	-1
normalized size	1	1.00	0.88	0.91	0.88	0.76	1.41	0.79	-0.03
time (sec)	N/A	0.031	0.012	0.080	0.558	1.948	20.817	0.614	0.000

Problem 100	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	116	87	101	0	0	0	0	-1
normalized size	1	1.71	1.28	1.49	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.059	0.049	0.061	0.000	0.831	0.000	0.000	0.000

Problem 101	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	64	74	85	60	82	91	-1
normalized size	1	1.00	0.73	0.84	0.97	0.68	0.93	1.03	-0.01
time (sec)	N/A	0.152	0.033	0.103	0.497	3.430	2.123	0.403	0.000

Problem 102	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	49	95	61	44	65	0	-1
normalized size	1	1.00	0.68	1.32	0.85	0.61	0.90	0.00	-0.01
time (sec)	N/A	0.107	0.040	0.088	0.484	0.497	1.124	0.000	0.000

Problem 103	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	43	40	56	39	42	53	-1
normalized size	1	1.00	0.86	0.80	1.12	0.78	0.84	1.06	-0.02
time (sec)	N/A	0.082	0.013	0.086	0.507	2.427	0.726	0.402	0.000

Problem 104	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	29	62	27	26	24	27	-1
normalized size	1	1.00	1.00	2.14	0.93	0.90	0.83	0.93	-0.03
time (sec)	N/A	0.041	0.009	0.075	0.489	0.654	0.414	0.421	0.000

Problem 105	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	13	13	13	12	11	11	10	11	11
normalized size	1	1.00	1.00	0.92	0.85	0.85	0.77	0.85	0.85
time (sec)	N/A	0.020	0.004	0.009	0.551	0.554	0.327	0.355	0.138

Problem 106	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	52	52	71	103	0	0	0	0	-1
normalized size	1	1.00	1.37	1.98	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.084	0.128	0.077	0.000	2.026	0.000	0.000	0.000

Problem 107	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	28	32	26	28	0	67	-1
normalized size	1	1.00	1.00	1.14	0.93	1.00	0.00	2.39	-0.04
time (sec)	N/A	0.061	0.030	0.089	0.538	0.966	0.000	0.360	0.000

Problem 108	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	137	178	0	0	0	0	-1
normalized size	1	1.00	1.40	1.82	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.147	0.917	0.352	0.000	1.369	0.000	0.000	0.000

Problem 109	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	224	224	119	521	180	150	0	0	-1
normalized size	1	1.00	0.53	2.33	0.80	0.67	0.00	0.00	-0.00
time (sec)	N/A	0.265	0.105	0.496	0.597	0.743	0.000	0.000	0.000

Problem 110	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	200	200	161	381	0	0	0	0	-1
normalized size	1	1.00	0.80	1.90	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.250	0.975	0.605	0.000	1.560	0.000	0.000	0.000

Problem 111	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	148	148	92	407	121	120	0	0	-1
normalized size	1	1.00	0.62	2.75	0.82	0.81	0.00	0.00	-0.01
time (sec)	N/A	0.159	0.058	0.287	0.426	0.580	0.000	0.000	0.000

Problem 112	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	134	270	0	0	0	0	-1
normalized size	1	1.00	1.08	2.18	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.146	1.407	0.283	0.000	1.045	0.000	0.000	0.000

Problem 113	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	64	159	58	92	0	0	-1
normalized size	1	1.00	0.96	2.37	0.87	1.37	0.00	0.00	-0.01
time (sec)	N/A	0.061	0.033	0.133	0.490	1.368	0.000	0.000	0.000

Problem 114	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	50	86	28	0	0	0	-1
normalized size	1	1.00	1.02	1.76	0.57	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.051	0.074	0.058	0.434	1.076	0.000	0.000	0.000

Problem 115	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	145	145	146	180	0	0	0	0	-1
normalized size	1	1.00	1.01	1.24	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.194	0.344	0.184	0.000	1.084	0.000	0.000	0.000

Problem 116	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	69	216	104	218	0	0	-1
normalized size	1	1.00	1.05	3.27	1.58	3.30	0.00	0.00	-0.02
time (sec)	N/A	0.090	0.166	0.258	0.605	0.910	0.000	0.000	0.000

Problem 117	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	229	229	244	461	0	0	0	0	-1
normalized size	1	1.00	1.07	2.01	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.299	2.780	0.374	0.000	1.872	0.000	0.000	0.000

Problem 118	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	147	147	152	849	124	433	0	0	-1
normalized size	1	1.00	1.03	5.78	0.84	2.95	0.00	0.00	-0.01
time (sec)	N/A	0.188	0.258	0.487	0.746	1.517	0.000	0.000	0.000

Problem 119	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	221	229	166	419	0	441	0	0	-1
normalized size	1	1.04	0.75	1.90	0.00	2.00	0.00	0.00	-0.00
time (sec)	N/A	0.291	0.306	0.503	0.000	1.007	0.000	0.000	0.000

Problem 120	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F(-1)	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	173	432	0	0	0	0	-1
normalized size	1	1.00	0.81	2.02	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.287	0.522	0.597	0.000	0.417	0.000	0.000	0.000

Problem 121	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	A	A	F(-2)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	142	146	136	306	142	382	0	0	-1
normalized size	1	1.03	0.96	2.15	1.00	2.69	0.00	0.00	-0.01
time (sec)	N/A	0.180	0.242	0.268	0.668	0.719	0.000	0.000	0.000

Problem 122	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F(-1)	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	160	274	0	0	0	0	-1
normalized size	1	1.00	1.19	2.03	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.159	0.221	0.275	0.000	0.606	0.000	0.000	0.000

Problem 123	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	51	194	0	279	0	0	-1
normalized size	1	1.00	0.70	2.66	0.00	3.82	0.00	0.00	-0.01
time (sec)	N/A	0.070	0.022	0.127	0.000	0.699	0.000	0.000	0.000

Problem 124	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	77	177	62	0	0	0	-1
normalized size	1	1.00	0.96	2.21	0.78	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.036	0.222	0.109	0.657	0.653	0.000	0.000	0.000

Problem 125	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	220	220	300	344	0	0	0	0	-1
normalized size	1	1.00	1.36	1.56	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.311	1.161	0.225	0.000	0.618	0.000	0.000	0.000

Problem 126	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	150	150	117	239	129	0	0	0	-1
normalized size	1	1.00	0.78	1.59	0.86	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.155	0.269	0.259	0.430	15.030	0.000	0.000	0.000

Problem 127	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	316	316	404	474	0	0	0	0	-1
normalized size	1	1.00	1.28	1.50	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.441	2.472	0.378	0.000	0.536	0.000	0.000	0.000

Problem 128	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	238	238	162	1045	0	0	0	0	-1
normalized size	1	1.00	0.68	4.39	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.292	0.349	0.499	0.000	19.558	0.000	0.000	0.000

Problem 129	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F(-1)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	293	293	253	2245	0	0	0	0	-1
normalized size	1	1.00	0.86	7.66	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.443	0.689	0.690	0.000	0.723	0.000	0.000	0.000

Problem 130	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	219	234	169	459	0	481	0	0	-1
normalized size	1	1.07	0.77	2.10	0.00	2.20	0.00	0.00	-0.00
time (sec)	N/A	0.316	0.336	0.500	0.000	1.139	0.000	0.000	0.000

Problem 131	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F(-1)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	212	212	213	531	0	0	0	0	-1
normalized size	1	1.00	1.00	2.50	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.302	0.462	0.605	0.000	2.930	0.000	0.000	0.000

Problem 132	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	A	A	F(-2)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	150	155	143	307	160	421	0	0	-1
normalized size	1	1.03	0.95	2.05	1.07	2.81	0.00	0.00	-0.01
time (sec)	N/A	0.197	0.250	0.276	0.572	2.885	0.000	0.000	0.000

Problem 133	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	125	125	103	1219	153	0	0	0	-1
normalized size	1	1.00	0.82	9.75	1.22	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.131	0.226	0.328	0.710	0.877	0.000	0.000	0.000

Problem 134	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F(-1)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	85	259	0	374	0	0	-1
normalized size	1	1.00	0.71	2.18	0.00	3.14	0.00	0.00	-0.01
time (sec)	N/A	0.081	0.054	0.184	0.000	1.219	0.000	0.000	0.000

Problem 135	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	154	154	113	1071	141	0	0	0	-1
normalized size	1	1.00	0.73	6.95	0.92	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.079	0.252	0.164	0.713	0.740	0.000	0.000	0.000

Problem 136	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	291	291	456	449	0	0	0	0	-1
normalized size	1	1.00	1.57	1.54	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.437	2.241	0.251	0.000	0.851	0.000	0.000	0.000

Problem 137	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	224	224	188	1346	0	0	0	0	-1
normalized size	1	1.00	0.84	6.01	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.220	0.341	0.334	0.000	13.036	0.000	0.000	0.000

Problem 138	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-1)	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	433	433	537	624	0	0	0	0	-1
normalized size	1	1.00	1.24	1.44	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.582	8.242	0.451	0.000	1.266	0.000	0.000	0.000

Problem 139	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	310	310	213	1875	255	0	0	0	-1
normalized size	1	1.00	0.69	6.05	0.82	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.387	0.337	0.525	1.334	1.188	0.000	0.000	0.000

Problem 140	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	111	409	149	0	0	128	-1
normalized size	1	1.00	0.53	1.95	0.71	0.00	0.00	0.61	-0.00
time (sec)	N/A	0.115	0.217	0.334	1.063	1.941	0.000	0.808	0.000

Problem 141	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	68	0	0	0	0	0	-1
normalized size	1	1.00	0.86	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.102	0.045	0.380	0.000	0.881	0.000	0.000	0.000

Problem 142	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	137	97	0	0	0	0	0	-1
normalized size	1	1.00	0.71	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.216	0.041	0.829	0.000	0.548	0.000	0.000	0.000

Problem 143	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	315	315	256	0	0	0	0	0	-1
normalized size	1	1.00	0.81	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.164	0.473	12.572	0.000	0.691	0.000	0.000	0.000

Problem 144	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	217	217	187	0	0	0	0	0	-1
normalized size	1	1.00	0.86	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.306	0.016	7.351	0.000	1.647	0.000	0.000	0.000

Problem 145	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-1)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	129	129	118	0	0	0	0	0	-1
normalized size	1	1.00	0.91	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.141	0.057	4.431	0.000	0.727	0.000	0.000	0.000

Problem 146	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.064	4.010	0.652	0.000	0.727	0.000	0.000	0.000

Problem 147	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	117	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.155	5.957	0.719	0.000	0.808	0.000	0.000	0.000

Problem 148	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	208	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.248	6.410	0.819	0.000	0.762	0.000	0.000	0.000

Problem 149	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	635	635	338	0	0	0	0	0	-1
normalized size	1	1.00	0.53	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.559	1.268	6.795	0.000	0.709	0.000	0.000	0.000

Problem 150	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	399	399	237	0	0	0	0	0	-1
normalized size	1	1.00	0.59	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.332	0.562	3.922	0.000	1.427	0.000	0.000	0.000

Problem 151	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	245	245	181	0	0	0	0	0	-1
normalized size	1	1.00	0.74	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.202	0.074	2.609	0.000	1.953	0.000	0.000	0.000

Problem 152	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	163	163	129	0	0	0	0	0	-1
normalized size	1	1.00	0.79	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.197	0.059	1.236	0.000	0.514	0.000	0.000	0.000

Problem 153	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	272	272	207	0	0	0	0	0	-1
normalized size	1	1.00	0.76	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.315	0.251	0.787	0.000	0.581	0.000	0.000	0.000

Problem 154	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	408	408	279	0	0	0	0	0	-1
normalized size	1	1.00	0.68	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.455	0.389	0.813	0.000	1.971	0.000	0.000	0.000

Problem 155	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	95	0	0	0	0	0	-1
normalized size	1	1.00	0.95	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.070	0.034	0.682	0.000	0.688	0.000	0.000	0.000

Problem 156	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	290	290	203	276	453	229	388	495	-1
normalized size	1	1.00	0.70	0.95	1.56	0.79	1.34	1.71	-0.00
time (sec)	N/A	0.461	0.286	0.198	0.465	0.559	10.797	0.463	0.000

Problem 157	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	202	202	192	306	0	211	332	377	-1
normalized size	1	1.00	0.95	1.51	0.00	1.04	1.64	1.87	-0.00
time (sec)	N/A	0.537	0.167	0.057	0.000	0.701	7.437	0.564	0.000

Problem 158	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	211	211	179	280	354	194	313	356	-1
normalized size	1	1.00	0.85	1.33	1.68	0.92	1.48	1.69	-0.00
time (sec)	N/A	0.337	0.278	0.142	0.449	0.661	4.011	0.395	0.000

Problem 159	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	138	138	157	206	0	176	269	248	-1
normalized size	1	1.00	1.14	1.49	0.00	1.28	1.95	1.80	-0.01
time (sec)	N/A	0.133	0.324	0.141	0.000	0.655	2.559	0.413	0.000

Problem 160	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	137	173	233	146	224	196	-1
normalized size	1	1.00	1.07	1.35	1.82	1.14	1.75	1.53	-0.01
time (sec)	N/A	0.137	0.221	0.056	0.429	0.964	1.282	0.638	0.000

Problem 161	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	178	178	236	421	0	0	0	0	-1
normalized size	1	1.00	1.33	2.37	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.238	0.464	0.346	0.000	0.946	0.000	0.000	0.000

Problem 162	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	203	269	0	0	0	0	-1
normalized size	1	1.00	1.36	1.81	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.298	0.420	0.401	0.000	0.758	0.000	0.000	0.000

Problem 163	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	193	193	236	564	0	0	0	0	-1
normalized size	1	1.00	1.22	2.92	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.287	0.393	0.591	0.000	0.674	0.000	0.000	0.000

Problem 164	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	176	176	266	291	0	0	0	0	-1
normalized size	1	1.00	1.51	1.65	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.377	0.766	0.619	0.000	2.215	0.000	0.000	0.000

Problem 165	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	395	395	253	531	781	337	563	702	-1
normalized size	1	1.00	0.64	1.34	1.98	0.85	1.43	1.78	-0.00
time (sec)	N/A	0.724	0.247	0.222	0.771	0.586	28.801	1.537	0.000

Problem 166	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	302	302	239	424	0	319	515	522	-1
normalized size	1	1.00	0.79	1.40	0.00	1.06	1.71	1.73	-0.00
time (sec)	N/A	1.008	0.250	0.199	0.000	0.669	21.820	0.522	0.000

Problem 167	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	310	310	229	400	634	296	483	553	-1
normalized size	1	1.00	0.74	1.29	2.05	0.95	1.56	1.78	-0.00
time (sec)	N/A	0.571	0.208	0.053	0.755	0.779	11.927	0.502	0.000

Problem 168	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	209	209	209	283	0	278	430	383	-1
normalized size	1	1.00	1.00	1.35	0.00	1.33	2.06	1.83	-0.00
time (sec)	N/A	0.198	0.285	0.052	0.000	0.668	8.233	0.582	0.000

Problem 169	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	219	219	193	275	465	247	389	374	-1
normalized size	1	1.00	0.88	1.26	2.12	1.13	1.78	1.71	-0.00
time (sec)	N/A	0.256	0.250	0.057	0.686	0.758	4.493	1.494	0.000

Problem 170	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	271	271	353	560	0	0	0	0	-1
normalized size	1	1.00	1.30	2.07	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.415	0.469	0.428	0.000	2.017	0.000	0.000	0.000

Problem 171	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	249	249	322	411	0	0	0	0	-1
normalized size	1	1.00	1.29	1.65	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.493	0.973	0.429	0.000	2.552	0.000	0.000	0.000

Problem 172	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	287	287	343	767	0	0	0	0	-1
normalized size	1	1.00	1.20	2.67	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.475	0.865	0.845	0.000	0.861	0.000	0.000	0.000

Problem 173	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	268	268	374	425	0	0	0	0	-1
normalized size	1	1.00	1.40	1.59	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.675	0.843	0.727	0.000	1.418	0.000	0.000	0.000

Problem 174	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	476	476	301	672	1141	413	702	865	-1
normalized size	1	1.00	0.63	1.41	2.40	0.87	1.47	1.82	-0.00
time (sec)	N/A	1.018	0.427	0.180	0.723	1.945	67.479	1.033	0.000

Problem 175	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	384	384	287	519	0	395	654	631	-1
normalized size	1	1.00	0.75	1.35	0.00	1.03	1.70	1.64	-0.00
time (sec)	N/A	1.594	0.454	0.167	0.000	0.742	52.755	0.613	0.000

Problem 176	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	391	391	277	525	946	372	626	716	-1
normalized size	1	1.00	0.71	1.34	2.42	0.95	1.60	1.83	-0.00
time (sec)	N/A	0.823	0.382	0.060	0.944	0.638	30.098	0.534	0.000

Problem 177	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	268	268	257	358	0	354	573	492	-1
normalized size	1	1.00	0.96	1.34	0.00	1.32	2.14	1.84	-0.00
time (sec)	N/A	0.247	0.344	0.069	0.000	0.644	22.709	1.478	0.000

Problem 178	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	298	298	241	384	729	323	524	528	-1
normalized size	1	1.00	0.81	1.29	2.45	1.08	1.76	1.77	-0.00
time (sec)	N/A	0.372	0.450	0.062	0.720	0.542	12.518	0.610	0.000

Problem 179	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	354	354	448	661	0	0	0	0	-1
normalized size	1	1.00	1.27	1.87	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.658	0.814	0.579	0.000	0.736	0.000	0.000	0.000

Problem 180	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	329	329	483	524	0	0	0	0	-1
normalized size	1	1.00	1.47	1.59	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.706	1.284	0.562	0.000	1.020	0.000	0.000	0.000

Problem 181	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	371	371	494	884	0	0	0	0	-1
normalized size	1	1.00	1.33	2.38	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.723	1.324	1.022	0.000	0.612	0.000	0.000	0.000

Problem 182	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	348	348	480	547	0	0	0	0	-1
normalized size	1	1.00	1.38	1.57	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.981	1.045	0.886	0.000	0.734	0.000	0.000	0.000

Problem 183	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	297	297	508	0	0	0	0	0	-1
normalized size	1	1.00	1.71	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.549	0.847	0.585	0.000	0.610	0.000	0.000	0.000

Problem 184	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	F(-1)	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	441	416	0	0	0	0	-1
normalized size	1	1.00	2.10	1.98	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.378	0.397	0.257	0.000	1.147	0.000	0.000	0.000

Problem 185	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	218	218	317	0	0	0	0	0	-1
normalized size	1	1.00	1.45	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.287	0.310	0.302	0.000	0.610	0.000	0.000	0.000

Problem 186	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-1)	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	117	117	143	258	0	0	0	0	-1
normalized size	1	1.00	1.22	2.21	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.172	0.079	0.085	0.000	0.679	0.000	0.000	0.000

Problem 187	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	156	156	207	404	0	0	0	0	-1
normalized size	1	1.00	1.33	2.59	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.127	0.495	0.154	0.000	0.436	0.000	0.000	0.000

Problem 188	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	254	475	0	0	0	0	-1
normalized size	1	1.00	1.94	3.63	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.197	0.189	0.159	0.000	0.755	0.000	0.000	0.000

Problem 189	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	238	238	391	575	0	0	0	0	-1
normalized size	1	1.00	1.64	2.42	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.348	0.685	0.304	0.000	1.066	0.000	0.000	0.000

Problem 190	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	353	793	0	0	0	0	-1
normalized size	1	1.00	1.68	3.78	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.383	1.186	0.526	0.000	0.712	0.000	0.000	0.000

Problem 191	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	333	333	849	725	0	0	0	0	-1
normalized size	1	1.00	2.55	2.18	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.654	7.844	0.448	0.000	2.959	0.000	0.000	0.000

Problem 192	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	300	300	614	705	0	0	0	0	-1
normalized size	1	1.00	2.05	2.35	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.525	3.138	0.622	0.000	0.702	0.000	0.000	0.000

Problem 193	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-1)	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	227	227	502	585	0	0	0	0	-1
normalized size	1	1.00	2.21	2.58	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.395	1.067	0.663	0.000	0.691	0.000	0.000	0.000

Problem 194	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	233	233	383	599	0	0	0	0	-1
normalized size	1	1.00	1.64	2.57	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.299	2.645	0.398	0.000	1.201	0.000	0.000	0.000

Problem 195	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	75	205	293	102	0	204	-1
normalized size	1	1.00	0.84	2.30	3.29	1.15	0.00	2.29	-0.01
time (sec)	N/A	0.099	0.191	0.048	0.930	0.602	0.000	0.734	0.000

Problem 196	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	230	230	359	593	0	0	0	0	-1
normalized size	1	1.00	1.56	2.58	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.236	2.622	0.184	0.000	0.749	0.000	0.000	0.000

Problem 197	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	211	211	365	829	0	0	0	0	-1
normalized size	1	1.00	1.73	3.93	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.365	1.325	0.444	0.000	1.007	0.000	0.000	0.000

Problem 198	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	324	324	1059	778	0	0	0	0	-1
normalized size	1	1.00	3.27	2.40	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.563	9.769	0.438	0.000	1.016	0.000	0.000	0.000

Problem 199	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	270	270	430	903	0	0	0	0	-1
normalized size	1	1.00	1.59	3.34	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.551	1.623	0.373	0.000	0.832	0.000	0.000	0.000

Problem 200	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	439	439	1514	1019	0	0	0	0	-1
normalized size	1	1.00	3.45	2.32	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.949	12.952	0.543	0.000	0.692	0.000	0.000	0.000

Problem 201	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	343	343	667	903	0	0	0	0	-1
normalized size	1	1.00	1.94	2.63	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.536	6.588	0.831	0.000	0.583	0.000	0.000	0.000

Problem 202	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	172	172	192	472	0	198	0	318	-1
normalized size	1	1.00	1.12	2.74	0.00	1.15	0.00	1.85	-0.01
time (sec)	N/A	0.334	0.191	0.661	0.000	0.805	0.000	1.031	0.000

Problem 203	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	341	341	446	894	0	0	0	0	-1
normalized size	1	1.00	1.31	2.62	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.422	4.647	0.625	0.000	1.484	0.000	0.000	0.000

Problem 204	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	150	150	162	335	0	165	0	395	-1
normalized size	1	1.00	1.08	2.23	0.00	1.10	0.00	2.63	-0.01
time (sec)	N/A	0.137	0.210	0.050	0.000	3.229	0.000	1.261	0.000

Problem 205	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	332	332	556	890	0	0	0	0	-1
normalized size	1	1.00	1.67	2.68	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.351	6.019	0.278	0.000	3.707	0.000	0.000	0.000

Problem 206	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	296	296	459	1224	0	0	0	0	-1
normalized size	1	1.00	1.55	4.14	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.491	3.812	0.464	0.000	1.349	0.000	0.000	0.000

Problem 207	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	429	429	1351	1093	0	0	0	0	-1
normalized size	1	1.00	3.15	2.55	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.759	12.042	0.538	0.000	1.489	0.000	0.000	0.000

Problem 208	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	403	403	569	1547	0	0	0	0	-1
normalized size	1	1.00	1.41	3.84	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.784	7.906	0.590	0.000	0.580	0.000	0.000	0.000

Problem 209	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	572	572	1657	1352	0	0	0	0	-1
normalized size	1	1.00	2.90	2.36	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.321	13.029	0.681	0.000	0.998	0.000	0.000	0.000

Problem 210	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	374	374	242	1165	311	277	0	0	-1
normalized size	1	1.00	0.65	3.11	0.83	0.74	0.00	0.00	-0.00
time (sec)	N/A	0.470	0.304	0.579	1.061	0.851	0.000	0.000	0.000

Problem 211	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	303	303	246	812	0	0	0	0	-1
normalized size	1	1.00	0.81	2.68	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.384	0.361	0.508	0.000	0.925	0.000	0.000	0.000

Problem 212	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	188	188	120	700	188	208	0	0	-1
normalized size	1	1.00	0.64	3.72	1.00	1.11	0.00	0.00	-0.01
time (sec)	N/A	0.159	0.297	0.298	0.523	0.798	0.000	0.000	0.000

Problem 213	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	192	192	128	564	0	0	0	0	-1
normalized size	1	1.00	0.67	2.94	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.115	0.235	0.197	0.000	0.791	0.000	0.000	0.000

Problem 214	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	378	378	391	1017	0	0	0	0	-1
normalized size	1	1.00	1.03	2.69	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.349	1.207	0.382	0.000	0.538	0.000	0.000	0.000

Problem 215	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	227	227	257	762	0	0	0	0	-1
normalized size	1	1.00	1.13	3.36	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.320	1.050	0.421	0.000	0.474	0.000	0.000	0.000

Problem 216	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	398	398	480	1082	0	0	0	0	-1
normalized size	1	1.00	1.21	2.72	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.382	5.285	0.546	0.000	0.437	0.000	0.000	0.000

Problem 217	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	314	314	248	3017	0	0	0	0	-1
normalized size	1	1.00	0.79	9.61	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.272	1.248	0.593	0.000	1.491	0.000	0.000	0.000

Problem 218	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	503	503	244	1678	356	360	0	0	-1
normalized size	1	1.00	0.49	3.34	0.71	0.72	0.00	0.00	-0.00
time (sec)	N/A	0.780	0.333	0.629	1.537	0.595	0.000	0.000	0.000

Problem 219	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	421	421	297	4469	0	0	0	0	-1
normalized size	1	1.00	0.71	10.62	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.710	0.334	0.644	0.000	0.548	0.000	0.000	0.000

Problem 220	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	279	279	159	1151	236	295	0	0	-1
normalized size	1	1.00	0.57	4.13	0.85	1.06	0.00	0.00	-0.00
time (sec)	N/A	0.228	0.196	0.391	0.936	0.636	0.000	0.000	0.000

Problem 221	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	305	307	329	2936	0	0	0	0	-1
normalized size	1	1.01	1.08	9.63	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.240	1.207	0.267	0.000	0.606	0.000	0.000	0.000

Problem 222	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	545	545	576	1276	0	0	0	0	-1
normalized size	1	1.00	1.06	2.34	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.604	2.647	0.454	0.000	0.485	0.000	0.000	0.000

Problem 223	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	424	424	396	1148	0	0	0	0	-1
normalized size	1	1.00	0.93	2.71	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.404	2.667	0.471	0.000	0.458	0.000	0.000	0.000

Problem 224	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	590	590	854	1372	0	0	0	0	-1
normalized size	1	1.00	1.45	2.33	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.612	7.186	0.596	0.000	0.459	0.000	0.000	0.000

Problem 225	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	400	400	493	3281	0	0	0	0	-1
normalized size	1	1.00	1.23	8.20	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.555	2.144	0.630	0.000	0.439	0.000	0.000	0.000

Problem 226	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	651	651	270	2146	401	486	0	0	-1
normalized size	1	1.00	0.41	3.30	0.62	0.75	0.00	0.00	-0.00
time (sec)	N/A	1.246	0.454	0.672	0.683	0.547	0.000	0.000	0.000

Problem 227	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	556	556	348	6108	0	0	0	0	-1
normalized size	1	1.00	0.63	10.99	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.107	0.475	0.759	0.000	0.507	0.000	0.000	0.000

Problem 228	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	382	382	216	1611	281	405	0	0	-1
normalized size	1	1.00	0.57	4.22	0.74	1.06	0.00	0.00	-0.00
time (sec)	N/A	0.293	0.393	0.467	0.558	0.474	0.000	0.000	0.000

Problem 229	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	438	438	407	5048	0	0	0	0	-1
normalized size	1	1.00	0.93	11.53	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.387	2.085	0.340	0.000	0.468	0.000	0.000	0.000

Problem 230	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	687	687	775	1574	0	0	0	0	-1
normalized size	1	1.00	1.13	2.29	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.886	5.012	0.546	0.000	0.437	0.000	0.000	0.000

Problem 231	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	561	561	586	3585	0	0	0	0	-1
normalized size	1	1.00	1.04	6.39	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.603	2.313	0.565	0.000	0.498	0.000	0.000	0.000

Problem 232	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	740	740	1073	1674	0	0	0	0	-1
normalized size	1	1.00	1.45	2.26	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.955	7.467	0.690	0.000	0.482	0.000	0.000	0.000

Problem 233	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	591	591	690	3855	0	0	0	0	-1
normalized size	1	1.00	1.17	6.52	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.883	3.917	0.729	0.000	0.487	0.000	0.000	0.000

Problem 234	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	400	400	230	1020	365	276	0	0	-1
normalized size	1	1.00	0.58	2.55	0.91	0.69	0.00	0.00	-0.00
time (sec)	N/A	0.583	0.200	0.793	1.470	0.461	0.000	0.000	0.000

Problem 235	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	337	337	283	858	0	0	0	0	-1
normalized size	1	1.00	0.84	2.55	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.484	1.554	0.945	0.000	0.430	0.000	0.000	0.000

Problem 236	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	277	277	176	812	251	210	0	0	-1
normalized size	1	1.00	0.64	2.93	0.91	0.76	0.00	0.00	-0.00
time (sec)	N/A	0.329	0.135	0.590	0.557	0.453	0.000	0.000	0.000

Problem 237	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	213	210	604	0	0	0	0	-1
normalized size	1	1.03	1.02	2.93	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.269	1.344	0.431	0.000	0.428	0.000	0.000	0.000

Problem 238	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	86	316	130	147	0	0	-1
normalized size	1	1.00	0.59	2.16	0.89	1.01	0.00	0.00	-0.01
time (sec)	N/A	0.122	0.098	0.222	0.602	0.433	0.000	0.000	0.000

Problem 239	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	64	143	47	0	0	0	-1
normalized size	1	1.00	1.31	2.92	0.96	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.091	0.129	0.076	0.610	0.433	0.000	0.000	0.000

Problem 240	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	257	257	301	388	0	0	0	0	-1
normalized size	1	1.00	1.17	1.51	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.341	0.688	0.275	0.000	0.430	0.000	0.000	0.000

Problem 241	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	183	183	159	638	0	0	0	0	-1
normalized size	1	1.00	0.87	3.49	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.220	0.452	0.378	0.000	0.436	0.000	0.000	0.000

Problem 242	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	402	402	487	1107	0	0	0	0	-1
normalized size	1	1.00	1.21	2.75	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.519	6.254	0.563	0.000	0.436	0.000	0.000	0.000

Problem 243	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	319	319	269	2320	0	0	0	0	-1
normalized size	1	1.00	0.84	7.27	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.390	0.818	0.709	0.000	0.469	0.000	0.000	0.000

Problem 244	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	549	549	453	1085	0	0	0	0	-1
normalized size	1	1.00	0.83	1.98	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.741	0.856	0.826	0.000	0.490	0.000	0.000	0.000

Problem 245	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	424	424	312	973	0	0	0	0	-1
normalized size	1	1.00	0.74	2.29	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.643	2.444	0.935	0.000	0.459	0.000	0.000	0.000

Problem 246	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-2)	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	412	412	369	830	0	0	0	0	-1
normalized size	1	1.00	0.90	2.01	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.454	0.597	0.544	0.000	0.475	0.000	0.000	0.000

Problem 247	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	250	250	295	581	0	0	0	0	-1
normalized size	1	1.00	1.18	2.32	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.357	0.612	0.412	0.000	0.434	0.000	0.000	0.000

Problem 248	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	208	208	276	540	0	0	0	0	-1
normalized size	1	1.00	1.33	2.60	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.186	0.577	0.198	0.000	0.439	0.000	0.000	0.000

Problem 249	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	195	195	165	425	0	0	0	0	-1
normalized size	1	1.00	0.85	2.18	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.161	0.531	0.155	0.000	0.446	0.000	0.000	0.000

Problem 250	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	467	467	667	1096	0	0	0	0	-1
normalized size	1	1.00	1.43	2.35	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.573	1.890	0.405	0.000	0.434	0.000	0.000	0.000

Problem 251	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	333	333	322	807	0	0	0	0	-1
normalized size	1	1.00	0.97	2.42	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.437	0.784	0.380	0.000	0.446	0.000	0.000	0.000

Problem 252	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	634	634	844	1490	0	0	0	0	-1
normalized size	1	1.00	1.33	2.35	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.928	8.455	0.655	0.000	0.425	0.000	0.000	0.000

Problem 253	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	483	483	462	2845	0	0	0	0	-1
normalized size	1	1.00	0.96	5.89	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.804	0.904	0.749	0.000	0.443	0.000	0.000	0.000

Problem 254	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	546	546	594	1201	0	0	0	0	-1
normalized size	1	1.00	1.09	2.20	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.865	1.674	0.814	0.000	0.456	0.000	0.000	0.000

Problem 255	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	421	421	374	1304	0	0	0	0	-1
normalized size	1	1.00	0.89	3.10	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.726	1.633	1.003	0.000	0.436	0.000	0.000	0.000

Problem 256	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	F	F(-2)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	332	332	511	829	0	0	0	0	-1
normalized size	1	1.00	1.54	2.50	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.489	0.929	0.562	0.000	0.447	0.000	0.000	0.000

Problem 257	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	332	332	303	3277	0	0	0	0	-1
normalized size	1	1.00	0.91	9.87	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.352	0.826	0.497	0.000	0.463	0.000	0.000	0.000

Problem 258	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	294	294	461	762	0	0	0	0	-1
normalized size	1	1.00	1.57	2.59	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.218	1.309	0.293	0.000	0.445	0.000	0.000	0.000

Problem 259	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	311	311	320	2896	0	0	0	0	-1
normalized size	1	1.00	1.03	9.31	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.276	1.063	0.235	0.000	0.475	0.000	0.000	0.000

Problem 260	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	577	577	935	1373	0	0	0	0	-1
normalized size	1	1.00	1.62	2.38	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.860	8.894	0.481	0.000	0.488	0.000	0.000	0.000

Problem 261	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	452	452	352	3777	0	0	0	0	-1
normalized size	1	1.00	0.78	8.36	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.617	2.910	0.492	0.000	0.472	0.000	0.000	0.000

Problem 262	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	752	752	1090	1876	0	0	0	0	-1
normalized size	1	1.00	1.45	2.49	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.256	11.325	0.744	0.000	0.502	0.000	0.000	0.000

Problem 263	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	538	538	441	5229	0	0	0	0	-1
normalized size	1	1.00	0.82	9.72	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.053	4.219	0.789	0.000	0.543	0.000	0.000	0.000

Problem 264	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	157	157	100	129	0	84	146	143	-1
normalized size	1	1.00	0.64	0.82	0.00	0.54	0.93	0.91	-0.01
time (sec)	N/A	0.271	0.067	0.125	0.000	0.465	3.504	0.601	0.000

Problem 265	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	81	127	105	64	121	0	-1
normalized size	1	1.00	0.64	1.01	0.83	0.51	0.96	0.00	-0.01
time (sec)	N/A	0.202	0.069	0.111	0.439	0.473	2.039	0.000	0.000

Problem 266	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	73	71	0	59	78	81	-1
normalized size	1	1.00	0.82	0.80	0.00	0.66	0.88	0.91	-0.01
time (sec)	N/A	0.137	0.033	0.145	0.000	0.444	1.166	0.471	0.000

Problem 267	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	51	80	49	35	49	49	-1
normalized size	1	1.00	0.93	1.45	0.89	0.64	0.89	0.89	-0.02
time (sec)	N/A	0.072	0.020	0.099	0.784	0.445	0.664	0.408	0.000

Problem 268	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	13	13	13	12	11	11	10	11	11
normalized size	1	1.00	1.00	0.92	0.85	0.85	0.77	0.85	0.85
time (sec)	N/A	0.034	0.006	0.004	2.038	0.432	0.379	0.914	0.148

Problem 269	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	116	161	0	0	0	0	-1
normalized size	1	1.00	1.26	1.75	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.143	0.128	0.125	0.000	0.470	0.000	0.000	0.000

Problem 270	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	76	76	72	148	0	0	0	0	-1
normalized size	1	1.00	0.95	1.95	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.144	0.304	0.221	0.000	0.477	0.000	0.000	0.000

Problem 271	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	163	163	194	269	0	0	0	0	-1
normalized size	1	1.00	1.19	1.65	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.255	1.572	0.329	0.000	0.483	0.000	0.000	0.000

Problem 272	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	42	52	14	0	0	0	-1
normalized size	1	1.00	1.00	1.24	0.33	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.068	0.070	0.053	1.280	0.425	0.000	0.000	0.000

Problem 273	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	179	179	108	169	0	0	0	0	-1
normalized size	1	1.00	0.60	0.94	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.129	0.264	0.208	0.000	0.483	0.000	0.000	0.000

Problem 274	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	283	283	149	365	0	0	0	0	-1
normalized size	1	1.00	0.53	1.29	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.217	0.703	0.273	0.000	0.465	0.000	0.000	0.000

Problem 275	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	390	390	234	556	0	0	0	0	-1
normalized size	1	1.00	0.60	1.43	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.329	0.963	0.345	0.000	0.492	0.000	0.000	0.000

Problem 276	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	F	F	F	F	F(-1)	F	F
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	1312	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.083	3.670	22.230	0.000	0.563	0.000	0.000	0.000

Problem 277	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	F	F	F	F	F	F	F
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	756	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.081	0.155	10.615	0.000	0.478	0.000	0.000	0.000

Problem 278	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	F	F	F	F	F	F	F	F
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	371	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.049	0.110	4.483	0.000	0.494	0.000	0.000	0.000

Problem 279	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	30	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.091	7.497	0.594	0.000	0.458	0.000	0.000	0.000

Problem 280	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	280	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.408	9.144	0.747	0.000	0.458	0.000	0.000	0.000

Problem 281	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	669	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.913	10.311	0.838	0.000	1.193	0.000	0.000	0.000

Problem 282	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	958	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.157	6.431	12.278	0.000	0.546	0.000	0.000	0.000

Problem 283	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	500	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.152	0.164	4.897	0.000	0.462	0.000	0.000	0.000

Problem 284	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	204	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.139	0.114	1.793	0.000	0.432	0.000	0.000	0.000

Problem 285	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.151	3.452	0.932	0.000	0.445	0.000	0.000	0.000

Problem 286	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.166	4.577	0.815	0.000	0.483	0.000	0.000	0.000

Problem 287	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	32	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.166	4.755	0.849	0.000	0.459	0.000	0.000	0.000

Problem 288	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.095	0.945	0.702	0.000	0.479	0.000	0.000	0.000

Problem 289	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	370	370	171	278	284	202	355	379	-1
normalized size	1	1.00	0.46	0.75	0.77	0.55	0.96	1.02	-0.00
time (sec)	N/A	0.700	0.400	0.142	0.452	0.456	17.112	0.393	0.000

Problem 290	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	273	273	139	206	216	158	262	267	-1
normalized size	1	1.00	0.51	0.75	0.79	0.58	0.96	0.98	-0.00
time (sec)	N/A	0.407	0.254	0.090	0.506	0.477	6.255	0.829	0.000

Problem 291	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	101	132	128	95	150	139	-1
normalized size	1	1.00	0.64	0.84	0.81	0.60	0.95	0.88	-0.01
time (sec)	N/A	0.211	0.115	0.081	0.487	0.455	1.932	0.727	0.000

Problem 292	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	200	200	162	0	36	0	0	0	-1
normalized size	1	1.00	0.81	0.00	0.18	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.134	0.224	0.133	0.618	0.453	0.000	0.000	0.000

Problem 293	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	337	337	234	486	57	0	0	0	-1
normalized size	1	1.00	0.69	1.44	0.17	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.296	0.520	0.246	0.843	0.463	0.000	0.000	0.000

Problem 294	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	A	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	455	455	1544	726	78	0	0	0	-1
normalized size	1	1.00	3.39	1.60	0.17	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.507	12.520	0.344	1.036	0.475	0.000	0.000	0.000

Problem 295	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	533	533	179	699	0	0	0	0	-1
normalized size	1	1.00	0.34	1.31	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.547	0.884	0.336	0.000	0.449	0.000	0.000	0.000

Problem 296	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	365	365	138	474	0	0	0	0	-1
normalized size	1	1.00	0.38	1.30	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.322	0.355	0.234	0.000	0.464	0.000	0.000	0.000

Problem 297	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	215	215	114	260	0	0	0	0	-1
normalized size	1	1.00	0.53	1.21	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.165	0.070	0.207	0.000	0.452	0.000	0.000	0.000

Problem 298	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	42	52	14	0	0	0	-1
normalized size	1	1.00	1.00	1.24	0.33	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.069	0.051	0.046	0.484	0.447	0.000	0.000	0.000

Problem 299	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	238	238	157	203	49	0	0	0	-1
normalized size	1	1.00	0.66	0.85	0.21	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.175	0.280	0.207	1.401	0.444	0.000	0.000	0.000

Problem 300	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	388	388	211	661	106	0	0	0	-1
normalized size	1	1.00	0.54	1.70	0.27	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.306	0.631	0.295	0.843	0.495	0.000	0.000	0.000

Problem 301	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	547	547	319	1017	0	0	0	0	-1
normalized size	1	1.00	0.58	1.86	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.481	0.840	0.401	0.000	0.476	0.000	0.000	0.000

Problem 302	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.083	0.915	0.696	0.000	0.475	0.000	0.000	0.000

Problem 303	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	191	191	125	159	0	111	185	192	-1
normalized size	1	1.00	0.65	0.83	0.00	0.58	0.97	1.01	-0.01
time (sec)	N/A	0.468	0.070	0.126	0.000	0.463	5.934	0.561	0.000

Problem 304	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	157	157	100	180	131	85	148	0	-1
normalized size	1	1.00	0.64	1.15	0.83	0.54	0.94	0.00	-0.01
time (sec)	N/A	0.321	0.069	0.121	0.516	0.428	3.259	0.000	0.000

Problem 305	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	85	85	0	73	100	108	-1
normalized size	1	1.00	0.79	0.79	0.00	0.68	0.93	1.01	-0.01
time (sec)	N/A	0.207	0.031	0.139	0.000	0.465	2.040	0.428	0.000

Problem 306	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	61	107	64	46	61	62	-1
normalized size	1	1.00	0.91	1.60	0.96	0.69	0.91	0.93	-0.01
time (sec)	N/A	0.105	0.018	0.102	0.433	0.484	1.102	0.583	0.000

Problem 307	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	13	13	13	12	11	11	10	11	11
normalized size	1	1.00	1.00	0.92	0.85	0.85	0.77	0.85	0.85
time (sec)	N/A	0.030	0.004	0.008	0.419	0.435	0.625	1.382	0.147

Problem 308	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	138	138	180	221	0	0	0	0	-1
normalized size	1	1.00	1.30	1.60	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.160	0.161	0.128	0.000	0.456	0.000	0.000	0.000

Problem 309	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	108	208	0	0	0	0	-1
normalized size	1	1.00	1.09	2.10	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.182	0.244	0.226	0.000	0.444	0.000	0.000	0.000

Problem 310	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	264	264	317	428	0	0	0	0	-1
normalized size	1	1.00	1.20	1.62	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.357	5.035	0.352	0.000	0.468	0.000	0.000	0.000

Problem 311	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	43	42	0	0	0	59	-1
normalized size	1	1.00	0.64	0.63	0.00	0.00	0.00	0.88	-0.01
time (sec)	N/A	0.105	0.152	0.115	0.000	0.414	0.000	0.440	0.000

Problem 312	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	34	33	0	0	0	44	-1
normalized size	1	1.00	0.68	0.66	0.00	0.00	0.00	0.88	-0.02
time (sec)	N/A	0.090	0.094	0.059	0.000	0.441	0.000	0.353	0.000

Problem 313	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	23	22	0	0	0	25	-1
normalized size	1	1.00	0.79	0.76	0.00	0.00	0.00	0.86	-0.03
time (sec)	N/A	0.064	0.017	0.060	0.000	0.469	0.000	0.359	0.000

Problem 314	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.024	2.718	0.129	0.000	0.632	0.000	0.000	0.000

Problem 315	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.024	8.561	0.465	0.000	0.513	0.000	0.000	0.000

Problem 316	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	152	193	0	0	0	472	-1
normalized size	1	1.00	0.74	0.94	0.00	0.00	0.00	2.29	-0.00
time (sec)	N/A	0.460	0.486	0.089	0.000	0.464	0.000	0.422	0.000

Problem 317	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	183	179	135	138	0	0	0	0	-1
normalized size	1	0.98	0.74	0.75	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.430	0.367	0.077	0.000	0.438	0.000	0.000	0.000

Problem 318	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	66	77	0	0	0	169	-1
normalized size	1	1.00	0.80	0.94	0.00	0.00	0.00	2.06	-0.01
time (sec)	N/A	0.251	0.200	0.069	0.000	0.685	0.000	0.648	0.000

Problem 319	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	117	91	92	0	0	0	172	-1
normalized size	1	0.97	0.75	0.76	0.00	0.00	0.00	1.42	-0.01
time (sec)	N/A	0.262	0.244	0.074	0.000	0.459	0.000	0.907	0.000

Problem 320	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F(-1)	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	62	77	0	0	0	102	-1
normalized size	1	1.00	0.76	0.94	0.00	0.00	0.00	1.24	-0.01
time (sec)	N/A	0.166	0.184	0.080	0.000	0.000	0.000	0.496	0.000

Problem 321	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	79	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.399	3.180	0.503	0.000	1.244	0.000	0.000	0.000

Problem 322	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	47	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.298	0.974	0.569	0.000	2.364	0.000	0.000	0.000

Problem 323	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.121	6.022	2.986	0.000	0.679	0.000	0.000	0.000

Problem 324	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.120	0.872	4.546	0.000	2.938	0.000	0.000	0.000

Problem 325	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	245	241	179	184	0	0	0	614	-1
normalized size	1	0.98	0.73	0.75	0.00	0.00	0.00	2.51	-0.00
time (sec)	N/A	0.499	0.819	0.092	0.000	1.299	0.000	0.921	0.000

Problem 326	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	165	193	0	0	0	473	-1
normalized size	1	1.00	0.80	0.94	0.00	0.00	0.00	2.30	-0.00
time (sec)	N/A	0.423	0.672	0.095	0.000	0.723	0.000	0.781	0.000

Problem 327	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	183	179	136	139	0	0	0	360	-1
normalized size	1	0.98	0.74	0.76	0.00	0.00	0.00	1.97	-0.01
time (sec)	N/A	0.344	0.572	0.072	0.000	0.682	0.000	0.412	0.000

Problem 328	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	121	135	0	0	0	252	-1
normalized size	1	1.00	0.84	0.94	0.00	0.00	0.00	1.75	-0.01
time (sec)	N/A	0.242	0.365	0.092	0.000	0.522	0.000	0.374	0.000

Problem 329	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	140	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.752	3.342	0.619	0.000	1.327	0.000	0.000	0.000

Problem 330	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	107	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.576	1.321	0.523	0.000	0.511	0.000	0.000	0.000

Problem 331	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.139	5.745	3.145	0.000	0.539	0.000	0.000	0.000

Problem 332	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.140	0.860	3.858	0.000	1.836	0.000	0.000	0.000

Problem 333	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	245	241	180	185	0	0	0	746	-1
normalized size	1	0.98	0.73	0.76	0.00	0.00	0.00	3.04	-0.00
time (sec)	N/A	0.512	1.268	0.079	0.000	0.788	0.000	0.513	0.000

Problem 334	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	268	268	209	251	0	0	0	757	-1
normalized size	1	1.00	0.78	0.94	0.00	0.00	0.00	2.82	-0.00
time (sec)	N/A	0.530	1.138	0.079	0.000	0.530	0.000	0.591	0.000

Problem 335	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	245	241	180	185	0	0	0	614	-1
normalized size	1	0.98	0.73	0.76	0.00	0.00	0.00	2.51	-0.00
time (sec)	N/A	0.447	1.164	0.075	0.000	1.083	0.000	0.833	0.000

Problem 336	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	165	193	0	0	0	472	-1
normalized size	1	1.00	0.80	0.94	0.00	0.00	0.00	2.29	-0.00
time (sec)	N/A	0.321	0.896	0.084	0.000	2.060	0.000	0.689	0.000

Problem 337	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	196	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	1.145	3.572	0.717	0.000	1.003	0.000	0.000	0.000

Problem 338	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	161	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.933	1.431	0.612	0.000	1.147	0.000	0.000	0.000

Problem 339	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.143	5.975	3.289	0.000	3.638	0.000	0.000	0.000

Problem 340	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.145	0.980	4.434	0.000	1.051	0.000	0.000	0.000

Problem 341	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	31	36	0	0	0	35	-1
normalized size	1	1.00	0.76	0.88	0.00	0.00	0.00	0.85	-0.02
time (sec)	N/A	0.159	0.082	0.149	0.000	0.577	0.000	0.888	0.000

Problem 342	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	24	21	0	0	0	0	-1
normalized size	1	1.00	0.89	0.78	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.145	0.074	0.129	0.000	0.568	0.000	0.000	0.000

Problem 343	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	22	24	0	0	0	23	-1
normalized size	1	1.00	0.81	0.89	0.00	0.00	0.00	0.85	-0.04
time (sec)	N/A	0.136	0.073	0.099	0.000	1.774	0.000	0.354	0.000

Problem 344	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	22	24	0	0	0	23	-1
normalized size	1	1.00	0.81	0.89	0.00	0.00	0.00	0.85	-0.04
time (sec)	N/A	0.135	0.017	0.000	0.000	2.061	0.000	0.552	0.000

Problem 345	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	9	9	9	10	0	0	0	9	-1
normalized size	1	1.00	1.00	1.11	0.00	0.00	0.00	1.00	-0.11
time (sec)	N/A	0.075	0.060	0.073	0.000	0.699	0.000	0.765	0.000

Problem 346	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	9	9	9	10	9	11	7	10	9
normalized size	1	1.00	1.00	1.11	1.00	1.22	0.78	1.11	1.00
time (sec)	N/A	0.033	0.019	0.007	0.429	2.437	0.408	0.583	0.148

Problem 347	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.089	1.294	0.146	0.000	1.005	0.000	0.000	0.000

Problem 348	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.092	0.121	0.293	0.000	0.642	0.000	0.000	0.000

Problem 349	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	183	179	136	139	0	0	0	0	-1
normalized size	1	0.98	0.74	0.76	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.373	0.358	0.088	0.000	1.126	0.000	0.000	0.000

Problem 350	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	108	135	0	0	0	254	-1
normalized size	1	1.00	0.75	0.94	0.00	0.00	0.00	1.76	-0.01
time (sec)	N/A	0.331	0.265	0.093	0.000	0.568	0.000	0.452	0.000

Problem 351	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	117	92	93	0	0	0	0	-1
normalized size	1	0.97	0.76	0.77	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.310	0.220	0.085	0.000	0.651	0.000	0.000	0.000

Problem 352	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	64	77	0	0	0	104	-1
normalized size	1	1.00	0.78	0.94	0.00	0.00	0.00	1.27	-0.01
time (sec)	N/A	0.250	0.179	0.097	0.000	0.497	0.000	0.425	0.000

Problem 353	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	54	50	45	46	0	0	0	50	-1
normalized size	1	0.93	0.83	0.85	0.00	0.00	0.00	0.93	-0.02
time (sec)	N/A	0.154	0.114	0.076	0.000	0.650	0.000	0.362	0.000

Problem 354	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	17	16	19	42	17	16
normalized size	1	1.00	1.00	1.06	1.00	1.19	2.62	1.06	1.00
time (sec)	N/A	0.048	0.049	0.006	0.413	0.604	1.273	0.398	0.178

Problem 355	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.124	2.870	0.161	0.000	0.527	0.000	0.000	0.000

Problem 356	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.128	0.082	0.115	0.000	0.671	0.000	0.000	0.000

Problem 357	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.142	3.895	0.557	0.000	0.507	0.000	0.000	0.000

Problem 358	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.101	10.677	0.401	0.000	0.645	0.000	0.000	0.000

Problem 359	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.047	0.101	0.254	0.000	1.127	0.000	0.000	0.000

Problem 360	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.134	2.834	2.622	0.000	0.480	0.000	0.000	0.000

Problem 361	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.136	2.021	0.627	0.000	0.395	0.000	0.000	0.000

Problem 362	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.140	4.729	2.799	0.000	0.405	0.000	0.000	0.000

Problem 363	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.092	26.803	2.451	0.000	0.640	0.000	0.000	0.000

Problem 364	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.047	0.113	1.885	0.000	1.634	0.000	0.000	0.000

Problem 365	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.135	6.338	5.464	0.000	2.097	0.000	0.000	0.000

Problem 366	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.136	6.519	5.641	0.000	0.444	0.000	0.000	0.000

Problem 367	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.128	1.038	1.523	0.000	0.410	0.000	0.000	0.000

Problem 368	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.127	0.556	1.305	0.000	0.423	0.000	0.000	0.000

Problem 369	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.113	0.086	0.843	0.000	0.406	0.000	0.000	0.000

Problem 370	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.120	0.657	0.197	0.000	0.444	0.000	0.000	0.000

Problem 371	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.140	1.251	0.660	0.000	0.505	0.000	0.000	0.000

Problem 372	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.132	1.862	0.881	0.000	0.513	0.000	0.000	0.000

Problem 373	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.090	0.383	0.246	0.000	0.473	0.000	0.000	0.000

Problem 374	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	83	105	0	0	0	95	-1
normalized size	1	1.00	0.87	1.11	0.00	0.00	0.00	1.00	-0.01
time (sec)	N/A	0.174	0.599	0.174	0.000	0.550	0.000	0.469	0.000

Problem 375	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	70	83	0	0	0	81	-1
normalized size	1	1.00	0.90	1.06	0.00	0.00	0.00	1.04	-0.01
time (sec)	N/A	0.161	0.476	0.088	0.000	0.403	0.000	0.431	0.000

Problem 376	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	55	59	0	0	0	49	-1
normalized size	1	1.00	1.00	1.07	0.00	0.00	0.00	0.89	-0.02
time (sec)	N/A	0.118	0.144	0.079	0.000	0.448	0.000	0.435	0.000

Problem 377	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	59	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.096	4.069	0.135	0.000	0.444	0.000	0.000	0.000

Problem 378	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	60	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.097	15.501	0.507	0.000	0.489	0.000	0.000	0.000

Problem 379	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	0	37	21	0	70	-1
normalized size	1	1.00	1.00	0.00	2.18	1.24	0.00	4.12	-0.06
time (sec)	N/A	0.125	0.167	2.289	1.707	0.390	0.000	0.649	0.000

Problem 380	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.114	0.564	0.930	0.000	0.531	0.000	0.000	0.000

Problem 381	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	210	175	340	0	0	0	0	-1
normalized size	1	0.98	0.82	1.59	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.633	0.585	0.088	0.000	0.525	0.000	0.000	0.000

Problem 382	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	94	82	136	0	0	0	563	-1
normalized size	1	1.00	0.87	1.45	0.00	0.00	0.00	5.99	-0.01
time (sec)	N/A	0.468	0.349	0.074	0.000	0.536	0.000	0.592	0.000

Problem 383	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	150	198	125	223	0	0	0	608	-1
normalized size	1	1.32	0.83	1.49	0.00	0.00	0.00	4.05	-0.01
time (sec)	N/A	0.370	0.318	0.073	0.000	0.565	0.000	0.706	0.000

Problem 384	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	72	134	0	0	0	290	-1
normalized size	1	1.00	0.84	1.56	0.00	0.00	0.00	3.37	-0.01
time (sec)	N/A	0.162	0.218	0.094	0.000	0.498	0.000	1.037	0.000

Problem 385	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	105	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.204	11.110	0.836	0.000	0.428	0.000	0.000	0.000

Problem 386	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	57	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.149	2.493	0.746	0.000	0.424	0.000	0.000	0.000

Problem 387	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.121	17.458	4.548	0.000	0.587	0.000	0.000	0.000

Problem 388	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.121	3.990	6.534	0.000	0.476	0.000	0.000	0.000

Problem 389	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.135	0.619	1.371	0.000	0.505	0.000	0.000	0.000

Problem 390	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	278	274	399	455	0	0	0	2065	-1
normalized size	1	0.99	1.44	1.64	0.00	0.00	0.00	7.43	-0.00
time (sec)	N/A	0.890	1.218	0.087	0.000	0.564	0.000	1.125	0.000

Problem 391	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	220	220	306	364	0	0	0	1553	-1
normalized size	1	1.00	1.39	1.65	0.00	0.00	0.00	7.06	-0.00
time (sec)	N/A	0.636	0.857	0.105	0.000	0.502	0.000	0.692	0.000

Problem 392	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	210	295	341	0	0	0	1215	-1
normalized size	1	0.98	1.38	1.59	0.00	0.00	0.00	5.68	-0.00
time (sec)	N/A	0.666	0.571	0.078	0.000	0.427	0.000	1.106	0.000

Problem 393	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	150	150	122	250	0	0	0	747	-1
normalized size	1	1.00	0.81	1.67	0.00	0.00	0.00	4.98	-0.01
time (sec)	N/A	0.273	0.644	0.095	0.000	0.403	0.000	1.473	0.000

Problem 394	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	177	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.404	11.131	0.798	0.000	0.397	0.000	0.000	0.000

Problem 395	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	102	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.246	4.620	0.663	0.000	0.536	0.000	0.000	0.000

Problem 396	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.140	17.392	1.824	0.000	0.427	0.000	0.000	0.000

Problem 397	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	69	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.197	2.966	5.812	0.000	0.450	0.000	0.000	0.000

Problem 398	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	F(-1)	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.137	0.655	1.596	0.000	0.436	0.000	0.000	0.000

Problem 399	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	278	274	408	454	0	0	0	2479	-1
normalized size	1	0.99	1.47	1.63	0.00	0.00	0.00	8.92	-0.00
time (sec)	N/A	1.155	1.731	0.109	0.000	0.430	0.000	0.656	0.000

Problem 400	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	282	282	414	478	0	0	0	2461	-1
normalized size	1	1.00	1.47	1.70	0.00	0.00	0.00	8.73	-0.00
time (sec)	N/A	0.933	1.220	0.093	0.000	0.404	0.000	0.689	0.000

Problem 401	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	276	272	404	455	0	0	0	2026	-1
normalized size	1	0.99	1.46	1.65	0.00	0.00	0.00	7.34	-0.00
time (sec)	N/A	0.872	1.091	0.109	0.000	0.412	0.000	1.270	0.000

Problem 402	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	217	217	311	364	0	0	0	1394	-1
normalized size	1	1.00	1.43	1.68	0.00	0.00	0.00	6.42	-0.00
time (sec)	N/A	0.400	0.919	0.102	0.000	0.405	0.000	0.749	0.000

Problem 403	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	235	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.534	14.124	1.015	0.000	0.424	0.000	0.000	0.000

Problem 404	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	106	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.312	3.897	0.849	0.000	0.394	0.000	0.000	0.000

Problem 405	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.140	18.021	5.249	0.000	0.410	0.000	0.000	0.000

Problem 406	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.138	3.445	6.349	0.000	0.418	0.000	0.000	0.000

Problem 407	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	49	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.162	0.692	0.287	0.000	0.506	0.000	0.000	0.000

Problem 408	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	204	200	157	341	0	0	0	0	-1
normalized size	1	0.98	0.77	1.67	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.441	0.413	0.109	0.000	0.405	0.000	0.000	0.000

Problem 409	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	141	117	250	0	0	0	876	-1
normalized size	1	1.00	0.83	1.77	0.00	0.00	0.00	6.21	-0.01
time (sec)	N/A	0.359	0.346	0.112	0.000	0.403	0.000	0.905	0.000

Problem 410	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	142	138	113	227	0	0	0	0	-1
normalized size	1	0.97	0.80	1.60	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.340	0.326	0.108	0.000	0.419	0.000	0.000	0.000

Problem 411	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	70	136	0	0	0	346	-1
normalized size	1	1.00	0.89	1.72	0.00	0.00	0.00	4.38	-0.01
time (sec)	N/A	0.244	0.184	0.102	0.000	0.403	0.000	0.681	0.000

Problem 412	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	59	108	0	0	0	200	-1
normalized size	1	1.00	0.82	1.50	0.00	0.00	0.00	2.78	-0.01
time (sec)	N/A	0.150	0.128	0.092	0.000	0.461	0.000	0.501	0.000

Problem 413	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	18	19	18	18	53	18	18
normalized size	1	1.00	1.00	1.06	1.00	1.00	2.94	1.00	1.00
time (sec)	N/A	0.044	0.010	0.007	0.520	0.509	2.109	0.522	0.173

Problem 414	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	47	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.152	8.151	0.189	0.000	0.411	0.000	0.000	0.000

Problem 415	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	47	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.149	1.389	0.231	0.000	0.417	0.000	0.000	0.000

Problem 416	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.136	1.237	0.730	0.000	0.448	0.000	0.000	0.000

Problem 417	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.141	66.687	0.830	0.000	0.447	0.000	0.000	0.000

Problem 418	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	69	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.201	8.574	0.668	0.000	0.462	0.000	0.000	0.000

Problem 419	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.093	68.240	0.344	0.000	0.441	0.000	0.000	0.000

Problem 420	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	64	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.108	2.760	0.331	0.000	0.415	0.000	0.000	0.000

Problem 421	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.132	54.045	3.829	0.000	0.419	0.000	0.000	0.000

Problem 422	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.132	36.378	0.980	0.000	0.461	0.000	0.000	0.000

Problem 423	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.133	2.023	0.934	0.000	0.443	0.000	0.000	0.000

Problem 424	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.134	110.499	4.556	0.000	0.671	0.000	0.000	0.000

Problem 425	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.136	12.816	4.093	0.000	0.436	0.000	0.000	0.000

Problem 426	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.094	113.708	2.803	0.000	0.600	0.000	0.000	0.000

Problem 427	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	64	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.110	4.437	0.648	0.000	0.429	0.000	0.000	0.000

Problem 428	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.131	86.248	7.731	0.000	0.409	0.000	0.000	0.000

Problem 429	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.132	26.840	8.148	0.000	0.405	0.000	0.000	0.000

Problem 430	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	13	13	13	12	11	11	12	11	11
normalized size	1	1.00	1.00	0.92	0.85	0.85	0.92	0.85	0.85
time (sec)	N/A	0.031	0.004	0.012	0.428	0.509	0.851	0.641	0.124

Problem 431	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	251	251	287	287	0	0	0	0	-1
normalized size	1	1.00	1.14	1.14	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.444	1.569	0.242	0.000	0.000	0.000	0.000	0.000

Problem 432	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	591	591	514	441	0	0	0	0	-1
normalized size	1	1.00	0.87	0.75	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.668	1.673	0.343	0.000	0.000	0.000	0.000	0.000

Problem 433	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	241	241	375	281	0	0	0	0	-1
normalized size	1	1.00	1.56	1.17	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.787	2.462	0.212	0.000	0.000	0.000	0.000	0.000

Problem 434	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	253	253	348	297	0	0	0	0	-1
normalized size	1	1.00	1.38	1.17	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.592	1.193	0.203	0.000	0.000	0.000	0.000	0.000

Problem 435	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	171	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.779	2.020	0.855	0.000	0.000	0.000	0.000	0.000

Problem 436	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	485	485	540	551	0	0	0	0	-1
normalized size	1	1.00	1.11	1.14	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.662	3.043	0.302	0.000	0.000	0.000	0.000	0.000

Problem 437	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	511	511	686	590	0	0	0	0	-1
normalized size	1	1.00	1.34	1.15	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.124	3.290	0.316	0.000	0.000	0.000	0.000	0.000

Problem 438	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	373	373	509	426	0	0	0	0	-1
normalized size	1	1.00	1.36	1.14	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.401	3.708	0.245	0.000	0.000	0.000	0.000	0.000

Problem 439	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	390	390	522	446	0	0	0	0	-1
normalized size	1	1.00	1.34	1.14	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.816	2.742	0.232	0.000	0.000	0.000	0.000	0.000

Problem 440	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	289	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.463	4.148	1.038	0.000	0.000	0.000	0.000	0.000

Problem 441	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	F	F(-2)	F(-2)	F	A	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	0	0	0	0	0	46	-1
normalized size	1	1.00	0.00	0.00	0.00	0.00	0.00	1.10	-0.02
time (sec)	N/A	0.151	3.850	0.608	0.000	0.000	0.000	0.809	0.000

Problem 442	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F(-2)	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	227	227	166	0	0	0	0	0	-1
normalized size	1	1.00	0.73	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.283	0.262	0.472	0.000	0.000	0.000	0.000	0.000

Problem 443	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F(-2)	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	138	0	0	0	0	0	-1
normalized size	1	1.00	1.06	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.118	0.085	0.450	0.000	0.000	0.000	0.000	0.000

Problem 444	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	44	38	0	0	0	0	-1
normalized size	1	1.00	1.00	0.86	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.075	0.060	0.064	0.000	0.000	0.000	0.000	0.000

Problem 445	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	91	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.095	0.722	0.500	0.000	0.000	0.000	0.000	0.000

Problem 446	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	187	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.189	1.995	0.632	0.000	0.000	0.000	0.000	0.000

Problem 447	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F(-2)	F(-1)	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	363	363	186	0	0	0	0	0	-1
normalized size	1	1.00	0.51	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.434	0.523	0.392	0.000	0.000	0.000	0.000	0.000

Problem 448	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F(-2)	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	219	219	158	0	0	0	0	0	-1
normalized size	1	1.00	0.72	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.225	0.140	0.430	0.000	0.000	0.000	0.000	0.000

Problem 449	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	44	38	0	0	0	0	-1
normalized size	1	1.00	1.00	0.86	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.072	0.066	0.059	0.000	0.000	0.000	0.000	0.000

Problem 450	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	91	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.088	0.843	0.462	0.000	0.000	0.000	0.000	0.000

Problem 451	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F(-2)	F(-1)	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	431	431	180	0	0	0	0	0	-1
normalized size	1	1.00	0.42	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.578	0.399	0.384	0.000	0.000	0.000	0.000	0.000

Problem 452	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F(-2)	F(-1)	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	247	247	158	0	0	0	0	0	-1
normalized size	1	1.00	0.64	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.249	0.155	0.411	0.000	0.000	0.000	0.000	0.000

Problem 453	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	F(-2)	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	44	38	0	0	0	0	-1
normalized size	1	1.00	1.00	0.86	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.069	0.063	0.060	0.000	0.000	0.000	0.000	0.000

Problem 454	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	F(-2)	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	91	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.085	0.805	0.464	0.000	0.000	0.000	0.000	0.000

Problem 455	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	226	226	183	0	0	0	0	0	-1
normalized size	1	1.00	0.81	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.237	0.234	0.456	0.000	0.000	0.000	0.000	0.000

Problem 456	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	148	0	0	0	0	0	-1
normalized size	1	1.00	1.17	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.106	0.081	0.436	0.000	0.000	0.000	0.000	0.000

Problem 457	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	42	38	0	36	0	15	-1
normalized size	1	1.00	1.00	0.90	0.00	0.86	0.00	0.36	-0.02
time (sec)	N/A	0.061	0.038	0.070	0.000	0.388	0.000	0.302	0.000

Problem 458	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	90	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.075	0.678	0.499	0.000	0.000	0.000	0.000	0.000

Problem 459	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	185	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.156	2.098	0.559	0.000	0.000	0.000	0.000	0.000

Problem 460	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F(-2)	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	359	359	209	0	0	0	0	0	-1
normalized size	1	1.00	0.58	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.421	0.544	0.391	0.000	0.000	0.000	0.000	0.000

Problem 461	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	215	215	173	0	0	0	0	0	-1
normalized size	1	1.00	0.80	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.232	0.154	0.426	0.000	0.000	0.000	0.000	0.000

Problem 462	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	42	38	0	38	0	15	-1
normalized size	1	1.00	1.00	0.90	0.00	0.90	0.00	0.36	-0.02
time (sec)	N/A	0.065	0.039	0.062	0.000	0.455	0.000	0.316	0.000

Problem 463	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	90	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.075	0.771	0.429	0.000	0.000	0.000	0.000	0.000

Problem 464	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	F(-2)	F	C	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	53	20	0	0	0	37	-1
normalized size	1	1.00	2.12	0.80	0.00	0.00	0.00	1.48	-0.04
time (sec)	N/A	0.061	0.092	0.129	0.000	0.000	0.000	0.769	0.000

Problem 465	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F(-2)	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	244	244	336	0	0	0	0	0	-1
normalized size	1	1.00	1.38	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.193	0.738	0.415	0.000	0.000	0.000	0.000	0.000

Problem 466	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	182	0	0	0	0	0	-1
normalized size	1	1.00	1.07	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.154	0.368	0.389	0.000	0.000	0.000	0.000	0.000

Problem 467	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	118	0	0	0	0	0	-1
normalized size	1	1.00	1.19	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.122	0.160	0.444	0.000	0.000	0.000	0.000	0.000

Problem 468	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	42	38	0	0	0	0	-1
normalized size	1	1.00	1.00	0.90	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.070	0.055	0.055	0.000	0.000	0.000	0.000	0.000

Problem 469	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.041	1.003	0.477	0.000	0.000	0.000	0.000	0.000

Problem 470	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.040	2.415	0.582	0.000	0.000	0.000	0.000	0.000

Problem 471	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F(-2)	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	237	237	404	0	0	0	0	0	-1
normalized size	1	1.00	1.70	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.186	1.265	0.382	0.000	0.000	0.000	0.000	0.000

Problem 472	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	163	163	211	0	0	0	0	0	-1
normalized size	1	1.00	1.29	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.134	0.442	0.381	0.000	0.000	0.000	0.000	0.000

Problem 473	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	83	0	0	0	0	0	-1
normalized size	1	1.00	0.85	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.080	0.192	0.415	0.000	0.000	0.000	0.000	0.000

Problem 474	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	42	38	0	48	0	0	-1
normalized size	1	1.00	1.00	0.90	0.00	1.14	0.00	0.00	-0.02
time (sec)	N/A	0.070	0.048	0.057	0.000	0.397	0.000	0.000	0.000

Problem 475	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	103	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.092	0.936	0.469	0.000	0.000	0.000	0.000	0.000

Problem 476	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	F(-2)	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	103	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.094	2.210	0.584	0.000	0.000	0.000	0.000	0.000

Problem 477	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F(-2)	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	251	0	0	0	0	0	-1
normalized size	1	1.00	1.22	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.297	1.600	0.386	0.000	0.000	0.000	0.000	0.000

Problem 478	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	142	0	0	0	0	0	-1
normalized size	1	1.00	1.09	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.073	0.524	0.419	0.000	0.000	0.000	0.000	0.000

Problem 479	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	44	38	0	48	0	0	-1
normalized size	1	1.00	1.00	0.86	0.00	1.09	0.00	0.00	-0.02
time (sec)	N/A	0.069	0.055	0.058	0.000	0.478	0.000	0.000	0.000

Problem 480	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	F(-2)	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	107	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.087	1.002	0.467	0.000	0.000	0.000	0.000	0.000

Problem 481	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	F(-2)	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	107	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.089	2.112	0.585	0.000	0.000	0.000	0.000	0.000

Problem 482	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	259	259	189	0	0	0	0	0	-1
normalized size	1	1.00	0.73	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.456	0.903	0.567	0.000	0.477	0.000	0.000	0.000

Problem 483	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	391	391	272	0	0	0	0	0	-1
normalized size	1	1.00	0.70	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.440	0.911	0.266	0.000	0.458	0.000	0.000	0.000

Problem 484	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	259	259	182	0	0	0	0	0	-1
normalized size	1	1.00	0.70	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.293	0.828	0.258	0.000	0.610	0.000	0.000	0.000

Problem 485	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	219	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.138	0.234	0.658	0.000	0.548	0.000	0.000	0.000

Problem 486	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	88	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.142	0.315	0.387	0.000	0.449	0.000	0.000	0.000

Problem 487	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	684	684	436	0	0	0	0	0	-1
normalized size	1	1.00	0.64	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.810	3.574	0.466	0.000	0.447	0.000	0.000	0.000

Problem 488	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	595	595	464	0	0	0	0	0	-1
normalized size	1	1.00	0.78	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.586	2.412	0.186	0.000	0.434	0.000	0.000	0.000

Problem 489	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	466	466	326	0	0	0	0	0	-1
normalized size	1	1.00	0.70	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.407	1.988	0.136	0.000	0.473	0.000	0.000	0.000

Problem 490	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	427	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.159	0.244	0.278	0.000	0.450	0.000	0.000	0.000

Problem 491	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	298	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.158	0.816	0.401	0.000	0.457	0.000	0.000	0.000

Problem 492	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	906	906	989	0	0	0	0	0	-1
normalized size	1	1.00	1.09	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.960	4.407	0.477	0.000	0.439	0.000	0.000	0.000

Problem 493	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	815	815	603	0	0	0	0	0	-1
normalized size	1	1.00	0.74	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.735	4.301	0.190	0.000	0.434	0.000	0.000	0.000

Problem 494	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	698	698	477	0	0	0	0	0	-1
normalized size	1	1.00	0.68	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.577	4.759	0.132	0.000	0.476	0.000	0.000	0.000

Problem 495	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	827	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.155	0.249	0.274	0.000	0.435	0.000	0.000	0.000

Problem 496	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	502	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.160	0.798	0.370	0.000	0.457	0.000	0.000	0.000

Problem 497	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.102	0.529	0.428	0.000	0.432	0.000	0.000	0.000

Problem 498	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	163	163	153	0	0	0	0	0	-1
normalized size	1	1.00	0.94	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.246	0.342	0.464	0.000	0.442	0.000	0.000	0.000

Problem 499	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	109	0	0	0	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.207	0.272	0.405	0.000	0.434	0.000	0.000	0.000

Problem 500	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	70	0	0	0	0	0	-1
normalized size	1	1.00	0.93	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.116	0.085	0.100	0.000	0.469	0.000	0.000	0.000

Problem 501	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	18	17	18	34	17	33
normalized size	1	1.00	1.00	1.06	1.00	1.06	2.00	1.00	1.94
time (sec)	N/A	0.036	0.008	0.006	0.452	0.426	0.826	0.405	0.306

Problem 502	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.102	3.561	0.176	0.000	0.437	0.000	0.000	0.000

Problem 503	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.102	1.036	0.270	0.000	0.433	0.000	0.000	0.000

Problem 504	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	376	376	293	0	0	0	0	0	-1
normalized size	1	1.00	0.78	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.537	1.356	0.442	0.000	0.435	0.000	0.000	0.000

Problem 505	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	273	273	260	0	0	0	0	0	-1
normalized size	1	1.00	0.95	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.297	1.062	0.277	0.000	0.442	0.000	0.000	0.000

Problem 506	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	134	134	207	0	0	0	0	0	-1
normalized size	1	1.00	1.54	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.165	0.654	0.277	0.000	0.409	0.000	0.000	0.000

Problem 507	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	141	200	0	0	0	0	0	-1
normalized size	1	1.00	1.42	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.264	0.834	0.322	0.000	0.548	0.000	0.000	0.000

Problem 508	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	162	162	248	0	0	0	0	0	-1
normalized size	1	1.00	1.53	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.360	1.456	0.378	0.000	0.479	0.000	0.000	0.000

Problem 509	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	163	163	114	0	215	520	0	0	-1
normalized size	1	1.00	0.70	0.00	1.32	3.19	0.00	0.00	-0.01
time (sec)	N/A	0.269	0.549	0.321	0.487	0.624	0.000	0.000	0.000

Problem 510	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	414	414	305	0	0	0	0	0	-1
normalized size	1	1.00	0.74	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.390	1.739	0.276	0.000	0.569	0.000	0.000	0.000

Problem 511	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	226	226	247	0	0	0	0	0	-1
normalized size	1	1.00	1.09	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.224	1.126	0.272	0.000	0.476	0.000	0.000	0.000

Problem 512	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	273	273	260	0	0	0	0	0	-1
normalized size	1	1.00	0.95	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.312	1.076	0.278	0.000	0.421	0.000	0.000	0.000

Problem 513	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	242	242	238	0	0	0	0	0	-1
normalized size	1	1.00	0.98	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.425	1.316	0.318	0.000	0.451	0.000	0.000	0.000

Problem 514	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	252	252	291	0	0	0	0	0	-1
normalized size	1	1.00	1.15	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.436	3.553	0.339	0.000	0.457	0.000	0.000	0.000

Problem 515	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	324	324	599	0	0	0	0	0	-1
normalized size	1	1.00	1.85	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.353	5.609	0.345	0.000	0.516	0.000	0.000	0.000

Problem 516	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	315	315	303	0	0	0	0	0	-1
normalized size	1	1.00	0.96	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.265	1.711	0.274	0.000	0.511	0.000	0.000	0.000

Problem 517	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	414	414	305	0	0	0	0	0	-1
normalized size	1	1.00	0.74	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.382	1.647	0.276	0.000	0.511	0.000	0.000	0.000

Problem 518	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	376	376	293	0	0	0	0	0	-1
normalized size	1	1.00	0.78	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.539	1.352	0.283	0.000	0.427	0.000	0.000	0.000

Problem 519	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	345	345	274	0	0	0	0	0	-1
normalized size	1	1.00	0.79	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.592	1.990	0.320	0.000	0.434	0.000	0.000	0.000

Problem 520	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	465	465	685	0	0	0	0	0	-1
normalized size	1	1.00	1.47	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.375	3.772	0.362	0.000	0.424	0.000	0.000	0.000

Problem 521	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F(-1)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	420	420	847	0	0	0	0	0	-1
normalized size	1	1.00	2.02	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.394	6.814	0.363	0.000	0.472	0.000	0.000	0.000

Problem 522	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	345	345	270	0	0	0	0	0	-1
normalized size	1	1.00	0.78	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.587	2.278	0.323	0.000	0.418	0.000	0.000	0.000

Problem 523	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	242	242	238	0	0	0	0	0	-1
normalized size	1	1.00	0.98	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.420	1.237	0.324	0.000	0.425	0.000	0.000	0.000

Problem 524	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	141	200	0	0	0	0	0	-1
normalized size	1	1.00	1.42	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.258	0.806	0.331	0.000	0.412	0.000	0.000	0.000

Problem 525	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	110	0	32	0	0	0	-1
normalized size	1	1.00	2.00	0.00	0.58	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.144	0.560	0.314	0.467	0.431	0.000	0.000	0.000

Problem 526	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	79	0	96	348	0	0	-1
normalized size	1	1.00	0.80	0.00	0.97	3.52	0.00	0.00	-0.01
time (sec)	N/A	0.213	0.393	0.342	0.482	0.485	0.000	0.000	0.000

Problem 527	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	265	265	118	0	223	525	0	0	-1
normalized size	1	1.00	0.45	0.00	0.84	1.98	0.00	0.00	-0.00
time (sec)	N/A	0.300	0.509	0.339	0.490	0.550	0.000	0.000	0.000

Problem 528	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	463	463	768	0	0	0	0	0	-1
normalized size	1	1.00	1.66	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.370	4.554	0.361	0.000	0.430	0.000	0.000	0.000

Problem 529	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	252	252	514	0	0	0	0	0	-1
normalized size	1	1.00	2.04	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.422	3.093	0.345	0.000	0.455	0.000	0.000	0.000

Problem 530	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	162	162	281	0	0	0	0	0	-1
normalized size	1	1.00	1.73	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.347	1.715	0.348	0.000	0.425	0.000	0.000	0.000

Problem 531	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	106	0	98	354	0	0	-1
normalized size	1	1.00	1.08	0.00	1.00	3.61	0.00	0.00	-0.01
time (sec)	N/A	0.210	0.475	0.339	0.484	0.485	0.000	0.000	0.000

Problem 532	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	105	0	86	0	0	0	-1
normalized size	1	1.00	1.09	0.00	0.90	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.175	0.514	0.333	0.459	0.537	0.000	0.000	0.000

Problem 533	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	255	255	180	0	234	0	0	0	-1
normalized size	1	1.00	0.71	0.00	0.92	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.262	0.677	0.333	0.480	0.673	0.000	0.000	0.000

Problem 534	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F(-1)	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	419	419	850	0	0	0	0	0	-1
normalized size	1	1.00	2.03	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.380	6.212	0.372	0.000	0.841	0.000	0.000	0.000

Problem 535	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	324	324	601	0	0	0	0	0	-1
normalized size	1	1.00	1.85	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.341	4.990	0.350	0.000	1.240	0.000	0.000	0.000

Problem 536	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	164	164	126	0	217	520	0	0	-1
normalized size	1	1.00	0.77	0.00	1.32	3.17	0.00	0.00	-0.01
time (sec)	N/A	0.256	0.539	0.326	0.496	0.624	0.000	0.000	0.000

Problem 537	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	265	265	130	0	227	527	0	0	-1
normalized size	1	1.00	0.49	0.00	0.86	1.99	0.00	0.00	-0.00
time (sec)	N/A	0.286	0.501	0.338	0.490	0.640	0.000	0.000	0.000

Problem 538	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	255	255	184	0	237	0	0	0	-1
normalized size	1	1.00	0.72	0.00	0.93	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.252	0.693	0.337	0.546	0.726	0.000	0.000	0.000

Problem 539	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	188	188	178	0	177	0	0	0	-1
normalized size	1	1.00	0.95	0.00	0.94	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.202	0.640	0.329	0.523	0.601	0.000	0.000	0.000

Problem 540	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	613	613	555	0	0	0	0	0	-1
normalized size	1	1.00	0.91	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.010	2.598	0.369	0.000	0.424	0.000	0.000	0.000

Problem 541	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	455	455	437	0	0	0	0	0	-1
normalized size	1	1.00	0.96	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.571	2.012	0.312	0.000	0.421	0.000	0.000	0.000

Problem 542	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	222	222	288	0	0	0	0	0	-1
normalized size	1	1.00	1.30	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.299	1.146	0.311	0.000	1.396	0.000	0.000	0.000

Problem 543	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	230	230	296	0	0	0	0	0	-1
normalized size	1	1.00	1.29	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.441	1.279	0.349	0.000	0.489	0.000	0.000	0.000

Problem 544	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	530	530	547	0	0	0	0	0	-1
normalized size	1	1.00	1.03	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.948	4.266	0.292	0.000	0.660	0.000	0.000	0.000

Problem 545	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-1)	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	486	486	698	0	0	0	0	0	-1
normalized size	1	1.00	1.44	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.119	8.229	0.352	0.000	0.473	0.000	0.000	0.000

Problem 546	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	697	697	574	0	0	0	0	0	-1
normalized size	1	1.00	0.82	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.800	4.039	0.309	0.000	0.468	0.000	0.000	0.000

Problem 547	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	362	362	373	0	0	0	0	0	-1
normalized size	1	1.00	1.03	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.431	2.060	0.303	0.000	0.438	0.000	0.000	0.000

Problem 548	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	455	455	440	0	0	0	0	0	-1
normalized size	1	1.00	0.97	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.592	2.061	0.315	0.000	0.459	0.000	0.000	0.000

Problem 549	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	398	398	358	0	0	0	0	0	-1
normalized size	1	1.00	0.90	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.578	2.386	0.350	0.000	0.626	0.000	0.000	0.000

Problem 550	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	714	714	1086	0	0	0	0	0	-1
normalized size	1	1.00	1.52	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.085	8.576	0.293	0.000	0.498	0.000	0.000	0.000

Problem 551	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	544	544	1438	0	0	0	0	0	-1
normalized size	1	1.00	2.64	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.154	10.339	0.290	0.000	0.494	0.000	0.000	0.000

Problem 552	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	502	502	450	0	0	0	0	0	-1
normalized size	1	1.00	0.90	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.568	3.126	0.311	0.000	0.424	0.000	0.000	0.000

Problem 553	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	697	697	574	0	0	0	0	0	-1
normalized size	1	1.00	0.82	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.794	4.125	0.309	0.000	0.437	0.000	0.000	0.000

Problem 554	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	613	613	555	0	0	0	0	0	-1
normalized size	1	1.00	0.91	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.003	2.586	0.318	0.000	0.426	0.000	0.000	0.000

Problem 555	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	559	559	473	0	0	0	0	0	-1
normalized size	1	1.00	0.85	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.688	3.622	0.357	0.000	0.504	0.000	0.000	0.000

Problem 556	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	918	918	2291	0	0	0	0	0	-1
normalized size	1	1.00	2.50	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.273	11.537	0.296	0.000	0.464	0.000	0.000	0.000

Problem 557	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	729	729	2338	0	0	0	0	0	-1
normalized size	1	1.00	3.21	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.303	13.804	0.292	0.000	0.510	0.000	0.000	0.000

Problem 558	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	559	559	434	0	0	0	0	0	-1
normalized size	1	1.00	0.78	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.660	3.846	0.359	0.000	0.459	0.000	0.000	0.000

Problem 559	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	398	398	344	0	0	0	0	0	-1
normalized size	1	1.00	0.86	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.562	2.380	0.360	0.000	0.479	0.000	0.000	0.000

Problem 560	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	231	231	298	0	0	0	0	0	-1
normalized size	1	1.00	1.29	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.442	1.218	0.361	0.000	0.430	0.000	0.000	0.000

Problem 561	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	159	0	53	0	0	0	-1
normalized size	1	1.00	2.89	0.00	0.96	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.238	0.980	0.352	0.472	0.489	0.000	0.000	0.000

Problem 562	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	455	455	225	0	0	0	0	0	-1
normalized size	1	1.00	0.49	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.672	1.876	0.372	0.000	0.454	0.000	0.000	0.000

Problem 563	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	896	896	540	0	0	0	0	0	-1
normalized size	1	1.00	0.60	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.239	7.588	0.369	0.000	1.131	0.000	0.000	0.000

Problem 564	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	918	918	2041	0	0	0	0	0	-1
normalized size	1	1.00	2.22	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.275	14.574	0.295	0.000	1.061	0.000	0.000	0.000

Problem 565	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	713	713	1255	0	0	0	0	0	-1
normalized size	1	1.00	1.76	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.049	10.994	0.300	0.000	1.603	0.000	0.000	0.000

Problem 566	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	530	530	513	0	0	0	0	0	-1
normalized size	1	1.00	0.97	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.909	6.582	0.300	0.000	1.160	0.000	0.000	0.000

Problem 567	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	454	454	221	0	0	0	0	0	-1
normalized size	1	1.00	0.49	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.659	1.809	0.367	0.000	0.514	0.000	0.000	0.000

Problem 568	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	217	217	550	0	0	0	0	0	-1
normalized size	1	1.00	2.53	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.377	1.312	0.356	0.000	0.713	0.000	0.000	0.000

Problem 569	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	709	709	739	0	0	0	0	0	-1
normalized size	1	1.00	1.04	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.839	8.331	0.371	0.000	0.477	0.000	0.000	0.000

Problem 570	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	730	730	2312	0	0	0	0	0	-1
normalized size	1	1.00	3.17	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.291	13.286	0.299	0.000	0.443	0.000	0.000	0.000

Problem 571	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	544	544	1419	0	0	0	0	0	-1
normalized size	1	1.00	2.61	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.145	10.232	0.296	0.000	0.522	0.000	0.000	0.000

Problem 572	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-1)	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	486	486	687	0	0	0	0	0	-1
normalized size	1	1.00	1.41	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.070	8.359	0.362	0.000	0.497	0.000	0.000	0.000

Problem 573	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	896	896	388	0	0	0	0	0	-1
normalized size	1	1.00	0.43	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.231	7.294	0.376	0.000	0.473	0.000	0.000	0.000

Problem 574	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	709	709	764	0	0	0	0	0	-1
normalized size	1	1.00	1.08	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.836	8.453	0.371	0.000	0.450	0.000	0.000	0.000

Problem 575	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	366	366	722	0	0	0	0	0	-1
normalized size	1	1.00	1.97	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.474	9.754	0.368	0.000	0.438	0.000	0.000	0.000

Problem 576	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	351	351	297	0	0	0	0	0	-1
normalized size	1	1.00	0.85	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.705	1.188	0.995	0.000	0.444	0.000	0.000	0.000

Problem 577	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	225	225	178	0	233	197	0	0	-1
normalized size	1	1.00	0.79	0.00	1.04	0.88	0.00	0.00	-0.00
time (sec)	N/A	0.395	0.584	0.557	1.350	0.439	0.000	0.000	0.000

Problem 578	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	222	222	288	0	0	0	0	0	-1
normalized size	1	1.00	1.30	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.290	0.832	0.000	0.000	0.413	0.000	0.000	0.000

Problem 579	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	432	432	434	0	0	0	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.681	2.306	0.436	0.000	0.475	0.000	0.000	0.000

Problem 580	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	257	257	374	0	0	0	0	0	-1
normalized size	1	1.00	1.46	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.594	1.253	1.000	0.000	0.436	0.000	0.000	0.000

Problem 581	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	509	509	452	0	0	0	0	0	-1
normalized size	1	1.00	0.89	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.026	2.182	1.046	0.000	0.621	0.000	0.000	0.000

Problem 582	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	338	338	207	0	290	302	0	0	-1
normalized size	1	1.00	0.61	0.00	0.86	0.89	0.00	0.00	-0.00
time (sec)	N/A	0.507	0.808	0.571	1.542	0.730	0.000	0.000	0.000

Problem 583	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	362	362	373	0	0	0	0	0	-1
normalized size	1	1.00	1.03	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.422	1.279	0.000	0.000	0.631	0.000	0.000	0.000

Problem 584	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	647	647	632	0	0	0	0	0	-1
normalized size	1	1.00	0.98	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.941	4.123	0.428	0.000	0.680	0.000	0.000	0.000

Problem 585	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	505	505	538	0	0	0	0	0	-1
normalized size	1	1.00	1.07	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.807	2.253	1.022	0.000	0.430	0.000	0.000	0.000

Problem 586	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	250	250	326	0	0	0	0	0	-1
normalized size	1	1.00	1.30	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.582	1.305	0.669	0.000	0.574	0.000	0.000	0.000

Problem 587	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	177	177	150	0	157	138	0	0	-1
normalized size	1	1.00	0.85	0.00	0.89	0.78	0.00	0.00	-0.01
time (sec)	N/A	0.377	0.667	0.801	0.610	0.527	0.000	0.000	0.000

Problem 588	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	159	0	53	0	0	0	-1
normalized size	1	1.00	2.89	0.00	0.96	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.232	0.676	0.000	0.496	0.780	0.000	0.000	0.000

Problem 589	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	287	287	336	0	0	0	0	0	-1
normalized size	1	1.00	1.17	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.580	1.453	0.425	0.000	0.547	0.000	0.000	0.000

Problem 590	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	189	0	0	0	0	0	-1
normalized size	1	1.00	0.88	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.584	1.180	1.288	0.000	0.660	0.000	0.000	0.000

Problem 591	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	295	295	636	0	0	0	0	0	-1
normalized size	1	1.00	2.16	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.743	2.597	0.657	0.000	1.242	0.000	0.000	0.000

Problem 592	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	244	244	453	0	0	0	0	0	-1
normalized size	1	1.00	1.86	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.488	1.346	0.852	0.000	0.504	0.000	0.000	0.000

Problem 593	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F(-1)	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	217	217	550	0	0	0	0	0	-1
normalized size	1	1.00	2.53	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.383	0.758	0.000	0.000	0.778	0.000	0.000	0.000

Problem 594	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	548	548	877	0	0	0	0	0	-1
normalized size	1	1.00	1.60	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.853	5.761	0.434	0.000	0.700	0.000	0.000	0.000

Problem 595	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	396	396	564	0	0	0	0	0	-1
normalized size	1	1.00	1.42	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.858	2.588	1.272	0.000	0.567	0.000	0.000	0.000

Problem 596	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	115	201	183	128	223	325	-1
normalized size	1	1.00	0.76	1.32	1.20	0.84	1.47	2.14	-0.01
time (sec)	N/A	0.150	0.135	0.008	1.080	0.602	5.691	0.415	0.000

Problem 597	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	116	177	163	124	206	262	-1
normalized size	1	1.00	0.78	1.19	1.09	0.83	1.38	1.76	-0.01
time (sec)	N/A	0.117	0.091	0.006	0.514	0.543	3.687	0.291	0.000

Problem 598	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	96	161	142	107	172	217	-1
normalized size	1	1.00	0.80	1.34	1.18	0.89	1.43	1.81	-0.01
time (sec)	N/A	0.127	0.105	0.005	0.594	0.631	2.051	0.461	0.000

Problem 599	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	122	122	95	137	122	102	153	174	-1
normalized size	1	1.00	0.78	1.12	1.00	0.84	1.25	1.43	-0.01
time (sec)	N/A	0.088	0.073	0.004	1.239	0.642	1.145	0.325	0.000

Problem 600	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	71	111	91	82	109	114	-1
normalized size	1	1.00	0.88	1.37	1.12	1.01	1.35	1.41	-0.01
time (sec)	N/A	0.065	0.077	0.005	0.492	0.938	0.546	0.277	0.000

Problem 601	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	108	167	0	0	0	0	-1
normalized size	1	1.00	0.82	1.27	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.239	0.206	0.256	0.000	0.670	0.000	0.000	0.000

Problem 602	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	71	79	79	103	75	1036	70
normalized size	1	1.00	1.08	1.20	1.20	1.56	1.14	15.70	1.06
time (sec)	N/A	0.077	0.063	0.008	0.527	0.874	3.936	1.705	0.357

Problem 603	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	104	174	0	0	0	0	-1
normalized size	1	1.00	0.87	1.46	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.223	0.129	0.865	0.000	0.548	0.000	0.000	0.000

Problem 604	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	109	120	119	115	170	430	-1
normalized size	1	1.00	1.28	1.41	1.40	1.35	2.00	5.06	-0.01
time (sec)	N/A	0.087	0.050	0.012	1.213	0.788	4.875	4.165	0.000

Problem 605	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	241	241	187	339	314	219	415	596	-1
normalized size	1	1.00	0.78	1.41	1.30	0.91	1.72	2.47	-0.00
time (sec)	N/A	0.318	0.213	0.006	1.849	0.597	15.974	0.443	0.000

Problem 606	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	241	241	190	303	284	215	382	496	-1
normalized size	1	1.00	0.79	1.26	1.18	0.89	1.59	2.06	-0.00
time (sec)	N/A	0.251	0.178	0.009	0.676	0.421	10.798	0.307	0.000

Problem 607	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	198	198	158	279	253	186	333	427	-1
normalized size	1	1.00	0.80	1.41	1.28	0.94	1.68	2.16	-0.01
time (sec)	N/A	0.221	0.203	0.005	1.088	0.528	5.992	0.615	0.000

Problem 608	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	183	183	159	243	223	183	299	348	-1
normalized size	1	1.00	0.87	1.33	1.22	1.00	1.63	1.90	-0.01
time (sec)	N/A	0.176	0.162	0.005	0.616	0.685	4.057	0.528	0.000

Problem 609	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	150	150	125	209	182	151	240	263	-1
normalized size	1	1.00	0.83	1.39	1.21	1.01	1.60	1.75	-0.01
time (sec)	N/A	0.136	0.169	0.005	0.480	0.659	2.270	0.313	0.000

Problem 610	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	229	229	184	262	0	0	0	0	-1
normalized size	1	1.00	0.80	1.14	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.335	0.375	0.327	0.000	0.664	0.000	0.000	0.000

Problem 611	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	129	168	151	172	167	4247	-1
normalized size	1	1.00	1.02	1.33	1.20	1.37	1.33	33.71	-0.01
time (sec)	N/A	0.184	0.153	0.008	1.497	0.677	5.615	36.871	0.000

Problem 612	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	185	185	159	248	0	0	0	0	-1
normalized size	1	1.00	0.86	1.34	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.338	0.356	0.900	0.000	2.062	0.000	0.000	0.000

Problem 613	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	140	156	159	174	219	2540	-1
normalized size	1	1.00	1.11	1.24	1.26	1.38	1.74	20.16	-0.01
time (sec)	N/A	0.201	0.174	0.011	1.073	0.737	6.828	32.237	0.000

Problem 614	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	341	341	271	497	465	322	631	928	-1
normalized size	1	1.00	0.79	1.46	1.36	0.94	1.85	2.72	-0.00
time (sec)	N/A	0.435	0.286	0.005	0.752	0.688	38.572	0.432	0.000

Problem 615	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	380	380	276	449	425	318	597	793	-1
normalized size	1	1.00	0.73	1.18	1.12	0.84	1.57	2.09	-0.00
time (sec)	N/A	0.508	0.268	0.014	1.135	0.574	27.783	0.400	0.000

Problem 616	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	287	287	231	417	384	277	525	698	-1
normalized size	1	1.00	0.80	1.45	1.34	0.97	1.83	2.43	-0.00
time (sec)	N/A	0.373	0.261	0.005	0.562	0.421	16.489	0.466	0.000

Problem 617	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	258	258	232	369	344	274	483	585	-1
normalized size	1	1.00	0.90	1.43	1.33	1.06	1.87	2.27	-0.00
time (sec)	N/A	0.268	0.224	0.005	0.964	0.679	11.304	0.339	0.000

Problem 618	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	225	225	187	325	292	229	389	469	-1
normalized size	1	1.00	0.83	1.44	1.30	1.02	1.73	2.08	-0.00
time (sec)	N/A	0.251	0.236	0.006	1.204	0.668	6.279	3.976	0.000

Problem 619	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	357	357	278	391	0	0	0	0	-1
normalized size	1	1.00	0.78	1.10	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.476	0.379	0.436	0.000	0.529	0.000	0.000	0.000

Problem 620	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	190	190	183	264	241	239	272	10765	-1
normalized size	1	1.00	0.96	1.39	1.27	1.26	1.43	56.66	-0.01
time (sec)	N/A	0.271	0.216	0.010	1.095	0.763	7.827	54.902	0.000

Problem 621	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	262	262	220	360	0	0	0	0	-1
normalized size	1	1.00	0.84	1.37	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.779	0.465	0.734	0.000	0.619	0.000	0.000	0.000

Problem 622	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	186	186	194	249	231	246	311	7973	-1
normalized size	1	1.00	1.04	1.34	1.24	1.32	1.67	42.87	-0.01
time (sec)	N/A	0.315	0.299	0.012	0.658	0.868	8.732	159.581	0.000

Problem 623	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	317	317	260	465	424	321	593	744	-1
normalized size	1	1.00	0.82	1.47	1.34	1.01	1.87	2.35	-0.00
time (sec)	N/A	0.340	0.338	0.005	0.786	0.603	17.130	1.109	0.000

Problem 624	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	653	653	515	376	0	0	0	0	-1
normalized size	1	1.00	0.79	0.58	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.053	0.974	3.851	0.000	0.525	0.000	0.000	0.000

Problem 625	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	559	559	454	2854	0	0	0	0	-1
normalized size	1	1.00	0.81	5.11	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.911	0.340	0.920	0.000	0.733	0.000	0.000	0.000

Problem 626	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	579	579	456	285	0	0	0	0	-1
normalized size	1	1.00	0.79	0.49	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.904	0.328	0.626	0.000	0.538	0.000	0.000	0.000

Problem 627	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	491	491	399	2749	0	0	0	0	-1
normalized size	1	1.00	0.81	5.60	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.736	0.094	0.407	0.000	0.588	0.000	0.000	0.000

Problem 628	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	541	541	490	236	0	0	0	0	-1
normalized size	1	1.00	0.91	0.44	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.739	0.437	0.087	0.000	0.505	0.000	0.000	0.000

Problem 629	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	518	518	441	355	0	0	0	0	-1
normalized size	1	1.00	0.85	0.69	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.930	0.759	0.329	0.000	0.628	0.000	0.000	0.000

Problem 630	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	579	579	455	363	0	0	0	0	-1
normalized size	1	1.00	0.79	0.63	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.916	0.354	0.939	0.000	0.739	0.000	0.000	0.000

Problem 631	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	573	573	483	419	0	0	0	0	-1
normalized size	1	1.00	0.84	0.73	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.988	2.365	0.447	0.000	0.533	0.000	0.000	0.000

Problem 632	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	649	649	531	472	0	0	0	0	-1
normalized size	1	1.00	0.82	0.73	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.962	0.439	1.030	0.000	0.657	0.000	0.000	0.000

Problem 633	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	574	574	593	2907	0	0	0	0	-1
normalized size	1	1.00	1.03	5.06	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.956	1.069	0.926	0.000	0.567	0.000	0.000	0.000

Problem 634	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	83	87	414	0	395	0	0	-1
normalized size	1	0.97	1.01	4.81	0.00	4.59	0.00	0.00	-0.01
time (sec)	N/A	0.059	0.150	0.042	0.000	0.653	0.000	0.000	0.000

Problem 635	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	C	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	597	597	0	491	0	0	0	0	-1
normalized size	1	1.00	0.00	0.82	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.009	3.918	0.425	0.000	0.732	0.000	0.000	0.000

Problem 636	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	C	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	632	632	0	679	0	0	0	0	-1
normalized size	1	1.00	0.00	1.07	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.045	6.444	0.590	0.000	0.669	0.000	0.000	0.000

Problem 637	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	787	787	649	1738	0	0	0	0	-1
normalized size	1	1.00	0.82	2.21	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.027	1.560	3.076	0.000	0.593	0.000	0.000	0.000

Problem 638	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	745	745	603	1677	0	0	0	0	-1
normalized size	1	1.00	0.81	2.25	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.943	1.188	1.104	0.000	0.703	0.000	0.000	0.000

Problem 639	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	757	757	591	1687	0	0	0	0	-1
normalized size	1	1.00	0.78	2.23	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.995	1.792	0.886	0.000	0.628	0.000	0.000	0.000

Problem 640	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	795	795	672	1839	0	0	0	0	-1
normalized size	1	1.00	0.85	2.31	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.998	1.494	4.596	0.000	0.850	0.000	0.000	0.000

Problem 641	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	705	705	1030	5124	0	0	0	0	-1
normalized size	1	1.00	1.46	7.27	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.095	6.922	2.878	0.000	0.749	0.000	0.000	0.000

Problem 642	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	153	153	152	1055	0	921	0	0	-1
normalized size	1	1.00	0.99	6.90	0.00	6.02	0.00	0.00	-0.01
time (sec)	N/A	0.194	0.544	0.019	0.000	1.169	0.000	0.000	0.000

Problem 643	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	141	1017	0	783	0	0	-1
normalized size	1	1.00	1.06	7.65	0.00	5.89	0.00	0.00	-0.01
time (sec)	N/A	0.095	0.591	0.011	0.000	0.721	0.000	0.000	0.000

Problem 644	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	C	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	727	727	0	1379	0	0	0	0	-1
normalized size	1	1.00	0.00	1.90	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.132	7.464	0.720	0.000	0.757	0.000	0.000	0.000

Problem 645	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	C	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	783	783	0	1816	0	0	0	0	-1
normalized size	1	1.00	0.00	2.32	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.175	10.031	0.957	0.000	0.839	0.000	0.000	0.000

Problem 646	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1082	1082	1014	3107	0	0	0	0	-1
normalized size	1	1.00	0.94	2.87	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.384	6.065	2.017	0.000	0.517	0.000	0.000	0.000

Problem 647	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1092	1092	1064	2259	0	0	0	0	-1
normalized size	1	1.00	0.97	2.07	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.611	6.077	2.178	0.000	0.632	0.000	0.000	0.000

Problem 648	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1092	1092	1055	3110	0	0	0	0	-1
normalized size	1	1.00	0.97	2.85	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.248	6.104	1.121	0.000	0.844	0.000	0.000	0.000

Problem 649	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.022	6.345	0.878	0.000	0.548	0.000	0.000	0.000

Problem 650	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.023	4.462	0.799	0.000	0.618	0.000	0.000	0.000

Problem 651	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	B	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	74	0	0	294	0	0	-1
normalized size	1	1.00	1.06	0.00	0.00	4.20	0.00	0.00	-0.01
time (sec)	N/A	0.099	0.173	0.688	0.000	1.064	0.000	0.000	0.000

Problem 652	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	B	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	190	0	0	683	0	0	-1
normalized size	1	1.00	1.30	0.00	0.00	4.68	0.00	0.00	-0.01
time (sec)	N/A	0.160	0.285	0.718	0.000	0.736	0.000	0.000	0.000

Problem 653	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	B	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	226	226	188	0	0	1321	0	0	-1
normalized size	1	1.00	0.83	0.00	0.00	5.85	0.00	0.00	-0.00
time (sec)	N/A	0.825	0.475	0.746	0.000	0.759	0.000	0.000	0.000

Problem 654	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	F	F	F	F	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	484	455	0	0	0	0	0	0	-1
normalized size	1	0.94	0.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.376	5.391	44.158	0.000	0.720	0.000	0.000	0.000

Problem 655	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	293	272	2792	0	0	0	0	0	-1
normalized size	1	0.93	9.53	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.415	7.048	15.848	0.000	0.830	0.000	0.000	0.000

Problem 656	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-1)	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	161	148	508	0	0	0	0	0	-1
normalized size	1	0.92	3.16	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.166	2.217	4.862	0.000	0.838	0.000	0.000	0.000

Problem 657	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.062	8.921	1.487	0.000	1.243	0.000	0.000	0.000

Problem 658	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	26	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.059	10.997	1.036	0.000	0.494	0.000	0.000	0.000

Problem 659	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	569	569	435	1194	699	555	989	1216	-1
normalized size	1	1.00	0.76	2.10	1.23	0.98	1.74	2.14	-0.00
time (sec)	N/A	0.963	0.564	0.174	0.472	1.281	12.764	0.725	0.000

Problem 660	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	335	335	291	635	437	349	595	678	-1
normalized size	1	1.00	0.87	1.90	1.30	1.04	1.78	2.02	-0.00
time (sec)	N/A	0.557	0.384	0.127	0.448	0.991	4.614	0.532	0.000

Problem 661	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	156	156	148	276	221	177	279	296	-1
normalized size	1	1.00	0.95	1.77	1.42	1.13	1.79	1.90	-0.01
time (sec)	N/A	0.261	0.278	0.099	0.436	0.881	1.272	0.881	0.000

Problem 662	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	47	72	72	65	82	75	142
normalized size	1	1.00	1.00	1.53	1.53	1.38	1.74	1.60	3.02
time (sec)	N/A	0.060	0.092	0.016	0.417	0.616	0.250	0.572	0.533

Problem 663	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	821	821	1101	0	0	0	0	0	-1
normalized size	1	1.00	1.34	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.342	0.865	1.394	0.000	0.686	0.000	0.000	0.000

Problem 664	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.037	18.086	0.702	0.000	0.814	0.000	0.000	0.000

Problem 665	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.039	13.058	0.717	0.000	0.667	0.000	0.000	0.000

Problem 666	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.044	4.332	0.683	0.000	0.550	0.000	0.000	0.000

Problem 667	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.044	8.764	0.556	0.000	0.583	0.000	0.000	0.000

Problem 668	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	387	379	253	310	0	0	0	627	-1
normalized size	1	0.98	0.65	0.80	0.00	0.00	0.00	1.62	-0.00
time (sec)	N/A	0.770	0.725	0.084	0.000	0.523	0.000	1.517	0.000

Problem 669	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	179	175	125	142	0	0	0	235	-1
normalized size	1	0.98	0.70	0.79	0.00	0.00	0.00	1.31	-0.01
time (sec)	N/A	0.335	0.325	0.069	0.000	0.767	0.000	3.977	0.000

Problem 670	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	44	48	0	0	0	49	-1
normalized size	1	1.00	0.83	0.91	0.00	0.00	0.00	0.92	-0.02
time (sec)	N/A	0.063	0.065	0.062	0.000	0.583	0.000	1.101	0.000

Problem 671	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.036	0.809	0.846	0.000	0.440	0.000	0.000	0.000

Problem 672	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.034	3.853	3.198	0.000	0.708	0.000	0.000	0.000

Problem 673	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.042	1.337	0.432	0.000	1.027	0.000	0.000	0.000

Problem 674	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.044	1.211	0.451	0.000	0.678	0.000	0.000	0.000

Problem 675	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.047	1.698	0.408	0.000	0.563	0.000	0.000	0.000

Problem 676	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.048	4.075	0.433	0.000	0.745	0.000	0.000	0.000

Problem 677	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-1)	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	498	486	359	795	0	0	0	2324	-1
normalized size	1	0.98	0.72	1.60	0.00	0.00	0.00	4.67	-0.00
time (sec)	N/A	0.761	2.249	0.268	0.000	0.562	0.000	1.338	0.000

Problem 678	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-1)	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	249	241	191	367	0	0	0	905	-1
normalized size	1	0.97	0.77	1.47	0.00	0.00	0.00	3.63	-0.00
time (sec)	N/A	0.418	1.040	0.194	0.000	0.688	0.000	0.816	0.000

Problem 679	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	82	72	76	0	0	0	192	-1
normalized size	1	0.95	0.84	0.88	0.00	0.00	0.00	2.23	-0.01
time (sec)	N/A	0.168	0.219	0.000	0.000	0.597	0.000	0.817	0.000

Problem 680	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.034	22.771	1.069	0.000	0.548	0.000	0.000	0.000

Problem 681	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	F(-1)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.033	56.358	3.976	0.000	0.578	0.000	0.000	0.000

Problem 682	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.040	7.793	0.446	0.000	0.466	0.000	0.000	0.000

Problem 683	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.041	12.402	0.447	0.000	0.671	0.000	0.000	0.000

Problem 684	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.044	27.406	0.405	0.000	0.508	0.000	0.000	0.000

Problem 685	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.043	51.991	0.423	0.000	0.498	0.000	0.000	0.000

Problem 686	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	C	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	754	754	400	1137	0	0	0	3371	-1
normalized size	1	1.00	0.53	1.51	0.00	0.00	0.00	4.47	-0.00
time (sec)	N/A	2.265	1.681	0.503	0.000	0.000	0.000	4.589	0.000

Problem 687	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	C	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	369	369	244	542	0	0	0	1677	-1
normalized size	1	1.00	0.66	1.47	0.00	0.00	0.00	4.54	-0.00
time (sec)	N/A	1.027	0.673	0.324	0.000	0.000	0.000	3.897	0.000

Problem 688	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	C	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	119	178	0	0	0	531	-1
normalized size	1	1.00	0.99	1.48	0.00	0.00	0.00	4.42	-0.01
time (sec)	N/A	0.271	0.139	0.006	0.000	0.000	0.000	1.137	0.000

Problem 689	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.053	10.927	0.581	0.000	0.000	0.000	0.000	0.000

Problem 690	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.049	23.492	1.263	0.000	0.000	0.000	0.000	0.000

Problem 691	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F	C	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	482	482	873	835	0	0	0	3039	-1
normalized size	1	1.00	1.81	1.73	0.00	0.00	0.00	6.30	-0.00
time (sec)	N/A	1.424	10.277	0.435	0.000	0.000	0.000	5.676	0.000

Problem 692	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-2)	F	C	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	159	159	291	270	0	0	0	993	-1
normalized size	1	1.00	1.83	1.70	0.00	0.00	0.00	6.25	-0.01
time (sec)	N/A	0.232	2.920	0.002	0.000	0.000	0.000	3.404	0.000

Problem 693	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.062	3.873	0.559	0.000	0.000	0.000	0.000	0.000

Problem 694	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-1)	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.059	12.774	1.319	0.000	0.000	0.000	0.000	0.000

Problem 695	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	C	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	679	679	401	545	0	0	0	973	-1
normalized size	1	1.00	0.59	0.80	0.00	0.00	0.00	1.43	-0.00
time (sec)	N/A	1.504	1.755	0.415	0.000	0.000	0.000	2.522	0.000

Problem 696	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	C	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	329	329	246	248	0	0	0	485	-1
normalized size	1	1.00	0.75	0.75	0.00	0.00	0.00	1.47	-0.00
time (sec)	N/A	0.637	0.682	0.247	0.000	0.000	0.000	2.069	0.000

Problem 697	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	C	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	121	83	0	0	0	159	-1
normalized size	1	1.00	1.20	0.82	0.00	0.00	0.00	1.57	-0.01
time (sec)	N/A	0.095	0.150	0.000	0.000	0.000	0.000	1.978	0.000

Problem 698	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.057	0.195	0.556	0.000	0.000	0.000	0.000	0.000

Problem 699	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.054	0.357	1.232	0.000	0.000	0.000	0.000	0.000

Problem 700	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	394	394	417	446	0	0	0	0	-1
normalized size	1	1.00	1.06	1.13	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.798	1.321	0.349	0.000	0.000	0.000	0.000	0.000

Problem 701	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F(-2)	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	137	137	167	149	0	0	0	0	-1
normalized size	1	1.00	1.22	1.09	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.268	0.367	0.000	0.000	0.000	0.000	0.000	0.000

Problem 702	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.064	0.202	0.553	0.000	0.000	0.000	0.000	0.000

Problem 703	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	F(-1)	F(-2)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.060	0.343	1.235	0.000	0.000	0.000	0.000	0.000

2.3 Detailed conclusion table specific for Rubi results

The following table is specific to Rubi. It gives additional statistics for each integral. the column **steps** is the number of steps used by Rubi to obtain the antiderivative. The **rules** column is the number of unique rules used. The **integrand size** column is the leaf size of the integrand. Finally the ratio $\frac{\text{number of rules}}{\text{integrand size}}$ is given. The larger this ratio is, the harder the integral was to solve. In this test, problem number [621] had the largest ratio of [.7619]

Table 2.1: Rubi specific breakdown of results for each integral

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1	A	5	5	1.00	23	0.217
2	A	6	6	1.00	23	0.261
3	A	5	5	1.00	23	0.217
4	A	4	3	1.00	21	0.143
5	A	5	4	1.00	20	0.200
6	A	8	8	1.00	23	0.348
7	A	6	7	1.00	23	0.304
8	A	8	8	1.00	23	0.348
9	A	6	7	1.00	23	0.304
10	A	6	6	1.00	25	0.240
11	A	7	8	1.00	25	0.320
12	A	5	5	1.00	25	0.200
13	A	5	3	1.00	23	0.130

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
14	A	5	5	1.00	22	0.227
15	A	12	8	1.00	25	0.320
16	A	7	7	1.00	25	0.280
17	A	12	10	1.00	25	0.400
18	A	7	8	1.00	25	0.320
19	A	5	5	1.00	25	0.200
20	A	8	7	1.00	25	0.280
21	A	5	5	1.00	25	0.200
22	A	6	3	1.00	23	0.130
23	A	5	5	1.00	22	0.227
24	A	17	8	1.00	25	0.320
25	A	7	7	1.00	25	0.280
26	A	17	10	1.00	25	0.400
27	A	8	8	1.00	25	0.320
28	A	12	8	1.00	25	0.320
29	A	8	8	1.00	25	0.320
30	A	8	6	1.00	25	0.240
31	A	5	5	1.00	23	0.217
32	A	6	4	1.00	22	0.182
33	A	7	5	1.00	25	0.200
34	A	10	8	1.00	25	0.320
35	A	9	7	1.00	25	0.280
36	A	15	9	1.00	25	0.360
37	A	12	9	1.00	25	0.360
38	A	8	8	1.00	25	0.320
39	A	8	6	1.00	25	0.240
40	A	2	2	1.00	23	0.087
41	A	8	6	1.00	22	0.273
42	A	9	7	1.00	25	0.280
43	A	13	11	1.00	25	0.440
44	A	12	9	1.00	25	0.360
45	A	19	11	1.10	25	0.440
46	A	12	8	1.00	25	0.320
47	A	4	3	1.00	25	0.120
48	A	10	7	1.00	25	0.280
49	A	3	3	1.00	23	0.130

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
50	A	10	6	1.00	22	0.273
51	A	12	8	1.00	25	0.320
52	A	16	11	1.00	25	0.440
53	A	16	10	1.00	25	0.400
54	A	23	11	1.16	25	0.440
55	A	7	4	1.00	27	0.148
56	A	5	4	1.00	27	0.148
57	A	3	3	1.00	24	0.125
58	A	3	3	1.00	27	0.111
59	A	3	2	1.00	27	0.074
60	A	6	5	1.00	27	0.185
61	A	7	5	1.00	27	0.185
62	A	6	4	1.00	27	0.148
63	A	6	4	1.00	27	0.148
64	A	2	1	1.00	25	0.040
65	A	8	6	1.00	27	0.222
66	A	8	6	1.00	27	0.222
67	A	10	7	1.00	27	0.259
68	A	10	6	1.00	27	0.222
69	A	8	6	1.00	27	0.222
70	A	6	5	1.00	24	0.208
71	A	6	5	1.00	27	0.185
72	A	6	5	1.00	27	0.185
73	A	4	3	1.00	27	0.111
74	A	7	6	1.00	27	0.222
75	A	8	6	1.00	27	0.222
76	A	9	6	1.00	27	0.222
77	A	7	5	1.00	27	0.185
78	A	7	5	1.00	27	0.185
79	A	7	5	1.00	27	0.185
80	A	3	2	1.00	25	0.080
81	A	10	7	1.00	27	0.259
82	A	11	8	1.00	27	0.296
83	A	11	8	1.00	27	0.296
84	A	14	8	1.00	27	0.296
85	A	12	8	1.00	27	0.296

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
86	A	8	6	1.00	24	0.250
87	A	10	8	1.00	27	0.296
88	A	10	7	1.00	27	0.259
89	A	10	7	1.00	27	0.259
90	A	4	3	1.00	27	0.111
91	A	8	7	1.00	27	0.259
92	A	8	6	1.00	27	0.222
93	A	7	5	1.00	27	0.185
94	A	7	5	1.00	27	0.185
95	A	3	2	1.00	25	0.080
96	A	13	8	1.00	27	0.296
97	A	13	9	1.00	27	0.333
98	A	14	9	1.00	27	0.333
99	A	3	3	1.00	14	0.214
100	A	3	3	1.71	24	0.125
101	A	5	3	1.00	22	0.136
102	A	4	4	1.00	22	0.182
103	A	3	3	1.00	22	0.136
104	A	2	2	1.00	20	0.100
105	A	1	1	1.00	19	0.053
106	A	6	4	1.00	22	0.182
107	A	2	2	1.00	22	0.091
108	A	8	6	1.00	22	0.273
109	A	6	4	1.00	27	0.148
110	A	6	4	1.00	27	0.148
111	A	4	4	1.00	27	0.148
112	A	4	4	1.00	27	0.148
113	A	2	2	1.00	25	0.080
114	A	2	2	1.00	24	0.083
115	A	7	5	1.00	27	0.185
116	A	2	2	1.00	27	0.074
117	A	9	7	1.00	27	0.259
118	A	4	4	1.00	27	0.148
119	A	8	7	1.04	27	0.259
120	A	8	7	1.00	27	0.259
121	A	5	5	1.03	27	0.185

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
122	A	4	4	1.00	27	0.148
123	A	2	2	1.00	25	0.080
124	A	2	2	1.00	24	0.083
125	A	9	7	1.00	27	0.259
126	A	7	7	1.00	27	0.259
127	A	12	9	1.00	27	0.333
128	A	11	8	1.00	27	0.296
129	A	12	7	1.00	27	0.259
130	A	9	6	1.07	27	0.222
131	A	8	6	1.00	27	0.222
132	A	5	4	1.03	27	0.148
133	A	4	3	1.00	27	0.111
134	A	3	3	1.00	25	0.120
135	A	4	4	1.00	24	0.167
136	A	12	8	1.00	27	0.296
137	A	8	7	1.00	27	0.259
138	A	16	11	1.00	27	0.407
139	A	12	7	1.00	27	0.259
140	A	6	4	1.00	20	0.200
141	A	1	1	1.00	30	0.033
142	A	2	2	1.00	31	0.065
143	A	6	7	1.00	25	0.280
144	A	5	6	1.00	25	0.240
145	A	4	5	1.00	23	0.217
146	A	0	0	0.00	0	0.000
147	A	0	0	0.00	0	0.000
148	A	0	0	0.00	0	0.000
149	A	9	6	1.00	27	0.222
150	A	6	5	1.00	27	0.185
151	A	3	3	1.00	27	0.111
152	A	2	2	1.00	27	0.074
153	A	4	4	1.00	27	0.148
154	A	6	4	1.00	27	0.148
155	A	1	1	1.00	22	0.045
156	A	11	10	1.00	25	0.400
157	A	14	6	1.00	25	0.240

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
158	A	9	10	1.00	25	0.400
159	A	7	6	1.00	23	0.261
160	A	6	4	1.00	22	0.182
161	A	10	10	1.00	25	0.400
162	A	12	9	1.00	25	0.360
163	A	10	10	1.00	25	0.400
164	A	16	8	1.00	25	0.320
165	A	16	11	1.00	27	0.407
166	A	25	7	1.00	27	0.259
167	A	14	11	1.00	27	0.407
168	A	9	7	1.00	25	0.280
169	A	10	5	1.00	24	0.208
170	A	17	12	1.00	27	0.444
171	A	17	11	1.00	27	0.407
172	A	17	12	1.00	27	0.444
173	A	24	10	1.00	27	0.370
174	A	21	11	1.00	27	0.407
175	A	40	9	1.00	27	0.333
176	A	19	11	1.00	27	0.407
177	A	11	7	1.00	25	0.280
178	A	14	5	1.00	24	0.208
179	A	26	13	1.00	27	0.482
180	A	24	12	1.00	27	0.444
181	A	28	15	1.00	27	0.556
182	A	31	12	1.00	27	0.444
183	A	16	10	1.00	27	0.370
184	A	10	10	1.00	27	0.370
185	A	11	8	1.00	27	0.296
186	A	6	6	1.00	25	0.240
187	A	8	5	1.00	24	0.208
188	A	9	6	1.00	27	0.222
189	A	15	10	1.00	27	0.370
190	A	12	9	1.00	27	0.333
191	A	24	11	1.00	27	0.407
192	A	15	14	1.00	27	0.518
193	A	10	9	1.00	27	0.333

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
194	A	11	8	1.00	27	0.296
195	A	3	3	1.00	25	0.120
196	A	11	8	1.00	24	0.333
197	A	12	9	1.00	27	0.333
198	A	20	14	1.00	27	0.518
199	A	17	15	1.00	27	0.556
200	A	32	15	1.00	27	0.556
201	A	16	13	1.00	27	0.482
202	A	8	6	1.00	27	0.222
203	A	15	10	1.00	27	0.370
204	A	5	5	1.00	25	0.200
205	A	15	9	1.00	24	0.375
206	A	17	11	1.00	27	0.407
207	A	27	15	1.00	27	0.556
208	A	23	19	1.00	27	0.704
209	A	43	17	1.00	27	0.630
210	A	14	8	1.00	29	0.276
211	A	10	6	1.00	29	0.207
212	A	5	4	1.00	27	0.148
213	A	5	5	1.00	26	0.192
214	A	12	8	1.00	29	0.276
215	A	7	7	1.00	29	0.241
216	A	13	10	1.00	29	0.345
217	A	9	9	1.00	29	0.310
218	A	20	14	1.00	29	0.483
219	A	17	11	1.00	29	0.379
220	A	6	6	1.00	27	0.222
221	A	10	8	1.01	26	0.308
222	A	17	12	1.00	29	0.414
223	A	14	13	1.00	29	0.448
224	A	18	15	1.00	29	0.517
225	A	16	11	1.00	29	0.379
226	A	27	18	1.00	29	0.621
227	A	25	14	1.00	29	0.483
228	A	6	6	1.00	27	0.222
229	A	16	8	1.00	26	0.308

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
230	A	23	16	1.00	29	0.552
231	A	23	15	1.00	29	0.517
232	A	25	20	1.00	29	0.690
233	A	27	15	1.00	29	0.517
234	A	14	7	1.00	29	0.241
235	A	11	6	1.00	29	0.207
236	A	9	7	1.00	29	0.241
237	A	6	6	1.03	29	0.207
238	A	4	3	1.00	27	0.111
239	A	2	2	1.00	26	0.077
240	A	9	6	1.00	29	0.207
241	A	6	6	1.00	29	0.207
242	A	14	11	1.00	29	0.379
243	A	9	9	1.00	29	0.310
244	A	22	13	1.00	29	0.448
245	A	15	13	1.00	29	0.448
246	A	13	9	1.00	29	0.310
247	A	8	8	1.00	29	0.276
248	A	7	5	1.00	27	0.185
249	A	6	6	1.00	26	0.231
250	A	16	11	1.00	29	0.379
251	A	14	10	1.00	29	0.345
252	A	27	15	1.00	29	0.517
253	A	24	11	1.00	29	0.379
254	A	26	11	1.00	29	0.379
255	A	17	10	1.00	29	0.345
256	A	16	7	1.00	29	0.241
257	A	9	9	1.00	29	0.310
258	A	9	7	1.00	27	0.259
259	A	9	9	1.00	26	0.346
260	A	25	13	1.00	29	0.448
261	A	19	14	1.00	29	0.483
262	A	39	18	1.00	29	0.621
263	A	32	15	1.00	29	0.517
264	A	10	5	1.00	24	0.208
265	A	8	7	1.00	24	0.292

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
266	A	5	5	1.00	24	0.208
267	A	3	3	1.00	22	0.136
268	A	1	1	1.00	21	0.048
269	A	8	5	1.00	24	0.208
270	A	6	6	1.00	24	0.250
271	A	13	10	1.00	24	0.417
272	A	2	2	1.00	22	0.091
273	A	6	6	1.00	22	0.273
274	A	9	9	1.00	22	0.409
275	A	13	10	1.00	22	0.454
276	F	0	0	N/A	0	N/A
277	F	0	0	N/A	0	N/A
278	F	0	0	N/A	0	N/A
279	A	0	0	0.00	0	0.000
280	A	0	0	0.00	0	0.000
281	A	0	0	0.00	0	0.000
282	A	0	0	0.00	0	0.000
283	A	0	0	0.00	0	0.000
284	A	0	0	0.00	0	0.000
285	A	0	0	0.00	0	0.000
286	A	0	0	0.00	0	0.000
287	A	0	0	0.00	0	0.000
288	A	0	0	0.00	0	0.000
289	A	24	13	1.00	20	0.650
290	A	17	11	1.00	20	0.550
291	A	10	7	1.00	18	0.389
292	A	10	6	1.00	20	0.300
293	A	18	10	1.00	20	0.500
294	A	28	11	1.00	20	0.550
295	A	24	9	1.00	22	0.409
296	A	14	8	1.00	22	0.364
297	A	6	5	1.00	22	0.227
298	A	2	2	1.00	22	0.091
299	A	7	7	1.00	22	0.318
300	A	11	11	1.00	22	0.500
301	A	17	12	1.00	22	0.546

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
302	A	0	0	0.00	0	0.000
303	A	13	4	1.00	24	0.167
304	A	10	6	1.00	24	0.250
305	A	6	4	1.00	24	0.167
306	A	4	3	1.00	22	0.136
307	A	1	1	1.00	21	0.048
308	A	10	6	1.00	24	0.250
309	A	7	7	1.00	24	0.292
310	A	18	10	1.00	24	0.417
311	A	7	3	1.00	20	0.150
312	A	6	3	1.00	20	0.150
313	A	5	3	1.00	18	0.167
314	A	0	0	0.00	0	0.000
315	A	0	0	0.00	0	0.000
316	A	12	5	1.00	28	0.179
317	A	12	5	0.98	28	0.179
318	A	6	5	1.00	28	0.179
319	A	9	5	0.97	26	0.192
320	A	6	5	1.00	25	0.200
321	A	0	0	0.00	0	0.000
322	A	0	0	0.00	0	0.000
323	A	0	0	0.00	0	0.000
324	A	0	0	0.00	0	0.000
325	A	15	5	0.98	28	0.179
326	A	12	5	1.00	28	0.179
327	A	12	5	0.98	26	0.192
328	A	9	5	1.00	25	0.200
329	A	0	0	0.00	0	0.000
330	A	0	0	0.00	0	0.000
331	A	0	0	0.00	0	0.000
332	A	0	0	0.00	0	0.000
333	A	15	5	0.98	28	0.179
334	A	15	5	1.00	28	0.179
335	A	15	5	0.98	26	0.192
336	A	12	5	1.00	25	0.200
337	A	0	0	0.00	0	0.000

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
338	A	0	0	0.00	0	0.000
339	A	0	0	0.00	0	0.000
340	A	0	0	0.00	0	0.000
341	A	5	3	1.00	24	0.125
342	A	5	3	1.00	24	0.125
343	A	4	3	1.00	24	0.125
344	A	4	3	1.00	24	0.125
345	A	2	2	1.00	22	0.091
346	A	1	1	1.00	21	0.048
347	A	0	0	0.00	0	0.000
348	A	0	0	0.00	0	0.000
349	A	12	5	0.98	28	0.179
350	A	9	5	1.00	28	0.179
351	A	9	5	0.97	28	0.179
352	A	6	5	1.00	28	0.179
353	A	4	4	0.93	26	0.154
354	A	1	1	1.00	25	0.040
355	A	0	0	0.00	0	0.000
356	A	0	0	0.00	0	0.000
357	A	0	0	0.00	0	0.000
358	A	0	0	0.00	0	0.000
359	A	0	0	0.00	0	0.000
360	A	0	0	0.00	0	0.000
361	A	0	0	0.00	0	0.000
362	A	0	0	0.00	0	0.000
363	A	0	0	0.00	0	0.000
364	A	0	0	0.00	0	0.000
365	A	0	0	0.00	0	0.000
366	A	0	0	0.00	0	0.000
367	A	0	0	0.00	0	0.000
368	A	0	0	0.00	0	0.000
369	A	0	0	0.00	0	0.000
370	A	0	0	0.00	0	0.000
371	A	0	0	0.00	0	0.000
372	A	0	0	0.00	0	0.000
373	A	0	0	0.00	0	0.000

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
374	A	8	4	1.00	20	0.200
375	A	7	4	1.00	20	0.200
376	A	6	4	1.00	18	0.222
377	A	0	0	0.00	0	0.000
378	A	0	0	0.00	0	0.000
379	A	2	1	1.00	33	0.030
380	A	0	0	0.00	0	0.000
381	A	22	6	0.98	28	0.214
382	A	16	7	1.00	28	0.250
383	A	14	7	1.32	26	0.269
384	A	7	7	1.00	25	0.280
385	A	0	0	0.00	0	0.000
386	A	0	0	0.00	0	0.000
387	A	0	0	0.00	0	0.000
388	A	0	0	0.00	0	0.000
389	A	0	0	0.00	0	0.000
390	A	28	6	0.99	28	0.214
391	A	19	6	1.00	28	0.214
392	A	22	8	0.98	26	0.308
393	A	10	6	1.00	25	0.240
394	A	0	0	0.00	0	0.000
395	A	0	0	0.00	0	0.000
396	A	0	0	0.00	0	0.000
397	A	0	0	0.00	0	0.000
398	A	0	0	0.00	0	0.000
399	A	34	6	0.99	28	0.214
400	A	28	6	1.00	28	0.214
401	A	28	8	0.99	26	0.308
402	A	13	6	1.00	25	0.240
403	A	0	0	0.00	0	0.000
404	A	0	0	0.00	0	0.000
405	A	0	0	0.00	0	0.000
406	A	0	0	0.00	0	0.000
407	A	0	0	0.00	0	0.000
408	A	13	6	0.98	28	0.214
409	A	10	6	1.00	28	0.214

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
410	A	10	6	0.97	28	0.214
411	A	7	7	1.00	28	0.250
412	A	5	5	1.00	26	0.192
413	A	1	1	1.00	25	0.040
414	A	0	0	0.00	0	0.000
415	A	0	0	0.00	0	0.000
416	A	0	0	0.00	0	0.000
417	A	0	0	0.00	0	0.000
418	A	0	0	0.00	0	0.000
419	A	0	0	0.00	0	0.000
420	A	0	0	0.00	0	0.000
421	A	0	0	0.00	0	0.000
422	A	0	0	0.00	0	0.000
423	A	0	0	0.00	0	0.000
424	A	0	0	0.00	0	0.000
425	A	0	0	0.00	0	0.000
426	A	0	0	0.00	0	0.000
427	A	0	0	0.00	0	0.000
428	A	0	0	0.00	0	0.000
429	A	0	0	0.00	0	0.000
430	A	1	1	1.00	21	0.048
431	A	27	8	1.00	27	0.296
432	A	32	8	1.00	27	0.296
433	A	17	10	1.00	25	0.400
434	A	14	8	1.00	24	0.333
435	A	0	0	0.00	0	0.000
436	A	32	8	1.00	29	0.276
437	A	42	8	1.00	29	0.276
438	A	32	10	1.00	27	0.370
439	A	19	8	1.00	26	0.308
440	A	0	0	0.00	0	0.000
441	A	3	2	1.00	38	0.053
442	A	15	9	1.00	24	0.375
443	A	7	7	1.00	24	0.292
444	A	2	2	1.00	24	0.083
445	A	0	0	0.00	0	0.000

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
446	A	0	0	0.00	0	0.000
447	A	17	10	1.00	24	0.417
448	A	8	7	1.00	24	0.292
449	A	2	2	1.00	24	0.083
450	A	0	0	0.00	0	0.000
451	A	27	12	1.00	24	0.500
452	A	10	9	1.00	24	0.375
453	A	2	2	1.00	24	0.083
454	A	0	0	0.00	0	0.000
455	A	15	9	1.00	24	0.375
456	A	7	7	1.00	24	0.292
457	A	2	2	1.00	24	0.083
458	A	0	0	0.00	0	0.000
459	A	0	0	0.00	0	0.000
460	A	17	10	1.00	24	0.417
461	A	8	7	1.00	24	0.292
462	A	2	2	1.00	24	0.083
463	A	0	0	0.00	0	0.000
464	A	3	3	1.00	19	0.158
465	A	10	5	1.00	24	0.208
466	A	8	5	1.00	24	0.208
467	A	6	5	1.00	24	0.208
468	A	2	2	1.00	24	0.083
469	A	0	0	0.00	0	0.000
470	A	0	0	0.00	0	0.000
471	A	10	5	1.00	24	0.208
472	A	8	5	1.00	24	0.208
473	A	6	6	1.00	24	0.250
474	A	2	2	1.00	24	0.083
475	A	0	0	0.00	0	0.000
476	A	0	0	0.00	0	0.000
477	A	12	8	1.00	24	0.333
478	A	4	4	1.00	24	0.167
479	A	2	2	1.00	24	0.083
480	A	0	0	0.00	0	0.000
481	A	0	0	0.00	0	0.000

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
482	A	7	5	1.00	29	0.172
483	A	10	5	1.00	27	0.185
484	A	7	5	1.00	26	0.192
485	A	0	0	0.00	0	0.000
486	A	0	0	0.00	0	0.000
487	A	13	5	1.00	29	0.172
488	A	13	5	1.00	27	0.185
489	A	10	5	1.00	26	0.192
490	A	0	0	0.00	0	0.000
491	A	0	0	0.00	0	0.000
492	A	16	5	1.00	29	0.172
493	A	16	5	1.00	27	0.185
494	A	13	5	1.00	26	0.192
495	A	0	0	0.00	0	0.000
496	A	0	0	0.00	0	0.000
497	A	0	0	0.00	0	0.000
498	A	9	4	1.00	24	0.167
499	A	6	4	1.00	24	0.167
500	A	4	3	1.00	22	0.136
501	A	1	1	1.00	21	0.048
502	A	0	0	0.00	0	0.000
503	A	0	0	0.00	0	0.000
504	A	13	8	1.00	30	0.267
505	A	8	6	1.00	30	0.200
506	A	4	4	1.00	30	0.133
507	A	6	5	1.00	30	0.167
508	A	8	8	1.00	30	0.267
509	A	6	6	1.00	30	0.200
510	A	12	9	1.00	30	0.300
511	A	7	6	1.00	30	0.200
512	A	8	6	1.00	30	0.200
513	A	9	7	1.00	30	0.233
514	A	10	10	1.00	30	0.333
515	A	9	9	1.00	30	0.300
516	A	9	7	1.00	30	0.233
517	A	12	9	1.00	30	0.300

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
518	A	13	8	1.00	30	0.267
519	A	13	7	1.00	30	0.233
520	A	7	9	1.00	30	0.300
521	A	10	8	1.00	30	0.267
522	A	13	7	1.00	30	0.233
523	A	9	7	1.00	30	0.233
524	A	6	5	1.00	30	0.167
525	A	2	2	1.00	30	0.067
526	A	5	6	1.00	30	0.200
527	A	8	8	1.00	30	0.267
528	A	7	9	1.00	30	0.300
529	A	10	10	1.00	30	0.333
530	A	8	8	1.00	30	0.267
531	A	5	6	1.00	30	0.200
532	A	3	3	1.00	30	0.100
533	A	8	8	1.00	30	0.267
534	A	10	8	1.00	30	0.267
535	A	9	9	1.00	30	0.300
536	A	6	6	1.00	30	0.200
537	A	8	8	1.00	30	0.267
538	A	8	8	1.00	30	0.267
539	A	5	5	1.00	30	0.167
540	A	23	13	1.00	32	0.406
541	A	13	11	1.00	32	0.344
542	A	6	6	1.00	32	0.188
543	A	8	6	1.00	32	0.188
544	A	19	13	1.00	32	0.406
545	A	20	12	1.00	32	0.375
546	A	19	15	1.00	32	0.469
547	A	11	9	1.00	32	0.281
548	A	13	11	1.00	32	0.344
549	A	11	9	1.00	32	0.281
550	A	23	15	1.00	32	0.469
551	A	21	13	1.00	32	0.406
552	A	17	9	1.00	32	0.281
553	A	19	15	1.00	32	0.469

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
554	A	23	13	1.00	32	0.406
555	A	17	10	1.00	32	0.312
556	A	28	19	1.00	32	0.594
557	A	25	16	1.00	32	0.500
558	A	17	10	1.00	32	0.312
559	A	11	9	1.00	32	0.281
560	A	8	6	1.00	32	0.188
561	A	2	2	1.00	32	0.062
562	A	16	11	1.00	32	0.344
563	A	30	18	1.00	32	0.562
564	A	28	19	1.00	32	0.594
565	A	23	15	1.00	32	0.469
566	A	19	13	1.00	32	0.406
567	A	16	11	1.00	32	0.344
568	A	7	7	1.00	32	0.219
569	A	21	14	1.00	32	0.438
570	A	25	16	1.00	32	0.500
571	A	21	13	1.00	32	0.406
572	A	20	12	1.00	32	0.375
573	A	30	18	1.00	32	0.562
574	A	21	14	1.00	32	0.438
575	A	10	10	1.00	32	0.312
576	A	11	7	1.00	35	0.200
577	A	6	5	1.00	33	0.152
578	A	6	6	1.00	32	0.188
579	A	13	9	1.00	35	0.257
580	A	8	8	1.00	35	0.229
581	A	18	12	1.00	35	0.343
582	A	7	7	1.00	33	0.212
583	A	11	9	1.00	32	0.281
584	A	18	13	1.00	35	0.371
585	A	15	14	1.00	35	0.400
586	A	6	6	1.00	35	0.171
587	A	5	4	1.00	33	0.121
588	A	2	2	1.00	32	0.062
589	A	9	6	1.00	35	0.171

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
590	A	7	7	1.00	35	0.200
591	A	8	8	1.00	35	0.229
592	A	8	6	1.00	33	0.182
593	A	7	7	1.00	32	0.219
594	A	16	11	1.00	35	0.314
595	A	15	11	1.00	35	0.314
596	A	5	5	1.00	19	0.263
597	A	6	6	1.00	19	0.316
598	A	5	5	1.00	19	0.263
599	A	4	4	1.00	17	0.235
600	A	4	3	1.00	16	0.188
601	A	12	12	1.00	19	0.632
602	A	5	6	1.00	19	0.316
603	A	10	10	1.00	19	0.526
604	A	6	7	1.00	19	0.368
605	A	6	6	1.00	21	0.286
606	A	7	8	1.00	21	0.381
607	A	5	5	1.00	21	0.238
608	A	5	5	1.00	19	0.263
609	A	5	5	1.00	18	0.278
610	A	14	12	1.00	21	0.571
611	A	6	6	1.00	21	0.286
612	A	13	14	1.00	21	0.667
613	A	6	7	1.00	21	0.333
614	A	5	5	1.00	21	0.238
615	A	8	7	1.00	21	0.333
616	A	5	5	1.00	21	0.238
617	A	6	5	1.00	19	0.263
618	A	5	5	1.00	18	0.278
619	A	19	13	1.00	21	0.619
620	A	6	6	1.00	21	0.286
621	A	15	16	1.00	21	0.762
622	A	8	8	1.00	21	0.381
623	A	5	5	1.00	18	0.278
624	A	27	12	1.00	21	0.571
625	A	23	9	1.00	21	0.429

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
626	A	23	9	1.00	21	0.429
627	A	18	6	1.00	19	0.316
628	A	18	6	1.00	18	0.333
629	A	25	8	1.00	21	0.381
630	A	24	11	1.00	21	0.524
631	A	27	10	1.00	21	0.476
632	A	29	12	1.00	21	0.571
633	A	23	9	1.00	21	0.429
634	A	3	3	0.97	19	0.158
635	A	28	11	1.00	21	0.524
636	A	30	13	1.00	21	0.619
637	A	49	12	1.00	21	0.571
638	A	46	10	1.00	21	0.476
639	A	26	9	1.00	18	0.500
640	A	50	14	1.00	21	0.667
641	A	27	10	1.00	21	0.476
642	A	7	8	1.00	21	0.381
643	A	4	4	1.00	19	0.210
644	A	32	12	1.00	21	0.571
645	A	34	14	1.00	21	0.667
646	A	80	11	1.00	21	0.524
647	A	62	11	1.00	21	0.524
648	A	34	10	1.00	18	0.556
649	A	0	0	0.00	0	0.000
650	A	0	0	0.00	0	0.000
651	A	6	7	1.00	20	0.350
652	A	7	9	1.00	20	0.450
653	A	8	10	1.00	20	0.500
654	A	6	7	0.94	23	0.304
655	A	5	6	0.93	23	0.261
656	A	4	5	0.92	21	0.238
657	A	0	0	0.00	0	0.000
658	A	0	0	0.00	0	0.000
659	A	26	7	1.00	20	0.350
660	A	17	7	1.00	20	0.350
661	A	10	7	1.00	18	0.389

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
662	A	3	3	1.00	10	0.300
663	A	22	7	1.00	20	0.350
664	A	0	0	0.00	0	0.000
665	A	0	0	0.00	0	0.000
666	A	0	0	0.00	0	0.000
667	A	0	0	0.00	0	0.000
668	A	27	7	0.98	20	0.350
669	A	15	7	0.98	18	0.389
670	A	4	4	1.00	10	0.400
671	A	0	0	0.00	0	0.000
672	A	0	0	0.00	0	0.000
673	A	0	0	0.00	0	0.000
674	A	0	0	0.00	0	0.000
675	A	0	0	0.00	0	0.000
676	A	0	0	0.00	0	0.000
677	A	26	7	0.98	20	0.350
678	A	15	7	0.97	18	0.389
679	A	5	5	0.95	10	0.500
680	A	0	0	0.00	0	0.000
681	A	0	0	0.00	0	0.000
682	A	0	0	0.00	0	0.000
683	A	0	0	0.00	0	0.000
684	A	0	0	0.00	0	0.000
685	A	0	0	0.00	0	0.000
686	A	42	10	1.00	22	0.454
687	A	23	10	1.00	20	0.500
688	A	7	7	1.00	12	0.583
689	A	0	0	0.00	0	0.000
690	A	0	0	0.00	0	0.000
691	A	32	13	1.00	20	0.650
692	A	8	8	1.00	12	0.667
693	A	0	0	0.00	0	0.000
694	A	0	0	0.00	0	0.000
695	A	39	9	1.00	22	0.409
696	A	21	9	1.00	20	0.450
697	A	6	6	1.00	12	0.500

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
698	A	0	0	0.00	0	0.000
699	A	0	0	0.00	0	0.000
700	A	21	9	1.00	20	0.450
701	A	7	7	1.00	12	0.583
702	A	0	0	0.00	0	0.000
703	A	0	0	0.00	0	0.000

Chapter 3

Listing of integrals

3.1 $\int x^4 \left(d-c^2 d x^2\right) \left(a+b \sin^{-1}(cx)\right) \, dx$

Optimal. Leaf size=128

$$-\frac{1}{7} c^2 d x^7 \left(a+b \sin^{-1}(cx)\right)+\frac{1}{5} d x^5 \left(a+b \sin^{-1}(cx)\right)+\frac{b d \left(1-c^2 x^2\right)^{7/2}}{49 c^5}-\frac{8 b d \left(1-c^2 x^2\right)^{5/2}}{175 c^5}+\frac{b d \left(1-c^2 x^2\right)^{3/2}}{105 c^5}+\frac{2bd}{}$$

```
[Out] 1/105*b*d*(-c^2*x^2+1)^(3/2)/c^5-8/175*b*d*(-c^2*x^2+1)^(5/2)/c^5+1/49*b*d*
(-c^2*x^2+1)^(7/2)/c^5+1/5*d*x^5*(a+b*arcsin(c*x))-1/7*c^2*d*x^7*(a+b*arcsi
n(c*x))+2/35*b*d*(-c^2*x^2+1)^(1/2)/c^5
```

Rubi [A] time = 0.12, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {14, 4687, 12, 446, 77}

$$-\frac{1}{7} c^2 d x^7 \left(a+b \sin^{-1}(cx)\right)+\frac{1}{5} d x^5 \left(a+b \sin^{-1}(cx)\right)+\frac{b d \left(1-c^2 x^2\right)^{7/2}}{49 c^5}-\frac{8 b d \left(1-c^2 x^2\right)^{5/2}}{175 c^5}+\frac{b d \left(1-c^2 x^2\right)^{3/2}}{105 c^5}+\frac{2bd}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(d - c^2*d*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (2*b*d*Sqrt[1 - c^2*x^2])/(35*c^5) + (b*d*(1 - c^2*x^2)^(3/2))/(105*c^5) -
(8*b*d*(1 - c^2*x^2)^(5/2))/(175*c^5) + (b*d*(1 - c^2*x^2)^(7/2))/(49*c^5)
+ (d*x^5*(a + b*ArcSin[c*x]))/5 - (c^2*d*x^7*(a + b*ArcSin[c*x]))/7
```

Rule 12

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

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
```

```
c, d, e, f]))))
```

Rule 446

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p
*(c + d*x)^q, x], x, x^n], x] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[
b*c - a*d, 0] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rubi steps

$$\int x^4\left(d-c^2dx^2\right)\left(a+b\sin^{-1}(cx)\right)dx=\frac{1}{5}dx^5\left(a+b\sin^{-1}(cx)\right)-\frac{1}{7}c^2dx^7\left(a+b\sin^{-1}(cx)\right)-(bc)\int\frac{dx^5\left(7-5c^2x\right.}{35\sqrt{1-c^2x}}$$

$$=\frac{1}{5}dx^5\left(a+b\sin^{-1}(cx)\right)-\frac{1}{7}c^2dx^7\left(a+b\sin^{-1}(cx)\right)-\frac{1}{35}(bcd)\int\frac{x^5\left(7-5\right.}{\sqrt{1-c}}$$

$$=\frac{1}{5}dx^5\left(a+b\sin^{-1}(cx)\right)-\frac{1}{7}c^2dx^7\left(a+b\sin^{-1}(cx)\right)-\frac{1}{70}(bcd)\,\mathrm{Subst}\left(\int\right.$$

$$=\frac{1}{5}dx^5\left(a+b\sin^{-1}(cx)\right)-\frac{1}{7}c^2dx^7\left(a+b\sin^{-1}(cx)\right)-\frac{1}{70}(bcd)\,\mathrm{Subst}\left(\int\left(\right.\right.$$

$$=\frac{2bd\sqrt{1-c^2x^2}}{35c^5}+\frac{bd\left(1-c^2x^2\right)^{3/2}}{105c^5}-\frac{8bd\left(1-c^2x^2\right)^{5/2}}{175c^5}+\frac{bd\left(1-c^2x^2\right)^{7/2}}{49c^5}$$

Mathematica [A] time = 0.15, size = 87, normalized size = 0.68

$$\frac{d\left(-105ax^5\left(5c^2x^2-7\right)-105bx^5\left(5c^2x^2-7\right)\sin^{-1}(cx)+\frac{b\sqrt{1-c^2x^2}\left(-75c^6x^6+57c^4x^4+76c^2x^2+152\right)}{c^5}\right)}{3675}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(d - c^2*d*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d*(-105*a*x^5*(-7 + 5*c^2*x^2) + (b*Sqrt[1 - c^2*x^2]*(152 + 76*c^2*x^2 +
57*c^4*x^4 - 75*c^6*x^6))/c^5 - 105*b*x^5*(-7 + 5*c^2*x^2)*ArcSin[c*x]))/36
75
```

fricas [A] time = 0.45, size = 101, normalized size = 0.79

$$-\frac{525\,ac^7dx^7-735\,ac^5dx^5+105\left(5\,bc^7dx^7-7\,bc^5dx^5\right)\arcsin(cx)+\left(75\,bc^6dx^6-57\,bc^4dx^4-76\,bc^2dx^2-152\,bd\right.}{3675\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] -1/3675*(525*a*c^7*d*x^7 - 735*a*c^5*d*x^5 + 105*(5*b*c^7*d*x^7 - 7*b*c^5*d
*x^5)*arcsin(c*x) + (75*b*c^6*d*x^6 - 57*b*c^4*d*x^4 - 76*b*c^2*d*x^2 - 152
*b*d)*sqrt(-c^2*x^2 + 1))/c^5
```

giac [A] time = 1.03, size = 195, normalized size = 1.52

$$-\frac{1}{7}\,ac^2dx^7+\frac{1}{5}\,adx^5-\frac{\left(c^2x^2-1\right)^3bdx\arcsin\left(cx\right)}{7\,c^4}-\frac{8\left(c^2x^2-1\right)^2bdx\arcsin\left(cx\right)}{35\,c^4}-\frac{\left(c^2x^2-1\right)bdx\arcsin\left(cx\right)}{35\,c^4}-\frac{\left(c^2x^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] -1/7*a*c^2*d*x^7 + 1/5*a*d*x^5 - 1/7*(c^2*x^2 - 1)^3*b*d*x*arcsin(c*x)/c^4
- 8/35*(c^2*x^2 - 1)^2*b*d*x*arcsin(c*x)/c^4 - 1/35*(c^2*x^2 - 1)*b*d*x*arc
sin(c*x)/c^4 - 1/49*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*b*d/c^5 + 2/35*b*d*x
*arcsin(c*x)/c^4 - 8/175*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*d/c^5 + 1/105
*(-c^2*x^2 + 1)^(3/2)*b*d/c^5 + 2/35*sqrt(-c^2*x^2 + 1)*b*d/c^5
```

maple [A] time = 0.01, size = 130, normalized size = 1.02

$$\frac{-da\left(\frac{1}{7}c^7x^7-\frac{1}{5}c^5x^5\right)-db\left(\frac{\arcsin(cx)c^7x^7}{7}-\frac{\arcsin(cx)c^5x^5}{5}+\frac{c^6x^6\sqrt{-c^2x^2+1}}{49}-\frac{19c^4x^4\sqrt{-c^2x^2+1}}{1225}-\frac{76c^2x^2\sqrt{-c^2x^2+1}}{3675}-\frac{152\sqrt{-c}}{367}\right.}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(-c^2*d*x^2+d)*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c^5*(-d*a*(1/7*c^7*x^7-1/5*c^5*x^5)-d*b*(1/7*arcsin(c*x)*c^7*x^7-1/5*arcs
in(c*x)*c^5*x^5+1/49*c^6*x^6*(-c^2*x^2+1)^(1/2)-19/1225*c^4*x^4*(-c^2*x^2+1
)^(1/2)-76/3675*c^2*x^2*(-c^2*x^2+1)^(1/2)-152/3675*(-c^2*x^2+1)^(1/2)))
```

maxima [A] time = 0.56, size = 189, normalized size = 1.48

$$-\frac{1}{7}\,ac^2dx^7+\frac{1}{5}\,adx^5-\frac{1}{245}\left(35\,x^7\arcsin\left(cx\right)+\left(\frac{5\,\sqrt{-c^2x^2+1}\,x^6}{c^2}+\frac{6\,\sqrt{-c^2x^2+1}\,x^4}{c^4}+\frac{8\,\sqrt{-c^2x^2+1}\,x^2}{c^6}+\frac{16\,\sqrt{-}}{}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] -1/7*a*c^2*d*x^7 + 1/5*a*d*x^5 - 1/245*(35*x^7*arcsin(c*x) + (5*sqrt(-c^2*x
^2 + 1)*x^6/c^2 + 6*sqrt(-c^2*x^2 + 1)*x^4/c^4 + 8*sqrt(-c^2*x^2 + 1)*x^2/c
^6 + 16*sqrt(-c^2*x^2 + 1)/c^8)*c)*b*c^2*d + 1/75*(15*x^5*arcsin(c*x) + (3*
sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2
 + 1)/c^6)*c)*b*d
```

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

$$\int x^4\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\left(d-c^2\,d\,x^2\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a + b*asin(c*x))*(d - c^2*d*x^2),x)
```

```
[Out] int(x^4*(a + b*asin(c*x))*(d - c^2*d*x^2), x)
```

sympy [A] time = 5.56, size = 151, normalized size = 1.18

$$\begin{cases} -\frac{ac^2dx^7}{7}+\frac{adx^5}{5}-\frac{bc^2dx^7\operatorname{asin}(cx)}{7}-\frac{bcdx^6\sqrt{-c^2x^2+1}}{49}+\frac{bdx^5\operatorname{asin}(cx)}{5}+\frac{19bdx^4\sqrt{-c^2x^2+1}}{1225c}+\frac{76bdx^2\sqrt{-c^2x^2+1}}{3675c^3}+\frac{152bd\sqrt{-c^2x^2+1}}{3675c^5} \\ \frac{adx^5}{5} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(-c**2*d*x**2+d)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((-a*c**2*d*x**7/7 + a*d*x**5/5 - b*c**2*d*x**7*asin(c*x)/7 - b*c*
d*x**6*sqrt(-c**2*x**2 + 1)/49 + b*d*x**5*asin(c*x)/5 + 19*b*d*x**4*sqrt(-c
**2*x**2 + 1)/(1225*c) + 76*b*d*x**2*sqrt(-c**2*x**2 + 1)/(3675*c**3) + 152
*b*d*sqrt(-c**2*x**2 + 1)/(3675*c**5), Ne(c, 0)), (a*d*x**5/5, True))
```

3.2 $\int x^3 \left(d-c^2dx^2\right) \left(a+b\sin^{-1}(cx)\right) \, dx$

Optimal. Leaf size=123

$$-\frac{1}{6}c^2dx^6\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}dx^4\left(a+b\sin^{-1}(cx)\right)-\frac{bd\sin^{-1}(cx)}{24c^4}-\frac{1}{36}bcdx^5\sqrt{1-c^2x^2}+\frac{bdx^3\sqrt{1-c^2x^2}}{36c}+\frac{bdx\sqrt{1}}{2}$$

```
[Out] -1/24*b*d*arcsin(c*x)/c^4+1/4*d*x^4*(a+b*arcsin(c*x))-1/6*c^2*d*x^6*(a+b*ar
csin(c*x))+1/24*b*d*x*(-c^2*x^2+1)^(1/2)/c^3+1/36*b*d*x^3*(-c^2*x^2+1)^(1/2
)/c-1/36*b*c*d*x^5*(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.261, Rules used = {14, 4687, 12, 459, 321, 216}

$$-\frac{1}{6}c^2dx^6\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}dx^4\left(a+b\sin^{-1}(cx)\right)-\frac{1}{36}bcdx^5\sqrt{1-c^2x^2}+\frac{bdx^3\sqrt{1-c^2x^2}}{36c}+\frac{bdx\sqrt{1-c^2x^2}}{24c^3}-\frac{bd\,s}{2}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(d - c^2*d*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*d*x*Sqrt[1 - c^2*x^2])/(24*c^3) + (b*d*x^3*Sqrt[1 - c^2*x^2])/(36*c) - (
b*c*d*x^5*Sqrt[1 - c^2*x^2])/36 - (b*d*ArcSin[c*x])/(24*c^4) + (d*x^4*(a +
b*ArcSin[c*x]))/4 - (c^2*d*x^6*(a + b*ArcSin[c*x]))/6
```

Rule 12

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

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

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

Rule 459

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

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rubi steps

$$\int x^3\left(d-c^2dx^2\right)\left(a+b\sin^{-1}(cx)\right)dx = \frac{1}{4}dx^4\left(a+b\sin^{-1}(cx)\right)-\frac{1}{6}c^2dx^6\left(a+b\sin^{-1}(cx)\right)-(bc)\int\frac{dx^4\left(3-2c^2x\right.}{12\sqrt{1-c^2x}}$$

$$= \frac{1}{4}dx^4\left(a+b\sin^{-1}(cx)\right)-\frac{1}{6}c^2dx^6\left(a+b\sin^{-1}(cx)\right)-\frac{1}{12}(bcd)\int\frac{x^4\left(3-2\right.}{\sqrt{1-c}}$$

$$= -\frac{1}{36}bcdx^5\sqrt{1-c^2x^2}+\frac{1}{4}dx^4\left(a+b\sin^{-1}(cx)\right)-\frac{1}{6}c^2dx^6\left(a+b\sin^{-1}(cx)\right.$$

$$= \frac{bdx^3\sqrt{1-c^2x^2}}{36c}-\frac{1}{36}bcdx^5\sqrt{1-c^2x^2}+\frac{1}{4}dx^4\left(a+b\sin^{-1}(cx)\right)-\frac{1}{6}c^2dx^6$$

$$= \frac{bdx\sqrt{1-c^2x^2}}{24c^3}+\frac{bdx^3\sqrt{1-c^2x^2}}{36c}-\frac{1}{36}bcdx^5\sqrt{1-c^2x^2}+\frac{1}{4}dx^4\left(a+b\sin\right.$$

$$= \frac{bdx\sqrt{1-c^2x^2}}{24c^3}+\frac{bdx^3\sqrt{1-c^2x^2}}{36c}-\frac{1}{36}bcdx^5\sqrt{1-c^2x^2}-\frac{bd\sin^{-1}(cx)}{24c^4}+$$

Mathematica [A] time = 0.12, size = 89, normalized size = 0.72

$$\frac{d\left(-6ac^4x^4\left(2c^2x^2-3\right)-3b\left(4c^6x^6-6c^4x^4+1\right)\sin^{-1}(cx)+bcx\sqrt{1-c^2x^2}\left(-2c^4x^4+2c^2x^2+3\right)\right)}{72c^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(d - c^2*d*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d*(-6*a*c^4*x^4*(-3 + 2*c^2*x^2) + b*c*x*Sqrt[1 - c^2*x^2]*(3 + 2*c^2*x^2
- 2*c^4*x^4) - 3*b*(1 - 6*c^4*x^4 + 4*c^6*x^6)*ArcSin[c*x]))/(72*c^4)
```

fricas [A] time = 0.55, size = 96, normalized size = 0.78

$$-\frac{12\,ac^6dx^6-18\,ac^4dx^4+3\left(4\,bc^6dx^6-6\,bc^4dx^4+bd\right)\arcsin(cx)+\left(2\,bc^5dx^5-2\,bc^3dx^3-3\,bcdx\right)\sqrt{-c^2x^2+1}}{72\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] -1/72*(12*a*c^6*d*x^6 - 18*a*c^4*d*x^4 + 3*(4*b*c^6*d*x^6 - 6*b*c^4*d*x^4 +
 b*d)*arcsin(c*x) + (2*b*c^5*d*x^5 - 2*b*c^3*d*x^3 - 3*b*c*d*x)*sqrt(-c^2*x
^2 + 1))/c^4
```

giac [A] time = 0.70, size = 144, normalized size = 1.17

$$-\frac{1}{6}\,ac^2dx^6+\frac{1}{4}\,adx^4-\frac{\left(c^2x^2-1\right)^2\sqrt{-c^2x^2+1}\,bdx}{36\,c^3}-\frac{\left(c^2x^2-1\right)^3bd\arcsin(cx)}{6\,c^4}+\frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}bdx}{36\,c^3}-\frac{\left(c^2x^2-1\right)^2bd\,\mathrm{arcs}}{4\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] -1/6*a*c^2*d*x^6 + 1/4*a*d*x^4 - 1/36*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*
d*x/c^3 - 1/6*(c^2*x^2 - 1)^3*b*d*arcsin(c*x)/c^4 + 1/36*(-c^2*x^2 + 1)^(3/
2)*b*d*x/c^3 - 1/4*(c^2*x^2 - 1)^2*b*d*arcsin(c*x)/c^4 + 1/24*sqrt(-c^2*x^2
 + 1)*b*d*x/c^3 + 1/24*b*d*arcsin(c*x)/c^4
```

maple [A] time = 0.01, size = 118, normalized size = 0.96

$$\frac{-da\left(\frac{1}{6}c^6x^6-\frac{1}{4}c^4x^4\right)-db\left(\frac{\arcsin(cx)c^6x^6}{6}-\frac{c^4x^4\arcsin(cx)}{4}+\frac{c^5x^5\sqrt{-c^2x^2+1}}{36}-\frac{c^3x^3\sqrt{-c^2x^2+1}}{36}-\frac{cx\sqrt{-c^2x^2+1}}{24}+\frac{\arcsin(cx)}{24}\right)}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(-c^2*d*x^2+d)*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c^4*(-d*a*(1/6*c^6*x^6-1/4*c^4*x^4)-d*b*(1/6*arcsin(c*x)*c^6*x^6-1/4*c^4*
x^4*arcsin(c*x)+1/36*c^5*x^5*(-c^2*x^2+1)^(1/2)-1/36*c^3*x^3*(-c^2*x^2+1)^(
1/2)-1/24*c*x*(-c^2*x^2+1)^(1/2)+1/24*arcsin(c*x)))
```

maxima [A] time = 0.45, size = 169, normalized size = 1.37

$$-\frac{1}{6}ac^2dx^6+\frac{1}{4}adx^4-\frac{1}{288}\left(48x^6\arcsin(cx)+\left(\frac{8\sqrt{-c^2x^2+1}x^5}{c^2}+\frac{10\sqrt{-c^2x^2+1}x^3}{c^4}+\frac{15\sqrt{-c^2x^2+1}x}{c^6}-\frac{15\,a}{}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] -1/6*a*c^2*d*x^6 + 1/4*a*d*x^4 - 1/288*(48*x^6*arcsin(c*x) + (8*sqrt(-c^2*x
^2 + 1)*x^5/c^2 + 10*sqrt(-c^2*x^2 + 1)*x^3/c^4 + 15*sqrt(-c^2*x^2 + 1)*x/c
^6 - 15*arcsin(c*x)/c^7)*c)*b*c^2*d + 1/32*(8*x^4*arcsin(c*x) + (2*sqrt(-c^
2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c*x)/c^5)*c)*b*d
```

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

$$\int x^3\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\left(d-c^2\,d\,x^2\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + b*asin(c*x))*(d - c^2*d*x^2),x)
```

```
[Out] int(x^3*(a + b*asin(c*x))*(d - c^2*d*x^2), x)
```

sympy [A] time = 3.54, size = 138, normalized size = 1.12

$$\begin{cases} -\frac{ac^2dx^6}{6}+\frac{adx^4}{4}-\frac{bc^2dx^6\,\mathrm{asin}\,(cx)}{6}-\frac{bcdx^5\sqrt{-c^2x^2+1}}{36}+\frac{bdx^4\,\mathrm{asin}\,(cx)}{4}+\frac{bdx^3\sqrt{-c^2x^2+1}}{36c}+\frac{bdx\sqrt{-c^2x^2+1}}{24c^3}-\frac{bd\,\mathrm{asin}\,(cx)}{24c^4} & \text{for}\ c \neq \\ \frac{adx^4}{4} & \text{otherv} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(-c**2*d*x**2+d)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((-a*c**2*d*x**6/6 + a*d*x**4/4 - b*c**2*d*x**6*asin(c*x)/6 - b*c*
d*x**5*sqrt(-c**2*x**2 + 1)/36 + b*d*x**4*asin(c*x)/4 + b*d*x**3*sqrt(-c**2
*x**2 + 1)/(36*c) + b*d*x*sqrt(-c**2*x**2 + 1)/(24*c**3) - b*d*asin(c*x)/(2
4*c**4), Ne(c, 0)), (a*d*x**4/4, True))
```

3.3 $\int x^2 \left(d - c^2 d x^2\right) \left(a + b \sin^{-1}(cx)\right) dx$

Optimal. Leaf size=105

$$-\frac{1}{5}c^2dx^5\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}dx^3\left(a+b\sin^{-1}(cx)\right)-\frac{bd\left(1-c^2x^2\right)^{5/2}}{25c^3}+\frac{bd\left(1-c^2x^2\right)^{3/2}}{45c^3}+\frac{2bd\sqrt{1-c^2x^2}}{15c^3}$$

```
[Out] 1/45*b*d*(-c^2*x^2+1)^(3/2)/c^3-1/25*b*d*(-c^2*x^2+1)^(5/2)/c^3+1/3*d*x^3*(
a+b*arcsin(c*x))-1/5*c^2*d*x^5*(a+b*arcsin(c*x))+2/15*b*d*(-c^2*x^2+1)^(1/2
)/c^3
```

Rubi [A] time = 0.10, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {14, 4687, 12, 446, 77}

$$-\frac{1}{5}c^2dx^5\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}dx^3\left(a+b\sin^{-1}(cx)\right)-\frac{bd\left(1-c^2x^2\right)^{5/2}}{25c^3}+\frac{bd\left(1-c^2x^2\right)^{3/2}}{45c^3}+\frac{2bd\sqrt{1-c^2x^2}}{15c^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(d - c^2*d*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (2*b*d*Sqrt[1 - c^2*x^2])/(15*c^3) + (b*d*(1 - c^2*x^2)^(3/2))/(45*c^3) - (
b*d*(1 - c^2*x^2)^(5/2))/(25*c^3) + (d*x^3*(a + b*ArcSin[c*x]))/3 - (c^2*d*
x^5*(a + b*ArcSin[c*x]))/5
```

Rule 12

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

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 446

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p
*(c + d*x)^q, x], x, x^n], x] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[
b*c - a*d, 0] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
```

IGtQ[p, 0]

Rubi steps

$$\int x^2\left(d-c^2dx^2\right)\left(a+b\sin^{-1}(cx)\right)dx=\frac{1}{3}dx^3\left(a+b\sin^{-1}(cx)\right)-\frac{1}{5}c^2dx^5\left(a+b\sin^{-1}(cx)\right)-(bc)\int\frac{dx^3\left(5-3\right.}{15\sqrt{1-}}$$
$$=\frac{1}{3}dx^3\left(a+b\sin^{-1}(cx)\right)-\frac{1}{5}c^2dx^5\left(a+b\sin^{-1}(cx)\right)-\frac{1}{15}(bcd)\int\frac{x^3\left(5\right.}{\sqrt{1}}$$
$$=\frac{1}{3}dx^3\left(a+b\sin^{-1}(cx)\right)-\frac{1}{5}c^2dx^5\left(a+b\sin^{-1}(cx)\right)-\frac{1}{30}(bcd)\,\text{Subst}\Big($$
$$=\frac{1}{3}dx^3\left(a+b\sin^{-1}(cx)\right)-\frac{1}{5}c^2dx^5\left(a+b\sin^{-1}(cx)\right)-\frac{1}{30}(bcd)\,\text{Subst}\Big($$
$$=\frac{2bd\sqrt{1-c^2x^2}}{15c^3}+\frac{bd\left(1-c^2x^2\right)^{3/2}}{45c^3}-\frac{bd\left(1-c^2x^2\right)^{5/2}}{25c^3}+\frac{1}{3}dx^3\left(a+b\sin\right.$$

Mathematica [A] time = 0.11, size = 85, normalized size = 0.81

$$\frac{d\left(a\left(75c^3x^3-45c^5x^5\right)+b\sqrt{1-c^2x^2}\left(-9c^4x^4+13c^2x^2+26\right)+15bc^3x^3\left(5-3c^2x^2\right)\sin^{-1}(cx)\right)}{225c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(d - c^2*d*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d*(b*Sqrt[1 - c^2*x^2]*(26 + 13*c^2*x^2 - 9*c^4*x^4) + a*(75*c^3*x^3 - 45*
c^5*x^5) + 15*b*c^3*x^3*(5 - 3*c^2*x^2)*ArcSin[c*x]))/(225*c^3)
```

fricas [A] time = 0.42, size = 91, normalized size = 0.87

$$-\frac{45\,ac^5dx^5-75\,ac^3dx^3+15\left(3\,bc^5dx^5-5\,bc^3dx^3\right)\arcsin(cx)+\left(9\,bc^4dx^4-13\,bc^2dx^2-26\,bd\right)\sqrt{-c^2x^2+1}}{225\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] -1/225*(45*a*c^5*d*x^5 - 75*a*c^3*d*x^3 + 15*(3*b*c^5*d*x^5 - 5*b*c^3*d*x^3
)*arcsin(c*x) + (9*b*c^4*d*x^4 - 13*b*c^2*d*x^2 - 26*b*d)*sqrt(-c^2*x^2 + 1
))/c^3
```

giac [A] time = 0.53, size = 142, normalized size = 1.35

$$-\frac{1}{5}\,ac^2dx^5+\frac{1}{3}\,adx^3-\frac{\left(c^2x^2-1\right)^2bdx\arcsin(cx)}{5\,c^2}-\frac{\left(c^2x^2-1\right)bdx\arcsin(cx)}{15\,c^2}+\frac{2\,bdx\arcsin(cx)}{15\,c^2}-\frac{\left(c^2x^2-1\right)^2\sqrt{-c}}{25\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] -1/5*a*c^2*d*x^5 + 1/3*a*d*x^3 - 1/5*(c^2*x^2 - 1)^2*b*d*x*arcsin(c*x)/c^2
- 1/15*(c^2*x^2 - 1)*b*d*x*arcsin(c*x)/c^2 + 2/15*b*d*x*arcsin(c*x)/c^2 - 1
/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*d/c^3 + 1/45*(-c^2*x^2 + 1)^(3/2)*
b*d/c^3 + 2/15*sqrt(-c^2*x^2 + 1)*b*d/c^3
```

maple [A] time = 0.01, size = 110, normalized size = 1.05

$$\frac{-da\left(\frac{1}{5}c^5x^5-\frac{1}{3}c^3x^3\right)-db\left(\frac{\arcsin(cx)c^5x^5}{5}-\frac{c^3x^3\arcsin(cx)}{3}+\frac{c^4x^4\sqrt{-c^2x^2+1}}{25}-\frac{13c^2x^2\sqrt{-c^2x^2+1}}{225}-\frac{26\sqrt{-c^2x^2+1}}{225}\right)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(-c^2*d*x^2+d)*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c^3*(-d*a*(1/5*c^5*x^5-1/3*c^3*x^3)-d*b*(1/5*arcsin(c*x)*c^5*x^5-1/3*c^3*
x^3*arcsin(c*x)+1/25*c^4*x^4*(-c^2*x^2+1)^(1/2)-13/225*c^2*x^2*(-c^2*x^2+1)
^(1/2)-26/225*(-c^2*x^2+1)^(1/2)))
```

maxima [A] time = 0.53, size = 148, normalized size = 1.41

$$-\frac{1}{5}ac^2dx^5-\frac{1}{75}\left(15x^5\arcsin(cx)+\left(\frac{3\sqrt{-c^2x^2+1}\,x^4}{c^2}+\frac{4\sqrt{-c^2x^2+1}\,x^2}{c^4}+\frac{8\sqrt{-c^2x^2+1}}{c^6}\right)c\right)bc^2d+\frac{1}{3}adx^3+\frac{1}{9}\Big(3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] -1/5*a*c^2*d*x^5 - 1/75*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2
 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*b*c^2*d + 1/
3*a*d*x^3 + 1/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt
(-c^2*x^2 + 1)/c^4))*b*d
```

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

$$\int x^2\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\left(d-c^2\,d\,x^2\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c*x))*(d - c^2*d*x^2),x)
```

```
[Out] int(x^2*(a + b*asin(c*x))*(d - c^2*d*x^2), x)
```

sympy [A] time = 1.98, size = 126, normalized size = 1.20

$$\begin{cases} -\frac{ac^2dx^5}{5}+\frac{adx^3}{3}-\frac{bc^2dx^5\,\mathrm{asin}\,(cx)}{5}-\frac{bcdx^4\sqrt{-c^2x^2+1}}{25}+\frac{bdx^3\,\mathrm{asin}\,(cx)}{3}+\frac{13bdx^2\sqrt{-c^2x^2+1}}{225c}+\frac{26bd\sqrt{-c^2x^2+1}}{225c^3} & \text{for } c\neq 0 \\ \frac{adx^3}{3} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(-c**2*d*x**2+d)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((-a*c**2*d*x**5/5 + a*d*x**3/3 - b*c**2*d*x**5*asin(c*x)/5 - b*c*
d*x**4*sqrt(-c**2*x**2 + 1)/25 + b*d*x**3*asin(c*x)/3 + 13*b*d*x**2*sqrt(-c
**2*x**2 + 1)/(225*c) + 26*b*d*sqrt(-c**2*x**2 + 1)/(225*c**3), Ne(c, 0)),
(a*d*x**3/3, True))
```

3.4 $\int x\left(d-c^2dx^2\right)\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=90

$$-\frac{d\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{4c^2}+\frac{bdx\left(1-c^2x^2\right)^{3/2}}{16c}+\frac{3bdx\sqrt{1-c^2x^2}}{32c}+\frac{3bd\sin^{-1}(cx)}{32c^2}$$

```
[Out] 1/16*b*d*x*(-c^2*x^2+1)^(3/2)/c+3/32*b*d*arcsin(c*x)/c^2-1/4*d*(-c^2*x^2+1)
^2*(a+b*arcsin(c*x))/c^2+3/32*b*d*x*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.04, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {4677, 195, 216}

$$-\frac{d\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{4c^2}+\frac{bdx\left(1-c^2x^2\right)^{3/2}}{16c}+\frac{3bdx\sqrt{1-c^2x^2}}{32c}+\frac{3bd\sin^{-1}(cx)}{32c^2}$$

Antiderivative was successfully verified.

```
[In] Int[x*(d - c^2*d*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (3*b*d*x*Sqrt[1 - c^2*x^2])/(32*c) + (b*d*x*(1 - c^2*x^2)^(3/2))/(16*c) + (
3*b*d*ArcSin[c*x])/(32*c^2) - (d*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x]))/(4*c^
2)
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int x\left(d-c^2dx^2\right)\left(a+b\sin^{-1}(cx)\right)\,dx = -\frac{d\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{4c^2}+\frac{(bd)\int\left(1-c^2x^2\right)^{3/2}\,dx}{4c}$$
$$=\frac{bdx\left(1-c^2x^2\right)^{3/2}}{16c}-\frac{d\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{4c^2}+\frac{(3bd)\int\sqrt{1-c^2x^2}\,d}{16c}$$
$$=\frac{3bdx\sqrt{1-c^2x^2}}{32c}+\frac{bdx\left(1-c^2x^2\right)^{3/2}}{16c}-\frac{d\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{4c^2}+\frac{(3}{}$$
$$=\frac{3bdx\sqrt{1-c^2x^2}}{32c}+\frac{bdx\left(1-c^2x^2\right)^{3/2}}{16c}+\frac{3bd\sin^{-1}(cx)}{32c^2}-\frac{d\left(1-c^2x^2\right)^2\left(a+\right.}{4c^2}$$

Mathematica [A] time = 0.11, size = 77, normalized size = 0.86

$$-\frac{d\left(cx\left(8acx\left(c^2x^2-2\right)+b\sqrt{1-c^2x^2}\left(2c^2x^2-5\right)\right)+b\left(8c^4x^4-16c^2x^2+5\right)\sin^{-1}(cx)\right)}{32c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d - c^2*d*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] -1/32*(d*(c*x*(8*a*c*x*(-2 + c^2*x^2) + b*Sqrt[1 - c^2*x^2]*(-5 + 2*c^2*x^2
)) + b*(5 - 16*c^2*x^2 + 8*c^4*x^4)*ArcSin[c*x]))/c^2
```

fricas [A] time = 0.50, size = 86, normalized size = 0.96

$$-\frac{8\,ac^4dx^4-16\,ac^2dx^2+\left(8\,bc^4dx^4-16\,bc^2dx^2+5\,bd\right)\arcsin\left(cx\right)+\left(2\,bc^3dx^3-5\,bcdx\right)\sqrt{-c^2x^2+1}}{32\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] -1/32*(8*a*c^4*d*x^4 - 16*a*c^2*d*x^2 + (8*b*c^4*d*x^4 - 16*b*c^2*d*x^2 + 5
*b*d)*arcsin(c*x) + (2*b*c^3*d*x^3 - 5*b*c*d*x)*sqrt(-c^2*x^2 + 1))/c^2
```

giac [A] time = 0.48, size = 100, normalized size = 1.11

$$-\frac{1}{4}\,ac^2dx^4+\frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}bdx}{16\,c}-\frac{\left(c^2x^2-1\right)^2bd\arcsin\left(cx\right)}{4\,c^2}+\frac{3\,\sqrt{-c^2x^2+1}\,bdx}{32\,c}+\frac{\left(c^2x^2-1\right)ad}{2\,c^2}+\frac{3\,bd\arcsin\left(cx\right)}{32\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] -1/4*a*c^2*d*x^4 + 1/16*(-c^2*x^2 + 1)^(3/2)*b*d*x/c - 1/4*(c^2*x^2 - 1)^2*
b*d*arcsin(c*x)/c^2 + 3/32*sqrt(-c^2*x^2 + 1)*b*d*x/c + 1/2*(c^2*x^2 - 1)*a
*d/c^2 + 3/32*b*d*arcsin(c*x)/c^2
```

maple [A] time = 0.01, size = 98, normalized size = 1.09

$$\frac{-da\left(\frac{1}{4}c^4x^4-\frac{1}{2}c^2x^2\right)-db\left(\frac{c^4x^4\arcsin(cx)}{4}-\frac{c^2x^2\arcsin(cx)}{2}+\frac{c^3x^3\sqrt{-c^2x^2+1}}{16}-\frac{5cx\sqrt{-c^2x^2+1}}{32}+\frac{5\arcsin(cx)}{32}\right)}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(-c^2*d*x^2+d)*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c^2*(-d*a*(1/4*c^4*x^4-1/2*c^2*x^2)-d*b*(1/4*c^4*x^4*arcsin(c*x)-1/2*c^2*
x^2*arcsin(c*x)+1/16*c^3*x^3*(-c^2*x^2+1)^(1/2)-5/32*c*x*(-c^2*x^2+1)^(1/2)
+5/32*arcsin(c*x)))
```

maxima [A] time = 0.60, size = 128, normalized size = 1.42

$$-\frac{1}{4}\,ac^2dx^4 - \frac{1}{32}\left(8\,x^4\arcsin\left(cx\right) + \left(\frac{2\,\sqrt{-c^2x^2+1}\,x^3}{c^2} + \frac{3\,\sqrt{-c^2x^2+1}\,x}{c^4} - \frac{3\,\arcsin\left(cx\right)}{c^5}\right)c\right)bc^2d + \frac{1}{2}\,adx^2 + \frac{1}{4}\left(2\,x\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] -1/4*a*c^2*d*x^4 - 1/32*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2
+ 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c*x)/c^5)*c)*b*c^2*d + 1/2*a*d*x^2
+ 1/4*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c*x)/c^3))*
b*d
```

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

$$\int x\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\left(d-c^2\,d\,x^2\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c*x))*(d - c^2*d*x^2),x)
```

```
[Out] int(x*(a + b*asin(c*x))*(d - c^2*d*x^2), x)
```

sympy [A] time = 1.06, size = 117, normalized size = 1.30

$$\begin{cases} -\frac{ac^2dx^4}{4} + \frac{adx^2}{2} - \frac{bc^2dx^4\,\mathrm{asin}\left(cx\right)}{4} - \frac{bcdx^3\sqrt{-c^2x^2+1}}{16} + \frac{bdx^2\,\mathrm{asin}\left(cx\right)}{2} + \frac{5bdx\sqrt{-c^2x^2+1}}{32c} - \frac{5bd\,\mathrm{asin}\left(cx\right)}{32c^2} & \text{for}\ c \neq 0 \\ \frac{adx^2}{2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c**2*d*x**2+d)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((-a*c**2*d*x**4/4 + a*d*x**2/2 - b*c**2*d*x**4*asin(c*x)/4 - b*c*
d*x**3*sqrt(-c**2*x**2 + 1)/16 + b*d*x**2*asin(c*x)/2 + 5*b*d*x*sqrt(-c**2*
x**2 + 1)/(32*c) - 5*b*d*asin(c*x)/(32*c**2), Ne(c, 0)), (a*d*x**2/2, True)
)
```

3.5 $\int \left(d-c^2dx^2\right)\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=77

$$-\frac{1}{3}c^2dx^3\left(a+b\sin^{-1}(cx)\right)+dx\left(a+b\sin^{-1}(cx)\right)+\frac{bd\left(1-c^2x^2\right)^{3/2}}{9c}+\frac{2bd\sqrt{1-c^2x^2}}{3c}$$

```
[Out] 1/9*b*d*(-c^2*x^2+1)^(3/2)/c+d*x*(a+b*arcsin(c*x))-1/3*c^2*d*x^3*(a+b*arcsi
n(c*x))+2/3*b*d*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.06, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {4645, 12, 444, 43}

$$-\frac{1}{3}c^2dx^3\left(a+b\sin^{-1}(cx)\right)+dx\left(a+b\sin^{-1}(cx)\right)+\frac{bd\left(1-c^2x^2\right)^{3/2}}{9c}+\frac{2bd\sqrt{1-c^2x^2}}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[(d - c^2*d*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (2*b*d*Sqrt[1 - c^2*x^2])/(3*c) + (b*d*(1 - c^2*x^2)^(3/2))/(9*c) + d*x*(a
+ b*ArcSin[c*x]) - (c^2*d*x^3*(a + b*ArcSin[c*x]))/3
```

Rule 12

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

Rule 43

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

Rule 444

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rubi steps

$$\int \left(d-c^2dx^2\right)\left(a+b\sin^{-1}(cx)\right)\,dx = dx\left(a+b\sin^{-1}(cx)\right)-\frac{1}{3}c^2dx^3\left(a+b\sin^{-1}(cx)\right)-(bc)\int \frac{dx\left(1-\frac{c^2x^2}{3}\right)}{\sqrt{1-c^2x^2}}\,dx$$

$$= dx\left(a+b\sin^{-1}(cx)\right)-\frac{1}{3}c^2dx^3\left(a+b\sin^{-1}(cx)\right)-(bcd)\int \frac{x\left(1-\frac{c^2x^2}{3}\right)}{\sqrt{1-c^2x^2}}\,dx$$

$$= dx\left(a+b\sin^{-1}(cx)\right)-\frac{1}{3}c^2dx^3\left(a+b\sin^{-1}(cx)\right)-\frac{1}{2}(bcd)\,\text{Subst}\left(\int \frac{1-}{\sqrt{1-}}\right.$$

$$= dx\left(a+b\sin^{-1}(cx)\right)-\frac{1}{3}c^2dx^3\left(a+b\sin^{-1}(cx)\right)-\frac{1}{2}(bcd)\,\text{Subst}\left(\int \left(\frac{}{3\sqrt{}}\right.\right.$$

$$= \frac{2bd\sqrt{1-c^2x^2}}{3c}+\frac{bd\left(1-c^2x^2\right)^{3/2}}{9c}+dx\left(a+b\sin^{-1}(cx)\right)-\frac{1}{3}c^2dx^3\left(a+b\right.$$

Mathematica [A] time = 0.10, size = 88, normalized size = 1.14

$$-\frac{1}{3}ac^2dx^3+adx-\frac{1}{3}bc^2dx^3\sin^{-1}(cx)-\frac{1}{9}bcdx^2\sqrt{1-c^2x^2}+\frac{7bd\sqrt{1-c^2x^2}}{9c}+bdx\sin^{-1}(cx)$$

Antiderivative was successfully verified.

```
[In] Integrate[(d - c^2*d*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] a*d*x - (a*c^2*d*x^3)/3 + (7*b*d*Sqrt[1 - c^2*x^2])/(9*c) - (b*c*d*x^2*Sqrt
[1 - c^2*x^2])/9 + b*d*x*ArcSin[c*x] - (b*c^2*d*x^3*ArcSin[c*x])/3
```

fricas [A] time = 0.41, size = 71, normalized size = 0.92

$$-\frac{3\,ac^3dx^3-9\,acdx+3\left(bc^3dx^3-3\,bcdx\right)\arcsin\left(cx\right)+\left(bc^2dx^2-7\,bd\right)\sqrt{-c^2x^2+1}}{9\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] -1/9*(3*a*c^3*d*x^3 - 9*a*c*d*x + 3*(b*c^3*d*x^3 - 3*b*c*d*x)*arcsin(c*x) +
 (b*c^2*d*x^2 - 7*b*d)*sqrt(-c^2*x^2 + 1))/c
```

giac [A] time = 0.57, size = 80, normalized size = 1.04

$$-\frac{1}{3}\,ac^2dx^3-\frac{1}{3}\left(c^2x^2-1\right)bdx\arcsin\left(cx\right)+\frac{2}{3}\,bdx\arcsin\left(cx\right)+adx+\frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}bd}{9\,c}+\frac{2\,\sqrt{-c^2x^2+1}\,bd}{3\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] -1/3*a*c^2*d*x^3 - 1/3*(c^2*x^2 - 1)*b*d*x*arcsin(c*x) + 2/3*b*d*x*arcsin(c
*x) + a*d*x + 1/9*(-c^2*x^2 + 1)^(3/2)*b*d/c + 2/3*sqrt(-c^2*x^2 + 1)*b*d/c
```

maple [A] time = 0.01, size = 82, normalized size = 1.06

$$\frac{-da\left(\frac{1}{3}c^3x^3-cx\right)-db\left(\frac{c^3x^3\arcsin(cx)}{3}-cx\arcsin\left(cx\right)+\frac{c^2x^2\sqrt{-c^2x^2+1}}{9}-\frac{7\sqrt{-c^2x^2+1}}{9}\right)}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c*(-d*a*(1/3*c^3*x^3-c*x)-d*b*(1/3*c^3*x^3*arcsin(c*x)-c*x*arcsin(c*x)+1/
9*c^2*x^2*(-c^2*x^2+1)^(1/2)-7/9*(-c^2*x^2+1)^(1/2)))
```

maxima [A] time = 0.53, size = 97, normalized size = 1.26

$$-\frac{1}{3}ac^2dx^3-\frac{1}{9}\left(3x^3\arcsin\left(cx\right)+c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2}+\frac{2\sqrt{-c^2x^2+1}}{c^4}\right)\right)bc^2d+adx+\frac{\left(cx\arcsin\left(cx\right)+\sqrt{-c^2x^2+1}\right)bd}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] -1/3*a*c^2*d*x^3 - 1/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 +
 2*sqrt(-c^2*x^2 + 1)/c^4))*b*c^2*d + a*d*x + (c*x*arcsin(c*x) + sqrt(-c^2*
x^2 + 1))*b*d/c
```

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

$$\begin{cases} \frac{b\,d\left(\sqrt{1-c^2\,x^2}+c\,x\,\mathrm{asin}(c\,x)\right)}{c}-b\,c^2\,d\left(\frac{\sqrt{\frac{1}{c^2}-x^2}\,\left(\frac{2}{c^2}+x^2\right)}{9}+\frac{x^3\,\mathrm{asin}(c\,x)}{3}\right)-\frac{a\,d\,x\left(c^2\,x^2-3\right)}{3} & \text{if } 0<c \\ \int \left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\left(d-c^2\,d\,x^2\right)\,dx & \text{if } \neg 0<c \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(d - c^2*d*x^2),x)
```

```
[Out] piecewise(0 < c, - b*c^2*d*(((1/c^2 - x^2)^(1/2)*(2/c^2 + x^2))/9 + (x^3*as
in(c*x))/3) + (b*d*((- c^2*x^2 + 1)^(1/2) + c*x*asin(c*x)))/c - (a*d*x*(c^2
*x^2 - 3))/3, ~0 < c, int((a + b*asin(c*x))*(d - c^2*d*x^2), x))
```

sympy [A] time = 0.52, size = 90, normalized size = 1.17

$$\begin{cases} -\frac{ac^2dx^3}{3}+adx-\frac{bc^2dx^3\,\mathrm{asin}\left(cx\right)}{3}-\frac{bcdx^2\sqrt{-c^2x^2+1}}{9}+bdx\,\mathrm{asin}\left(cx\right)+\frac{7bd\sqrt{-c^2x^2+1}}{9c} & \text{for } c\neq 0 \\ adx & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((-a*c**2*d*x**3/3 + a*d*x - b*c**2*d*x**3*asin(c*x)/3 - b*c*d*x**
2*sqrt(-c**2*x**2 + 1)/9 + b*d*x*asin(c*x) + 7*b*d*sqrt(-c**2*x**2 + 1)/(9*
c), Ne(c, 0)), (a*d*x, True))
```

3.6 $\int \frac{(d-c^2dx^2)(a+b\sin^{-1}(cx))}{x}\,dx$

Optimal. Leaf size=121

$$\frac{1}{2}d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)-\frac{id\left(a+b\sin^{-1}(cx)\right)^2}{2b}+d\log\left(1-e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)-\frac{1}{4}bcdx\sqrt{1-c^2x^2}$$

```
[Out] -1/4*b*d*arcsin(c*x)+1/2*d*(-c^2*x^2+1)*(a+b*arcsin(c*x))-1/2*I*d*(a+b*arcs
in(c*x))^2/b+d*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))^2)-1/2*I*b
*d*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)-1/4*b*c*d*x*(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.348, Rules used = {4683, 4625, 3717, 2190, 2279, 2391, 195, 216}

$$-\frac{1}{2}ibd\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)+\frac{1}{2}d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)-\frac{id\left(a+b\sin^{-1}(cx)\right)^2}{2b}+d\log\left(1-e^{2i\sin^{-1}(cx)}\right)(a$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)*(a + b*ArcSin[c*x]))/x,x]
```

```
[Out] -(b*c*d*x*Sqrt[1 - c^2*x^2])/4 - (b*d*ArcSin[c*x])/4 + (d*(1 - c^2*x^2)*(a
+ b*ArcSin[c*x]))/2 - ((I/2)*d*(a + b*ArcSin[c*x])^2)/b + d*(a + b*ArcSin[c
*x])*Log[1 - E^((2*I)*ArcSin[c*x])] - (I/2)*b*d*PolyLog[2, E^((2*I)*ArcSin[
c*x])]
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4683

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.))/(x_),
x_Symbol] :> Simp[((d + e*x^2)^p*(a + b*ArcSin[c*x]))/(2*p), x] + (Dist[d,
Int[((d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x]))/x, x], x] - Dist[(b*c*d^p)/(2
*p), Int[(1 - c^2*x^2)^(p - 1/2), x], x]) /; FreeQ[{a, b, c, d, e}, x] && E
qQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)\left(a+b\sin^{-1}(cx)\right)}{x}\,dx = \frac{1}{2}d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)+d\int \frac{a+b\sin^{-1}(cx)}{x}\,dx-\frac{1}{2}(bcd)\int \sqrt{1-\cdots}$$

$$= -\frac{1}{4}bcdx\sqrt{1-c^2x^2}+\frac{1}{2}d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)+d\,\mathrm{Subst}\left(\int (a+bx)\cdots\right.$$

$$= -\frac{1}{4}bcdx\sqrt{1-c^2x^2}-\frac{1}{4}bd\sin^{-1}(cx)+\frac{1}{2}d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)-\frac{id(\cdots}{\cdots}$$

$$= -\frac{1}{4}bcdx\sqrt{1-c^2x^2}-\frac{1}{4}bd\sin^{-1}(cx)+\frac{1}{2}d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)-\frac{id(\cdots}{\cdots}$$

$$= -\frac{1}{4}bcdx\sqrt{1-c^2x^2}-\frac{1}{4}bd\sin^{-1}(cx)+\frac{1}{2}d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)-\frac{id(\cdots}{\cdots}$$

$$= -\frac{1}{4}bcdx\sqrt{1-c^2x^2}-\frac{1}{4}bd\sin^{-1}(cx)+\frac{1}{2}d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)-\frac{id(\cdots}{\cdots}$$

Mathematica [A] time = 0.13, size = 99, normalized size = 0.82

$$-\frac{1}{4}d\left(2ac^2x^2-4a\log(x)+bcx\sqrt{1-c^2x^2}+b\sin^{-1}(cx)\left(2c^2x^2-4\log\left(1-e^{2i\sin^{-1}(cx)}\right)-1\right)+2ib\mathrm{Li}_2\left(e^{2i\sin^{-1}(cx)}\right)+\cdots\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)*(a + b*ArcSin[c*x]))/x,x]
```

```
[Out] -1/4*(d*(2*a*c^2*x^2 + b*c*x*Sqrt[1 - c^2*x^2] + (2*I)*b*ArcSin[c*x]^2 + b*
ArcSin[c*x]*(-1 + 2*c^2*x^2 - 4*Log[1 - E^((2*I)*ArcSin[c*x])]) - 4*a*Log[x
] + (2*I)*b*PolyLog[2, E^((2*I)*ArcSin[c*x])]))
```

fricas [F] time = 0.64, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{ac^2dx^2-ad+\left(bc^2dx^2-bd\right)\arcsin(cx)}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))/x,x, algorithm="fricas")
[Out] integral(-(a*c^2*d*x^2 - a*d + (b*c^2*d*x^2 - b*d)*arcsin(c*x))/x, x)
```

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

$$\int -\frac{\left(c^2dx^2 - d\right)(b \arcsin(cx) + a)}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))/x,x, algorithm="giac")
[Out] integrate(-(c^2*d*x^2 - d)*(b*arcsin(c*x) + a)/x, x)
```

maple [A] time = 0.24, size = 164, normalized size = 1.36

$$-\frac{da\,c^2x^2}{2}+da\ln(cx)-\frac{ibd\arcsin(cx)^2}{2}+db\arcsin(cx)\ln\left(1+icx+\sqrt{-c^2x^2+1}\right)+db\arcsin(cx)\ln\left(1-icx-\sqrt{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)*(a+b*arcsin(c*x))/x,x)
[Out] -1/2*d*a*c^2*x^2+d*a*ln(c*x)-1/2*I*b*d*arcsin(c*x)^2+d*b*arcsin(c*x)*ln(1+I
*c*x+(-c^2*x^2+1)^(1/2))+d*b*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))-I*d
*b*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))-I*d*b*polylog(2,I*c*x+(-c^2*x^2+1)^
(1/2))+1/4*d*b*cos(2*arcsin(c*x))*arcsin(c*x)-1/8*d*b*sin(2*arcsin(c*x))
```

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

$$-\frac{1}{2}\,ac^2dx^2 + ad\log(x) - \int \frac{\left(bc^2dx^2 - bd\right)\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))/x,x, algorithm="maxima")
[Out] -1/2*a*c^2*d*x^2 + a*d*log(x) - integrate((b*c^2*d*x^2 - b*d)*arctan2(c*x,
sqrt(c*x + 1)*sqrt(-c*x + 1))/x, x)
```

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

$$\int \frac{(a + b\,\mathrm{asin}(c\,x))\,\left(d - c^2\,d\,x^2\right)}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2))/x,x)
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2))/x, x)
```

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

$$-d\left(\int\left(-\frac{a}{x}\right)dx + \int ac^2x\,dx + \int\left(-\frac{b\,\mathrm{asin}(cx)}{x}\right)dx + \int bc^2x\,\mathrm{asin}(cx)\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)*(a+b*asin(c*x))/x,x)
[Out] -d*(Integral(-a/x, x) + Integral(a*c**2*x, x) + Integral(-b*asin(c*x)/x, x)
 + Integral(b*c**2*x*asin(c*x), x))
```

3.7 $\int \frac{(d-c^2dx^2)(a+b\sin^{-1}(cx))}{x^2}\,dx$

Optimal. Leaf size=69

$$c^2(-d)x\left(a+b\sin^{-1}(cx)\right)-\frac{d\left(a+b\sin^{-1}(cx)\right)}{x}-bcd\sqrt{1-c^2x^2}-bcd\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)$$

```
[Out] -d*(a+b*arcsin(c*x))/x-c^2*d*x*(a+b*arcsin(c*x))-b*c*d*arctanh((-c^2*x^2+1)
^(1/2))-b*c*d*(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 7, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.304, Rules used = {14, 4687, 12, 446, 80, 63, 208}

$$c^2(-d)x\left(a+b\sin^{-1}(cx)\right)-\frac{d\left(a+b\sin^{-1}(cx)\right)}{x}-bcd\sqrt{1-c^2x^2}-bcd\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)*(a + b*ArcSin[c*x]))/x^2,x]
```

```
[Out] -(b*c*d*Sqrt[1 - c^2*x^2]) - (d*(a + b*ArcSin[c*x]))/x - c^2*d*x*(a + b*Arc
Sin[c*x]) - b*c*d*ArcTanh[Sqrt[1 - c^2*x^2]]
```

Rule 12

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

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 446

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p
```

```
*(c + d*x)^q, x], x, x^n], x] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[
b*c - a*d, 0] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)\left(a+b\sin^{-1}(cx)\right)}{x^2}\,dx = -\frac{d\left(a+b\sin^{-1}(cx)\right)}{x} - c^2dx\left(a+b\sin^{-1}(cx)\right) - (bc)\int \frac{d\left(-1-c^2x^2\right)}{x\sqrt{1-c^2x^2}}\,dx$$

$$= -\frac{d\left(a+b\sin^{-1}(cx)\right)}{x} - c^2dx\left(a+b\sin^{-1}(cx)\right) - (bcd)\int \frac{-1-c^2x^2}{x\sqrt{1-c^2x^2}}\,dx$$

$$= -\frac{d\left(a+b\sin^{-1}(cx)\right)}{x} - c^2dx\left(a+b\sin^{-1}(cx)\right) - \frac{1}{2}(bcd)\,\text{Subst}\left(\int \frac{-1-}{x\sqrt{1-}}\right.$$

$$= -bcd\sqrt{1-c^2x^2} - \frac{d\left(a+b\sin^{-1}(cx)\right)}{x} - c^2dx\left(a+b\sin^{-1}(cx)\right) + \frac{1}{2}(bcd)\,\text{S}$$

$$= -bcd\sqrt{1-c^2x^2} - \frac{d\left(a+b\sin^{-1}(cx)\right)}{x} - c^2dx\left(a+b\sin^{-1}(cx)\right) - \frac{(bd)\,\text{Sub}}{}$$

$$= -bcd\sqrt{1-c^2x^2} - \frac{d\left(a+b\sin^{-1}(cx)\right)}{x} - c^2dx\left(a+b\sin^{-1}(cx)\right) - bcd\tanh$$

Mathematica [A] time = 0.05, size = 78, normalized size = 1.13

$$-ac^2dx - \frac{ad}{x} - bcd\sqrt{1-c^2x^2} - bcd\tanh^{-1}\left(\sqrt{1-c^2x^2}\right) - bc^2dx\sin^{-1}(cx) - \frac{bd\sin^{-1}(cx)}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d - c^2*d*x^2)*(a + b*ArcSin[c*x]))/x^2,x]
```

```
[Out] -((a*d)/x) - a*c^2*d*x - b*c*d*Sqrt[1 - c^2*x^2] - (b*d*ArcSin[c*x])/x - b*
c^2*d*x*ArcSin[c*x] - b*c*d*ArcTanh[Sqrt[1 - c^2*x^2]]
```

fricas [A] time = 0.53, size = 98, normalized size = 1.42

$$-\frac{2\,ac^2dx^2 + bcdx\log\left(\sqrt{-c^2x^2+1}+1\right) - bcdx\log\left(\sqrt{-c^2x^2+1}-1\right) + 2\sqrt{-c^2x^2+1}\,bcdx + 2\,ad + 2\left(bc^2dx^2\right.}{2\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))/x^2,x, algorithm="fricas")
```

```
[Out] -1/2*(2*a*c^2*d*x^2 + b*c*d*x*log(sqrt(-c^2*x^2 + 1) + 1) - b*c*d*x*log(sqr
t(-c^2*x^2 + 1) - 1) + 2*sqrt(-c^2*x^2 + 1)*b*c*d*x + 2*a*d + 2*(b*c^2*d*x^
2 + b*d)*arcsin(c*x))/x
```

giac [B] time = 1.48, size = 856, normalized size = 12.41

$$-\frac{bc^5dx^4\arcsin(cx)}{2\left(\frac{c^3x^3}{\left(\sqrt{-c^2x^2+1}+1\right)^3}+\frac{cx}{\sqrt{-c^2x^2+1}+1}\right)\left(\sqrt{-c^2x^2+1}+1\right)^4}-\frac{ac^5dx^4}{2\left(\frac{c^3x^3}{\left(\sqrt{-c^2x^2+1}+1\right)^3}+\frac{cx}{\sqrt{-c^2x^2+1}+1}\right)\left(\sqrt{-c^2x^2+1}+1\right)^4}+\ldots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))/x^2,x, algorithm="giac")
```

```
[Out] -1/2*b*c^5*d*x^4*arcsin(c*x)/((c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sq
rt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^4) - 1/2*a*c^5*d*x^4/((c^3*
x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x
^2 + 1) + 1)^4) + b*c^4*d*x^3*log(abs(c)*abs(x))/((c^3*x^3/(sqrt(-c^2*x^2 +
 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^3) - b*
c^4*d*x^3*log(sqrt(-c^2*x^2 + 1) + 1)/((c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3
+ c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^3) + b*c^4*d*x^3/(
(c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-
c^2*x^2 + 1) + 1)^3) - 3*b*c^3*d*x^2*arcsin(c*x)/((c^3*x^3/(sqrt(-c^2*x^2 +
 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^2) - 3*
a*c^3*d*x^2/((c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1)
+ 1))*(sqrt(-c^2*x^2 + 1) + 1)^2) + b*c^2*d*x*log(abs(c)*abs(x))/((c^3*x^3/
(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 +
 1) + 1)) - b*c^2*d*x*log(sqrt(-c^2*x^2 + 1) + 1)/((c^3*x^3/(sqrt(-c^2*x^2
+ 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)) - b*c
^2*d*x/((c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))
*(sqrt(-c^2*x^2 + 1) + 1)) - 1/2*b*c*d*arcsin(c*x)/(c^3*x^3/(sqrt(-c^2*x^2
+ 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1)) - 1/2*a*c*d/(c^3*x^3/(sqrt(-c^2
*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))
```

maple [A] time = 0.01, size = 67, normalized size = 0.97

$$c\left(-da\left(cx+\frac{1}{cx}\right)-db\left(cx\arcsin(cx)+\frac{\arcsin(cx)}{cx}+\sqrt{-c^2x^2+1}+\operatorname{arctanh}\left(\frac{1}{\sqrt{-c^2x^2+1}}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)*(a+b*arcsin(c*x))/x^2,x)
```

```
[Out] c*(-d*a*(c*x+1/c/x)-d*b*(c*x*arcsin(c*x)+1/c/x*arcsin(c*x)+(-c^2*x^2+1)^(1/
2)+arctanh(1/(-c^2*x^2+1)^(1/2))))
```

maxima [A] time = 0.51, size = 82, normalized size = 1.19

$$-ac^2dx-\left(cx\arcsin(cx)+\sqrt{-c^2x^2+1}\right)bcd-\left(c\log\left(\frac{2\sqrt{-c^2x^2+1}}{|x|}+\frac{2}{|x|}\right)+\frac{\arcsin(cx)}{x}\right)bd-\frac{ad}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))/x^2,x, algorithm="maxima")
```

```
[Out] -a*c^2*d*x - (c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*b*c*d - (c*log(2*sqrt(-
c^2*x^2 + 1)/abs(x) + 2/abs(x)) + arcsin(c*x)/x)*b*d - a*d/x
```

mupad [B] time = 0.23, size = 71, normalized size = 1.03

$$-\frac{a\,d\,\left(c^2\,x^2+1\right)}{x}-b\,c\,d\,\left(\sqrt{1-c^2\,x^2}+c\,x\,\mathrm{asin}\left(c\,x\right)\right)-\frac{b\,d\,\mathrm{asin}\left(c\,x\right)}{x}-b\,c\,d\,\mathrm{atanh}\left(\frac{1}{\sqrt{1-c^2\,x^2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2))/x^2,x)
```

```
[Out] - (a*d*(c^2*x^2 + 1))/x - b*c*d*((1 - c^2*x^2)^(1/2) + c*x*asin(c*x)) - (b*
d*asin(c*x))/x - b*c*d*atanh(1/(1 - c^2*x^2)^(1/2))
```

sympy [A] time = 4.09, size = 82, normalized size = 1.19

$$-ac^2dx - \frac{ad}{x} - bc^2d\left(\begin{cases} 0 & \text{for}\ c = 0 \\ x\,\mathrm{asin}\,(cx) + \frac{\sqrt{-c^2x^2+1}}{c} & \text{otherwise} \end{cases}\right) + bcd\left(\begin{cases} -\,\mathrm{acosh}\left(\frac{1}{cx}\right) & \text{for}\ \frac{1}{|c^2x^2|} > 1 \\ i\,\mathrm{asin}\left(\frac{1}{cx}\right) & \text{otherwise} \end{cases}\right) - \frac{bd\,\mathrm{asin}\,(cx)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)*(a+b*asin(c*x))/x**2,x)
```

```
[Out] -a*c**2*d*x - a*d/x - b*c**2*d*Piecewise((0, Eq(c, 0)), (x*asin(c*x) + sqrt
(-c**2*x**2 + 1)/c, True)) + b*c*d*Piecewise((-acosh(1/(c*x)), 1/Abs(c**2*x
**2) > 1), (I*asin(1/(c*x)), True)) - b*d*asin(c*x)/x
```

3.8 $\int \frac{(d-c^2dx^2)(a+b\sin^{-1}(cx))}{x^3}\,dx$

Optimal. Leaf size=139

$$-\frac{d(1-c^2x^2)(a+b\sin^{-1}(cx))}{2x^2}+\frac{ic^2d(a+b\sin^{-1}(cx))^2}{2b}-c^2d\log\left(1-e^{2i\sin^{-1}(cx)}\right)(a+b\sin^{-1}(cx))+\frac{1}{2}ibc^2d\mathrm{Li}_2\left(e^{2i\right.$$

```
[Out] -1/2*b*c^2*d*arcsin(c*x)-1/2*d*(-c^2*x^2+1)*(a+b*arcsin(c*x))/x^2+1/2*I*c^2
*d*(a+b*arcsin(c*x))^2/b-c^2*d*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(
1/2))^2)+1/2*I*b*c^2*d*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)-1/2*b*c*d*(-
c^2*x^2+1)^(1/2)/x
```

Rubi [A] time = 0.12, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.348, Rules used = {4685, 277, 216, 4625, 3717, 2190, 2279, 2391}

$$\frac{1}{2}ibc^2d\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)-\frac{d(1-c^2x^2)(a+b\sin^{-1}(cx))}{2x^2}+\frac{ic^2d(a+b\sin^{-1}(cx))^2}{2b}-c^2d\log\left(1-e^{2i\sin^{-1}(cx)}\right)(a$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)*(a + b*ArcSin[c*x]))/x^3,x]
```

```
[Out] -(b*c*d*Sqrt[1 - c^2*x^2])/(2*x) - (b*c^2*d*ArcSin[c*x])/2 - (d*(1 - c^2*x^
2)*(a + b*ArcSin[c*x]))/(2*x^2) + ((I/2)*c^2*d*(a + b*ArcSin[c*x])^2)/b - c
^2*d*(a + b*ArcSin[c*x])*Log[1 - E^((2*I)*ArcSin[c*x])] + (I/2)*b*c^2*d*Pol
yLog[2, E^((2*I)*ArcSin[c*x])]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 277

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c
*x)^(m + 1)*(a + b*x^n)^p)/(c*(m + 1)), x] - Dist[(b*n*p)/(c^n*(m + 1)), In
t[(c*x)^(m + n)*(a + b*x^n)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[
n, 0] && GtQ[p, 0] && LtQ[m, -1] &&  !ILtQ[(m + n*p + n + 1)/n, 0] && IntBi
nomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4685

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcSin[c*x
]))/(f*(m + 1)), x] + (-Dist[(b*c*d^p)/(f*(m + 1)), Int[(f*x)^(m + 1)*(1 -
c^2*x^2)^(p - 1/2), x], x] - Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m + 2)*
(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x]), x], x]) /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0] && ILtQ[(m + 1)/2, 0]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)\left(a+b\sin^{-1}(cx)\right)}{x^3}\,dx = -\frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{2x^2}+\frac{1}{2}(bcd)\int \frac{\sqrt{1-c^2x^2}}{x^2}\,dx-\left(c^2d\right)\int \frac{a+}{}$$

$$= -\frac{bcd\sqrt{1-c^2x^2}}{2x}-\frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{2x^2}-\left(c^2d\right)\text{Subst}\left(\int (a+b$$

$$= -\frac{bcd\sqrt{1-c^2x^2}}{2x}-\frac{1}{2}bc^2d\sin^{-1}(cx)-\frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{2x^2}+\frac{ic^2}{}$$

$$= -\frac{bcd\sqrt{1-c^2x^2}}{2x}-\frac{1}{2}bc^2d\sin^{-1}(cx)-\frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{2x^2}+\frac{ic^2}{}$$

$$= -\frac{bcd\sqrt{1-c^2x^2}}{2x}-\frac{1}{2}bc^2d\sin^{-1}(cx)-\frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{2x^2}+\frac{ic^2}{}$$

$$= -\frac{bcd\sqrt{1-c^2x^2}}{2x}-\frac{1}{2}bc^2d\sin^{-1}(cx)-\frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{2x^2}+\frac{ic^2}{}$$

Mathematica [A] time = 0.12, size = 110, normalized size = 0.79

$$-\frac{d\left(2ac^2x^2\log(x)+a-ibc^2x^2\text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right)+bcx\sqrt{1-c^2x^2}-ibc^2x^2\sin^{-1}(cx)^2+b\sin^{-1}(cx)\left(1+2c^2x^2\log\right.\right.}{2x^2}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)*(a + b*ArcSin[c*x]))/x^3,x]
```

```
[Out] -1/2*(d*(a + b*c*x*Sqrt[1 - c^2*x^2] - I*b*c^2*x^2*ArcSin[c*x]^2 + b*ArcSin
[c*x]*(1 + 2*c^2*x^2*Log[1 - E^((2*I)*ArcSin[c*x])]) + 2*a*c^2*x^2*Log[x] -
 I*b*c^2*x^2*PolyLog[2, E^((2*I)*ArcSin[c*x])]))/x^2
```

fricas [F] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{ac^2dx^2-ad+\left(bc^2dx^2-bd\right)\arcsin\left(cx\right)}{x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))/x^3,x, algorithm="fricas")
```

```
[Out] integral(-(a*c^2*d*x^2 - a*d + (b*c^2*d*x^2 - b*d)*arcsin(c*x))/x^3, x)
```

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

$$\int -\frac{\left(c^2dx^2 - d\right)(b\arcsin(cx) + a)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))/x^3,x, algorithm="giac")
```

```
[Out] integrate(-(c^2*d*x^2 - d)*(b*arcsin(c*x) + a)/x^3, x)
```

maple [A] time = 0.41, size = 195, normalized size = 1.40

$$-c^2da\ln(cx) - \frac{da}{2x^2} + \frac{ic^2db\arcsin(cx)^2}{2} + \frac{ic^2db}{2} - \frac{bcd\sqrt{-c^2x^2+1}}{2x} - \frac{db\arcsin(cx)}{2x^2} - c^2db\arcsin(cx)\ln\left(1 + icx + \sqrt{-}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)*(a+b*arcsin(c*x))/x^3,x)
```

```
[Out] -c^2*d*a*ln(c*x)-1/2*d*a/x^2+1/2*I*c^2*d*b*arcsin(c*x)^2+1/2*I*c^2*d*b-1/2*
b*c*d*(-c^2*x^2+1)^(1/2)/x-1/2*d*b*arcsin(c*x)/x^2-c^2*d*b*arcsin(c*x)*ln(1
+I*c*x+(-c^2*x^2+1)^(1/2))-c^2*d*b*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2
))+I*c^2*d*b*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))+I*c^2*d*b*polylog(2,I*c*x
+(-c^2*x^2+1)^(1/2))
```

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

$$-bc^2d\int \frac{\arctan\left(cx, \sqrt{cx+1}\sqrt{-cx+1}\right)}{x}\,dx - ac^2d\log(x) - \frac{1}{2}bd\left(\frac{\sqrt{-c^2x^2+1}\,c}{x} + \frac{\arcsin(cx)}{x^2}\right) - \frac{ad}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))/x^3,x, algorithm="maxima")
```

```
[Out] -b*c^2*d*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/x, x) - a*c^2
*d*log(x) - 1/2*b*d*(sqrt(-c^2*x^2 + 1)*c/x + arcsin(c*x)/x^2) - 1/2*a*d/x^
2
```

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

$$\int \frac{(a + b\,\mathrm{asin}(c\,x))\,\left(d - c^2\,d\,x^2\right)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2))/x^3,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2))/x^3, x)
```

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

$$-d\left(\int \left(-\frac{a}{x^3}\right)dx + \int \frac{ac^2}{x}\,dx + \int \left(-\frac{b\,\mathrm{asin}(cx)}{x^3}\right)dx + \int \frac{bc^2\,\mathrm{asin}(cx)}{x}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)*(a+b*asin(c*x))/x**3,x)
```

```
[Out] -d*(Integral(-a/x**3, x) + Integral(a*c**2/x, x) + Integral(-b*asin(c*x)/x*
*3, x) + Integral(b*c**2*asin(c*x)/x, x))
```

3.9 $\int \frac{(d-c^2dx^2)(a+b\sin^{-1}(cx))}{x^4} dx$

Optimal. Leaf size=81

$$\frac{c^2d(a+b\sin^{-1}(cx))}{x} - \frac{d(a+b\sin^{-1}(cx))}{3x^3} - \frac{bcd\sqrt{1-c^2x^2}}{6x^2} + \frac{5}{6}bc^3d\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)$$

```
[Out] -1/3*d*(a+b*arcsin(c*x))/x^3+c^2*d*(a+b*arcsin(c*x))/x+5/6*b*c^3*d*arctanh(
(-c^2*x^2+1)^(1/2))-1/6*b*c*d*(-c^2*x^2+1)^(1/2)/x^2
```

Rubi [A] time = 0.09, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 7, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.304, Rules used = {14, 4687, 12, 446, 78, 63, 208}

$$\frac{c^2d(a+b\sin^{-1}(cx))}{x} - \frac{d(a+b\sin^{-1}(cx))}{3x^3} - \frac{bcd\sqrt{1-c^2x^2}}{6x^2} + \frac{5}{6}bc^3d\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)*(a + b*ArcSin[c*x]))/x^4,x]
```

```
[Out] -(b*c*d*Sqrt[1 - c^2*x^2])/(6*x^2) - (d*(a + b*ArcSin[c*x]))/(3*x^3) + (c^2
*d*(a + b*ArcSin[c*x]))/x + (5*b*c^3*d*ArcTanh[Sqrt[1 - c^2*x^2]])/6
```

Rule 12

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

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 446

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p
*(c + d*x)^q, x], x, x^n], x] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[
b*c - a*d, 0] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\left(d-c^2dx^2\right)\left(a+b\sin^{-1}(cx)\right)}{x^4}\,dx &= -\frac{d\left(a+b\sin^{-1}(cx)\right)}{3x^3}+\frac{c^2d\left(a+b\sin^{-1}(cx)\right)}{x}-(bc)\int \frac{d\left(-1+3c^2x^2\right)}{3x^3\sqrt{1-c^2x^2}}\,dx\\ &= -\frac{d\left(a+b\sin^{-1}(cx)\right)}{3x^3}+\frac{c^2d\left(a+b\sin^{-1}(cx)\right)}{x}-\frac{1}{3}(bcd)\int \frac{-1+3c^2x^2}{x^3\sqrt{1-c^2x^2}}\,dx\\ &= -\frac{d\left(a+b\sin^{-1}(cx)\right)}{3x^3}+\frac{c^2d\left(a+b\sin^{-1}(cx)\right)}{x}-\frac{1}{6}(bcd)\,\text{Subst}\left(\int \frac{-1+3c^2x}{x^2\sqrt{1-c^2x}}\right.\\ &= -\frac{bcd\sqrt{1-c^2x^2}}{6x^2}-\frac{d\left(a+b\sin^{-1}(cx)\right)}{3x^3}+\frac{c^2d\left(a+b\sin^{-1}(cx)\right)}{x}-\frac{1}{12}\left(5bc^3d\right)\\ &= -\frac{bcd\sqrt{1-c^2x^2}}{6x^2}-\frac{d\left(a+b\sin^{-1}(cx)\right)}{3x^3}+\frac{c^2d\left(a+b\sin^{-1}(cx)\right)}{x}+\frac{1}{6}(5bcd)\,\text{Su}\\ &= -\frac{bcd\sqrt{1-c^2x^2}}{6x^2}-\frac{d\left(a+b\sin^{-1}(cx)\right)}{3x^3}+\frac{c^2d\left(a+b\sin^{-1}(cx)\right)}{x}+\frac{5}{6}bc^3d\tanh\end{aligned}$$

Mathematica [A] time = 0.06, size = 93, normalized size = 1.15

$$\frac{ac^2d}{x}-\frac{ad}{3x^3}-\frac{bcd\sqrt{1-c^2x^2}}{6x^2}+\frac{bc^2d\sin^{-1}(cx)}{x}+\frac{5}{6}bc^3d\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)-\frac{bd\sin^{-1}(cx)}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d - c^2*d*x^2)*(a + b*ArcSin[c*x]))/x^4,x]
```

```
[Out] -1/3*(a*d)/x^3 + (a*c^2*d)/x - (b*c*d*Sqrt[1 - c^2*x^2])/(6*x^2) - (b*d*Arc
Sin[c*x])/(3*x^3) + (b*c^2*d*ArcSin[c*x])/x + (5*b*c^3*d*ArcTanh[Sqrt[1 - c
^2*x^2]])/6
```

fricas [A] time = 1.02, size = 109, normalized size = 1.35

$$\frac{5\,bc^3dx^3\log\left(\sqrt{-c^2x^2+1}\,+1\right)-5\,bc^3dx^3\log\left(\sqrt{-c^2x^2+1}\,-1\right)+12\,ac^2dx^2-2\,\sqrt{-c^2x^2+1}\,bcdx-4\,ad+4\left(3\,bc\right.}{12\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))/x^4,x, algorithm="fricas")
```

```
[Out] 1/12*(5*b*c^3*d*x^3*log(sqrt(-c^2*x^2 + 1) + 1) - 5*b*c^3*d*x^3*log(sqrt(-c
^2*x^2 + 1) - 1) + 12*a*c^2*d*x^2 - 2*sqrt(-c^2*x^2 + 1)*b*c*d*x - 4*a*d +
4*(3*b*c^2*d*x^2 - b*d)*arcsin(c*x))/x^3
```

giac [B] time = 6.09, size = 296, normalized size = 3.65

$$-\frac{bc^6dx^3\arcsin(cx)}{24\left(\sqrt{-c^2x^2+1}+1\right)^3}-\frac{ac^6dx^3}{24\left(\sqrt{-c^2x^2+1}+1\right)^3}+\frac{bc^5dx^2}{24\left(\sqrt{-c^2x^2+1}+1\right)^2}+\frac{3\,bc^4dx\arcsin(cx)}{8\left(\sqrt{-c^2x^2+1}+1\right)}+\frac{3\,ac^4dx}{8\left(\sqrt{-c^2x^2+1}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))/x^4,x, algorithm="giac")
```

```
[Out] -1/24*b*c^6*d*x^3*arcsin(c*x)/(sqrt(-c^2*x^2 + 1) + 1)^3 - 1/24*a*c^6*d*x^3
/(sqrt(-c^2*x^2 + 1) + 1)^3 + 1/24*b*c^5*d*x^2/(sqrt(-c^2*x^2 + 1) + 1)^2 +
 3/8*b*c^4*d*x*arcsin(c*x)/(sqrt(-c^2*x^2 + 1) + 1) + 3/8*a*c^4*d*x/(sqrt(-
c^2*x^2 + 1) + 1) - 5/6*b*c^3*d*log(abs(c)*abs(x)) + 5/6*b*c^3*d*log(sqrt(-
c^2*x^2 + 1) + 1) + 3/8*b*c^2*d*(sqrt(-c^2*x^2 + 1) + 1)*arcsin(c*x)/x + 3/
8*a*c^2*d*(sqrt(-c^2*x^2 + 1) + 1)/x - 1/24*b*c*d*(sqrt(-c^2*x^2 + 1) + 1)^
2/x^2 - 1/24*b*d*(sqrt(-c^2*x^2 + 1) + 1)^3*arcsin(c*x)/x^3 - 1/24*a*d*(sqr
t(-c^2*x^2 + 1) + 1)^3/x^3
```

maple [A] time = 0.01, size = 91, normalized size = 1.12

$$c^3\left(-da\left(\frac{1}{3c^3x^3}-\frac{1}{cx}\right)-db\left(\frac{\arcsin(cx)}{3c^3x^3}-\frac{\arcsin(cx)}{cx}-\frac{5\,\operatorname{arctanh}\left(\frac{1}{\sqrt{-c^2x^2+1}}\right)}{6}+\frac{\sqrt{-c^2x^2+1}}{6c^2x^2}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)*(a+b*arcsin(c*x))/x^4,x)
```

```
[Out] c^3*(-d*a*(1/3/c^3/x^3-1/c/x)-d*b*(1/3*arcsin(c*x)/c^3/x^3-1/c/x*arcsin(c*x
)-5/6*arctanh(1/(-c^2*x^2+1)^(1/2))+1/6/c^2/x^2*(-c^2*x^2+1)^(1/2)))
```

maxima [A] time = 0.75, size = 123, normalized size = 1.52

$$\left(c\log\left(\frac{2\sqrt{-c^2x^2+1}}{|x|}+\frac{2}{|x|}\right)+\frac{\arcsin(cx)}{x}\right)bc^2d-\frac{1}{6}\left(\left(c^2\log\left(\frac{2\sqrt{-c^2x^2+1}}{|x|}+\frac{2}{|x|}\right)+\frac{\sqrt{-c^2x^2+1}}{x^2}\right)c+\frac{2\,\operatorname{arcsi}}{x^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))/x^4,x, algorithm="maxima")
```

```
[Out] (c*log(2*sqrt(-c^2*x^2 + 1)/abs(x) + 2/abs(x)) + arcsin(c*x)/x)*b*c^2*d - 1
/6*((c^2*log(2*sqrt(-c^2*x^2 + 1)/abs(x) + 2/abs(x)) + sqrt(-c^2*x^2 + 1)/x
^2)*c + 2*arcsin(c*x)/x^3)*b*d + a*c^2*d/x - 1/3*a*d/x^3
```

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

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))\,\left(d-c^2\,d\,x^2\right)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2))/x^4,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2))/x^4, x)
```

sympy [A] time = 5.01, size = 178, normalized size = 2.20

$$\frac{ac^2d}{x}-\frac{ad}{3x^3}-bc^3d\left(\begin{cases}-\operatorname{acosh}\left(\frac{1}{cx}\right) & \text{for } \frac{1}{|c^2x^2|}>1\\ i\operatorname{asin}\left(\frac{1}{cx}\right) & \text{otherwise}\end{cases}\right)+\frac{bc^2d\operatorname{asin}(cx)}{x}+\frac{bcd\left(\begin{cases}-\frac{c^2\operatorname{acosh}\left(\frac{1}{cx}\right)}{2}-\frac{c\sqrt{-1+\frac{1}{c^2x^2}}}{2x} & \text{f}\\ \frac{ic^2\operatorname{asin}\left(\frac{1}{cx}\right)}{2}-\frac{ic}{2x\sqrt{1-\frac{1}{c^2x^2}}}+\frac{i}{2cx^3\sqrt{1-\frac{1}{c^2x^2}}} & \text{o}\end{cases}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)*(a+b*asin(c*x))/x**4,x)
```

```
[Out] a*c**2*d/x - a*d/(3*x**3) - b*c**3*d*Piecewise((-acosh(1/(c*x)), 1/Abs(c**2
*x**2) > 1), (I*asin(1/(c*x)), True)) + b*c**2*d*asin(c*x)/x + b*c*d*Piecew
ise((-c**2*acosh(1/(c*x))/2 - c*sqrt(-1 + 1/(c**2*x**2))/(2*x), 1/Abs(c**2*
x**2) > 1), (I*c**2*asin(1/(c*x))/2 - I*c/(2*x*sqrt(1 - 1/(c**2*x**2))) + I
/(2*c*x**3*sqrt(1 - 1/(c**2*x**2))), True))/3 - b*d*asin(c*x)/(3*x**3)
```

3.10 $\int x^4 \left(d-c^2 d x^2\right)^2 \left(a+b \sin^{-1}(cx)\right) dx$

Optimal. Leaf size=186

$$\frac{1}{9}c^4d^2x^9\left(a+b\sin^{-1}(cx)\right)-\frac{2}{7}c^2d^2x^7\left(a+b\sin^{-1}(cx)\right)+\frac{1}{5}d^2x^5\left(a+b\sin^{-1}(cx)\right)+\frac{bd^2\left(1-c^2x^2\right)^{9/2}}{81c^5}-\frac{10bd^2\left(1-c\right.}{441c^5}$$

```
[Out] 4/945*b*d^2*(-c^2*x^2+1)^(3/2)/c^5+1/525*b*d^2*(-c^2*x^2+1)^(5/2)/c^5-10/44
1*b*d^2*(-c^2*x^2+1)^(7/2)/c^5+1/81*b*d^2*(-c^2*x^2+1)^(9/2)/c^5+1/5*d^2*x^
5*(a+b*arcsin(c*x))-2/7*c^2*d^2*x^7*(a+b*arcsin(c*x))+1/9*c^4*d^2*x^9*(a+b*
arcsin(c*x))+8/315*b*d^2*(-c^2*x^2+1)^(1/2)/c^5
```

Rubi [A] time = 0.21, antiderivative size = 186, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {270, 4687, 12, 1251, 897, 1153}

$$\frac{1}{9}c^4d^2x^9\left(a+b\sin^{-1}(cx)\right)-\frac{2}{7}c^2d^2x^7\left(a+b\sin^{-1}(cx)\right)+\frac{1}{5}d^2x^5\left(a+b\sin^{-1}(cx)\right)+\frac{bd^2\left(1-c^2x^2\right)^{9/2}}{81c^5}-\frac{10bd^2\left(1-c\right.}{441c^5}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x]),x]
```

```
[Out] (8*b*d^2*Sqrt[1 - c^2*x^2])/(315*c^5) + (4*b*d^2*(1 - c^2*x^2)^(3/2))/(945*
c^5) + (b*d^2*(1 - c^2*x^2)^(5/2))/(525*c^5) - (10*b*d^2*(1 - c^2*x^2)^(7/2
))/(441*c^5) + (b*d^2*(1 - c^2*x^2)^(9/2))/(81*c^5) + (d^2*x^5*(a + b*ArcSi
n[c*x]))/5 - (2*c^2*d^2*x^7*(a + b*ArcSin[c*x]))/7 + (c^4*d^2*x^9*(a + b*Ar
cSin[c*x]))/9
```

Rule 12

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

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 897

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_.) + (b_.)*(x_)
 + (c_.)*(x_)^2)^(p_.), x_Symbol] :> With[{q = Denominator[m]}, Dist[q/e, S
ubst[Int[x^(q*(m + 1) - 1)*((e*f - d*g)/e + (g*x^q)/e)^n*((c*d^2 - b*d*e +
a*e^2)/e^2 - ((2*c*d - b*e)*x^q)/e^2 + (c*x^(2*q))/e^2)^p, x], x, (d + e*x)
^(1/q)], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ
[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegersQ[n, p] && Fra
ctionQ[m]
```

Rule 1153

```
Int[((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.),
 x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^q*(a + b*x^2 + c*x^4)^p, x],
x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e
 + a*e^2, 0] && IGtQ[p, 0] && IGtQ[q, -2]
```

Rule 1251

```
Int[(x_)^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_
)^4)^(p_.), x_Symbol] :> Dist[1/2, Subst[Int[x^((m - 1)/2)*(d + e*x)^q*(a +
 b*x + c*x^2)^p, x], x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x] && Inte
gerQ[(m - 1)/2]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rubi steps

$$\int x^4 \left(d-c^2dx^2\right)^2 \left(a+b\sin^{-1}(cx)\right)\,dx = \frac{1}{5}d^2x^5\left(a+b\sin^{-1}(cx)\right)-\frac{2}{7}c^2d^2x^7\left(a+b\sin^{-1}(cx)\right)+\frac{1}{9}c^4d^2x^9\left(a+b\,\mathrm{si}\right.$$

$$= \frac{1}{5}d^2x^5\left(a+b\sin^{-1}(cx)\right)-\frac{2}{7}c^2d^2x^7\left(a+b\sin^{-1}(cx)\right)+\frac{1}{9}c^4d^2x^9\left(a+b\,\mathrm{si}\right.$$

$$= \frac{1}{5}d^2x^5\left(a+b\sin^{-1}(cx)\right)-\frac{2}{7}c^2d^2x^7\left(a+b\sin^{-1}(cx)\right)+\frac{1}{9}c^4d^2x^9\left(a+b\,\mathrm{si}\right.$$

$$= \frac{1}{5}d^2x^5\left(a+b\sin^{-1}(cx)\right)-\frac{2}{7}c^2d^2x^7\left(a+b\sin^{-1}(cx)\right)+\frac{1}{9}c^4d^2x^9\left(a+b\,\mathrm{si}\right.$$

$$= \frac{1}{5}d^2x^5\left(a+b\sin^{-1}(cx)\right)-\frac{2}{7}c^2d^2x^7\left(a+b\sin^{-1}(cx)\right)+\frac{1}{9}c^4d^2x^9\left(a+b\,\mathrm{si}\right.$$

$$= \frac{8bd^2\sqrt{1-c^2x^2}}{315c^5}+\frac{4bd^2\left(1-c^2x^2\right)^{3/2}}{945c^5}+\frac{bd^2\left(1-c^2x^2\right)^{5/2}}{525c^5}-\frac{10bd^2\left(1-c^2\right.}{441c^5}$$

Mathematica [A] time = 0.13, size = 119, normalized size = 0.64

$$\frac{d^2\left(315ac^5x^5\left(35c^4x^4-90c^2x^2+63\right)+315bc^5x^5\left(35c^4x^4-90c^2x^2+63\right)\sin^{-1}(cx)+b\sqrt{1-c^2x^2}\left(1225c^8x^8-265\right.\right.}{99225c^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d^2*(315*a*c^5*x^5*(63 - 90*c^2*x^2 + 35*c^4*x^4) + b*Sqrt[1 - c^2*x^2]*(2
104 + 1052*c^2*x^2 + 789*c^4*x^4 - 2650*c^6*x^6 + 1225*c^8*x^8) + 315*b*c^5
*x^5*(63 - 90*c^2*x^2 + 35*c^4*x^4)*ArcSin[c*x]))/(99225*c^5)
```

fricas [A] time = 0.53, size = 153, normalized size = 0.82

$$\frac{11025\,ac^9d^2x^9-28350\,ac^7d^2x^7+19845\,ac^5d^2x^5+315\left(35\,bc^9d^2x^9-90\,bc^7d^2x^7+63\,bc^5d^2x^5\right)\arcsin\left(cx\right)+\left(122\right.}{99225\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/99225*(11025*a*c^9*d^2*x^9 - 28350*a*c^7*d^2*x^7 + 19845*a*c^5*d^2*x^5 +
315*(35*b*c^9*d^2*x^9 - 90*b*c^7*d^2*x^7 + 63*b*c^5*d^2*x^5)*arcsin(c*x) +
```

```
(1225*b*c^8*d^2*x^8 - 2650*b*c^6*d^2*x^6 + 789*b*c^4*d^2*x^4 + 1052*b*c^2*d
^2*x^2 + 2104*b*d^2)*sqrt(-c^2*x^2 + 1))/c^5
```

giac [A] time = 0.65, size = 284, normalized size = 1.53

$$\frac{1}{9}\,ac^4d^2x^9-\frac{2}{7}\,ac^2d^2x^7+\frac{1}{5}\,ad^2x^5+\frac{\left(c^2x^2-1\right)^4bd^2x\arcsin\left(cx\right)}{9\,c^4}+\frac{10\left(c^2x^2-1\right)^3bd^2x\arcsin\left(cx\right)}{63\,c^4}+\frac{\left(c^2x^2-1\right)^2bd^2x}{105\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/9*a*c^4*d^2*x^9 - 2/7*a*c^2*d^2*x^7 + 1/5*a*d^2*x^5 + 1/9*(c^2*x^2 - 1)^4
*b*d^2*x*arcsin(c*x)/c^4 + 10/63*(c^2*x^2 - 1)^3*b*d^2*x*arcsin(c*x)/c^4 +
1/105*(c^2*x^2 - 1)^2*b*d^2*x*arcsin(c*x)/c^4 + 1/81*(c^2*x^2 - 1)^4*sqrt(-
c^2*x^2 + 1)*b*d^2/c^5 - 4/315*(c^2*x^2 - 1)*b*d^2*x*arcsin(c*x)/c^4 + 10/4
41*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*b*d^2/c^5 + 8/315*b*d^2*x*arcsin(c*x)
/c^4 + 1/525*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*d^2/c^5 + 4/945*(-c^2*x^2
 + 1)^(3/2)*b*d^2/c^5 + 8/315*sqrt(-c^2*x^2 + 1)*b*d^2/c^5
```

maple [A] time = 0.01, size = 172, normalized size = 0.92

$$\frac{d^2a\left(\frac{1}{9}c^9x^9-\frac{2}{7}c^7x^7+\frac{1}{5}c^5x^5\right)+d^2b\left(\frac{\arcsin(cx)c^9x^9}{9}-\frac{2\arcsin(cx)c^7x^7}{7}+\frac{\arcsin(cx)c^5x^5}{5}+\frac{c^8x^8\sqrt{-c^2x^2+1}}{81}-\frac{106c^6x^6\sqrt{-c^2x^2+1}}{3969}\right.}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c^5*(d^2*a*(1/9*c^9*x^9-2/7*c^7*x^7+1/5*c^5*x^5)+d^2*b*(1/9*arcsin(c*x)*c
^9*x^9-2/7*arcsin(c*x)*c^7*x^7+1/5*arcsin(c*x)*c^5*x^5+1/81*c^8*x^8*(-c^2*x
^2+1)^(1/2)-106/3969*c^6*x^6*(-c^2*x^2+1)^(1/2)+263/33075*c^4*x^4*(-c^2*x^2
+1)^(1/2)+1052/99225*c^2*x^2*(-c^2*x^2+1)^(1/2)+2104/99225*(-c^2*x^2+1)^(1/
2)))
```

maxima [B] time = 0.48, size = 328, normalized size = 1.76

$$\frac{1}{9}\,ac^4d^2x^9-\frac{2}{7}\,ac^2d^2x^7+\frac{1}{2835}\left(315\,x^9\arcsin\left(cx\right)+\left(\frac{35\sqrt{-c^2x^2+1}\,x^8}{c^2}+\frac{40\sqrt{-c^2x^2+1}\,x^6}{c^4}+\frac{48\sqrt{-c^2x^2+1}\,x^4}{c^6}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/9*a*c^4*d^2*x^9 - 2/7*a*c^2*d^2*x^7 + 1/2835*(315*x^9*arcsin(c*x) + (35*s
qrt(-c^2*x^2 + 1)*x^8/c^2 + 40*sqrt(-c^2*x^2 + 1)*x^6/c^4 + 48*sqrt(-c^2*x^
2 + 1)*x^4/c^6 + 64*sqrt(-c^2*x^2 + 1)*x^2/c^8 + 128*sqrt(-c^2*x^2 + 1)/c^1
0)*c)*b*c^4*d^2 + 1/5*a*d^2*x^5 - 2/245*(35*x^7*arcsin(c*x) + (5*sqrt(-c^2*
x^2 + 1)*x^6/c^2 + 6*sqrt(-c^2*x^2 + 1)*x^4/c^4 + 8*sqrt(-c^2*x^2 + 1)*x^2/
c^6 + 16*sqrt(-c^2*x^2 + 1)/c^8)*c)*b*c^2*d^2 + 1/75*(15*x^5*arcsin(c*x) +
(3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*
x^2 + 1)/c^6)*c)*b*d^2
```

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

$$\int x^4\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(d-c^2\,d\,x^2\right)}^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a + b*asin(c*x))*(d - c^2*d*x^2)^2,x)
```

[Out] int(x^4*(a + b*asin(c*x))*(d - c^2*d*x^2)^2, x)

sympy [A] time = 15.84, size = 230, normalized size = 1.24

$$\begin{cases} \frac{ac^4d^2x^9}{9} - \frac{2ac^2d^2x^7}{7} + \frac{ad^2x^5}{5} + \frac{bc^4d^2x^9\operatorname{asin}(cx)}{9} + \frac{bc^3d^2x^8\sqrt{-c^2x^2+1}}{81} - \frac{2bc^2d^2x^7\operatorname{asin}(cx)}{7} - \frac{106bcd^2x^6\sqrt{-c^2x^2+1}}{3969} + \frac{bd^2x^5\operatorname{asin}(cx)}{5} + 2 \\ \frac{ad^2x^5}{5} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(-c**2*d*x**2+d)**2*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*c**4*d**2*x**9/9 - 2*a*c**2*d**2*x**7/7 + a*d**2*x**5/5 + b*c*
*4*d**2*x**9*asin(c*x)/9 + b*c**3*d**2*x**8*sqrt(-c**2*x**2 + 1)/81 - 2*b*c
**2*d**2*x**7*asin(c*x)/7 - 106*b*c*d**2*x**6*sqrt(-c**2*x**2 + 1)/3969 + b
*d**2*x**5*asin(c*x)/5 + 263*b*d**2*x**4*sqrt(-c**2*x**2 + 1)/(33075*c) + 1
052*b*d**2*x**2*sqrt(-c**2*x**2 + 1)/(99225*c**3) + 2104*b*d**2*sqrt(-c**2*
x**2 + 1)/(99225*c**5), Ne(c, 0)), (a*d**2*x**5/5, True))
```

3.11 $\int x^3 \left(d-c^2 d x^2\right)^2 \left(a+b \sin^{-1}(cx)\right) dx$

Optimal. Leaf size=184

$$\frac{1}{8}c^4 d^2 x^8 \left(a+b\sin^{-1}(cx)\right)-\frac{1}{3}c^2 d^2 x^6 \left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}d^2 x^4 \left(a+b\sin^{-1}(cx)\right)-\frac{73bd^2\sin^{-1}(cx)}{3072c^4}-\frac{43bcd^2x^5\sqrt{1}}{1152}$$

```
[Out] -73/3072*b*d^2*arcsin(c*x)/c^4+1/4*d^2*x^4*(a+b*arcsin(c*x))-1/3*c^2*d^2*x^
6*(a+b*arcsin(c*x))+1/8*c^4*d^2*x^8*(a+b*arcsin(c*x))+73/3072*b*d^2*x*(-c^2
*x^2+1)^(1/2)/c^3+73/4608*b*d^2*x^3*(-c^2*x^2+1)^(1/2)/c-43/1152*b*c*d^2*x^
5*(-c^2*x^2+1)^(1/2)+1/64*b*c^3*d^2*x^7*(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 184, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.320, Rules used = {266, 43, 4687, 12, 1267, 459, 321, 216}

$$\frac{1}{8}c^4 d^2 x^8 \left(a+b\sin^{-1}(cx)\right)-\frac{1}{3}c^2 d^2 x^6 \left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}d^2 x^4 \left(a+b\sin^{-1}(cx)\right)+\frac{1}{64}bc^3d^2x^7\sqrt{1-c^2x^2}-\frac{43bcd^2x}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x]),x]
```

```
[Out] (73*b*d^2*x*Sqrt[1 - c^2*x^2])/(3072*c^3) + (73*b*d^2*x^3*Sqrt[1 - c^2*x^2]
)/(4608*c) - (43*b*c*d^2*x^5*Sqrt[1 - c^2*x^2])/1152 + (b*c^3*d^2*x^7*Sqrt[
1 - c^2*x^2])/64 - (73*b*d^2*ArcSin[c*x])/(3072*c^4) + (d^2*x^4*(a + b*ArcS
in[c*x]))/4 - (c^2*d^2*x^6*(a + b*ArcSin[c*x]))/3 + (c^4*d^2*x^8*(a + b*Arc
Sin[c*x]))/8
```

Rule 12

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

Rule 43

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

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 321

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

Rule 459

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

Rule 1267

```
Int[((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (
c_.)*(x_)^4)^(p_.), x_Symbol] :> Simp[(c^p*(f*x)^(m + 4*p - 1)*(d + e*x^2)^
(q + 1))/(e*f^(4*p - 1)*(m + 4*p + 2*q + 1)), x] + Dist[1/(e*(m + 4*p + 2*q
 + 1)), Int[(f*x)^m*(d + e*x^2)^q*ExpandToSum[e*(m + 4*p + 2*q + 1)*((a + b
*x^2 + c*x^4)^p - c^p*x^(4*p)) - d*c^p*(m + 4*p - 1)*x^(4*p - 2), x], x], x
] /; FreeQ[{a, b, c, d, e, f, m, q}, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[p, 0
] &&  !IntegerQ[q] && NeQ[m + 4*p + 2*q + 1, 0]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rubi steps

$$\int x^3\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)dx=\frac{1}{4}d^2x^4\left(a+b\sin^{-1}(cx)\right)-\frac{1}{3}c^2d^2x^6\left(a+b\sin^{-1}(cx)\right)+\frac{1}{8}c^4d^2x^8\left(a+b\,\mathrm{si}\right.$$

$$=\frac{1}{4}d^2x^4\left(a+b\sin^{-1}(cx)\right)-\frac{1}{3}c^2d^2x^6\left(a+b\sin^{-1}(cx)\right)+\frac{1}{8}c^4d^2x^8\left(a+b\,\mathrm{si}\right.$$

$$=\frac{1}{64}bc^3d^2x^7\sqrt{1-c^2x^2}+\frac{1}{4}d^2x^4\left(a+b\sin^{-1}(cx)\right)-\frac{1}{3}c^2d^2x^6\left(a+b\sin^{-1}(\right.$$

$$=-\frac{43bcd^2x^5\sqrt{1-c^2x^2}}{1152}+\frac{1}{64}bc^3d^2x^7\sqrt{1-c^2x^2}+\frac{1}{4}d^2x^4\left(a+b\sin^{-1}(cx)\right)$$

$$=\frac{73bd^2x^3\sqrt{1-c^2x^2}}{4608c}-\frac{43bcd^2x^5\sqrt{1-c^2x^2}}{1152}+\frac{1}{64}bc^3d^2x^7\sqrt{1-c^2x^2}+\frac{1}{4}d$$

$$=\frac{73bd^2x\sqrt{1-c^2x^2}}{3072c^3}+\frac{73bd^2x^3\sqrt{1-c^2x^2}}{4608c}-\frac{43bcd^2x^5\sqrt{1-c^2x^2}}{1152}+\frac{1}{64}bc^3$$

$$=\frac{73bd^2x\sqrt{1-c^2x^2}}{3072c^3}+\frac{73bd^2x^3\sqrt{1-c^2x^2}}{4608c}-\frac{43bcd^2x^5\sqrt{1-c^2x^2}}{1152}+\frac{1}{64}bc^3$$

Mathematica [A] time = 0.10, size = 115, normalized size = 0.62

$$\frac{d^2\left(384ac^4x^4\left(3c^4x^4-8c^2x^2+6\right)+3b\left(384c^8x^8-1024c^6x^6+768c^4x^4-73\right)\sin^{-1}(cx)+bcx\sqrt{1-c^2x^2}\left(144c^6x^6\right.\right.}{9216c^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d^2*(384*a*c^4*x^4*(6 - 8*c^2*x^2 + 3*c^4*x^4) + b*c*x*Sqrt[1 - c^2*x^2]*(
219 + 146*c^2*x^2 - 344*c^4*x^4 + 144*c^6*x^6) + 3*b*(-73 + 768*c^4*x^4 - 1
024*c^6*x^6 + 384*c^8*x^8)*ArcSin[c*x]))/(9216*c^4)
```

fricas [A] time = 0.96, size = 149, normalized size = 0.81

$$\frac{1152\,ac^8d^2x^8 - 3072\,ac^6d^2x^6 + 2304\,ac^4d^2x^4 + 3\left(384\,bc^8d^2x^8 - 1024\,bc^6d^2x^6 + 768\,bc^4d^2x^4 - 73\,bd^2\right)\arcsin}{9216\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/9216*(1152*a*c^8*d^2*x^8 - 3072*a*c^6*d^2*x^6 + 2304*a*c^4*d^2*x^4 + 3*(3
84*b*c^8*d^2*x^8 - 1024*b*c^6*d^2*x^6 + 768*b*c^4*d^2*x^4 - 73*b*d^2)*arcsi
n(c*x) + (144*b*c^7*d^2*x^7 - 344*b*c^5*d^2*x^5 + 146*b*c^3*d^2*x^3 + 219*b
*c*d^2*x)*sqrt(-c^2*x^2 + 1))/c^4
```

giac [A] time = 0.63, size = 205, normalized size = 1.11

$$\frac{1}{8}\,ac^4d^2x^8 - \frac{1}{3}\,ac^2d^2x^6 + \frac{1}{4}\,ad^2x^4 + \frac{\left(c^2x^2-1\right)^3\sqrt{-c^2x^2+1}\,bd^2x}{64\,c^3} + \frac{\left(c^2x^2-1\right)^4bd^2\arcsin\left(cx\right)}{8\,c^4} + \frac{11\left(c^2x^2-1\right)^2\sqrt{-c^2}}{1152\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/8*a*c^4*d^2*x^8 - 1/3*a*c^2*d^2*x^6 + 1/4*a*d^2*x^4 + 1/64*(c^2*x^2 - 1)^
3*sqrt(-c^2*x^2 + 1)*b*d^2*x/c^3 + 1/8*(c^2*x^2 - 1)^4*b*d^2*arcsin(c*x)/c^
4 + 11/1152*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*d^2*x/c^3 + 1/6*(c^2*x^2 -
 1)^3*b*d^2*arcsin(c*x)/c^4 + 55/4608*(-c^2*x^2 + 1)^(3/2)*b*d^2*x/c^3 + 55
/3072*sqrt(-c^2*x^2 + 1)*b*d^2*x/c^3 + 55/3072*b*d^2*arcsin(c*x)/c^4
```

maple [A] time = 0.01, size = 160, normalized size = 0.87

$$\frac{d^2a\left(\frac{1}{8}c^8x^8 - \frac{1}{3}c^6x^6 + \frac{1}{4}c^4x^4\right) + d^2b\left(\frac{\arcsin(cx)c^8x^8}{8} - \frac{\arcsin(cx)c^6x^6}{3} + \frac{c^4x^4\arcsin(cx)}{4} + \frac{c^7x^7\sqrt{-c^2x^2+1}}{64} - \frac{43c^5x^5\sqrt{-c^2x^2+1}}{1152} + \right.}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c^4*(d^2*a*(1/8*c^8*x^8-1/3*c^6*x^6+1/4*c^4*x^4)+d^2*b*(1/8*arcsin(c*x)*c
^8*x^8-1/3*arcsin(c*x)*c^6*x^6+1/4*c^4*x^4*arcsin(c*x)+1/64*c^7*x^7*(-c^2*x
^2+1)^(1/2)-43/1152*c^5*x^5*(-c^2*x^2+1)^(1/2)+73/4608*c^3*x^3*(-c^2*x^2+1)
^(1/2)+73/3072*c*x*(-c^2*x^2+1)^(1/2)-73/3072*arcsin(c*x)))
```

maxima [A] time = 0.53, size = 298, normalized size = 1.62

$$\frac{1}{8}\,ac^4d^2x^8 - \frac{1}{3}\,ac^2d^2x^6 + \frac{1}{3072}\left(384\,x^8\arcsin\left(cx\right) + \left(\frac{48\sqrt{-c^2x^2+1}\,x^7}{c^2} + \frac{56\sqrt{-c^2x^2+1}\,x^5}{c^4} + \frac{70\sqrt{-c^2x^2+1}\,x^3}{c^6}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/8*a*c^4*d^2*x^8 - 1/3*a*c^2*d^2*x^6 + 1/3072*(384*x^8*arcsin(c*x) + (48*s
qrt(-c^2*x^2 + 1)*x^7/c^2 + 56*sqrt(-c^2*x^2 + 1)*x^5/c^4 + 70*sqrt(-c^2*x^
2 + 1)*x^3/c^6 + 105*sqrt(-c^2*x^2 + 1)*x/c^8 - 105*arcsin(c*x)/c^9)*c)*b*c
^4*d^2 + 1/4*a*d^2*x^4 - 1/144*(48*x^6*arcsin(c*x) + (8*sqrt(-c^2*x^2 + 1)*
x^5/c^2 + 10*sqrt(-c^2*x^2 + 1)*x^3/c^4 + 15*sqrt(-c^2*x^2 + 1)*x/c^6 - 15*
```

```
arcsin(c*x)/c^7)*c)*b*c^2*d^2 + 1/32*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2
+ 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c*x)/c^5)*c)*b*d^2
```

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

$$\int x^3 \left(a + b \operatorname{asin}(c x)\right) \left(d - c^2 d x^2\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + b*asin(c*x))*(d - c^2*d*x^2)^2,x)
```

```
[Out] int(x^3*(a + b*asin(c*x))*(d - c^2*d*x^2)^2, x)
```

sympy [A] time = 10.59, size = 218, normalized size = 1.18

$$\begin{cases} \frac{ac^4d^2x^8}{8} - \frac{ac^2d^2x^6}{3} + \frac{ad^2x^4}{4} + \frac{bc^4d^2x^8 \operatorname{asin}(cx)}{8} + \frac{bc^3d^2x^7\sqrt{-c^2x^2+1}}{64} - \frac{bc^2d^2x^6 \operatorname{asin}(cx)}{3} - \frac{43bcd^2x^5\sqrt{-c^2x^2+1}}{1152} + \frac{bd^2x^4 \operatorname{asin}(cx)}{4} + \frac{73bd}{} \\ \frac{ad^2x^4}{4} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(-c**2*d*x**2+d)**2*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*c**4*d**2*x**8/8 - a*c**2*d**2*x**6/3 + a*d**2*x**4/4 + b*c**4
*d**2*x**8*asin(c*x)/8 + b*c**3*d**2*x**7*sqrt(-c**2*x**2 + 1)/64 - b*c**2*
d**2*x**6*asin(c*x)/3 - 43*b*c*d**2*x**5*sqrt(-c**2*x**2 + 1)/1152 + b*d**2
*x**4*asin(c*x)/4 + 73*b*d**2*x**3*sqrt(-c**2*x**2 + 1)/(4608*c) + 73*b*d**
2*x*sqrt(-c**2*x**2 + 1)/(3072*c**3) - 73*b*d**2*asin(c*x)/(3072*c**4), Ne(
c, 0)), (a*d**2*x**4/4, True))
```

3.12 $\int x^2 \left(d-c^2 d x^2\right)^2 \left(a+b \sin^{-1}(cx)\right) dx$

Optimal. Leaf size=161

$$\frac{1}{7}c^4d^2x^7\left(a+b\sin^{-1}(cx)\right)-\frac{2}{5}c^2d^2x^5\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}d^2x^3\left(a+b\sin^{-1}(cx)\right)-\frac{bd^2\left(1-c^2x^2\right)^{7/2}}{49c^3}+\frac{bd^2\left(1-c^2x\right.}{175c^3}$$

```
[Out] 4/315*b*d^2*(-c^2*x^2+1)^(3/2)/c^3+1/175*b*d^2*(-c^2*x^2+1)^(5/2)/c^3-1/49*
b*d^2*(-c^2*x^2+1)^(7/2)/c^3+1/3*d^2*x^3*(a+b*arcsin(c*x))-2/5*c^2*d^2*x^5*
(a+b*arcsin(c*x))+1/7*c^4*d^2*x^7*(a+b*arcsin(c*x))+8/105*b*d^2*(-c^2*x^2+1
)^(1/2)/c^3
```

Rubi [A] time = 0.17, antiderivative size = 161, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {270, 4687, 12, 1251, 771}

$$\frac{1}{7}c^4d^2x^7\left(a+b\sin^{-1}(cx)\right)-\frac{2}{5}c^2d^2x^5\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}d^2x^3\left(a+b\sin^{-1}(cx)\right)-\frac{bd^2\left(1-c^2x^2\right)^{7/2}}{49c^3}+\frac{bd^2\left(1-c^2x\right.}{175c^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x]),x]
```

```
[Out] (8*b*d^2*Sqrt[1 - c^2*x^2])/(105*c^3) + (4*b*d^2*(1 - c^2*x^2)^(3/2))/(315*
c^3) + (b*d^2*(1 - c^2*x^2)^(5/2))/(175*c^3) - (b*d^2*(1 - c^2*x^2)^(7/2))/
(49*c^3) + (d^2*x^3*(a + b*ArcSin[c*x]))/3 - (2*c^2*d^2*x^5*(a + b*ArcSin[c
*x]))/5 + (c^4*d^2*x^7*(a + b*ArcSin[c*x]))/7
```

Rule 12

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

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rule 1251

```
Int[(x_)^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_
)^4)^(p_.), x_Symbol] :> Dist[1/2, Subst[Int[x^((m - 1)/2)*(d + e*x)^q*(a +
 b*x + c*x^2)^p, x], x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x] && Inte
gerQ[(m - 1)/2]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
```

```
IGtQ[p, 0]
```

Rubi steps

$$\int x^2\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)dx=\frac{1}{3}d^2x^3\left(a+b\sin^{-1}(cx)\right)-\frac{2}{5}c^2d^2x^5\left(a+b\sin^{-1}(cx)\right)+\frac{1}{7}c^4d^2x^7\left(a+b\sin\right.$$

$$=\frac{1}{3}d^2x^3\left(a+b\sin^{-1}(cx)\right)-\frac{2}{5}c^2d^2x^5\left(a+b\sin^{-1}(cx)\right)+\frac{1}{7}c^4d^2x^7\left(a+b\sin\right.$$

$$=\frac{1}{3}d^2x^3\left(a+b\sin^{-1}(cx)\right)-\frac{2}{5}c^2d^2x^5\left(a+b\sin^{-1}(cx)\right)+\frac{1}{7}c^4d^2x^7\left(a+b\sin\right.$$

$$=\frac{1}{3}d^2x^3\left(a+b\sin^{-1}(cx)\right)-\frac{2}{5}c^2d^2x^5\left(a+b\sin^{-1}(cx)\right)+\frac{1}{7}c^4d^2x^7\left(a+b\sin\right.$$

$$=\frac{8bd^2\sqrt{1-c^2x^2}}{105c^3}+\frac{4bd^2\left(1-c^2x^2\right)^{3/2}}{315c^3}+\frac{bd^2\left(1-c^2x^2\right)^{5/2}}{175c^3}-\frac{bd^2\left(1-c^2x^2\right.}{49c^3}$$

Mathematica [A] time = 0.12, size = 111, normalized size = 0.69

$$\frac{d^2\left(105ac^3x^3\left(15c^4x^4-42c^2x^2+35\right)+b\sqrt{1-c^2x^2}\left(225c^6x^6-612c^4x^4+409c^2x^2+818\right)+105bc^3x^3\left(15c^4x^4-4\right.\right.}{11025c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d^2*(105*a*c^3*x^3*(35 - 42*c^2*x^2 + 15*c^4*x^4) + b*Sqrt[1 - c^2*x^2]*(8
18 + 409*c^2*x^2 - 612*c^4*x^4 + 225*c^6*x^6) + 105*b*c^3*x^3*(35 - 42*c^2*
x^2 + 15*c^4*x^4)*ArcSin[c*x]))/(11025*c^3)
```

fricas [A] time = 0.50, size = 141, normalized size = 0.88

$$\frac{1575\,ac^7d^2x^7-4410\,ac^5d^2x^5+3675\,ac^3d^2x^3+105\left(15\,bc^7d^2x^7-42\,bc^5d^2x^5+35\,bc^3d^2x^3\right)\arcsin\left(cx\right)+\left(225\,bc^6\right.}{11025\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/11025*(1575*a*c^7*d^2*x^7 - 4410*a*c^5*d^2*x^5 + 3675*a*c^3*d^2*x^3 + 105
*(15*b*c^7*d^2*x^7 - 42*b*c^5*d^2*x^5 + 35*b*c^3*d^2*x^3)*arcsin(c*x) + (22
5*b*c^6*d^2*x^6 - 612*b*c^4*d^2*x^4 + 409*b*c^2*d^2*x^2 + 818*b*d^2)*sqrt(-
c^2*x^2 + 1))/c^3
```

giac [A] time = 0.60, size = 227, normalized size = 1.41

$$\frac{1}{7}\,ac^4d^2x^7-\frac{2}{5}\,ac^2d^2x^5+\frac{1}{3}\,ad^2x^3+\frac{\left(c^2x^2-1\right)^3bd^2x\arcsin\left(cx\right)}{7\,c^2}+\frac{\left(c^2x^2-1\right)^2bd^2x\arcsin\left(cx\right)}{35\,c^2}-\frac{4\left(c^2x^2-1\right)bd^2x\,\mathrm{arcsi}}{105\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/7*a*c^4*d^2*x^7 - 2/5*a*c^2*d^2*x^5 + 1/3*a*d^2*x^3 + 1/7*(c^2*x^2 - 1)^3
*b*d^2*x*arcsin(c*x)/c^2 + 1/35*(c^2*x^2 - 1)^2*b*d^2*x*arcsin(c*x)/c^2 - 4
```

```
/105*(c^2*x^2 - 1)*b*d^2*x*arcsin(c*x)/c^2 + 1/49*(c^2*x^2 - 1)^3*sqrt(-c^2
*x^2 + 1)*b*d^2/c^3 + 8/105*b*d^2*x*arcsin(c*x)/c^2 + 1/175*(c^2*x^2 - 1)^2
*sqrt(-c^2*x^2 + 1)*b*d^2/c^3 + 4/315*(-c^2*x^2 + 1)^(3/2)*b*d^2/c^3 + 8/10
5*sqrt(-c^2*x^2 + 1)*b*d^2/c^3
```

maple [A] time = 0.01, size = 152, normalized size = 0.94

$$\frac{d^2a\left(\frac{1}{7}c^7x^7-\frac{2}{5}c^5x^5+\frac{1}{3}c^3x^3\right)+d^2b\left(\frac{\arcsin(cx)c^7x^7}{7}-\frac{2\arcsin(cx)c^5x^5}{5}+\frac{c^3x^3\arcsin(cx)}{3}+\frac{c^6x^6\sqrt{-c^2x^2+1}}{49}-\frac{68c^4x^4\sqrt{-c^2x^2+1}}{1225}\right.}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c^3*(d^2*a*(1/7*c^7*x^7-2/5*c^5*x^5+1/3*c^3*x^3)+d^2*b*(1/7*arcsin(c*x)*c
^7*x^7-2/5*arcsin(c*x)*c^5*x^5+1/3*c^3*x^3*arcsin(c*x)+1/49*c^6*x^6*(-c^2*x
^2+1)^(1/2)-68/1225*c^4*x^4*(-c^2*x^2+1)^(1/2)+409/11025*c^2*x^2*(-c^2*x^2+
1)^(1/2)+818/11025*(-c^2*x^2+1)^(1/2)))
```

maxima [A] time = 0.49, size = 267, normalized size = 1.66

$$\frac{1}{7}ac^4d^2x^7-\frac{2}{5}ac^2d^2x^5+\frac{1}{245}\left(35\,x^7\arcsin(cx)+\left(\frac{5\sqrt{-c^2x^2+1}\,x^6}{c^2}+\frac{6\sqrt{-c^2x^2+1}\,x^4}{c^4}+\frac{8\sqrt{-c^2x^2+1}\,x^2}{c^6}+\frac{16}{\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/7*a*c^4*d^2*x^7 - 2/5*a*c^2*d^2*x^5 + 1/245*(35*x^7*arcsin(c*x) + (5*sqrt
(-c^2*x^2 + 1)*x^6/c^2 + 6*sqrt(-c^2*x^2 + 1)*x^4/c^4 + 8*sqrt(-c^2*x^2 + 1
)*x^2/c^6 + 16*sqrt(-c^2*x^2 + 1)/c^8)*c)*b*c^4*d^2 - 2/75*(15*x^5*arcsin(c
*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt
(-c^2*x^2 + 1)/c^6)*c)*b*c^2*d^2 + 1/3*a*d^2*x^3 + 1/9*(3*x^3*arcsin(c*x) +
 c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*d^2
```

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

$$\int x^2\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(d-c^2\,d\,x^2\right)}^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c*x))*(d - c^2*d*x^2)^2,x)
```

```
[Out] int(x^2*(a + b*asin(c*x))*(d - c^2*d*x^2)^2, x)
```

sympy [A] time = 5.93, size = 202, normalized size = 1.25

$$\begin{cases} \frac{ac^4d^2x^7}{7}-\frac{2ac^2d^2x^5}{5}+\frac{ad^2x^3}{3}+\frac{bc^4d^2x^7\,\mathrm{asin}\,(cx)}{7}+\frac{bc^3d^2x^6\sqrt{-c^2x^2+1}}{49}-\frac{2bc^2d^2x^5\,\mathrm{asin}\,(cx)}{5}-\frac{68bcd^2x^4\sqrt{-c^2x^2+1}}{1225}+\frac{bd^2x^3\,\mathrm{asin}\,(cx)}{3}+ \\ \frac{ad^2x^3}{3} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(-c**2*d*x**2+d)**2*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*c**4*d**2*x**7/7 - 2*a*c**2*d**2*x**5/5 + a*d**2*x**3/3 + b*c*
*4*d**2*x**7*asin(c*x)/7 + b*c**3*d**2*x**6*sqrt(-c**2*x**2 + 1)/49 - 2*b*c
**2*d**2*x**5*asin(c*x)/5 - 68*b*c*d**2*x**4*sqrt(-c**2*x**2 + 1)/1225 + b*
d**2*x**3*asin(c*x)/3 + 409*b*d**2*x**2*sqrt(-c**2*x**2 + 1)/(11025*c) + 81
8*b*d**2*sqrt(-c**2*x**2 + 1)/(11025*c**3), Ne(c, 0)), (a*d**2*x**3/3, True
))
```

3.13 $\int x\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=124

$$-\frac{d^2\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)}{6c^2}+\frac{bd^2x\left(1-c^2x^2\right)^{5/2}}{36c}+\frac{5bd^2x\left(1-c^2x^2\right)^{3/2}}{144c}+\frac{5bd^2x\sqrt{1-c^2x^2}}{96c}+\frac{5bd^2\sin^{-1}(cx)}{96c^2}$$

```
[Out] 5/144*b*d^2*x*(-c^2*x^2+1)^(3/2)/c+1/36*b*d^2*x*(-c^2*x^2+1)^(5/2)/c+5/96*b
*d^2*arcsin(c*x)/c^2-1/6*d^2*(-c^2*x^2+1)^3*(a+b*arcsin(c*x))/c^2+5/96*b*d^
2*x*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.07, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.130, Rules used = {4677, 195, 216}

$$-\frac{d^2\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)}{6c^2}+\frac{bd^2x\left(1-c^2x^2\right)^{5/2}}{36c}+\frac{5bd^2x\left(1-c^2x^2\right)^{3/2}}{144c}+\frac{5bd^2x\sqrt{1-c^2x^2}}{96c}+\frac{5bd^2\sin^{-1}(cx)}{96c^2}$$

Antiderivative was successfully verified.

```
[In] Int[x*(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x]),x]
```

```
[Out] (5*b*d^2*x*Sqrt[1 - c^2*x^2])/(96*c) + (5*b*d^2*x*(1 - c^2*x^2)^(3/2))/(144
*c) + (b*d^2*x*(1 - c^2*x^2)^(5/2))/(36*c) + (5*b*d^2*ArcSin[c*x])/(96*c^2)
 - (d^2*(1 - c^2*x^2)^3*(a + b*ArcSin[c*x]))/(6*c^2)
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int x\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)\,dx=-\frac{d^2\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)}{6c^2}+\frac{\left(bd^2\right)\int\left(1-c^2x^2\right)^{5/2}\,dx}{6c}$$
$$=\frac{bd^2x\left(1-c^2x^2\right)^{5/2}}{36c}-\frac{d^2\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)}{6c^2}+\frac{\left(5bd^2\right)\int\left(1-\right.}{36c}$$
$$=\frac{5bd^2x\left(1-c^2x^2\right)^{3/2}}{144c}+\frac{bd^2x\left(1-c^2x^2\right)^{5/2}}{36c}-\frac{d^2\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}\right.}{6c^2}$$
$$=\frac{5bd^2x\sqrt{1-c^2x^2}}{96c}+\frac{5bd^2x\left(1-c^2x^2\right)^{3/2}}{144c}+\frac{bd^2x\left(1-c^2x^2\right)^{5/2}}{36c}-\frac{d^2\left(1-\right.}{}$$
$$=\frac{5bd^2x\sqrt{1-c^2x^2}}{96c}+\frac{5bd^2x\left(1-c^2x^2\right)^{3/2}}{144c}+\frac{bd^2x\left(1-c^2x^2\right)^{5/2}}{36c}+\frac{5bd^2\,\mathrm{si}}{96}$$

Mathematica [A] time = 0.08, size = 94, normalized size = 0.76

$$\frac{d^2\left(48a\left(c^2x^2-1\right)^3+bcx\sqrt{1-c^2x^2}\left(8c^4x^4-26c^2x^2+33\right)+3b\left(16c^6x^6-48c^4x^4+48c^2x^2-11\right)\sin^{-1}(cx)\right)}{288c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d^2*(48*a*(-1 + c^2*x^2)^3 + b*c*x*Sqrt[1 - c^2*x^2]*(33 - 26*c^2*x^2 + 8*
c^4*x^4) + 3*b*(-11 + 48*c^2*x^2 - 48*c^4*x^4 + 16*c^6*x^6)*ArcSin[c*x]))/(
288*c^2)
```

fricas [A] time = 1.15, size = 137, normalized size = 1.10

$$\frac{48\,ac^6d^2x^6-144\,ac^4d^2x^4+144\,ac^2d^2x^2+3\left(16\,bc^6d^2x^6-48\,bc^4d^2x^4+48\,bc^2d^2x^2-11\,bd^2\right)\arcsin(cx)+\left(8\,b\right.}{288\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/288*(48*a*c^6*d^2*x^6 - 144*a*c^4*d^2*x^4 + 144*a*c^2*d^2*x^2 + 3*(16*b*c
^6*d^2*x^6 - 48*b*c^4*d^2*x^4 + 48*b*c^2*d^2*x^2 - 11*b*d^2)*arcsin(c*x) +
(8*b*c^5*d^2*x^5 - 26*b*c^3*d^2*x^3 + 33*b*c*d^2*x)*sqrt(-c^2*x^2 + 1))/c^2
```

giac [A] time = 0.65, size = 157, normalized size = 1.27

$$\frac{1}{6}\,ac^4d^2x^6-\frac{1}{2}\,ac^2d^2x^4+\frac{\left(c^2x^2-1\right)^2\sqrt{-c^2x^2+1}\,bd^2x}{36\,c}+\frac{\left(c^2x^2-1\right)^3bd^2\arcsin(cx)}{6\,c^2}+\frac{5\left(-c^2x^2+1\right)^{\frac{3}{2}}bd^2x}{144\,c}+\frac{5\sqrt{-c^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/6*a*c^4*d^2*x^6 - 1/2*a*c^2*d^2*x^4 + 1/36*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2
+ 1)*b*d^2*x/c + 1/6*(c^2*x^2 - 1)^3*b*d^2*arcsin(c*x)/c^2 + 5/144*(-c^2*x^
2 + 1)^(3/2)*b*d^2*x/c + 5/96*sqrt(-c^2*x^2 + 1)*b*d^2*x/c + 1/2*(c^2*x^2 -
 1)*a*d^2/c^2 + 5/96*b*d^2*arcsin(c*x)/c^2
```

maple [A] time = 0.01, size = 140, normalized size = 1.13

$$\frac{d^2a\left(\frac{1}{6}c^6x^6-\frac{1}{2}c^4x^4+\frac{1}{2}c^2x^2\right)+d^2b\left(\frac{\arcsin(cx)c^6x^6}{6}-\frac{c^4x^4\arcsin(cx)}{2}+\frac{c^2x^2\arcsin(cx)}{2}+\frac{c^5x^5\sqrt{-c^2x^2+1}}{36}-\frac{13c^3x^3\sqrt{-c^2x^2+1}}{144}+\right.}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c^2*(d^2*a*(1/6*c^6*x^6-1/2*c^4*x^4+1/2*c^2*x^2)+d^2*b*(1/6*arcsin(c*x)*c
^6*x^6-1/2*c^4*x^4*arcsin(c*x)+1/2*c^2*x^2*arcsin(c*x)+1/36*c^5*x^5*(-c^2*x
^2+1)^(1/2)-13/144*c^3*x^3*(-c^2*x^2+1)^(1/2)+11/96*c*x*(-c^2*x^2+1)^(1/2)-
11/96*arcsin(c*x)))
```

maxima [B] time = 0.54, size = 237, normalized size = 1.91

$$\frac{1}{6}ac^4d^2x^6 - \frac{1}{2}ac^2d^2x^4 + \frac{1}{288}\left(48\,x^6\arcsin\left(cx\right) + \left(\frac{8\,\sqrt{-c^2x^2+1}\,x^5}{c^2} + \frac{10\,\sqrt{-c^2x^2+1}\,x^3}{c^4} + \frac{15\,\sqrt{-c^2x^2+1}\,x}{c^6} - \frac{15\,\mathrm{ar}}{}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/6*a*c^4*d^2*x^6 - 1/2*a*c^2*d^2*x^4 + 1/288*(48*x^6*arcsin(c*x) + (8*sqrt
(-c^2*x^2 + 1)*x^5/c^2 + 10*sqrt(-c^2*x^2 + 1)*x^3/c^4 + 15*sqrt(-c^2*x^2 +
 1)*x/c^6 - 15*arcsin(c*x)/c^7)*c)*b*c^4*d^2 - 1/16*(8*x^4*arcsin(c*x) + (2
*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c*x)/c^
5)*c)*b*c^2*d^2 + 1/2*a*d^2*x^2 + 1/4*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2
 + 1)*x/c^2 - arcsin(c*x)/c^3))*b*d^2
```

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

$$\int x\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(d-c^2\,d\,x^2\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c*x))*(d - c^2*d*x^2)^2,x)
```

```
[Out] int(x*(a + b*asin(c*x))*(d - c^2*d*x^2)^2, x)
```

sympy [A] time = 3.93, size = 190, normalized size = 1.53

$$\begin{cases} \frac{ac^4d^2x^6}{6} - \frac{ac^2d^2x^4}{2} + \frac{ad^2x^2}{2} + \frac{bc^4d^2x^6\,\mathrm{asin}\,(cx)}{6} + \frac{bc^3d^2x^5\sqrt{-c^2x^2+1}}{36} - \frac{bc^2d^2x^4\,\mathrm{asin}\,(cx)}{2} - \frac{13bcd^2x^3\sqrt{-c^2x^2+1}}{144} + \frac{bd^2x^2\,\mathrm{asin}\,(cx)}{2} + \frac{11bd}{} \\ \frac{ad^2x^2}{2} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c**2*d*x**2+d)**2*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*c**4*d**2*x**6/6 - a*c**2*d**2*x**4/2 + a*d**2*x**2/2 + b*c**4
*d**2*x**6*asin(c*x)/6 + b*c**3*d**2*x**5*sqrt(-c**2*x**2 + 1)/36 - b*c**2*
d**2*x**4*asin(c*x)/2 - 13*b*c*d**2*x**3*sqrt(-c**2*x**2 + 1)/144 + b*d**2*
x**2*asin(c*x)/2 + 11*b*d**2*x*sqrt(-c**2*x**2 + 1)/(96*c) - 11*b*d**2*asin
(c*x)/(96*c**2), Ne(c, 0)), (a*d**2*x**2/2, True))
```

3.14 $\int \left(d-c^2dx^2\right)^2 \left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=131

$$\frac{1}{5}c^4d^2x^5\left(a+b\sin^{-1}(cx)\right)-\frac{2}{3}c^2d^2x^3\left(a+b\sin^{-1}(cx)\right)+d^2x\left(a+b\sin^{-1}(cx)\right)+\frac{bd^2\left(1-c^2x^2\right)^{5/2}}{25c}+\frac{4bd^2\left(1-c^2x^2\right.}{45c}$$

```
[Out] 4/45*b*d^2*(-c^2*x^2+1)^(3/2)/c+1/25*b*d^2*(-c^2*x^2+1)^(5/2)/c+d^2*x*(a+b*
arcsin(c*x))-2/3*c^2*d^2*x^3*(a+b*arcsin(c*x))+1/5*c^4*d^2*x^5*(a+b*arcsin(
c*x))+8/15*b*d^2*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.10, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {194, 4645, 12, 1247, 698}

$$\frac{1}{5}c^4d^2x^5\left(a+b\sin^{-1}(cx)\right)-\frac{2}{3}c^2d^2x^3\left(a+b\sin^{-1}(cx)\right)+d^2x\left(a+b\sin^{-1}(cx)\right)+\frac{bd^2\left(1-c^2x^2\right)^{5/2}}{25c}+\frac{4bd^2\left(1-c^2x^2\right.}{45c}$$

Antiderivative was successfully verified.

```
[In] Int[(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x]),x]
```

```
[Out] (8*b*d^2*Sqrt[1 - c^2*x^2])/(15*c) + (4*b*d^2*(1 - c^2*x^2)^(3/2))/(45*c) +
 (b*d^2*(1 - c^2*x^2)^(5/2))/(25*c) + d^2*x*(a + b*ArcSin[c*x]) - (2*c^2*d^
2*x^3*(a + b*ArcSin[c*x]))/3 + (c^4*d^2*x^5*(a + b*ArcSin[c*x]))/5
```

Rule 12

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

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 698

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 1247

```
Int[(x_)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(
p_.), x_Symbol] :> Dist[1/2, Subst[Int[(d + e*x)^q*(a + b*x + c*x^2)^p, x],
 x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x]
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rubi steps

$$\int \left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)\,dx = d^2x\left(a+b\sin^{-1}(cx)\right)-\frac{2}{3}c^2d^2x^3\left(a+b\sin^{-1}(cx)\right)+\frac{1}{5}c^4d^2x^5\left(a+b\sin^{-1}(c\right.$$

$$= d^2x\left(a+b\sin^{-1}(cx)\right)-\frac{2}{3}c^2d^2x^3\left(a+b\sin^{-1}(cx)\right)+\frac{1}{5}c^4d^2x^5\left(a+b\sin^{-1}(c\right.$$

$$= d^2x\left(a+b\sin^{-1}(cx)\right)-\frac{2}{3}c^2d^2x^3\left(a+b\sin^{-1}(cx)\right)+\frac{1}{5}c^4d^2x^5\left(a+b\sin^{-1}(c\right.$$

$$= d^2x\left(a+b\sin^{-1}(cx)\right)-\frac{2}{3}c^2d^2x^3\left(a+b\sin^{-1}(cx)\right)+\frac{1}{5}c^4d^2x^5\left(a+b\sin^{-1}(c\right.$$

$$= \frac{8bd^2\sqrt{1-c^2x^2}}{15c}+\frac{4bd^2\left(1-c^2x^2\right)^{3/2}}{45c}+\frac{bd^2\left(1-c^2x^2\right)^{5/2}}{25c}+d^2x\left(a+b\sin^{-1}\right.$$

Mathematica [A] time = 0.11, size = 95, normalized size = 0.73

$$\frac{d^2\left(15acx\left(3c^4x^4-10c^2x^2+15\right)+b\sqrt{1-c^2x^2}\left(9c^4x^4-38c^2x^2+149\right)+15bcx\left(3c^4x^4-10c^2x^2+15\right)\sin^{-1}(cx)\right)}{225c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d^2*(15*a*c*x*(15 - 10*c^2*x^2 + 3*c^4*x^4) + b*Sqrt[1 - c^2*x^2]*(149 - 3
8*c^2*x^2 + 9*c^4*x^4) + 15*b*c*x*(15 - 10*c^2*x^2 + 3*c^4*x^4)*ArcSin[c*x]
))/(225*c)
```

fricas [A] time = 0.68, size = 121, normalized size = 0.92

$$\frac{45\,ac^5d^2x^5-150\,ac^3d^2x^3+225\,acd^2x+15\left(3\,bc^5d^2x^5-10\,bc^3d^2x^3+15\,bcd^2x\right)\arcsin(cx)+\left(9\,bc^4d^2x^4-38\,bc^2d\right.}{225\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/225*(45*a*c^5*d^2*x^5 - 150*a*c^3*d^2*x^3 + 225*a*c*d^2*x + 15*(3*b*c^5*d
^2*x^5 - 10*b*c^3*d^2*x^3 + 15*b*c*d^2*x)*arcsin(c*x) + (9*b*c^4*d^2*x^4 -
38*b*c^2*d^2*x^2 + 149*b*d^2)*sqrt(-c^2*x^2 + 1))/c
```

giac [A] time = 0.56, size = 158, normalized size = 1.21

$$\frac{1}{5}ac^4d^2x^5-\frac{2}{3}ac^2d^2x^3+\frac{1}{5}\left(c^2x^2-1\right)^2bd^2x\arcsin(cx)-\frac{4}{15}\left(c^2x^2-1\right)bd^2x\arcsin(cx)+\frac{8}{15}bd^2x\arcsin(cx)+\frac{\left(c^2x^2-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/5*a*c^4*d^2*x^5 - 2/3*a*c^2*d^2*x^3 + 1/5*(c^2*x^2 - 1)^2*b*d^2*x*arcsin(
c*x) - 4/15*(c^2*x^2 - 1)*b*d^2*x*arcsin(c*x) + 8/15*b*d^2*x*arcsin(c*x) +
1/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*d^2/c + a*d^2*x + 4/45*(-c^2*x^2
+ 1)^(3/2)*b*d^2/c + 8/15*sqrt(-c^2*x^2 + 1)*b*d^2/c
```

maple [A] time = 0.00, size = 122, normalized size = 0.93

$$\frac{d^2a\left(\frac{1}{5}c^5x^5-\frac{2}{3}c^3x^3+cx\right)+d^2b\left(\frac{\arcsin(cx)c^5x^5}{5}-\frac{2c^3x^3\arcsin(cx)}{3}+cx\arcsin(cx)+\frac{c^4x^4\sqrt{-c^2x^2+1}}{25}-\frac{38c^2x^2\sqrt{-c^2x^2+1}}{225}+\frac{149}{}\right.}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c*(d^2*a*(1/5*c^5*x^5-2/3*c^3*x^3+c*x)+d^2*b*(1/5*arcsin(c*x)*c^5*x^5-2/3
*c^3*x^3*arcsin(c*x)+c*x*arcsin(c*x)+1/25*c^4*x^4*(-c^2*x^2+1)^(1/2)-38/225
*c^2*x^2*(-c^2*x^2+1)^(1/2)+149/225*(-c^2*x^2+1)^(1/2)))
```

maxima [A] time = 0.50, size = 196, normalized size = 1.50

$$\frac{1}{5}\,ac^4d^2x^5+\frac{1}{75}\left(15\,x^5\arcsin\left(cx\right)+\left(\frac{3\,\sqrt{-c^2x^2+1}\,x^4}{c^2}+\frac{4\,\sqrt{-c^2x^2+1}\,x^2}{c^4}+\frac{8\,\sqrt{-c^2x^2+1}}{c^6}\right)c\right)bc^4d^2-\frac{2}{3}\,ac^2d^2x^3-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/5*a*c^4*d^2*x^5 + 1/75*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^
2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*b*c^4*d^2 -
 2/3*a*c^2*d^2*x^3 - 2/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2
 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*c^2*d^2 + a*d^2*x + (c*x*arcsin(c*x) + sqrt
(-c^2*x^2 + 1))*b*d^2/c
```

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

$$\int (a+b\,\mathrm{asin}\left(c\,x\right))\,{\left(d-c^2\,d\,x^2\right)}^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(d - c^2*d*x^2)^2,x)
```

```
[Out] int((a + b*asin(c*x))*(d - c^2*d*x^2)^2, x)
```

sympy [A] time = 2.14, size = 165, normalized size = 1.26

$$\begin{cases} \frac{ac^4d^2x^5}{5}-\frac{2ac^2d^2x^3}{3}+ad^2x+\frac{bc^4d^2x^5\,\mathrm{asin}\left(cx\right)}{5}+\frac{bc^3d^2x^4\sqrt{-c^2x^2+1}}{25}-\frac{2bc^2d^2x^3\,\mathrm{asin}\left(cx\right)}{3}-\frac{38bcd^2x^2\sqrt{-c^2x^2+1}}{225}+bd^2x\,\mathrm{asin}\left(cx\right) \\ ad^2x \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**2*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*c**4*d**2*x**5/5 - 2*a*c**2*d**2*x**3/3 + a*d**2*x + b*c**4*d*
*2*x**5*asin(c*x)/5 + b*c**3*d**2*x**4*sqrt(-c**2*x**2 + 1)/25 - 2*b*c**2*d
**2*x**3*asin(c*x)/3 - 38*b*c*d**2*x**2*sqrt(-c**2*x**2 + 1)/225 + b*d**2*x
*asin(c*x) + 149*b*d**2*sqrt(-c**2*x**2 + 1)/(225*c), Ne(c, 0)), (a*d**2*x,
 True))
```

3.15 $\int \frac{\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{x}\,dx$

Optimal. Leaf size=184

$$\frac{1}{4}d^2\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)-\frac{id^2\left(a+b\sin^{-1}(cx)\right)^2}{2b}+d^2\log\left(1-e^{2i\sin^{-1}(cx)}\right)$$

```
[Out] -1/16*b*c*d^2*x*(-c^2*x^2+1)^(3/2)-11/32*b*d^2*arcsin(c*x)+1/2*d^2*(-c^2*x^
2+1)*(a+b*arcsin(c*x))+1/4*d^2*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))-1/2*I*d^2*(
a+b*arcsin(c*x))^2/b+d^2*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))^
2)-1/2*I*b*d^2*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)-11/32*b*c*d^2*x*(-c^
2*x^2+1)^(1/2)
```

Rubi [A] time = 0.20, antiderivative size = 184, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.320, Rules used = {4683, 4625, 3717, 2190, 2279, 2391, 195, 216}

$$-\frac{1}{2}ibd^2\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)+\frac{1}{4}d^2\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)-\frac{id^2\left(a+b\sin^{-1}\right.}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^2*(a + b*ArcSin[c*x]))/x,x]
```

```
[Out] (-11*b*c*d^2*x*Sqrt[1 - c^2*x^2])/32 - (b*c*d^2*x*(1 - c^2*x^2)^(3/2))/16 -
 (11*b*d^2*ArcSin[c*x])/32 + (d^2*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/2 + (d
^2*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x]))/4 - ((I/2)*d^2*(a + b*ArcSin[c*x])^
2)/b + d^2*(a + b*ArcSin[c*x])*Log[1 - E^((2*I)*ArcSin[c*x])] - (I/2)*b*d^2
*PolyLog[2, E^((2*I)*ArcSin[c*x])]
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4683

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.))/(x_),
x_Symbol] :> Simp[((d + e*x^2)^p*(a + b*ArcSin[c*x]))/(2*p), x] + (Dist[d,
Int[((d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x]))/x, x], x] - Dist[(b*c*d^p)/(2
*p), Int[(1 - c^2*x^2)^(p - 1/2), x], x]) /; FreeQ[{a, b, c, d, e}, x] && E
qQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{x}\,dx = \frac{1}{4}d^2\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)+d\int \frac{\left(d-c^2dx^2\right)\left(a+b\sin^{-1}(cx)\right)}{x}\,d$$

$$= -\frac{1}{16}bcd^2x\left(1-c^2x^2\right)^{3/2}+\frac{1}{2}d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}d^2\left(1-c^2\right.$$

$$= -\frac{11}{32}bcd^2x\sqrt{1-c^2x^2}-\frac{1}{16}bcd^2x\left(1-c^2x^2\right)^{3/2}+\frac{1}{2}d^2\left(1-c^2x^2\right)\left(a+b\sin\right.$$

$$= -\frac{11}{32}bcd^2x\sqrt{1-c^2x^2}-\frac{1}{16}bcd^2x\left(1-c^2x^2\right)^{3/2}-\frac{11}{32}bd^2\sin^{-1}(cx)+\frac{1}{2}d^2\left(\right.$$

$$= -\frac{11}{32}bcd^2x\sqrt{1-c^2x^2}-\frac{1}{16}bcd^2x\left(1-c^2x^2\right)^{3/2}-\frac{11}{32}bd^2\sin^{-1}(cx)+\frac{1}{2}d^2\left(\right.$$

$$= -\frac{11}{32}bcd^2x\sqrt{1-c^2x^2}-\frac{1}{16}bcd^2x\left(1-c^2x^2\right)^{3/2}-\frac{11}{32}bd^2\sin^{-1}(cx)+\frac{1}{2}d^2\left(\right.$$

$$= -\frac{11}{32}bcd^2x\sqrt{1-c^2x^2}-\frac{1}{16}bcd^2x\left(1-c^2x^2\right)^{3/2}-\frac{11}{32}bd^2\sin^{-1}(cx)+\frac{1}{2}d^2\left(\right.$$

Mathematica [A] time = 0.17, size = 142, normalized size = 0.77

$$\frac{1}{32}d^2\left(8ac^4x^4-32ac^2x^2+32a\log(x)-13bcx\sqrt{1-c^2x^2}+b\sin^{-1}(cx)\left(8c^4x^4-32c^2x^2+32\log\left(1-e^{2i\sin^{-1}(cx)}\right.\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^2*(a + b*ArcSin[c*x]))/x,x]
```

```
[Out] (d^2*(-32*a*c^2*x^2 + 8*a*c^4*x^4 - 13*b*c*x*Sqrt[1 - c^2*x^2] + 2*b*c^3*x^
3*Sqrt[1 - c^2*x^2] - (16*I)*b*ArcSin[c*x]^2 + b*ArcSin[c*x]*(13 - 32*c^2*x
^2 + 8*c^4*x^4 + 32*Log[1 - E^((2*I)*ArcSin[c*x])]) + 32*a*Log[x] - (16*I)*
b*PolyLog[2, E^((2*I)*ArcSin[c*x])]))/32
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{ac^4d^2x^4 - 2\,ac^2d^2x^2 + ad^2 + \left(bc^4d^2x^4 - 2\,bc^2d^2x^2 + bd^2\right)\arcsin\left(cx\right)}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))/x,x, algorithm="fricas")
```

```
[Out] integral((a*c^4*d^2*x^4 - 2*a*c^2*d^2*x^2 + a*d^2 + (b*c^4*d^2*x^4 - 2*b*c^
2*d^2*x^2 + b*d^2)*arcsin(c*x))/x, x)
```

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

$$\int \frac{\left(c^2dx^2 - d\right)^2 (b\arcsin\left(cx\right) + a)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))/x,x, algorithm="giac")
```

```
[Out] integrate((c^2*d*x^2 - d)^2*(b*arcsin(c*x) + a)/x, x)
```

maple [A] time = 0.30, size = 224, normalized size = 1.22

$$\frac{d^2a\,c^4x^4}{4} - d^2a\,c^2x^2 + d^2a\ln\left(cx\right) - \frac{ib\,d^2\arcsin\left(cx\right)^2}{2} + d^2b\arcsin\left(cx\right)\ln\left(1 + icx + \sqrt{-c^2x^2+1}\right) + d^2b\arcsin\left(cx\right)\ln\left(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))/x,x)
```

```
[Out] 1/4*d^2*a*c^4*x^4-d^2*a*c^2*x^2+d^2*a*ln(c*x)-1/2*I*b*d^2*arcsin(c*x)^2+d^2
*b*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+d^2*b*arcsin(c*x)*ln(1-I*c*x-
(-c^2*x^2+1)^(1/2))-I*d^2*b*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))-I*d^2*b*po
lylog(2,I*c*x+(-c^2*x^2+1)^(1/2))+1/32*d^2*b*arcsin(c*x)*cos(4*arcsin(c*x))
-1/128*d^2*b*sin(4*arcsin(c*x))+3/8*d^2*b*cos(2*arcsin(c*x))*arcsin(c*x)-3/
16*d^2*b*sin(2*arcsin(c*x))
```

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

$$\frac{1}{4}\,ac^4d^2x^4 - ac^2d^2x^2 + ad^2\log(x) + \int \frac{\left(bc^4d^2x^4 - 2\,bc^2d^2x^2 + bd^2\right)\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))/x,x, algorithm="maxima")
```

```
[Out] 1/4*a*c^4*d^2*x^4 - a*c^2*d^2*x^2 + a*d^2*log(x) + integrate((b*c^4*d^2*x^4
 - 2*b*c^2*d^2*x^2 + b*d^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/x, x
)
```

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

$$\int \frac{(a + b\,\mathrm{asin}\left(c\,x\right))\,\left(d - c^2\,d\,x^2\right)^2}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^2)/x,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^2)/x, x)
```

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

$$d^2\left(\int \frac{a}{x}\,dx + \int \left(-2ac^2x\right)\,dx + \int ac^4x^3\,dx + \int \frac{b\,\mathrm{asin}\,(cx)}{x}\,dx + \int \left(-2bc^2x\,\mathrm{asin}\,(cx)\right)\,dx + \int bc^4x^3\,\mathrm{asin}\,(cx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**2*(a+b*asin(c*x))/x,x)
```

```
[Out] d**2*(Integral(a/x, x) + Integral(-2*a*c**2*x, x) + Integral(a*c**4*x**3, x
) + Integral(b*asin(c*x)/x, x) + Integral(-2*b*c**2*x*asin(c*x), x) + Integ
ral(b*c**4*x**3*asin(c*x), x))
```

3.16 $\int \frac{\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{x^2}\,dx$

Optimal. Leaf size=123

$$\frac{1}{3}c^4d^2x^3\left(a+b\sin^{-1}(cx)\right)-2c^2d^2x\left(a+b\sin^{-1}(cx)\right)-\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{x}-\frac{1}{9}bcd^2\left(1-c^2x^2\right)^{3/2}-\frac{5}{3}bcd^2\sqrt{1-c^2x^2}-$$

```
[Out] -1/9*b*c*d^2*(-c^2*x^2+1)^(3/2)-d^2*(a+b*arcsin(c*x))/x-2*c^2*d^2*x*(a+b*ar
csin(c*x))+1/3*c^4*d^2*x^3*(a+b*arcsin(c*x))-b*c*d^2*arctanh((-c^2*x^2+1)^(
1/2))-5/3*b*c*d^2*(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.280, Rules used = {270, 4687, 12, 1251, 897, 1153, 208}

$$\frac{1}{3}c^4d^2x^3\left(a+b\sin^{-1}(cx)\right)-2c^2d^2x\left(a+b\sin^{-1}(cx)\right)-\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{x}-\frac{1}{9}bcd^2\left(1-c^2x^2\right)^{3/2}-\frac{5}{3}bcd^2\sqrt{1-c^2x^2}-$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^2*(a + b*ArcSin[c*x]))/x^2,x]
```

```
[Out] (-5*b*c*d^2*Sqrt[1 - c^2*x^2])/3 - (b*c*d^2*(1 - c^2*x^2)^(3/2))/9 - (d^2*(
a + b*ArcSin[c*x]))/x - 2*c^2*d^2*x*(a + b*ArcSin[c*x]) + (c^4*d^2*x^3*(a +
 b*ArcSin[c*x]))/3 - b*c*d^2*ArcTanh[Sqrt[1 - c^2*x^2]]
```

Rule 12

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

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 897

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_.) + (b_.)*(x_)
 + (c_.)*(x_)^2)^(p_.), x_Symbol] :> With[{q = Denominator[m]}, Dist[q/e, S
ubst[Int[x^(q*(m + 1) - 1)*((e*f - d*g)/e + (g*x^q)/e)^n*((c*d^2 - b*d*e +
a*e^2)/e^2 - ((2*c*d - b*e)*x^q)/e^2 + (c*x^(2*q))/e^2)^p, x], x, (d + e*x)
^(1/q)], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ
[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegersQ[n, p] && Fra
ctionQ[m]
```

Rule 1153

```
Int[((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.),
 x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^q*(a + b*x^2 + c*x^4)^p, x],
x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e
 + a*e^2, 0] && IGtQ[p, 0] && IGtQ[q, -2]
```

Rule 1251

```
Int[(x_)^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_
)^4)^(p_.), x_Symbol] :> Dist[1/2, Subst[Int[x^((m - 1)/2)*(d + e*x)^q*(a +
 b*x + c*x^2)^p, x], x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x] && Inte
gerQ[(m - 1)/2]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{x^2}\,dx = -\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{x}-2c^2d^2x\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}c^4d^2x^3\left(a+b\sin^{-1}\right.$$

$$= -\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{x}-2c^2d^2x\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}c^4d^2x^3\left(a+b\sin^{-1}\right.$$

$$= -\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{x}-2c^2d^2x\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}c^4d^2x^3\left(a+b\sin^{-1}\right.$$

$$= -\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{x}-2c^2d^2x\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}c^4d^2x^3\left(a+b\sin^{-1}\right.$$

$$= -\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{x}-2c^2d^2x\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}c^4d^2x^3\left(a+b\sin^{-1}\right.$$

$$= -\frac{5}{3}bcd^2\sqrt{1-c^2x^2}-\frac{1}{9}bcd^2\left(1-c^2x^2\right)^{3/2}-\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{x}-2c^2d^2$$

$$= -\frac{5}{3}bcd^2\sqrt{1-c^2x^2}-\frac{1}{9}bcd^2\left(1-c^2x^2\right)^{3/2}-\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{x}-2c^2d^2$$

Mathematica [A] time = 0.11, size = 126, normalized size = 1.02

$$\frac{d^2\left(3ac^4x^4-18ac^2x^2-9a-16bcx\sqrt{1-c^2x^2}-9bcx\log\left(\sqrt{1-c^2x^2}+1\right)+3b\left(c^4x^4-6c^2x^2-3\right)\sin^{-1}(cx)+b\right.}{9x}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d - c^2*d*x^2)^2*(a + b*ArcSin[c*x]))/x^2,x]
```

```
[Out] (d^2*(-9*a - 18*a*c^2*x^2 + 3*a*c^4*x^4 - 16*b*c*x*Sqrt[1 - c^2*x^2] + b*c^
3*x^3*Sqrt[1 - c^2*x^2] + 3*b*(-3 - 6*c^2*x^2 + c^4*x^4)*ArcSin[c*x] + 9*b*
c*x*Log[x] - 9*b*c*x*Log[1 + Sqrt[1 - c^2*x^2]]))/(9*x)
```

fricas [A] time = 0.63, size = 152, normalized size = 1.24

$$\frac{6\,ac^4d^2x^4-36\,ac^2d^2x^2-9\,bcd^2x\log\left(\sqrt{-c^2x^2+1}+1\right)+9\,bcd^2x\log\left(\sqrt{-c^2x^2+1}-1\right)-18\,ad^2+6\left(bc^4d^2x^4\right.}{18\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))/x^2,x, algorithm="fricas")
```

```
[Out] 1/18*(6*a*c^4*d^2*x^4 - 36*a*c^2*d^2*x^2 - 9*b*c*d^2*x*log(sqrt(-c^2*x^2 +
1) + 1) + 9*b*c*d^2*x*log(sqrt(-c^2*x^2 + 1) - 1) - 18*a*d^2 + 6*(b*c^4*d^2
*x^4 - 6*b*c^2*d^2*x^2 - 3*b*d^2)*arcsin(c*x) + 2*(b*c^3*d^2*x^3 - 16*b*c*d
^2*x)*sqrt(-c^2*x^2 + 1))/x
```

giac [B] time = 8.43, size = 2717, normalized size = 22.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))/x^2,x, algorithm="giac")
```

```
[Out] -1/2*b*c^9*d^2*x^8*arcsin(c*x)/((c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^5
*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*
x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^8) - 1/2*a*c^9*d^2*x^8
/((c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^
5 + 3*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(s
qrt(-c^2*x^2 + 1) + 1)^8) + b*c^8*d^2*x^7*log(abs(c)*abs(x))/((c^7*x^7/(sqr
t(-c^2*x^2 + 1) + 1)^7 + 3*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^3*x^3/(
sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 +
1) + 1)^7) - b*c^8*d^2*x^7*log(sqrt(-c^2*x^2 + 1) + 1)/((c^7*x^7/(sqrt(-c^2
*x^2 + 1) + 1)^7 + 3*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^3*x^3/(sqrt(-
c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1
)^7) + 16/9*b*c^8*d^2*x^7/((c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^5*x^5/
(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sq
rt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^7) - 6*b*c^7*d^2*x^6*arcsin
(c*x)/((c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^5*x^5/(sqrt(-c^2*x^2 + 1)
+ 1)^5 + 3*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1
))*(sqrt(-c^2*x^2 + 1) + 1)^6) - 6*a*c^7*d^2*x^6/((c^7*x^7/(sqrt(-c^2*x^2 +
 1) + 1)^7 + 3*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^3*x^3/(sqrt(-c^2*x^
2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^6) +
 3*b*c^6*d^2*x^5*log(abs(c)*abs(x))/((c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 +
3*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3
 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^5) - 3*b*c^6*d^2*
x^5*log(sqrt(-c^2*x^2 + 1) + 1)/((c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^
5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c
*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^5) + 4/3*b*c^6*d^2*x^
5/((c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)
^5 + 3*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(
sqrt(-c^2*x^2 + 1) + 1)^5) - 25/3*b*c^5*d^2*x^4*arcsin(c*x)/((c^7*x^7/(sqrt
(-c^2*x^2 + 1) + 1)^7 + 3*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^3*x^3/(s
qrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1
) + 1)^4) - 25/3*a*c^5*d^2*x^4/((c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^5
*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*
x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^4) + 3*b*c^4*d^2*x^3*l
og(abs(c)*abs(x))/((c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^5*x^5/(sqrt(-c
^2*x^2 + 1) + 1)^5 + 3*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*
x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^3) - 3*b*c^4*d^2*x^3*log(sqrt(-c^2*
x^2 + 1) + 1)/((c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^5*x^5/(sqrt(-c^2*x
^2 + 1) + 1)^5 + 3*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2
+ 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^3) - 4/3*b*c^4*d^2*x^3/((c^7*x^7/(sqrt(
-c^2*x^2 + 1) + 1)^7 + 3*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^3*x^3/(sq
rt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1)
 + 1)^3) - 6*b*c^3*d^2*x^2*arcsin(c*x)/((c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7
 + 3*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1
)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^2) - 6*a*c^3*d
```

```
^2*x^2/((c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^5*x^5/(sqrt(-c^2*x^2 + 1)
 + 1)^5 + 3*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) +
1))*(sqrt(-c^2*x^2 + 1) + 1)^2) + b*c^2*d^2*x*log(abs(c)*abs(x))/((c^7*x^7/
(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^3*x
^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^
2 + 1) + 1)) - b*c^2*d^2*x*log(sqrt(-c^2*x^2 + 1) + 1)/((c^7*x^7/(sqrt(-c^2
*x^2 + 1) + 1)^7 + 3*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^3*x^3/(sqrt(-
c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1
)) - 16/9*b*c^2*d^2*x/((c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^5*x^5/(sqr
t(-c^2*x^2 + 1) + 1)^5 + 3*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-
c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)) - 1/2*b*c*d^2*arcsin(c*x)/(c^7
*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*
c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1)) - 1/2*a*
c*d^2/(c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^5*x^5/(sqrt(-c^2*x^2 + 1) +
 1)^5 + 3*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1)
)
```

maple [A] time = 0.01, size = 117, normalized size = 0.95

$$c\left(d^2a\left(\frac{c^3x^3}{3}-2cx-\frac{1}{cx}\right)+d^2b\left(\frac{c^3x^3\arcsin(cx)}{3}-2cx\arcsin(cx)-\frac{\arcsin(cx)}{cx}+\frac{c^2x^2\sqrt{-c^2x^2+1}}{9}-\frac{16\sqrt{-c^2}}{9}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))/x^2,x)
```

```
[Out] c*(d^2*a*(1/3*c^3*x^3-2*c*x-1/c/x)+d^2*b*(1/3*c^3*x^3*arcsin(c*x)-2*c*x*arc
sin(c*x)-1/c/x*arcsin(c*x)+1/9*c^2*x^2*(-c^2*x^2+1)^(1/2)-16/9*(-c^2*x^2+1)
^(1/2)-arctanh(1/(-c^2*x^2+1)^(1/2))))
```

maxima [A] time = 0.47, size = 160, normalized size = 1.30

$$\frac{1}{3}ac^4d^2x^3+\frac{1}{9}\left(3x^3\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2}+\frac{2\sqrt{-c^2x^2+1}}{c^4}\right)\right)bc^4d^2-2ac^2d^2x-2\left(cx\arcsin(cx)+\sqrt{-c^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))/x^2,x, algorithm="maxima")
```

```
[Out] 1/3*a*c^4*d^2*x^3 + 1/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2
+ 2*sqrt(-c^2*x^2 + 1)/c^4))*b*c^4*d^2 - 2*a*c^2*d^2*x - 2*(c*x*arcsin(c*x)
 + sqrt(-c^2*x^2 + 1))*b*c*d^2 - (c*log(2*sqrt(-c^2*x^2 + 1)/abs(x) + 2/abs
(x)) + arcsin(c*x)/x)*b*d^2 - a*d^2/x
```

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

$$\begin{cases} b\,c^4\,d^2\left(\frac{\sqrt{\frac{1}{c^2}-x^2}\,\left(\frac{2}{c^2}+x^2\right)}{9}+\frac{x^3\,\mathrm{asin}(c\,x)}{3}\right)-\frac{a\,d^2\,\left(-c^4\,x^4+6\,c^2\,x^2+3\right)}{3\,x}-2\,b\,c\,d^2\,\left(\sqrt{1-c^2\,x^2}+c\,x\,\mathrm{asin}\,(c\,x)\right)-b\,c\,d^2\,\mathrm{atan} \\ \int\frac{(a+b\,\mathrm{asin}(c\,x))\,\left(d-c^2\,d\,x^2\right)^2}{x^2}\,dx \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^2)/x^2,x)
```

```
[Out] piecewise(0 < c, - b*c*d^2*atanh(1/(- c^2*x^2 + 1)^(1/2)) - (a*d^2*(6*c^2*x
^2 - c^4*x^4 + 3))/(3*x) - 2*b*c*d^2*((- c^2*x^2 + 1)^(1/2) + c*x*asin(c*x)
) + b*c^4*d^2*(((1/c^2 - x^2)^(1/2)*(2/c^2 + x^2))/9 + (x^3*asin(c*x))/3) -
```

```
(b*d^2*asin(c*x))/x, ~0 < c, int(((a + b*asin(c*x))*(d - c^2*d*x^2)^2)/x^2
, x))
```

sympy [A] time = 5.86, size = 182, normalized size = 1.48

$$\frac{ac^4d^2x^3}{3} - 2ac^2d^2x - \frac{ad^2}{x} - \frac{bc^5d^2\left(\begin{cases} -\frac{x^2\sqrt{-c^2x^2+1}}{3c^2} - \frac{2\sqrt{-c^2x^2+1}}{3c^4} & \text{for } c \neq 0 \\ \frac{x^4}{4} & \text{otherwise} \end{cases}\right)}{3} + \frac{bc^4d^2x^3\operatorname{asin}(cx)}{3} - 2bc^2d^2\left(\begin{cases} 0 \\ x\operatorname{asin}(cx \end{cases}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**2*(a+b*asin(c*x))/x**2,x)
```

```
[Out] a*c**4*d**2*x**3/3 - 2*a*c**2*d**2*x - a*d**2/x - b*c**5*d**2*Piecewise((-x
**2*sqrt(-c**2*x**2 + 1)/(3*c**2) - 2*sqrt(-c**2*x**2 + 1)/(3*c**4), Ne(c,
0)), (x**4/4, True))/3 + b*c**4*d**2*x**3*asin(c*x)/3 - 2*b*c**2*d**2*Piece
wise((0, Eq(c, 0)), (x*asin(c*x) + sqrt(-c**2*x**2 + 1)/c, True)) + b*c*d**
2*Piecewise((-acosh(1/(c*x)), 1/Abs(c**2*x**2) > 1), (I*asin(1/(c*x)), True
)) - b*d**2*asin(c*x)/x
```

3.17 $\int \frac{\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{x^3}\,dx$

Optimal. Leaf size=201

$$-c^2d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)-\frac{d^2\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{2x^2}+\frac{ic^2d^2\left(a+b\sin^{-1}(cx)\right)^2}{b}-2c^2d^2\log\left(1-e^{2\cdots}\right.$$

```
[Out] -1/2*b*c*d^2*(-c^2*x^2+1)^(3/2)/x-1/4*b*c^2*d^2*arcsin(c*x)-c^2*d^2*(-c^2*x
^2+1)*(a+b*arcsin(c*x))-1/2*d^2*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))/x^2+I*c^2*
d^2*(a+b*arcsin(c*x))^2/b-2*c^2*d^2*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2
+1)^(1/2))^2)+I*b*c^2*d^2*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)-1/4*b*c^3
*d^2*x*(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.21, antiderivative size = 201, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {4685, 277, 195, 216, 4683, 4625, 3717, 2190, 2279, 2391}

$$ibc^2d^2\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)-c^2d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)-\frac{d^2\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{2x^2}+\frac{ic^2d^2\left(a+b\cdots\right.}{b}$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^2*(a + b*ArcSin[c*x]))/x^3,x]
```

```
[Out] -(b*c^3*d^2*x*Sqrt[1 - c^2*x^2])/4 - (b*c*d^2*(1 - c^2*x^2)^(3/2))/(2*x) -
(b*c^2*d^2*ArcSin[c*x])/4 - c^2*d^2*(1 - c^2*x^2)*(a + b*ArcSin[c*x]) - (d^
2*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x]))/(2*x^2) + (I*c^2*d^2*(a + b*ArcSin[c
*x])^2)/b - 2*c^2*d^2*(a + b*ArcSin[c*x])*Log[1 - E^((2*I)*ArcSin[c*x])] +
I*b*c^2*d^2*PolyLog[2, E^((2*I)*ArcSin[c*x])]
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 277

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c
*x)^(m + 1)*(a + b*x^n)^p)/(c*(m + 1)), x] - Dist[(b*n*p)/(c^n*(m + 1)), In
t[(c*x)^(m + n)*(a + b*x^n)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[
n, 0] && GtQ[p, 0] && LtQ[m, -1] &&  !ILtQ[(m + n*p + n + 1)/n, 0] && IntBi
nomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
```

```
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4683

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.))/(x_),
x_Symbol] :> Simp[((d + e*x^2)^p*(a + b*ArcSin[c*x]))/(2*p), x] + (Dist[d,
Int[((d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x]))/x, x], x] - Dist[(b*c*d^p)/(2
*p), Int[(1 - c^2*x^2)^(p - 1/2), x], x]) /; FreeQ[{a, b, c, d, e}, x] && E
qQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4685

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcSin[c*x
]))/(f*(m + 1)), x] + (-Dist[(b*c*d^p)/(f*(m + 1)), Int[(f*x)^(m + 1)*(1 -
c^2*x^2)^(p - 1/2), x], x] - Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m + 2)*
(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x]), x], x]) /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0] && ILtQ[(m + 1)/2, 0]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{x^3}\,dx = -\frac{d^2\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{2x^2} - \left(2c^2d\right)\int \frac{\left(d-c^2dx^2\right)\left(a+b\sin^{-1}(c\right.}{x}$$

$$= -\frac{bcd^2\left(1-c^2x^2\right)^{3/2}}{2x} - c^2d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right) - \frac{d^2\left(1-c^2x^2\right)^2}{2}$$

$$= -\frac{1}{4}bc^3d^2x\sqrt{1-c^2x^2} - \frac{bcd^2\left(1-c^2x^2\right)^{3/2}}{2x} - c^2d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(\right.$$

$$= -\frac{1}{4}bc^3d^2x\sqrt{1-c^2x^2} - \frac{bcd^2\left(1-c^2x^2\right)^{3/2}}{2x} - \frac{1}{4}bc^2d^2\sin^{-1}(cx) - c^2d^2\left(1-\right.$$

$$= -\frac{1}{4}bc^3d^2x\sqrt{1-c^2x^2} - \frac{bcd^2\left(1-c^2x^2\right)^{3/2}}{2x} - \frac{1}{4}bc^2d^2\sin^{-1}(cx) - c^2d^2\left(1-\right.$$

$$= -\frac{1}{4}bc^3d^2x\sqrt{1-c^2x^2} - \frac{bcd^2\left(1-c^2x^2\right)^{3/2}}{2x} - \frac{1}{4}bc^2d^2\sin^{-1}(cx) - c^2d^2\left(1-\right.$$

$$= -\frac{1}{4}bc^3d^2x\sqrt{1-c^2x^2} - \frac{bcd^2\left(1-c^2x^2\right)^{3/2}}{2x} - \frac{1}{4}bc^2d^2\sin^{-1}(cx) - c^2d^2\left(1-\right.$$

Mathematica [A] time = 0.18, size = 162, normalized size = 0.81

$$\frac{d^2\left(2ac^4x^4 - 8ac^2x^2\log(x) - 2a + 4ibc^2x^2\text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right) - 2bcx\sqrt{1-c^2x^2} + 4ibc^2x^2\sin^{-1}(cx)^2 + b\sin^{-1}(cx)\right.}{4x^2}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^2*(a + b*ArcSin[c*x]))/x^3,x]
```

```
[Out] (d^2*(-2*a + 2*a*c^4*x^4 - 2*b*c*x*Sqrt[1 - c^2*x^2] + b*c^3*x^3*Sqrt[1 - c
^2*x^2] + (4*I)*b*c^2*x^2*ArcSin[c*x]^2 + b*ArcSin[c*x]*(-2 - c^2*x^2 + 2*c
^4*x^4 - 8*c^2*x^2*Log[1 - E^((2*I)*ArcSin[c*x])]) - 8*a*c^2*x^2*Log[x] + (
4*I)*b*c^2*x^2*PolyLog[2, E^((2*I)*ArcSin[c*x])]))/(4*x^2)
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{ac^4d^2x^4 - 2\,ac^2d^2x^2 + ad^2 + \left(bc^4d^2x^4 - 2\,bc^2d^2x^2 + bd^2\right)\arcsin\left(cx\right)}{x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))/x^3,x, algorithm="fricas")
```

```
[Out] integral((a*c^4*d^2*x^4 - 2*a*c^2*d^2*x^2 + a*d^2 + (b*c^4*d^2*x^4 - 2*b*c^
2*d^2*x^2 + b*d^2)*arcsin(c*x))/x^3, x)
```

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

$$\int \frac{\left(c^2dx^2 - d\right)^2\left(b\arcsin\left(cx\right) + a\right)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))/x^3,x, algorithm="giac")
```

```
[Out] integrate((c^2*d*x^2 - d)^2*(b*arcsin(c*x) + a)/x^3, x)
```

maple [A] time = 0.57, size = 278, normalized size = 1.38

$$\frac{c^4 d^2 a\, x^2}{2} - 2c^2 d^2 a \ln(cx) - \frac{d^2 a}{2x^2} + i c^2 d^2 b \arcsin(cx)^2 + \frac{b\, c^3 d^2 x \sqrt{-c^2 x^2+1}}{4} + \frac{c^4 d^2 b \arcsin(cx)\, x^2}{2} - \frac{b\, c^2 d^2 \arcsin(cx)}{4} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))/x^3,x)
```

```
[Out] 1/2*c^4*d^2*a*x^2-2*c^2*d^2*a*ln(c*x)-1/2*d^2*a/x^2+I*c^2*d^2*b*arcsin(c*x)
^2+1/4*b*c^3*d^2*x*(-c^2*x^2+1)^(1/2)+1/2*c^4*d^2*b*arcsin(c*x)*x^2-1/4*b*c
^2*d^2*arcsin(c*x)+1/2*I*c^2*d^2*b-1/2*b*c*d^2*(-c^2*x^2+1)^(1/2)/x-1/2*d^2
*b*arcsin(c*x)/x^2-2*c^2*d^2*b*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-2
*c^2*d^2*b*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))+2*I*c^2*d^2*b*polylog
(2,-I*c*x-(-c^2*x^2+1)^(1/2))+2*I*c^2*d^2*b*polylog(2,I*c*x+(-c^2*x^2+1)^(1
/2))
```

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

$$\frac{1}{2}\, a c^4 d^2 x^2 - 2\, a c^2 d^2 \log(x) - \frac{1}{2}\, b d^2 \left(\frac{\sqrt{-c^2 x^2+1}\, c}{x} + \frac{\arcsin(cx)}{x^2}\right) - \frac{a d^2}{2\, x^2} + \int \frac{\left(b c^4 d^2 x^2 - 2\, b c^2 d^2\right) \arctan\left(cx, \sqrt{cx+1}\right.}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))/x^3,x, algorithm="maxima")
```

```
[Out] 1/2*a*c^4*d^2*x^2 - 2*a*c^2*d^2*log(x) - 1/2*b*d^2*(sqrt(-c^2*x^2 + 1)*c/x
+ arcsin(c*x)/x^2) - 1/2*a*d^2/x^2 + integrate((b*c^4*d^2*x^2 - 2*b*c^2*d^2
)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/x, x)
```

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

$$\int \frac{(a + b \operatorname{asin}(c\, x)) \left(d - c^2\, d\, x^2\right)^2}{x^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^2)/x^3,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^2)/x^3, x)
```

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

$$d^2 \left(\int \frac{a}{x^3}\, dx + \int \left(-\frac{2ac^2}{x}\right) dx + \int ac^4 x\, dx + \int \frac{b \operatorname{asin}(cx)}{x^3}\, dx + \int \left(-\frac{2bc^2 \operatorname{asin}(cx)}{x}\right) dx + \int bc^4 x \operatorname{asin}(cx)\, dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**2*(a+b*asin(c*x))/x**3,x)
```

```
[Out] d**2*(Integral(a/x**3, x) + Integral(-2*a*c**2/x, x) + Integral(a*c**4*x, x
) + Integral(b*asin(c*x)/x**3, x) + Integral(-2*b*c**2*asin(c*x)/x, x) + In
tegral(b*c**4*x*asin(c*x), x))
```

3.18 $\int \frac{\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{x^4}\,dx$

Optimal. Leaf size=128

$$c^4d^2x\left(a+b\sin^{-1}(cx)\right)+\frac{2c^2d^2\left(a+b\sin^{-1}(cx)\right)}{x}-\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{bcd^2\sqrt{1-c^2x^2}}{6x^2}+bc^3d^2\sqrt{1-c^2x^2}+\frac{11}{6}bc$$

```
[Out] -1/3*d^2*(a+b*arcsin(c*x))/x^3+2*c^2*d^2*(a+b*arcsin(c*x))/x+c^4*d^2*x*(a+b
*arcsin(c*x))+11/6*b*c^3*d^2*arctanh((-c^2*x^2+1)^(1/2))+b*c^3*d^2*(-c^2*x^
2+1)^(1/2)-1/6*b*c*d^2*(-c^2*x^2+1)^(1/2)/x^2
```

Rubi [A] time = 0.16, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.320$, Rules used = {270, 4687, 12, 1251, 897, 1157, 388, 208}

$$c^4d^2x\left(a+b\sin^{-1}(cx)\right)+\frac{2c^2d^2\left(a+b\sin^{-1}(cx)\right)}{x}-\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{3x^3}+bc^3d^2\sqrt{1-c^2x^2}-\frac{bcd^2\sqrt{1-c^2x^2}}{6x^2}+\frac{11}{6}bc$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^2*(a + b*ArcSin[c*x]))/x^4,x]
```

```
[Out] b*c^3*d^2*Sqrt[1 - c^2*x^2] - (b*c*d^2*Sqrt[1 - c^2*x^2])/(6*x^2) - (d^2*(a
 + b*ArcSin[c*x]))/(3*x^3) + (2*c^2*d^2*(a + b*ArcSin[c*x]))/x + c^4*d^2*x*
(a + b*ArcSin[c*x]) + (11*b*c^3*d^2*ArcTanh[Sqrt[1 - c^2*x^2]])/6
```

Rule 12

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

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 388

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_)), x_Symbol] :> Si
mp[(d*x*(a + b*x^n)^(p + 1))/(b*(n*(p + 1) + 1)), x] - Dist[(a*d - b*c*(n*(
p + 1) + 1))/(b*(n*(p + 1) + 1)), Int[(a + b*x^n)^p, x], x] /; FreeQ[{a, b,
 c, d, n}, x] && NeQ[b*c - a*d, 0] && NeQ[n*(p + 1) + 1, 0]
```

Rule 897

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_.) + (b_.)*(x_)
 + (c_.)*(x_)^2)^(p_.), x_Symbol] :> With[{q = Denominator[m]}, Dist[q/e, S
ubst[Int[x^(q*(m + 1) - 1)*((e*f - d*g)/e + (g*x^q)/e)^n*((c*d^2 - b*d*e +
a*e^2)/e^2 - ((2*c*d - b*e)*x^q)/e^2 + (c*x^(2*q))/e^2)^p, x], x, (d + e*x)
^(1/q)], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ
[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegersQ[n, p] && Fra
ctionQ[m]
```

Rule 1157

```
Int[((d_) + (e_.)*(x_)^2)^(q_)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.),
x_Symbol] :> With[{Qx = PolynomialQuotient[(a + b*x^2 + c*x^4)^p, d + e*x^2
, x], R = Coeff[PolynomialRemainder[(a + b*x^2 + c*x^4)^p, d + e*x^2, x], x
, 0]}, -Simp[(R*x*(d + e*x^2)^(q + 1))/(2*d*(q + 1)), x] + Dist[1/(2*d*(q +
 1)), Int[(d + e*x^2)^(q + 1)*ExpandToSum[2*d*(q + 1)*Qx + R*(2*q + 3), x],
 x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 -
 b*d*e + a*e^2, 0] && IGtQ[p, 0] && LtQ[q, -1]
```

Rule 1251

```
Int[(x_)^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_
)^4)^(p_.), x_Symbol] :> Dist[1/2, Subst[Int[x^((m - 1)/2)*(d + e*x)^q*(a +
 b*x + c*x^2)^p, x], x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x] && Inte
gerQ[(m - 1)/2]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{x^4}\,dx = -\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{3x^3}+\frac{2c^2d^2\left(a+b\sin^{-1}(cx)\right)}{x}+c^4d^2x\left(a+b\sin^{-1}(cx)\right)$$

$$= -\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{3x^3}+\frac{2c^2d^2\left(a+b\sin^{-1}(cx)\right)}{x}+c^4d^2x\left(a+b\sin^{-1}(cx)\right)$$

$$= -\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{3x^3}+\frac{2c^2d^2\left(a+b\sin^{-1}(cx)\right)}{x}+c^4d^2x\left(a+b\sin^{-1}(cx)\right)$$

$$= -\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{3x^3}+\frac{2c^2d^2\left(a+b\sin^{-1}(cx)\right)}{x}+c^4d^2x\left(a+b\sin^{-1}(cx)\right)$$

$$= -\frac{bcd^2\sqrt{1-c^2x^2}}{6x^2}-\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{3x^3}+\frac{2c^2d^2\left(a+b\sin^{-1}(cx)\right)}{x}+c^4d^2x$$

$$= bc^3d^2\sqrt{1-c^2x^2}-\frac{bcd^2\sqrt{1-c^2x^2}}{6x^2}-\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{3x^3}+\frac{2c^2d^2\left(a+b\sin\right.}{x}$$

$$= bc^3d^2\sqrt{1-c^2x^2}-\frac{bcd^2\sqrt{1-c^2x^2}}{6x^2}-\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{3x^3}+\frac{2c^2d^2\left(a+b\sin\right.}{x}$$

Mathematica [A] time = 0.11, size = 136, normalized size = 1.06

$$\frac{d^2\left(6ac^4x^4+12ac^2x^2-2a-11bc^3x^3\log(x)-bcx\sqrt{1-c^2x^2}+2b\left(3c^4x^4+6c^2x^2-1\right)\sin^{-1}(cx)+6bc^3x^3\sqrt{1-c^2x\right.}{6x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d - c^2*d*x^2)^2*(a + b*ArcSin[c*x]))/x^4,x]
```

```
[Out] (d^2*(-2*a + 12*a*c^2*x^2 + 6*a*c^4*x^4 - b*c*x*Sqrt[1 - c^2*x^2] + 6*b*c^3
*x^3*Sqrt[1 - c^2*x^2] + 2*b*(-1 + 6*c^2*x^2 + 3*c^4*x^4)*ArcSin[c*x] - 11*
b*c^3*x^3*Log[x] + 11*b*c^3*x^3*Log[1 + Sqrt[1 - c^2*x^2]]))/(6*x^3)
```

fricas [A] time = 0.57, size = 162, normalized size = 1.27

$$\frac{12\,ac^4d^2x^4 + 11\,bc^3d^2x^3\log\left(\sqrt{-c^2x^2+1}+1\right) - 11\,bc^3d^2x^3\log\left(\sqrt{-c^2x^2+1}-1\right) + 24\,ac^2d^2x^2 - 4\,ad^2 + 4\,(3\,}{12\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))/x^4,x, algorithm="fricas")
```

```
[Out] 1/12*(12*a*c^4*d^2*x^4 + 11*b*c^3*d^2*x^3*log(sqrt(-c^2*x^2 + 1) + 1) - 11*
b*c^3*d^2*x^3*log(sqrt(-c^2*x^2 + 1) - 1) + 24*a*c^2*d^2*x^2 - 4*a*d^2 + 4*
(3*b*c^4*d^2*x^4 + 6*b*c^2*d^2*x^2 - b*d^2)*arcsin(c*x) + 2*(6*b*c^3*d^2*x^
3 - b*c*d^2*x)*sqrt(-c^2*x^2 + 1))/x^3
```

giac [B] time = 84.14, size = 1409, normalized size = 11.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))/x^4,x, algorithm="giac")
```

```
[Out] -1/24*b*c^11*d^2*x^8*arcsin(c*x)/((c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^3
*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^8) - 1/24*a*c^11*
d^2*x^8/((c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^3*x^3/(sqrt(-c^2*x^2 + 1)
+ 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^8) + 1/24*b*c^10*d^2*x^7/((c^5*x^5/(sqrt(-
c^2*x^2 + 1) + 1)^5 + c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 +
1) + 1)^7) + 5/6*b*c^9*d^2*x^6*arcsin(c*x)/((c^5*x^5/(sqrt(-c^2*x^2 + 1) +
1)^5 + c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^6) + 5/
6*a*c^9*d^2*x^6/((c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^3*x^3/(sqrt(-c^2*x
^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^6) - 11/6*b*c^8*d^2*x^5*log(abs(c)
*abs(x))/((c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^3*x^3/(sqrt(-c^2*x^2 + 1)
 + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^5) + 11/6*b*c^8*d^2*x^5*log(sqrt(-c^2*x^2
 + 1) + 1)/((c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^3*x^3/(sqrt(-c^2*x^2 +
1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^5) - 23/24*b*c^8*d^2*x^5/((c^5*x^5/(sqr
t(-c^2*x^2 + 1) + 1)^5 + c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2
 + 1) + 1)^5) + 15/4*b*c^7*d^2*x^4*arcsin(c*x)/((c^5*x^5/(sqrt(-c^2*x^2 + 1
) + 1)^5 + c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^4)
+ 15/4*a*c^7*d^2*x^4/((c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^3*x^3/(sqrt(-
c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^4) - 11/6*b*c^6*d^2*x^3*log(a
bs(c)*abs(x))/((c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^3*x^3/(sqrt(-c^2*x^2
 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^3) + 11/6*b*c^6*d^2*x^3*log(sqrt(-c^
2*x^2 + 1) + 1)/((c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^3*x^3/(sqrt(-c^2*x
^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^3) + 23/24*b*c^6*d^2*x^3/((c^5*x^5
/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^
2*x^2 + 1) + 1)^3) + 5/6*b*c^5*d^2*x^2*arcsin(c*x)/((c^5*x^5/(sqrt(-c^2*x^2
 + 1) + 1)^5 + c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)
^2) + 5/6*a*c^5*d^2*x^2/((c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^3*x^3/(sqr
t(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^2) - 1/24*b*c^4*d^2*x/((c^
5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqr
t(-c^2*x^2 + 1) + 1)) - 1/24*b*c^3*d^2*arcsin(c*x)/(c^5*x^5/(sqrt(-c^2*x^2
+ 1) + 1)^5 + c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3) - 1/24*a*c^3*d^2/(c^5*x^5
/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)
```

maple [A] time = 0.01, size = 115, normalized size = 0.90

$$c^3\left(d^2a\left(cx-\frac{1}{3c^3x^3}+\frac{2}{cx}\right)+d^2b\left(cx\arcsin(cx)-\frac{\arcsin(cx)}{3c^3x^3}+\frac{2\arcsin(cx)}{cx}+\sqrt{-c^2x^2+1}-\frac{\sqrt{-c^2x^2+1}}{6c^2x^2}+\frac{11}{\ldots}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))/x^4,x)
```

```
[Out] c^3*(d^2*a*(c*x-1/3/c^3/x^3+2/c/x)+d^2*b*(c*x*arcsin(c*x)-1/3*arcsin(c*x)/c
^3/x^3+2/c/x*arcsin(c*x)+(-c^2*x^2+1)^(1/2)-1/6/c^2/x^2*(-c^2*x^2+1)^(1/2)+
11/6*arctanh(1/(-c^2*x^2+1)^(1/2))))
```

maxima [A] time = 0.52, size = 170, normalized size = 1.33

$$ac^4d^2x+\left(cx\arcsin(cx)+\sqrt{-c^2x^2+1}\right)bc^3d^2+2\left(c\log\left(\frac{2\sqrt{-c^2x^2+1}}{|x|}+\frac{2}{|x|}\right)+\frac{\arcsin(cx)}{x}\right)bc^2d^2-\frac{1}{6}\left(\left(c^2\log\left(\frac{2\ldots}{}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))/x^4,x, algorithm="maxima")
```

```
[Out] a*c^4*d^2*x + (c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*b*c^3*d^2 + 2*(c*log(2
*sqrt(-c^2*x^2 + 1)/abs(x) + 2/abs(x)) + arcsin(c*x)/x)*b*c^2*d^2 - 1/6*((c
^2*log(2*sqrt(-c^2*x^2 + 1)/abs(x) + 2/abs(x)) + sqrt(-c^2*x^2 + 1)/x^2)*c
+ 2*arcsin(c*x)/x^3)*b*d^2 + 2*a*c^2*d^2/x - 1/3*a*d^2/x^3
```

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

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))\,\left(d-c^2\,d\,x^2\right)^2}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^2)/x^4,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^2)/x^4, x)
```

sympy [A] time = 6.91, size = 235, normalized size = 1.84

$$ac^4d^2x+\frac{2ac^2d^2}{x}-\frac{ad^2}{3x^3}+bc^4d^2\left(\begin{cases}0 & \text{for } c=0\\ x\,\mathrm{asin}(cx)+\frac{\sqrt{-c^2x^2+1}}{c} & \text{otherwise}\end{cases}\right)-2bc^3d^2\left(\begin{cases}-\mathrm{acosh}\left(\frac{1}{cx}\right) & \text{for } \frac{1}{|c^2x^2|}>1\\ i\,\mathrm{asin}\left(\frac{1}{cx}\right) & \text{otherwise}\end{cases}\right)+\frac{2b\ldots}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**2*(a+b*asin(c*x))/x**4,x)
```

```
[Out] a*c**4*d**2*x + 2*a*c**2*d**2/x - a*d**2/(3*x**3) + b*c**4*d**2*Piecewise((
0, Eq(c, 0)), (x*asin(c*x) + sqrt(-c**2*x**2 + 1)/c, True)) - 2*b*c**3*d**2
*Piecewise((-acosh(1/(c*x)), 1/Abs(c**2*x**2) > 1), (I*asin(1/(c*x)), True)
) + 2*b*c**2*d**2*asin(c*x)/x + b*c*d**2*Piecewise((-c**2*acosh(1/(c*x))/2
- c*sqrt(-1 + 1/(c**2*x**2))/(2*x), 1/Abs(c**2*x**2) > 1), (I*c**2*asin(1/(
c*x))/2 - I*c/(2*x*sqrt(1 - 1/(c**2*x**2))) + I/(2*c*x**3*sqrt(1 - 1/(c**2*
x**2))), True))/3 - b*d**2*asin(c*x)/(3*x**3)
```

3.19 $\int x^4 \left(d-c^2 d x^2\right)^3 \left(a+b \sin^{-1}(cx)\right) dx$

Optimal. Leaf size=232

$$-\frac{1}{11} c^6 d^3 x^{11} \left(a+b \sin^{-1}(cx)\right)+\frac{1}{3} c^4 d^3 x^9 \left(a+b \sin^{-1}(cx)\right)-\frac{3}{7} c^2 d^3 x^7 \left(a+b \sin^{-1}(cx)\right)+\frac{1}{5} d^3 x^5 \left(a+b \sin^{-1}(cx)\right)+$$

```
[Out] 8/3465*b*d^3*(-c^2*x^2+1)^(3/2)/c^5+2/1925*b*d^3*(-c^2*x^2+1)^(5/2)/c^5+1/1
617*b*d^3*(-c^2*x^2+1)^(7/2)/c^5-4/297*b*d^3*(-c^2*x^2+1)^(9/2)/c^5+1/121*b
*d^3*(-c^2*x^2+1)^(11/2)/c^5+1/5*d^3*x^5*(a+b*arcsin(c*x))-3/7*c^2*d^3*x^7*
(a+b*arcsin(c*x))+1/3*c^4*d^3*x^9*(a+b*arcsin(c*x))-1/11*c^6*d^3*x^11*(a+b*
arcsin(c*x))+16/1155*b*d^3*(-c^2*x^2+1)^(1/2)/c^5
```

Rubi [A] time = 0.29, antiderivative size = 232, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {270, 4687, 12, 1799, 1620}

$$-\frac{1}{11} c^6 d^3 x^{11} \left(a+b \sin^{-1}(cx)\right)+\frac{1}{3} c^4 d^3 x^9 \left(a+b \sin^{-1}(cx)\right)-\frac{3}{7} c^2 d^3 x^7 \left(a+b \sin^{-1}(cx)\right)+\frac{1}{5} d^3 x^5 \left(a+b \sin^{-1}(cx)\right)+$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x]),x]
```

```
[Out] (16*b*d^3*Sqrt[1 - c^2*x^2])/(1155*c^5) + (8*b*d^3*(1 - c^2*x^2)^(3/2))/(34
65*c^5) + (2*b*d^3*(1 - c^2*x^2)^(5/2))/(1925*c^5) + (b*d^3*(1 - c^2*x^2)^(
7/2))/(1617*c^5) - (4*b*d^3*(1 - c^2*x^2)^(9/2))/(297*c^5) + (b*d^3*(1 - c^
2*x^2)^(11/2))/(121*c^5) + (d^3*x^5*(a + b*ArcSin[c*x]))/5 - (3*c^2*d^3*x^7
*(a + b*ArcSin[c*x]))/7 + (c^4*d^3*x^9*(a + b*ArcSin[c*x]))/3 - (c^6*d^3*x^
11*(a + b*ArcSin[c*x]))/11
```

Rule 12

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

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 1620

```
Int[(Px_)*((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol]
:> Int[ExpandIntegrand[Px*(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c
, d, m, n}, x] && PolyQ[Px, x] && (IntegersQ[m, n] || IGtQ[m, -2]) && GtQ[E
xpon[Px, x], 2]
```

Rule 1799

```
Int[(Pq_)*(x_)^(m_.)*((a_) + (b_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/2, Su
bst[Int[x^((m - 1)/2)*SubstFor[x^2, Pq, x]*(a + b*x)^p, x], x, x^2], x] /;
FreeQ[{a, b, p}, x] && PolyQ[Pq, x^2] && IntegerQ[(m - 1)/2]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
```

```
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rubi steps

$$\int x^4 \left(d - c^2dx^2\right)^3 \left(a + b\sin^{-1}(cx)\right)\,dx = \frac{1}{5}d^3x^5\left(a + b\sin^{-1}(cx)\right) - \frac{3}{7}c^2d^3x^7\left(a + b\sin^{-1}(cx)\right) + \frac{1}{3}c^4d^3x^9\left(a + b\,\mathrm{si}\right.$$

$$= \frac{1}{5}d^3x^5\left(a + b\sin^{-1}(cx)\right) - \frac{3}{7}c^2d^3x^7\left(a + b\sin^{-1}(cx)\right) + \frac{1}{3}c^4d^3x^9\left(a + b\,\mathrm{si}\right.$$

$$= \frac{1}{5}d^3x^5\left(a + b\sin^{-1}(cx)\right) - \frac{3}{7}c^2d^3x^7\left(a + b\sin^{-1}(cx)\right) + \frac{1}{3}c^4d^3x^9\left(a + b\,\mathrm{si}\right.$$

$$= \frac{1}{5}d^3x^5\left(a + b\sin^{-1}(cx)\right) - \frac{3}{7}c^2d^3x^7\left(a + b\sin^{-1}(cx)\right) + \frac{1}{3}c^4d^3x^9\left(a + b\,\mathrm{si}\right.$$

$$= \frac{16bd^3\sqrt{1-c^2x^2}}{1155c^5} + \frac{8bd^3\left(1-c^2x^2\right)^{3/2}}{3465c^5} + \frac{2bd^3\left(1-c^2x^2\right)^{5/2}}{1925c^5} + \frac{bd^3\left(1-c^2\right.}{1617c}$$

Mathematica [A] time = 0.21, size = 143, normalized size = 0.62

$$\frac{d^3\left(-3465ac^5x^5\left(105c^6x^6 - 385c^4x^4 + 495c^2x^2 - 231\right) - 3465bc^5x^5\left(105c^6x^6 - 385c^4x^4 + 495c^2x^2 - 231\right)\sin^{-1}(c\right.}{4002075c^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d^3*(-3465*a*c^5*x^5*(-231 + 495*c^2*x^2 - 385*c^4*x^4 + 105*c^6*x^6) + b*
Sqrt[1 - c^2*x^2]*(50488 + 25244*c^2*x^2 + 18933*c^4*x^4 - 117625*c^6*x^6 +
 111475*c^8*x^8 - 33075*c^10*x^10) - 3465*b*c^5*x^5*(-231 + 495*c^2*x^2 - 3
85*c^4*x^4 + 105*c^6*x^6)*ArcSin[c*x]))/(4002075*c^5)
```

fricas [A] time = 0.51, size = 189, normalized size = 0.81

$$-\frac{363825\,ac^{11}d^3x^{11} - 1334025\,ac^9d^3x^9 + 1715175\,ac^7d^3x^7 - 800415\,ac^5d^3x^5 + 3465\left(105\,bc^{11}d^3x^{11} - 385\,bc^9d^3x^9\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] -1/4002075*(363825*a*c^11*d^3*x^11 - 1334025*a*c^9*d^3*x^9 + 1715175*a*c^7*
d^3*x^7 - 800415*a*c^5*d^3*x^5 + 3465*(105*b*c^11*d^3*x^11 - 385*b*c^9*d^3*
x^9 + 495*b*c^7*d^3*x^7 - 231*b*c^5*d^3*x^5)*arcsin(c*x) + (33075*b*c^10*d^
3*x^10 - 111475*b*c^8*d^3*x^8 + 117625*b*c^6*d^3*x^6 - 18933*b*c^4*d^3*x^4
- 25244*b*c^2*d^3*x^2 - 50488*b*d^3)*sqrt(-c^2*x^2 + 1))/c^5
```

giac [A] time = 0.43, size = 353, normalized size = 1.52

$$-\frac{1}{11}ac^6d^3x^{11} + \frac{1}{3}ac^4d^3x^9 - \frac{3}{7}ac^2d^3x^7 + \frac{1}{5}ad^3x^5 - \frac{\left(c^2x^2-1\right)^5bd^3x\arcsin(cx)}{11\,c^4} - \frac{4\left(c^2x^2-1\right)^4bd^3x\arcsin(cx)}{33\,c^4} - \frac{\left(c^2x^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] -1/11*a*c^6*d^3*x^11 + 1/3*a*c^4*d^3*x^9 - 3/7*a*c^2*d^3*x^7 + 1/5*a*d^3*x^
5 - 1/11*(c^2*x^2 - 1)^5*b*d^3*x*arcsin(c*x)/c^4 - 4/33*(c^2*x^2 - 1)^4*b*d
^3*x*arcsin(c*x)/c^4 - 1/231*(c^2*x^2 - 1)^3*b*d^3*x*arcsin(c*x)/c^4 - 1/12
1*(c^2*x^2 - 1)^5*sqrt(-c^2*x^2 + 1)*b*d^3/c^5 + 2/385*(c^2*x^2 - 1)^2*b*d^
3*x*arcsin(c*x)/c^4 - 4/297*(c^2*x^2 - 1)^4*sqrt(-c^2*x^2 + 1)*b*d^3/c^5 -
8/1155*(c^2*x^2 - 1)*b*d^3*x*arcsin(c*x)/c^4 - 1/1617*(c^2*x^2 - 1)^3*sqrt(
-c^2*x^2 + 1)*b*d^3/c^5 + 16/1155*b*d^3*x*arcsin(c*x)/c^4 + 2/1925*(c^2*x^2
 - 1)^2*sqrt(-c^2*x^2 + 1)*b*d^3/c^5 + 8/3465*(-c^2*x^2 + 1)^(3/2)*b*d^3/c^
5 + 16/1155*sqrt(-c^2*x^2 + 1)*b*d^3/c^5
```

maple [A] time = 0.03, size = 214, normalized size = 0.92

$$\frac{-d^3 a\left(\frac{1}{11}c^{11}x^{11}-\frac{1}{3}c^9x^9+\frac{3}{7}c^7x^7-\frac{1}{5}c^5x^5\right)-d^3b\left(\frac{\arcsin(cx)c^{11}x^{11}}{11}-\frac{\arcsin(cx)c^9x^9}{3}+\frac{3\arcsin(cx)c^7x^7}{7}-\frac{\arcsin(cx)c^5x^5}{5}+\frac{c^1}{}\right.}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c^5*(-d^3*a*(1/11*c^11*x^11-1/3*c^9*x^9+3/7*c^7*x^7-1/5*c^5*x^5)-d^3*b*(1
/11*arcsin(c*x)*c^11*x^11-1/3*arcsin(c*x)*c^9*x^9+3/7*arcsin(c*x)*c^7*x^7-1
/5*arcsin(c*x)*c^5*x^5+1/121*c^10*x^10*(-c^2*x^2+1)^(1/2)-91/3267*c^8*x^8*(
-c^2*x^2+1)^(1/2)+4705/160083*c^6*x^6*(-c^2*x^2+1)^(1/2)-6311/1334025*c^4*x
^4*(-c^2*x^2+1)^(1/2)-25244/4002075*c^2*x^2*(-c^2*x^2+1)^(1/2)-50488/400207
5*(-c^2*x^2+1)^(1/2)))
```

maxima [B] time = 0.50, size = 479, normalized size = 2.06

$$-\frac{1}{11}ac^6d^3x^{11}+\frac{1}{3}ac^4d^3x^9-\frac{3}{7}ac^2d^3x^7-\frac{1}{7623}\left(693x^{11}\arcsin(cx)+\left(\frac{63\sqrt{-c^2x^2+1}\,x^{10}}{c^2}+\frac{70\sqrt{-c^2x^2+1}\,x^8}{c^4}+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] -1/11*a*c^6*d^3*x^11 + 1/3*a*c^4*d^3*x^9 - 3/7*a*c^2*d^3*x^7 - 1/7623*(693*
x^11*arcsin(c*x) + (63*sqrt(-c^2*x^2 + 1)*x^10/c^2 + 70*sqrt(-c^2*x^2 + 1)*
x^8/c^4 + 80*sqrt(-c^2*x^2 + 1)*x^6/c^6 + 96*sqrt(-c^2*x^2 + 1)*x^4/c^8 + 1
28*sqrt(-c^2*x^2 + 1)*x^2/c^10 + 256*sqrt(-c^2*x^2 + 1)/c^12)*c)*b*c^6*d^3
+ 1/945*(315*x^9*arcsin(c*x) + (35*sqrt(-c^2*x^2 + 1)*x^8/c^2 + 40*sqrt(-c^
2*x^2 + 1)*x^6/c^4 + 48*sqrt(-c^2*x^2 + 1)*x^4/c^6 + 64*sqrt(-c^2*x^2 + 1)*
x^2/c^8 + 128*sqrt(-c^2*x^2 + 1)/c^10)*c)*b*c^4*d^3 + 1/5*a*d^3*x^5 - 3/245
*(35*x^7*arcsin(c*x) + (5*sqrt(-c^2*x^2 + 1)*x^6/c^2 + 6*sqrt(-c^2*x^2 + 1)
*x^4/c^4 + 8*sqrt(-c^2*x^2 + 1)*x^2/c^6 + 16*sqrt(-c^2*x^2 + 1)/c^8)*c)*b*c
^2*d^3 + 1/75*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(
-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*b*d^3
```

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

$$\int x^4\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(d-c^2\,d\,x^2\right)}^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a + b*asin(c*x))*(d - c^2*d*x^2)^3,x)
```

```
[Out] int(x^4*(a + b*asin(c*x))*(d - c^2*d*x^2)^3, x)
```

sympy [A] time = 37.04, size = 289, normalized size = 1.25

$$\begin{cases} -\frac{ac^6d^3x^{11}}{11} + \frac{ac^4d^3x^9}{3} - \frac{3ac^2d^3x^7}{7} + \frac{ad^3x^5}{5} - \frac{bc^6d^3x^{11}\operatorname{asin}(cx)}{11} - \frac{bc^5d^3x^{10}\sqrt{-c^2x^2+1}}{121} + \frac{bc^4d^3x^9\operatorname{asin}(cx)}{3} + \frac{91bc^3d^3x^8\sqrt{-c^2x^2+1}}{3267} - \frac{3bc^2 \\ \frac{ad^3x^5}{5} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(-c**2*d*x**2+d)**3*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((-a*c**6*d**3*x**11/11 + a*c**4*d**3*x**9/3 - 3*a*c**2*d**3*x**7/
7 + a*d**3*x**5/5 - b*c**6*d**3*x**11*asin(c*x)/11 - b*c**5*d**3*x**10*sqrt
(-c**2*x**2 + 1)/121 + b*c**4*d**3*x**9*asin(c*x)/3 + 91*b*c**3*d**3*x**8*s
qrt(-c**2*x**2 + 1)/3267 - 3*b*c**2*d**3*x**7*asin(c*x)/7 - 4705*b*c*d**3*x
**6*sqrt(-c**2*x**2 + 1)/160083 + b*d**3*x**5*asin(c*x)/5 + 6311*b*d**3*x**
4*sqrt(-c**2*x**2 + 1)/(1334025*c) + 25244*b*d**3*x**2*sqrt(-c**2*x**2 + 1)
/(4002075*c**3) + 50488*b*d**3*sqrt(-c**2*x**2 + 1)/(4002075*c**5), Ne(c, 0
)), (a*d**3*x**5/5, True))
```

3.20 $\int x^3 \left(d-c^2 d x^2\right)^3 \left(a+b \sin^{-1}(cx)\right) dx$

Optimal. Leaf size=206

$$\frac{d^3 \left(1-c^2x^2\right)^5 \left(a+b\sin^{-1}(cx)\right)}{10c^4}-\frac{d^3 \left(1-c^2x^2\right)^4 \left(a+b\sin^{-1}(cx)\right)}{8c^4}+\frac{49bd^3\sin^{-1}(cx)}{5120c^4}-\frac{bd^3x\left(1-c^2x^2\right)^{9/2}}{100c^3}+\frac{7bd^3x}{}$$

```
[Out] 49/7680*b*d^3*x*(-c^2*x^2+1)^(3/2)/c^3+49/9600*b*d^3*x*(-c^2*x^2+1)^(5/2)/c
^3+7/1600*b*d^3*x*(-c^2*x^2+1)^(7/2)/c^3-1/100*b*d^3*x*(-c^2*x^2+1)^(9/2)/c
^3+49/5120*b*d^3*arcsin(c*x)/c^4-1/8*d^3*(-c^2*x^2+1)^4*(a+b*arcsin(c*x))/c
^4+1/10*d^3*(-c^2*x^2+1)^5*(a+b*arcsin(c*x))/c^4+49/5120*b*d^3*x*(-c^2*x^2+
1)^(1/2)/c^3
```

Rubi [A] time = 0.18, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.280, Rules used = {266, 43, 4687, 12, 388, 195, 216}

$$\frac{d^3 \left(1-c^2x^2\right)^5 \left(a+b\sin^{-1}(cx)\right)}{10c^4}-\frac{d^3 \left(1-c^2x^2\right)^4 \left(a+b\sin^{-1}(cx)\right)}{8c^4}-\frac{bd^3x\left(1-c^2x^2\right)^{9/2}}{100c^3}+\frac{7bd^3x\left(1-c^2x^2\right)^{7/2}}{1600c^3}+\frac{49b}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x]),x]
```

```
[Out] (49*b*d^3*x*Sqrt[1 - c^2*x^2])/(5120*c^3) + (49*b*d^3*x*(1 - c^2*x^2)^(3/2)
)/(7680*c^3) + (49*b*d^3*x*(1 - c^2*x^2)^(5/2))/(9600*c^3) + (7*b*d^3*x*(1
- c^2*x^2)^(7/2))/(1600*c^3) - (b*d^3*x*(1 - c^2*x^2)^(9/2))/(100*c^3) + (4
9*b*d^3*ArcSin[c*x])/(5120*c^4) - (d^3*(1 - c^2*x^2)^4*(a + b*ArcSin[c*x]))
/(8*c^4) + (d^3*(1 - c^2*x^2)^5*(a + b*ArcSin[c*x]))/(10*c^4)
```

Rule 12

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

Rule 43

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

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
```

```
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 388

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_)), x_Symbol] :> Si
mp[(d*x*(a + b*x^n)^(p + 1))/(b*(n*(p + 1) + 1)), x] - Dist[(a*d - b*c*(n*(
p + 1) + 1))/(b*(n*(p + 1) + 1)), Int[(a + b*x^n)^p, x], x] /; FreeQ[{a, b,
 c, d, n}, x] && NeQ[b*c - a*d, 0] && NeQ[n*(p + 1) + 1, 0]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rubi steps

$$\int x^3\left(d-c^2dx^2\right)^3\left(a+b\sin^{-1}(cx)\right)dx = -\frac{d^3\left(1-c^2x^2\right)^4\left(a+b\sin^{-1}(cx)\right)}{8c^4}+\frac{d^3\left(1-c^2x^2\right)^5\left(a+b\sin^{-1}(cx)\right)}{10c^4} - \cdots$$

$$= -\frac{d^3\left(1-c^2x^2\right)^4\left(a+b\sin^{-1}(cx)\right)}{8c^4}+\frac{d^3\left(1-c^2x^2\right)^5\left(a+b\sin^{-1}(cx)\right)}{10c^4} - \cdots$$

$$= -\frac{bd^3x\left(1-c^2x^2\right)^{9/2}}{100c^3}-\frac{d^3\left(1-c^2x^2\right)^4\left(a+b\sin^{-1}(cx)\right)}{8c^4}+\cdots$$

$$= \frac{7bd^3x\left(1-c^2x^2\right)^{7/2}}{1600c^3}-\frac{bd^3x\left(1-c^2x^2\right)^{9/2}}{100c^3}-\cdots$$

$$= \frac{49bd^3x\left(1-c^2x^2\right)^{5/2}}{9600c^3}+\frac{7bd^3x\left(1-c^2x^2\right)^{7/2}}{1600c^3}-\frac{bd^3x\left(1-c^2x^2\right)^{9/2}}{100c^3}-\cdots$$

$$= \frac{49bd^3x\left(1-c^2x^2\right)^{3/2}}{7680c^3}+\frac{49bd^3x\left(1-c^2x^2\right)^{5/2}}{9600c^3}+\frac{7bd^3x\left(1-c^2x^2\right)^{7/2}}{1600c^3}-\cdots$$

$$= \frac{49bd^3x\sqrt{1-c^2x^2}}{5120c^3}+\frac{49bd^3x\left(1-c^2x^2\right)^{3/2}}{7680c^3}+\frac{49bd^3x\left(1-c^2x^2\right)^{5/2}}{9600c^3}+\cdots$$

$$= \frac{49bd^3x\sqrt{1-c^2x^2}}{5120c^3}+\frac{49bd^3x\left(1-c^2x^2\right)^{3/2}}{7680c^3}+\frac{49bd^3x\left(1-c^2x^2\right)^{5/2}}{9600c^3}+\cdots$$

Mathematica [A] time = 0.21, size = 139, normalized size = 0.67

$$\frac{d^3\left(-1920ac^4x^4\left(4c^6x^6-15c^4x^4+20c^2x^2-10\right)-15b\left(512c^{10}x^{10}-1920c^8x^8+2560c^6x^6-1280c^4x^4+79\right)\sin^{-1}(\cdots\right)}{76800c^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d^3*(-1920*a*c^4*x^4*(-10 + 20*c^2*x^2 - 15*c^4*x^4 + 4*c^6*x^6) + b*c*x*S
qrt[1 - c^2*x^2]*(1185 + 790*c^2*x^2 - 3208*c^4*x^4 + 2736*c^6*x^6 - 768*c^
8*x^8) - 15*b*(79 - 1280*c^4*x^4 + 2560*c^6*x^6 - 1920*c^8*x^8 + 512*c^10*x
^10)*ArcSin[c*x]))/(76800*c^4)
```

fricas [A] time = 0.52, size = 185, normalized size = 0.90

$$-\frac{7680\,ac^{10}d^3x^{10} - 28800\,ac^8d^3x^8 + 38400\,ac^6d^3x^6 - 19200\,ac^4d^3x^4 + 15\left(512\,bc^{10}d^3x^{10} - 1920\,bc^8d^3x^8 + 256\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] -1/76800*(7680*a*c^10*d^3*x^10 - 28800*a*c^8*d^3*x^8 + 38400*a*c^6*d^3*x^6
- 19200*a*c^4*d^3*x^4 + 15*(512*b*c^10*d^3*x^10 - 1920*b*c^8*d^3*x^8 + 2560
*b*c^6*d^3*x^6 - 1280*b*c^4*d^3*x^4 + 79*b*d^3)*arcsin(c*x) + (768*b*c^9*d^
3*x^9 - 2736*b*c^7*d^3*x^7 + 3208*b*c^5*d^3*x^5 - 790*b*c^3*d^3*x^3 - 1185*
b*c*d^3*x)*sqrt(-c^2*x^2 + 1))/c^4
```

giac [A] time = 0.37, size = 250, normalized size = 1.21

$$-\frac{1}{10}\,ac^6d^3x^{10}+\frac{3}{8}\,ac^4d^3x^8-\frac{1}{2}\,ac^2d^3x^6+\frac{1}{4}\,ad^3x^4-\frac{\left(c^2x^2-1\right)^4\sqrt{-c^2x^2+1}\,bd^3x}{100\,c^3}-\frac{\left(c^2x^2-1\right)^5bd^3\arcsin\left(cx\right)}{10\,c^4}-\frac{7\left(c^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] -1/10*a*c^6*d^3*x^10 + 3/8*a*c^4*d^3*x^8 - 1/2*a*c^2*d^3*x^6 + 1/4*a*d^3*x^
4 - 1/100*(c^2*x^2 - 1)^4*sqrt(-c^2*x^2 + 1)*b*d^3*x/c^3 - 1/10*(c^2*x^2 -
1)^5*b*d^3*arcsin(c*x)/c^4 - 7/1600*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*b*d^
3*x/c^3 - 1/8*(c^2*x^2 - 1)^4*b*d^3*arcsin(c*x)/c^4 + 49/9600*(c^2*x^2 - 1)
^2*sqrt(-c^2*x^2 + 1)*b*d^3*x/c^3 + 49/7680*(-c^2*x^2 + 1)^(3/2)*b*d^3*x/c^
3 + 49/5120*sqrt(-c^2*x^2 + 1)*b*d^3*x/c^3 + 49/5120*b*d^3*arcsin(c*x)/c^4
```

maple [A] time = 0.02, size = 202, normalized size = 0.98

$$\frac{-d^3a\left(\frac{1}{10}c^{10}x^{10}-\frac{3}{8}c^8x^8+\frac{1}{2}c^6x^6-\frac{1}{4}c^4x^4\right)-d^3b\left(\frac{\arcsin(cx)c^{10}x^{10}}{10}-\frac{3\arcsin(cx)c^8x^8}{8}+\frac{\arcsin(cx)c^6x^6}{2}-\frac{c^4x^4\arcsin(cx)}{4}+\right.}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c^4*(-d^3*a*(1/10*c^10*x^10-3/8*c^8*x^8+1/2*c^6*x^6-1/4*c^4*x^4)-d^3*b*(1
/10*arcsin(c*x)*c^10*x^10-3/8*arcsin(c*x)*c^8*x^8+1/2*arcsin(c*x)*c^6*x^6-1
/4*c^4*x^4*arcsin(c*x)+1/100*c^9*x^9*(-c^2*x^2+1)^(1/2)-57/1600*c^7*x^7*(-c
^2*x^2+1)^(1/2)+401/9600*c^5*x^5*(-c^2*x^2+1)^(1/2)-79/7680*c^3*x^3*(-c^2*x
^2+1)^(1/2)-79/5120*c*x*(-c^2*x^2+1)^(1/2)+79/5120*arcsin(c*x)))
```

maxima [B] time = 0.50, size = 439, normalized size = 2.13

$$-\frac{1}{10}\,ac^6d^3x^{10}+\frac{3}{8}\,ac^4d^3x^8-\frac{1}{2}\,ac^2d^3x^6-\frac{1}{12800}\left(1280\,x^{10}\arcsin\left(cx\right)+\left(\frac{128\,\sqrt{-c^2x^2+1}\,x^9}{c^2}+\frac{144\,\sqrt{-c^2x^2+1}\,x^7}{c^4}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] -1/10*a*c^6*d^3*x^10 + 3/8*a*c^4*d^3*x^8 - 1/2*a*c^2*d^3*x^6 - 1/12800*(128
0*x^10*arcsin(c*x) + (128*sqrt(-c^2*x^2 + 1)*x^9/c^2 + 144*sqrt(-c^2*x^2 +
1)*x^7/c^4 + 168*sqrt(-c^2*x^2 + 1)*x^5/c^6 + 210*sqrt(-c^2*x^2 + 1)*x^3/c^
8 + 315*sqrt(-c^2*x^2 + 1)*x/c^10 - 315*arcsin(c*x)/c^11)*c)*b*c^6*d^3 + 1/
1024*(384*x^8*arcsin(c*x) + (48*sqrt(-c^2*x^2 + 1)*x^7/c^2 + 56*sqrt(-c^2*x
```

```
^2 + 1)*x^5/c^4 + 70*sqrt(-c^2*x^2 + 1)*x^3/c^6 + 105*sqrt(-c^2*x^2 + 1)*x/
c^8 - 105*arcsin(c*x)/c^9)*c)*b*c^4*d^3 + 1/4*a*d^3*x^4 - 1/96*(48*x^6*arcs
in(c*x) + (8*sqrt(-c^2*x^2 + 1)*x^5/c^2 + 10*sqrt(-c^2*x^2 + 1)*x^3/c^4 + 1
5*sqrt(-c^2*x^2 + 1)*x/c^6 - 15*arcsin(c*x)/c^7)*c)*b*c^2*d^3 + 1/32*(8*x^4
*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 -
 3*arcsin(c*x)/c^5)*c)*b*d^3
```

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

$$\int x^3\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(d-c^2\,d\,x^2\right)}^3 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + b*asin(c*x))*(d - c^2*d*x^2)^3,x)
```

```
[Out] int(x^3*(a + b*asin(c*x))*(d - c^2*d*x^2)^3, x)
```

sympy [A] time = 26.93, size = 280, normalized size = 1.36

$$\begin{cases} -\frac{ac^6d^3x^{10}}{10} + \frac{3ac^4d^3x^8}{8} - \frac{ac^2d^3x^6}{2} + \frac{ad^3x^4}{4} - \frac{bc^6d^3x^{10}\operatorname{asin}(cx)}{10} - \frac{bc^5d^3x^9\sqrt{-c^2x^2+1}}{100} + \frac{3bc^4d^3x^8\operatorname{asin}(cx)}{8} + \frac{57bc^3d^3x^7\sqrt{-c^2x^2+1}}{1600} - \frac{bc^2d}{} \\ \frac{ad^3x^4}{4} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(-c**2*d*x**2+d)**3*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((-a*c**6*d**3*x**10/10 + 3*a*c**4*d**3*x**8/8 - a*c**2*d**3*x**6/
2 + a*d**3*x**4/4 - b*c**6*d**3*x**10*asin(c*x)/10 - b*c**5*d**3*x**9*sqrt(
-c**2*x**2 + 1)/100 + 3*b*c**4*d**3*x**8*asin(c*x)/8 + 57*b*c**3*d**3*x**7*
sqrt(-c**2*x**2 + 1)/1600 - b*c**2*d**3*x**6*asin(c*x)/2 - 401*b*c*d**3*x**
5*sqrt(-c**2*x**2 + 1)/9600 + b*d**3*x**4*asin(c*x)/4 + 79*b*d**3*x**3*sqrt
(-c**2*x**2 + 1)/(7680*c) + 79*b*d**3*x*sqrt(-c**2*x**2 + 1)/(5120*c**3) -
79*b*d**3*asin(c*x)/(5120*c**4), Ne(c, 0)), (a*d**3*x**4/4, True))
```

3.21 $\int x^2 \left(d-c^2 d x^2\right)^3 \left(a+b \sin^{-1}(cx)\right) dx$

Optimal. Leaf size=207

$$-\frac{1}{9}c^6 d^3 x^9 \left(a+b\sin^{-1}(cx)\right)+\frac{3}{7}c^4 d^3 x^7 \left(a+b\sin^{-1}(cx)\right)-\frac{3}{5}c^2 d^3 x^5 \left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}d^3 x^3 \left(a+b\sin^{-1}(cx)\right)-\frac{bc}{}$$

```
[Out] 8/945*b*d^3*(-c^2*x^2+1)^(3/2)/c^3+2/525*b*d^3*(-c^2*x^2+1)^(5/2)/c^3+1/441
*b*d^3*(-c^2*x^2+1)^(7/2)/c^3-1/81*b*d^3*(-c^2*x^2+1)^(9/2)/c^3+1/3*d^3*x^3
*(a+b*arcsin(c*x))-3/5*c^2*d^3*x^5*(a+b*arcsin(c*x))+3/7*c^4*d^3*x^7*(a+b*a
rcsin(c*x))-1/9*c^6*d^3*x^9*(a+b*arcsin(c*x))+16/315*b*d^3*(-c^2*x^2+1)^(1/
2)/c^3
```

Rubi [A] time = 0.26, antiderivative size = 207, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {270, 4687, 12, 1799, 1620}

$$-\frac{1}{9}c^6 d^3 x^9 \left(a+b\sin^{-1}(cx)\right)+\frac{3}{7}c^4 d^3 x^7 \left(a+b\sin^{-1}(cx)\right)-\frac{3}{5}c^2 d^3 x^5 \left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}d^3 x^3 \left(a+b\sin^{-1}(cx)\right)-\frac{bc}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x]),x]
```

```
[Out] (16*b*d^3*Sqrt[1 - c^2*x^2])/(315*c^3) + (8*b*d^3*(1 - c^2*x^2)^(3/2))/(945
*c^3) + (2*b*d^3*(1 - c^2*x^2)^(5/2))/(525*c^3) + (b*d^3*(1 - c^2*x^2)^(7/2
))/(441*c^3) - (b*d^3*(1 - c^2*x^2)^(9/2))/(81*c^3) + (d^3*x^3*(a + b*ArcSi
n[c*x]))/3 - (3*c^2*d^3*x^5*(a + b*ArcSin[c*x]))/5 + (3*c^4*d^3*x^7*(a + b*
ArcSin[c*x]))/7 - (c^6*d^3*x^9*(a + b*ArcSin[c*x]))/9
```

Rule 12

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

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 1620

```
Int[(Px_)*((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol]
:> Int[ExpandIntegrand[Px*(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c
, d, m, n}, x] && PolyQ[Px, x] && (IntegersQ[m, n] || IGtQ[m, -2]) && GtQ[E
xpon[Px, x], 2]
```

Rule 1799

```
Int[(Pq_)*(x_)^(m_.)*((a_) + (b_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/2, Su
bst[Int[x^((m - 1)/2)*SubstFor[x^2, Pq, x]*(a + b*x)^p, x], x, x^2], x] /;
FreeQ[{a, b, p}, x] && PolyQ[Pq, x^2] && IntegerQ[(m - 1)/2]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
```

```
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rubi steps

$$\int x^2 \left(d-c^2dx^2\right)^3 \left(a+b\sin^{-1}(cx)\right) dx = \frac{1}{3}d^3x^3\left(a+b\sin^{-1}(cx)\right)-\frac{3}{5}c^2d^3x^5\left(a+b\sin^{-1}(cx)\right)+\frac{3}{7}c^4d^3x^7\left(a+b\,\mathrm{si}\right.$$

$$=\frac{1}{3}d^3x^3\left(a+b\sin^{-1}(cx)\right)-\frac{3}{5}c^2d^3x^5\left(a+b\sin^{-1}(cx)\right)+\frac{3}{7}c^4d^3x^7\left(a+b\,\mathrm{si}\right.$$

$$=\frac{1}{3}d^3x^3\left(a+b\sin^{-1}(cx)\right)-\frac{3}{5}c^2d^3x^5\left(a+b\sin^{-1}(cx)\right)+\frac{3}{7}c^4d^3x^7\left(a+b\,\mathrm{si}\right.$$

$$=\frac{1}{3}d^3x^3\left(a+b\sin^{-1}(cx)\right)-\frac{3}{5}c^2d^3x^5\left(a+b\sin^{-1}(cx)\right)+\frac{3}{7}c^4d^3x^7\left(a+b\,\mathrm{si}\right.$$

$$=\frac{16bd^3\sqrt{1-c^2x^2}}{315c^3}+\frac{8bd^3\left(1-c^2x^2\right)^{3/2}}{945c^3}+\frac{2bd^3\left(1-c^2x^2\right)^{5/2}}{525c^3}+\frac{bd^3\left(1-c^2\right.}{441c}$$

Mathematica [A] time = 0.19, size = 135, normalized size = 0.65

$$\frac{d^3\left(-315ac^3x^3\left(35c^6x^6-135c^4x^4+189c^2x^2-105\right)+b\sqrt{1-c^2x^2}\left(-1225c^8x^8+4675c^6x^6-6297c^4x^4+2629c^2x^2\right.\right.}{99225c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d^3*(-315*a*c^3*x^3*(-105 + 189*c^2*x^2 - 135*c^4*x^4 + 35*c^6*x^6) + b*Sq
rt[1 - c^2*x^2]*(5258 + 2629*c^2*x^2 - 6297*c^4*x^4 + 4675*c^6*x^6 - 1225*c
^8*x^8) - 315*b*c^3*x^3*(-105 + 189*c^2*x^2 - 135*c^4*x^4 + 35*c^6*x^6)*Arc
Sin[c*x]))/(99225*c^3)
```

fricas [A] time = 0.50, size = 177, normalized size = 0.86

$$-\frac{11025\,ac^9d^3x^9-42525\,ac^7d^3x^7+59535\,ac^5d^3x^5-33075\,ac^3d^3x^3+315\left(35\,bc^9d^3x^9-135\,bc^7d^3x^7+189\,bc^5d^3x\right.}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] -1/99225*(11025*a*c^9*d^3*x^9 - 42525*a*c^7*d^3*x^7 + 59535*a*c^5*d^3*x^5 -
 33075*a*c^3*d^3*x^3 + 315*(35*b*c^9*d^3*x^9 - 135*b*c^7*d^3*x^7 + 189*b*c^
5*d^3*x^5 - 105*b*c^3*d^3*x^3)*arcsin(c*x) + (1225*b*c^8*d^3*x^8 - 4675*b*c
^6*d^3*x^6 + 6297*b*c^4*d^3*x^4 - 2629*b*c^2*d^3*x^2 - 5258*b*d^3)*sqrt(-c^
2*x^2 + 1))/c^3
```

giac [A] time = 0.43, size = 296, normalized size = 1.43

$$-\frac{1}{9}\,ac^6d^3x^9+\frac{3}{7}\,ac^4d^3x^7-\frac{3}{5}\,ac^2d^3x^5-\frac{\left(c^2x^2-1\right)^4bd^3x\arcsin\left(cx\right)}{9\,c^2}+\frac{1}{3}\,ad^3x^3-\frac{\left(c^2x^2-1\right)^3bd^3x\arcsin\left(cx\right)}{63\,c^2}+\frac{2\left(c^2x^2-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] -1/9*a*c^6*d^3*x^9 + 3/7*a*c^4*d^3*x^7 - 3/5*a*c^2*d^3*x^5 - 1/9*(c^2*x^2 -
 1)^4*b*d^3*x*arcsin(c*x)/c^2 + 1/3*a*d^3*x^3 - 1/63*(c^2*x^2 - 1)^3*b*d^3*
x*arcsin(c*x)/c^2 + 2/105*(c^2*x^2 - 1)^2*b*d^3*x*arcsin(c*x)/c^2 - 1/81*(c
^2*x^2 - 1)^4*sqrt(-c^2*x^2 + 1)*b*d^3/c^3 - 8/315*(c^2*x^2 - 1)*b*d^3*x*ar
csin(c*x)/c^2 - 1/441*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*b*d^3/c^3 + 16/315
*b*d^3*x*arcsin(c*x)/c^2 + 2/525*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*d^3/c
^3 + 8/945*(-c^2*x^2 + 1)^(3/2)*b*d^3/c^3 + 16/315*sqrt(-c^2*x^2 + 1)*b*d^3
/c^3
```

maple [A] time = 0.01, size = 194, normalized size = 0.94

$$\frac{-d^3a\left(\frac{1}{9}c^9x^9-\frac{3}{7}c^7x^7+\frac{3}{5}c^5x^5-\frac{1}{3}c^3x^3\right)-d^3b\left(\frac{\arcsin(cx)c^9x^9}{9}-\frac{3\arcsin(cx)c^7x^7}{7}+\frac{3\arcsin(cx)c^5x^5}{5}-\frac{c^3x^3\arcsin(cx)}{3}+\frac{c^8x^8\sqrt{}}{}\right.}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c^3*(-d^3*a*(1/9*c^9*x^9-3/7*c^7*x^7+3/5*c^5*x^5-1/3*c^3*x^3)-d^3*b*(1/9*
arcsin(c*x)*c^9*x^9-3/7*arcsin(c*x)*c^7*x^7+3/5*arcsin(c*x)*c^5*x^5-1/3*c^3
*x^3*arcsin(c*x)+1/81*c^8*x^8*(-c^2*x^2+1)^(1/2)-187/3969*c^6*x^6*(-c^2*x^2
+1)^(1/2)+2099/33075*c^4*x^4*(-c^2*x^2+1)^(1/2)-2629/99225*c^2*x^2*(-c^2*x^
2+1)^(1/2)-5258/99225*(-c^2*x^2+1)^(1/2)))
```

maxima [B] time = 0.46, size = 398, normalized size = 1.92

$$-\frac{1}{9}ac^6d^3x^9+\frac{3}{7}ac^4d^3x^7-\frac{1}{2835}\left(315\,x^9\arcsin(cx)+\left(\frac{35\sqrt{-c^2x^2+1}\,x^8}{c^2}+\frac{40\sqrt{-c^2x^2+1}\,x^6}{c^4}+\frac{48\sqrt{-c^2x^2+1}\,x}{c^6}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] -1/9*a*c^6*d^3*x^9 + 3/7*a*c^4*d^3*x^7 - 1/2835*(315*x^9*arcsin(c*x) + (35*
sqrt(-c^2*x^2 + 1)*x^8/c^2 + 40*sqrt(-c^2*x^2 + 1)*x^6/c^4 + 48*sqrt(-c^2*x
^2 + 1)*x^4/c^6 + 64*sqrt(-c^2*x^2 + 1)*x^2/c^8 + 128*sqrt(-c^2*x^2 + 1)/c^
10)*c)*b*c^6*d^3 - 3/5*a*c^2*d^3*x^5 + 3/245*(35*x^7*arcsin(c*x) + (5*sqrt(
-c^2*x^2 + 1)*x^6/c^2 + 6*sqrt(-c^2*x^2 + 1)*x^4/c^4 + 8*sqrt(-c^2*x^2 + 1)
*x^2/c^6 + 16*sqrt(-c^2*x^2 + 1)/c^8)*c)*b*c^4*d^3 - 1/25*(15*x^5*arcsin(c*
x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(
-c^2*x^2 + 1)/c^6)*c)*b*c^2*d^3 + 1/3*a*d^3*x^3 + 1/9*(3*x^3*arcsin(c*x) +
c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*d^3
```

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

$$\int x^2\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(d-c^2\,d\,x^2\right)}^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c*x))*(d - c^2*d*x^2)^3,x)
```

```
[Out] int(x^2*(a + b*asin(c*x))*(d - c^2*d*x^2)^3, x)
```

sympy [A] time = 16.15, size = 265, normalized size = 1.28

$$\begin{cases} -\frac{ac^6d^3x^9}{9}+\frac{3ac^4d^3x^7}{7}-\frac{3ac^2d^3x^5}{5}+\frac{ad^3x^3}{3}-\frac{bc^6d^3x^9\,\mathrm{asin}\,(cx)}{9}-\frac{bc^5d^3x^8\sqrt{-c^2x^2+1}}{81}+\frac{3bc^4d^3x^7\,\mathrm{asin}\,(cx)}{7}+\frac{187bc^3d^3x^6\sqrt{-c^2x^2+1}}{3969}- \\ \frac{ad^3x^3}{3} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(-c**2*d*x**2+d)**3*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((-a*c**6*d**3*x**9/9 + 3*a*c**4*d**3*x**7/7 - 3*a*c**2*d**3*x**5/
5 + a*d**3*x**3/3 - b*c**6*d**3*x**9*asin(c*x)/9 - b*c**5*d**3*x**8*sqrt(-c
**2*x**2 + 1)/81 + 3*b*c**4*d**3*x**7*asin(c*x)/7 + 187*b*c**3*d**3*x**6*sq
rt(-c**2*x**2 + 1)/3969 - 3*b*c**2*d**3*x**5*asin(c*x)/5 - 2099*b*c*d**3*x*
*4*sqrt(-c**2*x**2 + 1)/33075 + b*d**3*x**3*asin(c*x)/3 + 2629*b*d**3*x**2*
sqrt(-c**2*x**2 + 1)/(99225*c) + 5258*b*d**3*sqrt(-c**2*x**2 + 1)/(99225*c*
*3), Ne(c, 0)), (a*d**3*x**3/3, True))
```

3.22 $\int x\left(d-c^2dx^2\right)^3\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=150

$$-\frac{d^3\left(1-c^2x^2\right)^4\left(a+b\sin^{-1}(cx)\right)}{8c^2}+\frac{bd^3x\left(1-c^2x^2\right)^{7/2}}{64c}+\frac{7bd^3x\left(1-c^2x^2\right)^{5/2}}{384c}+\frac{35bd^3x\left(1-c^2x^2\right)^{3/2}}{1536c}+\frac{35bd^3x\sqrt{1-}}{1024c}$$

```
[Out] 35/1536*b*d^3*x*(-c^2*x^2+1)^(3/2)/c+7/384*b*d^3*x*(-c^2*x^2+1)^(5/2)/c+1/6
4*b*d^3*x*(-c^2*x^2+1)^(7/2)/c+35/1024*b*d^3*arcsin(c*x)/c^2-1/8*d^3*(-c^2*
x^2+1)^4*(a+b*arcsin(c*x))/c^2+35/1024*b*d^3*x*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.08, antiderivative size = 150, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.130, Rules used = {4677, 195, 216}

$$-\frac{d^3\left(1-c^2x^2\right)^4\left(a+b\sin^{-1}(cx)\right)}{8c^2}+\frac{bd^3x\left(1-c^2x^2\right)^{7/2}}{64c}+\frac{7bd^3x\left(1-c^2x^2\right)^{5/2}}{384c}+\frac{35bd^3x\left(1-c^2x^2\right)^{3/2}}{1536c}+\frac{35bd^3x\sqrt{1-}}{1024c}$$

Antiderivative was successfully verified.

```
[In] Int[x*(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x]),x]
```

```
[Out] (35*b*d^3*x*Sqrt[1 - c^2*x^2])/(1024*c) + (35*b*d^3*x*(1 - c^2*x^2)^(3/2))/
(1536*c) + (7*b*d^3*x*(1 - c^2*x^2)^(5/2))/(384*c) + (b*d^3*x*(1 - c^2*x^2)
^(7/2))/(64*c) + (35*b*d^3*ArcSin[c*x])/(1024*c^2) - (d^3*(1 - c^2*x^2)^4*(
a + b*ArcSin[c*x]))/(8*c^2)
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int x\left(d-c^2dx^2\right)^3\left(a+b\sin^{-1}(cx)\right)\,dx=-\frac{d^3\left(1-c^2x^2\right)^4\left(a+b\sin^{-1}(cx)\right)}{8c^2}+\frac{\left(bd^3\right)\int\left(1-c^2x^2\right)^{7/2}\,dx}{8c}$$
$$=\frac{bd^3x\left(1-c^2x^2\right)^{7/2}}{64c}-\frac{d^3\left(1-c^2x^2\right)^4\left(a+b\sin^{-1}(cx)\right)}{8c^2}+\frac{\left(7bd^3\right)\int\left(1-c^2x\right.}{64c}$$
$$=\frac{7bd^3x\left(1-c^2x^2\right)^{5/2}}{384c}+\frac{bd^3x\left(1-c^2x^2\right)^{7/2}}{64c}-\frac{d^3\left(1-c^2x^2\right)^4\left(a+b\sin^{-1}(cx\right.}{8c^2}$$
$$=\frac{35bd^3x\left(1-c^2x^2\right)^{3/2}}{1536c}+\frac{7bd^3x\left(1-c^2x^2\right)^{5/2}}{384c}+\frac{bd^3x\left(1-c^2x^2\right)^{7/2}}{64c}-\frac{d^3\left(1-\right.}{}$$
$$=\frac{35bd^3x\sqrt{1-c^2x^2}}{1024c}+\frac{35bd^3x\left(1-c^2x^2\right)^{3/2}}{1536c}+\frac{7bd^3x\left(1-c^2x^2\right)^{5/2}}{384c}+\frac{bd^3x\left(\right.}{}$$
$$=\frac{35bd^3x\sqrt{1-c^2x^2}}{1024c}+\frac{35bd^3x\left(1-c^2x^2\right)^{3/2}}{1536c}+\frac{7bd^3x\left(1-c^2x^2\right)^{5/2}}{384c}+\frac{bd^3x\left(\right.}{}$$

Mathematica [A] time = 0.10, size = 110, normalized size = 0.73

$$-\frac{d^3\left(384a\left(c^2x^2-1\right)^4+bcx\sqrt{1-c^2x^2}\left(48c^6x^6-200c^4x^4+326c^2x^2-279\right)+3b\left(128c^8x^8-512c^6x^6+768c^4x^4-\right.\right.}{3072c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x]),x]
```

```
[Out] -1/3072*(d^3*(384*a*(-1 + c^2*x^2)^4 + b*c*x*Sqrt[1 - c^2*x^2]*(-279 + 326*
c^2*x^2 - 200*c^4*x^4 + 48*c^6*x^6) + 3*b*(93 - 512*c^2*x^2 + 768*c^4*x^4 -
 512*c^6*x^6 + 128*c^8*x^8)*ArcSin[c*x]))/c^2
```

fricas [A] time = 0.46, size = 173, normalized size = 1.15

$$-\frac{384\,ac^8d^3x^8-1536\,ac^6d^3x^6+2304\,ac^4d^3x^4-1536\,ac^2d^3x^2+3\left(128\,bc^8d^3x^8-512\,bc^6d^3x^6+768\,bc^4d^3x^4-512\right.}{3072\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] -1/3072*(384*a*c^8*d^3*x^8 - 1536*a*c^6*d^3*x^6 + 2304*a*c^4*d^3*x^4 - 1536
*a*c^2*d^3*x^2 + 3*(128*b*c^8*d^3*x^8 - 512*b*c^6*d^3*x^6 + 768*b*c^4*d^3*x
^4 - 512*b*c^2*d^3*x^2 + 93*b*d^3)*arcsin(c*x) + (48*b*c^7*d^3*x^7 - 200*b*
c^5*d^3*x^5 + 326*b*c^3*d^3*x^3 - 279*b*c*d^3*x)*sqrt(-c^2*x^2 + 1))/c^2
```

giac [A] time = 0.52, size = 202, normalized size = 1.35

$$-\frac{1}{8}\,ac^6d^3x^8+\frac{1}{2}\,ac^4d^3x^6-\frac{3}{4}\,ac^2d^3x^4-\frac{\left(c^2x^2-1\right)^3\sqrt{-c^2x^2+1}\,bd^3x}{64\,c}-\frac{\left(c^2x^2-1\right)^4bd^3\arcsin\left(cx\right)}{8\,c^2}+\frac{7\left(c^2x^2-1\right)^2\sqrt{-c^2x}}{384\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] -1/8*a*c^6*d^3*x^8 + 1/2*a*c^4*d^3*x^6 - 3/4*a*c^2*d^3*x^4 - 1/64*(c^2*x^2
- 1)^3*sqrt(-c^2*x^2 + 1)*b*d^3*x/c - 1/8*(c^2*x^2 - 1)^4*b*d^3*arcsin(c*x)
/c^2 + 7/384*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*d^3*x/c + 35/1536*(-c^2*x
^2 + 1)^(3/2)*b*d^3*x/c + 35/1024*sqrt(-c^2*x^2 + 1)*b*d^3*x/c + 1/2*(c^2*x
^2 - 1)*a*d^3/c^2 + 35/1024*b*d^3*arcsin(c*x)/c^2
```

maple [A] time = 0.01, size = 182, normalized size = 1.21

$$\frac{-d^3a\left(\frac{1}{8}c^8x^8-\frac{1}{2}c^6x^6+\frac{3}{4}c^4x^4-\frac{1}{2}c^2x^2\right)-d^3b\left(\frac{\arcsin(cx)c^8x^8}{8}-\frac{\arcsin(cx)c^6x^6}{2}+\frac{3c^4x^4\arcsin(cx)}{4}-\frac{c^2x^2\arcsin(cx)}{2}+\frac{c^7x^7\sqrt{-}}{6}\right.}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c^2*(-d^3*a*(1/8*c^8*x^8-1/2*c^6*x^6+3/4*c^4*x^4-1/2*c^2*x^2)-d^3*b*(1/8*
arcsin(c*x)*c^8*x^8-1/2*arcsin(c*x)*c^6*x^6+3/4*c^4*x^4*arcsin(c*x)-1/2*c^2
*x^2*arcsin(c*x)+1/64*c^7*x^7*(-c^2*x^2+1)^(1/2)-25/384*c^5*x^5*(-c^2*x^2+1
)^(1/2)+163/1536*c^3*x^3*(-c^2*x^2+1)^(1/2)-93/1024*c*x*(-c^2*x^2+1)^(1/2)+
93/1024*arcsin(c*x)))
```

maxima [B] time = 0.47, size = 358, normalized size = 2.39

$$-\frac{1}{8}ac^6d^3x^8+\frac{1}{2}ac^4d^3x^6-\frac{1}{3072}\left(384x^8\arcsin(cx)+\left(\frac{48\sqrt{-c^2x^2+1}\,x^7}{c^2}+\frac{56\sqrt{-c^2x^2+1}\,x^5}{c^4}+\frac{70\sqrt{-c^2x^2+1}\,x}{c^6}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] -1/8*a*c^6*d^3*x^8 + 1/2*a*c^4*d^3*x^6 - 1/3072*(384*x^8*arcsin(c*x) + (48*
sqrt(-c^2*x^2 + 1)*x^7/c^2 + 56*sqrt(-c^2*x^2 + 1)*x^5/c^4 + 70*sqrt(-c^2*x
^2 + 1)*x^3/c^6 + 105*sqrt(-c^2*x^2 + 1)*x/c^8 - 105*arcsin(c*x)/c^9)*c)*b*
c^6*d^3 - 3/4*a*c^2*d^3*x^4 + 1/96*(48*x^6*arcsin(c*x) + (8*sqrt(-c^2*x^2 +
 1)*x^5/c^2 + 10*sqrt(-c^2*x^2 + 1)*x^3/c^4 + 15*sqrt(-c^2*x^2 + 1)*x/c^6 -
 15*arcsin(c*x)/c^7)*c)*b*c^4*d^3 - 3/32*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*
x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c*x)/c^5)*c)*b*c^2
*d^3 + 1/2*a*d^3*x^2 + 1/4*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2
 - arcsin(c*x)/c^3))*b*d^3
```

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

$$\int x\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(d-c^2\,d\,x^2\right)}^3 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c*x))*(d - c^2*d*x^2)^3,x)
```

```
[Out] int(x*(a + b*asin(c*x))*(d - c^2*d*x^2)^3, x)
```

sympy [A] time = 10.89, size = 253, normalized size = 1.69

$$\begin{cases} -\frac{ac^6d^3x^8}{8}+\frac{ac^4d^3x^6}{2}-\frac{3ac^2d^3x^4}{4}+\frac{ad^3x^2}{2}-\frac{bc^6d^3x^8\,\mathrm{asin}\,(cx)}{8}-\frac{bc^5d^3x^7\sqrt{-c^2x^2+1}}{64}+\frac{bc^4d^3x^6\,\mathrm{asin}\,(cx)}{2}+\frac{25bc^3d^3x^5\sqrt{-c^2x^2+1}}{384}-\frac{3bc}{} \\ \frac{ad^3x^2}{2} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c**2*d*x**2+d)**3*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((-a*c**6*d**3*x**8/8 + a*c**4*d**3*x**6/2 - 3*a*c**2*d**3*x**4/4
+ a*d**3*x**2/2 - b*c**6*d**3*x**8*asin(c*x)/8 - b*c**5*d**3*x**7*sqrt(-c**
2*x**2 + 1)/64 + b*c**4*d**3*x**6*asin(c*x)/2 + 25*b*c**3*d**3*x**5*sqrt(-c
**2*x**2 + 1)/384 - 3*b*c**2*d**3*x**4*asin(c*x)/4 - 163*b*c*d**3*x**3*sqrt
(-c**2*x**2 + 1)/1536 + b*d**3*x**2*asin(c*x)/2 + 93*b*d**3*x*sqrt(-c**2*x*
*2 + 1)/(1024*c) - 93*b*d**3*asin(c*x)/(1024*c**2), Ne(c, 0)), (a*d**3*x**2
/2, True))
```

3.23 $\int \left(d-c^2dx^2\right)^3 \left(a+b\sin^{-1}(cx)\right) dx$

Optimal. Leaf size=175

$$-\frac{1}{7}c^6d^3x^7\left(a+b\sin^{-1}(cx)\right)+\frac{3}{5}c^4d^3x^5\left(a+b\sin^{-1}(cx)\right)-c^2d^3x^3\left(a+b\sin^{-1}(cx)\right)+d^3x\left(a+b\sin^{-1}(cx)\right)+\frac{bd^3\left(1-c\right.}{49\ldots}$$

```
[Out] 8/105*b*d^3*(-c^2*x^2+1)^(3/2)/c+6/175*b*d^3*(-c^2*x^2+1)^(5/2)/c+1/49*b*d^
3*(-c^2*x^2+1)^(7/2)/c+d^3*x*(a+b*arcsin(c*x))-c^2*d^3*x^3*(a+b*arcsin(c*x)
)+3/5*c^4*d^3*x^5*(a+b*arcsin(c*x))-1/7*c^6*d^3*x^7*(a+b*arcsin(c*x))+16/35
*b*d^3*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.17, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = {194, 4645, 12, 1799, 1850}

$$-\frac{1}{7}c^6d^3x^7\left(a+b\sin^{-1}(cx)\right)+\frac{3}{5}c^4d^3x^5\left(a+b\sin^{-1}(cx)\right)-c^2d^3x^3\left(a+b\sin^{-1}(cx)\right)+d^3x\left(a+b\sin^{-1}(cx)\right)+\frac{bd^3\left(1-c\right.}{49\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x]),x]
```

```
[Out] (16*b*d^3*Sqrt[1 - c^2*x^2])/(35*c) + (8*b*d^3*(1 - c^2*x^2)^(3/2))/(105*c)
 + (6*b*d^3*(1 - c^2*x^2)^(5/2))/(175*c) + (b*d^3*(1 - c^2*x^2)^(7/2))/(49*
c) + d^3*x*(a + b*ArcSin[c*x]) - c^2*d^3*x^3*(a + b*ArcSin[c*x]) + (3*c^4*d
^3*x^5*(a + b*ArcSin[c*x]))/5 - (c^6*d^3*x^7*(a + b*ArcSin[c*x]))/7
```

Rule 12

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

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 1799

```
Int[(Pq_)*(x_)^(m_.)*((a_) + (b_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/2, Su
bst[Int[x^((m - 1)/2)*SubstFor[x^2, Pq, x]*(a + b*x)^p, x], x, x^2], x] /;
FreeQ[{a, b, p}, x] && PolyQ[Pq, x^2] && IntegerQ[(m - 1)/2]
```

Rule 1850

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_.), x_Symbol] :> Int[ExpandIntegrand
[Pq*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, n}, x] && PolyQ[Pq, x] && (IGtQ[p
, 0] || EqQ[n, 1])
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rubi steps

$$\int \left(d-c^2dx^2\right)^3 \left(a+b\sin^{-1}(cx)\right) dx = d^3x\left(a+b\sin^{-1}(cx)\right)-c^2d^3x^3\left(a+b\sin^{-1}(cx)\right)+\frac{3}{5}c^4d^3x^5\left(a+b\sin^{-1}(\right.$$

$$= d^3x\left(a+b\sin^{-1}(cx)\right)-c^2d^3x^3\left(a+b\sin^{-1}(cx)\right)+\frac{3}{5}c^4d^3x^5\left(a+b\sin^{-1}(\right.$$

$$= d^3x\left(a+b\sin^{-1}(cx)\right)-c^2d^3x^3\left(a+b\sin^{-1}(cx)\right)+\frac{3}{5}c^4d^3x^5\left(a+b\sin^{-1}(\right.$$

$$= d^3x\left(a+b\sin^{-1}(cx)\right)-c^2d^3x^3\left(a+b\sin^{-1}(cx)\right)+\frac{3}{5}c^4d^3x^5\left(a+b\sin^{-1}(\right.$$

$$= \frac{16bd^3\sqrt{1-c^2x^2}}{35c}+\frac{8bd^3\left(1-c^2x^2\right)^{3/2}}{105c}+\frac{6bd^3\left(1-c^2x^2\right)^{5/2}}{175c}+\frac{bd^3\left(1-c\right.}{49c}$$

Mathematica [A] time = 0.27, size = 119, normalized size = 0.68

$$-\frac{d^3\left(105acx\left(5c^6x^6-21c^4x^4+35c^2x^2-35\right)+b\sqrt{1-c^2x^2}\left(75c^6x^6-351c^4x^4+757c^2x^2-2161\right)+105bcx\left(5c\right.\right.}{3675c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x]),x]
```

```
[Out] -1/3675*(d^3*(105*a*c*x*(-35 + 35*c^2*x^2 - 21*c^4*x^4 + 5*c^6*x^6) + b*Sqr
t[1 - c^2*x^2]*(-2161 + 757*c^2*x^2 - 351*c^4*x^4 + 75*c^6*x^6) + 105*b*c*x
*(-35 + 35*c^2*x^2 - 21*c^4*x^4 + 5*c^6*x^6)*ArcSin[c*x]))/c
```

fricas [A] time = 0.55, size = 157, normalized size = 0.90

$$-\frac{525\,ac^7d^3x^7-2205\,ac^5d^3x^5+3675\,ac^3d^3x^3-3675\,acd^3x+105\left(5\,bc^7d^3x^7-21\,bc^5d^3x^5+35\,bc^3d^3x^3-35\,bc\right.}{3675\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] -1/3675*(525*a*c^7*d^3*x^7 - 2205*a*c^5*d^3*x^5 + 3675*a*c^3*d^3*x^3 - 3675
*a*c*d^3*x + 105*(5*b*c^7*d^3*x^7 - 21*b*c^5*d^3*x^5 + 35*b*c^3*d^3*x^3 - 3
5*b*c*d^3*x)*arcsin(c*x) + (75*b*c^6*d^3*x^6 - 351*b*c^4*d^3*x^4 + 757*b*c^
2*d^3*x^2 - 2161*b*d^3)*sqrt(-c^2*x^2 + 1))/c
```

giac [A] time = 0.35, size = 224, normalized size = 1.28

$$-\frac{1}{7}\,ac^6d^3x^7+\frac{3}{5}\,ac^4d^3x^5-ac^2d^3x^3-\frac{1}{7}\left(c^2x^2-1\right)^3bd^3x\arcsin\left(cx\right)+\frac{6}{35}\left(c^2x^2-1\right)^2bd^3x\arcsin\left(cx\right)-\frac{8}{35}\left(c^2x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] -1/7*a*c^6*d^3*x^7 + 3/5*a*c^4*d^3*x^5 - a*c^2*d^3*x^3 - 1/7*(c^2*x^2 - 1)^
3*b*d^3*x*arcsin(c*x) + 6/35*(c^2*x^2 - 1)^2*b*d^3*x*arcsin(c*x) - 8/35*(c^
2*x^2 - 1)*b*d^3*x*arcsin(c*x) - 1/49*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*b*
d^3/c + 16/35*b*d^3*x*arcsin(c*x) + 6/175*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1
)*b*d^3/c + a*d^3*x + 8/105*(-c^2*x^2 + 1)^(3/2)*b*d^3/c + 16/35*sqrt(-c^2*
x^2 + 1)*b*d^3/c
```

maple [A] time = 0.00, size = 164, normalized size = 0.94

$$\frac{-d^3a\left(\frac{1}{7}c^7x^7-\frac{3}{5}c^5x^5+c^3x^3-cx\right)-d^3b\left(\frac{\arcsin(cx)c^7x^7}{7}-\frac{3\arcsin(cx)c^5x^5}{5}+c^3x^3\arcsin(cx)-cx\arcsin(cx)+\frac{c^6x^6\sqrt{-c^2}}{49}\right.}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c*(-d^3*a*(1/7*c^7*x^7-3/5*c^5*x^5+c^3*x^3-c*x)-d^3*b*(1/7*arcsin(c*x)*c^
7*x^7-3/5*arcsin(c*x)*c^5*x^5+c^3*x^3*arcsin(c*x)-c*x*arcsin(c*x)+1/49*c^6*
x^6*(-c^2*x^2+1)^(1/2)-117/1225*c^4*x^4*(-c^2*x^2+1)^(1/2)+757/3675*c^2*x^2
*(-c^2*x^2+1)^(1/2)-2161/3675*(-c^2*x^2+1)^(1/2)))
```

maxima [A] time = 0.54, size = 307, normalized size = 1.75

$$-\frac{1}{7}ac^6d^3x^7+\frac{3}{5}ac^4d^3x^5-\frac{1}{245}\left(35x^7\arcsin(cx)+\left(\frac{5\sqrt{-c^2x^2+1}\,x^6}{c^2}+\frac{6\sqrt{-c^2x^2+1}\,x^4}{c^4}+\frac{8\sqrt{-c^2x^2+1}\,x^2}{c^6}+\frac{16\sqrt{}}{}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] -1/7*a*c^6*d^3*x^7 + 3/5*a*c^4*d^3*x^5 - 1/245*(35*x^7*arcsin(c*x) + (5*sqr
t(-c^2*x^2 + 1)*x^6/c^2 + 6*sqrt(-c^2*x^2 + 1)*x^4/c^4 + 8*sqrt(-c^2*x^2 +
1)*x^2/c^6 + 16*sqrt(-c^2*x^2 + 1)/c^8)*c)*b*c^6*d^3 + 1/25*(15*x^5*arcsin(
c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqr
t(-c^2*x^2 + 1)/c^6)*c)*b*c^4*d^3 - a*c^2*d^3*x^3 - 1/3*(3*x^3*arcsin(c*x)
+ c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*c^2*d^3 + a*
d^3*x + (c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*b*d^3/c
```

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

$$\int (a+b\operatorname{asin}(c\,x))\,\left(d-c^2\,d\,x^2\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(d - c^2*d*x^2)^3,x)
```

```
[Out] int((a + b*asin(c*x))*(d - c^2*d*x^2)^3, x)
```

sympy [A] time = 6.09, size = 221, normalized size = 1.26

$$\begin{cases} -\frac{ac^6d^3x^7}{7}+\frac{3ac^4d^3x^5}{5}-ac^2d^3x^3+ad^3x-\frac{bc^6d^3x^7\operatorname{asin}(cx)}{7}-\frac{bc^5d^3x^6\sqrt{-c^2x^2+1}}{49}+\frac{3bc^4d^3x^5\operatorname{asin}(cx)}{5}+\frac{117bc^3d^3x^4\sqrt{-c^2x^2+1}}{1225}-bc^2 \\ ad^3x \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**3*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((-a*c**6*d**3*x**7/7 + 3*a*c**4*d**3*x**5/5 - a*c**2*d**3*x**3 +
a*d**3*x - b*c**6*d**3*x**7*asin(c*x)/7 - b*c**5*d**3*x**6*sqrt(-c**2*x**2
+ 1)/49 + 3*b*c**4*d**3*x**5*asin(c*x)/5 + 117*b*c**3*d**3*x**4*sqrt(-c**2*
x**2 + 1)/1225 - b*c**2*d**3*x**3*asin(c*x) - 757*b*c*d**3*x**2*sqrt(-c**2*
x**2 + 1)/3675 + b*d**3*x*asin(c*x) + 2161*b*d**3*sqrt(-c**2*x**2 + 1)/(367
5*c), Ne(c, 0)), (a*d**3*x, True))
```

3.24 $\int \frac{\left(d-c^2dx^2\right)^3\left(a+b\sin^{-1}(cx)\right)}{x}\,dx$

Optimal. Leaf size=235

$$\frac{1}{6}d^3\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}d^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)-\frac{id^3\left(a+\right.}{}$$

```
[Out] -7/72*b*c*d^3*x*(-c^2*x^2+1)^(3/2)-1/36*b*c*d^3*x*(-c^2*x^2+1)^(5/2)-19/48*
b*d^3*arcsin(c*x)+1/2*d^3*(-c^2*x^2+1)*(a+b*arcsin(c*x))+1/4*d^3*(-c^2*x^2+
1)^2*(a+b*arcsin(c*x))+1/6*d^3*(-c^2*x^2+1)^3*(a+b*arcsin(c*x))-1/2*I*d^3*(
a+b*arcsin(c*x))^2/b+d^3*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))^
2)-1/2*I*b*d^3*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)-19/48*b*c*d^3*x*(-c^
2*x^2+1)^(1/2)
```

Rubi [A] time = 0.28, antiderivative size = 235, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.320, Rules used = {4683, 4625, 3717, 2190, 2279, 2391, 195, 216}

$$-\frac{1}{2}ibd^3\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)+\frac{1}{6}d^3\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}d^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}d^3\left(1-\right.$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^3*(a + b*ArcSin[c*x]))/x,x]
```

```
[Out] (-19*b*c*d^3*x*Sqrt[1 - c^2*x^2])/48 - (7*b*c*d^3*x*(1 - c^2*x^2)^(3/2))/72
 - (b*c*d^3*x*(1 - c^2*x^2)^(5/2))/36 - (19*b*d^3*ArcSin[c*x])/48 + (d^3*(1
 - c^2*x^2)*(a + b*ArcSin[c*x]))/2 + (d^3*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x
]))/4 + (d^3*(1 - c^2*x^2)^3*(a + b*ArcSin[c*x]))/6 - ((I/2)*d^3*(a + b*Arc
Sin[c*x])^2)/b + d^3*(a + b*ArcSin[c*x])*Log[1 - E^((2*I)*ArcSin[c*x])] - (
I/2)*b*d^3*PolyLog[2, E^((2*I)*ArcSin[c*x])]
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4683

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.))/(x_),
x_Symbol] :> Simp[((d + e*x^2)^p*(a + b*ArcSin[c*x]))/(2*p), x] + (Dist[d,
Int[((d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x]))/x, x], x] - Dist[(b*c*d^p)/(2
*p), Int[(1 - c^2*x^2)^(p - 1/2), x], x]) /; FreeQ[{a, b, c, d, e}, x] && E
qQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^3\left(a+b\sin^{-1}(cx)\right)}{x}\,dx = \frac{1}{6}d^3\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)+d\int \frac{\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{x}\,dx$$

$$= -\frac{1}{36}bcd^3x\left(1-c^2x^2\right)^{5/2}+\frac{1}{4}d^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{6}d^3\left(1-c^2x\right.$$

$$= -\frac{7}{72}bcd^3x\left(1-c^2x^2\right)^{3/2}-\frac{1}{36}bcd^3x\left(1-c^2x^2\right)^{5/2}+\frac{1}{2}d^3\left(1-c^2x^2\right)\left(a+b\sin\right.$$

$$= -\frac{19}{48}bcd^3x\sqrt{1-c^2x^2}-\frac{7}{72}bcd^3x\left(1-c^2x^2\right)^{3/2}-\frac{1}{36}bcd^3x\left(1-c^2x^2\right)^{5/2}+\frac{1}{2}$$

$$= -\frac{19}{48}bcd^3x\sqrt{1-c^2x^2}-\frac{7}{72}bcd^3x\left(1-c^2x^2\right)^{3/2}-\frac{1}{36}bcd^3x\left(1-c^2x^2\right)^{5/2}-\frac{19}{48}$$

$$= -\frac{19}{48}bcd^3x\sqrt{1-c^2x^2}-\frac{7}{72}bcd^3x\left(1-c^2x^2\right)^{3/2}-\frac{1}{36}bcd^3x\left(1-c^2x^2\right)^{5/2}-\frac{19}{48}$$

$$= -\frac{19}{48}bcd^3x\sqrt{1-c^2x^2}-\frac{7}{72}bcd^3x\left(1-c^2x^2\right)^{3/2}-\frac{1}{36}bcd^3x\left(1-c^2x^2\right)^{5/2}-\frac{19}{48}$$

$$= -\frac{19}{48}bcd^3x\sqrt{1-c^2x^2}-\frac{7}{72}bcd^3x\left(1-c^2x^2\right)^{3/2}-\frac{1}{36}bcd^3x\left(1-c^2x^2\right)^{5/2}-\frac{19}{48}$$

Mathematica [A] time = 0.23, size = 183, normalized size = 0.78

$$-\frac{1}{144}d^3\left(24ac^6x^6-108ac^4x^4+216ac^2x^2-144a\log(x)+75bcx\sqrt{1-c^2x^2}+4bc^5x^5\sqrt{1-c^2x^2}-22bc^3x^3\sqrt{1-c^2x\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^3*(a + b*ArcSin[c*x]))/x,x]
```

```
[Out] -1/144*(d^3*(216*a*c^2*x^2 - 108*a*c^4*x^4 + 24*a*c^6*x^6 + 75*b*c*x*Sqrt[1
 - c^2*x^2] - 22*b*c^3*x^3*Sqrt[1 - c^2*x^2] + 4*b*c^5*x^5*Sqrt[1 - c^2*x^2
] + (72*I)*b*ArcSin[c*x]^2 + 3*b*ArcSin[c*x]*(-25 + 72*c^2*x^2 - 36*c^4*x^4
 + 8*c^6*x^6 - 48*Log[1 - E^((2*I)*ArcSin[c*x])]) - 144*a*Log[x] + (72*I)*b
*PolyLog[2, E^((2*I)*ArcSin[c*x])]))
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{ac^6d^3x^6 - 3\,ac^4d^3x^4 + 3\,ac^2d^3x^2 - ad^3 + \left(bc^6d^3x^6 - 3\,bc^4d^3x^4 + 3\,bc^2d^3x^2 - bd^3\right)\arcsin\left(cx\right)}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))/x,x, algorithm="fricas")
```

```
[Out] integral(-(a*c^6*d^3*x^6 - 3*a*c^4*d^3*x^4 + 3*a*c^2*d^3*x^2 - a*d^3 + (b*c
^6*d^3*x^6 - 3*b*c^4*d^3*x^4 + 3*b*c^2*d^3*x^2 - b*d^3)*arcsin(c*x))/x, x)
```

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

$$\int -\frac{\left(c^2dx^2 - d\right)^3\left(b\arcsin\left(cx\right) + a\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))/x,x, algorithm="giac")
```

```
[Out] integrate(-(c^2*d*x^2 - d)^3*(b*arcsin(c*x) + a)/x, x)
```

maple [A] time = 0.35, size = 266, normalized size = 1.13

$$-\frac{d^3a\,c^6x^6}{6}+\frac{3d^3a\,c^4x^4}{4}-\frac{3d^3a\,c^2x^2}{2}+d^3a\ln\left(cx\right)-\frac{ib\,d^3\arcsin\left(cx\right)^2}{2}+d^3b\arcsin\left(cx\right)\ln\left(1+icx+\sqrt{-c^2x^2+1}\right)+d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))/x,x)
```

```
[Out] -1/6*d^3*a*c^6*x^6+3/4*d^3*a*c^4*x^4-3/2*d^3*a*c^2*x^2+d^3*a*ln(c*x)-1/2*I*
b*d^3*arcsin(c*x)^2+d^3*b*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+d^3*b*
arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))-I*d^3*b*polylog(2,I*c*x+(-c^2*x^
2+1)^(1/2))-I*d^3*b*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))+1/192*d^3*b*arcsin
(c*x)*cos(6*arcsin(c*x))-1/1152*d^3*b*sin(6*arcsin(c*x))+1/16*d^3*b*arcsin(
c*x)*cos(4*arcsin(c*x))-1/64*d^3*b*sin(4*arcsin(c*x))+29/64*d^3*b*cos(2*arc
sin(c*x))*arcsin(c*x)-29/128*d^3*b*sin(2*arcsin(c*x))
```

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

$$-\frac{1}{6}\,ac^6d^3x^6+\frac{3}{4}\,ac^4d^3x^4-\frac{3}{2}\,ac^2d^3x^2+ad^3\log(x)-\int\frac{\left(bc^6d^3x^6 - 3\,bc^4d^3x^4 + 3\,bc^2d^3x^2 - bd^3\right)\arctan\left(cx, \sqrt{cx +}\right.}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))/x,x, algorithm="maxima")
```

```
[Out] -1/6*a*c^6*d^3*x^6 + 3/4*a*c^4*d^3*x^4 - 3/2*a*c^2*d^3*x^2 + a*d^3*log(x) -
 integrate((b*c^6*d^3*x^6 - 3*b*c^4*d^3*x^4 + 3*b*c^2*d^3*x^2 - b*d^3)*arct
an2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/x, x)
```

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

$$\int \frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(d-c^2\,d\,x^2\right)}^3}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^3)/x,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^3)/x, x)
```

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

$$-d^3\left(\int\left(-\frac{a}{x}\right)dx+\int 3ac^2x\,dx+\int\left(-3ac^4x^3\right)dx+\int ac^6x^5\,dx+\int\left(-\frac{b\operatorname{asin}(cx)}{x}\right)dx+\int 3bc^2x\operatorname{asin}(cx)\,dx\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**3*(a+b*asin(c*x))/x,x)
```

```
[Out] -d**3*(Integral(-a/x, x) + Integral(3*a*c**2*x, x) + Integral(-3*a*c**4*x**
3, x) + Integral(a*c**6*x**5, x) + Integral(-b*asin(c*x)/x, x) + Integral(3
*b*c**2*x*asin(c*x), x) + Integral(-3*b*c**4*x**3*asin(c*x), x) + Integral(
b*c**6*x**5*asin(c*x), x))
```

3.25 $\int \frac{(d-c^2dx^2)^3(a+b\sin^{-1}(cx))}{x^2} dx$

Optimal. Leaf size=164

$$-\frac{1}{5}c^6d^3x^5\left(a+b\sin^{-1}(cx)\right)+c^4d^3x^3\left(a+b\sin^{-1}(cx)\right)-3c^2d^3x\left(a+b\sin^{-1}(cx)\right)-\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{x}-\frac{1}{25}bcd^3\big($$

```
[Out] -1/5*b*c*d^3*(-c^2*x^2+1)^(3/2)-1/25*b*c*d^3*(-c^2*x^2+1)^(5/2)-d^3*(a+b*ar
csin(c*x))/x-3*c^2*d^3*x*(a+b*arcsin(c*x))+c^4*d^3*x^3*(a+b*arcsin(c*x))-1/
5*c^6*d^3*x^5*(a+b*arcsin(c*x))-b*c*d^3*arctanh((-c^2*x^2+1)^(1/2))-11/5*b*
c*d^3*(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.23, antiderivative size = 164, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.280, Rules used = {270, 4687, 12, 1799, 1620, 63, 208}

$$-\frac{1}{5}c^6d^3x^5\left(a+b\sin^{-1}(cx)\right)+c^4d^3x^3\left(a+b\sin^{-1}(cx)\right)-3c^2d^3x\left(a+b\sin^{-1}(cx)\right)-\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{x}-\frac{1}{25}bcd^3\big($$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^3*(a + b*ArcSin[c*x]))/x^2,x]
```

```
[Out] (-11*b*c*d^3*Sqrt[1 - c^2*x^2])/5 - (b*c*d^3*(1 - c^2*x^2)^(3/2))/5 - (b*c*
d^3*(1 - c^2*x^2)^(5/2))/25 - (d^3*(a + b*ArcSin[c*x]))/x - 3*c^2*d^3*x*(a
+ b*ArcSin[c*x]) + c^4*d^3*x^3*(a + b*ArcSin[c*x]) - (c^6*d^3*x^5*(a + b*Ar
cSin[c*x]))/5 - b*c*d^3*ArcTanh[Sqrt[1 - c^2*x^2]]
```

Rule 12

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

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 1620

```
Int[(Px_)*((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol]
:> Int[ExpandIntegrand[Px*(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c
, d, m, n}, x] && PolyQ[Px, x] && (IntegersQ[m, n] || IGtQ[m, -2]) && GtQ[E
xpon[Px, x], 2]
```

Rule 1799

```
Int[(Pq_)*(x_)^(m_.)*((a_) + (b_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/2, Su
bst[Int[x^((m - 1)/2)*SubstFor[x^2, Pq, x]*(a + b*x)^p, x], x, x^2], x] /;
FreeQ[{a, b, p}, x] && PolyQ[Pq, x^2] && IntegerQ[(m - 1)/2]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^3\left(a+b\sin^{-1}(cx)\right)}{x^2}\,dx = -\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{x} - 3c^2d^3x\left(a+b\sin^{-1}(cx)\right) + c^4d^3x^3\left(a+b\sin^{-1}(cx)\right)$$

$$= -\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{x} - 3c^2d^3x\left(a+b\sin^{-1}(cx)\right) + c^4d^3x^3\left(a+b\sin^{-1}(cx)\right)$$

$$= -\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{x} - 3c^2d^3x\left(a+b\sin^{-1}(cx)\right) + c^4d^3x^3\left(a+b\sin^{-1}(cx)\right)$$

$$= -\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{x} - 3c^2d^3x\left(a+b\sin^{-1}(cx)\right) + c^4d^3x^3\left(a+b\sin^{-1}(cx)\right)$$

$$= -\frac{11}{5}bcd^3\sqrt{1-c^2x^2} - \frac{1}{5}bcd^3\left(1-c^2x^2\right)^{3/2} - \frac{1}{25}bcd^3\left(1-c^2x^2\right)^{5/2} - \frac{d^3\left(a+\right.}{}$$

$$= -\frac{11}{5}bcd^3\sqrt{1-c^2x^2} - \frac{1}{5}bcd^3\left(1-c^2x^2\right)^{3/2} - \frac{1}{25}bcd^3\left(1-c^2x^2\right)^{5/2} - \frac{d^3\left(a+\right.}{}$$

$$= -\frac{11}{5}bcd^3\sqrt{1-c^2x^2} - \frac{1}{5}bcd^3\left(1-c^2x^2\right)^{3/2} - \frac{1}{25}bcd^3\left(1-c^2x^2\right)^{5/2} - \frac{d^3\left(a+\right.}{}$$

Mathematica [A] time = 0.13, size = 166, normalized size = 1.01

$$-\frac{d^3\left(5ac^6x^6-25ac^4x^4+75ac^2x^2+25a+61bcx\sqrt{1-c^2x^2}+25bcx\log\left(\sqrt{1-c^2x^2}+1\right)+bc^5x^5\sqrt{1-c^2x^2}-7bc\right.}{25x}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d - c^2*d*x^2)^3*(a + b*ArcSin[c*x]))/x^2,x]
```

```
[Out] -1/25*(d^3*(25*a + 75*a*c^2*x^2 - 25*a*c^4*x^4 + 5*a*c^6*x^6 + 61*b*c*x*Sqr
t[1 - c^2*x^2] - 7*b*c^3*x^3*Sqrt[1 - c^2*x^2] + b*c^5*x^5*Sqrt[1 - c^2*x^2
] + 5*b*(5 + 15*c^2*x^2 - 5*c^4*x^4 + c^6*x^6)*ArcSin[c*x] - 25*b*c*x*Log[x
] + 25*b*c*x*Log[1 + Sqrt[1 - c^2*x^2]]))/x
```

fricas [A] time = 0.57, size = 188, normalized size = 1.15

$$-\frac{10\,ac^6d^3x^6-50\,ac^4d^3x^4+150\,ac^2d^3x^2+25\,bcd^3x\log\left(\sqrt{-c^2x^2+1}+1\right)-25\,bcd^3x\log\left(\sqrt{-c^2x^2+1}-1\right)+50}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))/x^2,x, algorithm="fricas")
```

```
[Out] -1/50*(10*a*c^6*d^3*x^6 - 50*a*c^4*d^3*x^4 + 150*a*c^2*d^3*x^2 + 25*b*c*d^3
*x*log(sqrt(-c^2*x^2 + 1) + 1) - 25*b*c*d^3*x*log(sqrt(-c^2*x^2 + 1) - 1) +
 50*a*d^3 + 10*(b*c^6*d^3*x^6 - 5*b*c^4*d^3*x^4 + 15*b*c^2*d^3*x^2 + 5*b*d^
3)*arcsin(c*x) + 2*(b*c^5*d^3*x^5 - 7*b*c^3*d^3*x^3 + 61*b*c*d^3*x)*sqrt(-c
^2*x^2 + 1))/x
```

giac [B] time = 48.64, size = 5513, normalized size = 33.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))/x^2,x, algorithm="giac")
```

```
[Out] -1/2*b*c^13*d^3*x^12*arcsin(c*x)/((c^11*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 +
5*c^9*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^
7 + 10*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^3*x^3/(sqrt(-c^2*x^2 + 1) +
 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^12) - 1/2*a*
c^13*d^3*x^12/((c^11*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^9*x^9/(sqrt(-c^
2*x^2 + 1) + 1)^9 + 10*c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^5*x^5/(sqr
t(-c^2*x^2 + 1) + 1)^5 + 5*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-
c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^12) + b*c^12*d^3*x^11*log(abs(c
)*abs(x))/((c^11*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^9*x^9/(sqrt(-c^2*x^
2 + 1) + 1)^9 + 10*c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^5*x^5/(sqrt(-c
^2*x^2 + 1) + 1)^5 + 5*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*
x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^11) - b*c^12*d^3*x^11*log(sqrt(-c^2
*x^2 + 1) + 1)/((c^11*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^9*x^9/(sqrt(-c
^2*x^2 + 1) + 1)^9 + 10*c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^5*x^5/(sq
rt(-c^2*x^2 + 1) + 1)^5 + 5*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(
-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^11) + 61/25*b*c^12*d^3*x^11/((
c^11*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^9*x^9/(sqrt(-c^2*x^2 + 1) + 1)^
9 + 10*c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^5*x^5/(sqrt(-c^2*x^2 + 1)
+ 1)^5 + 5*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1
))*(sqrt(-c^2*x^2 + 1) + 1)^11) - 9*b*c^11*d^3*x^10*arcsin(c*x)/((c^11*x^11
/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^9*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^
7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 +
5*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(
-c^2*x^2 + 1) + 1)^10) - 9*a*c^11*d^3*x^10/((c^11*x^11/(sqrt(-c^2*x^2 + 1)
+ 1)^11 + 5*c^9*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^7*x^7/(sqrt(-c^2*x^2
+ 1) + 1)^7 + 10*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^3*x^3/(sqrt(-c^2*
x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^10
) + 5*b*c^10*d^3*x^9*log(abs(c)*abs(x))/((c^11*x^11/(sqrt(-c^2*x^2 + 1) + 1
)^11 + 5*c^9*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^7*x^7/(sqrt(-c^2*x^2 + 1
) + 1)^7 + 10*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^3*x^3/(sqrt(-c^2*x^2
 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^9) -
5*b*c^10*d^3*x^9*log(sqrt(-c^2*x^2 + 1) + 1)/((c^11*x^11/(sqrt(-c^2*x^2 + 1
) + 1)^11 + 5*c^9*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^7*x^7/(sqrt(-c^2*x^
2 + 1) + 1)^7 + 10*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^3*x^3/(sqrt(-c^
2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^
9) + 31/5*b*c^10*d^3*x^9/((c^11*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^9*x^
9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c
^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 +
c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^9) - 47/2*b*c^9*d^3*
x^8*arcsin(c*x)/((c^11*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^9*x^9/(sqrt(-
c^2*x^2 + 1) + 1)^9 + 10*c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^5*x^5/(s
qrt(-c^2*x^2 + 1) + 1)^5 + 5*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt
(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^8) - 47/2*a*c^9*d^3*x^8/((c^1
1*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^9*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 +
 10*c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1
```

)^5 + 5*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*
(sqrt(-c^2*x^2 + 1) + 1)^8) + 10*b*c^8*d^3*x^7*log(abs(c)*abs(x))/((c^11*x^
11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^9*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*
c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5
+ 5*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqr
t(-c^2*x^2 + 1) + 1)^7) - 10*b*c^8*d^3*x^7*log(sqrt(-c^2*x^2 + 1) + 1)/((c^
11*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^9*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9
+ 10*c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^5*x^5/(sqrt(-c^2*x^2 + 1) +
1)^5 + 5*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))
*(sqrt(-c^2*x^2 + 1) + 1)^7) + 22/5*b*c^8*d^3*x^7/((c^11*x^11/(sqrt(-c^2*x^
2 + 1) + 1)^11 + 5*c^9*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^7*x^7/(sqrt(-c
^2*x^2 + 1) + 1)^7 + 10*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^3*x^3/(sqr
t(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1)
+ 1)^7) - 182/5*b*c^7*d^3*x^6*arcsin(c*x)/((c^11*x^11/(sqrt(-c^2*x^2 + 1) +
1)^11 + 5*c^9*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^7*x^7/(sqrt(-c^2*x^2 +
1) + 1)^7 + 10*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^3*x^3/(sqrt(-c^2*x
^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^6)
- 182/5*a*c^7*d^3*x^6/((c^11*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^9*x^9/(
sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^5*
x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x
/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^6) + 10*b*c^6*d^3*x^5*l
og(abs(c)*abs(x))/((c^11*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^9*x^9/(sqrt
(-c^2*x^2 + 1) + 1)^9 + 10*c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^5*x^5/
(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sq
rt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^5) - 10*b*c^6*d^3*x^5*log(s
qrt(-c^2*x^2 + 1) + 1)/((c^11*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^9*x^9/
(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^5
*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*
x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^5) - 22/5*b*c^6*d^3*x^
5/((c^11*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^9*x^9/(sqrt(-c^2*x^2 + 1) +
1)^9 + 10*c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^5*x^5/(sqrt(-c^2*x^2 +
1) + 1)^5 + 5*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1)
+ 1))*(sqrt(-c^2*x^2 + 1) + 1)^5) - 47/2*b*c^5*d^3*x^4*arcsin(c*x)/((c^11*
x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^9*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 1
0*c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^
5 + 5*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(s
qrt(-c^2*x^2 + 1) + 1)^4) - 47/2*a*c^5*d^3*x^4/((c^11*x^11/(sqrt(-c^2*x^2 +
1) + 1)^11 + 5*c^9*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^7*x^7/(sqrt(-c^2*
x^2 + 1) + 1)^7 + 10*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^3*x^3/(sqrt(-
c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1
)^4) + 5*b*c^4*d^3*x^3*log(abs(c)*abs(x))/((c^11*x^11/(sqrt(-c^2*x^2 + 1) +
1)^11 + 5*c^9*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^7*x^7/(sqrt(-c^2*x^2 +
1) + 1)^7 + 10*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^3*x^3/(sqrt(-c^2*x
^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^3)
- 5*b*c^4*d^3*x^3*log(sqrt(-c^2*x^2 + 1) + 1)/((c^11*x^11/(sqrt(-c^2*x^2 +
1) + 1)^11 + 5*c^9*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^7*x^7/(sqrt(-c^2*x
^2 + 1) + 1)^7 + 10*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^3*x^3/(sqrt(-c
^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)
^3) - 31/5*b*c^4*d^3*x^3/((c^11*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^9*x^
9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c
^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 +
c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^3) - 9*b*c^3*d^3*x^2
*arcsin(c*x)/((c^11*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^9*x^9/(sqrt(-c^2
*x^2 + 1) + 1)^9 + 10*c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^5*x^5/(sqrt
(-c^2*x^2 + 1) + 1)^5 + 5*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c
^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^2) - 9*a*c^3*d^3*x^2/((c^11*x^11
/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^9*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^
7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 +
5*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(

```
-c^2*x^2 + 1) + 1)^2) + b*c^2*d^3*x*log(abs(c)*abs(x))/((c^11*x^11/(sqrt(-c
^2*x^2 + 1) + 1)^11 + 5*c^9*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^7*x^7/(sq
rt(-c^2*x^2 + 1) + 1)^7 + 10*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^3*x^3
/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2
+ 1) + 1)) - b*c^2*d^3*x*log(sqrt(-c^2*x^2 + 1) + 1)/((c^11*x^11/(sqrt(-c^2
*x^2 + 1) + 1)^11 + 5*c^9*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^7*x^7/(sqrt
(-c^2*x^2 + 1) + 1)^7 + 10*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^3*x^3/(
sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 +
1) + 1)) - 61/25*b*c^2*d^3*x/((c^11*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^
9*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 +
10*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^
3 + c*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)) - 1/2*b*c*d^3*a
rcsin(c*x)/(c^11*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^9*x^9/(sqrt(-c^2*x^
2 + 1) + 1)^9 + 10*c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^5*x^5/(sqrt(-c
^2*x^2 + 1) + 1)^5 + 5*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c*x/(sqrt(-c^2*
x^2 + 1) + 1)) - 1/2*a*c*d^3/(c^11*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^9
*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^7*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 1
0*c^5*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^3*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3
 + c*x/(sqrt(-c^2*x^2 + 1) + 1))
```

maple [A] time = 0.01, size = 155, normalized size = 0.95

$$c\left(-d^3a\left(\frac{c^5x^5}{5}-c^3x^3+3cx+\frac{1}{cx}\right)-d^3b\left(\frac{\arcsin(cx)\,c^5x^5}{5}-c^3x^3\arcsin(cx)+3cx\arcsin(cx)+\frac{\arcsin(cx)}{cx}+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))/x^2,x)
```

```
[Out] c*(-d^3*a*(1/5*c^5*x^5-c^3*x^3+3*c*x+1/c/x)-d^3*b*(1/5*arcsin(c*x)*c^5*x^5-
c^3*x^3*arcsin(c*x)+3*c*x*arcsin(c*x)+1/c/x*arcsin(c*x)+1/25*c^4*x^4*(-c^2*
x^2+1)^(1/2)-7/25*c^2*x^2*(-c^2*x^2+1)^(1/2)+61/25*(-c^2*x^2+1)^(1/2)+arcta
nh(1/(-c^2*x^2+1)^(1/2))))
```

maxima [A] time = 0.48, size = 250, normalized size = 1.52

$$-\frac{1}{5}ac^6d^3x^5-\frac{1}{75}\left(15x^5\arcsin(cx)+\left(\frac{3\sqrt{-c^2x^2+1}\,x^4}{c^2}+\frac{4\sqrt{-c^2x^2+1}\,x^2}{c^4}+\frac{8\sqrt{-c^2x^2+1}}{c^6}\right)c\right)bc^6d^3+ac^4d^3x^3+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))/x^2,x, algorithm="maxima")
```

```
[Out] -1/5*a*c^6*d^3*x^5 - 1/75*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c
^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*b*c^6*d^3
+ a*c^4*d^3*x^3 + 1/3*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 +
2*sqrt(-c^2*x^2 + 1)/c^4))*b*c^4*d^3 - 3*a*c^2*d^3*x - 3*(c*x*arcsin(c*x) +
 sqrt(-c^2*x^2 + 1))*b*c*d^3 - (c*log(2*sqrt(-c^2*x^2 + 1)/abs(x) + 2/abs(x
)) + arcsin(c*x)/x)*b*d^3 - a*d^3/x
```

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

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))\,\left(d-c^2\,d\,x^2\right)^3}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^3)/x^2,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^3)/x^2, x)
```

sympy [A] time = 8.12, size = 287, normalized size = 1.75

$$-\frac{ac^6d^3x^5}{5}+ac^4d^3x^3-3ac^2d^3x-\frac{ad^3}{x}+\frac{bc^7d^3\left(\begin{cases}-\frac{x^4\sqrt{-c^2x^2+1}}{5c^2}-\frac{4x^2\sqrt{-c^2x^2+1}}{15c^4}-\frac{8\sqrt{-c^2x^2+1}}{15c^6} & \text{for } c\neq 0\\ \frac{x^6}{6} & \text{otherwise}\end{cases}\right)}{5}-\frac{bc^6d^3x^5\operatorname{asin}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**3*(a+b*asin(c*x))/x**2,x)
```

```
[Out] -a*c**6*d**3*x**5/5 + a*c**4*d**3*x**3 - 3*a*c**2*d**3*x - a*d**3/x + b*c**
7*d**3*Piecewise((-x**4*sqrt(-c**2*x**2 + 1)/(5*c**2) - 4*x**2*sqrt(-c**2*x
**2 + 1)/(15*c**4) - 8*sqrt(-c**2*x**2 + 1)/(15*c**6), Ne(c, 0)), (x**6/6,
True))/5 - b*c**6*d**3*x**5*asin(c*x)/5 - b*c**5*d**3*Piecewise((-x**2*sqrt
(-c**2*x**2 + 1)/(3*c**2) - 2*sqrt(-c**2*x**2 + 1)/(3*c**4), Ne(c, 0)), (x*
*4/4, True)) + b*c**4*d**3*x**3*asin(c*x) - 3*b*c**2*d**3*Piecewise((0, Eq(
c, 0)), (x*asin(c*x) + sqrt(-c**2*x**2 + 1)/c, True)) + b*c*d**3*Piecewise(
(-acosh(1/(c*x)), 1/Abs(c**2*x**2) > 1), (I*asin(1/(c*x)), True)) - b*d**3*
asin(c*x)/x
```

3.26 $\int \frac{\left(d-c^2dx^2\right)^3\left(a+b\sin^{-1}(cx)\right)}{x^3}\,dx$

Optimal. Leaf size=263

$$-\frac{d^3\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)}{2x^2}-\frac{3}{4}c^2d^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)-\frac{3}{2}c^2d^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)+\frac{3ic^2}{}$$

```
[Out] -7/16*b*c^3*d^3*x*(-c^2*x^2+1)^(3/2)-1/2*b*c*d^3*(-c^2*x^2+1)^(5/2)/x+3/32*
b*c^2*d^3*arcsin(c*x)-3/2*c^2*d^3*(-c^2*x^2+1)*(a+b*arcsin(c*x))-3/4*c^2*d^
3*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))-1/2*d^3*(-c^2*x^2+1)^3*(a+b*arcsin(c*x))
/x^2+3/2*I*c^2*d^3*(a+b*arcsin(c*x))^2/b-3*c^2*d^3*(a+b*arcsin(c*x))*ln(1-(
I*c*x+(-c^2*x^2+1)^(1/2))^2)+3/2*I*b*c^2*d^3*polylog(2,(I*c*x+(-c^2*x^2+1)^
(1/2))^2)+3/32*b*c^3*d^3*x*(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.30, antiderivative size = 263, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {4685, 277, 195, 216, 4683, 4625, 3717, 2190, 2279, 2391}

$$\frac{3}{2}ibc^2d^3\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)-\frac{d^3\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)}{2x^2}-\frac{3}{4}c^2d^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)-\frac{3}{2}c^2d^3\left(\right.$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^3*(a + b*ArcSin[c*x]))/x^3,x]
```

```
[Out] (3*b*c^3*d^3*x*Sqrt[1 - c^2*x^2])/32 - (7*b*c^3*d^3*x*(1 - c^2*x^2)^(3/2))/
16 - (b*c*d^3*(1 - c^2*x^2)^(5/2))/(2*x) + (3*b*c^2*d^3*ArcSin[c*x])/32 - (
3*c^2*d^3*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/2 - (3*c^2*d^3*(1 - c^2*x^2)^2
*(a + b*ArcSin[c*x]))/4 - (d^3*(1 - c^2*x^2)^3*(a + b*ArcSin[c*x]))/(2*x^2)
 + (((3*I)/2)*c^2*d^3*(a + b*ArcSin[c*x])^2)/b - 3*c^2*d^3*(a + b*ArcSin[c*
x])*Log[1 - E^((2*I)*ArcSin[c*x])] + ((3*I)/2)*b*c^2*d^3*PolyLog[2, E^((2*I
)*ArcSin[c*x])]
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 277

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c
*x)^(m + 1)*(a + b*x^n)^p)/(c*(m + 1)), x] - Dist[(b*n*p)/(c^n*(m + 1)), In
t[(c*x)^(m + n)*(a + b*x^n)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[
n, 0] && GtQ[p, 0] && LtQ[m, -1] &&  !ILtQ[(m + n*p + n + 1)/n, 0] && IntBi
nomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4683

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.))/(x_),
x_Symbol] :> Simp[((d + e*x^2)^p*(a + b*ArcSin[c*x]))/(2*p), x] + (Dist[d,
Int[((d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x]))/x, x], x] - Dist[(b*c*d^p)/(2
*p), Int[(1 - c^2*x^2)^(p - 1/2), x], x]) /; FreeQ[{a, b, c, d, e}, x] && E
qQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4685

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcSin[c*x
]))/(f*(m + 1)), x] + (-Dist[(b*c*d^p)/(f*(m + 1)), Int[(f*x)^(m + 1)*(1 -
c^2*x^2)^(p - 1/2), x], x] - Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m + 2)*
(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x]), x], x]) /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0] && ILtQ[(m + 1)/2, 0]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^3\left(a+b\sin^{-1}(cx)\right)}{x^3}\,dx = -\frac{d^3\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)}{2x^2} - \left(3c^2d\right)\int \frac{\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(\right.}{x}$$

$$= -\frac{bcd^3\left(1-c^2x^2\right)^{5/2}}{2x} - \frac{3}{4}c^2d^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right) - \frac{d^3\left(1-c^2x^2\right.}{}$$

$$= -\frac{7}{16}bc^3d^3x\left(1-c^2x^2\right)^{3/2} - \frac{bcd^3\left(1-c^2x^2\right)^{5/2}}{2x} - \frac{3}{2}c^2d^3\left(1-c^2x^2\right)\left(a+b\right.$$

$$= \frac{3}{32}bc^3d^3x\sqrt{1-c^2x^2} - \frac{7}{16}bc^3d^3x\left(1-c^2x^2\right)^{3/2} - \frac{bcd^3\left(1-c^2x^2\right)^{5/2}}{2x} - \frac{3}{2}c$$

$$= \frac{3}{32}bc^3d^3x\sqrt{1-c^2x^2} - \frac{7}{16}bc^3d^3x\left(1-c^2x^2\right)^{3/2} - \frac{bcd^3\left(1-c^2x^2\right)^{5/2}}{2x} + \frac{3}{32}$$

$$= \frac{3}{32}bc^3d^3x\sqrt{1-c^2x^2} - \frac{7}{16}bc^3d^3x\left(1-c^2x^2\right)^{3/2} - \frac{bcd^3\left(1-c^2x^2\right)^{5/2}}{2x} + \frac{3}{32}$$

$$= \frac{3}{32}bc^3d^3x\sqrt{1-c^2x^2} - \frac{7}{16}bc^3d^3x\left(1-c^2x^2\right)^{3/2} - \frac{bcd^3\left(1-c^2x^2\right)^{5/2}}{2x} + \frac{3}{32}$$

$$= \frac{3}{32}bc^3d^3x\sqrt{1-c^2x^2} - \frac{7}{16}bc^3d^3x\left(1-c^2x^2\right)^{3/2} - \frac{bcd^3\left(1-c^2x^2\right)^{5/2}}{2x} + \frac{3}{32}$$

Mathematica [A] time = 0.19, size = 203, normalized size = 0.77

$$-\frac{d^3\left(8ac^6x^6 - 48ac^4x^4 + 96ac^2x^2\log(x) + 16a - 48ibc^2x^2\text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right) + 16bcx\sqrt{1-c^2x^2} - 48ibc^2x^2\sin^{-1}(\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^3*(a + b*ArcSin[c*x]))/x^3,x]
```

```
[Out] -1/32*(d^3*(16*a - 48*a*c^4*x^4 + 8*a*c^6*x^6 + 16*b*c*x*Sqrt[1 - c^2*x^2]
- 21*b*c^3*x^3*Sqrt[1 - c^2*x^2] + 2*b*c^5*x^5*Sqrt[1 - c^2*x^2] - (48*I)*b
*c^2*x^2*ArcSin[c*x]^2 + b*ArcSin[c*x]*(16 + 21*c^2*x^2 - 48*c^4*x^4 + 8*c^
6*x^6 + 96*c^2*x^2*Log[1 - E^((2*I)*ArcSin[c*x])]) + 96*a*c^2*x^2*Log[x] -
(48*I)*b*c^2*x^2*PolyLog[2, E^((2*I)*ArcSin[c*x])]))/x^2
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{ac^6d^3x^6 - 3\,ac^4d^3x^4 + 3\,ac^2d^3x^2 - ad^3 + \left(bc^6d^3x^6 - 3\,bc^4d^3x^4 + 3\,bc^2d^3x^2 - bd^3\right)\arcsin(cx)}{x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))/x^3,x, algorithm="fricas")
```

```
[Out] integral(-(a*c^6*d^3*x^6 - 3*a*c^4*d^3*x^4 + 3*a*c^2*d^3*x^2 - a*d^3 + (b*c
^6*d^3*x^6 - 3*b*c^4*d^3*x^4 + 3*b*c^2*d^3*x^2 - b*d^3)*arcsin(c*x))/x^3, x
)
```

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

$$\int -\frac{\left(c^2dx^2 - d\right)^3\left(b\arcsin(cx) + a\right)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))/x^3,x, algorithm="giac")
```

```
[Out] integrate(-(c^2*d*x^2 - d)^3*(b*arcsin(c*x) + a)/x^3, x)
```

maple [A] time = 0.68, size = 326, normalized size = 1.24

$$-\frac{c^6 d^3 a x^4}{4}+\frac{3c^4 d^3 a x^2}{2}-3c^2 d^3 a \ln(cx)-\frac{d^3 a}{2x^2}+\frac{ic^2 d^3 b}{2}+\frac{5b c^3 d^3 x\sqrt{-c^2x^2+1}}{8}+\frac{5c^4 d^3 b \arcsin(cx) x^2}{4}-\frac{5b c^2 d^3 \arcsin(}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))/x^3,x)
```

```
[Out] -1/4*c^6*d^3*a*x^4+3/2*c^4*d^3*a*x^2-3*c^2*d^3*a*ln(c*x)-1/2*d^3*a/x^2+3*I*
c^2*d^3*b*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))+5/8*b*c^3*d^3*x*(-c^2*x^2+1)
^(1/2)+5/4*c^4*d^3*b*arcsin(c*x)*x^2-5/8*b*c^2*d^3*arcsin(c*x)+1/2*I*c^2*d^
3*b-1/2*b*c*d^3*(-c^2*x^2+1)^(1/2)/x-1/2*d^3*b*arcsin(c*x)/x^2-3*c^2*d^3*b*
arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-3*c^2*d^3*b*arcsin(c*x)*ln(1-I*c
*x-(-c^2*x^2+1)^(1/2))+3*I*c^2*d^3*b*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))+3/
2*I*c^2*d^3*b*arcsin(c*x)^2-1/32*c^2*d^3*b*arcsin(c*x)*cos(4*arcsin(c*x))+1
/128*c^2*d^3*b*sin(4*arcsin(c*x))
```

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

$$-\frac{1}{4}\, ac^6 d^3 x^4+\frac{3}{2}\, ac^4 d^3 x^2-3\, ac^2 d^3 \log(x)-\frac{1}{2}\, bd^3\left(\frac{\sqrt{-c^2x^2+1}\, c}{x}+\frac{\arcsin(cx)}{x^2}\right)-\frac{ad^3}{2\, x^2}-\int \frac{\left(bc^6 d^3 x^4 - 3\, bc^4 d^3 x^2 + 3\, bc\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))/x^3,x, algorithm="maxima")
```

```
[Out] -1/4*a*c^6*d^3*x^4 + 3/2*a*c^4*d^3*x^2 - 3*a*c^2*d^3*log(x) - 1/2*b*d^3*(sq
rt(-c^2*x^2 + 1)*c/x + arcsin(c*x)/x^2) - 1/2*a*d^3/x^2 - integrate((b*c^6*
d^3*x^4 - 3*b*c^4*d^3*x^2 + 3*b*c^2*d^3)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c
*x + 1))/x, x)
```

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

$$\int \frac{(a + b \operatorname{asin}(c\, x))\, \left(d - c^2\, d\, x^2\right)^3}{x^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^3)/x^3,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^3)/x^3, x)
```

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

$$-d^3\left(\int \left(-\frac{a}{x^3}\right) dx + \int \frac{3ac^2}{x}\, dx + \int \left(-3ac^4 x\right) dx + \int ac^6 x^3\, dx + \int \left(-\frac{b \operatorname{asin}(cx)}{x^3}\right) dx + \int \frac{3bc^2 \operatorname{asin}(cx)}{x}\, dx + \right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**3*(a+b*asin(c*x))/x**3,x)
```

```
[Out] -d**3*(Integral(-a/x**3, x) + Integral(3*a*c**2/x, x) + Integral(-3*a*c**4*
x, x) + Integral(a*c**6*x**3, x) + Integral(-b*asin(c*x)/x**3, x) + Integra
l(3*b*c**2*asin(c*x)/x, x) + Integral(-3*b*c**4*x*asin(c*x), x) + Integral(
b*c**6*x**3*asin(c*x), x))
```

3.27 $\int \frac{\left(d-c^2dx^2\right)^3\left(a+b\sin^{-1}(cx)\right)}{x^4}\,dx$

Optimal. Leaf size=178

$$-\frac{1}{3}c^6d^3x^3\left(a+b\sin^{-1}(cx)\right)+3c^4d^3x\left(a+b\sin^{-1}(cx)\right)+\frac{3c^2d^3\left(a+b\sin^{-1}(cx)\right)}{x}-\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{bcd^3\sqrt{1-}}{6x^2}$$

```
[Out] 1/9*b*c^3*d^3*(-c^2*x^2+1)^(3/2)-1/3*d^3*(a+b*arcsin(c*x))/x^3+3*c^2*d^3*(a
+b*arcsin(c*x))/x+3*c^4*d^3*x*(a+b*arcsin(c*x))-1/3*c^6*d^3*x^3*(a+b*arcsin
(c*x))+17/6*b*c^3*d^3*arctanh((-c^2*x^2+1)^(1/2))+8/3*b*c^3*d^3*(-c^2*x^2+1
)^(1/2)-1/6*b*c*d^3*(-c^2*x^2+1)^(1/2)/x^2
```

Rubi [A] time = 0.25, antiderivative size = 178, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.320$, Rules used = {270, 4687, 12, 1799, 1621, 897, 1153, 208}

$$-\frac{1}{3}c^6d^3x^3\left(a+b\sin^{-1}(cx)\right)+3c^4d^3x\left(a+b\sin^{-1}(cx)\right)+\frac{3c^2d^3\left(a+b\sin^{-1}(cx)\right)}{x}-\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{3x^3}+\frac{1}{9}bc^3d^3(1$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^3*(a + b*ArcSin[c*x]))/x^4,x]
```

```
[Out] (8*b*c^3*d^3*Sqrt[1 - c^2*x^2])/3 - (b*c*d^3*Sqrt[1 - c^2*x^2])/(6*x^2) + (
b*c^3*d^3*(1 - c^2*x^2)^(3/2))/9 - (d^3*(a + b*ArcSin[c*x]))/(3*x^3) + (3*c
^2*d^3*(a + b*ArcSin[c*x]))/x + 3*c^4*d^3*x*(a + b*ArcSin[c*x]) - (c^6*d^3*
x^3*(a + b*ArcSin[c*x]))/3 + (17*b*c^3*d^3*ArcTanh[Sqrt[1 - c^2*x^2]])/6
```

Rule 12

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

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 897

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_.) + (b_.)*(x_)
 + (c_.)*(x_)^2)^(p_.), x_Symbol] :> With[{q = Denominator[m]}, Dist[q/e, S
ubst[Int[x^(q*(m + 1) - 1)*((e*f - d*g)/e + (g*x^q)/e)^n*((c*d^2 - b*d*e +
a*e^2)/e^2 - ((2*c*d - b*e)*x^q)/e^2 + (c*x^(2*q))/e^2)^p, x], x, (d + e*x)
^(1/q)], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ
[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegersQ[n, p] && Fra
ctionQ[m]
```

Rule 1153

```
Int[((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.),
 x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^q*(a + b*x^2 + c*x^4)^p, x],
x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e
```

```
 + a*e^2, 0] && IGtQ[p, 0] && IGtQ[q, -2]
```

Rule 1621

```
Int[(Px_)*((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :
> With[{Qx = PolynomialQuotient[Px, a + b*x, x], R = PolynomialRemainder[Px
, a + b*x, x]}, Simp[(R*(a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((m + 1)*(b*c
- a*d)), x] + Dist[1/((m + 1)*(b*c - a*d)), Int[(a + b*x)^(m + 1)*(c + d*x)
^n*ExpandToSum[(m + 1)*(b*c - a*d)*Qx - d*R*(m + n + 2), x], x], x]] /; Fre
eQ[{a, b, c, d, n}, x] && PolyQ[Px, x] && ILtQ[m, -1] && GtQ[Expon[Px, x],
2]
```

Rule 1799

```
Int[(Pq_)*(x_)^(m_.)*((a_) + (b_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/2, Su
bst[Int[x^((m - 1)/2)*SubstFor[x^2, Pq, x]*(a + b*x)^p, x], x, x^2], x] /;
FreeQ[{a, b, p}, x] && PolyQ[Pq, x^2] && IntegerQ[(m - 1)/2]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^3\left(a+b\sin^{-1}(cx)\right)}{x^4}\,dx = -\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{3x^3}+\frac{3c^2d^3\left(a+b\sin^{-1}(cx)\right)}{x}+3c^4d^3x\left(a+b\sin^{-1}(cx)\right)$$

$$= -\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{3x^3}+\frac{3c^2d^3\left(a+b\sin^{-1}(cx)\right)}{x}+3c^4d^3x\left(a+b\sin^{-1}(cx)\right)$$

$$= -\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{3x^3}+\frac{3c^2d^3\left(a+b\sin^{-1}(cx)\right)}{x}+3c^4d^3x\left(a+b\sin^{-1}(cx)\right)$$

$$= -\frac{bcd^3\sqrt{1-c^2x^2}}{6x^2}-\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{3x^3}+\frac{3c^2d^3\left(a+b\sin^{-1}(cx)\right)}{x}+3c^4d^3$$

$$= -\frac{bcd^3\sqrt{1-c^2x^2}}{6x^2}-\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{3x^3}+\frac{3c^2d^3\left(a+b\sin^{-1}(cx)\right)}{x}+3c^4d^3$$

$$= -\frac{bcd^3\sqrt{1-c^2x^2}}{6x^2}-\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{3x^3}+\frac{3c^2d^3\left(a+b\sin^{-1}(cx)\right)}{x}+3c^4d^3$$

$$= \frac{8}{3}bc^3d^3\sqrt{1-c^2x^2}-\frac{bcd^3\sqrt{1-c^2x^2}}{6x^2}+\frac{1}{9}bc^3d^3\left(1-c^2x^2\right)^{3/2}-\frac{d^3\left(a+b\sin\right.}{3x^3}$$

$$= \frac{8}{3}bc^3d^3\sqrt{1-c^2x^2}-\frac{bcd^3\sqrt{1-c^2x^2}}{6x^2}+\frac{1}{9}bc^3d^3\left(1-c^2x^2\right)^{3/2}-\frac{d^3\left(a+b\sin\right.}{3x^3}$$

Mathematica [A] time = 0.16, size = 175, normalized size = 0.98

$$-\frac{d^3\left(6ac^6x^6-54ac^4x^4-54ac^2x^2+6a+51bc^3x^3\log(x)+3bcx\sqrt{1-c^2x^2}+2bc^5x^5\sqrt{1-c^2x^2}-50bc^3x^3\sqrt{1-\right.}{18x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d - c^2*d*x^2)^3*(a + b*ArcSin[c*x]))/x^4,x]
```

```
[Out] -1/18*(d^3*(6*a - 54*a*c^2*x^2 - 54*a*c^4*x^4 + 6*a*c^6*x^6 + 3*b*c*x*Sqrt[
1 - c^2*x^2] - 50*b*c^3*x^3*Sqrt[1 - c^2*x^2] + 2*b*c^5*x^5*Sqrt[1 - c^2*x^
2] + 6*b*(1 - 9*c^2*x^2 - 9*c^4*x^4 + c^6*x^6)*ArcSin[c*x] + 51*b*c^3*x^3*L
og[x] - 51*b*c^3*x^3*Log[1 + Sqrt[1 - c^2*x^2]]))/x^3
```

fricas [A] time = 0.55, size = 196, normalized size = 1.10

$$-\frac{12\,ac^6d^3x^6-108\,ac^4d^3x^4-51\,bc^3d^3x^3\log\left(\sqrt{-c^2x^2+1}+1\right)+51\,bc^3d^3x^3\log\left(\sqrt{-c^2x^2+1}-1\right)-108\,ac^2d^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))/x^4,x, algorithm="fricas")
```

```
[Out] -1/36*(12*a*c^6*d^3*x^6 - 108*a*c^4*d^3*x^4 - 51*b*c^3*d^3*x^3*log(sqrt(-c^
2*x^2 + 1) + 1) + 51*b*c^3*d^3*x^3*log(sqrt(-c^2*x^2 + 1) - 1) - 108*a*c^2*
d^3*x^2 + 12*a*d^3 + 12*(b*c^6*d^3*x^6 - 9*b*c^4*d^3*x^4 - 9*b*c^2*d^3*x^2
+ b*d^3)*arcsin(c*x) + 2*(2*b*c^5*d^3*x^5 - 50*b*c^3*d^3*x^3 + 3*b*c*d^3*x)
*sqrt(-c^2*x^2 + 1))/x^3
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))/x^4,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.01, size = 161, normalized size = 0.90

$$c^3\left(-d^3a\left(\frac{c^3x^3}{3}-3cx+\frac{1}{3c^3x^3}-\frac{3}{cx}\right)-d^3b\left(\frac{c^3x^3\arcsin(cx)}{3}-3cx\arcsin(cx)+\frac{\arcsin(cx)}{3c^3x^3}-\frac{3\arcsin(cx)}{cx}+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))/x^4,x)
```

```
[Out] c^3*(-d^3*a*(1/3*c^3*x^3-3*c*x+1/3/c^3/x^3-3/c/x)-d^3*b*(1/3*c^3*x^3*arcsin
(c*x)-3*c*x*arcsin(c*x)+1/3*arcsin(c*x)/c^3/x^3-3/c/x*arcsin(c*x)+1/9*c^2*x
^2*(-c^2*x^2+1)^(1/2)-25/9*(-c^2*x^2+1)^(1/2)+1/6/c^2/x^2*(-c^2*x^2+1)^(1/2
)-17/6*arctanh(1/(-c^2*x^2+1)^(1/2))))
```

maxima [A] time = 0.47, size = 242, normalized size = 1.36

$$-\frac{1}{3}\,ac^6d^3x^3-\frac{1}{9}\left(3\,x^3\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2}+\frac{2\,\sqrt{-c^2x^2+1}}{c^4}\right)\right)bc^6d^3+3\,ac^4d^3x+3\left(cx\arcsin(cx)+\sqrt{-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))/x^4,x, algorithm="maxima")
```

```
[Out] -1/3*a*c^6*d^3*x^3 - 1/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2
 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*c^6*d^3 + 3*a*c^4*d^3*x + 3*(c*x*arcsin(c*x
) + sqrt(-c^2*x^2 + 1))*b*c^3*d^3 + 3*(c*log(2*sqrt(-c^2*x^2 + 1)/abs(x) +
2/abs(x)) + arcsin(c*x)/x)*b*c^2*d^3 - 1/6*((c^2*log(2*sqrt(-c^2*x^2 + 1)/a
bs(x) + 2/abs(x)) + sqrt(-c^2*x^2 + 1)/x^2)*c + 2*arcsin(c*x)/x^3)*b*d^3 +
3*a*c^2*d^3/x - 1/3*a*d^3/x^3
```

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

$$\int \frac{(a + b \operatorname{asin}(c\,x))\,\left(d - c^2\,d\,x^2\right)^3}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^3)/x^4,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^3)/x^4, x)
```

sympy [A] time = 8.93, size = 326, normalized size = 1.83

$$-\frac{ac^6d^3x^3}{3}+3ac^4d^3x+\frac{3ac^2d^3}{x}-\frac{ad^3}{3x^3}+\frac{bc^7d^3\left(\begin{cases}-\frac{x^2\sqrt{-c^2x^2+1}}{3c^2}-\frac{2\sqrt{-c^2x^2+1}}{3c^4} & \text{for } c\neq 0\\ \frac{x^4}{4} & \text{otherwise}\end{cases}\right)}{3}-\frac{bc^6d^3x^3\operatorname{asin}(cx)}{3}+3bc^4d^3\left(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**3*(a+b*asin(c*x))/x**4,x)
```

```
[Out] -a*c**6*d**3*x**3/3 + 3*a*c**4*d**3*x + 3*a*c**2*d**3/x - a*d**3/(3*x**3) +
 b*c**7*d**3*Piecewise((-x**2*sqrt(-c**2*x**2 + 1)/(3*c**2) - 2*sqrt(-c**2*
x**2 + 1)/(3*c**4), Ne(c, 0)), (x**4/4, True))/3 - b*c**6*d**3*x**3*asin(c*
x)/3 + 3*b*c**4*d**3*Piecewise((0, Eq(c, 0)), (x*asin(c*x) + sqrt(-c**2*x**
2 + 1)/c, True)) - 3*b*c**3*d**3*Piecewise((-acosh(1/(c*x)), 1/Abs(c**2*x**
2) > 1), (I*asin(1/(c*x)), True)) + 3*b*c**2*d**3*asin(c*x)/x + b*c*d**3*Pi
ecewise((-c**2*acosh(1/(c*x))/2 - c*sqrt(-1 + 1/(c**2*x**2))/(2*x), 1/Abs(c
**2*x**2) > 1), (I*c**2*asin(1/(c*x))/2 - I*c/(2*x*sqrt(1 - 1/(c**2*x**2)))
 + I/(2*c*x**3*sqrt(1 - 1/(c**2*x**2))), True))/3 - b*d**3*asin(c*x)/(3*x**
3)
```

3.28 $\int \frac{x^4(a+b\sin^{-1}(cx))}{d-c^2dx^2}\,dx$

Optimal. Leaf size=172

$$-\frac{2i\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^5d}-\frac{x\left(a+b\sin^{-1}(cx)\right)}{c^4d}-\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{3c^2d}+\frac{ib\mathrm{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)}{c^5d}-\frac{ib\mathrm{Li}_2\left(i\right.}{}$$

```
[Out] 1/9*b*(-c^2*x^2+1)^(3/2)/c^5/d-x*(a+b*arcsin(c*x))/c^4/d-1/3*x^3*(a+b*arcsi
n(c*x))/c^2/d-2*I*(a+b*arcsin(c*x))*arctan(I*c*x+(-c^2*x^2+1)^(1/2))/c^5/d+
I*b*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c^5/d-I*b*polylog(2,I*(I*c*x+(
-c^2*x^2+1)^(1/2)))/c^5/d-4/3*b*(-c^2*x^2+1)^(1/2)/c^5/d
```

Rubi [A] time = 0.24, antiderivative size = 172, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.320, Rules used = {4715, 4657, 4181, 2279, 2391, 261, 266, 43}

$$\frac{ib\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{c^5d}-\frac{ib\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{c^5d}-\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{3c^2d}-\frac{x\left(a+b\sin^{-1}(cx)\right)}{c^4d}-\frac{2i\tan^{-1}\left(e^{i\sin}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2),x]
```

```
[Out] (-4*b*Sqrt[1 - c^2*x^2])/(3*c^5*d) + (b*(1 - c^2*x^2)^(3/2))/(9*c^5*d) - (x
*(a + b*ArcSin[c*x]))/(c^4*d) - (x^3*(a + b*ArcSin[c*x]))/(3*c^2*d) - ((2*I
)*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])])/(c^5*d) + (I*b*PolyLog[2,
(-I)*E^(I*ArcSin[c*x])])/(c^5*d) - (I*b*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c
^5*d)
```

Rule 43

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

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(e*(m + 2*p + 1)), x] + (Dist[(f^2*(m - 1))/(c^2*(m + 2*
p + 1)), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(c*(m + 2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c
*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e,
0] && GtQ[n, 0] && GtQ[m, 1] && NeQ[m + 2*p + 1, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)}{d-c^2dx^2}\,dx = -\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{3c^2d}+\frac{\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{d-c^2dx^2}\,dx}{c^2}+\frac{b\int \frac{x^3}{\sqrt{1-c^2x^2}}\,dx}{3cd}$$

$$= -\frac{x\left(a+b\sin^{-1}(cx)\right)}{c^4d}-\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{3c^2d}+\frac{\int \frac{a+b\sin^{-1}(cx)}{d-c^2dx^2}\,dx}{c^4}+\frac{b\int \frac{x}{\sqrt{1-c^2x^2}}\,dx}{c^3d}+\frac{b}{}$$

$$= -\frac{b\sqrt{1-c^2x^2}}{c^5d}-\frac{x\left(a+b\sin^{-1}(cx)\right)}{c^4d}-\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{3c^2d}+\frac{\text{Subst}\left(\int (a+bx)\sec(x\right.}{c^5d}$$

$$= -\frac{4b\sqrt{1-c^2x^2}}{3c^5d}+\frac{b\left(1-c^2x^2\right)^{3/2}}{9c^5d}-\frac{x\left(a+b\sin^{-1}(cx)\right)}{c^4d}-\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{3c^2d}-\frac{2i\left(a\right.}{}$$

$$= -\frac{4b\sqrt{1-c^2x^2}}{3c^5d}+\frac{b\left(1-c^2x^2\right)^{3/2}}{9c^5d}-\frac{x\left(a+b\sin^{-1}(cx)\right)}{c^4d}-\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{3c^2d}-\frac{2i\left(a\right.}{}$$

$$= -\frac{4b\sqrt{1-c^2x^2}}{3c^5d}+\frac{b\left(1-c^2x^2\right)^{3/2}}{9c^5d}-\frac{x\left(a+b\sin^{-1}(cx)\right)}{c^4d}-\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{3c^2d}-\frac{2i\left(a\right.}{}$$

Mathematica [A] time = 0.36, size = 286, normalized size = 1.66

$$-\frac{6ac^3x^3+18acx+9a\log(1-cx)-9a\log(cx+1)+6bc^3x^3\sin^{-1}(cx)+2bc^2x^2\sqrt{1-c^2x^2}+22b\sqrt{1-c^2x^2}-18ib}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^4*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2),x]
```

```
[Out] -1/18*(18*a*c*x + 6*a*c^3*x^3 + 22*b*Sqrt[1 - c^2*x^2] + 2*b*c^2*x^2*Sqrt[1
 - c^2*x^2] + (9*I)*b*Pi*ArcSin[c*x] + 18*b*c*x*ArcSin[c*x] + 6*b*c^3*x^3*A
rcSin[c*x] - 9*b*Pi*Log[1 - I*E^(I*ArcSin[c*x])] - 18*b*ArcSin[c*x]*Log[1 -
```

```
 I*E^(I*ArcSin[c*x])] - 9*b*Pi*Log[1 + I*E^(I*ArcSin[c*x])] + 18*b*ArcSin[c
*x]*Log[1 + I*E^(I*ArcSin[c*x])] + 9*a*Log[1 - c*x] - 9*a*Log[1 + c*x] + 9*
b*Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] + 9*b*Pi*Log[Sin[(Pi + 2*ArcSin[c*x]
)/4]] - (18*I)*b*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] + (18*I)*b*PolyLog[2, I
*E^(I*ArcSin[c*x])])/(c^5*d)
```

fricas [F] time = 0.52, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{bx^4 \arcsin(cx) + ax^4}{c^2dx^2 - d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d),x, algorithm="fricas")
```

```
[Out] integral(-(b*x^4*arcsin(c*x) + a*x^4)/(c^2*d*x^2 - d), x)
```

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

$$\int -\frac{(b \arcsin(cx) + a)x^4}{c^2dx^2 - d}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d),x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)*x^4/(c^2*d*x^2 - d), x)
```

maple [A] time = 0.27, size = 270, normalized size = 1.57

$$-\frac{a\,x^3}{3c^2d}-\frac{ax}{c^4d}-\frac{a\ln(cx-1)}{2c^5d}+\frac{a\ln(cx+1)}{2c^5d}-\frac{b\arcsin(cx)\ln\left(1+i\left(icx+\sqrt{-c^2x^2+1}\right)\right)}{c^5d}+\frac{b\arcsin(cx)\ln\left(1-i\left(i\right.\right.}{c^5d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d),x)
```

```
[Out] -1/3/c^2*a/d*x^3-1/c^4*a/d*x-1/2/c^5*a/d*ln(c*x-1)+1/2/c^5*a/d*ln(c*x+1)-1/
c^5*b/d*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+1/c^5*b/d*arcsin(c*x
)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+I/c^5*b/d*dilog(1+I*(I*c*x+(-c^2*x^2+1
)^(1/2)))-I/c^5*b/d*dilog(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-11/9*b*(-c^2*x^2+
1)^(1/2)/c^5/d-1/c^4*b/d*arcsin(c*x)*x-1/3/c^2*b/d*arcsin(c*x)*x^3-1/9/c^3*
b/d*(-c^2*x^2+1)^(1/2)*x^2
```

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

$$-\frac{1}{6}a\left(\frac{2\left(c^2x^3+3x\right)}{c^4d}-\frac{3\log(cx+1)}{c^5d}+\frac{3\log(cx-1)}{c^5d}\right)+\frac{-\frac{1}{3}\left(c^5d\left(\frac{2\left(c^2x^2+2\right)\sqrt{cx+1}\sqrt{-cx+1}}{c^5d}+\frac{18\sqrt{cx+1}\sqrt{-cx+1}}{c^5d}+3\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d),x, algorithm="maxima")
```

```
[Out] -1/6*a*(2*(c^2*x^3 + 3*x)/(c^4*d) - 3*log(c*x + 1)/(c^5*d) + 3*log(c*x - 1)
/(c^5*d)) + 1/6*(6*c^5*d*integrate(-1/6*(2*c^3*x^3 + 6*c*x - 3*log(c*x + 1)
 + 3*log(-c*x + 1))*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c^6*d*x^2 - c^4*d), x) -
2*(c^3*x^3 + 3*c*x)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + 3*arctan2(
c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(c*x + 1) - 3*arctan2(c*x, sqrt(c*x +
 1)*sqrt(-c*x + 1))*log(-c*x + 1))*b/(c^5*d)
```

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

$$\int \frac{x^4\,(a+b\,\mathrm{asin}\,(c\,x))}{d-c^2\,d\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(a + b*asin(c*x)))/(d - c^2*d*x^2),x)
```

```
[Out] int((x^4*(a + b*asin(c*x)))/(d - c^2*d*x^2), x)
```

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

$$-\frac{\int \frac{ax^4}{c^2x^2-1}\,dx + \int \frac{bx^4\,\mathrm{asin}\,(cx)}{c^2x^2-1}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*asin(c*x))/(-c**2*d*x**2+d),x)
```

```
[Out] -(Integral(a*x**4/(c**2*x**2 - 1), x) + Integral(b*x**4*asin(c*x)/(c**2*x**
2 - 1), x))/d
```

3.29 $\int \frac{x^3(a+b\sin^{-1}(cx))}{d-c^2dx^2}\,dx$

Optimal. Leaf size=144

$$\frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2bc^4d}-\frac{\log\left(1+e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^4d}-\frac{x^2\left(a+b\sin^{-1}(cx)\right)}{2c^2d}+\frac{ib\text{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right)}{2c^4d}+\frac{b\sin^{-1}(}{4c^4d}$$

```
[Out] 1/4*b*arcsin(c*x)/c^4/d-1/2*x^2*(a+b*arcsin(c*x))/c^2/d+1/2*I*(a+b*arcsin(c
*x))^2/b/c^4/d-(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c^4/d+1
/2*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c^4/d-1/4*b*x*(-c^2*x^2+1)^
(1/2)/c^3/d
```

Rubi [A] time = 0.19, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.320, Rules used = {4715, 4675, 3719, 2190, 2279, 2391, 321, 216}

$$\frac{ib\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{2c^4d}-\frac{x^2\left(a+b\sin^{-1}(cx)\right)}{2c^2d}+\frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2bc^4d}-\frac{\log\left(1+e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^4d}-$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2),x]
```

```
[Out] -(b*x*Sqrt[1 - c^2*x^2])/(4*c^3*d) + (b*ArcSin[c*x])/(4*c^4*d) - (x^2*(a +
b*ArcSin[c*x]))/(2*c^2*d) + ((I/2)*(a + b*ArcSin[c*x])^2)/(b*c^4*d) - ((a +
 b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(c^4*d) + ((I/2)*b*PolyLog[
2, -E^((2*I)*ArcSin[c*x])])/(c^4*d)
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

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

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(e*(m + 2*p + 1)), x] + (Dist[(f^2*(m - 1))/(c^2*(m + 2*
p + 1)), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(c*(m + 2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c
*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e,
0] && GtQ[n, 0] && GtQ[m, 1] && NeQ[m + 2*p + 1, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{d-c^2dx^2}\,dx = -\frac{x^2\left(a+b\sin^{-1}(cx)\right)}{2c^2d}+\frac{\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{d-c^2dx^2}\,dx}{c^2}+\frac{b\int \frac{x^2}{\sqrt{1-c^2x^2}}\,dx}{2cd}$$

$$= -\frac{bx\sqrt{1-c^2x^2}}{4c^3d}-\frac{x^2\left(a+b\sin^{-1}(cx)\right)}{2c^2d}+\frac{\text{Subst}\left(\int (a+bx)\tan(x)\,dx,x,\sin^{-1}(cx)\right)}{c^4d}+$$

$$= -\frac{bx\sqrt{1-c^2x^2}}{4c^3d}+\frac{b\sin^{-1}(cx)}{4c^4d}-\frac{x^2\left(a+b\sin^{-1}(cx)\right)}{2c^2d}+\frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2bc^4d}-\frac{(2i)\,\text{Sub}}{}$$

$$= -\frac{bx\sqrt{1-c^2x^2}}{4c^3d}+\frac{b\sin^{-1}(cx)}{4c^4d}-\frac{x^2\left(a+b\sin^{-1}(cx)\right)}{2c^2d}+\frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2bc^4d}-\frac{\left(a+b\,\text{s}\right.}{}$$

$$= -\frac{bx\sqrt{1-c^2x^2}}{4c^3d}+\frac{b\sin^{-1}(cx)}{4c^4d}-\frac{x^2\left(a+b\sin^{-1}(cx)\right)}{2c^2d}+\frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2bc^4d}-\frac{\left(a+b\,\text{s}\right.}{}$$

$$= -\frac{bx\sqrt{1-c^2x^2}}{4c^3d}+\frac{b\sin^{-1}(cx)}{4c^4d}-\frac{x^2\left(a+b\sin^{-1}(cx)\right)}{2c^2d}+\frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2bc^4d}-\frac{\left(a+b\,\text{s}\right.}{}$$

Mathematica [B] time = 0.14, size = 294, normalized size = 2.04

$$-\frac{2ac^2x^2+2a\log\left(1-c^2x^2\right)+bcx\sqrt{1-c^2x^2}+2bc^2x^2\sin^{-1}(cx)-4ib\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)-4ib\text{Li}_2\left(ie^{i\sin^{-1}(cx)}\right)-2ib}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^3*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2),x]
```

```
[Out] -1/4*(2*a*c^2*x^2 + b*c*x*Sqrt[1 - c^2*x^2] - b*ArcSin[c*x] + (4*I)*b*Pi*Ar
cSin[c*x] + 2*b*c^2*x^2*ArcSin[c*x] - (2*I)*b*ArcSin[c*x]^2 + 8*b*Pi*Log[1
+ E^((-I)*ArcSin[c*x])] + 2*b*Pi*Log[1 - I*E^(I*ArcSin[c*x])] + 4*b*ArcSin[
c*x]*Log[1 - I*E^(I*ArcSin[c*x])] - 2*b*Pi*Log[1 + I*E^(I*ArcSin[c*x])] + 4
```

```
*b*ArcSin[c*x]*Log[1 + I*E^(I*ArcSin[c*x])] + 2*a*Log[1 - c^2*x^2] - 8*b*Pi
*Log[Cos[ArcSin[c*x]/2]] + 2*b*Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] - 2*b*P
i*Log[Sin[(Pi + 2*ArcSin[c*x])/4]] - (4*I)*b*PolyLog[2, (-I)*E^(I*ArcSin[c*
x])] - (4*I)*b*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c^4*d)
```

fricas [F] time = 0.53, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{bx^3\arcsin(cx)+ax^3}{c^2dx^2-d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d),x, algorithm="fricas")
```

```
[Out] integral(-(b*x^3*arcsin(c*x) + a*x^3)/(c^2*d*x^2 - d), x)
```

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

$$\int -\frac{(b\arcsin(cx)+a)x^3}{c^2dx^2-d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d),x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)*x^3/(c^2*d*x^2 - d), x)
```

maple [A] time = 0.16, size = 181, normalized size = 1.26

$$-\frac{a\,x^2}{2c^2d}-\frac{a\ln(cx-1)}{2c^4d}-\frac{a\ln(cx+1)}{2c^4d}+\frac{ib\arcsin(cx)^2}{2c^4d}-\frac{bx\sqrt{-c^2x^2+1}}{4c^3d}-\frac{b\arcsin(cx)\,x^2}{2c^2d}+\frac{b\arcsin(cx)}{4c^4d}-\frac{b\arcsin(\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d),x)
```

```
[Out] -1/2/c^2*a/d*x^2-1/2/c^4*a/d*ln(c*x-1)-1/2/c^4*a/d*ln(c*x+1)+1/2*I/c^4*b/d*
arcsin(c*x)^2-1/4*b*x*(-c^2*x^2+1)^(1/2)/c^3/d-1/2/c^2*b/d*arcsin(c*x)*x^2+
1/4*b*arcsin(c*x)/c^4/d-1/c^4*b/d*arcsin(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2
))^2)+1/2*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c^4/d
```

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

$$-\frac{1}{2}a\left(\frac{x^2}{c^2d}+\frac{\log\left(c^2x^2-1\right)}{c^4d}\right)-\frac{\left(c^4d\int\frac{c^2x^2e^{\left(\frac{1}{2}\log(cx+1)+\frac{1}{2}\log(-cx+1)\right)}+e^{\left(\frac{1}{2}\log(cx+1)+\frac{1}{2}\log(-cx+1)\right)}\log(cx+1)+e^{\left(\frac{1}{2}\log(cx+1)+\frac{1}{2}\log(-cx+1)\right)}\cdots}{c^7dx^4-c^5dx^2-\left(c^5dx^2-c^3d\right)(cx+1)(cx-1)}\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d),x, algorithm="maxima")
```

```
[Out] -1/2*a*(x^2/(c^2*d) + log(c^2*x^2 - 1)/(c^4*d)) - 1/2*(2*c^4*d*integrate(1/
2*(c^2*x^2*e^(1/2*log(c*x + 1) + 1/2*log(-c*x + 1)) + e^(1/2*log(c*x + 1) +
 1/2*log(-c*x + 1))*log(c*x + 1) + e^(1/2*log(c*x + 1) + 1/2*log(-c*x + 1))
*log(-c*x + 1))/(c^7*d*x^4 - c^5*d*x^2 + (c^5*d*x^2 - c^3*d)*e^(log(c*x + 1
) + log(-c*x + 1))), x) + c^2*x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)
) + arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(c*x + 1) + arctan2(c*x,
sqrt(c*x + 1)*sqrt(-c*x + 1))*log(-c*x + 1))*b/(c^4*d)
```

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

$$\int \frac{x^3\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{d-c^2\,d\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*asin(c*x)))/(d - c^2*d*x^2),x)
```

```
[Out] int((x^3*(a + b*asin(c*x)))/(d - c^2*d*x^2), x)
```

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

$$-\frac{\int \frac{ax^3}{c^2x^2-1}\,dx + \int \frac{bx^3 \operatorname{asin}(cx)}{c^2x^2-1}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*asin(c*x))/(-c**2*d*x**2+d),x)
```

```
[Out] -(Integral(a*x**3/(c**2*x**2 - 1), x) + Integral(b*x**3*asin(c*x)/(c**2*x**
2 - 1), x))/d
```

3.30 $\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{d-c^2dx^2}\,dx$

Optimal. Leaf size=124

$$-\frac{2i\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^3d}-\frac{x\left(a+b\sin^{-1}(cx)\right)}{c^2d}+\frac{ib\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)}{c^3d}-\frac{ib\text{Li}_2\left(ie^{i\sin^{-1}(cx)}\right)}{c^3d}-\frac{b\sqrt{1-c^2}}{c^3d}$$

```
[Out] -x*(a+b*arcsin(c*x))/c^2/d-2*I*(a+b*arcsin(c*x))*arctan(I*c*x+(-c^2*x^2+1)^
(1/2))/c^3/d+I*b*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c^3/d-I*b*polylog
(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c^3/d-b*(-c^2*x^2+1)^(1/2)/c^3/d
```

Rubi [A] time = 0.14, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.240$, Rules used = {4715, 4657, 4181, 2279, 2391, 261}

$$\frac{ib\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{c^3d}-\frac{ib\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{c^3d}-\frac{x\left(a+b\sin^{-1}(cx)\right)}{c^2d}-\frac{2i\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(c\right.}{c^3d}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2),x]
```

```
[Out] -((b*Sqrt[1 - c^2*x^2])/(c^3*d)) - (x*(a + b*ArcSin[c*x]))/(c^2*d) - ((2*I)
*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])])/(c^3*d) + (I*b*PolyLog[2, (
-I)*E^(I*ArcSin[c*x])])/(c^3*d) - (I*b*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c^
3*d)
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(e*(m + 2*p + 1)), x] + (Dist[(f^2*(m - 1))/(c^2*(m + 2*
p + 1)), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(c*(m + 2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c
*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e,
0] && GtQ[n, 0] && GtQ[m, 1] && NeQ[m + 2*p + 1, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{d-c^2dx^2}\,dx = -\frac{x\left(a+b\sin^{-1}(cx)\right)}{c^2d}+\frac{\int \frac{a+b\sin^{-1}(cx)}{d-c^2dx^2}\,dx}{c^2}+\frac{b\int \frac{x}{\sqrt{1-c^2x^2}}\,dx}{cd}$$
$$= -\frac{b\sqrt{1-c^2x^2}}{c^3d}-\frac{x\left(a+b\sin^{-1}(cx)\right)}{c^2d}+\frac{\text{Subst}\left(\int(a+bx)\sec(x)\,dx,x,\sin^{-1}(cx)\right)}{c^3d}$$
$$= -\frac{b\sqrt{1-c^2x^2}}{c^3d}-\frac{x\left(a+b\sin^{-1}(cx)\right)}{c^2d}-\frac{2i\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{c^3d}-\frac{b\,\text{Subs}}{}$$
$$= -\frac{b\sqrt{1-c^2x^2}}{c^3d}-\frac{x\left(a+b\sin^{-1}(cx)\right)}{c^2d}-\frac{2i\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{c^3d}+\frac{(ib)\,\text{Su}}{}$$
$$= -\frac{b\sqrt{1-c^2x^2}}{c^3d}-\frac{x\left(a+b\sin^{-1}(cx)\right)}{c^2d}-\frac{2i\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{c^3d}+\frac{ib\text{Li}_2\left(\right.}{}$$

Mathematica [A] time = 0.12, size = 238, normalized size = 1.92

$$-\frac{2acx+a\log(1-cx)-a\log(cx+1)+2b\sqrt{1-c^2x^2}-2ib\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)+2ib\text{Li}_2\left(ie^{i\sin^{-1}(cx)}\right)+2bcx\sin^{-1}(cx}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^2*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2),x]
```

```
[Out] -1/2*(2*a*c*x + 2*b*Sqrt[1 - c^2*x^2] + I*b*Pi*ArcSin[c*x] + 2*b*c*x*ArcSin
[c*x] - b*Pi*Log[1 - I*E^(I*ArcSin[c*x])] - 2*b*ArcSin[c*x]*Log[1 - I*E^(I*
ArcSin[c*x])] - b*Pi*Log[1 + I*E^(I*ArcSin[c*x])] + 2*b*ArcSin[c*x]*Log[1 +
 I*E^(I*ArcSin[c*x])] + a*Log[1 - c*x] - a*Log[1 + c*x] + b*Pi*Log[-Cos[(Pi
 + 2*ArcSin[c*x])/4]] + b*Pi*Log[Sin[(Pi + 2*ArcSin[c*x])/4]] - (2*I)*b*Pol
yLog[2, (-I)*E^(I*ArcSin[c*x])] + (2*I)*b*PolyLog[2, I*E^(I*ArcSin[c*x])])/
(c^3*d)
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{bx^2\arcsin(cx)+ax^2}{c^2dx^2-d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d),x, algorithm="fricas")
```

```
[Out] integral(-(b*x^2*arcsin(c*x) + a*x^2)/(c^2*d*x^2 - d), x)
```

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

$$\int -\frac{(b\arcsin(cx)+a)x^2}{c^2dx^2-d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d),x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)*x^2/(c^2*d*x^2 - d), x)
```

maple [A] time = 0.11, size = 218, normalized size = 1.76

$$-\frac{ax}{c^2d}-\frac{a\ln(cx-1)}{2c^3d}+\frac{a\ln(cx+1)}{2c^3d}-\frac{ib\operatorname{dilog}\left(1-i\left(icx+\sqrt{-c^2x^2+1}\right)\right)}{c^3d}+\frac{ib\operatorname{dilog}\left(1+i\left(icx+\sqrt{-c^2x^2+1}\right)\right)}{c^3d}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d),x)
```

```
[Out] -1/c^2*a/d*x-1/2/c^3*a/d*ln(c*x-1)+1/2/c^3*a/d*ln(c*x+1)-I/c^3*b/d*dilog(1-
I*(I*c*x+(-c^2*x^2+1)^(1/2)))+I/c^3*b/d*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)
))+1/c^3*b/d*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-1/c^3*b/d*arcsi
n(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-1/c^2*b/d*arcsin(c*x)*x-b*(-c^2*x
^2+1)^(1/2)/c^3/d
```

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

$$-\frac{1}{2}a\left(\frac{2x}{c^2d}-\frac{\log(cx+1)}{c^3d}+\frac{\log(cx-1)}{c^3d}\right)+\frac{-\left(c^3d\left(\frac{2\sqrt{cx+1}\sqrt{-cx+1}}{c^3d}+\int-\frac{\sqrt{cx+1}\sqrt{-cx+1}\left(\log(cx+1)-\log(-cx+1)\right)}{c^4dx^2-c^2d}\,dx\right)+2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d),x, algorithm="maxima")
```

```
[Out] -1/2*a*(2*x/(c^2*d) - log(c*x + 1)/(c^3*d) + log(c*x - 1)/(c^3*d)) + 1/2*(2
*c^3*d*integrate(-1/2*(2*c*x - log(c*x + 1) + log(-c*x + 1))*sqrt(c*x + 1)*
sqrt(-c*x + 1)/(c^4*d*x^2 - c^2*d), x) - 2*c*x*arctan2(c*x, sqrt(c*x + 1)*s
qrt(-c*x + 1)) + arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(c*x + 1) -
arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(-c*x + 1))*b/(c^3*d)
```

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

$$\int \frac{x^2\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{d-c^2\,d\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*asin(c*x)))/(d - c^2*d*x^2),x)
```

```
[Out] int((x^2*(a + b*asin(c*x)))/(d - c^2*d*x^2), x)
```

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

$$-\frac{\int \frac{ax^2}{c^2x^2-1}\,dx+\int \frac{bx^2\operatorname{asin}(cx)}{c^2x^2-1}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(c*x))/(-c**2*d*x**2+d),x)
```

```
[Out] -(Integral(a*x**2/(c**2*x**2 - 1), x) + Integral(b*x**2*asin(c*x)/(c**2*x**
2 - 1), x))/d
```

3.31 $\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{d-c^2dx^2}\,dx$

Optimal. Leaf size=82

$$\frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2bc^2d}-\frac{\log\left(1+e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^2d}+\frac{ib\text{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right)}{2c^2d}$$

```
[Out] 1/2*I*(a+b*arcsin(c*x))^2/b/c^2/d-(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1
)^(1/2))^2)/c^2/d+1/2*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c^2/d
```

Rubi [A] time = 0.11, antiderivative size = 82, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {4675, 3719, 2190, 2279, 2391}

$$\frac{ib\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{2c^2d}+\frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2bc^2d}-\frac{\log\left(1+e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^2d}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2),x]
```

```
[Out] ((I/2)*(a + b*ArcSin[c*x])^2)/(b*c^2*d) - ((a + b*ArcSin[c*x])*Log[1 + E^((
2*I)*ArcSin[c*x])])/(c^2*d) + ((I/2)*b*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/
(c^2*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{d-c^2dx^2}\,dx = \frac{\text{Subst}\left(\int (a+bx)\tan(x)\,dx, x, \sin^{-1}(cx)\right)}{c^2d}$$
$$= \frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2bc^2d} - \frac{(2i)\,\text{Subst}\left(\int \frac{e^{2ix}(a+bx)}{1+e^{2ix}}\,dx, x, \sin^{-1}(cx)\right)}{c^2d}$$
$$= \frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2bc^2d} - \frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1+e^{2i\sin^{-1}(cx)}\right)}{c^2d} + \frac{b\,\text{Subst}\left(\int \log\left(1+\right.\right.}{c}$$
$$= \frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2bc^2d} - \frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1+e^{2i\sin^{-1}(cx)}\right)}{c^2d} - \frac{(ib)\,\text{Subst}\left(\int \frac{\log(1+x}{x}\right.}{2c^2}$$
$$= \frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2bc^2d} - \frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1+e^{2i\sin^{-1}(cx)}\right)}{c^2d} + \frac{ib\text{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right)}{2c^2d}$$

Mathematica [B] time = 0.09, size = 244, normalized size = 2.98

$$-\frac{a\log\left(1-c^2x^2\right) - 2ib\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right) - 2ib\text{Li}_2\left(ie^{i\sin^{-1}(cx)}\right) - ib\sin^{-1}(cx)^2 + 2i\pi b\sin^{-1}(cx) + 2b\sin^{-1}(cx)\,\text{lo}}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2),x]
```

```
[Out] -1/2*((2*I)*b*Pi*ArcSin[c*x] - I*b*ArcSin[c*x]^2 + 4*b*Pi*Log[1 + E^((-I)*A
rcSin[c*x])] + b*Pi*Log[1 - I*E^(I*ArcSin[c*x])] + 2*b*ArcSin[c*x]*Log[1 -
I*E^(I*ArcSin[c*x])] - b*Pi*Log[1 + I*E^(I*ArcSin[c*x])] + 2*b*ArcSin[c*x]*
Log[1 + I*E^(I*ArcSin[c*x])] + a*Log[1 - c^2*x^2] - 4*b*Pi*Log[Cos[ArcSin[c
*x]/2]] + b*Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] - b*Pi*Log[Sin[(Pi + 2*Arc
Sin[c*x])/4]] - (2*I)*b*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] - (2*I)*b*PolyLo
g[2, I*E^(I*ArcSin[c*x])])/(c^2*d)
```

fricas [F] time = 0.52, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{bx\arcsin(cx)+ax}{c^2dx^2-d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(-c^2*d*x^2+d),x, algorithm="fricas")
```

```
[Out] integral(-(b*x*arcsin(c*x) + a*x)/(c^2*d*x^2 - d), x)
```

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

$$\int -\frac{(b\arcsin(cx)+a)x}{c^2dx^2-d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(-c^2*d*x^2+d),x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)*x/(c^2*d*x^2 - d), x)
```

maple [A] time = 0.07, size = 118, normalized size = 1.44

$$-\frac{a\ln(cx-1)}{2c^2d} - \frac{a\ln(cx+1)}{2c^2d} + \frac{ib\arcsin(cx)^2}{2c^2d} - \frac{b\arcsin(cx)\ln\left(1+\left(icx+\sqrt{-c^2x^2+1}\right)^2\right)}{c^2d} + \frac{ib\,\text{polylog}\left(2,-\left(ic\right.\right.}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(c*x))/(-c^2*d*x^2+d),x)
```

```
[Out] -1/2/c^2*a/d*ln(c*x-1)-1/2/c^2*a/d*ln(c*x+1)+1/2*I/c^2*b/d*arcsin(c*x)^2-1/
c^2*b/d*arcsin(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)+1/2*I*b*polylog(2,-(
I*c*x+(-c^2*x^2+1)^(1/2))^2)/c^2/d
```

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

$$-\frac{\left(c^2d\int \frac{e^{\left(\frac{1}{2}\log(cx+1)+\frac{1}{2}\log(-cx+1)\right)}\log(cx+1)+e^{\left(\frac{1}{2}\log(cx+1)+\frac{1}{2}\log(-cx+1)\right)}\log(-cx+1)}{c^5dx^4-c^3dx^2-\left(c^3dx^2-cd\right)(cx+1)(cx-1)}\,dx+\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)\log(cx+}{2\,c^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(-c^2*d*x^2+d),x, algorithm="maxima")
```

```
[Out] -1/2*(2*c^2*d*integrate(1/2*(e^(1/2*log(c*x + 1) + 1/2*log(-c*x + 1))*log(c
*x + 1) + e^(1/2*log(c*x + 1) + 1/2*log(-c*x + 1))*log(-c*x + 1))/(c^5*d*x^
4 - c^3*d*x^2 + (c^3*d*x^2 - c*d)*e^(log(c*x + 1) + log(-c*x + 1))), x) + a
rctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(c*x + 1) + arctan2(c*x, sqrt(
c*x + 1)*sqrt(-c*x + 1))*log(-c*x + 1))*b/(c^2*d) - 1/2*a*log(c^2*d*x^2 - d
)/(c^2*d)
```

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

$$\int \frac{x\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{d-c^2\,d\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*asin(c*x)))/(d - c^2*d*x^2),x)
```

```
[Out] int((x*(a + b*asin(c*x)))/(d - c^2*d*x^2), x)
```

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

$$-\frac{\int \frac{ax}{c^2x^2-1}\,dx+\int \frac{bx\,\mathrm{asin}\,(cx)}{c^2x^2-1}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(c*x))/(-c**2*d*x**2+d),x)
```

```
[Out] -(Integral(a*x/(c**2*x**2 - 1), x) + Integral(b*x*asin(c*x)/(c**2*x**2 - 1)
, x))/d
```

3.32 $\int \frac{a+b\sin^{-1}(cx)}{d-c^2dx^2}\,dx$

Optimal. Leaf size=84

$$-\frac{2i\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{cd}+\frac{ib\mathrm{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)}{cd}-\frac{ib\mathrm{Li}_2\left(ie^{i\sin^{-1}(cx)}\right)}{cd}$$

```
[Out] -2*I*(a+b*arcsin(c*x))*arctan(I*c*x+(-c^2*x^2+1)^(1/2))/c/d+I*b*polylog(2,-
I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/d-I*b*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)
))/c/d
```

Rubi [A] time = 0.07, antiderivative size = 84, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {4657, 4181, 2279, 2391}

$$\frac{ib\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{cd}-\frac{ib\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{cd}-\frac{2i\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{cd}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(d - c^2*d*x^2),x]
```

```
[Out] ((-2*I)*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])])/(c*d) + (I*b*PolyLog
[2, (-I)*E^(I*ArcSin[c*x])])/(c*d) - (I*b*PolyLog[2, I*E^(I*ArcSin[c*x])])/
(c*d)
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{d-c^2dx^2}\,dx = \frac{\text{Subst}\left(\int(a+bx)\sec(x)\,dx,x,\sin^{-1}(cx)\right)}{cd}$$
$$= -\frac{2i\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{cd} - \frac{b\,\text{Subst}\left(\int\log\left(1-ie^{ix}\right)\,dx,x,\sin^{-1}(cx)\right)}{cd} + \frac{b\,\text{S}}{}$$
$$= -\frac{2i\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{cd} + \frac{(ib)\,\text{Subst}\left(\int\frac{\log(1-ix)}{x}\,dx,x,e^{i\sin^{-1}(cx)}\right)}{cd} - \frac{(ib)\,\text{Su}}{}$$
$$= -\frac{2i\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{cd} + \frac{ib\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)}{cd} - \frac{ib\text{Li}_2\left(ie^{i\sin^{-1}(cx)}\right)}{cd}$$

Mathematica [B] time = 0.24, size = 207, normalized size = 2.46

$$\frac{-a\log(1-cx)+a\log(cx+1)+2ib\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)-2ib\text{Li}_2\left(ie^{i\sin^{-1}(cx)}\right)-i\pi b\sin^{-1}(cx)+2b\sin^{-1}(cx)\log\left(1-\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(d - c^2*d*x^2),x]
```

```
[Out] ((-I)*b*Pi*ArcSin[c*x] + b*Pi*Log[1 - I*E^(I*ArcSin[c*x])] + 2*b*ArcSin[c*x
]*Log[1 - I*E^(I*ArcSin[c*x])] + b*Pi*Log[1 + I*E^(I*ArcSin[c*x])] - 2*b*Ar
cSin[c*x]*Log[1 + I*E^(I*ArcSin[c*x])] - a*Log[1 - c*x] + a*Log[1 + c*x] -
b*Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] - b*Pi*Log[Sin[(Pi + 2*ArcSin[c*x])/
4]] + (2*I)*b*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] - (2*I)*b*PolyLog[2, I*E^(
I*ArcSin[c*x])])/(2*c*d)
```

fricas [F] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{b\arcsin(cx)+a}{c^2dx^2-d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(-c^2*d*x^2+d),x, algorithm="fricas")
```

```
[Out] integral(-(b*arcsin(c*x) + a)/(c^2*d*x^2 - d), x)
```

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

$$\int -\frac{b\arcsin(cx)+a}{c^2dx^2-d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(-c^2*d*x^2+d),x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)/(c^2*d*x^2 - d), x)
```

maple [A] time = 0.14, size = 170, normalized size = 2.02

$$\frac{a\,\text{arctanh}(cx)}{cd} - \frac{ib\,\text{arctanh}(cx)\ln\left(1-\frac{i(cx+1)}{\sqrt{-c^2x^2+1}}\right)}{cd} + \frac{ib\,\text{arctanh}(cx)\ln\left(1+\frac{i(cx+1)}{\sqrt{-c^2x^2+1}}\right)}{cd} + \frac{b\,\text{arctanh}(cx)\arcsin(cx)}{cd} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(-c^2*d*x^2+d),x)
```

```
[Out] 1/c*a/d*arctanh(c*x)-I/c*b/d*arctanh(c*x)*ln(1-I*(c*x+1)/(-c^2*x^2+1)^(1/2)
)+I/c*b/d*arctanh(c*x)*ln(1+I*(c*x+1)/(-c^2*x^2+1)^(1/2))+1/c*b/d*arctanh(c
*x)*arcsin(c*x)-I/c*b/d*dilog(1-I*(c*x+1)/(-c^2*x^2+1)^(1/2))+I/c*b/d*dilog
(1+I*(c*x+1)/(-c^2*x^2+1)^(1/2))
```

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

$$\frac{1}{2}a\left(\frac{\log\left(cx+1\right)}{cd}-\frac{\log\left(cx-1\right)}{cd}\right)+\frac{\left(cd\int\frac{\sqrt{cx+1}\sqrt{-cx+1}\left(\log(cx+1)-\log(-cx+1)\right)}{c^2dx^2-d}\,dx+\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)\mathrm{l}\right.}{2\,cd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(-c^2*d*x^2+d),x, algorithm="maxima")
```

```
[Out] 1/2*a*(log(c*x + 1)/(c*d) - log(c*x - 1)/(c*d)) + 1/2*(2*c*d*integrate(1/2*
sqrt(c*x + 1)*sqrt(-c*x + 1)*(log(c*x + 1) - log(-c*x + 1))/(c^2*d*x^2 - d)
, x) + arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(c*x + 1) - arctan2(c*
x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(-c*x + 1))*b/(c*d)
```

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

$$\int\frac{a+b\,\mathrm{asin}\left(c\,x\right)}{d-c^2\,d\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(d - c^2*d*x^2),x)
```

```
[Out] int((a + b*asin(c*x))/(d - c^2*d*x^2), x)
```

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

$$-\frac{\int\frac{a}{c^2x^2-1}\,dx+\int\frac{b\,\mathrm{asin}\,(cx)}{c^2x^2-1}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(-c**2*d*x**2+d),x)
```

```
[Out] -(Integral(a/(c**2*x**2 - 1), x) + Integral(b*asin(c*x)/(c**2*x**2 - 1), x)
)/d
```

3.33 $\int \frac{a+b\sin^{-1}(cx)}{x\left(d-c^2dx^2\right)}\,dx$

Optimal. Leaf size=71

$$-\frac{2\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d}+\frac{ib\text{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right)}{2d}-\frac{ib\text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right)}{2d}$$

```
[Out] -2*(a+b*arcsin(c*x))*arctanh((I*c*x+(-c^2*x^2+1)^(1/2))^2)/d+1/2*I*b*polylo
g(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d-1/2*I*b*polylog(2,(I*c*x+(-c^2*x^2+1)^
(1/2))^2)/d
```

Rubi [A] time = 0.11, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {4679, 4419, 4183, 2279, 2391}

$$\frac{ib\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{2d}-\frac{ib\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)}{2d}-\frac{2\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x*(d - c^2*d*x^2)),x]
```

```
[Out] (-2*(a + b*ArcSin[c*x])*ArcTanh[E^((2*I)*ArcSin[c*x])])/d + ((I/2)*b*PolyLo
g[2, -E^((2*I)*ArcSin[c*x])])/d - ((I/2)*b*PolyLog[2, E^((2*I)*ArcSin[c*x])
])/d
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4419

```
Int[Csc[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csc[2*a + 2*b*x]^n,
 x], x] /; FreeQ[{a, b, c, d, m}, x] && IntegerQ[n] && RationalQ[m]
```

Rule 4679

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((x_)*((d_) + (e_.)*(x_)^2)),
x_Symbol] :> Dist[1/d, Subst[Int[(a + b*x)^n/(Cos[x]*Sin[x]), x], x, ArcSin
[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x\left(d-c^2dx^2\right)}\,dx = \frac{\text{Subst}\left(\int (a+bx)\csc(x)\sec(x)\,dx, x, \sin^{-1}(cx)\right)}{d}$$

$$= \frac{2\,\text{Subst}\left(\int (a+bx)\csc(2x)\,dx, x, \sin^{-1}(cx)\right)}{d}$$

$$= -\frac{2\left(a+b\sin^{-1}(cx)\right)\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)}{d} - \frac{b\,\text{Subst}\left(\int \log\left(1-e^{2ix}\right)\,dx, x, \sin^{-1}(cx)\right)}{d}$$

$$= -\frac{2\left(a+b\sin^{-1}(cx)\right)\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)}{d} + \frac{(ib)\,\text{Subst}\left(\int \frac{\log(1-x)}{x}\,dx, x, e^{2i\sin^{-1}(cx)}\right)}{2d} - \frac{(i}{}$$

$$= -\frac{2\left(a+b\sin^{-1}(cx)\right)\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)}{d} + \frac{ib\text{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right)}{2d} - \frac{ib\text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right)}{2d}$$

Mathematica [A] time = 0.10, size = 105, normalized size = 1.48

$$\frac{-a\log\left(1-c^2x^2\right)+2a\log(x)+ib\text{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right)-ib\text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right)+2b\sin^{-1}(cx)\log\left(1-e^{2i\sin^{-1}(cx)}\right)-2b}{2d}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x*(d - c^2*d*x^2)),x]
```

```
[Out] (2*b*ArcSin[c*x]*Log[1 - E^((2*I)*ArcSin[c*x])] - 2*b*ArcSin[c*x]*Log[1 + E
^((2*I)*ArcSin[c*x])] + 2*a*Log[x] - a*Log[1 - c^2*x^2] + I*b*PolyLog[2, -E
^((2*I)*ArcSin[c*x])] - I*b*PolyLog[2, E^((2*I)*ArcSin[c*x])])/(2*d)
```

fricas [F] time = 0.57, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{b\arcsin(cx)+a}{c^2dx^3-dx}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x/(-c^2*d*x^2+d),x, algorithm="fricas")
```

```
[Out] integral(-(b*arcsin(c*x) + a)/(c^2*d*x^3 - d*x), x)
```

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

$$\int -\frac{b\arcsin(cx)+a}{\left(c^2dx^2-d\right)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x/(-c^2*d*x^2+d),x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)/((c^2*d*x^2 - d)*x), x)
```

maple [A] time = 0.09, size = 164, normalized size = 2.31

$$-\frac{a\ln(cx+1)}{2d}+\frac{a\ln(cx)}{d}-\frac{a\ln(cx-1)}{2d}+\frac{b\arcsin(cx)\ln\left(1-\left(icx+\sqrt{-c^2x^2+1}\right)^2\right)}{d}-\frac{b\arcsin(cx)\ln\left(1+\left(icx\right.\right.}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x/(-c^2*d*x^2+d),x)
```

```
[Out] -1/2*a/d*ln(c*x+1)+a/d*ln(c*x)-1/2*a/d*ln(c*x-1)+b/d*arcsin(c*x)*ln(1-(I*c*
x+(-c^2*x^2+1)^(1/2))^2)-b/d*arcsin(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)
+1/2*I*b/d*dilog(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)-1/2*I*b/d*dilog(1-(I*c*x+(
-c^2*x^2+1)^(1/2))^2)
```

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

$$-\frac{1}{2}\,a\left(\frac{\log\left(cx+1\right)}{d}+\frac{\log\left(cx-1\right)}{d}-\frac{2\,\log\left(x\right)}{d}\right)-b\int\frac{\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{c^2dx^3-dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x/(-c^2*d*x^2+d),x, algorithm="maxima")
```

```
[Out] -1/2*a*(log(c*x + 1)/d + log(c*x - 1)/d - 2*log(x)/d) - b*integrate(arctan2
(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^2*d*x^3 - d*x), x)
```

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

$$\int\frac{a+b\,\mathrm{asin}\left(c\,x\right)}{x\,\left(d-c^2\,d\,x^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x*(d - c^2*d*x^2)),x)
```

```
[Out] int((a + b*asin(c*x))/(x*(d - c^2*d*x^2)), x)
```

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

$$-\frac{\int\frac{a}{c^2x^3-x}\,dx+\int\frac{b\,\mathrm{asin}\left(cx\right)}{c^2x^3-x}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x/(-c**2*d*x**2+d),x)
```

```
[Out] -(Integral(a/(c**2*x**3 - x), x) + Integral(b*asin(c*x)/(c**2*x**3 - x), x)
)/d
```

3.34 $\int \frac{a+b\sin^{-1}(cx)}{x^2(d-c^2dx^2)}\,dx$

Optimal. Leaf size=116

$$-\frac{a+b\sin^{-1}(cx)}{dx}-\frac{2ic\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d}-\frac{bc\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)}{d}+\frac{ibc\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)}{d}-\frac{ibc\text{Li}_2}{}$$

```
[Out] (-a-b*arcsin(c*x))/d/x-2*I*c*(a+b*arcsin(c*x))*arctan(I*c*x+(-c^2*x^2+1)^(1
/2))/d-b*c*arctanh((-c^2*x^2+1)^(1/2))/d+I*b*c*polylog(2,-I*(I*c*x+(-c^2*x^
2+1)^(1/2)))/d-I*b*c*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d
```

Rubi [A] time = 0.15, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.320$, Rules used = {4701, 4657, 4181, 2279, 2391, 266, 63, 208}

$$\frac{ibc\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{d}-\frac{ibc\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{d}-\frac{a+b\sin^{-1}(cx)}{dx}-\frac{2ic\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x^2*(d - c^2*d*x^2)),x]
```

```
[Out] -((a + b*ArcSin[c*x])/(d*x)) - ((2*I)*c*(a + b*ArcSin[c*x])*ArcTan[E^(I*Arc
Sin[c*x])])/d - (b*c*ArcTanh[Sqrt[1 - c^2*x^2]])/d + (I*b*c*PolyLog[2, (-I)
*E^(I*ArcSin[c*x])])/d - (I*b*c*PolyLog[2, I*E^(I*ArcSin[c*x])])/d
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x^2\left(d-c^2dx^2\right)}\,dx = -\frac{a+b\sin^{-1}(cx)}{dx}+c^2\int \frac{a+b\sin^{-1}(cx)}{d-c^2dx^2}\,dx+\frac{(bc)\int \frac{1}{x\sqrt{1-c^2x^2}}\,dx}{d}$$

$$= -\frac{a+b\sin^{-1}(cx)}{dx}+\frac{c\,\mathrm{Subst}\left(\int (a+bx)\sec(x)\,dx,x,\sin^{-1}(cx)\right)}{d}+\frac{(bc)\,\mathrm{Subst}\left(\int \frac{1}{x\sqrt{1-c^2x}}\,d\right.}{2d}$$

$$= -\frac{a+b\sin^{-1}(cx)}{dx}-\frac{2ic\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{d}-\frac{b\,\mathrm{Subst}\left(\int \frac{1}{\frac{1}{c^2}-\frac{x^2}{c^2}}\,dx,x,\sqrt{1-\right.}{cd}$$

$$= -\frac{a+b\sin^{-1}(cx)}{dx}-\frac{2ic\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{d}-\frac{bc\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)}{d}+\frac{(ib}{}$$

$$= -\frac{a+b\sin^{-1}(cx)}{dx}-\frac{2ic\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{d}-\frac{bc\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)}{d}+\frac{ibc}{}$$

Mathematica [B] time = 0.37, size = 259, normalized size = 2.23

$$-\frac{acx\log(1-cx)-acx\log(cx+1)+2a+2bcx\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)-2ibcx\mathrm{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)+2ibcx\mathrm{Li}_2\left(ie^{i\sin^{-1}(c\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x^2*(d - c^2*d*x^2)),x]
```

```
[Out] -1/2*(2*a + 2*b*ArcSin[c*x] + I*b*c*Pi*x*ArcSin[c*x] + 2*b*c*x*ArcTanh[Sqrt
[1 - c^2*x^2]] - b*c*Pi*x*Log[1 - I*E^(I*ArcSin[c*x])] - 2*b*c*x*ArcSin[c*x
]*Log[1 - I*E^(I*ArcSin[c*x])] - b*c*Pi*x*Log[1 + I*E^(I*ArcSin[c*x])] + 2*
b*c*x*ArcSin[c*x]*Log[1 + I*E^(I*ArcSin[c*x])] + a*c*x*Log[1 - c*x] - a*c*x
*Log[1 + c*x] + b*c*Pi*x*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] + b*c*Pi*x*Log[S
```

```
in[(Pi + 2*ArcSin[c*x])/4]] - (2*I)*b*c*x*PolyLog[2, (-I)*E^(I*ArcSin[c*x])
] + (2*I)*b*c*x*PolyLog[2, I*E^(I*ArcSin[c*x])])/(d*x)
```

fricas [F] time = 0.69, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{b\arcsin\left(cx\right)+a}{c^2dx^4-dx^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^2/(-c^2*d*x^2+d),x, algorithm="fricas")
```

```
[Out] integral(-(b*arcsin(c*x) + a)/(c^2*d*x^4 - d*x^2), x)
```

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

$$\int -\frac{b\arcsin\left(cx\right)+a}{\left(c^2dx^2-d\right)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^2/(-c^2*d*x^2+d),x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)/((c^2*d*x^2 - d)*x^2), x)
```

maple [A] time = 0.19, size = 236, normalized size = 2.03

$$\frac{ca\ln\left(cx+1\right)}{2d}-\frac{a}{dx}-\frac{ca\ln\left(cx-1\right)}{2d}-\frac{b\arcsin\left(cx\right)}{dx}-\frac{cb\arcsin\left(cx\right)\ln\left(1+i\left(icx+\sqrt{-c^2x^2+1}\right)\right)}{d}+\frac{cb\arcsin\left(cx\right)\ln}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x^2/(-c^2*d*x^2+d),x)
```

```
[Out] 1/2*c*a/d*ln(c*x+1)-a/d/x-1/2*c*a/d*ln(c*x-1)-b/d*arcsin(c*x)/x-c*b/d*arcsi
n(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+c*b/d*arcsin(c*x)*ln(1-I*(I*c*x+(
-c^2*x^2+1)^(1/2)))-c*b/d*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+c*b/d*ln(I*c*x+(-c
^2*x^2+1)^(1/2)-1)+I*c*b/d*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-I*c*b/d*di
log(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))
```

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

$$\frac{1}{2}a\left(\frac{c\log\left(cx+1\right)}{d}-\frac{c\log\left(cx-1\right)}{d}-\frac{2}{dx}\right)+\frac{\left(cx\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)\log\left(cx+1\right)-cx\arctan\left(cx,\sqrt{c}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^2/(-c^2*d*x^2+d),x, algorithm="maxima")
```

```
[Out] 1/2*a*(c*log(c*x + 1)/d - c*log(c*x - 1)/d - 2/(d*x)) + 1/2*(c*x*arctan2(c*
x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(c*x + 1) - c*x*arctan2(c*x, sqrt(c*x +
 1)*sqrt(-c*x + 1))*log(-c*x + 1) + 2*d*x*integrate(1/2*(c^2*x*log(c*x + 1)
 - c^2*x*log(-c*x + 1) - 2*c)*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c^2*d*x^3 - d*x
), x) - 2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*b/(d*x)
```

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

$$\int \frac{a+b\,\mathrm{asin}\left(c\,x\right)}{x^2\,\left(d-c^2\,d\,x^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x^2*(d - c^2*d*x^2)),x)
```

```
[Out] int((a + b*asin(c*x))/(x^2*(d - c^2*d*x^2)), x)
```

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

$$-\frac{\int \frac{a}{c^2x^4-x^2}\,dx + \int \frac{b\operatorname{asin}(cx)}{c^2x^4-x^2}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x**2/(-c**2*d*x**2+d),x)
```

```
[Out] -(Integral(a/(c**2*x**4 - x**2), x) + Integral(b*asin(c*x)/(c**2*x**4 - x**
2), x))/d
```

3.35 $\int \frac{a+b\sin^{-1}(cx)}{x^3(d-c^2dx^2)}\,dx$

Optimal. Leaf size=124

$$-\frac{2c^2\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d}-\frac{a+b\sin^{-1}(cx)}{2dx^2}+\frac{ibc^2\mathrm{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right)}{2d}-\frac{ibc^2\mathrm{Li}_2\left(e^{2i\sin^{-1}(cx)}\right)}{2d}-\frac{bc\sqrt{1}}{2}$$

```
[Out] 1/2*(-a-b*arcsin(c*x))/d/x^2-2*c^2*(a+b*arcsin(c*x))*arctanh((I*c*x+(-c^2*x
^2+1)^(1/2))^2)/d+1/2*I*b*c^2*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d-1/
2*I*b*c^2*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d-1/2*b*c*(-c^2*x^2+1)^(1
/2)/d/x
```

Rubi [A] time = 0.19, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.280, Rules used = {4701, 4679, 4419, 4183, 2279, 2391, 264}

$$\frac{ibc^2\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{2d}-\frac{ibc^2\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)}{2d}-\frac{2c^2\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d}-\frac{a+b\sin}{2d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x^3*(d - c^2*d*x^2)),x]
```

```
[Out] -(b*c*Sqrt[1 - c^2*x^2])/(2*d*x) - (a + b*ArcSin[c*x])/(2*d*x^2) - (2*c^2*(
a + b*ArcSin[c*x])*ArcTanh[E^((2*I)*ArcSin[c*x])])/d + ((I/2)*b*c^2*PolyLog
[2, -E^((2*I)*ArcSin[c*x])])/d - ((I/2)*b*c^2*PolyLog[2, E^((2*I)*ArcSin[c*
x])])/d
```

Rule 264

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

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4419

```
Int[Csc[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csc[2*a + 2*b*x]^n,
 x], x] /; FreeQ[{a, b, c, d, m}, x] && IntegerQ[n] && RationalQ[m]
```

Rule 4679

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((x_)*((d_) + (e_.)*(x_)^2)),
x_Symbol] :> Dist[1/d, Subst[Int[(a + b*x)^n/(Cos[x]*Sin[x]), x], x, ArcSin
[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x^3\left(d-c^2dx^2\right)}dx = -\frac{a+b\sin^{-1}(cx)}{2dx^2}+c^2\int \frac{a+b\sin^{-1}(cx)}{x\left(d-c^2dx^2\right)}dx+\frac{(bc)\int \frac{1}{x^2\sqrt{1-c^2x^2}}dx}{2d}$$
$$= -\frac{bc\sqrt{1-c^2x^2}}{2dx}-\frac{a+b\sin^{-1}(cx)}{2dx^2}+\frac{c^2\operatorname{Subst}\left(\int (a+bx)\csc(x)\sec(x)\,dx,x,\sin^{-1}(cx)\right)}{d}$$
$$= -\frac{bc\sqrt{1-c^2x^2}}{2dx}-\frac{a+b\sin^{-1}(cx)}{2dx^2}+\frac{\left(2c^2\right)\operatorname{Subst}\left(\int (a+bx)\csc(2x)\,dx,x,\sin^{-1}(cx)\right)}{d}$$
$$= -\frac{bc\sqrt{1-c^2x^2}}{2dx}-\frac{a+b\sin^{-1}(cx)}{2dx^2}-\frac{2c^2\left(a+b\sin^{-1}(cx)\right)\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)}{d}-\frac{\left(bc^2\right)\operatorname{Subs}}{}$$
$$= -\frac{bc\sqrt{1-c^2x^2}}{2dx}-\frac{a+b\sin^{-1}(cx)}{2dx^2}-\frac{2c^2\left(a+b\sin^{-1}(cx)\right)\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)}{d}+\frac{\left(ibc^2\right)\operatorname{Sub}}{}$$
$$= -\frac{bc\sqrt{1-c^2x^2}}{2dx}-\frac{a+b\sin^{-1}(cx)}{2dx^2}-\frac{2c^2\left(a+b\sin^{-1}(cx)\right)\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)}{d}+\frac{ibc^2\operatorname{Li}_2\left(-\right.}{2}$$

Mathematica [A] time = 0.36, size = 149, normalized size = 1.20

$$-\frac{ac^2\log\left(1-c^2x^2\right)-2ac^2\log(x)+\frac{a}{x^2}+bc^2\left(\frac{\sqrt{1-c^2x^2}}{cx}+\frac{\sin^{-1}(cx)}{c^2x^2}-i\operatorname{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right)+i\operatorname{Li}_2\left(e^{2i\sin^{-1}(cx)}\right)-2\sin^{-1}(\right.}{2d}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x^3*(d - c^2*d*x^2)),x]
```

```
[Out] -1/2*(a/x^2 - 2*a*c^2*Log[x] + a*c^2*Log[1 - c^2*x^2] + b*c^2*(Sqrt[1 - c^2
*x^2]/(c*x) + ArcSin[c*x]/(c^2*x^2) - 2*ArcSin[c*x]*Log[1 - E^((2*I)*ArcSin
[c*x])] + 2*ArcSin[c*x]*Log[1 + E^((2*I)*ArcSin[c*x])] - I*PolyLog[2, -E^((
2*I)*ArcSin[c*x])] + I*PolyLog[2, E^((2*I)*ArcSin[c*x])]))/d
```

fricas [F] time = 0.54, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(-\frac{b\arcsin(cx)+a}{c^2dx^5-dx^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(-c^2*d*x^2+d),x, algorithm="fricas")
```

```
[Out] integral(-(b*arcsin(c*x) + a)/(c^2*d*x^5 - d*x^3), x)
```

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

$$\int -\frac{b \arcsin(cx) + a}{(c^2dx^2 - d)x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(-c^2*d*x^2+d),x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)/((c^2*d*x^2 - d)*x^3), x)
```

maple [B] time = 0.33, size = 296, normalized size = 2.39

$$-\frac{c^2 a \ln(cx+1)}{2d} - \frac{a}{2d\,x^2} + \frac{c^2 a \ln(cx)}{d} - \frac{c^2 a \ln(cx-1)}{2d} + \frac{i c^2 b}{2d} - \frac{bc\sqrt{-c^2x^2+1}}{2dx} - \frac{b \arcsin(cx)}{2d\,x^2} + \frac{c^2 b \arcsin(cx) \ln\left(1\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x^3/(-c^2*d*x^2+d),x)
```

```
[Out] -1/2*c^2*a/d*ln(c*x+1)-1/2*a/d/x^2+c^2*a/d*ln(c*x)-1/2*c^2*a/d*ln(c*x-1)+1/
2*I*c^2*b/d-1/2*b*c*(-c^2*x^2+1)^(1/2)/d/x-1/2*b/d*arcsin(c*x)/x^2+c^2*b/d*
arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))-I*c^2*b/d*polylog(2,I*c*x+(-c^2*
x^2+1)^(1/2))-c^2*b/d*arcsin(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)+1/2*I*
b*c^2*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d+c^2*b/d*arcsin(c*x)*ln(1+I
*c*x+(-c^2*x^2+1)^(1/2))-I*c^2*b/d*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))
```

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

$$-\frac{1}{2}\left(\frac{c^2 \log(cx+1)}{d} + \frac{c^2 \log(cx-1)}{d} - \frac{2\,c^2 \log(x)}{d} + \frac{1}{dx^2}\right)a - b\int \frac{\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)}{c^2dx^5 - dx^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(-c^2*d*x^2+d),x, algorithm="maxima")
```

```
[Out] -1/2*(c^2*log(c*x + 1)/d + c^2*log(c*x - 1)/d - 2*c^2*log(x)/d + 1/(d*x^2))
*a - b*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^2*d*x^5 - d*
x^3), x)
```

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

$$\int \frac{a + b \operatorname{asin}(c\,x)}{x^3\,\left(d - c^2\,d\,x^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x^3*(d - c^2*d*x^2)),x)
```

```
[Out] int((a + b*asin(c*x))/(x^3*(d - c^2*d*x^2)), x)
```

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

$$-\frac{\int \frac{a}{c^2x^5 - x^3}\,dx + \int \frac{b \operatorname{asin}(cx)}{c^2x^5 - x^3}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x**3/(-c**2*d*x**2+d),x)
```

```
[Out] -(Integral(a/(c**2*x**5 - x**3), x) + Integral(b*asin(c*x)/(c**2*x**5 - x**
3), x))/d
```

3.36 $\int \frac{a+b\sin^{-1}(cx)}{x^4\left(d-c^2dx^2\right)}\,dx$

Optimal. Leaf size=173

$$-\frac{2ic^3\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d}-\frac{c^2\left(a+b\sin^{-1}(cx)\right)}{dx}-\frac{a+b\sin^{-1}(cx)}{3dx^3}+\frac{ibc^3\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)}{d}-\frac{ibc^3\text{Li}_2\left(ie\right.}{d}$$

```
[Out] 1/3*(-a-b*arcsin(c*x))/d/x^3-c^2*(a+b*arcsin(c*x))/d/x-2*I*c^3*(a+b*arcsin(
c*x))*arctan(I*c*x+(-c^2*x^2+1)^(1/2))/d-7/6*b*c^3*arctanh((-c^2*x^2+1)^(1/
2))/d+I*b*c^3*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d-I*b*c^3*polylog(2,
I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d-1/6*b*c*(-c^2*x^2+1)^(1/2)/d/x^2
```

Rubi [A] time = 0.24, antiderivative size = 173, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 9, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.360$, Rules used = {4701, 4657, 4181, 2279, 2391, 266, 63, 208, 51}

$$\frac{ibc^3\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{d}-\frac{ibc^3\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{d}-\frac{c^2\left(a+b\sin^{-1}(cx)\right)}{dx}-\frac{2ic^3\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x^4*(d - c^2*d*x^2)),x]
```

```
[Out] -(b*c*Sqrt[1 - c^2*x^2])/(6*d*x^2) - (a + b*ArcSin[c*x])/(3*d*x^3) - (c^2*(
a + b*ArcSin[c*x]))/(d*x) - ((2*I)*c^3*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcS
in[c*x])])/d - (7*b*c^3*ArcTanh[Sqrt[1 - c^2*x^2]])/(6*d) + (I*b*c^3*PolyLo
g[2, (-I)*E^(I*ArcSin[c*x])])/d - (I*b*c^3*PolyLog[2, I*E^(I*ArcSin[c*x])])
/d
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] && !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x^4\left(d-c^2dx^2\right)}\,dx = -\frac{a+b\sin^{-1}(cx)}{3dx^3}+c^2\int \frac{a+b\sin^{-1}(cx)}{x^2\left(d-c^2dx^2\right)}\,dx+\frac{(bc)\int \frac{1}{x^3\sqrt{1-c^2x^2}}\,dx}{3d}$$

$$= -\frac{a+b\sin^{-1}(cx)}{3dx^3}-\frac{c^2\left(a+b\sin^{-1}(cx)\right)}{dx}+c^4\int \frac{a+b\sin^{-1}(cx)}{d-c^2dx^2}\,dx+\frac{(bc)\,\text{Subst}\left(\int \frac{}{x^2\sqrt{}}\right.}{6d}$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{6dx^2}-\frac{a+b\sin^{-1}(cx)}{3dx^3}-\frac{c^2\left(a+b\sin^{-1}(cx)\right)}{dx}+\frac{c^3\,\text{Subst}\left(\int (a+bx)\sec(x)\,d\right.}{d}$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{6dx^2}-\frac{a+b\sin^{-1}(cx)}{3dx^3}-\frac{c^2\left(a+b\sin^{-1}(cx)\right)}{dx}-\frac{2ic^3\left(a+b\sin^{-1}(cx)\right)\tan^{-1}(}{d}$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{6dx^2}-\frac{a+b\sin^{-1}(cx)}{3dx^3}-\frac{c^2\left(a+b\sin^{-1}(cx)\right)}{dx}-\frac{2ic^3\left(a+b\sin^{-1}(cx)\right)\tan^{-1}(}{d}$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{6dx^2}-\frac{a+b\sin^{-1}(cx)}{3dx^3}-\frac{c^2\left(a+b\sin^{-1}(cx)\right)}{dx}-\frac{2ic^3\left(a+b\sin^{-1}(cx)\right)\tan^{-1}(}{d}$$

Mathematica [B] time = 0.15, size = 350, normalized size = 2.02

$$-\frac{3ac^3x^3\log(1-cx)-3ac^3x^3\log(cx+1)+6ac^2x^2+2a-6ibc^3x^3\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)+6ibc^3x^3\text{Li}_2\left(ie^{i\sin^{-1}(cx)}\right)+3i}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x^4*(d - c^2*d*x^2)),x]
```

```
[Out] -1/6*(2*a + 6*a*c^2*x^2 + b*c*x*Sqrt[1 - c^2*x^2] + 2*b*ArcSin[c*x] + 6*b*c
^2*x^2*ArcSin[c*x] + (3*I)*b*c^3*Pi*x^3*ArcSin[c*x] + 7*b*c^3*x^3*ArcTanh[S
qrt[1 - c^2*x^2]] - 3*b*c^3*Pi*x^3*Log[1 - I*E^(I*ArcSin[c*x])] - 6*b*c^3*x
^3*ArcSin[c*x]*Log[1 - I*E^(I*ArcSin[c*x])] - 3*b*c^3*Pi*x^3*Log[1 + I*E^(I
*ArcSin[c*x])] + 6*b*c^3*x^3*ArcSin[c*x]*Log[1 + I*E^(I*ArcSin[c*x])] + 3*a
*c^3*x^3*Log[1 - c*x] - 3*a*c^3*x^3*Log[1 + c*x] + 3*b*c^3*Pi*x^3*Log[-Cos[
(Pi + 2*ArcSin[c*x])/4]] + 3*b*c^3*Pi*x^3*Log[Sin[(Pi + 2*ArcSin[c*x])/4]]
- (6*I)*b*c^3*x^3*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] + (6*I)*b*c^3*x^3*Poly
Log[2, I*E^(I*ArcSin[c*x])])/(d*x^3)
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{b\arcsin(cx)+a}{c^2dx^6-dx^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^4/(-c^2*d*x^2+d),x, algorithm="fricas")
```

```
[Out] integral(-(b*arcsin(c*x) + a)/(c^2*d*x^6 - d*x^4), x)
```

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

$$\int -\frac{b\arcsin(cx)+a}{(c^2dx^2-d)x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^4/(-c^2*d*x^2+d),x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)/((c^2*d*x^2 - d)*x^4), x)
```

maple [A] time = 0.26, size = 303, normalized size = 1.75

$$\frac{c^3a\ln(cx+1)}{2d}-\frac{a}{3dx^3}-\frac{c^2a}{dx}-\frac{c^3a\ln(cx-1)}{2d}-\frac{c^2b\arcsin(cx)}{dx}-\frac{bc\sqrt{-c^2x^2+1}}{6dx^2}-\frac{b\arcsin(cx)}{3dx^3}-\frac{7c^3b\ln\left(1+icx+\sqrt{-}\right.}{6d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x^4/(-c^2*d*x^2+d),x)
```

```
[Out] 1/2*c^3*a/d*ln(c*x+1)-1/3*a/d/x^3-c^2*a/d/x-1/2*c^3*a/d*ln(c*x-1)-c^2*b/d*a
rcsin(c*x)/x-1/6*b*c*(-c^2*x^2+1)^(1/2)/d/x^2-1/3*b/d*arcsin(c*x)/x^3-7/6*c
^3*b/d*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+7/6*c^3*b/d*ln(I*c*x+(-c^2*x^2+1)^(1/
2)-1)-I*c^3*b/d*dilog(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+I*c^3*b/d*dilog(1+I*(
I*c*x+(-c^2*x^2+1)^(1/2)))-c^3*b/d*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(
1/2)))+c^3*b/d*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))
```

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

$$\frac{1}{6}\left(\frac{3c^3\log(cx+1)}{d}-\frac{3c^3\log(cx-1)}{d}-\frac{2\left(3c^2x^2+1\right)}{dx^3}\right)a+\frac{\left(3c^3x^3\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)\log(cx+1)-3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^4/(-c^2*d*x^2+d),x, algorithm="maxima")
```

```
[Out] 1/6*(3*c^3*log(c*x + 1)/d - 3*c^3*log(c*x - 1)/d - 2*(3*c^2*x^2 + 1)/(d*x^3
))*a + 1/6*(3*c^3*x^3*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(c*x +
1) - 3*c^3*x^3*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(-c*x + 1) + 6
*d*x^3*integrate(1/6*(3*c^4*x^3*log(c*x + 1) - 3*c^4*x^3*log(-c*x + 1) - 6*
c^3*x^2 - 2*c)*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c^2*d*x^5 - d*x^3), x) - 2*(3*
c^2*x^2 + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*b/(d*x^3)
```

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

$$\int \frac{a+b\,\mathrm{asin}\left(c\,x\right)}{x^4\,\left(d-c^2\,d\,x^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x^4*(d - c^2*d*x^2)),x)
```

```
[Out] int((a + b*asin(c*x))/(x^4*(d - c^2*d*x^2)), x)
```

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

$$-\frac{\int \frac{a}{c^2x^6-x^4}\,dx+\int \frac{b\,\mathrm{asin}\,(cx)}{c^2x^6-x^4}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x**4/(-c**2*d*x**2+d),x)
```

```
[Out] -(Integral(a/(c**2*x**6 - x**4), x) + Integral(b*asin(c*x)/(c**2*x**6 - x**
4), x))/d
```

3.37 $\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^2}\,dx$

Optimal. Leaf size=187

$$\frac{3i\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^5d^2}+\frac{3x\left(a+b\sin^{-1}(cx)\right)}{2c^4d^2}+\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{2c^2d^2\left(1-c^2x^2\right)}-\frac{3ibLi_2\left(-ie^{i\sin^{-1}(cx)}\right)}{2c^5d^2}+\frac{3ibLi_2\left(i\right.}{2c}$$

```
[Out] 3/2*x*(a+b*arcsin(c*x))/c^4/d^2+1/2*x^3*(a+b*arcsin(c*x))/c^2/d^2/(-c^2*x^2
+1)+3*I*(a+b*arcsin(c*x))*arctan(I*c*x+(-c^2*x^2+1)^(1/2))/c^5/d^2-3/2*I*b*
polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c^5/d^2+3/2*I*b*polylog(2,I*(I*c*x
+(-c^2*x^2+1)^(1/2)))/c^5/d^2-1/2*b/c^5/d^2/(-c^2*x^2+1)^(1/2)+b*(-c^2*x^2+
1)^(1/2)/c^5/d^2
```

Rubi [A] time = 0.24, antiderivative size = 187, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.360, Rules used = {4703, 4715, 4657, 4181, 2279, 2391, 261, 266, 43}

$$-\frac{3ib\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{2c^5d^2}+\frac{3ib\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{2c^5d^2}+\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{2c^2d^2\left(1-c^2x^2\right)}+\frac{3x\left(a+b\sin^{-1}(cx)\right)}{2c^4d^2}+\frac{3i\tan^{-1}\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^2,x]
```

```
[Out] -b/(2*c^5*d^2*Sqrt[1 - c^2*x^2]) + (b*Sqrt[1 - c^2*x^2])/(c^5*d^2) + (3*x*(
a + b*ArcSin[c*x]))/(2*c^4*d^2) + (x^3*(a + b*ArcSin[c*x]))/(2*c^2*d^2*(1 -
 c^2*x^2)) + ((3*I)*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])])/(c^5*d^2
) - (((3*I)/2)*b*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(c^5*d^2) + (((3*I)/2)
*b*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c^5*d^2)
```

Rule 43

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

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(e*(m + 2*p + 1)), x] + (Dist[(f^2*(m - 1))/(c^2*(m + 2*
p + 1)), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(c*(m + 2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c
*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e,
0] && GtQ[n, 0] && GtQ[m, 1] && NeQ[m + 2*p + 1, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^2}\,dx = \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{2c^2d^2\left(1-c^2x^2\right)} - \frac{b\int \frac{x^3}{\left(1-c^2x^2\right)^{3/2}}\,dx}{2cd^2} - \frac{3\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{d-c^2dx^2}\,dx}{2c^2d}$$

$$= \frac{3x\left(a+b\sin^{-1}(cx)\right)}{2c^4d^2} + \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{2c^2d^2\left(1-c^2x^2\right)} - \frac{(3b)\int \frac{x}{\sqrt{1-c^2x^2}}\,dx}{2c^3d^2} - \frac{b\,\text{Subst}\left(\int \frac{x}{\left(1-c^2x\right)^{3}}\right.}{4cd^2}$$

$$= \frac{3b\sqrt{1-c^2x^2}}{2c^5d^2} + \frac{3x\left(a+b\sin^{-1}(cx)\right)}{2c^4d^2} + \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{2c^2d^2\left(1-c^2x^2\right)} - \frac{3\,\text{Subst}\left(\int (a+bx)\,\text{sec}\right.}{2c^5}$$

$$= -\frac{b}{2c^5d^2\sqrt{1-c^2x^2}} + \frac{b\sqrt{1-c^2x^2}}{c^5d^2} + \frac{3x\left(a+b\sin^{-1}(cx)\right)}{2c^4d^2} + \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{2c^2d^2\left(1-c^2x^2\right)} + \frac{3i}{}$$

$$= -\frac{b}{2c^5d^2\sqrt{1-c^2x^2}} + \frac{b\sqrt{1-c^2x^2}}{c^5d^2} + \frac{3x\left(a+b\sin^{-1}(cx)\right)}{2c^4d^2} + \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{2c^2d^2\left(1-c^2x^2\right)} + \frac{3i}{}$$

$$= -\frac{b}{2c^5d^2\sqrt{1-c^2x^2}} + \frac{b\sqrt{1-c^2x^2}}{c^5d^2} + \frac{3x\left(a+b\sin^{-1}(cx)\right)}{2c^4d^2} + \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{2c^2d^2\left(1-c^2x^2\right)} + \frac{3i}{}$$

Mathematica [A] time = 0.44, size = 332, normalized size = 1.78

$$-\frac{2acx}{c^2x^2-1} + 4acx + 3a\log(1-cx) - 3a\log(cx+1) + \frac{b\sqrt{1-c^2x^2}}{cx-1} - \frac{b\sqrt{1-c^2x^2}}{cx+1} + 4b\sqrt{1-c^2x^2} - 6ib\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right) + 6$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^4*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^2,x]
```

```
[Out] (4*a*c*x + 4*b*Sqrt[1 - c^2*x^2] + (b*Sqrt[1 - c^2*x^2])/(-1 + c*x) - (b*Sq
rt[1 - c^2*x^2])/(1 + c*x) - (2*a*c*x)/(-1 + c^2*x^2) + (3*I)*b*Pi*ArcSin[c
*x] + 4*b*c*x*ArcSin[c*x] + (b*ArcSin[c*x])/(1 - c*x) - (b*ArcSin[c*x])/(1
+ c*x) - 3*b*Pi*Log[1 - I*E^(I*ArcSin[c*x])] - 6*b*ArcSin[c*x]*Log[1 - I*E^
(I*ArcSin[c*x])] - 3*b*Pi*Log[1 + I*E^(I*ArcSin[c*x])] + 6*b*ArcSin[c*x]*Lo
g[1 + I*E^(I*ArcSin[c*x])] + 3*a*Log[1 - c*x] - 3*a*Log[1 + c*x] + 3*b*Pi*L
og[-Cos[(Pi + 2*ArcSin[c*x])/4]] + 3*b*Pi*Log[Sin[(Pi + 2*ArcSin[c*x])/4]]
- (6*I)*b*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] + (6*I)*b*PolyLog[2, I*E^(I*Ar
cSin[c*x])])/(4*c^5*d^2)
```

fricas [F] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bx^4\arcsin(cx) + ax^4}{c^4d^2x^4 - 2\,c^2d^2x^2 + d^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^2,x, algorithm="fricas")
```

```
[Out] integral((b*x^4*arcsin(c*x) + a*x^4)/(c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2), x
)
```

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

$$\int \frac{(b\arcsin(cx) + a)x^4}{\left(c^2dx^2 - d\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)*x^4/(c^2*d*x^2 - d)^2, x)
```

maple [A] time = 0.40, size = 305, normalized size = 1.63

$$\frac{ax}{c^4d^2}-\frac{a}{4c^5d^2(cx+1)}-\frac{3a\ln(cx+1)}{4c^5d^2}-\frac{a}{4c^5d^2(cx-1)}+\frac{3a\ln(cx-1)}{4c^5d^2}+\frac{b\sqrt{-c^2x^2+1}}{c^5d^2}+\frac{b\arcsin(cx)x}{c^4d^2}-\frac{b\arcsin(}{2c^4d^2(c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^2,x)
```

```
[Out] 1/c^4*a/d^2*x-1/4/c^5*a/d^2/(c*x+1)-3/4/c^5*a/d^2*ln(c*x+1)-1/4/c^5*a/d^2/(
c*x-1)+3/4/c^5*a/d^2*ln(c*x-1)+b*(-c^2*x^2+1)^(1/2)/c^5/d^2+1/c^4*b/d^2*arc
sin(c*x)*x-1/2/c^4*b/d^2/(c^2*x^2-1)*arcsin(c*x)*x+1/2/c^5*b/d^2/(c^2*x^2-1
)*(-c^2*x^2+1)^(1/2)+3/2/c^5*b/d^2*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(
1/2)))-3/2/c^5*b/d^2*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-3/2*I/c
^5*b/d^2*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+3/2*I/c^5*b/d^2*dilog(1-I*(I
*c*x+(-c^2*x^2+1)^(1/2)))
```

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

$$-\frac{1}{4}a\left(\frac{2x}{c^6d^2x^2-c^4d^2}-\frac{4x}{c^4d^2}+\frac{3\log(cx+1)}{c^5d^2}-\frac{3\log(cx-1)}{c^5d^2}\right)-\frac{\left(3\left(c^2x^2-1\right)\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)\mathrm{lo}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^2,x, algorithm="maxima")
```

```
[Out] -1/4*a*(2*x/(c^6*d^2*x^2 - c^4*d^2) - 4*x/(c^4*d^2) + 3*log(c*x + 1)/(c^5*d
^2) - 3*log(c*x - 1)/(c^5*d^2)) - 1/4*(3*(c^2*x^2 - 1)*arctan2(c*x, sqrt(c*
x + 1)*sqrt(-c*x + 1))*log(c*x + 1) - 3*(c^2*x^2 - 1)*arctan2(c*x, sqrt(c*x
 + 1)*sqrt(-c*x + 1))*log(-c*x + 1) - 2*(2*c^3*x^3 - 3*c*x)*arctan2(c*x, sq
rt(c*x + 1)*sqrt(-c*x + 1)) + 4*(c^7*d^2*x^2 - c^5*d^2)*integrate(-1/4*(4*c
^3*x^3 - 6*c*x - 3*(c^2*x^2 - 1)*log(c*x + 1) + 3*(c^2*x^2 - 1)*log(-c*x +
1))*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c^8*d^2*x^4 - 2*c^6*d^2*x^2 + c^4*d^2), x
))*b/(c^7*d^2*x^2 - c^5*d^2)
```

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

$$\int \frac{x^4\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(d-c^2\,d\,x^2\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(a + b*asin(c*x)))/(d - c^2*d*x^2)^2,x)
```

```
[Out] int((x^4*(a + b*asin(c*x)))/(d - c^2*d*x^2)^2, x)
```

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

$$\frac{\int \frac{ax^4}{c^4x^4-2c^2x^2+1}\, dx + \int \frac{bx^4\operatorname{asin}(cx)}{c^4x^4-2c^2x^2+1}\, dx}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*asin(c*x))/(-c**2*d*x**2+d)**2,x)
```

```
[Out] (Integral(a*x**4/(c**4*x**4 - 2*c**2*x**2 + 1), x) + Integral(b*x**4*asin(c
*x)/(c**4*x**4 - 2*c**2*x**2 + 1), x))/d**2
```

3.38 $\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^2}\,dx$

Optimal. Leaf size=155

$$-\frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2bc^4d^2}+\frac{\log\left(1+e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^4d^2}+\frac{x^2\left(a+b\sin^{-1}(cx)\right)}{2c^2d^2\left(1-c^2x^2\right)}-\frac{ib\text{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right)}{2c^4d^2}+\frac{b\sin^{-1}(c}{2c^4d^2}$$

```
[Out] 1/2*b*arcsin(c*x)/c^4/d^2+1/2*x^2*(a+b*arcsin(c*x))/c^2/d^2/(-c^2*x^2+1)-1/
2*I*(a+b*arcsin(c*x))^2/b/c^4/d^2+(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1
)^(1/2))^2)/c^4/d^2-1/2*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c^4/d^
2-1/2*b*x/c^3/d^2/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.320, Rules used = {4703, 4675, 3719, 2190, 2279, 2391, 288, 216}

$$-\frac{ib\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{2c^4d^2}+\frac{x^2\left(a+b\sin^{-1}(cx)\right)}{2c^2d^2\left(1-c^2x^2\right)}-\frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2bc^4d^2}+\frac{\log\left(1+e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^4d^2}-\frac{}{2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^2,x]
```

```
[Out] -(b*x)/(2*c^3*d^2*Sqrt[1 - c^2*x^2]) + (b*ArcSin[c*x])/(2*c^4*d^2) + (x^2*(
a + b*ArcSin[c*x]))/(2*c^2*d^2*(1 - c^2*x^2)) - ((I/2)*(a + b*ArcSin[c*x])^
2)/(b*c^4*d^2) + ((a + b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(c^4*
d^2) - ((I/2)*b*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(c^4*d^2)
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rubi steps

$$\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^2}\,dx = \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{2c^2d^2\left(1-c^2x^2\right)} - \frac{b\int \frac{x^2}{\left(1-c^2x^2\right)^{3/2}}\,dx}{2cd^2} - \frac{\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{d-c^2dx^2}\,dx}{c^2d}$$

$$= -\frac{bx}{2c^3d^2\sqrt{1-c^2x^2}} + \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{2c^2d^2\left(1-c^2x^2\right)} - \frac{\text{Subst}\left(\int (a+bx)\tan(x)\,dx, x, \sin^{-1}(c\right.}{c^4d^2}$$

$$= -\frac{bx}{2c^3d^2\sqrt{1-c^2x^2}} + \frac{b\sin^{-1}(cx)}{2c^4d^2} + \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{2c^2d^2\left(1-c^2x^2\right)} - \frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2bc^4d^2} + \frac{(2}{}$$

$$= -\frac{bx}{2c^3d^2\sqrt{1-c^2x^2}} + \frac{b\sin^{-1}(cx)}{2c^4d^2} + \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{2c^2d^2\left(1-c^2x^2\right)} - \frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2bc^4d^2} + \frac{(}{}$$

$$= -\frac{bx}{2c^3d^2\sqrt{1-c^2x^2}} + \frac{b\sin^{-1}(cx)}{2c^4d^2} + \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{2c^2d^2\left(1-c^2x^2\right)} - \frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2bc^4d^2} + \frac{(}{}$$

$$= -\frac{bx}{2c^3d^2\sqrt{1-c^2x^2}} + \frac{b\sin^{-1}(cx)}{2c^4d^2} + \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{2c^2d^2\left(1-c^2x^2\right)} - \frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2bc^4d^2} + \frac{(}{}$$

Mathematica [B] time = 0.51, size = 334, normalized size = 2.15

$$-\frac{2a}{c^2x^2-1} + 2a\log\left(1-c^2x^2\right) + \frac{b\sqrt{1-c^2x^2}}{cx-1} + \frac{b\sqrt{1-c^2x^2}}{cx+1} - 4ib\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right) - 4ib\text{Li}_2\left(ie^{i\sin^{-1}(cx)}\right) - 2ib\sin^{-1}(cx)^2$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^3*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^2,x]
```

```
[Out] ((b*Sqrt[1 - c^2*x^2])/(-1 + c*x) + (b*Sqrt[1 - c^2*x^2])/(1 + c*x) - (2*a)
/(-1 + c^2*x^2) + (4*I)*b*Pi*ArcSin[c*x] + (b*ArcSin[c*x])/(1 - c*x) + (b*A
rcSin[c*x])/(1 + c*x) - (2*I)*b*ArcSin[c*x]^2 + 8*b*Pi*Log[1 + E^((-I)*ArcS
in[c*x])] + 2*b*Pi*Log[1 - I*E^(I*ArcSin[c*x])] + 4*b*ArcSin[c*x]*Log[1 - I
*E^(I*ArcSin[c*x])] - 2*b*Pi*Log[1 + I*E^(I*ArcSin[c*x])] + 4*b*ArcSin[c*x]
*Log[1 + I*E^(I*ArcSin[c*x])] + 2*a*Log[1 - c^2*x^2] - 8*b*Pi*Log[Cos[ArcSi
n[c*x]/2]] + 2*b*Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] - 2*b*Pi*Log[Sin[(Pi
+ 2*ArcSin[c*x])/4]] - (4*I)*b*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] - (4*I)*b
*PolyLog[2, I*E^(I*ArcSin[c*x])])/(4*c^4*d^2)
```

fricas [F] time = 0.58, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bx^3 \arcsin(cx) + ax^3}{c^4d^2x^4 - 2\,c^2d^2x^2 + d^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^2,x, algorithm="fricas")
```

```
[Out] integral((b*x^3*arcsin(c*x) + a*x^3)/(c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2), x
)
```

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

$$\int \frac{(b\arcsin(cx) + a)x^3}{\left(c^2dx^2 - d\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)*x^3/(c^2*d*x^2 - d)^2, x)
```

maple [A] time = 0.45, size = 251, normalized size = 1.62

$$\frac{a}{4c^4d^2(cx+1)} + \frac{a\ln(cx+1)}{2c^4d^2} - \frac{a}{4c^4d^2(cx-1)} + \frac{a\ln(cx-1)}{2c^4d^2} - \frac{ib\arcsin(cx)^2}{2c^4d^2} - \frac{ibx^2}{2c^2d^2\left(c^2x^2-1\right)} + \frac{bx\sqrt{-c^2x^2+1}}{2c^3d^2\left(c^2x^2-1\right)} - \cdots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^2,x)
```

```
[Out] 1/4/c^4*a/d^2/(c*x+1)+1/2/c^4*a/d^2*ln(c*x+1)-1/4/c^4*a/d^2/(c*x-1)+1/2/c^4
*a/d^2*ln(c*x-1)-1/2*I/c^4*b/d^2*arcsin(c*x)^2-1/2*I/c^2*b/d^2/(c^2*x^2-1)*
x^2+1/2/c^3*b/d^2/(c^2*x^2-1)*x*(-c^2*x^2+1)^(1/2)-1/2/c^4*b/d^2/(c^2*x^2-1
)*arcsin(c*x)+1/2*I/c^4*b/d^2/(c^2*x^2-1)+1/c^4*b/d^2*arcsin(c*x)*ln(1+(I*c
*x+(-c^2*x^2+1)^(1/2))^2)-1/2*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/
c^4/d^2
```

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

$$-\frac{1}{2}a\left(\frac{1}{c^6d^2x^2 - c^4d^2} - \frac{\log\left(c^2x^2-1\right)}{c^4d^2}\right) + \frac{\left(\left(c^2x^2-1\right)\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)\log(cx+1) + \left(c^2x^2-1\right)\operatorname{arcta}\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a*(1/(c^6*d^2*x^2 - c^4*d^2) - log(c^2*x^2 - 1)/(c^4*d^2)) + 1/2*((c^2
*x^2 - 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(c*x + 1) + (c^2*x^
2 - 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(-c*x + 1) + 2*(c^6*d^
2*x^2 - c^4*d^2)*integrate(1/2*((c^2*x^2 - 1)*e^(1/2*log(c*x + 1) + 1/2*log
(-c*x + 1))*log(c*x + 1) + (c^2*x^2 - 1)*e^(1/2*log(c*x + 1) + 1/2*log(-c*x
 + 1))*log(-c*x + 1) - e^(1/2*log(c*x + 1) + 1/2*log(-c*x + 1)))/(c^9*d^2*x
^6 - 2*c^7*d^2*x^4 + c^5*d^2*x^2 + (c^7*d^2*x^4 - 2*c^5*d^2*x^2 + c^3*d^2)*
e^(log(c*x + 1) + log(-c*x + 1))), x) - arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*
x + 1)))*b/(c^6*d^2*x^2 - c^4*d^2)
```

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

$$\int \frac{x^3\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(d-c^2\,d\,x^2\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*asin(c*x)))/(d - c^2*d*x^2)^2,x)
```

```
[Out] int((x^3*(a + b*asin(c*x)))/(d - c^2*d*x^2)^2, x)
```

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

$$\frac{\int \frac{ax^3}{c^4x^4-2c^2x^2+1}\,dx + \int \frac{bx^3\,\mathrm{asin}\,(cx)}{c^4x^4-2c^2x^2+1}\,dx}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*asin(c*x))/(-c**2*d*x**2+d)**2,x)
```

```
[Out] (Integral(a*x**3/(c**4*x**4 - 2*c**2*x**2 + 1), x) + Integral(b*x**3*asin(c
*x)/(c**4*x**4 - 2*c**2*x**2 + 1), x))/d**2
```

3.39 $\int \frac{x^2(a+b\sin^{-1}(cx))}{(d-c^2dx^2)^2}\,dx$

Optimal. Leaf size=144

$$\frac{i\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^3d^2}+\frac{x\left(a+b\sin^{-1}(cx)\right)}{2c^2d^2\left(1-c^2x^2\right)}-\frac{ib\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)}{2c^3d^2}+\frac{ib\text{Li}_2\left(ie^{i\sin^{-1}(cx)}\right)}{2c^3d^2}-\frac{b}{2c^3d^2\sqrt{1-c^2x^2}}$$

```
[Out] 1/2*x*(a+b*arcsin(c*x))/c^2/d^2/(-c^2*x^2+1)+I*(a+b*arcsin(c*x))*arctan(I*c
*x+(-c^2*x^2+1)^(1/2))/c^3/d^2-1/2*I*b*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/
2)))/c^3/d^2+1/2*I*b*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c^3/d^2-1/2*b/
c^3/d^2/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {4703, 4657, 4181, 2279, 2391, 261}

$$-\frac{ib\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{2c^3d^2}+\frac{ib\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{2c^3d^2}+\frac{x\left(a+b\sin^{-1}(cx)\right)}{2c^2d^2\left(1-c^2x^2\right)}+\frac{i\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^3d^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^2,x]
```

```
[Out] -b/(2*c^3*d^2*Sqrt[1 - c^2*x^2]) + (x*(a + b*ArcSin[c*x]))/(2*c^2*d^2*(1 -
c^2*x^2)) + (I*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])])/(c^3*d^2) - (
(I/2)*b*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(c^3*d^2) + ((I/2)*b*PolyLog[2,
 I*E^(I*ArcSin[c*x])])/(c^3*d^2)
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
```

```
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rubi steps

$$\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^2}\,dx = \frac{x\left(a+b\sin^{-1}(cx)\right)}{2c^2d^2\left(1-c^2x^2\right)} - \frac{b\int \frac{x}{\left(1-c^2x^2\right)^{3/2}}\,dx}{2cd^2} - \frac{\int \frac{a+b\sin^{-1}(cx)}{d-c^2dx^2}\,dx}{2c^2d}$$

$$= -\frac{b}{2c^3d^2\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)}{2c^2d^2\left(1-c^2x^2\right)} - \frac{\text{Subst}\left(\int (a+bx)\sec(x)\,dx, x, \sin^{-1}(cx\right.}{2c^3d^2}$$

$$= -\frac{b}{2c^3d^2\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)}{2c^2d^2\left(1-c^2x^2\right)} + \frac{i\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{c^3d^2} +$$

$$= -\frac{b}{2c^3d^2\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)}{2c^2d^2\left(1-c^2x^2\right)} + \frac{i\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{c^3d^2} -$$

$$= -\frac{b}{2c^3d^2\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)}{2c^2d^2\left(1-c^2x^2\right)} + \frac{i\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{c^3d^2} -$$

Mathematica [B] time = 0.19, size = 463, normalized size = 3.22

$$\frac{a\log(1-cx)}{4c^3d^2} - \frac{a\log(cx+1)}{4c^3d^2} - \frac{ax}{2c^2d^2\left(c^2x^2-1\right)} + \frac{b\left(-\frac{2i\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)}{c} - \frac{i\sin^{-1}(cx)^2}{2c} + \frac{3i\pi\sin^{-1}(cx)}{2c} + \frac{2\sin^{-1}(cx)\log\left(1+ie^{i\sin^{-1}(cx)}\right)}{c} + \frac{2\pi\cdots}{\cdots}\right.}{\cdots}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^2*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^2,x]
```

```
[Out] -1/2*(a*x)/(c^2*d^2*(-1 + c^2*x^2)) + (a*Log[1 - c*x])/(4*c^3*d^2) - (a*Log
[1 + c*x])/(4*c^3*d^2) + (b*((Sqrt[1 - c^2*x^2] - ArcSin[c*x])/(4*c^3*(-1 +
 c*x)) - (Sqrt[1 - c^2*x^2] + ArcSin[c*x])/(4*c^2*(c + c^2*x)) + ((((3*I)/2
)*Pi*ArcSin[c*x])/c - ((I/2)*ArcSin[c*x]^2)/c + (2*Pi*Log[1 + E^((-I)*ArcSi
n[c*x])])/c - (Pi*Log[1 + I*E^(I*ArcSin[c*x])])/c + (2*ArcSin[c*x]*Log[1 +
I*E^(I*ArcSin[c*x])])/c - (2*Pi*Log[Cos[ArcSin[c*x]/2]])/c + (Pi*Log[-Cos[(
Pi + 2*ArcSin[c*x])/4]])/c - ((2*I)*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/c)/
(4*c^2) - (((I/2)*Pi*ArcSin[c*x])/c - ((I/2)*ArcSin[c*x]^2)/c + (2*Pi*Log[1
 + E^((-I)*ArcSin[c*x])])/c + (Pi*Log[1 - I*E^(I*ArcSin[c*x])])/c + (2*ArcS
in[c*x]*Log[1 - I*E^(I*ArcSin[c*x])])/c - (2*Pi*Log[Cos[ArcSin[c*x]/2]])/c
- (Pi*Log[Sin[(Pi + 2*ArcSin[c*x])/4]])/c - ((2*I)*PolyLog[2, I*E^(I*ArcSin
[c*x])])/c)/(4*c^2)))/d^2
```

fricas [F] time = 0.54, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bx^2 \arcsin(cx) + ax^2}{c^4d^2x^4 - 2\,c^2d^2x^2 + d^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^2,x, algorithm="fricas")
```

```
[Out] integral((b*x^2*arcsin(c*x) + a*x^2)/(c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2), x
)
```

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

$$\int \frac{(b\arcsin(cx) + a)x^2}{\left(c^2dx^2 - d\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)*x^2/(c^2*d*x^2 - d)^2, x)
```

maple [A] time = 0.27, size = 263, normalized size = 1.83

$$-\frac{a}{4c^3d^2(cx+1)} - \frac{a\ln(cx+1)}{4c^3d^2} - \frac{a}{4c^3d^2(cx-1)} + \frac{a\ln(cx-1)}{4c^3d^2} - \frac{b\arcsin(cx)\,x}{2c^2d^2\left(c^2x^2-1\right)} + \frac{b\sqrt{-c^2x^2+1}}{2c^3d^2\left(c^2x^2-1\right)} + \frac{b\arcsin(cx)\ln}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^2,x)
```

```
[Out] -1/4/c^3*a/d^2/(c*x+1)-1/4/c^3*a/d^2*ln(c*x+1)-1/4/c^3*a/d^2/(c*x-1)+1/4/c^
3*a/d^2*ln(c*x-1)-1/2/c^2*b/d^2/(c^2*x^2-1)*arcsin(c*x)*x+1/2/c^3*b/d^2/(c^
2*x^2-1)*(-c^2*x^2+1)^(1/2)+1/2/c^3*b/d^2*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x
^2+1)^(1/2)))-1/2/c^3*b/d^2*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-
1/2*I/c^3*b/d^2*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+1/2*I/c^3*b/d^2*dilog
(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))
```

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

$$-\frac{1}{4}a\left(\frac{2\,x}{c^4d^2x^2 - c^2d^2} + \frac{\log(cx+1)}{c^3d^2} - \frac{\log(cx-1)}{c^3d^2}\right) - \frac{\left(2\,cx\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right) + \left(c^2x^2-1\right)\arctan\left(cx\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^2,x, algorithm="maxima")
```

```
[Out] -1/4*a*(2*x/(c^4*d^2*x^2 - c^2*d^2) + log(c*x + 1)/(c^3*d^2) - log(c*x - 1)
/(c^3*d^2)) - 1/4*(2*c*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + (c^2*
x^2 - 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(c*x + 1) - (c^2*x^2
 - 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(-c*x + 1) + 4*(c^5*d^2
*x^2 - c^3*d^2)*integrate(1/4*(2*c*x + (c^2*x^2 - 1)*log(c*x + 1) - (c^2*x^
2 - 1)*log(-c*x + 1))*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c^6*d^2*x^4 - 2*c^4*d^2
*x^2 + c^2*d^2), x))*b/(c^5*d^2*x^2 - c^3*d^2)
```

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

$$\int \frac{x^2\,\left(a + b\,\mathrm{asin}\left(c\,x\right)\right)}{\left(d - c^2\,d\,x^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*asin(c*x)))/(d - c^2*d*x^2)^2,x)
```

```
[Out] int((x^2*(a + b*asin(c*x)))/(d - c^2*d*x^2)^2, x)
```

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

$$\frac{\int \frac{ax^2}{c^4x^4-2c^2x^2+1}\,dx + \int \frac{bx^2\operatorname{asin}(cx)}{c^4x^4-2c^2x^2+1}\,dx}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(c*x))/(-c**2*d*x**2+d)**2,x)
```

```
[Out] (Integral(a*x**2/(c**4*x**4 - 2*c**2*x**2 + 1), x) + Integral(b*x**2*asin(c
*x)/(c**4*x**4 - 2*c**2*x**2 + 1), x))/d**2
```

3.40 $\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^2}\,dx$

Optimal. Leaf size=57

$$\frac{a+b\sin^{-1}(cx)}{2c^2d^2\left(1-c^2x^2\right)}-\frac{bx}{2cd^2\sqrt{1-c^2x^2}}$$

```
[Out] 1/2*(a+b*arcsin(c*x))/c^2/d^2/(-c^2*x^2+1)-1/2*b*x/c/d^2/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {4677, 191}

$$\frac{a+b\sin^{-1}(cx)}{2c^2d^2\left(1-c^2x^2\right)}-\frac{bx}{2cd^2\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^2,x]
```

```
[Out] -(b*x)/(2*c*d^2*Sqrt[1 - c^2*x^2]) + (a + b*ArcSin[c*x])/(2*c^2*d^2*(1 - c^
2*x^2))
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^2}\,dx &= \frac{a+b\sin^{-1}(cx)}{2c^2d^2\left(1-c^2x^2\right)}-\frac{b\int \frac{1}{\left(1-c^2x^2\right)^{3/2}}\,dx}{2cd^2}\\ &= -\frac{bx}{2cd^2\sqrt{1-c^2x^2}}+\frac{a+b\sin^{-1}(cx)}{2c^2d^2\left(1-c^2x^2\right)}\end{aligned}$$

Mathematica [A] time = 0.05, size = 50, normalized size = 0.88

$$\frac{a-bcx\sqrt{1-c^2x^2}+b\sin^{-1}(cx)}{2c^2d^2-2c^4d^2x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^2,x]
```

```
[Out] (a - b*c*x*Sqrt[1 - c^2*x^2] + b*ArcSin[c*x])/(2*c^2*d^2 - 2*c^4*d^2*x^2)
```

fricas [A] time = 0.48, size = 55, normalized size = 0.96

$$-\frac{ac^2x^2 - \sqrt{-c^2x^2+1}\,bcx + b\arcsin(cx)}{2\left(c^4d^2x^2 - c^2d^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(a*c^2*x^2 - sqrt(-c^2*x^2 + 1)*b*c*x + b*arcsin(c*x))/(c^4*d^2*x^2 -
c^2*d^2)
```

giac [A] time = 1.18, size = 89, normalized size = 1.56

$$-\frac{bx^2\arcsin(cx)}{2\left(c^2x^2-1\right)d^2} - \frac{ax^2}{2\left(c^2x^2-1\right)d^2} - \frac{bx}{2\sqrt{-c^2x^2+1}\,cd^2} + \frac{b\arcsin(cx)}{2\,c^2d^2} + \frac{a}{2\,c^2d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^2,x, algorithm="giac")
```

```
[Out] -1/2*b*x^2*arcsin(c*x)/((c^2*x^2 - 1)*d^2) - 1/2*a*x^2/((c^2*x^2 - 1)*d^2)
- 1/2*b*x/(sqrt(-c^2*x^2 + 1)*c*d^2) + 1/2*b*arcsin(c*x)/(c^2*d^2) + 1/2*a/
(c^2*d^2)
```

maple [A] time = 0.01, size = 98, normalized size = 1.72

$$\frac{-\frac{a}{2d^2\left(c^2x^2-1\right)} + \frac{b\left(-\frac{\arcsin(cx)}{2\left(c^2x^2-1\right)} + \frac{\sqrt{-(cx+1)^2+2cx+2}}{4cx+4} + \frac{\sqrt{-(cx-1)^2-2cx+2}}{4cx-4}\right)}{d^2}}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^2,x)
```

```
[Out] 1/c^2*(-1/2*a/d^2/(c^2*x^2-1)+b/d^2*(-1/2/(c^2*x^2-1)*arcsin(c*x)+1/4/(c*x+
1)*(-(c*x+1)^2+2*c*x+2)^(1/2)+1/4/(c*x-1)*(-(c*x-1)^2-2*c*x+2)^(1/2)))
```

maxima [B] time = 0.48, size = 136, normalized size = 2.39

$$\frac{1}{4}\left(\left(\frac{\sqrt{-c^2x^2+1}\,c^2d^2}{c^7d^4x + c^6d^4} + \frac{\sqrt{-c^2x^2+1}\,c^2d^2}{c^7d^4x - c^6d^4}\right)c^2 - \frac{2\arcsin(cx)}{c^4d^2x^2 - c^2d^2}\right)b - \frac{a}{2\left(c^4d^2x^2 - c^2d^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^2,x, algorithm="maxima")
```

```
[Out] 1/4*((sqrt(-c^2*x^2 + 1)*c^2*d^2/(c^7*d^4*x + c^6*d^4) + sqrt(-c^2*x^2 + 1)
*c^2*d^2/(c^7*d^4*x - c^6*d^4))*c^2 - 2*arcsin(c*x)/(c^4*d^2*x^2 - c^2*d^2)
)*b - 1/2*a/(c^4*d^2*x^2 - c^2*d^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{x\,\left(a + b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(d - c^2\,d\,x^2\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*asin(c*x)))/(d - c^2*d*x^2)^2,x)
```

```
[Out] int((x*(a + b*asin(c*x)))/(d - c^2*d*x^2)^2, x)
```

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

$$\frac{\int \frac{ax}{c^4x^4-2c^2x^2+1}\,dx + \int \frac{bx\operatorname{asin}(cx)}{c^4x^4-2c^2x^2+1}\,dx}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(c*x))/(-c**2*d*x**2+d)**2,x)
```

```
[Out] (Integral(a*x/(c**4*x**4 - 2*c**2*x**2 + 1), x) + Integral(b*x*asin(c*x)/(c
**4*x**4 - 2*c**2*x**2 + 1), x))/d**2
```

3.41 $\int \frac{a+b\sin^{-1}(cx)}{\left(d-c^2dx^2\right)^2}\,dx$

Optimal. Leaf size=141

$$\frac{x\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(1-c^2x^2\right)}-\frac{i\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{cd^2}-\frac{b}{2cd^2\sqrt{1-c^2x^2}}+\frac{ib\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)}{2cd^2}-\frac{ib\text{Li}_2\left(ie^{i\sin^{-1}(c}\right.}{2cd^2}$$

```
[Out] 1/2*x*(a+b*arcsin(c*x))/d^2/(-c^2*x^2+1)-I*(a+b*arcsin(c*x))*arctan(I*c*x+(
-c^2*x^2+1)^(1/2))/c/d^2+1/2*I*b*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c
/d^2-1/2*I*b*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/d^2-1/2*b/c/d^2/(-c^
2*x^2+1)^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {4655, 4657, 4181, 2279, 2391, 261}

$$\frac{ib\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{2cd^2}-\frac{ib\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{2cd^2}+\frac{x\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(1-c^2x^2\right)}-\frac{i\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx\right.}{cd^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(d - c^2*d*x^2)^2,x]
```

```
[Out] -b/(2*c*d^2*Sqrt[1 - c^2*x^2]) + (x*(a + b*ArcSin[c*x]))/(2*d^2*(1 - c^2*x^
2)) - (I*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])])/(c*d^2) + ((I/2)*b*
PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(c*d^2) - ((I/2)*b*PolyLog[2, I*E^(I*Ar
cSin[c*x])])/(c*d^2)
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
```

```
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{\left(d-c^2dx^2\right)^2}\,dx = \frac{x\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(1-c^2x^2\right)} - \frac{(bc)\int \frac{x}{\left(1-c^2x^2\right)^{3/2}}\,dx}{2d^2} + \frac{\int \frac{a+b\sin^{-1}(cx)}{d-c^2dx^2}\,dx}{2d}$$

$$= -\frac{b}{2cd^2\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(1-c^2x^2\right)} + \frac{\text{Subst}\left(\int (a+bx)\sec(x)\,dx, x, \sin^{-1}(cx)\right)}{2cd^2}$$

$$= -\frac{b}{2cd^2\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(1-c^2x^2\right)} - \frac{i\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{cd^2} - \frac{b\,\text{Subst}\big(}{}$$

$$= -\frac{b}{2cd^2\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(1-c^2x^2\right)} - \frac{i\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{cd^2} + \frac{(ib)\,\text{Subs}}{}$$

$$= -\frac{b}{2cd^2\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(1-c^2x^2\right)} - \frac{i\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{cd^2} + \frac{ib\text{Li}_2\big(-i}{2c}$$

Mathematica [B] time = 0.84, size = 334, normalized size = 2.37

$$-\frac{\frac{2ax}{c^2x^2-1} + \frac{a\log(1-cx)}{c} - \frac{a\log(cx+1)}{c} + \frac{b\sqrt{1-c^2x^2}}{c-c^2x} + \frac{b\sqrt{1-c^2x^2}}{c^2x+c} + \frac{b\sin^{-1}(cx)}{c^2x+c} - \frac{2ib\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)}{c} + \frac{2ib\text{Li}_2\left(ie^{i\sin^{-1}(cx)}\right)}{c} + \frac{b\sin^{-1}(cx)}{c(cx-1)}}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(d - c^2*d*x^2)^2,x]
```

```
[Out] -1/4*((b*Sqrt[1 - c^2*x^2])/(c - c^2*x) + (b*Sqrt[1 - c^2*x^2])/(c + c^2*x)
 + (2*a*x)/(-1 + c^2*x^2) + (I*b*Pi*ArcSin[c*x])/c + (b*ArcSin[c*x])/(c*(-1
 + c*x)) + (b*ArcSin[c*x])/(c + c^2*x) - (b*Pi*Log[1 - I*E^(I*ArcSin[c*x])]
)/c - (2*b*ArcSin[c*x]*Log[1 - I*E^(I*ArcSin[c*x])])/c - (b*Pi*Log[1 + I*E^
(I*ArcSin[c*x])])/c + (2*b*ArcSin[c*x]*Log[1 + I*E^(I*ArcSin[c*x])])/c + (a
*Log[1 - c*x])/c - (a*Log[1 + c*x])/c + (b*Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])
/4]])/c + (b*Pi*Log[Sin[(Pi + 2*ArcSin[c*x])/4]])/c - ((2*I)*b*PolyLog[2, (
-I)*E^(I*ArcSin[c*x])])/c + ((2*I)*b*PolyLog[2, I*E^(I*ArcSin[c*x])])/c)/d^
2
```

fricas [F] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\arcsin(cx)+a}{c^4d^2x^4-2\,c^2d^2x^2+d^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(-c^2*d*x^2+d)^2,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(c*x) + a)/(c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2), x)
```

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

$$\int \frac{b \arcsin(cx) + a}{(c^2dx^2 - d)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(-c^2*d*x^2+d)^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/(c^2*d*x^2 - d)^2, x)
```

maple [A] time = 0.11, size = 260, normalized size = 1.84

$$-\frac{a}{4c\,d^2\,(cx+1)}+\frac{a\ln(cx+1)}{4c\,d^2}-\frac{a}{4c\,d^2\,(cx-1)}-\frac{a\ln(cx-1)}{4c\,d^2}-\frac{b\arcsin(cx)\,x}{2d^2\left(c^2x^2-1\right)}+\frac{b\sqrt{-c^2x^2+1}}{2c\,d^2\left(c^2x^2-1\right)}-\frac{b\arcsin(cx)\ln\Big(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(-c^2*d*x^2+d)^2,x)
```

```
[Out] -1/4/c*a/d^2/(c*x+1)+1/4/c*a/d^2*ln(c*x+1)-1/4/c*a/d^2/(c*x-1)-1/4/c*a/d^2*
ln(c*x-1)-1/2*b/d^2/(c^2*x^2-1)*arcsin(c*x)*x+1/2/c*b/d^2/(c^2*x^2-1)*(-c^2
*x^2+1)^(1/2)-1/2/c*b/d^2*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+1/
2/c*b/d^2*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+1/2*I/c*b/d^2*dilo
g(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-1/2*I/c*b/d^2*dilog(1-I*(I*c*x+(-c^2*x^2+
1)^(1/2)))
```

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

$$-\frac{1}{4}a\left(\frac{2x}{c^2d^2x^2-d^2}-\frac{\log(cx+1)}{cd^2}+\frac{\log(cx-1)}{cd^2}\right)-\frac{\Big(2\,cx\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)-\left(c^2x^2-1\right)\arctan\big(cx}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(-c^2*d*x^2+d)^2,x, algorithm="maxima")
```

```
[Out] -1/4*a*(2*x/(c^2*d^2*x^2 - d^2) - log(c*x + 1)/(c*d^2) + log(c*x - 1)/(c*d^
2)) - 1/4*(2*c*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) - (c^2*x^2 - 1)
*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(c*x + 1) + (c^2*x^2 - 1)*ar
ctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(-c*x + 1) - 4*(c^3*d^2*x^2 - c
*d^2)*integrate(-1/4*(2*c*x - (c^2*x^2 - 1)*log(c*x + 1) + (c^2*x^2 - 1)*lo
g(-c*x + 1))*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^
2), x))*b/(c^3*d^2*x^2 - c*d^2)
```

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

$$\int \frac{a + b\,\mathrm{asin}(c\,x)}{\left(d - c^2\,d\,x^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(d - c^2*d*x^2)^2,x)
```

```
[Out] int((a + b*asin(c*x))/(d - c^2*d*x^2)^2, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(-c**2*d*x**2+d)**2,x)
```

```
[Out] Timed out
```

3.42 $\int \frac{a+b\sin^{-1}(cx)}{x(d-c^2dx^2)^2}\,dx$

Optimal. Leaf size=122

$$\frac{a+b\sin^{-1}(cx)}{2d^2(1-c^2x^2)}-\frac{2\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2}-\frac{bcx}{2d^2\sqrt{1-c^2x^2}}+\frac{ib\text{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right)}{2d^2}-\frac{ib\text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right)}{2d^2}$$

```
[Out] 1/2*(a+b*arcsin(c*x))/d^2/(-c^2*x^2+1)-2*(a+b*arcsin(c*x))*arctanh((I*c*x+(
-c^2*x^2+1)^(1/2))^2)/d^2+1/2*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/
d^2-1/2*I*b*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^2-1/2*b*c*x/d^2/(-c^2
*x^2+1)^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 122, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.280, Rules used = {4705, 4679, 4419, 4183, 2279, 2391, 191}

$$\frac{ib\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{2d^2}-\frac{ib\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)}{2d^2}+\frac{a+b\sin^{-1}(cx)}{2d^2(1-c^2x^2)}-\frac{2\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x*(d - c^2*d*x^2)^2),x]
```

```
[Out] -(b*c*x)/(2*d^2*Sqrt[1 - c^2*x^2]) + (a + b*ArcSin[c*x])/(2*d^2*(1 - c^2*x^
2)) - (2*(a + b*ArcSin[c*x])*ArcTanh[E^((2*I)*ArcSin[c*x])])/d^2 + ((I/2)*b
*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/d^2 - ((I/2)*b*PolyLog[2, E^((2*I)*Arc
Sin[c*x])])/d^2
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4419

```
Int[Csc[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csc[2*a + 2*b*x]^n,
 x], x] /; FreeQ[{a, b, c, d, m}, x] && IntegerQ[n] && RationalQ[m]
```

Rule 4679

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((x_)*((d_) + (e_.)*(x_)^2)),
x_Symbol] :> Dist[1/d, Subst[Int[(a + b*x)^n/(Cos[x]*Sin[x]), x], x, ArcSin
[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4705

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> -Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a +
b*ArcSin[c*x])^n)/(2*d*f*(p + 1)), x] + (Dist[(m + 2*p + 3)/(2*d*(p + 1)),
Int[(f*x)^m*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[(b*c*n
*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*f*(p + 1)*(1 - c^2*x^2)^FracPart[
p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
0] && LtQ[p, -1] &&  !GtQ[m, 1] && (IntegerQ[m] || IntegerQ[p] || EqQ[n, 1]
)
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x\left(d-c^2dx^2\right)^2}\,dx = \frac{a+b\sin^{-1}(cx)}{2d^2\left(1-c^2x^2\right)} - \frac{(bc)\int \frac{1}{\left(1-c^2x^2\right)^{3/2}}\,dx}{2d^2} + \frac{\int \frac{a+b\sin^{-1}(cx)}{x\left(d-c^2dx^2\right)}\,dx}{d}$$
$$= -\frac{bcx}{2d^2\sqrt{1-c^2x^2}} + \frac{a+b\sin^{-1}(cx)}{2d^2\left(1-c^2x^2\right)} + \frac{\operatorname{Subst}\left(\int (a+bx)\csc(x)\sec(x)\,dx, x, \sin^{-1}(cx)\right)}{d^2}$$
$$= -\frac{bcx}{2d^2\sqrt{1-c^2x^2}} + \frac{a+b\sin^{-1}(cx)}{2d^2\left(1-c^2x^2\right)} + \frac{2\operatorname{Subst}\left(\int (a+bx)\csc(2x)\,dx, x, \sin^{-1}(cx)\right)}{d^2}$$
$$= -\frac{bcx}{2d^2\sqrt{1-c^2x^2}} + \frac{a+b\sin^{-1}(cx)}{2d^2\left(1-c^2x^2\right)} - \frac{2\left(a+b\sin^{-1}(cx)\right)\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)}{d^2} - \frac{b\operatorname{Subst}\left(\int\right.}{}$$
$$= -\frac{bcx}{2d^2\sqrt{1-c^2x^2}} + \frac{a+b\sin^{-1}(cx)}{2d^2\left(1-c^2x^2\right)} - \frac{2\left(a+b\sin^{-1}(cx)\right)\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)}{d^2} + \frac{(ib)\operatorname{Subst}}{}$$
$$= -\frac{bcx}{2d^2\sqrt{1-c^2x^2}} + \frac{a+b\sin^{-1}(cx)}{2d^2\left(1-c^2x^2\right)} - \frac{2\left(a+b\sin^{-1}(cx)\right)\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)}{d^2} + \frac{ib\operatorname{Li}_2\left(-e^{2i\right.}}{2d^2}$$

Mathematica [A] time = 0.41, size = 153, normalized size = 1.25

$$\frac{\frac{a}{1-c^2x^2} - a\log\left(1-c^2x^2\right) + 2a\log(x) + b\left(-\frac{cx}{\sqrt{1-c^2x^2}} + \frac{\sin^{-1}(cx)}{1-c^2x^2} + i\operatorname{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right) - i\operatorname{Li}_2\left(e^{2i\sin^{-1}(cx)}\right) + 2\sin^{-1}(cx\right.}{2d^2}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x*(d - c^2*d*x^2)^2),x]
```

```
[Out] (a/(1 - c^2*x^2) + 2*a*Log[x] - a*Log[1 - c^2*x^2] + b*(-((c*x)/Sqrt[1 - c^
2*x^2]) + ArcSin[c*x]/(1 - c^2*x^2) + 2*ArcSin[c*x]*Log[1 - E^((2*I)*ArcSin
[c*x])] - 2*ArcSin[c*x]*Log[1 + E^((2*I)*ArcSin[c*x])] + I*PolyLog[2, -E^((
2*I)*ArcSin[c*x])] - I*PolyLog[2, E^((2*I)*ArcSin[c*x])]))/(2*d^2)
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{b\arcsin(cx)+a}{c^4d^2x^5-2\,c^2d^2x^3+d^2x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*arcsin(c*x))/x/(-c^2*d*x^2+d)^2,x, algorithm="fricas")

[Out] integral((b*arcsin(c*x) + a)/(c^4*d^2*x^5 - 2*c^2*d^2*x^3 + d^2*x), x)

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

$$\int \frac{b \arcsin(cx) + a}{\left(c^2dx^2 - d\right)^2 x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*arcsin(c*x))/x/(-c^2*d*x^2+d)^2,x, algorithm="giac")

[Out] integrate((b*arcsin(c*x) + a)/((c^2*d*x^2 - d)^2*x), x)

maple [B] time = 0.29, size = 335, normalized size = 2.75

$$\frac{a}{4d^2(cx+1)} - \frac{a\ln(cx+1)}{2d^2} + \frac{a\ln(cx)}{d^2} - \frac{a}{4d^2(cx-1)} - \frac{a\ln(cx-1)}{2d^2} - \frac{ib\,c^2x^2}{2d^2\left(c^2x^2-1\right)} + \frac{bcx\sqrt{-c^2x^2+1}}{2d^2\left(c^2x^2-1\right)} - \frac{b\arcsin(c}{2d^2\left(c^2x^2-\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a+b*arcsin(c*x))/x/(-c^2*d*x^2+d)^2,x)

[Out] 1/4*a/d^2/(c*x+1)-1/2*a/d^2*ln(c*x+1)+a/d^2*ln(c*x)-1/4*a/d^2/(c*x-1)-1/2*a/d^2*ln(c*x-1)-1/2*I*b/d^2/(c^2*x^2-1)*c^2*x^2+1/2*b/d^2/(c^2*x^2-1)*c*x*(-c^2*x^2+1)^(1/2)-1/2*b/d^2/(c^2*x^2-1)*arcsin(c*x)+1/2*I*b/d^2/(c^2*x^2-1)+b/d^2*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))-I*b/d^2*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))-b/d^2*arcsin(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)+1/2*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^2+b/d^2*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-I*b/d^2*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))

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

$$-\frac{1}{2}a\left(\frac{1}{c^2d^2x^2-d^2} + \frac{\log(cx+1)}{d^2} + \frac{\log(cx-1)}{d^2} - \frac{2\log(x)}{d^2}\right) + b\int \frac{\arctan\left(cx, \sqrt{cx+1}\sqrt{-cx+1}\right)}{c^4d^2x^5 - 2c^2d^2x^3 + d^2x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*arcsin(c*x))/x/(-c^2*d*x^2+d)^2,x, algorithm="maxima")

[Out] -1/2*a*(1/(c^2*d^2*x^2 - d^2) + log(c*x + 1)/d^2 + log(c*x - 1)/d^2 - 2*log(x)/d^2) + b*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^4*d^2*x^5 - 2*c^2*d^2*x^3 + d^2*x), x)

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

$$\int \frac{a + b\,\mathrm{asin}(c\,x)}{x\left(d - c^2\,d\,x^2\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a + b*asin(c*x))/(x*(d - c^2*d*x^2)^2),x)

[Out] int((a + b*asin(c*x))/(x*(d - c^2*d*x^2)^2), x)

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x/(-c**2*d*x**2+d)**2,x)
```

```
[Out] Timed out
```

3.43 $\int \frac{a+b\sin^{-1}(cx)}{x^2(d-c^2dx^2)^2}\,dx$

Optimal. Leaf size=186

$$\frac{3c^2x\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(1-c^2x^2\right)}-\frac{a+b\sin^{-1}(cx)}{d^2x\left(1-c^2x^2\right)}-\frac{3ic\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2}-\frac{bc}{2d^2\sqrt{1-c^2x^2}}-\frac{bc\tanh^{-1}\left(\sqrt{1\right.}}{d^2}$$

```
[Out] (-a-b*arcsin(c*x))/d^2/x/(-c^2*x^2+1)+3/2*c^2*x*(a+b*arcsin(c*x))/d^2/(-c^2
*x^2+1)-3*I*c*(a+b*arcsin(c*x))*arctan(I*c*x+(-c^2*x^2+1)^(1/2))/d^2-b*c*ar
ctanh((-c^2*x^2+1)^(1/2))/d^2+3/2*I*b*c*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1
/2)))/d^2-3/2*I*b*c*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d^2-1/2*b*c/d^2
/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.19, antiderivative size = 186, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 11, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.440, Rules used = {4701, 4655, 4657, 4181, 2279, 2391, 261, 266, 51, 63, 208}

$$\frac{3ibc\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{2d^2}-\frac{3ibc\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{2d^2}+\frac{3c^2x\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(1-c^2x^2\right)}-\frac{a+b\sin^{-1}(cx)}{d^2x\left(1-c^2x^2\right)}-\frac{3ic\tan^{-1}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x^2*(d - c^2*d*x^2)^2),x]
```

```
[Out] -(b*c)/(2*d^2*Sqrt[1 - c^2*x^2]) - (a + b*ArcSin[c*x])/(d^2*x*(1 - c^2*x^2)
) + (3*c^2*x*(a + b*ArcSin[c*x]))/(2*d^2*(1 - c^2*x^2)) - ((3*I)*c*(a + b*A
rcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])])/d^2 - (b*c*ArcTanh[Sqrt[1 - c^2*x^2]
])/d^2 + (((3*I)/2)*b*c*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/d^2 - (((3*I)/2
)*b*c*PolyLog[2, I*E^(I*ArcSin[c*x])])/d^2
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
```

```
NeQ[p, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x^2\left(d-c^2dx^2\right)^2}\,dx = -\frac{a+b\sin^{-1}(cx)}{d^2x\left(1-c^2x^2\right)} + \left(3c^2\right)\int \frac{a+b\sin^{-1}(cx)}{\left(d-c^2dx^2\right)^2}\,dx + \frac{(bc)\int \frac{1}{x\left(1-c^2x^2\right)^{3/2}}\,dx}{d^2}$$

$$= -\frac{a+b\sin^{-1}(cx)}{d^2x\left(1-c^2x^2\right)} + \frac{3c^2x\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(1-c^2x^2\right)} + \frac{(bc)\,\text{Subst}\left(\int \frac{1}{x\left(1-c^2x\right)^{3/2}}\,dx, x, x^2\right)}{2d^2} - \frac{(3bc}{}$$

$$= -\frac{bc}{2d^2\sqrt{1-c^2x^2}} - \frac{a+b\sin^{-1}(cx)}{d^2x\left(1-c^2x^2\right)} + \frac{3c^2x\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(1-c^2x^2\right)} + \frac{(3c)\,\text{Subst}\left(\int (a+bx)\,\text{se}\right.}{2d^2}$$

$$= -\frac{bc}{2d^2\sqrt{1-c^2x^2}} - \frac{a+b\sin^{-1}(cx)}{d^2x\left(1-c^2x^2\right)} + \frac{3c^2x\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(1-c^2x^2\right)} - \frac{3ic\left(a+b\sin^{-1}(cx)\right)\tan}{d^2}$$

$$= -\frac{bc}{2d^2\sqrt{1-c^2x^2}} - \frac{a+b\sin^{-1}(cx)}{d^2x\left(1-c^2x^2\right)} + \frac{3c^2x\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(1-c^2x^2\right)} - \frac{3ic\left(a+b\sin^{-1}(cx)\right)\tan}{d^2}$$

$$= -\frac{bc}{2d^2\sqrt{1-c^2x^2}} - \frac{a+b\sin^{-1}(cx)}{d^2x\left(1-c^2x^2\right)} + \frac{3c^2x\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(1-c^2x^2\right)} - \frac{3ic\left(a+b\sin^{-1}(cx)\right)\tan}{d^2}$$

Mathematica [A] time = 0.91, size = 348, normalized size = 1.87

$$-\frac{\frac{2ac^2x}{c^2x^2-1} + 3ac\log(1-cx) - 3ac\log(cx+1) + \frac{4a}{x} + \frac{bc\sqrt{1-c^2x^2}}{1-cx} + \frac{bc\sqrt{1-c^2x^2}}{cx+1} + 4bc\tanh^{-1}\left(\sqrt{1-c^2x^2}\right) - 6ibc\text{Li}_2\left(\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x^2*(d - c^2*d*x^2)^2),x]
```

```
[Out] -1/4*((4*a)/x + (b*c*Sqrt[1 - c^2*x^2])/(1 - c*x) + (b*c*Sqrt[1 - c^2*x^2])
/(1 + c*x) + (2*a*c^2*x)/(-1 + c^2*x^2) + (3*I)*b*c*Pi*ArcSin[c*x] + (4*b*A
rcSin[c*x])/x + (b*c*ArcSin[c*x])/(-1 + c*x) + (b*c*ArcSin[c*x])/(1 + c*x)
+ 4*b*c*ArcTanh[Sqrt[1 - c^2*x^2]] - 3*b*c*Pi*Log[1 - I*E^(I*ArcSin[c*x])]
- 6*b*c*ArcSin[c*x]*Log[1 - I*E^(I*ArcSin[c*x])] - 3*b*c*Pi*Log[1 + I*E^(I*
ArcSin[c*x])] + 6*b*c*ArcSin[c*x]*Log[1 + I*E^(I*ArcSin[c*x])] + 3*a*c*Log[
1 - c*x] - 3*a*c*Log[1 + c*x] + 3*b*c*Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]]
+ 3*b*c*Pi*Log[Sin[(Pi + 2*ArcSin[c*x])/4]] - (6*I)*b*c*PolyLog[2, (-I)*E^(
I*ArcSin[c*x])] + (6*I)*b*c*PolyLog[2, I*E^(I*ArcSin[c*x])])/d^2
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\arcsin(cx)+a}{c^4d^2x^6-2\,c^2d^2x^4+d^2x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^2/(-c^2*d*x^2+d)^2,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(c*x) + a)/(c^4*d^2*x^6 - 2*c^2*d^2*x^4 + d^2*x^2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^2/(-c^2*d*x^2+d)^2,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.27, size = 330, normalized size = 1.77

$$-\frac{ca}{4d^2(cx+1)}+\frac{3ca\ln(cx+1)}{4d^2}-\frac{a}{d^2x}-\frac{ca}{4d^2(cx-1)}-\frac{3ca\ln(cx-1)}{4d^2}-\frac{3b\arcsin(cx)c^2x}{2d^2(c^2x^2-1)}+\frac{cb\sqrt{-c^2x^2+1}}{2d^2(c^2x^2-1)}+\frac{b\arcsin(}{d^2x(c^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x^2/(-c^2*d*x^2+d)^2,x)
```

```
[Out] -1/4*c*a/d^2/(c*x+1)+3/4*c*a/d^2*ln(c*x+1)-a/d^2/x-1/4*c*a/d^2/(c*x-1)-3/4*
c*a/d^2*ln(c*x-1)-3/2*b/d^2/(c^2*x^2-1)*arcsin(c*x)*c^2*x+1/2*c*b/d^2/(c^2*
x^2-1)*(-c^2*x^2+1)^(1/2)+b/d^2/x/(c^2*x^2-1)*arcsin(c*x)-c*b/d^2*ln(1+I*c*
x+(-c^2*x^2+1)^(1/2))+c*b/d^2*ln(I*c*x+(-c^2*x^2+1)^(1/2)-1)-3/2*I*c*b/d^2*
dilog(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-3/2*c*b/d^2*arcsin(c*x)*ln(1+I*(I*c*x
+(-c^2*x^2+1)^(1/2)))+3/2*c*b/d^2*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1
/2)))+3/2*I*c*b/d^2*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))
```

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

$$-\frac{1}{4}a\left(\frac{2\left(3c^2x^2-2\right)}{c^2d^2x^3-d^2x}-\frac{3c\log(cx+1)}{d^2}+\frac{3c\log(cx-1)}{d^2}\right)+\frac{\left(3\left(c^3x^3-cx\right)\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)\log(cx+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^2/(-c^2*d*x^2+d)^2,x, algorithm="maxima")
```

```
[Out] -1/4*a*(2*(3*c^2*x^2 - 2)/(c^2*d^2*x^3 - d^2*x) - 3*c*log(c*x + 1)/d^2 + 3*
c*log(c*x - 1)/d^2) + 1/4*(3*(c^3*x^3 - c*x)*arctan2(c*x, sqrt(c*x + 1)*sqr
t(-c*x + 1))*log(c*x + 1) - 3*(c^3*x^3 - c*x)*arctan2(c*x, sqrt(c*x + 1)*sq
rt(-c*x + 1))*log(-c*x + 1) - 2*(3*c^2*x^2 - 2)*arctan2(c*x, sqrt(c*x + 1)*
sqrt(-c*x + 1)) + 4*(c^2*d^2*x^3 - d^2*x)*integrate(-1/4*(6*c^3*x^2 - 3*(c^
4*x^3 - c^2*x)*log(c*x + 1) + 3*(c^4*x^3 - c^2*x)*log(-c*x + 1) - 4*c)*sqrt
(c*x + 1)*sqrt(-c*x + 1)/(c^4*d^2*x^5 - 2*c^2*d^2*x^3 + d^2*x), x))*b/(c^2*
d^2*x^3 - d^2*x)
```

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

$$\int \frac{a+b\,\mathrm{asin}\left(c\,x\right)}{x^2\,{\left(d-c^2\,d\,x^2\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x^2*(d - c^2*d*x^2)^2),x)
```

```
[Out] int((a + b*asin(c*x))/(x^2*(d - c^2*d*x^2)^2), x)
```

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

$$\frac{\int \frac{a}{c^4x^6-2c^2x^4+x^2}\,dx+\int \frac{b\,\mathrm{asin}(cx)}{c^4x^6-2c^2x^4+x^2}\,dx}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x**2/(-c**2*d*x**2+d)**2,x)
```

```
[Out] (Integral(a/(c**4*x**6 - 2*c**2*x**4 + x**2), x) + Integral(b*asin(c*x)/(c*
*4*x**6 - 2*c**2*x**4 + x**2), x))/d**2
```

3.44 $\int \frac{a+b\sin^{-1}(cx)}{x^3(d-c^2dx^2)^2}\,dx$

Optimal. Leaf size=159

$$\frac{c^2\left(a+b\sin^{-1}(cx)\right)}{d^2\left(1-c^2x^2\right)}-\frac{a+b\sin^{-1}(cx)}{2d^2x^2\left(1-c^2x^2\right)}-\frac{4c^2\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2}+\frac{ibc^2\text{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right)}{d^2}-\frac{ibc^2\text{L}}{}$$

```
[Out] c^2*(a+b*arcsin(c*x))/d^2/(-c^2*x^2+1)+1/2*(-a-b*arcsin(c*x))/d^2/x^2/(-c^2
*x^2+1)-4*c^2*(a+b*arcsin(c*x))*arctanh((I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^2+I
*b*c^2*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^2-I*b*c^2*polylog(2,(I*c*
x+(-c^2*x^2+1)^(1/2))^2)/d^2-1/2*b*c/d^2/x/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.26, antiderivative size = 159, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.360, Rules used = {4701, 4705, 4679, 4419, 4183, 2279, 2391, 191, 271}

$$\frac{ibc^2\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{d^2}-\frac{ibc^2\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)}{d^2}+\frac{c^2\left(a+b\sin^{-1}(cx)\right)}{d^2\left(1-c^2x^2\right)}-\frac{a+b\sin^{-1}(cx)}{2d^2x^2\left(1-c^2x^2\right)}-\frac{4c^2\tanh^{-}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x^3*(d - c^2*d*x^2)^2),x]
```

```
[Out] -(b*c)/(2*d^2*x*Sqrt[1 - c^2*x^2]) + (c^2*(a + b*ArcSin[c*x]))/(d^2*(1 - c^
2*x^2)) - (a + b*ArcSin[c*x])/(2*d^2*x^2*(1 - c^2*x^2)) - (4*c^2*(a + b*Arc
Sin[c*x])*ArcTanh[E^((2*I)*ArcSin[c*x])])/d^2 + (I*b*c^2*PolyLog[2, -E^((2*
I)*ArcSin[c*x])])/d^2 - (I*b*c^2*PolyLog[2, E^((2*I)*ArcSin[c*x])])/d^2
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 271

```
Int[(x_)^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x^(m + 1)*(
a + b*x^n)^(p + 1))/(a*(m + 1)), x] - Dist[(b*(m + n*(p + 1) + 1))/(a*(m +
1)), Int[x^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, m, n, p}, x] && IL
tQ[Simplify[(m + 1)/n + p + 1], 0] && NeQ[m, -1]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
```

```
[m, 0]
```

Rule 4419

```
Int[Csc[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csc[2*a + 2*b*x]^n,
 x], x] /; FreeQ[{a, b, c, d, m}, x] && IntegerQ[n] && RationalQ[m]
```

Rule 4679

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((x_)*((d_) + (e_.)*(x_)^2)),
x_Symbol] :> Dist[1/d, Subst[Int[(a + b*x)^n/(Cos[x]*Sin[x]), x], x, ArcSin
[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4705

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> -Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a +
b*ArcSin[c*x])^n)/(2*d*f*(p + 1)), x] + (Dist[(m + 2*p + 3)/(2*d*(p + 1)),
Int[(f*x)^m*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[(b*c*n
*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*f*(p + 1)*(1 - c^2*x^2)^FracPart[
p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
0] && LtQ[p, -1] &&  !GtQ[m, 1] && (IntegerQ[m] || IntegerQ[p] || EqQ[n, 1]
)
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x^3\left(d-c^2dx^2\right)^2}\,dx = -\frac{a+b\sin^{-1}(cx)}{2d^2x^2\left(1-c^2x^2\right)} + \left(2c^2\right)\int \frac{a+b\sin^{-1}(cx)}{x\left(d-c^2dx^2\right)^2}\,dx + \frac{(bc)\int \frac{1}{x^2\left(1-c^2x^2\right)^{3/2}}\,dx}{2d^2}$$

$$= -\frac{bc}{2d^2x\sqrt{1-c^2x^2}} + \frac{c^2\left(a+b\sin^{-1}(cx)\right)}{d^2\left(1-c^2x^2\right)} - \frac{a+b\sin^{-1}(cx)}{2d^2x^2\left(1-c^2x^2\right)} + \frac{\left(2c^2\right)\int \frac{a+b\sin^{-1}(cx)}{x\left(d-c^2dx^2\right)}\,dx}{d}$$

$$= -\frac{bc}{2d^2x\sqrt{1-c^2x^2}} + \frac{c^2\left(a+b\sin^{-1}(cx)\right)}{d^2\left(1-c^2x^2\right)} - \frac{a+b\sin^{-1}(cx)}{2d^2x^2\left(1-c^2x^2\right)} + \frac{\left(2c^2\right)\text{Subst}\left(\int (a+bx)\right.}{}$$

$$= -\frac{bc}{2d^2x\sqrt{1-c^2x^2}} + \frac{c^2\left(a+b\sin^{-1}(cx)\right)}{d^2\left(1-c^2x^2\right)} - \frac{a+b\sin^{-1}(cx)}{2d^2x^2\left(1-c^2x^2\right)} + \frac{\left(4c^2\right)\text{Subst}\left(\int (a+bx)\right.}{d}$$

$$= -\frac{bc}{2d^2x\sqrt{1-c^2x^2}} + \frac{c^2\left(a+b\sin^{-1}(cx)\right)}{d^2\left(1-c^2x^2\right)} - \frac{a+b\sin^{-1}(cx)}{2d^2x^2\left(1-c^2x^2\right)} - \frac{4c^2\left(a+b\sin^{-1}(cx)\right)\tan}{d^2}$$

$$= -\frac{bc}{2d^2x\sqrt{1-c^2x^2}} + \frac{c^2\left(a+b\sin^{-1}(cx)\right)}{d^2\left(1-c^2x^2\right)} - \frac{a+b\sin^{-1}(cx)}{2d^2x^2\left(1-c^2x^2\right)} - \frac{4c^2\left(a+b\sin^{-1}(cx)\right)\tan}{d^2}$$

$$= -\frac{bc}{2d^2x\sqrt{1-c^2x^2}} + \frac{c^2\left(a+b\sin^{-1}(cx)\right)}{d^2\left(1-c^2x^2\right)} - \frac{a+b\sin^{-1}(cx)}{2d^2x^2\left(1-c^2x^2\right)} - \frac{4c^2\left(a+b\sin^{-1}(cx)\right)\tan}{d^2}$$

Mathematica [A] time = 0.80, size = 213, normalized size = 1.34

$$-\frac{\frac{ac^2}{c^2x^2-1} + 2ac^2\log\left(1-c^2x^2\right) - 4ac^2\log(x) + \frac{a}{x^2} - 2ibc^2\text{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right) + 2ibc^2\text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right) + \frac{bc\sqrt{1-c^2x^2}}{x} +}{2d}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x^3*(d - c^2*d*x^2)^2),x]
```

```
[Out] -1/2*(a/x^2 + (b*c^3*x)/Sqrt[1 - c^2*x^2] + (b*c*Sqrt[1 - c^2*x^2])/x + (a*
c^2)/(-1 + c^2*x^2) + (b*ArcSin[c*x])/x^2 + (b*c^2*ArcSin[c*x])/(-1 + c^2*x
^2) - 4*b*c^2*ArcSin[c*x]*Log[1 - E^((2*I)*ArcSin[c*x])] + 4*b*c^2*ArcSin[c
*x]*Log[1 + E^((2*I)*ArcSin[c*x])] - 4*a*c^2*Log[x] + 2*a*c^2*Log[1 - c^2*x
^2] - (2*I)*b*c^2*PolyLog[2, -E^((2*I)*ArcSin[c*x])] + (2*I)*b*c^2*PolyLog[
2, E^((2*I)*ArcSin[c*x])])/d^2
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\arcsin(cx)+a}{c^4d^2x^7-2c^2d^2x^5+d^2x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(-c^2*d*x^2+d)^2,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(c*x) + a)/(c^4*d^2*x^7 - 2*c^2*d^2*x^5 + d^2*x^3), x)
```

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

$$\int \frac{b\arcsin(cx)+a}{\left(c^2dx^2-d\right)^2x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(-c^2*d*x^2+d)^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/((c^2*d*x^2 - d)^2*x^3), x)
```

maple [A] time = 0.27, size = 367, normalized size = 2.31

$$\frac{c^2 a}{4d^2 (cx+1)} - \frac{c^2 a \ln (cx+1)}{d^2} - \frac{a}{2d^2 x^2} + \frac{2c^2 a \ln (cx)}{d^2} - \frac{c^2 a}{4d^2 (cx-1)} - \frac{c^2 a \ln (cx-1)}{d^2} - \frac{c^2 b \arcsin (cx)}{d^2 \left(c^2 x^2 - 1\right)} + \frac{cb\sqrt{-c^2x^2+1}}{2d^2 x \left(c^2x^2-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x^3/(-c^2*d*x^2+d)^2,x)
```

```
[Out] 1/4*c^2*a/d^2/(c*x+1)-c^2*a/d^2*ln(c*x+1)-1/2*a/d^2/x^2+2*c^2*a/d^2*ln(c*x)
-1/4*c^2*a/d^2/(c*x-1)-c^2*a/d^2*ln(c*x-1)-c^2*b/d^2/(c^2*x^2-1)*arcsin(c*x
)+1/2*c*b/d^2/x/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)+1/2*b/d^2/x^2/(c^2*x^2-1)*ar
csin(c*x)-2*c^2*b/d^2*arcsin(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)+2*c^2*
b/d^2*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+2*c^2*b/d^2*arcsin(c*x)*ln
(1-I*c*x-(-c^2*x^2+1)^(1/2))-2*I*c^2*b/d^2*polylog(2,-I*c*x-(-c^2*x^2+1)^(1
/2))-2*I*c^2*b/d^2*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))+I*b*c^2*polylog(2,-(
I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^2
```

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

$$-\frac{1}{2} a \left(\frac{2 c^2 \log (cx+1)}{d^2} + \frac{2 c^2 \log (cx-1)}{d^2} - \frac{4 c^2 \log(x)}{d^2} + \frac{2 c^2 x^2 - 1}{c^2 d^2 x^4 - d^2 x^2}\right) + b \int \frac{\arctan \left(cx, \sqrt{cx+1}\, \sqrt{-cx+1}\right)}{c^4 d^2 x^7 - 2 c^2 d^2 x^5 + d^2 x^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(-c^2*d*x^2+d)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a*(2*c^2*log(c*x + 1)/d^2 + 2*c^2*log(c*x - 1)/d^2 - 4*c^2*log(x)/d^2
+ (2*c^2*x^2 - 1)/(c^2*d^2*x^4 - d^2*x^2)) + b*integrate(arctan2(c*x, sqrt(
c*x + 1)*sqrt(-c*x + 1))/(c^4*d^2*x^7 - 2*c^2*d^2*x^5 + d^2*x^3), x)
```

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

$$\int \frac{a + b \operatorname{asin}(c\,x)}{x^3 \left(d - c^2\, d\, x^2\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x^3*(d - c^2*d*x^2)^2),x)
```

```
[Out] int((a + b*asin(c*x))/(x^3*(d - c^2*d*x^2)^2), x)
```

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

$$\frac{\int \frac{a}{c^4 x^7 - 2 c^2 x^5 + x^3}\, dx + \int \frac{b \operatorname{asin}(cx)}{c^4 x^7 - 2 c^2 x^5 + x^3}\, dx}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x**3/(-c**2*d*x**2+d)**2,x)
```

```
[Out] (Integral(a/(c**4*x**7 - 2*c**2*x**5 + x**3), x) + Integral(b*asin(c*x)/(c*
*4*x**7 - 2*c**2*x**5 + x**3), x))/d**2
```

3.45 $\int \frac{a+b\sin^{-1}(cx)}{x^4(d-c^2dx^2)^2}\,dx$

Optimal. Leaf size=259

$$-\frac{5ic^3\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2}-\frac{5c^2\left(a+b\sin^{-1}(cx)\right)}{3d^2x\left(1-c^2x^2\right)}-\frac{a+b\sin^{-1}(cx)}{3d^2x^3\left(1-c^2x^2\right)}+\frac{5c^4x\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(1-c^2x^2\right)}+\frac{5ib}{}$$

```
[Out] 1/3*(-a-b*arcsin(c*x))/d^2/x^3/(-c^2*x^2+1)-5/3*c^2*(a+b*arcsin(c*x))/d^2/x
/(-c^2*x^2+1)+5/2*c^4*x*(a+b*arcsin(c*x))/d^2/(-c^2*x^2+1)-5*I*c^3*(a+b*arc
sin(c*x))*arctan(I*c*x+(-c^2*x^2+1)^(1/2))/d^2-13/6*b*c^3*arctanh((-c^2*x^2
+1)^(1/2))/d^2+5/2*I*b*c^3*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d^2-5/2
*I*b*c^3*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d^2-1/3*b*c^3/d^2/(-c^2*x^
2+1)^(1/2)-1/6*b*c/d^2/x^2/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.31, antiderivative size = 285, normalized size of antiderivative = 1.10, number of steps used = 19, number of rules used = 11, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.440, Rules used = {4701, 4655, 4657, 4181, 2279, 2391, 261, 266, 51, 63, 208}

$$\frac{5ibc^3\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{2d^2}-\frac{5ibc^3\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{2d^2}+\frac{5c^4x\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(1-c^2x^2\right)}-\frac{5c^2\left(a+b\sin^{-1}(cx)\right)}{3d^2x\left(1-c^2x^2\right)}-$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x^4*(d - c^2*d*x^2)^2),x]
```

```
[Out] (-5*b*c^3)/(6*d^2*Sqrt[1 - c^2*x^2]) + (b*c)/(3*d^2*x^2*Sqrt[1 - c^2*x^2])
- (b*c*Sqrt[1 - c^2*x^2])/(2*d^2*x^2) - (a + b*ArcSin[c*x])/(3*d^2*x^3*(1 -
 c^2*x^2)) - (5*c^2*(a + b*ArcSin[c*x]))/(3*d^2*x*(1 - c^2*x^2)) + (5*c^4*x
*(a + b*ArcSin[c*x]))/(2*d^2*(1 - c^2*x^2)) - ((5*I)*c^3*(a + b*ArcSin[c*x]
)*ArcTan[E^(I*ArcSin[c*x])])/d^2 - (13*b*c^3*ArcTanh[Sqrt[1 - c^2*x^2]])/(6
*d^2) + (((5*I)/2)*b*c^3*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/d^2 - (((5*I)/
2)*b*c^3*PolyLog[2, I*E^(I*ArcSin[c*x])])/d^2
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x^4\left(d-c^2dx^2\right)^2}dx = -\frac{a+b\sin^{-1}(cx)}{3d^2x^3\left(1-c^2x^2\right)}+\frac{1}{3}\left(5c^2\right)\int \frac{a+b\sin^{-1}(cx)}{x^2\left(d-c^2dx^2\right)^2}dx+\frac{(bc)\int \frac{1}{x^3\left(1-c^2x^2\right)^{3/2}}dx}{3d^2}$$

$$= -\frac{a+b\sin^{-1}(cx)}{3d^2x^3\left(1-c^2x^2\right)}-\frac{5c^2\left(a+b\sin^{-1}(cx)\right)}{3d^2x\left(1-c^2x^2\right)}+\left(5c^4\right)\int \frac{a+b\sin^{-1}(cx)}{\left(d-c^2dx^2\right)^2}dx+\frac{(bc)\,\mathrm{Subst}\Big(}{}$$

$$= \frac{bc}{3d^2x^2\sqrt{1-c^2x^2}}-\frac{a+b\sin^{-1}(cx)}{3d^2x^3\left(1-c^2x^2\right)}-\frac{5c^2\left(a+b\sin^{-1}(cx)\right)}{3d^2x\left(1-c^2x^2\right)}+\frac{5c^4x\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(1-c^2x^2\right)}$$

$$= -\frac{5bc^3}{6d^2\sqrt{1-c^2x^2}}+\frac{bc}{3d^2x^2\sqrt{1-c^2x^2}}-\frac{bc\sqrt{1-c^2x^2}}{2d^2x^2}-\frac{a+b\sin^{-1}(cx)}{3d^2x^3\left(1-c^2x^2\right)}-\frac{5c^2\left(a+b\sin\right.}{3d^2x\left(1-\right.}$$

$$= -\frac{5bc^3}{6d^2\sqrt{1-c^2x^2}}+\frac{bc}{3d^2x^2\sqrt{1-c^2x^2}}-\frac{bc\sqrt{1-c^2x^2}}{2d^2x^2}-\frac{a+b\sin^{-1}(cx)}{3d^2x^3\left(1-c^2x^2\right)}-\frac{5c^2\left(a+b\sin\right.}{3d^2x\left(1-\right.}$$

$$= -\frac{5bc^3}{6d^2\sqrt{1-c^2x^2}}+\frac{bc}{3d^2x^2\sqrt{1-c^2x^2}}-\frac{bc\sqrt{1-c^2x^2}}{2d^2x^2}-\frac{a+b\sin^{-1}(cx)}{3d^2x^3\left(1-c^2x^2\right)}-\frac{5c^2\left(a+b\sin\right.}{3d^2x\left(1-\right.}$$

$$= -\frac{5bc^3}{6d^2\sqrt{1-c^2x^2}}+\frac{bc}{3d^2x^2\sqrt{1-c^2x^2}}-\frac{bc\sqrt{1-c^2x^2}}{2d^2x^2}-\frac{a+b\sin^{-1}(cx)}{3d^2x^3\left(1-c^2x^2\right)}-\frac{5c^2\left(a+b\sin\right.}{3d^2x\left(1-\right.}$$

Mathematica [A] time = 0.90, size = 426, normalized size = 1.64

$$-\frac{15ac^3\log(1-cx)-15ac^3\log(cx+1)+\frac{24ac^2}{x}+\frac{6ac^4x}{c^2x^2-1}+\frac{4a}{x^3}-30ibc^3\mathrm{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)+30ibc^3\mathrm{Li}_2\left(ie^{i\sin^{-1}(cx)}\right)}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x^4*(d - c^2*d*x^2)^2),x]
```

```
[Out] -1/12*((4*a)/x^3 + (24*a*c^2)/x + (2*b*c*Sqrt[1 - c^2*x^2])/x^2 - (3*b*c^3*
Sqrt[1 - c^2*x^2])/(-1 + c*x) + (3*b*c^3*Sqrt[1 - c^2*x^2])/(1 + c*x) + (6*
a*c^4*x)/(-1 + c^2*x^2) + (15*I)*b*c^3*Pi*ArcSin[c*x] + (4*b*ArcSin[c*x])/x
^3 + (24*b*c^2*ArcSin[c*x])/x + (3*b*c^3*ArcSin[c*x])/(-1 + c*x) + (3*b*c^3
*ArcSin[c*x])/(1 + c*x) + 26*b*c^3*ArcTanh[Sqrt[1 - c^2*x^2]] - 15*b*c^3*Pi
*Log[1 - I*E^(I*ArcSin[c*x])] - 30*b*c^3*ArcSin[c*x]*Log[1 - I*E^(I*ArcSin[
c*x])] - 15*b*c^3*Pi*Log[1 + I*E^(I*ArcSin[c*x])] + 30*b*c^3*ArcSin[c*x]*Lo
g[1 + I*E^(I*ArcSin[c*x])] + 15*a*c^3*Log[1 - c*x] - 15*a*c^3*Log[1 + c*x]
+ 15*b*c^3*Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] + 15*b*c^3*Pi*Log[Sin[(Pi +
 2*ArcSin[c*x])/4]] - (30*I)*b*c^3*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] + (30
*I)*b*c^3*PolyLog[2, I*E^(I*ArcSin[c*x])])/d^2
```

fricas [F] time = 0.60, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{b\arcsin(cx)+a}{c^4d^2x^8-2\,c^2d^2x^6+d^2x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^4/(-c^2*d*x^2+d)^2,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(c*x) + a)/(c^4*d^2*x^8 - 2*c^2*d^2*x^6 + d^2*x^4), x)
```

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

$$\int \frac{b \arcsin(cx) + a}{\left(c^2dx^2 - d\right)^2 x^4}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^4/(-c^2*d*x^2+d)^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/((c^2*d*x^2 - d)^2*x^4), x)
```

maple [A] time = 0.33, size = 426, normalized size = 1.64

$$-\frac{c^3a}{4d^2(cx+1)}+\frac{5c^3a\ln(cx+1)}{4d^2}-\frac{a}{3d^2x^3}-\frac{2c^2a}{d^2x}-\frac{c^3a}{4d^2(cx-1)}-\frac{5c^3a\ln(cx-1)}{4d^2}-\frac{5c^4b\arcsin(cx)\,x}{2d^2\left(c^2x^2-1\right)}+\frac{c^3b\sqrt{-c^2x^2+1}}{3d^2\left(c^2x^2-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x^4/(-c^2*d*x^2+d)^2,x)
```

```
[Out] -1/4*c^3*a/d^2/(c*x+1)+5/4*c^3*a/d^2*ln(c*x+1)-1/3*a/d^2/x^3-2*c^2*a/d^2/x-
1/4*c^3*a/d^2/(c*x-1)-5/4*c^3*a/d^2*ln(c*x-1)-5/2*c^4*b/d^2/(c^2*x^2-1)*arc
sin(c*x)*x+1/3*c^3*b/d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)+5/3*c^2*b/d^2/x/(c^
2*x^2-1)*arcsin(c*x)+1/6*c*b/d^2/x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)+1/3*b/d
^2/x^3/(c^2*x^2-1)*arcsin(c*x)-13/6*c^3*b/d^2*ln(1+I*c*x+(-c^2*x^2+1)^(1/2)
)+13/6*c^3*b/d^2*ln(I*c*x+(-c^2*x^2+1)^(1/2)-1)-5/2*c^3*b/d^2*arcsin(c*x)*l
n(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+5/2*c^3*b/d^2*arcsin(c*x)*ln(1-I*(I*c*x+(
-c^2*x^2+1)^(1/2)))-5/2*I*c^3*b/d^2*dilog(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+5
/2*I*c^3*b/d^2*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))
```

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

$$\frac{1}{12}\left(\frac{15\,c^3\log(cx+1)}{d^2}-\frac{15\,c^3\log(cx-1)}{d^2}-\frac{2\left(15\,c^4x^4-10\,c^2x^2-2\right)}{c^2d^2x^5-d^2x^3}\right)a+\frac{\left(15\left(c^5x^5-c^3x^3\right)\arctan\left(cx,\sqrt{cx+1}\sqrt{\cdot}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^4/(-c^2*d*x^2+d)^2,x, algorithm="maxima")
```

```
[Out] 1/12*(15*c^3*log(c*x + 1)/d^2 - 15*c^3*log(c*x - 1)/d^2 - 2*(15*c^4*x^4 - 1
0*c^2*x^2 - 2)/(c^2*d^2*x^5 - d^2*x^3))*a + 1/12*(15*(c^5*x^5 - c^3*x^3)*ar
ctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(c*x + 1) - 15*(c^5*x^5 - c^3*x
^3)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(-c*x + 1) - 2*(15*c^4*x^
4 - 10*c^2*x^2 - 2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + 12*(c^2*d^
2*x^5 - d^2*x^3)*integrate(-1/12*(30*c^5*x^4 - 20*c^3*x^2 - 15*(c^6*x^5 - c
^4*x^3)*log(c*x + 1) + 15*(c^6*x^5 - c^4*x^3)*log(-c*x + 1) - 4*c)*sqrt(c*x
 + 1)*sqrt(-c*x + 1)/(c^4*d^2*x^7 - 2*c^2*d^2*x^5 + d^2*x^3), x))*b/(c^2*d^
2*x^5 - d^2*x^3)
```

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

$$\int \frac{a + b\,\mathrm{asin}(c\,x)}{x^4\left(d - c^2\,d\,x^2\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x^4*(d - c^2*d*x^2)^2),x)
```

```
[Out] int((a + b*asin(c*x))/(x^4*(d - c^2*d*x^2)^2), x)
```

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

$$\frac{\int \frac{a}{c^4x^8-2c^2x^6+x^4}\,dx + \int \frac{b\operatorname{asin}(cx)}{c^4x^8-2c^2x^6+x^4}\,dx}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x**4/(-c**2*d*x**2+d)**2,x)
```

```
[Out] (Integral(a/(c**4*x**8 - 2*c**2*x**6 + x**4), x) + Integral(b*asin(c*x)/(c*
*4*x**8 - 2*c**2*x**6 + x**4), x))/d**2
```

3.46 $\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^3}\,dx$

Optimal. Leaf size=204

$$-\frac{3i\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{4c^5d^3}+\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{4c^2d^3\left(1-c^2x^2\right)^2}-\frac{3x\left(a+b\sin^{-1}(cx)\right)}{8c^4d^3\left(1-c^2x^2\right)}+\frac{3ib\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)}{8c^5d^3}-\frac{3ib\text{Li}_2\left(\right.}{8}$$

```
[Out] -1/12*b/c^5/d^3/(-c^2*x^2+1)^(3/2)+1/4*x^3*(a+b*arcsin(c*x))/c^2/d^3/(-c^2*
x^2+1)^2-3/8*x*(a+b*arcsin(c*x))/c^4/d^3/(-c^2*x^2+1)-3/4*I*(a+b*arcsin(c*x
))*arctan(I*c*x+(-c^2*x^2+1)^(1/2))/c^5/d^3+3/8*I*b*polylog(2,-I*(I*c*x+(-c
^2*x^2+1)^(1/2)))/c^5/d^3-3/8*I*b*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c
^5/d^3+5/8*b/c^5/d^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.24, antiderivative size = 204, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.320, Rules used = {4703, 4657, 4181, 2279, 2391, 261, 266, 43}

$$\frac{3ib\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{8c^5d^3}-\frac{3ib\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{8c^5d^3}+\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{4c^2d^3\left(1-c^2x^2\right)^2}-\frac{3x\left(a+b\sin^{-1}(cx)\right)}{8c^4d^3\left(1-c^2x^2\right)}-\frac{3i\tan^{-1}\left(e^{i}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^3,x]
```

```
[Out] -b/(12*c^5*d^3*(1 - c^2*x^2)^(3/2)) + (5*b)/(8*c^5*d^3*Sqrt[1 - c^2*x^2]) +
 (x^3*(a + b*ArcSin[c*x]))/(4*c^2*d^3*(1 - c^2*x^2)^2) - (3*x*(a + b*ArcSin
[c*x]))/(8*c^4*d^3*(1 - c^2*x^2)) - (((3*I)/4)*(a + b*ArcSin[c*x])*ArcTan[E
^(I*ArcSin[c*x])])/(c^5*d^3) + (((3*I)/8)*b*PolyLog[2, (-I)*E^(I*ArcSin[c*x
])])/(c^5*d^3) - (((3*I)/8)*b*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c^5*d^3)
```

Rule 43

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

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rubi steps

$$\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^3}\,dx = \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{4c^2d^3\left(1-c^2x^2\right)^2} - \frac{b\int \frac{x^3}{\left(1-c^2x^2\right)^{5/2}}\,dx}{4cd^3} - \frac{3\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^2}\,dx}{4c^2d}$$

$$= \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{4c^2d^3\left(1-c^2x^2\right)^2} - \frac{3x\left(a+b\sin^{-1}(cx)\right)}{8c^4d^3\left(1-c^2x^2\right)} + \frac{(3b)\int \frac{x}{\left(1-c^2x^2\right)^{3/2}}\,dx}{8c^3d^3} - \frac{b\,\mathrm{Subst}\left(\int \cdots\right.}{8\cdots}$$

$$= \frac{3b}{8c^5d^3\sqrt{1-c^2x^2}} + \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{4c^2d^3\left(1-c^2x^2\right)^2} - \frac{3x\left(a+b\sin^{-1}(cx)\right)}{8c^4d^3\left(1-c^2x^2\right)} + \frac{3\,\mathrm{Subst}\left(\int (a+\cdots\right.}{\cdots}$$

$$= -\frac{b}{12c^5d^3\left(1-c^2x^2\right)^{3/2}} + \frac{5b}{8c^5d^3\sqrt{1-c^2x^2}} + \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{4c^2d^3\left(1-c^2x^2\right)^2} - \frac{3x\left(a+b\sin^{-1}\cdots\right.}{8c^4d^3\left(1-c^2\cdots\right.}$$

$$= -\frac{b}{12c^5d^3\left(1-c^2x^2\right)^{3/2}} + \frac{5b}{8c^5d^3\sqrt{1-c^2x^2}} + \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{4c^2d^3\left(1-c^2x^2\right)^2} - \frac{3x\left(a+b\sin^{-1}\cdots\right.}{8c^4d^3\left(1-c^2\cdots\right.}$$

$$= -\frac{b}{12c^5d^3\left(1-c^2x^2\right)^{3/2}} + \frac{5b}{8c^5d^3\sqrt{1-c^2x^2}} + \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{4c^2d^3\left(1-c^2x^2\right)^2} - \frac{3x\left(a+b\sin^{-1}\cdots\right.}{8c^4d^3\left(1-c^2\cdots\right.}$$

Mathematica [B] time = 0.94, size = 445, normalized size = 2.18

$$\frac{30acx}{c^2x^2-1}+\frac{12acx}{(c^2x^2-1)^2}-9a\log(1-cx)+9a\log(cx+1)-\frac{15b\sqrt{1-c^2x^2}}{cx-1}+\frac{15b\sqrt{1-c^2x^2}}{cx+1}+\frac{bcx\sqrt{1-c^2x^2}}{(cx-1)^2}-\frac{2b\sqrt{1-c^2x^2}}{(cx-1)^2}-\frac{bcx\sqrt{1-c^2x^2}}{(cx+1)^2}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^4*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^3,x]
```

```
[Out] ((-2*b*Sqrt[1 - c^2*x^2])/(-1 + c*x)^2 + (b*c*x*Sqrt[1 - c^2*x^2])/(-1 + c*
x)^2 - (15*b*Sqrt[1 - c^2*x^2])/(-1 + c*x) - (2*b*Sqrt[1 - c^2*x^2])/(1 + c
*x)^2 - (b*c*x*Sqrt[1 - c^2*x^2])/(1 + c*x)^2 + (15*b*Sqrt[1 - c^2*x^2])/(1
 + c*x) + (12*a*c*x)/(-1 + c^2*x^2)^2 + (30*a*c*x)/(-1 + c^2*x^2) - (9*I)*b
*Pi*ArcSin[c*x] + (3*b*ArcSin[c*x])/(-1 + c*x)^2 + (15*b*ArcSin[c*x])/(-1 +
 c*x) - (3*b*ArcSin[c*x])/(1 + c*x)^2 + (15*b*ArcSin[c*x])/(1 + c*x) + 9*b*
Pi*Log[1 - I*E^(I*ArcSin[c*x])] + 18*b*ArcSin[c*x]*Log[1 - I*E^(I*ArcSin[c*
x])] + 9*b*Pi*Log[1 + I*E^(I*ArcSin[c*x])] - 18*b*ArcSin[c*x]*Log[1 + I*E^(
I*ArcSin[c*x])] - 9*a*Log[1 - c*x] + 9*a*Log[1 + c*x] - 9*b*Pi*Log[-Cos[(Pi
 + 2*ArcSin[c*x])/4]] - 9*b*Pi*Log[Sin[(Pi + 2*ArcSin[c*x])/4]] + (18*I)*b*
PolyLog[2, (-I)*E^(I*ArcSin[c*x])] - (18*I)*b*PolyLog[2, I*E^(I*ArcSin[c*x]
)])/(48*c^5*d^3)
```

fricas [F] time = 0.81, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{bx^4\arcsin(cx)+ax^4}{c^6d^3x^6-3\,c^4d^3x^4+3\,c^2d^3x^2-d^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^3,x, algorithm="fricas")
```

```
[Out] integral(-(b*x^4*arcsin(c*x) + a*x^4)/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*
d^3*x^2 - d^3), x)
```

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

$$\int -\frac{(b\arcsin(cx)+a)x^4}{(c^2dx^2-d)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^3,x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)*x^4/(c^2*d*x^2 - d)^3, x)
```

maple [A] time = 0.55, size = 389, normalized size = 1.91

$$-\frac{a}{16c^5d^3(cx+1)^2}+\frac{5a}{16c^5d^3(cx+1)}+\frac{3a\ln(cx+1)}{16c^5d^3}+\frac{a}{16c^5d^3(cx-1)^2}+\frac{5a}{16c^5d^3(cx-1)}-\frac{3a\ln(cx-1)}{16c^5d^3}+\frac{5b\arcs}{8c^2d^3(c^4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^3,x)
```

```
[Out] -1/16/c^5*a/d^3/(c*x+1)^2+5/16/c^5*a/d^3/(c*x+1)+3/16/c^5*a/d^3*ln(c*x+1)+1
/16/c^5*a/d^3/(c*x-1)^2+5/16/c^5*a/d^3/(c*x-1)-3/16/c^5*a/d^3*ln(c*x-1)+5/8
/c^2*b/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)*x^3-5/8/c^3*b/d^3/(c^4*x^4-2*c
^2*x^2+1)*x^2*(-c^2*x^2+1)^(1/2)-3/8/c^4*b/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin
(c*x)*x+13/24/c^5*b/d^3/(c^4*x^4-2*c^2*x^2+1)*(-c^2*x^2+1)^(1/2)-3/8/c^5*b/
d^3*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+3/8/c^5*b/d^3*arcsin(c*x
```

```
)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+3/8*I/c^5*b/d^3*dilog(1+I*(I*c*x+(-c^2
*x^2+1)^(1/2)))-3/8*I/c^5*b/d^3*dilog(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))
```

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

$$\frac{1}{16}a\left(\frac{2\left(5c^2x^3-3x\right)}{c^8d^3x^4-2c^6d^3x^2+c^4d^3}+\frac{3\log(cx+1)}{c^5d^3}-\frac{3\log(cx-1)}{c^5d^3}\right)+\frac{\left(3\left(c^4x^4-2c^2x^2+1\right)\arctan\left(cx,\sqrt{cx+1}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] 1/16*a*(2*(5*c^2*x^3 - 3*x)/(c^8*d^3*x^4 - 2*c^6*d^3*x^2 + c^4*d^3) + 3*log
(c*x + 1)/(c^5*d^3) - 3*log(c*x - 1)/(c^5*d^3)) + 1/16*(3*(c^4*x^4 - 2*c^2*
x^2 + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(c*x + 1) - 3*(c^4*x
^4 - 2*c^2*x^2 + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(-c*x + 1
) + 2*(5*c^3*x^3 - 3*c*x)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + 16*(
c^9*d^3*x^4 - 2*c^7*d^3*x^2 + c^5*d^3)*integrate(1/16*(10*c^3*x^3 - 6*c*x +
 3*(c^4*x^4 - 2*c^2*x^2 + 1)*log(c*x + 1) - 3*(c^4*x^4 - 2*c^2*x^2 + 1)*log
(-c*x + 1))*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c^10*d^3*x^6 - 3*c^8*d^3*x^4 + 3*
c^6*d^3*x^2 - c^4*d^3), x))*b/(c^9*d^3*x^4 - 2*c^7*d^3*x^2 + c^5*d^3)
```

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

$$\int \frac{x^4\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(d-c^2\,d\,x^2\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(a + b*asin(c*x)))/(d - c^2*d*x^2)^3,x)
```

```
[Out] int((x^4*(a + b*asin(c*x)))/(d - c^2*d*x^2)^3, x)
```

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

$$-\frac{\int \frac{ax^4}{c^6x^6-3c^4x^4+3c^2x^2-1}\,dx+\int \frac{bx^4\operatorname{asin}(cx)}{c^6x^6-3c^4x^4+3c^2x^2-1}\,dx}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*asin(c*x))/(-c**2*d*x**2+d)**3,x)
```

```
[Out] -(Integral(a*x**4/(c**6*x**6 - 3*c**4*x**4 + 3*c**2*x**2 - 1), x) + Integra
l(b*x**4*asin(c*x)/(c**6*x**6 - 3*c**4*x**4 + 3*c**2*x**2 - 1), x))/d**3
```

3.47 $\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^3}\,dx$

Optimal. Leaf size=100

$$\frac{x^4\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2}-\frac{b\sin^{-1}(cx)}{4c^4d^3}-\frac{bx^3}{12cd^3\left(1-c^2x^2\right)^{3/2}}+\frac{bx}{4c^3d^3\sqrt{1-c^2x^2}}$$

```
[Out] -1/12*b*x^3/c/d^3/(-c^2*x^2+1)^(3/2)-1/4*b*arcsin(c*x)/c^4/d^3+1/4*x^4*(a+b
*arcsin(c*x))/d^3/(-c^2*x^2+1)^2+1/4*b*x/c^3/d^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {4681, 288, 216}

$$\frac{x^4\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2}-\frac{bx^3}{12cd^3\left(1-c^2x^2\right)^{3/2}}+\frac{bx}{4c^3d^3\sqrt{1-c^2x^2}}-\frac{b\sin^{-1}(cx)}{4c^4d^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^3,x]
```

```
[Out] -(b*x^3)/(12*c*d^3*(1 - c^2*x^2)^(3/2)) + (b*x)/(4*c^3*d^3*Sqrt[1 - c^2*x^2
]) - (b*ArcSin[c*x])/(4*c^4*d^3) + (x^4*(a + b*ArcSin[c*x]))/(4*d^3*(1 - c^
2*x^2)^2)
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4681

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^F
racPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c
^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d,
 e, f, m, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] &
& NeQ[m, -1]
```

Rubi steps

$$\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^3}\,dx = \frac{x^4\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2} - \frac{(bc)\int \frac{x^4}{\left(1-c^2x^2\right)^{5/2}}\,dx}{4d^3}$$

$$= -\frac{bx^3}{12cd^3\left(1-c^2x^2\right)^{3/2}} + \frac{x^4\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2} + \frac{b\int \frac{x^2}{\left(1-c^2x^2\right)^{3/2}}\,dx}{4cd^3}$$

$$= -\frac{bx^3}{12cd^3\left(1-c^2x^2\right)^{3/2}} + \frac{bx}{4c^3d^3\sqrt{1-c^2x^2}} + \frac{x^4\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2} - \frac{b\int \frac{1}{\sqrt{1-c^2x^2}}\,dx}{4c^3d^3}$$

$$= -\frac{bx^3}{12cd^3\left(1-c^2x^2\right)^{3/2}} + \frac{bx}{4c^3d^3\sqrt{1-c^2x^2}} - \frac{b\sin^{-1}(cx)}{4c^4d^3} + \frac{x^4\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2}$$

Mathematica [A] time = 0.08, size = 79, normalized size = 0.79

$$\frac{a\left(6c^2x^2-3\right)+bcx\sqrt{1-c^2x^2}\,\left(3-4c^2x^2\right)+3b\left(2c^2x^2-1\right)\sin^{-1}(cx)}{12c^4d^3\left(c^2x^2-1\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^3,x]
```

```
[Out] (b*c*x*(3 - 4*c^2*x^2)*Sqrt[1 - c^2*x^2] + a*(-3 + 6*c^2*x^2) + 3*b*(-1 + 2
*c^2*x^2)*ArcSin[c*x])/(12*c^4*d^3*(-1 + c^2*x^2)^2)
```

fricas [A] time = 0.53, size = 91, normalized size = 0.91

$$\frac{3\,ac^4x^4+3\left(2\,bc^2x^2-b\right)\arcsin\left(cx\right)-\left(4\,bc^3x^3-3\,bcx\right)\sqrt{-c^2x^2+1}}{12\left(c^8d^3x^4-2\,c^6d^3x^2+c^4d^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^3,x, algorithm="fricas")
```

```
[Out] 1/12*(3*a*c^4*x^4 + 3*(2*b*c^2*x^2 - b)*arcsin(c*x) - (4*b*c^3*x^3 - 3*b*c*
x)*sqrt(-c^2*x^2 + 1))/(c^8*d^3*x^4 - 2*c^6*d^3*x^2 + c^4*d^3)
```

giac [A] time = 0.32, size = 124, normalized size = 1.24

$$\frac{bx^4\arcsin\left(cx\right)}{4\left(c^2x^2-1\right)^2d^3}+\frac{ax^4}{4\left(c^2x^2-1\right)^2d^3}+\frac{bx^3}{12\left(c^2x^2-1\right)\sqrt{-c^2x^2+1}\,cd^3}+\frac{bx}{4\sqrt{-c^2x^2+1}\,c^3d^3}-\frac{b\arcsin\left(cx\right)}{4\,c^4d^3}-\frac{a}{4\,c^4d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^3,x, algorithm="giac")
```

```
[Out] 1/4*b*x^4*arcsin(c*x)/((c^2*x^2 - 1)^2*d^3) + 1/4*a*x^4/((c^2*x^2 - 1)^2*d^
3) + 1/12*b*x^3/((c^2*x^2 - 1)*sqrt(-c^2*x^2 + 1)*c*d^3) + 1/4*b*x/(sqrt(-c
^2*x^2 + 1)*c^3*d^3) - 1/4*b*arcsin(c*x)/(c^4*d^3) - 1/4*a/(c^4*d^3)
```

maple [B] time = 0.02, size = 212, normalized size = 2.12

$$\frac{-\frac{a\left(-\frac{1}{16(cx+1)^2}+\frac{3}{16(cx+1)}-\frac{1}{16(cx-1)^2}-\frac{3}{16(cx-1)}\right)}{d^3}-\frac{b\left(-\frac{\arcsin(cx)}{16(cx+1)^2}+\frac{3\arcsin(cx)}{16(cx+1)}-\frac{\arcsin(cx)}{16(cx-1)^2}-\frac{3\arcsin(cx)}{16(cx-1)}+\frac{\sqrt{-(cx+1)^2+2cx+2}}{6cx+6}+\frac{\sqrt{-(cx-1)^2-2cx+2}}{48(cx-1)^2}+\frac{\sqrt{-(cx-1)^2 \ldots}}{6cx- \ldots}\right.}{d^3}}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^3,x)
```

```
[Out] 1/c^4*(-a/d^3*(-1/16/(c*x+1)^2+3/16/(c*x+1)-1/16/(c*x-1)^2-3/16/(c*x-1))-b/
d^3*(-1/16*arcsin(c*x)/(c*x+1)^2+3/16*arcsin(c*x)/(c*x+1)-1/16*arcsin(c*x)/
(c*x-1)^2-3/16*arcsin(c*x)/(c*x-1)+1/6/(c*x+1)*(-(c*x+1)^2+2*c*x+2)^(1/2)+1
/48/(c*x-1)^2*(-(c*x-1)^2-2*c*x+2)^(1/2)+1/6/(c*x-1)*(-(c*x-1)^2-2*c*x+2)^(
1/2)-1/48/(c*x+1)^2*(-(c*x+1)^2+2*c*x+2)^(1/2)))
```

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

$$\frac{(2c^2x^2-1)a}{4\,(c^8d^3x^4-2\,c^6d^3x^2+c^4d^3)}+\frac{\left((2\,c^2x^2-1)\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+\left(c^8d^3x^4-2\,c^6d^3x^2+c^4d^3\right)\int\frac{\cdots}{c^{11}d^3x^8\cdots}\right.}{4\,(c^8d^3x^4-2\,c^6d^3x^2+c\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] 1/4*(2*c^2*x^2 - 1)*a/(c^8*d^3*x^4 - 2*c^6*d^3*x^2 + c^4*d^3) + 1/4*((2*c^2
*x^2 - 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + 4*(c^8*d^3*x^4 - 2*c
^6*d^3*x^2 + c^4*d^3)*integrate(1/4*(2*c^2*x^2 - 1)*e^(1/2*log(c*x + 1) + 1
/2*log(-c*x + 1))/(c^11*d^3*x^8 - 3*c^9*d^3*x^6 + 3*c^7*d^3*x^4 - c^5*d^3*x
^2 + (c^9*d^3*x^6 - 3*c^7*d^3*x^4 + 3*c^5*d^3*x^2 - c^3*d^3)*e^(log(c*x + 1
) + log(-c*x + 1))), x))*b/(c^8*d^3*x^4 - 2*c^6*d^3*x^2 + c^4*d^3)
```

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

$$\int \frac{x^3\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(d-c^2\,d\,x^2\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*asin(c*x)))/(d - c^2*d*x^2)^3,x)
```

```
[Out] int((x^3*(a + b*asin(c*x)))/(d - c^2*d*x^2)^3, x)
```

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

$$-\frac{\int \frac{ax^3}{c^6x^6-3c^4x^4+3c^2x^2-1}\,dx+\int \frac{bx^3\operatorname{asin}(cx)}{c^6x^6-3c^4x^4+3c^2x^2-1}\,dx}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*asin(c*x))/(-c**2*d*x**2+d)**3,x)
```

```
[Out] -(Integral(a*x**3/(c**6*x**6 - 3*c**4*x**4 + 3*c**2*x**2 - 1), x) + Integra
l(b*x**3*asin(c*x)/(c**6*x**6 - 3*c**4*x**4 + 3*c**2*x**2 - 1), x))/d**3
```

3.48 $\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^3}\,dx$

Optimal. Leaf size=202

$$\frac{i\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{4c^3d^3}-\frac{x\left(a+b\sin^{-1}(cx)\right)}{8c^2d^3\left(1-c^2x^2\right)}+\frac{x\left(a+b\sin^{-1}(cx)\right)}{4c^2d^3\left(1-c^2x^2\right)^2}-\frac{ib\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)}{8c^3d^3}+\frac{ib\text{Li}_2\left(ie^{i\sin^{-1}(cx)}\right)}{8c^3d^3}$$

```
[Out] -1/12*b/c^3/d^3/(-c^2*x^2+1)^(3/2)+1/4*x*(a+b*arcsin(c*x))/c^2/d^3/(-c^2*x^
2+1)^2-1/8*x*(a+b*arcsin(c*x))/c^2/d^3/(-c^2*x^2+1)+1/4*I*(a+b*arcsin(c*x))
*arctan(I*c*x+(-c^2*x^2+1)^(1/2))/c^3/d^3-1/8*I*b*polylog(2,-I*(I*c*x+(-c^2
*x^2+1)^(1/2)))/c^3/d^3+1/8*I*b*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c^3
/d^3+1/8*b/c^3/d^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 202, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.280, Rules used = {4703, 4655, 4657, 4181, 2279, 2391, 261}

$$-\frac{ib\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{8c^3d^3}+\frac{ib\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{8c^3d^3}-\frac{x\left(a+b\sin^{-1}(cx)\right)}{8c^2d^3\left(1-c^2x^2\right)}+\frac{x\left(a+b\sin^{-1}(cx)\right)}{4c^2d^3\left(1-c^2x^2\right)^2}+\frac{i\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^3,x]
```

```
[Out] -b/(12*c^3*d^3*(1 - c^2*x^2)^(3/2)) + b/(8*c^3*d^3*Sqrt[1 - c^2*x^2]) + (x*
(a + b*ArcSin[c*x]))/(4*c^2*d^3*(1 - c^2*x^2)^2) - (x*(a + b*ArcSin[c*x]))/
(8*c^2*d^3*(1 - c^2*x^2)) + ((I/4)*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c
*x])])/(c^3*d^3) - ((I/8)*b*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(c^3*d^3) +
 ((I/8)*b*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c^3*d^3)
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^3}\,dx &= \frac{x\left(a+b\sin^{-1}(cx)\right)}{4c^2d^3\left(1-c^2x^2\right)^2}-\frac{b\int \frac{x}{\left(1-c^2x^2\right)^{5/2}}\,dx}{4cd^3}-\frac{\int \frac{a+b\sin^{-1}(cx)}{\left(d-c^2dx^2\right)^2}\,dx}{4c^2d}\\
&= -\frac{b}{12c^3d^3\left(1-c^2x^2\right)^{3/2}}+\frac{x\left(a+b\sin^{-1}(cx)\right)}{4c^2d^3\left(1-c^2x^2\right)^2}-\frac{x\left(a+b\sin^{-1}(cx)\right)}{8c^2d^3\left(1-c^2x^2\right)}+\frac{b\int \frac{x}{\left(1-c^2x^2\right)^{3/2}}\,dx}{8cd^3}\\
&= -\frac{b}{12c^3d^3\left(1-c^2x^2\right)^{3/2}}+\frac{b}{8c^3d^3\sqrt{1-c^2x^2}}+\frac{x\left(a+b\sin^{-1}(cx)\right)}{4c^2d^3\left(1-c^2x^2\right)^2}-\frac{x\left(a+b\sin^{-1}(cx)\right)}{8c^2d^3\left(1-c^2x^2\right)}\\
&= -\frac{b}{12c^3d^3\left(1-c^2x^2\right)^{3/2}}+\frac{b}{8c^3d^3\sqrt{1-c^2x^2}}+\frac{x\left(a+b\sin^{-1}(cx)\right)}{4c^2d^3\left(1-c^2x^2\right)^2}-\frac{x\left(a+b\sin^{-1}(cx)\right)}{8c^2d^3\left(1-c^2x^2\right)}\\
&= -\frac{b}{12c^3d^3\left(1-c^2x^2\right)^{3/2}}+\frac{b}{8c^3d^3\sqrt{1-c^2x^2}}+\frac{x\left(a+b\sin^{-1}(cx)\right)}{4c^2d^3\left(1-c^2x^2\right)^2}-\frac{x\left(a+b\sin^{-1}(cx)\right)}{8c^2d^3\left(1-c^2x^2\right)}\\
&= -\frac{b}{12c^3d^3\left(1-c^2x^2\right)^{3/2}}+\frac{b}{8c^3d^3\sqrt{1-c^2x^2}}+\frac{x\left(a+b\sin^{-1}(cx)\right)}{4c^2d^3\left(1-c^2x^2\right)^2}-\frac{x\left(a+b\sin^{-1}(cx)\right)}{8c^2d^3\left(1-c^2x^2\right)}
\end{aligned}$$

Mathematica [B] time = 0.77, size = 445, normalized size = 2.20

$$\frac{6acx}{c^2x^2-1}+\frac{12acx}{\left(c^2x^2-1\right)^2}+3a\log(1-cx)-3a\log(cx+1)-\frac{3b\sqrt{1-c^2x^2}}{cx-1}+\frac{3b\sqrt{1-c^2x^2}}{cx+1}+\frac{bcx\sqrt{1-c^2x^2}}{(cx-1)^2}-\frac{2b\sqrt{1-c^2x^2}}{(cx-1)^2}-\frac{bcx\sqrt{1-c^2x^2}}{(cx+1)^2}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^2*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^3,x]
```

```
[Out] ((-2*b*Sqrt[1 - c^2*x^2])/(-1 + c*x)^2 + (b*c*x*Sqrt[1 - c^2*x^2])/(-1 + c*
x)^2 - (3*b*Sqrt[1 - c^2*x^2])/(-1 + c*x) - (2*b*Sqrt[1 - c^2*x^2])/(1 + c*
x)^2 - (b*c*x*Sqrt[1 - c^2*x^2])/(1 + c*x)^2 + (3*b*Sqrt[1 - c^2*x^2])/(1 +
 c*x) + (12*a*c*x)/(-1 + c^2*x^2)^2 + (6*a*c*x)/(-1 + c^2*x^2) + (3*I)*b*Pi
*ArcSin[c*x] + (3*b*ArcSin[c*x])/(-1 + c*x)^2 + (3*b*ArcSin[c*x])/(-1 + c*x
) - (3*b*ArcSin[c*x])/(1 + c*x)^2 + (3*b*ArcSin[c*x])/(1 + c*x) - 3*b*Pi*Lo
g[1 - I*E^(I*ArcSin[c*x])] - 6*b*ArcSin[c*x]*Log[1 - I*E^(I*ArcSin[c*x])] -
 3*b*Pi*Log[1 + I*E^(I*ArcSin[c*x])] + 6*b*ArcSin[c*x]*Log[1 + I*E^(I*ArcSi
n[c*x])] + 3*a*Log[1 - c*x] - 3*a*Log[1 + c*x] + 3*b*Pi*Log[-Cos[(Pi + 2*Ar
cSin[c*x])/4]] + 3*b*Pi*Log[Sin[(Pi + 2*ArcSin[c*x])/4]] - (6*I)*b*PolyLog[
2, (-I)*E^(I*ArcSin[c*x])] + (6*I)*b*PolyLog[2, I*E^(I*ArcSin[c*x])])/(48*c
^3*d^3)
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{bx^2 \arcsin(cx) + ax^2}{c^6d^3x^6 - 3\,c^4d^3x^4 + 3\,c^2d^3x^2 - d^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^3,x, algorithm="fricas")
```

```
[Out] integral(-(b*x^2*arcsin(c*x) + a*x^2)/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*
d^3*x^2 - d^3), x)
```

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

$$\int -\frac{(b \arcsin(cx) + a)x^2}{\left(c^2dx^2 - d\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^3,x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)*x^2/(c^2*d*x^2 - d)^3, x)
```

maple [A] time = 0.41, size = 386, normalized size = 1.91

$$-\frac{a}{16c^3d^3\,(cx+1)^2}+\frac{a}{16c^3d^3\,(cx+1)}-\frac{a\ln(cx+1)}{16c^3d^3}+\frac{a}{16c^3d^3\,(cx-1)^2}+\frac{a}{16c^3d^3\,(cx-1)}+\frac{a\ln(cx-1)}{16c^3d^3}+\frac{b\,\text{arcsi}}{8d^3\left(c^4x^4\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^3,x)
```

```
[Out] -1/16/c^3*a/d^3/(c*x+1)^2+1/16/c^3*a/d^3/(c*x+1)-1/16/c^3*a/d^3*ln(c*x+1)+1
/16/c^3*a/d^3/(c*x-1)^2+1/16/c^3*a/d^3/(c*x-1)+1/16/c^3*a/d^3*ln(c*x-1)+1/8
*b/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)*x^3-1/8/c*b/d^3/(c^4*x^4-2*c^2*x^2
+1)*x^2*(-c^2*x^2+1)^(1/2)+1/8/c^2*b/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)*
x+1/24/c^3*b/d^3/(c^4*x^4-2*c^2*x^2+1)*(-c^2*x^2+1)^(1/2)+1/8/c^3*b/d^3*arc
sin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-1/8/c^3*b/d^3*arcsin(c*x)*ln(1-
I*(I*c*x+(-c^2*x^2+1)^(1/2)))-1/8*I/c^3*b/d^3*dilog(1+I*(I*c*x+(-c^2*x^2+1)
^(1/2)))+1/8*I/c^3*b/d^3*dilog(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))
```

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

$$\frac{1}{16}a\left(\frac{2\left(c^2x^3+x\right)}{c^6d^3x^4-2\,c^4d^3x^2+c^2d^3}-\frac{\log(cx+1)}{c^3d^3}+\frac{\log(cx-1)}{c^3d^3}\right)-\frac{\left(\left(c^4x^4-2\,c^2x^2+1\right)\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] 1/16*a*(2*(c^2*x^3 + x)/(c^6*d^3*x^4 - 2*c^4*d^3*x^2 + c^2*d^3) - log(c*x +
 1)/(c^3*d^3) + log(c*x - 1)/(c^3*d^3)) - 1/16*((c^4*x^4 - 2*c^2*x^2 + 1)*a
rctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(c*x + 1) - (c^4*x^4 - 2*c^2*x
^2 + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(-c*x + 1) - 2*(c^3*x
^3 + c*x)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + 16*(c^7*d^3*x^4 - 2*
c^5*d^3*x^2 + c^3*d^3)*integrate(-1/16*(2*c^3*x^3 + 2*c*x - (c^4*x^4 - 2*c^
2*x^2 + 1)*log(c*x + 1) + (c^4*x^4 - 2*c^2*x^2 + 1)*log(-c*x + 1))*sqrt(c*x
 + 1)*sqrt(-c*x + 1)/(c^8*d^3*x^6 - 3*c^6*d^3*x^4 + 3*c^4*d^3*x^2 - c^2*d^3
), x))*b/(c^7*d^3*x^4 - 2*c^5*d^3*x^2 + c^3*d^3)
```

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

$$\int \frac{x^2\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(d-c^2\,d\,x^2\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*asin(c*x)))/(d - c^2*d*x^2)^3,x)
```

```
[Out] int((x^2*(a + b*asin(c*x)))/(d - c^2*d*x^2)^3, x)
```

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

$$-\frac{\int \frac{ax^2}{c^6x^6-3c^4x^4+3c^2x^2-1}\,dx+\int \frac{bx^2\,\mathrm{asin}\,(cx)}{c^6x^6-3c^4x^4+3c^2x^2-1}\,dx}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(c*x))/(-c**2*d*x**2+d)**3,x)
```

```
[Out] -(Integral(a*x**2/(c**6*x**6 - 3*c**4*x**4 + 3*c**2*x**2 - 1), x) + Integra
l(b*x**2*asin(c*x)/(c**6*x**6 - 3*c**4*x**4 + 3*c**2*x**2 - 1), x))/d**3
```

3.49 $\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^3}\,dx$

Optimal. Leaf size=83

$$\frac{a+b\sin^{-1}(cx)}{4c^2d^3\left(1-c^2x^2\right)^2}-\frac{bx}{6cd^3\sqrt{1-c^2x^2}}-\frac{bx}{12cd^3\left(1-c^2x^2\right)^{3/2}}$$

```
[Out] -1/12*b*x/c/d^3/(-c^2*x^2+1)^(3/2)+1/4*(a+b*arcsin(c*x))/c^2/d^3/(-c^2*x^2+
1)^2-1/6*b*x/c/d^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.130$, Rules used = {4677, 192, 191}

$$\frac{a+b\sin^{-1}(cx)}{4c^2d^3\left(1-c^2x^2\right)^2}-\frac{bx}{6cd^3\sqrt{1-c^2x^2}}-\frac{bx}{12cd^3\left(1-c^2x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^3,x]
```

```
[Out] -(b*x)/(12*c*d^3*(1 - c^2*x^2)^(3/2)) - (b*x)/(6*c*d^3*Sqrt[1 - c^2*x^2]) +
 (a + b*ArcSin[c*x])/(4*c^2*d^3*(1 - c^2*x^2)^2)
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 192

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b, n, p}, x] && ILtQ[Simplify[1/n + p + 1], 0]
 && NeQ[p, -1]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^3}\,dx = \frac{a+b\sin^{-1}(cx)}{4c^2d^3\left(1-c^2x^2\right)^2} - \frac{b\int \frac{1}{\left(1-c^2x^2\right)^{5/2}}\,dx}{4cd^3}$$

$$= -\frac{bx}{12cd^3\left(1-c^2x^2\right)^{3/2}} + \frac{a+b\sin^{-1}(cx)}{4c^2d^3\left(1-c^2x^2\right)^2} - \frac{b\int \frac{1}{\left(1-c^2x^2\right)^{3/2}}\,dx}{6cd^3}$$

$$= -\frac{bx}{12cd^3\left(1-c^2x^2\right)^{3/2}} - \frac{bx}{6cd^3\sqrt{1-c^2x^2}} + \frac{a+b\sin^{-1}(cx)}{4c^2d^3\left(1-c^2x^2\right)^2}$$

Mathematica [A] time = 0.11, size = 62, normalized size = 0.75

$$\frac{\frac{a+b\sin^{-1}(cx)}{\left(c^2x^2-1\right)^2} + \frac{bcx\left(2c^2x^2-3\right)}{3\left(1-c^2x^2\right)^{3/2}}}{4c^2d^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^3,x]
```

```
[Out] ((b*c*x*(-3 + 2*c^2*x^2))/(3*(1 - c^2*x^2)^(3/2)) + (a + b*ArcSin[c*x])/(-1
 + c^2*x^2)^2)/(4*c^2*d^3)
```

fricas [A] time = 0.62, size = 88, normalized size = 1.06

$$-\frac{3\,ac^4x^4 - 6\,ac^2x^2 - 3\,b\arcsin(cx) - \left(2\,bc^3x^3 - 3\,bcx\right)\sqrt{-c^2x^2+1}}{12\left(c^6d^3x^4 - 2\,c^4d^3x^2 + c^2d^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^3,x, algorithm="fricas")
```

```
[Out] -1/12*(3*a*c^4*x^4 - 6*a*c^2*x^2 - 3*b*arcsin(c*x) - (2*b*c^3*x^3 - 3*b*c*x
)*sqrt(-c^2*x^2 + 1))/(c^6*d^3*x^4 - 2*c^4*d^3*x^2 + c^2*d^3)
```

giac [B] time = 0.36, size = 172, normalized size = 2.07

$$\frac{bc^2x^4\arcsin(cx)}{4\left(c^2x^2-1\right)^2d^3} + \frac{ac^2x^4}{4\left(c^2x^2-1\right)^2d^3} + \frac{bcx^3}{12\left(c^2x^2-1\right)\sqrt{-c^2x^2+1}\,d^3} - \frac{bx^2\arcsin(cx)}{2\left(c^2x^2-1\right)d^3} - \frac{ax^2}{2\left(c^2x^2-1\right)d^3} - \frac{bx}{4\sqrt{-c^2x^2+1}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^3,x, algorithm="giac")
```

```
[Out] 1/4*b*c^2*x^4*arcsin(c*x)/((c^2*x^2 - 1)^2*d^3) + 1/4*a*c^2*x^4/((c^2*x^2 -
 1)^2*d^3) + 1/12*b*c*x^3/((c^2*x^2 - 1)*sqrt(-c^2*x^2 + 1)*d^3) - 1/2*b*x^
2*arcsin(c*x)/((c^2*x^2 - 1)*d^3) - 1/2*a*x^2/((c^2*x^2 - 1)*d^3) - 1/4*b*x
/(sqrt(-c^2*x^2 + 1)*c*d^3) + 1/4*b*arcsin(c*x)/(c^2*d^3) + 1/4*a/(c^2*d^3)
```

maple [B] time = 0.01, size = 151, normalized size = 1.82

$$\frac{\frac{a}{4d^3\left(c^2x^2-1\right)^2} - \frac{b\left(-\frac{\arcsin(cx)}{4\left(c^2x^2-1\right)^2} - \frac{\sqrt{-(cx+1)^2+2cx+2}}{12(cx+1)} + \frac{\sqrt{-(cx-1)^2-2cx+2}}{48(cx-1)^2} - \frac{\sqrt{-(cx-1)^2-2cx+2}}{12(cx-1)} - \frac{\sqrt{-(cx+1)^2+2cx+2}}{48(cx+1)^2}\right)}{d^3}}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^3,x)
```

```
[Out] 1/c^2*(1/4*a/d^3/(c^2*x^2-1)^2-b/d^3*(-1/4/(c^2*x^2-1)^2*arcsin(c*x)-1/12/(
c*x+1)*(-(c*x+1)^2+2*c*x+2)^(1/2)+1/48/(c*x-1)^2*(-(c*x-1)^2-2*c*x+2)^(1/2)
-1/12/(c*x-1)*(-(c*x-1)^2-2*c*x+2)^(1/2)-1/48/(c*x+1)^2*(-(c*x+1)^2+2*c*x+2
)^(1/2)))
```

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

$$\frac{\left(\left(c^6d^3x^4-2\,c^4d^3x^2+c^2d^3\right)\int\frac{e^{\left(\frac{1}{2}\,\log(cx+1)+\frac{1}{2}\,\log(-cx+1)\right)}}{c^9d^3x^8-3\,c^7d^3x^6+3\,c^5d^3x^4-c^3d^3x^2-\left(c^7d^3x^6-3\,c^5d^3x^4+3\,c^3d^3x^2-cd^3\right)(cx+1)(cx-1)}\,dx+\arctan\left(cx,\right.\right.}{4\left(c^6d^3x^4-2\,c^4d^3x^2+c^2d^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] 1/4*(4*(c^6*d^3*x^4 - 2*c^4*d^3*x^2 + c^2*d^3)*integrate(1/4*e^(1/2*log(c*x
 + 1) + 1/2*log(-c*x + 1))/(c^9*d^3*x^8 - 3*c^7*d^3*x^6 + 3*c^5*d^3*x^4 - c
^3*d^3*x^2 + (c^7*d^3*x^6 - 3*c^5*d^3*x^4 + 3*c^3*d^3*x^2 - c*d^3)*e^(log(c
*x + 1) + log(-c*x + 1))), x) + arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))
*b/(c^6*d^3*x^4 - 2*c^4*d^3*x^2 + c^2*d^3) + 1/4*a/(c^6*d^3*x^4 - 2*c^4*d^3
*x^2 + c^2*d^3)
```

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

$$\int \frac{x\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(d-c^2\,d\,x^2\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*asin(c*x)))/(d - c^2*d*x^2)^3,x)
```

```
[Out] int((x*(a + b*asin(c*x)))/(d - c^2*d*x^2)^3, x)
```

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

$$-\frac{\int\frac{ax}{c^6x^6-3c^4x^4+3c^2x^2-1}\,dx+\int\frac{bx\,\mathrm{asin}\,(cx)}{c^6x^6-3c^4x^4+3c^2x^2-1}\,dx}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(c*x))/(-c**2*d*x**2+d)**3,x)
```

```
[Out] -(Integral(a*x/(c**6*x**6 - 3*c**4*x**4 + 3*c**2*x**2 - 1), x) + Integral(b
*x*asin(c*x)/(c**6*x**6 - 3*c**4*x**4 + 3*c**2*x**2 - 1), x))/d**3
```

3.50 $\int \frac{a+b\sin^{-1}(cx)}{(d-c^2dx^2)^3}\,dx$

Optimal. Leaf size=196

$$\frac{3x\left(a+b\sin^{-1}(cx)\right)}{8d^3\left(1-c^2x^2\right)}+\frac{x\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2}-\frac{3i\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{4cd^3}-\frac{3b}{8cd^3\sqrt{1-c^2x^2}}-\frac{b}{12cd^3\left(1-c^2x^2\right.}$$

```
[Out] -1/12*b/c/d^3/(-c^2*x^2+1)^(3/2)+1/4*x*(a+b*arcsin(c*x))/d^3/(-c^2*x^2+1)^2
+3/8*x*(a+b*arcsin(c*x))/d^3/(-c^2*x^2+1)-3/4*I*(a+b*arcsin(c*x))*arctan(I*
c*x+(-c^2*x^2+1)^(1/2))/c/d^3+3/8*I*b*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2
)))/c/d^3-3/8*I*b*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/d^3-3/8*b/c/d^3
/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 196, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {4655, 4657, 4181, 2279, 2391, 261}

$$\frac{3ib\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{8cd^3}-\frac{3ib\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{8cd^3}+\frac{3x\left(a+b\sin^{-1}(cx)\right)}{8d^3\left(1-c^2x^2\right)}+\frac{x\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2}-\frac{3i\tan^{-1}\left(e^{i\sin\right.}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(d - c^2*d*x^2)^3,x]
```

```
[Out] -b/(12*c*d^3*(1 - c^2*x^2)^(3/2)) - (3*b)/(8*c*d^3*Sqrt[1 - c^2*x^2]) + (x*
(a + b*ArcSin[c*x]))/(4*d^3*(1 - c^2*x^2)^2) + (3*x*(a + b*ArcSin[c*x]))/(8
*d^3*(1 - c^2*x^2)) - (((3*I)/4)*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x
])])/(c*d^3) + (((3*I)/8)*b*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(c*d^3) - (
((3*I)/8)*b*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c*d^3)
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{\left(d-c^2dx^2\right)^3}\,dx = \frac{x\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2} - \frac{(bc)\int \frac{x}{\left(1-c^2x^2\right)^{5/2}}\,dx}{4d^3} + \frac{3\int \frac{a+b\sin^{-1}(cx)}{\left(d-c^2dx^2\right)^2}\,dx}{4d}$$

$$= -\frac{b}{12cd^3\left(1-c^2x^2\right)^{3/2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2} + \frac{3x\left(a+b\sin^{-1}(cx)\right)}{8d^3\left(1-c^2x^2\right)} - \frac{(3bc)\int \frac{x}{\left(1-c^2x^2\right)^{3/2}}}{8d^3}$$

$$= -\frac{b}{12cd^3\left(1-c^2x^2\right)^{3/2}} - \frac{3b}{8cd^3\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2} + \frac{3x\left(a+b\sin^{-1}(cx)\right)}{8d^3\left(1-c^2x^2\right)} +$$

$$= -\frac{b}{12cd^3\left(1-c^2x^2\right)^{3/2}} - \frac{3b}{8cd^3\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2} + \frac{3x\left(a+b\sin^{-1}(cx)\right)}{8d^3\left(1-c^2x^2\right)} -$$

$$= -\frac{b}{12cd^3\left(1-c^2x^2\right)^{3/2}} - \frac{3b}{8cd^3\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2} + \frac{3x\left(a+b\sin^{-1}(cx)\right)}{8d^3\left(1-c^2x^2\right)} -$$

$$= -\frac{b}{12cd^3\left(1-c^2x^2\right)^{3/2}} - \frac{3b}{8cd^3\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2} + \frac{3x\left(a+b\sin^{-1}(cx)\right)}{8d^3\left(1-c^2x^2\right)} -$$

Mathematica [B] time = 1.61, size = 501, normalized size = 2.56

$$-\frac{\frac{6ax}{c^2x^2-1} - \frac{4ax}{\left(c^2x^2-1\right)^2} + \frac{3a\log(1-cx)}{c} - \frac{3a\log(cx+1)}{c} + \frac{3b\sqrt{1-c^2x^2}}{c-c^2x} + \frac{3b\sqrt{1-c^2x^2}}{c^2x+c} - \frac{bx\sqrt{1-c^2x^2}}{3(cx-1)^2} + \frac{2b\sqrt{1-c^2x^2}}{3c(cx-1)^2} + \frac{bx\sqrt{1-c^2x^2}}{3(cx+1)^2} + \frac{2b}{3c}}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(d - c^2*d*x^2)^3,x]
```

```
[Out] -1/16*((2*b*Sqrt[1 - c^2*x^2])/(3*c*(-1 + c*x)^2) - (b*x*Sqrt[1 - c^2*x^2])
/(3*(-1 + c*x)^2) + (2*b*Sqrt[1 - c^2*x^2])/(3*c*(1 + c*x)^2) + (b*x*Sqrt[1
 - c^2*x^2])/(3*(1 + c*x)^2) + (3*b*Sqrt[1 - c^2*x^2])/(c - c^2*x) + (3*b*S
qrt[1 - c^2*x^2])/(c + c^2*x) - (4*a*x)/(-1 + c^2*x^2)^2 + (6*a*x)/(-1 + c^
2*x^2) + ((3*I)*b*Pi*ArcSin[c*x])/c - (b*ArcSin[c*x])/(c*(-1 + c*x)^2) + (b
*ArcSin[c*x])/(c*(1 + c*x)^2) - (3*b*ArcSin[c*x])/(c - c^2*x) + (3*b*ArcSin
[c*x])/(c + c^2*x) - (3*b*Pi*Log[1 - I*E^(I*ArcSin[c*x])])/c - (6*b*ArcSin[
c*x]*Log[1 - I*E^(I*ArcSin[c*x])])/c - (3*b*Pi*Log[1 + I*E^(I*ArcSin[c*x])]
)/c + (6*b*ArcSin[c*x]*Log[1 + I*E^(I*ArcSin[c*x])])/c + (3*a*Log[1 - c*x])
```

```
/c - (3*a*Log[1 + c*x])/c + (3*b*Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]])/c +
(3*b*Pi*Log[Sin[(Pi + 2*ArcSin[c*x])/4]])/c - ((6*I)*b*PolyLog[2, (-I)*E^(I
*ArcSin[c*x])])/c + ((6*I)*b*PolyLog[2, I*E^(I*ArcSin[c*x])])/c)/d^3
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{b\arcsin(cx)+a}{c^6d^3x^6-3\,c^4d^3x^4+3\,c^2d^3x^2-d^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(-c^2*d*x^2+d)^3,x, algorithm="fricas")
```

```
[Out] integral(-(b*arcsin(c*x) + a)/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x^2
- d^3), x)
```

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

$$\int -\frac{b\arcsin(cx)+a}{\left(c^2dx^2-d\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(-c^2*d*x^2+d)^3,x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)/(c^2*d*x^2 - d)^3, x)
```

maple [A] time = 0.19, size = 384, normalized size = 1.96

$$-\frac{a}{16c\,d^3\,(cx+1)^2}-\frac{3a}{16c\,d^3\,(cx+1)}+\frac{3a\ln(cx+1)}{16c\,d^3}+\frac{a}{16c\,d^3\,(cx-1)^2}-\frac{3a}{16c\,d^3\,(cx-1)}-\frac{3a\ln(cx-1)}{16c\,d^3}-\frac{3c^2b\arcsin}{8d^3\left(c^4x^4-2c\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(-c^2*d*x^2+d)^3,x)
```

```
[Out] -1/16/c*a/d^3/(c*x+1)^2-3/16/c*a/d^3/(c*x+1)+3/16/c*a/d^3*ln(c*x+1)+1/16/c*
a/d^3/(c*x-1)^2-3/16/c*a/d^3/(c*x-1)-3/16/c*a/d^3*ln(c*x-1)-3/8*c^2*b/d^3/(
c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)*x^3+3/8*c*b/d^3/(c^4*x^4-2*c^2*x^2+1)*x^2*
(-c^2*x^2+1)^(1/2)+5/8*b/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)*x-11/24/c*b/
d^3/(c^4*x^4-2*c^2*x^2+1)*(-c^2*x^2+1)^(1/2)-3/8/c*b/d^3*arcsin(c*x)*ln(1+I
*(I*c*x+(-c^2*x^2+1)^(1/2)))+3/8/c*b/d^3*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^
2+1)^(1/2)))+3/8*I/c*b/d^3*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-3/8*I/c*b/
d^3*dilog(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))
```

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

$$-\frac{1}{16}a\left(\frac{2\left(3\,c^2x^3-5\,x\right)}{c^4d^3x^4-2\,c^2d^3x^2+d^3}-\frac{3\,\log(cx+1)}{cd^3}+\frac{3\,\log(cx-1)}{cd^3}\right)+\frac{\left(3\left(c^4x^4-2\,c^2x^2+1\right)\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-c}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(-c^2*d*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] -1/16*a*(2*(3*c^2*x^3 - 5*x)/(c^4*d^3*x^4 - 2*c^2*d^3*x^2 + d^3) - 3*log(c*
x + 1)/(c*d^3) + 3*log(c*x - 1)/(c*d^3)) + 1/16*(3*(c^4*x^4 - 2*c^2*x^2 + 1
)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(c*x + 1) - 3*(c^4*x^4 - 2*
c^2*x^2 + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(-c*x + 1) - 2*(
3*c^3*x^3 - 5*c*x)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + 16*(c^5*d^3
*x^4 - 2*c^3*d^3*x^2 + c*d^3)*integrate(-1/16*(6*c^3*x^3 - 10*c*x - 3*(c^4*
```

```
x^4 - 2*c^2*x^2 + 1)*log(c*x + 1) + 3*(c^4*x^4 - 2*c^2*x^2 + 1)*log(-c*x +
1))*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x
^2 - d^3), x))*b/(c^5*d^3*x^4 - 2*c^3*d^3*x^2 + c*d^3)
```

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

$$\int \frac{a+b\,\mathrm{asin}\left(c\,x\right)}{{\left(d-c^2\,d\,x^2\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(d - c^2*d*x^2)^3,x)
```

```
[Out] int((a + b*asin(c*x))/(d - c^2*d*x^2)^3, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(-c**2*d*x**2+d)**3,x)
```

```
[Out] Timed out
```

3.51 $\int \frac{a+b\sin^{-1}(cx)}{x\left(d-c^2dx^2\right)^3} \, dx$

Optimal. Leaf size=173

$$\frac{a+b\sin^{-1}(cx)}{2d^3\left(1-c^2x^2\right)}+\frac{a+b\sin^{-1}(cx)}{4d^3\left(1-c^2x^2\right)^2}-\frac{2\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^3}-\frac{2bcx}{3d^3\sqrt{1-c^2x^2}}-\frac{bcx}{12d^3\left(1-c^2x^2\right)^{3/2}}+\frac{ibL}{}$$

```
[Out] -1/12*b*c*x/d^3/(-c^2*x^2+1)^(3/2)+1/4*(a+b*arcsin(c*x))/d^3/(-c^2*x^2+1)^2
+1/2*(a+b*arcsin(c*x))/d^3/(-c^2*x^2+1)-2*(a+b*arcsin(c*x))*arctanh((I*c*x+
(-c^2*x^2+1)^(1/2))^2)/d^3+1/2*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)
/d^3-1/2*I*b*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^3-2/3*b*c*x/d^3/(-c^
2*x^2+1)^(1/2)
```

Rubi [A] time = 0.25, antiderivative size = 173, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.320, Rules used = {4705, 4679, 4419, 4183, 2279, 2391, 191, 192}

$$\frac{ib\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{2d^3}-\frac{ib\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)}{2d^3}+\frac{a+b\sin^{-1}(cx)}{2d^3\left(1-c^2x^2\right)}+\frac{a+b\sin^{-1}(cx)}{4d^3\left(1-c^2x^2\right)^2}-\frac{2\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)\left(\right.}{d^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x*(d - c^2*d*x^2)^3),x]
```

```
[Out] -(b*c*x)/(12*d^3*(1 - c^2*x^2)^(3/2)) - (2*b*c*x)/(3*d^3*Sqrt[1 - c^2*x^2])
 + (a + b*ArcSin[c*x])/(4*d^3*(1 - c^2*x^2)^2) + (a + b*ArcSin[c*x])/(2*d^3
*(1 - c^2*x^2)) - (2*(a + b*ArcSin[c*x])*ArcTanh[E^((2*I)*ArcSin[c*x])])/d^
3 + ((I/2)*b*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/d^3 - ((I/2)*b*PolyLog[2,
E^((2*I)*ArcSin[c*x])])/d^3
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 192

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b, n, p}, x] && ILtQ[Simplify[1/n + p + 1], 0]
 && NeQ[p, -1]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
```

```
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4419

```
Int[Csc[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csc[2*a + 2*b*x]^n,
 x], x] /; FreeQ[{a, b, c, d, m}, x] && IntegerQ[n] && RationalQ[m]
```

Rule 4679

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((x_)*((d_) + (e_.)*(x_)^2)),
x_Symbol] :> Dist[1/d, Subst[Int[(a + b*x)^n/(Cos[x]*Sin[x]), x], x, ArcSin
[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4705

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> -Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a +
b*ArcSin[c*x])^n)/(2*d*f*(p + 1)), x] + (Dist[(m + 2*p + 3)/(2*d*(p + 1)),
Int[(f*x)^m*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[(b*c*n
*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*f*(p + 1)*(1 - c^2*x^2)^FracPart[
p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
0] && LtQ[p, -1] &&  !GtQ[m, 1] && (IntegerQ[m] || IntegerQ[p] || EqQ[n, 1]
)
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x\left(d-c^2dx^2\right)^3}\,dx = \frac{a+b\sin^{-1}(cx)}{4d^3\left(1-c^2x^2\right)^2} - \frac{(bc)\int \frac{1}{\left(1-c^2x^2\right)^{5/2}}\,dx}{4d^3} + \frac{\int \frac{a+b\sin^{-1}(cx)}{x\left(d-c^2dx^2\right)^2}\,dx}{d}$$

$$= -\frac{bcx}{12d^3\left(1-c^2x^2\right)^{3/2}} + \frac{a+b\sin^{-1}(cx)}{4d^3\left(1-c^2x^2\right)^2} + \frac{a+b\sin^{-1}(cx)}{2d^3\left(1-c^2x^2\right)} - \frac{(bc)\int \frac{1}{\left(1-c^2x^2\right)^{3/2}}\,dx}{6d^3} - \frac{(bc)\int}{}$$

$$= -\frac{bcx}{12d^3\left(1-c^2x^2\right)^{3/2}} - \frac{2bcx}{3d^3\sqrt{1-c^2x^2}} + \frac{a+b\sin^{-1}(cx)}{4d^3\left(1-c^2x^2\right)^2} + \frac{a+b\sin^{-1}(cx)}{2d^3\left(1-c^2x^2\right)} + \frac{\mathrm{Subst}\left(\int(\right.}{}$$

$$= -\frac{bcx}{12d^3\left(1-c^2x^2\right)^{3/2}} - \frac{2bcx}{3d^3\sqrt{1-c^2x^2}} + \frac{a+b\sin^{-1}(cx)}{4d^3\left(1-c^2x^2\right)^2} + \frac{a+b\sin^{-1}(cx)}{2d^3\left(1-c^2x^2\right)} + \frac{2\,\mathrm{Subst}\left(\right.}{}$$

$$= -\frac{bcx}{12d^3\left(1-c^2x^2\right)^{3/2}} - \frac{2bcx}{3d^3\sqrt{1-c^2x^2}} + \frac{a+b\sin^{-1}(cx)}{4d^3\left(1-c^2x^2\right)^2} + \frac{a+b\sin^{-1}(cx)}{2d^3\left(1-c^2x^2\right)} - \frac{2\left(a+b\,\mathrm{si}\right.}{}$$

$$= -\frac{bcx}{12d^3\left(1-c^2x^2\right)^{3/2}} - \frac{2bcx}{3d^3\sqrt{1-c^2x^2}} + \frac{a+b\sin^{-1}(cx)}{4d^3\left(1-c^2x^2\right)^2} + \frac{a+b\sin^{-1}(cx)}{2d^3\left(1-c^2x^2\right)} - \frac{2\left(a+b\,\mathrm{si}\right.}{}$$

$$= -\frac{bcx}{12d^3\left(1-c^2x^2\right)^{3/2}} - \frac{2bcx}{3d^3\sqrt{1-c^2x^2}} + \frac{a+b\sin^{-1}(cx)}{4d^3\left(1-c^2x^2\right)^2} + \frac{a+b\sin^{-1}(cx)}{2d^3\left(1-c^2x^2\right)} - \frac{2\left(a+b\,\mathrm{si}\right.}{}$$

Mathematica [A] time = 1.03, size = 201, normalized size = 1.16

$$-\frac{\frac{6a}{c^2x^2-1}-\frac{3a}{\left(c^2x^2-1\right)^2}+6a\log\left(1-c^2x^2\right)-12a\log(x)+b\left(\frac{8cx}{\sqrt{1-c^2x^2}}+\frac{cx}{\left(1-c^2x^2\right)^{3/2}}+\frac{6\sin^{-1}(cx)}{c^2x^2-1}-\frac{3\sin^{-1}(cx)}{\left(c^2x^2-1\right)^2}-6i\text{Li}_2\left(-e^{2is}\right.\right.}{12d^3}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x*(d - c^2*d*x^2)^3),x]
```

```
[Out] -1/12*((-3*a)/(-1 + c^2*x^2)^2 + (6*a)/(-1 + c^2*x^2) - 12*a*Log[x] + 6*a*L
og[1 - c^2*x^2] + b*((c*x)/(1 - c^2*x^2)^(3/2) + (8*c*x)/Sqrt[1 - c^2*x^2]
- (3*ArcSin[c*x])/(-1 + c^2*x^2)^2 + (6*ArcSin[c*x])/(-1 + c^2*x^2) - 12*Ar
cSin[c*x]*Log[1 - E^((2*I)*ArcSin[c*x])] + 12*ArcSin[c*x]*Log[1 + E^((2*I)*
ArcSin[c*x])] - (6*I)*PolyLog[2, -E^((2*I)*ArcSin[c*x])] + (6*I)*PolyLog[2,
 E^((2*I)*ArcSin[c*x])]))/d^3
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{b\arcsin(cx)+a}{c^6d^3x^7-3c^4d^3x^5+3c^2d^3x^3-d^3x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x/(-c^2*d*x^2+d)^3,x, algorithm="fricas")
```

```
[Out] integral(-(b*arcsin(c*x) + a)/(c^6*d^3*x^7 - 3*c^4*d^3*x^5 + 3*c^2*d^3*x^3
- d^3*x), x)
```

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

$$\int -\frac{b\arcsin(cx)+a}{\left(c^2dx^2-d\right)^3x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x/(-c^2*d*x^2+d)^3,x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)/((c^2*d*x^2 - d)^3*x), x)
```

maple [B] time = 0.31, size = 503, normalized size = 2.91

$$\frac{a}{16d^3(cx+1)^2}+\frac{5a}{16d^3(cx+1)}-\frac{a\ln(cx+1)}{2d^3}+\frac{a\ln(cx)}{d^3}+\frac{a}{16d^3(cx-1)^2}-\frac{5a}{16d^3(cx-1)}-\frac{a\ln(cx-1)}{2d^3}-\frac{2ibc^4}{3d^3\left(c^4x^4-2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x/(-c^2*d*x^2+d)^3,x)
```

```
[Out] 1/16*a/d^3/(c*x+1)^2+5/16*a/d^3/(c*x+1)-1/2*a/d^3*ln(c*x+1)+a/d^3*ln(c*x)+1
/16*a/d^3/(c*x-1)^2-5/16*a/d^3/(c*x-1)-1/2*a/d^3*ln(c*x-1)-I*b/d^3*polylog(
2,I*c*x+(-c^2*x^2+1)^(1/2))+2/3*b/d^3/(c^4*x^4-2*c^2*x^2+1)*c^3*x^3*(-c^2*x
^2+1)^(1/2)-1/2*b/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)*c^2*x^2-2/3*I*b/d^3
/(c^4*x^4-2*c^2*x^2+1)*c^4*x^4-3/4*b/d^3/(c^4*x^4-2*c^2*x^2+1)*c*x*(-c^2*x^
2+1)^(1/2)+3/4*b/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)+1/2*I*b*polylog(2,-(
I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^3+b/d^3*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^
(1/2))-2/3*I*b/d^3/(c^4*x^4-2*c^2*x^2+1)-b/d^3*arcsin(c*x)*ln(1+(I*c*x+(-c^
2*x^2+1)^(1/2))^2)+4/3*I*b/d^3/(c^4*x^4-2*c^2*x^2+1)*c^2*x^2+b/d^3*arcsin(c
*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-I*b/d^3*polylog(2,-I*c*x-(-c^2*x^2+1)^(1
/2))
```

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

$$-\frac{1}{4}a\left(\frac{2c^2x^2-3}{c^4d^3x^4-2c^2d^3x^2+d^3}+\frac{2\log(cx+1)}{d^3}+\frac{2\log(cx-1)}{d^3}-\frac{4\log(x)}{d^3}\right)-b\int\frac{\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx}\right.}{c^6d^3x^7-3c^4d^3x^5+3c^2d^3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x/(-c^2*d*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] -1/4*a*((2*c^2*x^2 - 3)/(c^4*d^3*x^4 - 2*c^2*d^3*x^2 + d^3) + 2*log(c*x + 1
)/d^3 + 2*log(c*x - 1)/d^3 - 4*log(x)/d^3) - b*integrate(arctan2(c*x, sqrt(
c*x + 1)*sqrt(-c*x + 1))/(c^6*d^3*x^7 - 3*c^4*d^3*x^5 + 3*c^2*d^3*x^3 - d^3
*x), x)
```

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

$$\int \frac{a+b\,\mathrm{asin}\left(c\,x\right)}{x\,\left(d-c^2\,d\,x^2\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x*(d - c^2*d*x^2)^3),x)
```

```
[Out] int((a + b*asin(c*x))/(x*(d - c^2*d*x^2)^3), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x/(-c**2*d*x**2+d)**3,x)
```

```
[Out] Timed out
```

3.52 $\int \frac{a+b\sin^{-1}(cx)}{x^2(d-c^2dx^2)^3}\,dx$

Optimal. Leaf size=242

$$\frac{15c^2x\left(a+b\sin^{-1}(cx)\right)}{8d^3\left(1-c^2x^2\right)}+\frac{5c^2x\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2}-\frac{a+b\sin^{-1}(cx)}{d^3x\left(1-c^2x^2\right)^2}-\frac{15ic\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{4d^3}-\frac{7}{8d^3\sqrt{1}}$$

```
[Out] -1/12*b*c/d^3/(-c^2*x^2+1)^(3/2)+(-a-b*arcsin(c*x))/d^3/x/(-c^2*x^2+1)^2+5/
4*c^2*x*(a+b*arcsin(c*x))/d^3/(-c^2*x^2+1)^2+15/8*c^2*x*(a+b*arcsin(c*x))/d
^3/(-c^2*x^2+1)-15/4*I*c*(a+b*arcsin(c*x))*arctan(I*c*x+(-c^2*x^2+1)^(1/2))
/d^3-b*c*arctanh((-c^2*x^2+1)^(1/2))/d^3+15/8*I*b*c*polylog(2,-I*(I*c*x+(-c
^2*x^2+1)^(1/2)))/d^3-15/8*I*b*c*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d^
3-7/8*b*c/d^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.24, antiderivative size = 242, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 11, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.440, Rules used = {4701, 4655, 4657, 4181, 2279, 2391, 261, 266, 51, 63, 208}

$$\frac{15ibc\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{8d^3}-\frac{15ibc\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{8d^3}+\frac{15c^2x\left(a+b\sin^{-1}(cx)\right)}{8d^3\left(1-c^2x^2\right)}+\frac{5c^2x\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2}-\frac{a}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x^2*(d - c^2*d*x^2)^3),x]
```

```
[Out] -(b*c)/(12*d^3*(1 - c^2*x^2)^(3/2)) - (7*b*c)/(8*d^3*Sqrt[1 - c^2*x^2]) - (
a + b*ArcSin[c*x])/(d^3*x*(1 - c^2*x^2)^2) + (5*c^2*x*(a + b*ArcSin[c*x]))/
(4*d^3*(1 - c^2*x^2)^2) + (15*c^2*x*(a + b*ArcSin[c*x]))/(8*d^3*(1 - c^2*x^
2)) - (((15*I)/4)*c*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])])/d^3 - (b
*c*ArcTanh[Sqrt[1 - c^2*x^2]])/d^3 + (((15*I)/8)*b*c*PolyLog[2, (-I)*E^(I*A
rcSin[c*x])])/d^3 - (((15*I)/8)*b*c*PolyLog[2, I*E^(I*ArcSin[c*x])])/d^3
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x^2\left(d-c^2dx^2\right)^3}\,dx = -\frac{a+b\sin^{-1}(cx)}{d^3x\left(1-c^2x^2\right)^2} + \left(5c^2\right)\int \frac{a+b\sin^{-1}(cx)}{\left(d-c^2dx^2\right)^3}\,dx + \frac{(bc)\int \frac{1}{x\left(1-c^2x^2\right)^{5/2}}\,dx}{d^3}$$

$$= -\frac{a+b\sin^{-1}(cx)}{d^3x\left(1-c^2x^2\right)^2} + \frac{5c^2x\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2} + \frac{(bc)\,\text{Subst}\left(\int \frac{1}{x\left(1-c^2x\right)^{5/2}}\,dx, x, x^2\right)}{2d^3} - \frac{\left(5bc^3\right)\ldots}{}$$

$$= -\frac{bc}{12d^3\left(1-c^2x^2\right)^{3/2}} - \frac{a+b\sin^{-1}(cx)}{d^3x\left(1-c^2x^2\right)^2} + \frac{5c^2x\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2} + \frac{15c^2x\left(a+b\sin^{-1}(cx)\right)}{8d^3\left(1-c^2x^2\right)}\ldots$$

$$= -\frac{bc}{12d^3\left(1-c^2x^2\right)^{3/2}} - \frac{7bc}{8d^3\sqrt{1-c^2x^2}} - \frac{a+b\sin^{-1}(cx)}{d^3x\left(1-c^2x^2\right)^2} + \frac{5c^2x\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2} + \frac{15c^2x\ldots}{8\ldots}$$

$$= -\frac{bc}{12d^3\left(1-c^2x^2\right)^{3/2}} - \frac{7bc}{8d^3\sqrt{1-c^2x^2}} - \frac{a+b\sin^{-1}(cx)}{d^3x\left(1-c^2x^2\right)^2} + \frac{5c^2x\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2} + \frac{15c^2x\ldots}{8\ldots}$$

$$= -\frac{bc}{12d^3\left(1-c^2x^2\right)^{3/2}} - \frac{7bc}{8d^3\sqrt{1-c^2x^2}} - \frac{a+b\sin^{-1}(cx)}{d^3x\left(1-c^2x^2\right)^2} + \frac{5c^2x\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2} + \frac{15c^2x\ldots}{8\ldots}$$

$$= -\frac{bc}{12d^3\left(1-c^2x^2\right)^{3/2}} - \frac{7bc}{8d^3\sqrt{1-c^2x^2}} - \frac{a+b\sin^{-1}(cx)}{d^3x\left(1-c^2x^2\right)^2} + \frac{5c^2x\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2} + \frac{15c^2x\ldots}{8\ldots}$$

Mathematica [B] time = 1.55, size = 512, normalized size = 2.12

$$-\frac{\frac{14ac^2x}{c^2x^2-1} - \frac{4ac^2x}{\left(c^2x^2-1\right)^2} + 15ac\log(1-cx) - 15ac\log(cx+1) + \frac{16a}{x} - \frac{bc^2x\sqrt{1-c^2x^2}}{3(cx-1)^2} + \frac{bc^2x\sqrt{1-c^2x^2}}{3(cx+1)^2} - \frac{7bc\sqrt{1-c^2x^2}}{cx-1} + \frac{7bc\sqrt{1-c^2\ldots}}{cx+1}\ldots}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x^2*(d - c^2*d*x^2)^3),x]
```

```
[Out] -1/16*((16*a)/x + (2*b*c*Sqrt[1 - c^2*x^2])/(3*(-1 + c*x)^2) - (b*c^2*x*Sqr
t[1 - c^2*x^2])/(3*(-1 + c*x)^2) - (7*b*c*Sqrt[1 - c^2*x^2])/(-1 + c*x) + (
2*b*c*Sqrt[1 - c^2*x^2])/(3*(1 + c*x)^2) + (b*c^2*x*Sqrt[1 - c^2*x^2])/(3*(
1 + c*x)^2) + (7*b*c*Sqrt[1 - c^2*x^2])/(1 + c*x) - (4*a*c^2*x)/(-1 + c^2*x
^2)^2 + (14*a*c^2*x)/(-1 + c^2*x^2) + (15*I)*b*c*Pi*ArcSin[c*x] + (16*b*Arc
Sin[c*x])/x - (b*c*ArcSin[c*x])/(-1 + c*x)^2 + (7*b*c*ArcSin[c*x])/(-1 + c*
x) + (b*c*ArcSin[c*x])/(1 + c*x)^2 + (7*b*c*ArcSin[c*x])/(1 + c*x) + 16*b*c
*ArcTanh[Sqrt[1 - c^2*x^2]] - 15*b*c*Pi*Log[1 - I*E^(I*ArcSin[c*x])] - 30*b
*c*ArcSin[c*x]*Log[1 - I*E^(I*ArcSin[c*x])] - 15*b*c*Pi*Log[1 + I*E^(I*ArcS
in[c*x])] + 30*b*c*ArcSin[c*x]*Log[1 + I*E^(I*ArcSin[c*x])] + 15*a*c*Log[1
- c*x] - 15*a*c*Log[1 + c*x] + 15*b*c*Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]]
+ 15*b*c*Pi*Log[Sin[(Pi + 2*ArcSin[c*x])/4]] - (30*I)*b*c*PolyLog[2, (-I)*E
^(I*ArcSin[c*x])] + (30*I)*b*c*PolyLog[2, I*E^(I*ArcSin[c*x])])/d^3
```

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{b\arcsin(cx)+a}{c^6d^3x^8 - 3\,c^4d^3x^6 + 3\,c^2d^3x^4 - d^3x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*arcsin(c*x))/x^2/(-c^2*d*x^2+d)^3,x, algorithm="fricas")

[Out] integral(-(b*arcsin(c*x) + a)/(c^6*d^3*x^8 - 3*c^4*d^3*x^6 + 3*c^2*d^3*x^4 - d^3*x^2), x)

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

$$\int -\frac{b \arcsin(cx) + a}{\left(c^2dx^2 - d\right)^3 x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*arcsin(c*x))/x^2/(-c^2*d*x^2+d)^3,x, algorithm="giac")

[Out] integrate(-(b*arcsin(c*x) + a)/((c^2*d*x^2 - d)^3*x^2), x)

maple [A] time = 0.33, size = 461, normalized size = 1.90

$$-\frac{ca}{16d^3(cx+1)^2}-\frac{7ca}{16d^3(cx+1)}+\frac{15ca\ln(cx+1)}{16d^3}-\frac{a}{d^3x}+\frac{ca}{16d^3(cx-1)^2}-\frac{7ca}{16d^3(cx-1)}-\frac{15ca\ln(cx-1)}{16d^3}-\frac{15b\,a}{8d^3\left(c^4\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a+b*arcsin(c*x))/x^2/(-c^2*d*x^2+d)^3,x)

[Out] -1/16*c*a/d^3/(c*x+1)^2-7/16*c*a/d^3/(c*x+1)+15/16*c*a/d^3*ln(c*x+1)-a/d^3/x+1/16*c*a/d^3/(c*x-1)^2-7/16*c*a/d^3/(c*x-1)-15/16*c*a/d^3*ln(c*x-1)-15/8*b/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)*c^4*x^3+7/8*b/d^3/(c^4*x^4-2*c^2*x^2+1)*c^3*x^2*(-c^2*x^2+1)^(1/2)+25/8*b/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)*c^2*x-23/24*c*b/d^3/(c^4*x^4-2*c^2*x^2+1)*(-c^2*x^2+1)^(1/2)-b/d^3/(c^4*x^4-2*c^2*x^2+1)/x*arcsin(c*x)-c*b/d^3*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+c*b/d^3*ln(I*c*x+(-c^2*x^2+1)^(1/2)-1)+15/8*I*c*b/d^3*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-15/8*I*c*b/d^3*dilog(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-15/8*c*b/d^3*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+15/8*c*b/d^3*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))

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

$$-\frac{1}{16}a\left(\frac{2\left(15c^4x^4-25c^2x^2+8\right)}{c^4d^3x^5-2c^2d^3x^3+d^3x}-\frac{15c\log(cx+1)}{d^3}+\frac{15c\log(cx-1)}{d^3}\right)+\frac{\left(15\left(c^5x^5-2c^3x^3+cx\right)\arctan\left(cx,\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*arcsin(c*x))/x^2/(-c^2*d*x^2+d)^3,x, algorithm="maxima")

[Out] -1/16*a*(2*(15*c^4*x^4 - 25*c^2*x^2 + 8)/(c^4*d^3*x^5 - 2*c^2*d^3*x^3 + d^3*x) - 15*c*log(c*x + 1)/d^3 + 15*c*log(c*x - 1)/d^3) + 1/16*(15*(c^5*x^5 - 2*c^3*x^3 + c*x)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(c*x + 1) - 15*(c^5*x^5 - 2*c^3*x^3 + c*x)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(-c*x + 1) - 2*(15*c^4*x^4 - 25*c^2*x^2 + 8)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + 16*(c^4*d^3*x^5 - 2*c^2*d^3*x^3 + d^3*x)*integrate(-1/16*(30*c^5*x^4 - 50*c^3*x^2 - 15*(c^6*x^5 - 2*c^4*x^3 + c^2*x)*log(c*x + 1) + 15*(c^6*x^5 - 2*c^4*x^3 + c^2*x)*log(-c*x + 1) + 16*c)*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c^6*d^3*x^7 - 3*c^4*d^3*x^5 + 3*c^2*d^3*x^3 - d^3*x), x))*b/(c^4*d^3*x^5 - 2*c^2*d^3*x^3 + d^3*x)

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

$$\int \frac{a+b\,\mathrm{asin}\left(c\,x\right)}{x^2\,{\left(d-c^2\,d\,x^2\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x^2*(d - c^2*d*x^2)^3),x)
```

```
[Out] int((a + b*asin(c*x))/(x^2*(d - c^2*d*x^2)^3), x)
```

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

$$-\frac{\int \frac{a}{c^6x^8-3c^4x^6+3c^2x^4-x^2}\,dx+\int \frac{b\,\mathrm{asin}\,(cx)}{c^6x^8-3c^4x^6+3c^2x^4-x^2}\,dx}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x**2/(-c**2*d*x**2+d)**3,x)
```

```
[Out] -(Integral(a/(c**6*x**8 - 3*c**4*x**6 + 3*c**2*x**4 - x**2), x) + Integral(
b*asin(c*x)/(c**6*x**8 - 3*c**4*x**6 + 3*c**2*x**4 - x**2), x))/d**3
```

3.53 $\int \frac{a+b\sin^{-1}(cx)}{x^3\left(d-c^2dx^2\right)^3}\,dx$

Optimal. Leaf size=248

$$\frac{3c^2\left(a+b\sin^{-1}(cx)\right)}{2d^3\left(1-c^2x^2\right)}+\frac{3c^2\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2}-\frac{a+b\sin^{-1}(cx)}{2d^3x^2\left(1-c^2x^2\right)^2}-\frac{6c^2\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^3}+\frac{3ib}{\ldots}$$

```
[Out] -1/2*b*c/d^3/x/(-c^2*x^2+1)^(3/2)+5/12*b*c^3*x/d^3/(-c^2*x^2+1)^(3/2)+3/4*c
^2*(a+b*arcsin(c*x))/d^3/(-c^2*x^2+1)^2+1/2*(-a-b*arcsin(c*x))/d^3/x^2/(-c^
2*x^2+1)^2+3/2*c^2*(a+b*arcsin(c*x))/d^3/(-c^2*x^2+1)-6*c^2*(a+b*arcsin(c*x
))*arctanh((I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^3+3/2*I*b*c^2*polylog(2,-(I*c*x+
(-c^2*x^2+1)^(1/2))^2)/d^3-3/2*I*b*c^2*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))
^2)/d^3-2/3*b*c^3*x/d^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.35, antiderivative size = 248, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {4701, 4705, 4679, 4419, 4183, 2279, 2391, 191, 192, 271}

$$\frac{3ibc^2\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{2d^3}-\frac{3ibc^2\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)}{2d^3}+\frac{3c^2\left(a+b\sin^{-1}(cx)\right)}{2d^3\left(1-c^2x^2\right)}+\frac{3c^2\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2}-\ldots$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x^3*(d - c^2*d*x^2)^3),x]
```

```
[Out] -(b*c)/(2*d^3*x*(1 - c^2*x^2)^(3/2)) + (5*b*c^3*x)/(12*d^3*(1 - c^2*x^2)^(3
/2)) - (2*b*c^3*x)/(3*d^3*Sqrt[1 - c^2*x^2]) + (3*c^2*(a + b*ArcSin[c*x]))/
(4*d^3*(1 - c^2*x^2)^2) - (a + b*ArcSin[c*x])/(2*d^3*x^2*(1 - c^2*x^2)^2) +
 (3*c^2*(a + b*ArcSin[c*x]))/(2*d^3*(1 - c^2*x^2)) - (6*c^2*(a + b*ArcSin[c
*x])*ArcTanh[E^((2*I)*ArcSin[c*x])])/d^3 + (((3*I)/2)*b*c^2*PolyLog[2, -E^(
(2*I)*ArcSin[c*x])])/d^3 - (((3*I)/2)*b*c^2*PolyLog[2, E^((2*I)*ArcSin[c*x]
)])/d^3
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 192

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b, n, p}, x] && ILtQ[Simplify[1/n + p + 1], 0]
 && NeQ[p, -1]
```

Rule 271

```
Int[(x_)^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x^(m + 1)*(
a + b*x^n)^(p + 1))/(a*(m + 1)), x] - Dist[(b*(m + n*(p + 1) + 1))/(a*(m +
1)), Int[x^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, m, n, p}, x] && IL
tQ[Simplify[(m + 1)/n + p + 1], 0] && NeQ[m, -1]
```

Rule 2279

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

```
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4419

```
Int[Csc[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csc[2*a + 2*b*x]^n,
 x], x] /; FreeQ[{a, b, c, d, m}, x] && IntegerQ[n] && RationalQ[m]
```

Rule 4679

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((x_)*((d_) + (e_.)*(x_)^2)),
x_Symbol] :> Dist[1/d, Subst[Int[(a + b*x)^n/(Cos[x]*Sin[x]), x], x, ArcSin
[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4705

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> -Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a +
b*ArcSin[c*x])^n)/(2*d*f*(p + 1)), x] + (Dist[(m + 2*p + 3)/(2*d*(p + 1)),
Int[(f*x)^m*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[(b*c*n
*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*f*(p + 1)*(1 - c^2*x^2)^FracPart[
p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
0] && LtQ[p, -1] &&  !GtQ[m, 1] && (IntegerQ[m] || IntegerQ[p] || EqQ[n, 1]
)
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x^3\left(d-c^2dx^2\right)^3}\,dx = -\frac{a+b\sin^{-1}(cx)}{2d^3x^2\left(1-c^2x^2\right)^2} + \left(3c^2\right)\int \frac{a+b\sin^{-1}(cx)}{x\left(d-c^2dx^2\right)^3}\,dx + \frac{(bc)\int \frac{1}{x^2\left(1-c^2x^2\right)^{5/2}}\,dx}{2d^3}$$

$$= -\frac{bc}{2d^3x\left(1-c^2x^2\right)^{3/2}} + \frac{3c^2\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2} - \frac{a+b\sin^{-1}(cx)}{2d^3x^2\left(1-c^2x^2\right)^2} - \frac{\left(3bc^3\right)\int \frac{1}{\left(1-c^2x^2\right)^{5/2}}}{4d^3}$$

$$= -\frac{bc}{2d^3x\left(1-c^2x^2\right)^{3/2}} + \frac{5bc^3x}{12d^3\left(1-c^2x^2\right)^{3/2}} + \frac{3c^2\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2} - \frac{a+b\sin^{-1}(cx)}{2d^3x^2\left(1-c^2x^2\right)^2}$$

$$= -\frac{bc}{2d^3x\left(1-c^2x^2\right)^{3/2}} + \frac{5bc^3x}{12d^3\left(1-c^2x^2\right)^{3/2}} - \frac{2bc^3x}{3d^3\sqrt{1-c^2x^2}} + \frac{3c^2\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2} -$$

$$= -\frac{bc}{2d^3x\left(1-c^2x^2\right)^{3/2}} + \frac{5bc^3x}{12d^3\left(1-c^2x^2\right)^{3/2}} - \frac{2bc^3x}{3d^3\sqrt{1-c^2x^2}} + \frac{3c^2\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2} -$$

$$= -\frac{bc}{2d^3x\left(1-c^2x^2\right)^{3/2}} + \frac{5bc^3x}{12d^3\left(1-c^2x^2\right)^{3/2}} - \frac{2bc^3x}{3d^3\sqrt{1-c^2x^2}} + \frac{3c^2\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2} -$$

$$= -\frac{bc}{2d^3x\left(1-c^2x^2\right)^{3/2}} + \frac{5bc^3x}{12d^3\left(1-c^2x^2\right)^{3/2}} - \frac{2bc^3x}{3d^3\sqrt{1-c^2x^2}} + \frac{3c^2\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2} -$$

$$= -\frac{bc}{2d^3x\left(1-c^2x^2\right)^{3/2}} + \frac{5bc^3x}{12d^3\left(1-c^2x^2\right)^{3/2}} - \frac{2bc^3x}{3d^3\sqrt{1-c^2x^2}} + \frac{3c^2\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2} -$$

Mathematica [A] time = 1.69, size = 256, normalized size = 1.03

$$-\frac{\frac{12ac^2}{c^2x^2-1} - \frac{3ac^2}{\left(c^2x^2-1\right)^2} + 18ac^2\log\left(1-c^2x^2\right) - 36ac^2\log(x) + \frac{6a}{x^2} + bc^2\left(\frac{14cx}{\sqrt{1-c^2x^2}} + \frac{cx}{\left(1-c^2x^2\right)^{3/2}} + \frac{6\sqrt{1-c^2x^2}}{cx} + \frac{12\sin^{-1}(c}{c^2x^2-1}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x^3*(d - c^2*d*x^2)^3),x]
```

```
[Out] -1/12*((6*a)/x^2 - (3*a*c^2)/(-1 + c^2*x^2)^2 + (12*a*c^2)/(-1 + c^2*x^2) -
 36*a*c^2*Log[x] + 18*a*c^2*Log[1 - c^2*x^2] + b*c^2*((c*x)/(1 - c^2*x^2)^(
3/2) + (14*c*x)/Sqrt[1 - c^2*x^2] + (6*Sqrt[1 - c^2*x^2])/(c*x) + (6*ArcSin
[c*x])/(c^2*x^2) - (3*ArcSin[c*x])/(-1 + c^2*x^2)^2 + (12*ArcSin[c*x])/(-1
+ c^2*x^2) - 36*ArcSin[c*x]*Log[1 - E^((2*I)*ArcSin[c*x])] + 36*ArcSin[c*x]
*Log[1 + E^((2*I)*ArcSin[c*x])] - (18*I)*PolyLog[2, -E^((2*I)*ArcSin[c*x])]
 + (18*I)*PolyLog[2, E^((2*I)*ArcSin[c*x])]))/d^3
```

fricas [F] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{b\arcsin\left(cx\right) + a}{c^6d^3x^9 - 3\,c^4d^3x^7 + 3\,c^2d^3x^5 - d^3x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(-c^2*d*x^2+d)^3,x, algorithm="fricas")
```

```
[Out] integral(-(b*arcsin(c*x) + a)/(c^6*d^3*x^9 - 3*c^4*d^3*x^7 + 3*c^2*d^3*x^5
- d^3*x^3), x)
```

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

$$\int -\frac{b \arcsin(cx) + a}{\left(c^2dx^2 - d\right)^3 x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(-c^2*d*x^2+d)^3,x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)/((c^2*d*x^2 - d)^3*x^3), x)
```

maple [B] time = 0.41, size = 635, normalized size = 2.56

$$\frac{c^2a}{16d^3(cx+1)^2}+\frac{9c^2a}{16d^3(cx+1)}-\frac{3c^2a\ln(cx+1)}{2d^3}-\frac{a}{2d^3x^2}+\frac{3c^2a\ln(cx)}{d^3}+\frac{c^2a}{16d^3(cx-1)^2}-\frac{9c^2a}{16d^3(cx-1)}-\frac{3c^2a\ln(cx-}{2d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x^3/(-c^2*d*x^2+d)^3,x)
```

```
[Out] 1/16*c^2*a/d^3/(c*x+1)^2+9/16*c^2*a/d^3/(c*x+1)-3/2*c^2*a/d^3*ln(c*x+1)-1/2
*a/d^3/x^2+3*c^2*a/d^3*ln(c*x)+1/16*c^2*a/d^3/(c*x-1)^2-9/16*c^2*a/d^3/(c*x
-1)-3/2*c^2*a/d^3*ln(c*x-1)-2/3*I*c^6*b/d^3/(c^4*x^4-2*c^2*x^2+1)*x^4+2/3*c
^5*b/d^3/(c^4*x^4-2*c^2*x^2+1)*x^3*(-c^2*x^2+1)^(1/2)-3/2*c^4*b/d^3/(c^4*x^
4-2*c^2*x^2+1)*arcsin(c*x)*x^2-3*I*c^2*b/d^3*polylog(2,-I*c*x-(-c^2*x^2+1)^
(1/2))-1/4*c^3*b/d^3/(c^4*x^4-2*c^2*x^2+1)*x*(-c^2*x^2+1)^(1/2)+9/4*c^2*b/d
^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)-2/3*I*c^2*b/d^3/(c^4*x^4-2*c^2*x^2+1)-
1/2*c*b/d^3/(c^4*x^4-2*c^2*x^2+1)/x*(-c^2*x^2+1)^(1/2)-1/2*b/d^3/(c^4*x^4-2
*c^2*x^2+1)/x^2*arcsin(c*x)+3*c^2*b/d^3*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)
^(1/2))+4/3*I*c^4*b/d^3/(c^4*x^4-2*c^2*x^2+1)*x^2-3*c^2*b/d^3*arcsin(c*x)*l
n(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)-3*I*c^2*b/d^3*polylog(2,I*c*x+(-c^2*x^2+1
)^(1/2))+3*c^2*b/d^3*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+3/2*I*b*c^2
*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^3
```

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

$$-\frac{1}{4}a\left(\frac{6\,c^4x^4 - 9\,c^2x^2 + 2}{c^4d^3x^6 - 2\,c^2d^3x^4 + d^3x^2} + \frac{6\,c^2\log(cx+1)}{d^3} + \frac{6\,c^2\log(cx-1)}{d^3} - \frac{12\,c^2\log(x)}{d^3}\right) - b\int \frac{\arctan\left(cx, \sqrt{cx+1}\right.}{c^6d^3x^9 - 3\,c^4d^3x^7 + 3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(-c^2*d*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] -1/4*a*((6*c^4*x^4 - 9*c^2*x^2 + 2)/(c^4*d^3*x^6 - 2*c^2*d^3*x^4 + d^3*x^2)
 + 6*c^2*log(c*x + 1)/d^3 + 6*c^2*log(c*x - 1)/d^3 - 12*c^2*log(x)/d^3) - b
*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^6*d^3*x^9 - 3*c^4*
d^3*x^7 + 3*c^2*d^3*x^5 - d^3*x^3), x)
```

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

$$\int \frac{a + b\,\mathrm{asin}(c\,x)}{x^3\left(d - c^2\,d\,x^2\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x^3*(d - c^2*d*x^2)^3),x)
```

```
[Out] int((a + b*asin(c*x))/(x^3*(d - c^2*d*x^2)^3), x)
```

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

$$-\frac{\int \frac{a}{c^6x^9-3c^4x^7+3c^2x^5-x^3}\,dx + \int \frac{b\,\mathrm{asin}\,(cx)}{c^6x^9-3c^4x^7+3c^2x^5-x^3}\,dx}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x**3/(-c**2*d*x**2+d)**3,x)
```

```
[Out] -(Integral(a/(c**6*x**9 - 3*c**4*x**7 + 3*c**2*x**5 - x**3), x) + Integral(
b*asin(c*x)/(c**6*x**9 - 3*c**4*x**7 + 3*c**2*x**5 - x**3), x))/d**3
```

3.54 $\int \frac{a+b\sin^{-1}(cx)}{x^4\left(d-c^2dx^2\right)^3}\,dx$

Optimal. Leaf size=317

$$-\frac{35ic^3\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{4d^3}-\frac{7c^2\left(a+b\sin^{-1}(cx)\right)}{3d^3x\left(1-c^2x^2\right)^2}-\frac{a+b\sin^{-1}(cx)}{3d^3x^3\left(1-c^2x^2\right)^2}+\frac{35c^4x\left(a+b\sin^{-1}(cx)\right)}{8d^3\left(1-c^2x^2\right)}+\frac{35}{}$$

```
[Out] 1/12*b*c^3/d^3/(-c^2*x^2+1)^(3/2)-1/6*b*c/d^3/x^2/(-c^2*x^2+1)^(3/2)+1/3*(-
a-b*arcsin(c*x))/d^3/x^3/(-c^2*x^2+1)^2-7/3*c^2*(a+b*arcsin(c*x))/d^3/x/(-c
^2*x^2+1)^2+35/12*c^4*x*(a+b*arcsin(c*x))/d^3/(-c^2*x^2+1)^2+35/8*c^4*x*(a+
b*arcsin(c*x))/d^3/(-c^2*x^2+1)-35/4*I*c^3*(a+b*arcsin(c*x))*arctan(I*c*x+(
-c^2*x^2+1)^(1/2))/d^3-19/6*b*c^3*arctanh((-c^2*x^2+1)^(1/2))/d^3+35/8*I*b*
c^3*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d^3-35/8*I*b*c^3*polylog(2,I*(
I*c*x+(-c^2*x^2+1)^(1/2)))/d^3-29/24*b*c^3/d^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.38, antiderivative size = 369, normalized size of antiderivative = 1.16, number of steps used = 23, number of rules used = 11, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.440, Rules used = {4701, 4655, 4657, 4181, 2279, 2391, 261, 266, 51, 63, 208}

$$\frac{35ibc^3\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{8d^3}-\frac{35ibc^3\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{8d^3}+\frac{35c^4x\left(a+b\sin^{-1}(cx)\right)}{8d^3\left(1-c^2x^2\right)}+\frac{35c^4x\left(a+b\sin^{-1}(cx)\right)}{12d^3\left(1-c^2x^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x^4*(d - c^2*d*x^2)^3),x]
```

```
[Out] (-7*b*c^3)/(36*d^3*(1 - c^2*x^2)^(3/2)) + (b*c)/(9*d^3*x^2*(1 - c^2*x^2)^(3
/2)) - (49*b*c^3)/(24*d^3*Sqrt[1 - c^2*x^2]) + (5*b*c)/(9*d^3*x^2*Sqrt[1 -
c^2*x^2]) - (5*b*c*Sqrt[1 - c^2*x^2])/(6*d^3*x^2) - (a + b*ArcSin[c*x])/(3*
d^3*x^3*(1 - c^2*x^2)^2) - (7*c^2*(a + b*ArcSin[c*x]))/(3*d^3*x*(1 - c^2*x^
2)^2) + (35*c^4*x*(a + b*ArcSin[c*x]))/(12*d^3*(1 - c^2*x^2)^2) + (35*c^4*x
*(a + b*ArcSin[c*x]))/(8*d^3*(1 - c^2*x^2)) - (((35*I)/4)*c^3*(a + b*ArcSin
[c*x])*ArcTan[E^(I*ArcSin[c*x])])/d^3 - (19*b*c^3*ArcTanh[Sqrt[1 - c^2*x^2]
])/(6*d^3) + (((35*I)/8)*b*c^3*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/d^3 - ((
(35*I)/8)*b*c^3*PolyLog[2, I*E^(I*ArcSin[c*x])])/d^3
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
```

```
0] && LtQ[m, -1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x^4\left(d-c^2dx^2\right)^3}\,dx = -\frac{a+b\sin^{-1}(cx)}{3d^3x^3\left(1-c^2x^2\right)^2}+\frac{1}{3}\left(7c^2\right)\int \frac{a+b\sin^{-1}(cx)}{x^2\left(d-c^2dx^2\right)^3}\,dx+\frac{(bc)\int \frac{1}{x^3\left(1-c^2x^2\right)^{5/2}}\,dx}{3d^3}$$

$$= -\frac{a+b\sin^{-1}(cx)}{3d^3x^3\left(1-c^2x^2\right)^2}-\frac{7c^2\left(a+b\sin^{-1}(cx)\right)}{3d^3x\left(1-c^2x^2\right)^2}+\frac{1}{3}\left(35c^4\right)\int \frac{a+b\sin^{-1}(cx)}{\left(d-c^2dx^2\right)^3}\,dx+\frac{(bc)\,\mathrm{Subs}}{}$$

$$= \frac{bc}{9d^3x^2\left(1-c^2x^2\right)^{3/2}}-\frac{a+b\sin^{-1}(cx)}{3d^3x^3\left(1-c^2x^2\right)^2}-\frac{7c^2\left(a+b\sin^{-1}(cx)\right)}{3d^3x\left(1-c^2x^2\right)^2}+\frac{35c^4x\left(a+b\sin^{-1}(cx)\right)}{12d^3\left(1-c^2x^2\right)^2}$$

$$= -\frac{7bc^3}{36d^3\left(1-c^2x^2\right)^{3/2}}+\frac{bc}{9d^3x^2\left(1-c^2x^2\right)^{3/2}}+\frac{5bc}{9d^3x^2\sqrt{1-c^2x^2}}-\frac{a+b\sin^{-1}(cx)}{3d^3x^3\left(1-c^2x^2\right)^2}-\frac{7c^2(}{3a}$$

$$= -\frac{7bc^3}{36d^3\left(1-c^2x^2\right)^{3/2}}+\frac{bc}{9d^3x^2\left(1-c^2x^2\right)^{3/2}}-\frac{49bc^3}{24d^3\sqrt{1-c^2x^2}}+\frac{5bc}{9d^3x^2\sqrt{1-c^2x^2}}-\frac{5bc\sqrt{1}}{6d}$$

$$= -\frac{7bc^3}{36d^3\left(1-c^2x^2\right)^{3/2}}+\frac{bc}{9d^3x^2\left(1-c^2x^2\right)^{3/2}}-\frac{49bc^3}{24d^3\sqrt{1-c^2x^2}}+\frac{5bc}{9d^3x^2\sqrt{1-c^2x^2}}-\frac{5bc\sqrt{1}}{6d}$$

$$= -\frac{7bc^3}{36d^3\left(1-c^2x^2\right)^{3/2}}+\frac{bc}{9d^3x^2\left(1-c^2x^2\right)^{3/2}}-\frac{49bc^3}{24d^3\sqrt{1-c^2x^2}}+\frac{5bc}{9d^3x^2\sqrt{1-c^2x^2}}-\frac{5bc\sqrt{1}}{6d}$$

$$= -\frac{7bc^3}{36d^3\left(1-c^2x^2\right)^{3/2}}+\frac{bc}{9d^3x^2\left(1-c^2x^2\right)^{3/2}}-\frac{49bc^3}{24d^3\sqrt{1-c^2x^2}}+\frac{5bc}{9d^3x^2\sqrt{1-c^2x^2}}-\frac{5bc\sqrt{1}}{6d}$$

Mathematica [A] time = 1.66, size = 587, normalized size = 1.85

$$-\frac{105ac^3\log(1-cx)-105ac^3\log(cx+1)+\frac{144ac^2}{x}+\frac{66ac^4x}{c^2x^2-1}-\frac{12ac^4x}{\left(c^2x^2-1\right)^2}+\frac{16a}{x^3}-210ibc^3\mathrm{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)+210ibc^3\mathrm{L}}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x^4*(d - c^2*d*x^2)^3),x]
```

```
[Out] -1/48*((16*a)/x^3 + (144*a*c^2)/x + (8*b*c*Sqrt[1 - c^2*x^2])/x^2 + (2*b*c^
3*Sqrt[1 - c^2*x^2])/(-1 + c*x)^2 - (b*c^4*x*Sqrt[1 - c^2*x^2])/(-1 + c*x)^
2 - (33*b*c^3*Sqrt[1 - c^2*x^2])/(-1 + c*x) + (2*b*c^3*Sqrt[1 - c^2*x^2])/(
1 + c*x)^2 + (b*c^4*x*Sqrt[1 - c^2*x^2])/(1 + c*x)^2 + (33*b*c^3*Sqrt[1 - c
^2*x^2])/(1 + c*x) - (12*a*c^4*x)/(-1 + c^2*x^2)^2 + (66*a*c^4*x)/(-1 + c^2
*x^2) + (105*I)*b*c^3*Pi*ArcSin[c*x] + (16*b*ArcSin[c*x])/x^3 + (144*b*c^2*
ArcSin[c*x])/x - (3*b*c^3*ArcSin[c*x])/(-1 + c*x)^2 + (33*b*c^3*ArcSin[c*x]
)/(-1 + c*x) + (3*b*c^3*ArcSin[c*x])/(1 + c*x)^2 + (33*b*c^3*ArcSin[c*x])/(
1 + c*x) + 152*b*c^3*ArcTanh[Sqrt[1 - c^2*x^2]] - 105*b*c^3*Pi*Log[1 - I*E^
(I*ArcSin[c*x])] - 210*b*c^3*ArcSin[c*x]*Log[1 - I*E^(I*ArcSin[c*x])] - 105
```

```
*b*c^3*Pi*Log[1 + I*E^(I*ArcSin[c*x])] + 210*b*c^3*ArcSin[c*x]*Log[1 + I*E^
(I*ArcSin[c*x])] + 105*a*c^3*Log[1 - c*x] - 105*a*c^3*Log[1 + c*x] + 105*b*
c^3*Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] + 105*b*c^3*Pi*Log[Sin[(Pi + 2*Arc
Sin[c*x])/4]] - (210*I)*b*c^3*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] + (210*I)*
b*c^3*PolyLog[2, I*E^(I*ArcSin[c*x])])/d^3
```

fricas [F] time = 0.57, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{b \arcsin\left(cx\right) + a}{c^6 d^3 x^{10} - 3\,c^4 d^3 x^8 + 3\,c^2 d^3 x^6 - d^3 x^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^4/(-c^2*d*x^2+d)^3,x, algorithm="fricas")
```

```
[Out] integral(-(b*arcsin(c*x) + a)/(c^6*d^3*x^10 - 3*c^4*d^3*x^8 + 3*c^2*d^3*x^6
 - d^3*x^4), x)
```

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

$$\int -\frac{b \arcsin\left(cx\right) + a}{\left(c^2 dx^2 - d\right)^3 x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^4/(-c^2*d*x^2+d)^3,x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)/((c^2*d*x^2 - d)^3*x^4), x)
```

maple [A] time = 0.42, size = 576, normalized size = 1.82

$$-\frac{c^3 a}{16 d^3 \left(cx+1\right)^2}-\frac{11 c^3 a}{16 d^3 \left(cx+1\right)}+\frac{35 c^3 a \ln\left(cx+1\right)}{16 d^3}-\frac{a}{3 d^3 x^3}-\frac{3 c^2 a}{d^3 x}+\frac{c^3 a}{16 d^3 \left(cx-1\right)^2}-\frac{11 c^3 a}{16 d^3 \left(cx-1\right)}-\frac{35 c^3 a \ln\left(cx-\right.}{16 d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x^4/(-c^2*d*x^2+d)^3,x)
```

```
[Out] -1/16*c^3*a/d^3/(c*x+1)^2-11/16*c^3*a/d^3/(c*x+1)+35/16*c^3*a/d^3*ln(c*x+1)
-1/3*a/d^3/x^3-3*c^2*a/d^3/x+1/16*c^3*a/d^3/(c*x-1)^2-11/16*c^3*a/d^3/(c*x-
1)-35/16*c^3*a/d^3*ln(c*x-1)-35/8*c^6*b/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*
x)*x^3+29/24*c^5*b/d^3/(c^4*x^4-2*c^2*x^2+1)*x^2*(-c^2*x^2+1)^(1/2)+175/24*
c^4*b/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)*x-9/8*c^3*b/d^3/(c^4*x^4-2*c^2*
x^2+1)*(-c^2*x^2+1)^(1/2)-7/3*c^2*b/d^3/(c^4*x^4-2*c^2*x^2+1)/x*arcsin(c*x)
-1/6*c*b/d^3/(c^4*x^4-2*c^2*x^2+1)/x^2*(-c^2*x^2+1)^(1/2)-1/3*b/d^3/(c^4*x^
4-2*c^2*x^2+1)/x^3*arcsin(c*x)-19/6*c^3*b/d^3*ln(1+I*c*x+(-c^2*x^2+1)^(1/2)
)+19/6*c^3*b/d^3*ln(I*c*x+(-c^2*x^2+1)^(1/2)-1)+35/8*c^3*b/d^3*arcsin(c*x)*
ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-35/8*I*c^3*b/d^3*dilog(1-I*(I*c*x+(-c^2*
x^2+1)^(1/2)))-35/8*c^3*b/d^3*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2))
)+35/8*I*c^3*b/d^3*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))
```

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

$$\frac{1}{48}\,a\left(\frac{105\,c^3 \log\left(cx+1\right)}{d^3}-\frac{105\,c^3 \log\left(cx-1\right)}{d^3}-\frac{2\left(105\,c^6 x^6 - 175\,c^4 x^4 + 56\,c^2 x^2 + 8\right)}{c^4 d^3 x^7 - 2\,c^2 d^3 x^5 + d^3 x^3}\right)+\frac{\left(105\left(c^7 x^7 - 2\,c^5 x^5 + \right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^4/(-c^2*d*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] 1/48*a*(105*c^3*log(c*x + 1)/d^3 - 105*c^3*log(c*x - 1)/d^3 - 2*(105*c^6*x^
6 - 175*c^4*x^4 + 56*c^2*x^2 + 8)/(c^4*d^3*x^7 - 2*c^2*d^3*x^5 + d^3*x^3))
+ 1/48*(105*(c^7*x^7 - 2*c^5*x^5 + c^3*x^3)*arctan2(c*x, sqrt(c*x + 1)*sqrt
(-c*x + 1))*log(c*x + 1) - 105*(c^7*x^7 - 2*c^5*x^5 + c^3*x^3)*arctan2(c*x,
 sqrt(c*x + 1)*sqrt(-c*x + 1))*log(-c*x + 1) - 2*(105*c^6*x^6 - 175*c^4*x^4
 + 56*c^2*x^2 + 8)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + 48*(c^4*d^3
*x^7 - 2*c^2*d^3*x^5 + d^3*x^3)*integrate(-1/48*(210*c^7*x^6 - 350*c^5*x^4
+ 112*c^3*x^2 - 105*(c^8*x^7 - 2*c^6*x^5 + c^4*x^3)*log(c*x + 1) + 105*(c^8
*x^7 - 2*c^6*x^5 + c^4*x^3)*log(-c*x + 1) + 16*c)*sqrt(c*x + 1)*sqrt(-c*x +
 1)/(c^6*d^3*x^9 - 3*c^4*d^3*x^7 + 3*c^2*d^3*x^5 - d^3*x^3), x))*b/(c^4*d^3
*x^7 - 2*c^2*d^3*x^5 + d^3*x^3)
```

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

$$\int \frac{a + b\,\mathrm{asin}\left(c\,x\right)}{x^4\,{\left(d - c^2\,d\,x^2\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x^4*(d - c^2*d*x^2)^3),x)
```

```
[Out] int((a + b*asin(c*x))/(x^4*(d - c^2*d*x^2)^3), x)
```

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

$$-\frac{\int \frac{a}{c^{6}x^{10}-3c^{4}x^{8}+3c^{2}x^{6}-x^{4}}\,dx + \int \frac{b\,\mathrm{asin}\,(cx)}{c^{6}x^{10}-3c^{4}x^{8}+3c^{2}x^{6}-x^{4}}\,dx}{d^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x**4/(-c**2*d*x**2+d)**3,x)
```

```
[Out] -(Integral(a/(c**6*x**10 - 3*c**4*x**8 + 3*c**2*x**6 - x**4), x) + Integral
(b*asin(c*x)/(c**6*x**10 - 3*c**4*x**8 + 3*c**2*x**6 - x**4), x))/d**3
```

3.55 $\int x^4\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=262

$$\frac{1}{6}x^5\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)-\frac{x^3\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)}{24c^2}+\frac{\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{32bc^5\sqrt{1-c^2x^2}}-\frac{x\sqrt{d-c^2d}}{}$$

```
[Out] -1/16*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c^4-1/24*x^3*(a+b*arcsin(c*x
))*(-c^2*d*x^2+d)^(1/2)/c^2+1/6*x^5*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))+
1/32*b*x^2*(-c^2*d*x^2+d)^(1/2)/c^3/(-c^2*x^2+1)^(1/2)+1/96*b*x^4*(-c^2*d*x
^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-1/36*b*c*x^6*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^
2+1)^(1/2)+1/32*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/b/c^5/(-c^2*x^2+1)
^(1/2)
```

Rubi [A] time = 0.28, antiderivative size = 262, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = $\{4697, 4707, 4641, 30\}$

$$\frac{1}{6}x^5\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)-\frac{x^3\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)}{24c^2}-\frac{x\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)}{16c^4}+\frac{\sqrt{d-c^2d}}{32}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*x^2*Sqrt[d - c^2*d*x^2])/(32*c^3*Sqrt[1 - c^2*x^2]) + (b*x^4*Sqrt[d - c^
2*d*x^2])/(96*c*Sqrt[1 - c^2*x^2]) - (b*c*x^6*Sqrt[d - c^2*d*x^2])/(36*Sqrt
[1 - c^2*x^2]) - (x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(16*c^4) - (x^
3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(24*c^2) + (x^5*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x]))/6 + (Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(3
2*b*c^5*Sqrt[1 - c^2*x^2])
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
```

```
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int x^4\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)dx = \frac{1}{6}x^5\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{\sqrt{d-c^2dx^2}\int\frac{x^4\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}dx}{6\sqrt{1-c^2x^2}}-\frac{(b$$

$$=-\frac{bcx^6\sqrt{d-c^2dx^2}}{36\sqrt{1-c^2x^2}}-\frac{x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{24c^2}+\frac{1}{6}x^5\sqrt{d-c^2dx^2}\,($$

$$=\frac{bx^4\sqrt{d-c^2dx^2}}{96c\sqrt{1-c^2x^2}}-\frac{bcx^6\sqrt{d-c^2dx^2}}{36\sqrt{1-c^2x^2}}-\frac{x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{16c^4}-\frac{x}{}$$

$$=\frac{bx^2\sqrt{d-c^2dx^2}}{32c^3\sqrt{1-c^2x^2}}+\frac{bx^4\sqrt{d-c^2dx^2}}{96c\sqrt{1-c^2x^2}}-\frac{bcx^6\sqrt{d-c^2dx^2}}{36\sqrt{1-c^2x^2}}-\frac{x\sqrt{d-c^2dx^2}\,(a}{16c}$$

Mathematica [A] time = 0.15, size = 169, normalized size = 0.65

$$\frac{\sqrt{d-c^2dx^2}\left(9a^2+6abcx\sqrt{1-c^2x^2}\left(8c^4x^4-2c^2x^2-3\right)+6b\sin^{-1}(cx)\left(3a+bcx\sqrt{1-c^2x^2}\left(8c^4x^4-2c^2x^2-3\right)\right)\right.}{288bc^5\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(9*a^2 + b^2*c^2*x^2*(9 + 3*c^2*x^2 - 8*c^4*x^4) + 6*a
*b*c*x*Sqrt[1 - c^2*x^2]*(-3 - 2*c^2*x^2 + 8*c^4*x^4) + 6*b*(3*a + b*c*x*Sq
rt[1 - c^2*x^2]*(-3 - 2*c^2*x^2 + 8*c^4*x^4))*ArcSin[c*x] + 9*b^2*ArcSin[c*
x]^2))/(288*b*c^5*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(bx^4\arcsin(cx)+ax^4\right)\sqrt{-c^2dx^2+d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral((b*x^4*arcsin(c*x) + a*x^4)*sqrt(-c^2*d*x^2 + d), x)
```

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

$$\int\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)x^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] integrate(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)*x^4, x)
```

maple [C] time = 0.71, size = 1690, normalized size = 6.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] -1/192*I*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))/c^4/(c^2*x^2-1)*(-c^2*
x^2+1)^(1/2)*arcsin(c*x)*x-1/64*I*b*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x
))/c^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x-1/6*b*(-d*(c^2*x^2-1))^
(1/2)/(c^2*x^2-1)*arcsin(c*x)*x^5+3/512*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcs
in(c*x))/c^5/(c^2*x^2-1)+1/288*b*(-d*(c^2*x^2-1))^(1/2)/c^5/(c^2*x^2-1)*(-c
^2*x^2+1)^(1/2)+7/4608*b*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsin(c*x))/c^5/(c^2
*x^2-1)-1/36*I*b*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)*x^5-1/6*a*x^3*(-c^2*d*x
^2+d)^(3/2)/c^2/d-1/8*a/c^4*x*(-c^2*d*x^2+d)^(3/2)/d+1/16*a/c^4*d/(c^2*d)^(
1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+1/16*a/c^4*x*(-c^2*d*x^2+
d)^(1/2)+1/12*b*(-d*(c^2*x^2-1))^(1/2)/c^2/(c^2*x^2-1)*arcsin(c*x)*x^3+1/19
2*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))/c^5/(c^2*x^2-1)*arcsin(c*x)-3
/512*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))/c^3/(c^2*x^2-1)*x^2+1/64*b
*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))/c^5/(c^2*x^2-1)*arcsin(c*x)-1/32
*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^5/(c^2*x^2-1)*arcsin(c*x)^2+
1/12*b*(-d*(c^2*x^2-1))^(1/2)*c^2/(c^2*x^2-1)*arcsin(c*x)*x^7+1/72*b*(-d*(c
^2*x^2-1))^(1/2)*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^6-1/48*b*(-d*(c^2*x^2-1
))^(1/2)/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4-7/4608*b*(-d*(c^2*x^2-1))^(1/
2)*cos(5*arcsin(c*x))/c^3/(c^2*x^2-1)*x^2+7/288*I*b*(-d*(c^2*x^2-1))^(1/2)/
c^2/(c^2*x^2-1)*x^3-1/96*I*b*(-d*(c^2*x^2-1))^(1/2)/c^4/(c^2*x^2-1)*x+11/46
08*I*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))/c^5/(c^2*x^2-1)+1/512*I*b*
(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))/c^5/(c^2*x^2-1)+1/72*I*b*(-d*(c^2
*x^2-1))^(1/2)*c^2/(c^2*x^2-1)*x^7-1/192*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arc
sin(c*x))/c^3/(c^2*x^2-1)*arcsin(c*x)*x^2-1/64*b*(-d*(c^2*x^2-1))^(1/2)*sin
(3*arcsin(c*x))/c^3/(c^2*x^2-1)*arcsin(c*x)*x^2+11/4608*b*(-d*(c^2*x^2-1))^
(1/2)*sin(5*arcsin(c*x))/c^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+1/512*b*(-d*(
c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))/c^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+1
/96*I*b*(-d*(c^2*x^2-1))^(1/2)/c^5/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*
x)-1/96*I*b*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsin(c*x))/c^5/(c^2*x^2-1)*arcsi
n(c*x)-11/4608*I*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))/c^3/(c^2*x^2-1
)*x^2-1/512*I*b*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))/c^3/(c^2*x^2-1)*x
^2-1/96*b*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsin(c*x))/c^4/(c^2*x^2-1)*(-c^2*x
^2+1)^(1/2)*arcsin(c*x)*x-3/512*I*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x
))/c^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-1/12*I*b*(-d*(c^2*x^2-1))^(1/2)*c/(
c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^6+1/8*I*b*(-d*(c^2*x^2-1))^(1/2
)/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^4-1/16*I*b*(-d*(c^2*x^2-1)
)^(1/2)/c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^2+1/96*I*b*(-d*(c^
2*x^2-1))^(1/2)*cos(5*arcsin(c*x))/c^3/(c^2*x^2-1)*arcsin(c*x)*x^2-7/4608*I
*b*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsin(c*x))/c^4/(c^2*x^2-1)*(-c^2*x^2+1)^(
1/2)*x
```

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

$$b\sqrt{d}\int\sqrt{cx+1}\,\sqrt{-cx+1}\,x^4\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)\,dx-\frac{1}{48}\left(\frac{8\left(-c^2dx^2+d\right)^{\frac{3}{2}}x^3}{c^2d}-\frac{3\sqrt{-c^2dx^2+d}\,x}{c^4}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] b*sqrt(d)*integrate(sqrt(c*x + 1)*sqrt(-c*x + 1)*x^4*arctan2(c*x, sqrt(c*x
+ 1)*sqrt(-c*x + 1)), x) - 1/48*(8*(-c^2*d*x^2 + d)^(3/2)*x^3/(c^2*d) - 3*s
qrt(-c^2*d*x^2 + d)*x/c^4 + 6*(-c^2*d*x^2 + d)^(3/2)*x/(c^4*d) - 3*sqrt(d)*
arcsin(c*x)/c^5)*a
```

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

$$\int x^4\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\sqrt{d-c^2\,d\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2),x)
[Out] int(x^4*(a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2), x)
```

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

$$\int x^4\sqrt{-d\,(cx-1)\,(cx+1)}\,\left(a+b\,\mathrm{asin}\,(cx)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x)),x)
[Out] Integral(x**4*sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x)), x)
```

3.56 $\int x^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=189

$$-\frac{x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{8c^2}+\frac{1}{4}x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{16bc^3\sqrt{1-c^2x^2}}+\frac{bx^2\sqrt{d-}}{16c\sqrt{1-}}$$

```
[Out] -1/8*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c^2+1/4*x^3*(-c^2*d*x^2+d)^(1
/2)*(a+b*arcsin(c*x))+1/16*b*x^2*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-
1/16*b*c*x^4*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/16*(a+b*arcsin(c*x))
^2*(-c^2*d*x^2+d)^(1/2)/b/c^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.19, antiderivative size = 189, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {4697, 4707, 4641, 30}

$$\frac{1}{4}x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)-\frac{x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{8c^2}+\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{16bc^3\sqrt{1-c^2x^2}}-\frac{bcx^4\sqrt{d-c}}{16\sqrt{1-c}}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*x^2*Sqrt[d - c^2*d*x^2])/(16*c*Sqrt[1 - c^2*x^2]) - (b*c*x^4*Sqrt[d - c^
2*d*x^2])/(16*Sqrt[1 - c^2*x^2]) - (x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x
]))/(8*c^2) + (x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/4 + (Sqrt[d - c
^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(16*b*c^3*Sqrt[1 - c^2*x^2])
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int x^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)dx=\frac{1}{4}x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{\sqrt{d-c^2dx^2}\int\frac{x^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}dx}{4\sqrt{1-c^2x^2}}-\frac{(b}{}$$

$$=-\frac{bcx^4\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}}-\frac{x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{8c^2}+\frac{1}{4}x^3\sqrt{d-c^2dx^2}\,(a$$

$$=\frac{bx^2\sqrt{d-c^2dx^2}}{16c\sqrt{1-c^2x^2}}-\frac{bcx^4\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}}-\frac{x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{8c^2}+\frac{1}{4}$$

Mathematica [A] time = 0.11, size = 140, normalized size = 0.74

$$\frac{\sqrt{d-c^2dx^2}\left(a^2+2abcx\sqrt{1-c^2x^2}\left(2c^2x^2-1\right)+2b\sin^{-1}(cx)\left(a+bcx\sqrt{1-c^2x^2}\left(2c^2x^2-1\right)\right)+b^2c^2x^2\left(1-c^2x^2\right)\right.}{16bc^3\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(a^2 + b^2*c^2*x^2*(1 - c^2*x^2) + 2*a*b*c*x*Sqrt[1 -
c^2*x^2]*(-1 + 2*c^2*x^2) + 2*b*(a + b*c*x*Sqrt[1 - c^2*x^2]*(-1 + 2*c^2*x^
2))*ArcSin[c*x] + b^2*ArcSin[c*x]^2))/(16*b*c^3*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{-c^2dx^2+d}\left(bx^2\arcsin(cx)+ax^2\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b*x^2*arcsin(c*x) + a*x^2), x)
```

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

$$\int\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] integrate(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)*x^2, x)
```

maple [B] time = 0.29, size = 373, normalized size = 1.97

$$-\frac{ax\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}}{4c^2d}+\frac{ax\sqrt{-c^2d\,x^2+d}}{8c^2}+\frac{ad\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2d\,x^2+d}}\right)}{8c^2\sqrt{c^2d}}+\frac{b\sqrt{-d\left(c^2x^2-1\right)}\,c\sqrt{-c^2x^2+1}\,x^4}{16c^2x^2-16}-\frac{b\sqrt{-d\left(c^2x^2-\right.}}{16c\,(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] -1/4*a*x*(-c^2*d*x^2+d)^(3/2)/c^2/d+1/8*a/c^2*x*(-c^2*d*x^2+d)^(1/2)+1/8*a/
c^2*d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+1/16*b*(-d
```

```
*(c^2*x^2-1))^(1/2)*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4-1/16*b*(-d*(c^2*x^
2-1))^(1/2)/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2-1/16*b*(-d*(c^2*x^2-1))^(1
/2)*(-c^2*x^2+1)^(1/2)/c^3/(c^2*x^2-1)*arcsin(c*x)^2+1/128*b*(-d*(c^2*x^2-1
))^(1/2)/c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)+1/8*b*(-d*(c^2*x^2-1))^(1/2)/c^
2/(c^2*x^2-1)*arcsin(c*x)*x+1/4*b*(-d*(c^2*x^2-1))^(1/2)*c^2/(c^2*x^2-1)*ar
csin(c*x)*x^5-3/8*b*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)*arcsin(c*x)*x^3
```

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

$$b\sqrt{d}\int\sqrt{cx+1}\sqrt{-cx+1}\,x^2\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)dx+\frac{1}{8}a\left(\frac{\sqrt{-c^2dx^2+d}\,x}{c^2}-\frac{2\left(-c^2dx^2+d\right)^{\frac{3}{2}}x}{c^2d}+\frac{\sqrt{}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] b*sqrt(d)*integrate(sqrt(c*x + 1)*sqrt(-c*x + 1)*x^2*arctan2(c*x, sqrt(c*x
+ 1)*sqrt(-c*x + 1)), x) + 1/8*a*(sqrt(-c^2*d*x^2 + d)*x/c^2 - 2*(-c^2*d*x^
2 + d)^(3/2)*x/(c^2*d) + sqrt(d)*arcsin(c*x)/c^3)
```

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

$$\int x^2\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\sqrt{d-c^2\,d\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int(x^2*(a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2), x)
```

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

$$\int x^{2}\sqrt{-d\left(cx-1\right)\left(cx+1\right)}\,\left(a+b\,\mathrm{asin}\left(cx\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x)),x)
```

```
[Out] Integral(x**2*sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x)), x)
```

3.57 $\int \sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)dx$

Optimal. Leaf size=116

$$\frac{1}{2}x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{4bc\sqrt{1-c^2x^2}}-\frac{bcx^2\sqrt{d-c^2dx^2}}{4\sqrt{1-c^2x^2}}$$

```
[Out] 1/2*x*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))-1/4*b*c*x^2*(-c^2*d*x^2+d)^(1/
2)/(-c^2*x^2+1)^(1/2)+1/4*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/b/c/(-c^
2*x^2+1)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {4647, 4641, 30}

$$\frac{1}{2}x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{4bc\sqrt{1-c^2x^2}}-\frac{bcx^2\sqrt{d-c^2dx^2}}{4\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] -(b*c*x^2*Sqrt[d - c^2*d*x^2])/(4*Sqrt[1 - c^2*x^2]) + (x*Sqrt[d - c^2*d*x^
2]*(a + b*ArcSin[c*x]))/2 + (Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(4*
b*c*Sqrt[1 - c^2*x^2])
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rubi steps

$$\int \sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)dx=\frac{1}{2}x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{\sqrt{d-c^2dx^2}\int\frac{a+b\sin^{-1}(cx)}{\sqrt{1-c^2x^2}}dx}{2\sqrt{1-c^2x^2}}-\frac{\left(bc\sqrt{d-\right.}{2\sqrt{}}$$

$$=-\frac{bcx^2\sqrt{d-c^2dx^2}}{4\sqrt{1-c^2x^2}}+\frac{1}{2}x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{\sqrt{d-c^2dx^2}\left(a+b\right.}{4bc\sqrt{1-c^2}}$$

Mathematica [A] time = 0.06, size = 111, normalized size = 0.96

$$\frac{\sqrt{d-c^2dx^2}\left(a^2+2abcx\sqrt{1-c^2x^2}+2b\sin^{-1}(cx)\left(a+bcx\sqrt{1-c^2x^2}\right)-b^2c^2x^2+b^2\sin^{-1}(cx)^2\right)}{4bc\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(a^2 - b^2*c^2*x^2 + 2*a*b*c*x*Sqrt[1 - c^2*x^2] + 2*b
*(a + b*c*x*Sqrt[1 - c^2*x^2])*ArcSin[c*x] + b^2*ArcSin[c*x]^2))/(4*b*c*Sqr
t[1 - c^2*x^2])
```

fricas [F] time = 0.41, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [B] time = 0.14, size = 260, normalized size = 2.24

$$\frac{ax\sqrt{-c^2d\,x^2+d}}{2}+\frac{ad\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2d\,x^2+d}}\right)}{2\sqrt{c^2d}}-\frac{b\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x^2+1}\,\arcsin(cx)^2}{4c\left(c^2x^2-1\right)}+\frac{b\sqrt{-d\left(c^2x^2-1\right)}\,c^2\,\text{arc}}{2c^2x^2-2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/2*a*x*(-c^2*d*x^2+d)^(1/2)+1/2*a*d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(
-c^2*d*x^2+d)^(1/2))-1/4*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/(c^2
*x^2-1)*arcsin(c*x)^2+1/2*b*(-d*(c^2*x^2-1))^(1/2)*c^2/(c^2*x^2-1)*arcsin(c
*x)*x^3+1/4*b*(-d*(c^2*x^2-1))^(1/2)*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2-1
/2*b*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)*arcsin(c*x)*x-1/8*b*(-d*(c^2*x^2-1)
)^(1/2)/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)
```

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

$$b\sqrt{d}\int\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)\,dx+\frac{1}{2}\left(\sqrt{-c^2dx^2+d}\,x+\frac{\sqrt{d}\,\arcsin(cx)}{c}\right)a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] b*sqrt(d)*integrate(sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)
*sqrt(-c*x + 1)), x) + 1/2*(sqrt(-c^2*d*x^2 + d)*x + sqrt(d)*arcsin(c*x)/c)
*a
```

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

$$\int (a + b\,\mathrm{asin}\,(c\,x))\,\sqrt{d - c^2\,d\,x^2}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int((a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2), x)
```

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

$$\int \sqrt{-d\,(cx-1)\,(cx+1)}\;(a + b\,\mathrm{asin}\,(cx))\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x)),x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x)), x)
```

3.58 $\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x^2}\,dx$

Optimal. Leaf size=110

$$-\frac{c\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2b\sqrt{1-c^2x^2}}-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x}+\frac{bc\log(x)\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}}$$

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

Rubi [A] time = 0.11, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {4693, 29, 4641}

$$-\frac{c\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2b\sqrt{1-c^2x^2}}-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x}+\frac{bc\log(x)\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/x^2,x]
```

```
[Out] -((Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/x) - (c*Sqrt[d - c^2*d*x^2]*(a
+ b*ArcSin[c*x])^2)/(2*b*Sqrt[1 - c^2*x^2]) + (b*c*Sqrt[d - c^2*d*x^2]*Log[
x])/Sqrt[1 - c^2*x^2]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4693

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(b*c*n*Sqrt[d + e*x^2])/(f*(m + 1)*Sqr
t[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1), x], x] + Di
st[(c^2*Sqrt[d + e*x^2])/(f^2*(m + 1)*Sqrt[1 - c^2*x^2]), Int[((f*x)^(m + 2
)*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c, d, e
, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && LtQ[m, -1]
```

Rubi steps

$$\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x^2}\,dx=-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x}+\frac{\left(bc\sqrt{d-c^2dx^2}\right)\int\frac{1}{x}\,dx}{\sqrt{1-c^2x^2}}-\frac{\left(c^2\sqrt{d-c^2d\right.}}{}$$

$$=-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x}-\frac{c\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2b\sqrt{1-c^2x^2}}+\frac{bc\sqrt{}}{}$$

Mathematica [A] time = 0.47, size = 142, normalized size = 1.29

$$-\frac{a\sqrt{-d\left(c^2x^2-1\right)}}{x}+ac\sqrt{d}\,\tan^{-1}\left(\frac{cx\sqrt{-d\left(c^2x^2-1\right)}}{\sqrt{d}\left(c^2x^2-1\right)}\right)-\frac{bc\sqrt{d\left(1-c^2x^2\right)}\left(\frac{2\sqrt{1-c^2x^2}\sin^{-1}(cx)}{cx}-2\log(cx)+\sin^{-1}(cx)\right.}{2\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/x^2,x]
```

```
[Out] -((a*Sqrt[-(d*(-1 + c^2*x^2))])/x) + a*c*Sqrt[d]*ArcTan[(c*x*Sqrt[-(d*(-1 +
 c^2*x^2))])/(Sqrt[d]*(-1 + c^2*x^2))] - (b*c*Sqrt[d*(1 - c^2*x^2)]*((2*Sqr
t[1 - c^2*x^2]*ArcSin[c*x])/(c*x) + ArcSin[c*x]^2 - 2*Log[c*x]))/(2*Sqrt[1
- c^2*x^2])
```

fricas [F] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)}{x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^2,x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/x^2, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.28, size = 308, normalized size = 2.80

$$-\frac{a\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}}{dx}-a\,c^2x\sqrt{-c^2d\,x^2+d}-\frac{a\,c^2d\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2d\,x^2+d}}\right)}{\sqrt{c^2d}}+\frac{b\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x^2+1}\,\arcsin(cx)^2c}{2c^2x^2-2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^2,x)
```

```
[Out] -a/d/x*(-c^2*d*x^2+d)^(3/2)-a*c^2*x*(-c^2*d*x^2+d)^(1/2)-a*c^2*d/(c^2*d)^(1
/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+1/2*b*(-d*(c^2*x^2-1))^(1/
2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*arcsin(c*x)^2*c+I*b*(-c^2*x^2+1)^(1/2)*(-
d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)*arcsin(c*x)*c-b*(-d*(c^2*x^2-1))^(1/2)*arc
sin(c*x)/(c^2*x^2-1)*x*c^2+b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/(c^2*x^2-1)
/x-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*ln((I*c*x+(-c^2*
x^2+1)^(1/2))^2-1)*c
```

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

$$b\sqrt{d}\int\frac{\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{x^2}\,dx-\left(c\sqrt{d}\,\arcsin(cx)+\frac{\sqrt{-c^2dx^2+d}}{x}\right)a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^2,x, algorithm="maxima")
```

```
[Out] b*sqrt(d)*integrate(sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)
*sqrt(-c*x + 1))/x^2, x) - (c*sqrt(d)*arcsin(c*x) + sqrt(-c^2*d*x^2 + d)/x)
*a
```

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

$$\int \frac{(a + b\,\mathrm{asin}\,(c\,x))\;\sqrt{d - c^2\,d\,x^2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2))/x^2,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2))/x^2, x)
```

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

$$\int \frac{\sqrt{-d\,(cx - 1)\,(cx + 1)}\;(a + b\,\mathrm{asin}\,(cx))}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x))/x**2,x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))/x**2, x)
```

3.59 $\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x^4}\,dx$

Optimal. Leaf size=111

$$-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3dx^3}-\frac{bc\sqrt{d-c^2dx^2}}{6x^2\sqrt{1-c^2x^2}}-\frac{bc^3\log(x)\sqrt{d-c^2dx^2}}{3\sqrt{1-c^2x^2}}$$

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

Rubi [A] time = 0.09, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {4681, 14}

$$-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3dx^3}-\frac{bc\sqrt{d-c^2dx^2}}{6x^2\sqrt{1-c^2x^2}}-\frac{bc^3\log(x)\sqrt{d-c^2dx^2}}{3\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/x^4,x]
```

```
[Out] -(b*c*Sqrt[d - c^2*d*x^2])/(6*x^2*Sqrt[1 - c^2*x^2]) - ((d - c^2*d*x^2)^(3/
2)*(a + b*ArcSin[c*x]))/(3*d*x^3) - (b*c^3*Sqrt[d - c^2*d*x^2]*Log[x])/(3*S
qrt[1 - c^2*x^2])
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 4681

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^F
racPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c
^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d,
 e, f, m, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] &
& NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x^4}\,dx &= -\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3dx^3}+\frac{\left(bc\sqrt{d-c^2dx^2}\right)\int \frac{1-c^2x^2}{x^3}\,dx}{3\sqrt{1-c^2x^2}}\\ &= -\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3dx^3}+\frac{\left(bc\sqrt{d-c^2dx^2}\right)\int \left(\frac{1}{x^3}-\frac{c^2}{x}\right)dx}{3\sqrt{1-c^2x^2}}\\ &= -\frac{bc\sqrt{d-c^2dx^2}}{6x^2\sqrt{1-c^2x^2}}-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3dx^3}-\frac{bc^3\sqrt{d-c^2dx^2}\log(x)}{3\sqrt{1-c^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.23, size = 134, normalized size = 1.21

$$\frac{\sqrt{d-c^2dx^2}\left(2a\left(c^2x^2-1\right)^2+bcx\left(1-3c^2x^2\right)\sqrt{1-c^2x^2}+2b\left(c^2x^2-1\right)^2\sin^{-1}(cx)\right)}{6x^3\left(c^2x^2-1\right)}-\frac{bc^3\log(x)\sqrt{d-c^2dx^2}}{3\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/x^4,x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(b*c*x*(1 - 3*c^2*x^2)*Sqrt[1 - c^2*x^2] + 2*a*(-1 + c
^2*x^2)^2 + 2*b*(-1 + c^2*x^2)^2*ArcSin[c*x]))/(6*x^3*(-1 + c^2*x^2)) - (b*
c^3*Sqrt[d - c^2*d*x^2]*Log[x])/(3*Sqrt[1 - c^2*x^2])
```

fricas [B] time = 0.89, size = 414, normalized size = 3.73

$$\left[\frac{\left(bc^5x^5-bc^3x^3\right)\sqrt{d}\,\log\left(\frac{c^2dx^6+c^2dx^2-dx^4+\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+1}\,\left(x^4-1\right)\sqrt{d}-d}{c^2x^4-x^2}\right)-\sqrt{-c^2dx^2+d}\,\left(bcx^3-bcx\right)\sqrt{-c^2x^2+1}}{6\left(c^2x^5-x^3\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^4,x, algorithm="fricas")
```

```
[Out] [1/6*((b*c^5*x^5 - b*c^3*x^3)*sqrt(d)*log((c^2*d*x^6 + c^2*d*x^2 - d*x^4 +
sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*(x^4 - 1)*sqrt(d) - d)/(c^2*x^4 - x
^2)) - sqrt(-c^2*d*x^2 + d)*(b*c*x^3 - b*c*x)*sqrt(-c^2*x^2 + 1) + 2*(a*c^4
*x^4 - 2*a*c^2*x^2 + (b*c^4*x^4 - 2*b*c^2*x^2 + b)*arcsin(c*x) + a)*sqrt(-c
^2*d*x^2 + d))/(c^2*x^5 - x^3), -1/6*(2*(b*c^5*x^5 - b*c^3*x^3)*sqrt(-d)*ar
ctan(sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*(x^2 + 1)*sqrt(-d)/(c^2*d*x^4
- (c^2 + 1)*d*x^2 + d)) + sqrt(-c^2*d*x^2 + d)*(b*c*x^3 - b*c*x)*sqrt(-c^2*
x^2 + 1) - 2*(a*c^4*x^4 - 2*a*c^2*x^2 + (b*c^4*x^4 - 2*b*c^2*x^2 + b)*arcsi
n(c*x) + a)*sqrt(-c^2*d*x^2 + d))/(c^2*x^5 - x^3)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^4,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.40, size = 1117, normalized size = 10.06

$$-\frac{a\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}}{3d\,x^3}-\frac{2ib\sqrt{-c^2x^2+1}\,\sqrt{-d\left(c^2x^2-1\right)}\,\arcsin(cx)\,c^3}{3c^2x^2-3}+\frac{ib\sqrt{-d\left(c^2x^2-1\right)}\,x^4\sqrt{-c^2x^2+1}\,\arcsin(c}{\left(3c^4x^4-3c^2x^2+1\right)\left(c^2x^2-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^4,x)
```

```
[Out] -1/3*a/d/x^3*(-c^2*d*x^2+d)^(3/2)-2*I*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))
^(1/2)*arcsin(c*x)*c^3/(3*c^2*x^2-3)+I*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-
3*c^2*x^2+1)*x^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^7+b*(-d*(c^2*
x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x^5/(c^2*x^2-1)*arcsin(c*x)*c^8-1/6*I
```

```
*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x^5/(c^2*x^2-1)*c^8+1/6*I
*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x/(c^2*x^2-1)*(-c^2*x^2+1
)*c^4-1/6*I*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x/(c^2*x^2-1)*
c^4-3*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x^3/(c^2*x^2-1)*arcs
in(c*x)*c^6+1/3*I*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x^3/(c^2
*x^2-1)*c^6+1/3*I*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)/(c^2*x^2
-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^3+1/2*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*
x^4-3*c^2*x^2+1)*x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c^5-I*b*(-d*(c^2*x^2-1)
)^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c
*x)*c^5+10/3*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x/(c^2*x^2-1)
*arcsin(c*x)*c^4-1/6*I*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x^3
/(c^2*x^2-1)*(-c^2*x^2+1)*c^6-1/2*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2
*x^2+1)/(c^2*x^2-1)*c^3*(-c^2*x^2+1)^(1/2)-5/3*b*(-d*(c^2*x^2-1))^(1/2)/(3*
c^4*x^4-3*c^2*x^2+1)/x/(c^2*x^2-1)*arcsin(c*x)*c^2+1/6*b*(-d*(c^2*x^2-1))^(
1/2)/(3*c^4*x^4-3*c^2*x^2+1)/x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c+1/3*b*(-d
*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)/x^3/(c^2*x^2-1)*arcsin(c*x)+1/3
*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*ln((I*c*x+(-c^2*x^
2+1)^(1/2))^2-1)*c^3
```

maxima [A] time = 0.44, size = 137, normalized size = 1.23

$$\frac{\left((-1)^{-2\,c^2dx^2+2\,d}\,c^2d^{\frac{3}{2}}\log\left(-2\,c^2d+\frac{2\,d}{x^2}\right)+c^2d^{\frac{3}{2}}\log\left(x^2-\frac{1}{c^2}\right)-\frac{\sqrt{c^4dx^4-2\,c^2dx^2+d}\,d}{x^2}\right)bc}{6\,d}-\frac{\left(-c^2dx^2+d\right)^{\frac{3}{2}}b\arcsin\left(cx\right)}{3\,dx^3}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^4,x, algorithm="maxima")
```

```
[Out] 1/6*((-1)^(-2*c^2*d*x^2 + 2*d)*c^2*d^(3/2)*log(-2*c^2*d + 2*d/x^2) + c^2*d^
(3/2)*log(x^2 - 1/c^2) - sqrt(c^4*d*x^4 - 2*c^2*d*x^2 + d)*d/x^2)*b*c/d - 1
/3*(-c^2*d*x^2 + d)^(3/2)*b*arcsin(c*x)/(d*x^3) - 1/3*(-c^2*d*x^2 + d)^(3/2
)*a/(d*x^3)
```

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

$$\int \frac{(a+b\,\mathrm{asin}\left(c\,x\right))\,\sqrt{d-c^2\,d\,x^2}}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2))/x^4,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2))/x^4, x)
```

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

$$\int \frac{\sqrt{-d\left(cx-1\right)\left(cx+1\right)}\,\left(a+b\,\mathrm{asin}\left(cx\right)\right)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x))/x**4,x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))/x**4, x)
```

3.60 $\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x^6}\,dx$

Optimal. Leaf size=187

$$-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{5dx^5}-\frac{2c^2\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{15dx^3}-\frac{bc\sqrt{d-c^2dx^2}}{20x^4\sqrt{1-c^2x^2}}-\frac{2bc^5\log(x)\sqrt{d-c^2dx^2}}{15\sqrt{1-c^2x^2}}$$

```
[Out] -1/5*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/d/x^5-2/15*c^2*(-c^2*d*x^2+d)^(
3/2)*(a+b*arcsin(c*x))/d/x^3-1/20*b*c*(-c^2*d*x^2+d)^(1/2)/x^4/(-c^2*x^2+1)
^(1/2)+1/30*b*c^3*(-c^2*d*x^2+d)^(1/2)/x^2/(-c^2*x^2+1)^(1/2)-2/15*b*c^5*ln
(x)*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 187, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {271, 264, 4691, 12, 14}

$$-\frac{2c^2\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{15dx^3}-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{5dx^5}+\frac{bc^3\sqrt{d-c^2dx^2}}{30x^2\sqrt{1-c^2x^2}}-\frac{bc\sqrt{d-c^2dx^2}}{20x^4\sqrt{1-c^2x^2}}-\frac{2bc^5}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/x^6,x]
```

```
[Out] -(b*c*Sqrt[d - c^2*d*x^2])/(20*x^4*Sqrt[1 - c^2*x^2]) + (b*c^3*Sqrt[d - c^2
*d*x^2])/(30*x^2*Sqrt[1 - c^2*x^2]) - ((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[
c*x]))/(5*d*x^5) - (2*c^2*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(15*d*
x^3) - (2*b*c^5*Sqrt[d - c^2*d*x^2]*Log[x])/(15*Sqrt[1 - c^2*x^2])
```

Rule 12

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

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 264

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

Rule 271

```
Int[(x_)^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x^(m + 1)*(
a + b*x^n)^(p + 1))/(a*(m + 1)), x] - Dist[(b*(m + n*(p + 1) + 1))/(a*(m +
1)), Int[x^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, m, n, p}, x] && IL
tQ[Simplify[(m + 1)/n + p + 1], 0] && NeQ[m, -1]
```

Rule 4691

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[a + b*ArcSi
n[c*x], Int[x^m*(d + e*x^2)^p, x], x] - Dist[(b*c*d^(p - 1/2)*Sqrt[d + e*x^
2])/Sqrt[1 - c^2*x^2], Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x
```

```
]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p + 1/2, 0] &&
 (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0])
```

Rubi steps

$$\int \frac{\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)}{x^6}\,dx = -\frac{\left(bc\sqrt{d-c^2dx^2}\right)\int \frac{-3+c^2x^2+2c^4x^4}{15x^5}\,dx}{\sqrt{1-c^2x^2}} + \left(a+b\sin^{-1}(cx)\right)\int \frac{\sqrt{d-c^2dx^2}}{x^6}\,dx$$

$$= -\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{5dx^5} - \frac{\left(bc\sqrt{d-c^2dx^2}\right)\int \frac{-3+c^2x^2+2c^4x^4}{x^5}\,dx}{15\sqrt{1-c^2x^2}} + \frac{1}{5}$$

$$= -\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{5dx^5} - \frac{2c^2\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{15dx^3} -$$

$$= -\frac{bc\sqrt{d-c^2dx^2}}{20x^4\sqrt{1-c^2x^2}} + \frac{bc^3\sqrt{d-c^2dx^2}}{30x^2\sqrt{1-c^2x^2}} - \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{5dx^5} - \frac{2c}{}$$

Mathematica [A] time = 0.16, size = 162, normalized size = 0.87

$$\frac{\sqrt{d-c^2dx^2}\left(12a\left(2c^2x^2+3\right)\left(c^2x^2-1\right)^2+12b\left(2c^2x^2+3\right)\left(c^2x^2-1\right)^2\sin^{-1}(cx)+bcx\sqrt{1-c^2x^2}\left(-50c^4x^4-6c^2x\right.\right.}{180x^5\left(c^2x^2-1\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/x^6,x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(12*a*(-1 + c^2*x^2)^2*(3 + 2*c^2*x^2) + b*c*x*Sqrt[1
- c^2*x^2]*(9 - 6*c^2*x^2 - 50*c^4*x^4) + 12*b*(-1 + c^2*x^2)^2*(3 + 2*c^2*
x^2)*ArcSin[c*x]))/(180*x^5*(-1 + c^2*x^2)) - (2*b*c^5*Sqrt[d - c^2*d*x^2]*
Log[x])/(15*Sqrt[1 - c^2*x^2])
```

fricas [A] time = 1.10, size = 501, normalized size = 2.68

$$\left[\frac{4\left(bc^7x^7-bc^5x^5\right)\sqrt{d}\,\log\left(\frac{c^2dx^6+c^2dx^2-dx^4+\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+1}\,\left(x^4-1\right)\sqrt{d}-d}{c^2x^4-x^2}\right)-\left(2\,bc^3x^3-\left(2\,bc^3-3\,bc\right)x^5-3\,bcx\right)\sqrt{-c}}{60\,(}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^6,x, algorithm="fricas")
```

```
[Out] [1/60*(4*(b*c^7*x^7 - b*c^5*x^5)*sqrt(d)*log((c^2*d*x^6 + c^2*d*x^2 - d*x^4
 + sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*(x^4 - 1)*sqrt(d) - d)/(c^2*x^4
- x^2)) - (2*b*c^3*x^3 - (2*b*c^3 - 3*b*c)*x^5 - 3*b*c*x)*sqrt(-c^2*d*x^2 +
 d)*sqrt(-c^2*x^2 + 1) + 4*(2*a*c^6*x^6 - a*c^4*x^4 - 4*a*c^2*x^2 + (2*b*c^
6*x^6 - b*c^4*x^4 - 4*b*c^2*x^2 + 3*b)*arcsin(c*x) + 3*a)*sqrt(-c^2*d*x^2 +
 d))/(c^2*x^7 - x^5), -1/60*(8*(b*c^7*x^7 - b*c^5*x^5)*sqrt(-d)*arctan(sqrt
(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*(x^2 + 1)*sqrt(-d)/(c^2*d*x^4 - (c^2 +
1)*d*x^2 + d)) + (2*b*c^3*x^3 - (2*b*c^3 - 3*b*c)*x^5 - 3*b*c*x)*sqrt(-c^2*
d*x^2 + d)*sqrt(-c^2*x^2 + 1) - 4*(2*a*c^6*x^6 - a*c^4*x^4 - 4*a*c^2*x^2 +
(2*b*c^6*x^6 - b*c^4*x^4 - 4*b*c^2*x^2 + 3*b)*arcsin(c*x) + 3*a)*sqrt(-c^2*
d*x^2 + d))/(c^2*x^7 - x^5)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^6,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.48, size = 1902, normalized size = 10.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^6,x)
```

```
[Out] 2*I*b*(-d*(c^2*x^2-1))^(1/2)/(15*c^6*x^6-5*c^4*x^4-15*c^2*x^2+9)*x^6/(c^2*x
^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^11-2/3*I*b*(-d*(c^2*x^2-1))^(1/2)/(1
5*c^6*x^6-5*c^4*x^4-15*c^2*x^2+9)*x^4/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^
(1/2)*c^9-2*I*b*(-d*(c^2*x^2-1))^(1/2)/(15*c^6*x^6-5*c^4*x^4-15*c^2*x^2+9)*
x^2/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^7-5/3*b*(-d*(c^2*x^2-1))^(
1/2)/(15*c^6*x^6-5*c^4*x^4-15*c^2*x^2+9)*x^5/(c^2*x^2-1)*arcsin(c*x)*c^10-1
/2*b*(-d*(c^2*x^2-1))^(1/2)/(15*c^6*x^6-5*c^4*x^4-15*c^2*x^2+9)*x^4/(c^2*x^
2-1)*(-c^2*x^2+1)^(1/2)*c^9-17/3*b*(-d*(c^2*x^2-1))^(1/2)/(15*c^6*x^6-5*c^4
*x^4-15*c^2*x^2+9)*x^3/(c^2*x^2-1)*arcsin(c*x)*c^8+11/12*b*(-d*(c^2*x^2-1))
^(1/2)/(15*c^6*x^6-5*c^4*x^4-15*c^2*x^2+9)*x^2/(c^2*x^2-1)*c^7*(-c^2*x^2+1)
^(1/2)+98/15*b*(-d*(c^2*x^2-1))^(1/2)/(15*c^6*x^6-5*c^4*x^4-15*c^2*x^2+9)*x
/(c^2*x^2-1)*arcsin(c*x)*c^6+12/5*b*(-d*(c^2*x^2-1))^(1/2)/(15*c^6*x^6-5*c^
4*x^4-15*c^2*x^2+9)/x/(c^2*x^2-1)*arcsin(c*x)*c^4-21/20*b*(-d*(c^2*x^2-1))^
(1/2)/(15*c^6*x^6-5*c^4*x^4-15*c^2*x^2+9)/x^2/(c^2*x^2-1)*c^3*(-c^2*x^2+1)^
(1/2)-27/5*b*(-d*(c^2*x^2-1))^(1/2)/(15*c^6*x^6-5*c^4*x^4-15*c^2*x^2+9)/x^3
/(c^2*x^2-1)*arcsin(c*x)*c^2+9/20*b*(-d*(c^2*x^2-1))^(1/2)/(15*c^6*x^6-5*c^
4*x^4-15*c^2*x^2+9)/x^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c-4*I*b*(-d*(c^2*x^2
-1))^(1/2)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^5/(15*c^2*x^2-15)+2/15*I*b*(-d*
(c^2*x^2-1))^(1/2)/(15*c^6*x^6-5*c^4*x^4-15*c^2*x^2+9)*x^9/(c^2*x^2-1)*c^14
-4/15*I*b*(-d*(c^2*x^2-1))^(1/2)/(15*c^6*x^6-5*c^4*x^4-15*c^2*x^2+9)*x^7/(c
^2*x^2-1)*c^12-1/6*I*b*(-d*(c^2*x^2-1))^(1/2)/(15*c^6*x^6-5*c^4*x^4-15*c^2*
x^2+9)*x^5/(c^2*x^2-1)*c^10+3/5*I*b*(-d*(c^2*x^2-1))^(1/2)/(15*c^6*x^6-5*c^
4*x^4-15*c^2*x^2+9)*x^3/(c^2*x^2-1)*c^8-3/10*I*b*(-d*(c^2*x^2-1))^(1/2)/(15
*c^6*x^6-5*c^4*x^4-15*c^2*x^2+9)*x/(c^2*x^2-1)*c^6+2*b*(-d*(c^2*x^2-1))^(1/
2)/(15*c^6*x^6-5*c^4*x^4-15*c^2*x^2+9)*x^7/(c^2*x^2-1)*arcsin(c*x)*c^12-1/5
*a/d/x^5*(-c^2*d*x^2+d)^(3/2)+1/4*b*(-d*(c^2*x^2-1))^(1/2)/(15*c^6*x^6-5*c^
4*x^4-15*c^2*x^2+9)/(c^2*x^2-1)*c^5*(-c^2*x^2+1)^(1/2)+2/15*b*(-d*(c^2*x^2-
1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*ln((I*c*x+(-c^2*x^2+1)^(1/2))^2-1)
*c^5+9/5*b*(-d*(c^2*x^2-1))^(1/2)/(15*c^6*x^6-5*c^4*x^4-15*c^2*x^2+9)/x^5/(
c^2*x^2-1)*arcsin(c*x)+2/15*I*b*(-d*(c^2*x^2-1))^(1/2)/(15*c^6*x^6-5*c^4*x^
4-15*c^2*x^2+9)*x^7/(c^2*x^2-1)*(-c^2*x^2+1)*c^12-2/15*I*b*(-d*(c^2*x^2-1))
^(1/2)/(15*c^6*x^6-5*c^4*x^4-15*c^2*x^2+9)*x^5/(c^2*x^2-1)*(-c^2*x^2+1)*c^1
0-3/10*I*b*(-d*(c^2*x^2-1))^(1/2)/(15*c^6*x^6-5*c^4*x^4-15*c^2*x^2+9)*x^3/(
c^2*x^2-1)*(-c^2*x^2+1)*c^8+3/10*I*b*(-d*(c^2*x^2-1))^(1/2)/(15*c^6*x^6-5*c
^4*x^4-15*c^2*x^2+9)*x/(c^2*x^2-1)*(-c^2*x^2+1)*c^6+6/5*I*b*(-d*(c^2*x^2-1)
)^(1/2)/(15*c^6*x^6-5*c^4*x^4-15*c^2*x^2+9)/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x
^2+1)^(1/2)*c^5-2/15*a*c^2/d/x^3*(-c^2*d*x^2+d)^(3/2)
```

maxima [A] time = 0.53, size = 140, normalized size = 0.75

$$-\frac{1}{60}\left(8\,c^4\sqrt{d}\,\log(x)-\frac{2\,c^2\sqrt{d}\,x^2-3\,\sqrt{d}}{x^4}\right)bc-\frac{1}{15}\,b\left(\frac{2\left(-c^2dx^2+d\right)^{\frac{3}{2}}c^2}{dx^3}+\frac{3\left(-c^2dx^2+d\right)^{\frac{3}{2}}}{dx^5}\right)\arcsin(cx)-\frac{1}{15}\,a\left(\frac{2}{\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^6,x, algorithm="maxima")
```

```
[Out] -1/60*(8*c^4*sqrt(d)*log(x) - (2*c^2*sqrt(d)*x^2 - 3*sqrt(d))/x^4)*b*c - 1/
15*b*(2*(-c^2*d*x^2 + d)^(3/2)*c^2/(d*x^3) + 3*(-c^2*d*x^2 + d)^(3/2)/(d*x^
5))*arcsin(c*x) - 1/15*a*(2*(-c^2*d*x^2 + d)^(3/2)*c^2/(d*x^3) + 3*(-c^2*d*
x^2 + d)^(3/2)/(d*x^5))
```

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

$$\int \frac{(a + b\,\mathrm{asin}\,(c\,x))\ \sqrt{d - c^2\,d\,x^2}}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2))/x^6,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2))/x^6, x)
```

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

$$\int \frac{\sqrt{-d\,(cx - 1)\,(cx + 1)}\ (a + b\,\mathrm{asin}\,(cx))}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x))/x**6,x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))/x**6, x)
```

3.61 $\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x^8}\,dx$

Optimal. Leaf size=263

$$-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{7dx^7}-\frac{4c^2\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{35dx^5}-\frac{8c^4\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{105dx^3}-\frac{b}{42}$$

```
[Out] -1/7*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/d/x^7-4/35*c^2*(-c^2*d*x^2+d)^(
3/2)*(a+b*arcsin(c*x))/d/x^5-8/105*c^4*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x
))/d/x^3-1/42*b*c*(-c^2*d*x^2+d)^(1/2)/x^6/(-c^2*x^2+1)^(1/2)+1/140*b*c^3*(
-c^2*d*x^2+d)^(1/2)/x^4/(-c^2*x^2+1)^(1/2)+2/105*b*c^5*(-c^2*d*x^2+d)^(1/2)
/x^2/(-c^2*x^2+1)^(1/2)-8/105*b*c^7*ln(x)*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)
^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 263, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {271, 264, 4691, 12, 14}

$$-\frac{8c^4\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{105dx^3}-\frac{4c^2\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{35dx^5}-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{7dx^7}+\frac{2}{1}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/x^8,x]
```

```
[Out] -(b*c*Sqrt[d - c^2*d*x^2])/(42*x^6*Sqrt[1 - c^2*x^2]) + (b*c^3*Sqrt[d - c^2
*d*x^2])/(140*x^4*Sqrt[1 - c^2*x^2]) + (2*b*c^5*Sqrt[d - c^2*d*x^2])/(105*x
^2*Sqrt[1 - c^2*x^2]) - ((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(7*d*x^
7) - (4*c^2*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(35*d*x^5) - (8*c^4*
(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(105*d*x^3) - (8*b*c^7*Sqrt[d -
c^2*d*x^2]*Log[x])/(105*Sqrt[1 - c^2*x^2])
```

Rule 12

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

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 264

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

Rule 271

```
Int[(x_)^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x^(m + 1)*(
a + b*x^n)^(p + 1))/(a*(m + 1)), x] - Dist[(b*(m + n*(p + 1) + 1))/(a*(m +
1)), Int[x^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, m, n, p}, x] && IL
tQ[Simplify[(m + 1)/n + p + 1], 0] && NeQ[m, -1]
```

Rule 4691

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[a + b*ArcSi
n[c*x], Int[x^m*(d + e*x^2)^p, x], x] - Dist[(b*c*d^(p - 1/2)*Sqrt[d + e*x^
2])/Sqrt[1 - c^2*x^2], Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x
]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p + 1/2, 0] &&
 (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0])
```

Rubi steps

$$\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x^8}\,dx = -\frac{\left(bc\sqrt{d-c^2dx^2}\right)\int \frac{-15+3c^2x^2+4c^4x^4+8c^6x^6}{105x^7}\,dx}{\sqrt{1-c^2x^2}} + \left(a+b\sin^{-1}(cx)\right)\int \frac{\sqrt{d-c^2}}{x^8}$$

$$= -\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{7dx^7} - \frac{\left(bc\sqrt{d-c^2dx^2}\right)\int \frac{-15+3c^2x^2+4c^4x^4+8c^6x^6}{x^7}}{105\sqrt{1-c^2x^2}}$$

$$= -\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{7dx^7} - \frac{4c^2\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{35dx^5} -$$

$$= -\frac{bc\sqrt{d-c^2dx^2}}{42x^6\sqrt{1-c^2x^2}} + \frac{bc^3\sqrt{d-c^2dx^2}}{140x^4\sqrt{1-c^2x^2}} + \frac{2bc^5\sqrt{d-c^2dx^2}}{105x^2\sqrt{1-c^2x^2}} - \frac{\left(d-c^2dx^2\right)^{3/2}}{7d}$$

Mathematica [A] time = 0.19, size = 187, normalized size = 0.71

$$\frac{\sqrt{d-c^2dx^2}\left(20a\left(8c^4x^4+12c^2x^2+15\right)\left(c^2x^2-1\right)^2+20b\left(8c^4x^4+12c^2x^2+15\right)\left(c^2x^2-1\right)^2\sin^{-1}(cx)-bcx\sqrt{1-}\right.}{2100x^7\left(c^2x^2-1\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/x^8,x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(20*a*(-1 + c^2*x^2)^2*(15 + 12*c^2*x^2 + 8*c^4*x^4) -
 b*c*x*Sqrt[1 - c^2*x^2]*(-50 + 15*c^2*x^2 + 40*c^4*x^4 + 392*c^6*x^6) + 20
*b*(-1 + c^2*x^2)^2*(15 + 12*c^2*x^2 + 8*c^4*x^4)*ArcSin[c*x]))/(2100*x^7*(
-1 + c^2*x^2)) - (8*b*c^7*Sqrt[d - c^2*d*x^2]*Log[x])/(105*Sqrt[1 - c^2*x^2
])
```

fricas [A] time = 1.08, size = 567, normalized size = 2.16

$$\left[\frac{16\left(bc^9x^9-bc^7x^7\right)\sqrt{d}\,\log\left(\frac{c^2dx^6+c^2dx^2-dx^4+\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+1}\left(x^4-1\right)\sqrt{d}-d}{c^2x^4-x^2}\right)-\left(8\,bc^5x^5-\left(8\,bc^5+3\,bc^3-10\,bc\right)x^7+\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^8,x, algorithm="fricas")
```

```
[Out] [1/420*(16*(b*c^9*x^9 - b*c^7*x^7)*sqrt(d)*log((c^2*d*x^6 + c^2*d*x^2 - d*x
^4 + sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*(x^4 - 1)*sqrt(d) - d)/(c^2*x^
4 - x^2)) - (8*b*c^5*x^5 - (8*b*c^5 + 3*b*c^3 - 10*b*c)*x^7 + 3*b*c^3*x^3 -
 10*b*c*x)*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1) + 4*(8*a*c^8*x^8 - 4*a*c
^6*x^6 - a*c^4*x^4 - 18*a*c^2*x^2 + (8*b*c^8*x^8 - 4*b*c^6*x^6 - b*c^4*x^4
- 18*b*c^2*x^2 + 15*b)*arcsin(c*x) + 15*a)*sqrt(-c^2*d*x^2 + d))/(c^2*x^9 -
 x^7), -1/420*(32*(b*c^9*x^9 - b*c^7*x^7)*sqrt(-d)*arctan(sqrt(-c^2*d*x^2 +
 d)*sqrt(-c^2*x^2 + 1)*(x^2 + 1)*sqrt(-d)/(c^2*d*x^4 - (c^2 + 1)*d*x^2 + d)
```

```
) + (8*b*c^5*x^5 - (8*b*c^5 + 3*b*c^3 - 10*b*c)*x^7 + 3*b*c^3*x^3 - 10*b*c*
x)*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1) - 4*(8*a*c^8*x^8 - 4*a*c^6*x^6 -
 a*c^4*x^4 - 18*a*c^2*x^2 + (8*b*c^8*x^8 - 4*b*c^6*x^6 - b*c^4*x^4 - 18*b*c
^2*x^2 + 15*b)*arcsin(c*x) + 15*a)*sqrt(-c^2*d*x^2 + d))/(c^2*x^9 - x^7)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^8,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.56, size = 2748, normalized size = 10.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^8,x)
```

```
[Out] 225/7*b*(-d*(c^2*x^2-1))^(1/2)/(280*c^8*x^8-105*c^6*x^6-21*c^4*x^4-315*c^2*
x^2+225)/x^7/(c^2*x^2-1)*arcsin(c*x)+8/105*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x
^2+1)^(1/2)/(c^2*x^2-1)*ln((I*c*x+(-c^2*x^2+1)^(1/2))^2-1)*c^7+73/20*b*(-d*
(c^2*x^2-1))^(1/2)/(280*c^8*x^8-105*c^6*x^6-21*c^4*x^4-315*c^2*x^2+225)/(c^
2*x^2-1)*c^7*(-c^2*x^2+1)^(1/2)-16/105*I*b*(-d*(c^2*x^2-1))^(1/2)/(280*c^8*
x^8-105*c^6*x^6-21*c^4*x^4-315*c^2*x^2+225)*x^11/(c^2*x^2-1)*c^18-40/21*I*b
*(-d*(c^2*x^2-1))^(1/2)/(280*c^8*x^8-105*c^6*x^6-21*c^4*x^4-315*c^2*x^2+225
)*x^9/(c^2*x^2-1)*c^16-214/105*I*b*(-d*(c^2*x^2-1))^(1/2)/(280*c^8*x^8-105*
c^6*x^6-21*c^4*x^4-315*c^2*x^2+225)*x^7/(c^2*x^2-1)*c^14+152/105*I*b*(-d*(c
^2*x^2-1))^(1/2)/(280*c^8*x^8-105*c^6*x^6-21*c^4*x^4-315*c^2*x^2+225)*x^5/(
c^2*x^2-1)*c^12+30/7*I*b*(-d*(c^2*x^2-1))^(1/2)/(280*c^8*x^8-105*c^6*x^6-21
*c^4*x^4-315*c^2*x^2+225)*x^3/(c^2*x^2-1)*c^10-20/7*I*b*(-d*(c^2*x^2-1))^(1
/2)/(280*c^8*x^8-105*c^6*x^6-21*c^4*x^4-315*c^2*x^2+225)*x/(c^2*x^2-1)*c^8-
71/28*b*(-d*(c^2*x^2-1))^(1/2)/(280*c^8*x^8-105*c^6*x^6-21*c^4*x^4-315*c^2*
x^2+225)/x^2/(c^2*x^2-1)*c^5*(-c^2*x^2+1)^(1/2)+342/7*b*(-d*(c^2*x^2-1))^(1
/2)/(280*c^8*x^8-105*c^6*x^6-21*c^4*x^4-315*c^2*x^2+225)/x^3/(c^2*x^2-1)*ar
csin(c*x)*c^4-255/28*b*(-d*(c^2*x^2-1))^(1/2)/(280*c^8*x^8-105*c^6*x^6-21*c
^4*x^4-315*c^2*x^2+225)/x^4/(c^2*x^2-1)*c^3*(-c^2*x^2+1)^(1/2)+64/3*I*b*(-d
*(c^2*x^2-1))^(1/2)/(280*c^8*x^8-105*c^6*x^6-21*c^4*x^4-315*c^2*x^2+225)*x^
8/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^15-8*I*b*(-d*(c^2*x^2-1))^(1
/2)/(280*c^8*x^8-105*c^6*x^6-21*c^4*x^4-315*c^2*x^2+225)*x^6/(c^2*x^2-1)*(-
c^2*x^2+1)^(1/2)*arcsin(c*x)*c^13-8/5*I*b*(-d*(c^2*x^2-1))^(1/2)/(280*c^8*x
^8-105*c^6*x^6-21*c^4*x^4-315*c^2*x^2+225)*x^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/
2)*arcsin(c*x)*c^11-24*I*b*(-d*(c^2*x^2-1))^(1/2)/(280*c^8*x^8-105*c^6*x^6-
21*c^4*x^4-315*c^2*x^2+225)*x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*
c^9-8/105*a*c^4/d/x^3*(-c^2*d*x^2+d)^(3/2)-1/7*a/d/x^7*(-c^2*d*x^2+d)^(3/2)
-585/7*b*(-d*(c^2*x^2-1))^(1/2)/(280*c^8*x^8-105*c^6*x^6-21*c^4*x^4-315*c^2
*x^2+225)/x^5/(c^2*x^2-1)*arcsin(c*x)*c^2+75/14*b*(-d*(c^2*x^2-1))^(1/2)/(2
80*c^8*x^8-105*c^6*x^6-21*c^4*x^4-315*c^2*x^2+225)/x^6/(c^2*x^2-1)*(-c^2*x^
2+1)^(1/2)*c+64/3*b*(-d*(c^2*x^2-1))^(1/2)/(280*c^8*x^8-105*c^6*x^6-21*c^4*
x^4-315*c^2*x^2+225)*x^9/(c^2*x^2-1)*arcsin(c*x)*c^16-56/3*b*(-d*(c^2*x^2-1
))^(1/2)/(280*c^8*x^8-105*c^6*x^6-21*c^4*x^4-315*c^2*x^2+225)*x^7/(c^2*x^2-
1)*arcsin(c*x)*c^14-16/3*b*(-d*(c^2*x^2-1))^(1/2)/(280*c^8*x^8-105*c^6*x^6-
21*c^4*x^4-315*c^2*x^2+225)*x^6/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c^13-4/15*b*
(-d*(c^2*x^2-1))^(1/2)/(280*c^8*x^8-105*c^6*x^6-21*c^4*x^4-315*c^2*x^2+225)
*x^5/(c^2*x^2-1)*arcsin(c*x)*c^12-351/5*b*(-d*(c^2*x^2-1))^(1/2)/(280*c^8*x
```

```
^8-105*c^6*x^6-21*c^4*x^4-315*c^2*x^2+225)*x^3/(c^2*x^2-1)*arcsin(c*x)*c^10
+469/60*b*(-d*(c^2*x^2-1))^(1/2)/(280*c^8*x^8-105*c^6*x^6-21*c^4*x^4-315*c^
2*x^2+225)*x^2/(c^2*x^2-1)*c^9*(-c^2*x^2+1)^(1/2)+3057/35*b*(-d*(c^2*x^2-1)
)^(1/2)/(280*c^8*x^8-105*c^6*x^6-21*c^4*x^4-315*c^2*x^2+225)*x/(c^2*x^2-1)*
arcsin(c*x)*c^8-594/35*b*(-d*(c^2*x^2-1))^(1/2)/(280*c^8*x^8-105*c^6*x^6-21
*c^4*x^4-315*c^2*x^2+225)/x/(c^2*x^2-1)*arcsin(c*x)*c^6-16*I*b*(-d*(c^2*x^2
-1))^(1/2)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^7/(105*c^2*x^2-105)+128/105*I*b
*(-d*(c^2*x^2-1))^(1/2)/(280*c^8*x^8-105*c^6*x^6-21*c^4*x^4-315*c^2*x^2+225
)*x^13/(c^2*x^2-1)*c^20+128/105*I*b*(-d*(c^2*x^2-1))^(1/2)/(280*c^8*x^8-105
*c^6*x^6-21*c^4*x^4-315*c^2*x^2+225)*x^11/(c^2*x^2-1)*(-c^2*x^2+1)*c^18+16/
15*I*b*(-d*(c^2*x^2-1))^(1/2)/(280*c^8*x^8-105*c^6*x^6-21*c^4*x^4-315*c^2*x
^2+225)*x^9/(c^2*x^2-1)*(-c^2*x^2+1)*c^16-88/105*I*b*(-d*(c^2*x^2-1))^(1/2)
/(280*c^8*x^8-105*c^6*x^6-21*c^4*x^4-315*c^2*x^2+225)*x^7/(c^2*x^2-1)*(-c^2
*x^2+1)*c^14-302/105*I*b*(-d*(c^2*x^2-1))^(1/2)/(280*c^8*x^8-105*c^6*x^6-21
*c^4*x^4-315*c^2*x^2+225)*x^5/(c^2*x^2-1)*(-c^2*x^2+1)*c^12-10/7*I*b*(-d*(c
^2*x^2-1))^(1/2)/(280*c^8*x^8-105*c^6*x^6-21*c^4*x^4-315*c^2*x^2+225)*x^3/(
c^2*x^2-1)*(-c^2*x^2+1)*c^10+20/7*I*b*(-d*(c^2*x^2-1))^(1/2)/(280*c^8*x^8-1
05*c^6*x^6-21*c^4*x^4-315*c^2*x^2+225)*x/(c^2*x^2-1)*(-c^2*x^2+1)*c^8+120/7
*I*b*(-d*(c^2*x^2-1))^(1/2)/(280*c^8*x^8-105*c^6*x^6-21*c^4*x^4-315*c^2*x^2
+225)/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^7-4/35*a*c^2/d/x^5*(-c^2
*d*x^2+d)^(3/2)
```

maxima [A] time = 0.47, size = 199, normalized size = 0.76

$$-\frac{1}{420}\left(32\,c^6\sqrt{d}\,\log(x)-\frac{8\,c^4\sqrt{d}\,x^4+3\,c^2\sqrt{d}\,x^2-10\,\sqrt{d}}{x^6}\right)bc-\frac{1}{105}\left(\frac{8\left(-c^2dx^2+d\right)^{\frac{3}{2}}c^4}{dx^3}+\frac{12\left(-c^2dx^2+d\right)^{\frac{3}{2}}c^2}{dx^5}+\frac{15}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^8,x, algorithm="maxima")
```

```
[Out] -1/420*(32*c^6*sqrt(d)*log(x) - (8*c^4*sqrt(d)*x^4 + 3*c^2*sqrt(d)*x^2 - 10
*sqrt(d))/x^6)*b*c - 1/105*(8*(-c^2*d*x^2 + d)^(3/2)*c^4/(d*x^3) + 12*(-c^2
*d*x^2 + d)^(3/2)*c^2/(d*x^5) + 15*(-c^2*d*x^2 + d)^(3/2)/(d*x^7))*b*arcsin
(c*x) - 1/105*(8*(-c^2*d*x^2 + d)^(3/2)*c^4/(d*x^3) + 12*(-c^2*d*x^2 + d)^(
3/2)*c^2/(d*x^5) + 15*(-c^2*d*x^2 + d)^(3/2)/(d*x^7))*a
```

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

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))\,\sqrt{d-c^2\,d\,x^2}}{x^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2))/x^8,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2))/x^8, x)
```

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

$$\int \frac{\sqrt{-d\,(cx-1)\,(cx+1)}\,\,(a+b\,\mathrm{asin}\,(cx))}{x^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x))/x**8,x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))/x**8, x)
```

3.62 $\int x^5\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)dx$

Optimal. Leaf size=256

$$-\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{7c^6d^3}+\frac{2\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{5c^6d^2}-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3c^6d}-\frac{bcx^7\sqrt{d}}{49\sqrt{1}}$$

```
[Out] -1/3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/c^6/d+2/5*(-c^2*d*x^2+d)^(5/2)*
(a+b*arcsin(c*x))/c^6/d^2-1/7*(-c^2*d*x^2+d)^(7/2)*(a+b*arcsin(c*x))/c^6/d^
3+8/105*b*x*(-c^2*d*x^2+d)^(1/2)/c^5/(-c^2*x^2+1)^(1/2)+4/315*b*x^3*(-c^2*d
*x^2+d)^(1/2)/c^3/(-c^2*x^2+1)^(1/2)+1/175*b*x^5*(-c^2*d*x^2+d)^(1/2)/c/(-c
^2*x^2+1)^(1/2)-1/49*b*c*x^7*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.21, antiderivative size = 256, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {266, 43, 4691, 12}

$$-\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{7c^6d^3}+\frac{2\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{5c^6d^2}-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3c^6d}-\frac{bcx^7\sqrt{d}}{49\sqrt{1}}$$

Antiderivative was successfully verified.

```
[In] Int[x^5*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (8*b*x*Sqrt[d - c^2*d*x^2])/(105*c^5*Sqrt[1 - c^2*x^2]) + (4*b*x^3*Sqrt[d -
 c^2*d*x^2])/(315*c^3*Sqrt[1 - c^2*x^2]) + (b*x^5*Sqrt[d - c^2*d*x^2])/(175
*c*Sqrt[1 - c^2*x^2]) - (b*c*x^7*Sqrt[d - c^2*d*x^2])/(49*Sqrt[1 - c^2*x^2]
) - ((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(3*c^6*d) + (2*(d - c^2*d*x
^2)^(5/2)*(a + b*ArcSin[c*x]))/(5*c^6*d^2) - ((d - c^2*d*x^2)^(7/2)*(a + b*
ArcSin[c*x]))/(7*c^6*d^3)
```

Rule 12

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

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4691

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[a + b*ArcSi
n[c*x], Int[x^m*(d + e*x^2)^p, x], x] - Dist[(b*c*d^(p - 1/2)*Sqrt[d + e*x^
2])/Sqrt[1 - c^2*x^2], Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x
]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p + 1/2, 0] &&
 (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0])
```

Rubi steps

$$\int x^5\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)dx = -\frac{\left(bc\sqrt{d-c^2dx^2}\right)\int\frac{-8-4c^2x^2-3c^4x^4+15c^6x^6}{105c^6}dx}{\sqrt{1-c^2x^2}} + \left(a+b\sin^{-1}(cx)\right)\int x^5\sqrt{d-$$

$$= -\frac{\left(b\sqrt{d-c^2dx^2}\right)\int\left(-8-4c^2x^2-3c^4x^4+15c^6x^6\right)dx}{105c^5\sqrt{1-c^2x^2}} + \frac{1}{2}\left(a+b\sin^{-1}(c$$

$$= \frac{8bx\sqrt{d-c^2dx^2}}{105c^5\sqrt{1-c^2x^2}} + \frac{4bx^3\sqrt{d-c^2dx^2}}{315c^3\sqrt{1-c^2x^2}} + \frac{bx^5\sqrt{d-c^2dx^2}}{175c\sqrt{1-c^2x^2}} - \frac{bcx^7\sqrt{d-c^2dx^2}}{49\sqrt{1-c^2x^2}}$$

$$= \frac{8bx\sqrt{d-c^2dx^2}}{105c^5\sqrt{1-c^2x^2}} + \frac{4bx^3\sqrt{d-c^2dx^2}}{315c^3\sqrt{1-c^2x^2}} + \frac{bx^5\sqrt{d-c^2dx^2}}{175c\sqrt{1-c^2x^2}} - \frac{bcx^7\sqrt{d-c^2dx^2}}{49\sqrt{1-c^2x^2}}$$

Mathematica [A] time = 0.19, size = 157, normalized size = 0.61

$$\frac{\sqrt{d-c^2dx^2}\left(105a\sqrt{1-c^2x^2}\left(15c^6x^6-3c^4x^4-4c^2x^2-8\right)+bcx\left(-225c^6x^6+63c^4x^4+140c^2x^2+840\right)+105b\sqrt{1}\right.}{11025c^6\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^5*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(b*c*x*(840 + 140*c^2*x^2 + 63*c^4*x^4 - 225*c^6*x^6)
+ 105*a*Sqrt[1 - c^2*x^2]*(-8 - 4*c^2*x^2 - 3*c^4*x^4 + 15*c^6*x^6) + 105*b
*Sqrt[1 - c^2*x^2]*(-8 - 4*c^2*x^2 - 3*c^4*x^4 + 15*c^6*x^6)*ArcSin[c*x]))/
(11025*c^6*Sqrt[1 - c^2*x^2])
```

fricas [A] time = 0.59, size = 177, normalized size = 0.69

$$\frac{\left(225\,bc^7x^7-63\,bc^5x^5-140\,bc^3x^3-840\,bcx\right)\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+1}+105\left(15\,ac^8x^8-18\,ac^6x^6-ac^4x^4-4\,ac^2\right.}{11025\left(c^8x^2-c^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/11025*((225*b*c^7*x^7 - 63*b*c^5*x^5 - 140*b*c^3*x^3 - 840*b*c*x)*sqrt(-c
^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1) + 105*(15*a*c^8*x^8 - 18*a*c^6*x^6 - a*c^4
*x^4 - 4*a*c^2*x^2 + (15*b*c^8*x^8 - 18*b*c^6*x^6 - b*c^4*x^4 - 4*b*c^2*x^2
 + 8*b)*arcsin(c*x) + 8*a)*sqrt(-c^2*d*x^2 + d))/(c^8*x^2 - c^6)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.52, size = 880, normalized size = 3.44

$$a\left(-\frac{x^4\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}}{7c^2d}+\frac{-\frac{4x^2\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}}{35c^2d}-\frac{8\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}}{105d\,c^4}}{c^2}\right)+b\left(\frac{\sqrt{-d\left(c^2x^2-1\right)}\left(64c^8x^8-144c^6x^6-64i\sqrt{-c^2x^2+1}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] a*(-1/7*x^4*(-c^2*d*x^2+d)^(3/2)/c^2/d+4/7/c^2*(-1/5*x^2*(-c^2*d*x^2+d)^(3/
2)/c^2/d-2/15/d/c^4*(-c^2*d*x^2+d)^(3/2)))+b*(1/6272*(-d*(c^2*x^2-1))^(1/2)
*(64*c^8*x^8-144*c^6*x^6-64*I*(-c^2*x^2+1)^(1/2)*x^7*c^7+104*c^4*x^4+112*I*
(-c^2*x^2+1)^(1/2)*x^5*c^5-25*c^2*x^2-56*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+7*I*(
-c^2*x^2+1)^(1/2)*x*c+1)*(I+7*arcsin(c*x))/c^6/(c^2*x^2-1)+3/3200*(-d*(c^2*
x^2-1))^(1/2)*(16*c^6*x^6-28*c^4*x^4-16*I*(-c^2*x^2+1)^(1/2)*x^5*c^5+13*c^2
*x^2+20*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-5*I*(-c^2*x^2+1)^(1/2)*x*c-1)*(I+5*arc
sin(c*x))/c^6/(c^2*x^2-1)-5/128*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2
+1)^(1/2)*x*c-1)*(I+arcsin(c*x))/c^6/(c^2*x^2-1)-5/128*(-d*(c^2*x^2-1))^(1/
2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(arcsin(c*x)-I)/c^6/(c^2*x^2-1)+1/1
152*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-
c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*(-I+3*arcsin(c*x))/c^6/(c^2*x^2-1)+1/6272
*(-d*(c^2*x^2-1))^(1/2)*(64*I*(-c^2*x^2+1)^(1/2)*x^7*c^7+64*c^8*x^8-112*I*(
-c^2*x^2+1)^(1/2)*x^5*c^5-144*c^6*x^6+56*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+104*c
^4*x^4-7*I*(-c^2*x^2+1)^(1/2)*x*c-25*c^2*x^2+1)*(-I+7*arcsin(c*x))/c^6/(c^2
*x^2-1)+1/7200*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*
(-13*I+15*arcsin(c*x))*cos(4*arcsin(c*x))/c^6/(c^2*x^2-1)-1/14400*(-d*(c^2*
x^2-1))^(1/2)*(I*c^2*x^2-c*x*(-c^2*x^2+1)^(1/2)-I)*(-I+105*arcsin(c*x))*sin
(4*arcsin(c*x))/c^6/(c^2*x^2-1))
```

maxima [A] time = 0.61, size = 197, normalized size = 0.77

$$-\frac{1}{105}\left(\frac{15\left(-c^2dx^2+d\right)^{\frac{3}{2}}x^4}{c^2d}+\frac{12\left(-c^2dx^2+d\right)^{\frac{3}{2}}x^2}{c^4d}+\frac{8\left(-c^2dx^2+d\right)^{\frac{3}{2}}}{c^6d}\right)b\arcsin\left(cx\right)-\frac{1}{105}\left(\frac{15\left(-c^2dx^2+d\right)^{\frac{3}{2}}x^4}{c^2d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] -1/105*(15*(-c^2*d*x^2 + d)^(3/2)*x^4/(c^2*d) + 12*(-c^2*d*x^2 + d)^(3/2)*x
^2/(c^4*d) + 8*(-c^2*d*x^2 + d)^(3/2)/(c^6*d))*b*arcsin(c*x) - 1/105*(15*(-
c^2*d*x^2 + d)^(3/2)*x^4/(c^2*d) + 12*(-c^2*d*x^2 + d)^(3/2)*x^2/(c^4*d) +
8*(-c^2*d*x^2 + d)^(3/2)/(c^6*d))*a - 1/11025*(225*c^6*sqrt(d)*x^7 - 63*c^4
*sqrt(d)*x^5 - 140*c^2*sqrt(d)*x^3 - 840*sqrt(d)*x)*b/c^5
```

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

$$\int x^5\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\sqrt{d-c^2\,d\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int(x^5*(a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2), x)
```

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

$$\int x^5\sqrt{-d\left(cx-1\right)\left(cx+1\right)}\,\left(a+b\,\mathrm{asin}\left(cx\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x)),x)
```

```
[Out] Integral(x**5*sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x)), x)
```

3.63 $\int x^3\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=183

$$\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{5c^4d^2}-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3c^4d}-\frac{bcx^5\sqrt{d-c^2dx^2}}{25\sqrt{1-c^2x^2}}+\frac{bx^3\sqrt{d-c^2dx^2}}{45c\sqrt{1-c^2x^2}}+\frac{2bx\sqrt{d-c^2dx^2}}{15c^3\sqrt{1-c^2x^2}}$$

```
[Out] -1/3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/c^4/d+1/5*(-c^2*d*x^2+d)^(5/2)*
(a+b*arcsin(c*x))/c^4/d^2+2/15*b*x*(-c^2*d*x^2+d)^(1/2)/c^3/(-c^2*x^2+1)^(1
/2)+1/45*b*x^3*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-1/25*b*c*x^5*(-c^2
*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 183, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {266, 43, 4691, 12}

$$\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{5c^4d^2}-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3c^4d}-\frac{bcx^5\sqrt{d-c^2dx^2}}{25\sqrt{1-c^2x^2}}+\frac{bx^3\sqrt{d-c^2dx^2}}{45c\sqrt{1-c^2x^2}}+\frac{2bx\sqrt{d-c^2dx^2}}{15c^3\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (2*b*x*Sqrt[d - c^2*d*x^2])/(15*c^3*Sqrt[1 - c^2*x^2]) + (b*x^3*Sqrt[d - c^
2*d*x^2])/(45*c*Sqrt[1 - c^2*x^2]) - (b*c*x^5*Sqrt[d - c^2*d*x^2])/(25*Sqrt
[1 - c^2*x^2]) - ((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(3*c^4*d) + ((
d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(5*c^4*d^2)
```

Rule 12

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

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4691

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[a + b*ArcSi
n[c*x], Int[x^m*(d + e*x^2)^p, x], x] - Dist[(b*c*d^(p - 1/2)*Sqrt[d + e*x^
2])/Sqrt[1 - c^2*x^2], Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x
]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p + 1/2, 0] &&
 (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0])
```

Rubi steps

$$\int x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)dx = -\frac{\left(bc\sqrt{d-c^2dx^2}\right)\int \frac{-2-c^2x^2+3c^4x^4}{15c^4}\,dx}{\sqrt{1-c^2x^2}} + \left(a+b\sin^{-1}(cx)\right)\int x^3\sqrt{d-c^2c$$

$$= -\frac{\left(b\sqrt{d-c^2dx^2}\right)\int\left(-2-c^2x^2+3c^4x^4\right)dx}{15c^3\sqrt{1-c^2x^2}} + \frac{1}{2}\left(a+b\sin^{-1}(cx)\right)\text{Sub}$$

$$= \frac{2bx\sqrt{d-c^2dx^2}}{15c^3\sqrt{1-c^2x^2}} + \frac{bx^3\sqrt{d-c^2dx^2}}{45c\sqrt{1-c^2x^2}} - \frac{bcx^5\sqrt{d-c^2dx^2}}{25\sqrt{1-c^2x^2}} + \frac{1}{2}\left(a+b\sin^{-}\right.$$

$$= \frac{2bx\sqrt{d-c^2dx^2}}{15c^3\sqrt{1-c^2x^2}} + \frac{bx^3\sqrt{d-c^2dx^2}}{45c\sqrt{1-c^2x^2}} - \frac{bcx^5\sqrt{d-c^2dx^2}}{25\sqrt{1-c^2x^2}} - \frac{\left(d-c^2dx^2\right)^{3/}}{}$$

Mathematica [A] time = 0.13, size = 134, normalized size = 0.73

$$\frac{\sqrt{d-c^2dx^2}\left(15a\sqrt{1-c^2x^2}\left(3c^4x^4-c^2x^2-2\right)+b\left(-9c^5x^5+5c^3x^3+30cx\right)+15b\sqrt{1-c^2x^2}\left(3c^4x^4-c^2x^2-2\right.\right.}{225c^4\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(15*a*Sqrt[1 - c^2*x^2]*(-2 - c^2*x^2 + 3*c^4*x^4) + b
*(30*c*x + 5*c^3*x^3 - 9*c^5*x^5) + 15*b*Sqrt[1 - c^2*x^2]*(-2 - c^2*x^2 +
3*c^4*x^4)*ArcSin[c*x]))/(225*c^4*Sqrt[1 - c^2*x^2])
```

fricas [A] time = 0.57, size = 150, normalized size = 0.82

$$\frac{\left(9\,bc^5x^5-5\,bc^3x^3-30\,bcx\right)\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+1}\;+15\left(3\,ac^6x^6-4\,ac^4x^4-ac^2x^2+\left(3\,bc^6x^6-4\,bc^4x^4-bc\right.\right.}{225\left(c^6x^2-c^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/225*((9*b*c^5*x^5 - 5*b*c^3*x^3 - 30*b*c*x)*sqrt(-c^2*d*x^2 + d)*sqrt(-c^
2*x^2 + 1) + 15*(3*a*c^6*x^6 - 4*a*c^4*x^4 - a*c^2*x^2 + (3*b*c^6*x^6 - 4*b
*c^4*x^4 - b*c^2*x^2 + 2*b)*arcsin(c*x) + 2*a)*sqrt(-c^2*d*x^2 + d))/(c^6*x
^2 - c^4)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.29, size = 544, normalized size = 2.97

$$a\left(-\frac{x^2\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}}{5c^2d}-\frac{2\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}}{15d\,c^4}\right)+b\left(\frac{\sqrt{-d\left(c^2x^2-1\right)}\left(16c^6x^6-28c^4x^4-16i\sqrt{-c^2x^2+1}\;x^5c^5+13c\right.}{800c^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] a*(-1/5*x^2*(-c^2*d*x^2+d)^(3/2)/c^2/d-2/15/d/c^4*(-c^2*d*x^2+d)^(3/2))+b*(
1/800*(-d*(c^2*x^2-1))^(1/2)*(16*c^6*x^6-28*c^4*x^4-16*I*(-c^2*x^2+1)^(1/2)
*x^5*c^5+13*c^2*x^2+20*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-5*I*(-c^2*x^2+1)^(1/2)*
x*c-1)*(I+5*arcsin(c*x))/c^4/(c^2*x^2-1)-1/16*(-d*(c^2*x^2-1))^(1/2)*(c^2*x
^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*(I+arcsin(c*x))/c^4/(c^2*x^2-1)-1/16*(-d*(c^
2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(arcsin(c*x)-I)/c^4/(c
^2*x^2-1)+1/288*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^
4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*(-I+3*arcsin(c*x))/c^4/(c^2*x
^2-1)-1/3600*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(1
7*I+15*arcsin(c*x))*cos(4*arcsin(c*x))/c^4/(c^2*x^2-1)-1/900*(-d*(c^2*x^2-1
))^(1/2)*(I*c^2*x^2-c*x*(-c^2*x^2+1)^(1/2)-I)*(2*I+15*arcsin(c*x))*sin(4*ar
csin(c*x))/c^4/(c^2*x^2-1))
```

maxima [A] time = 0.51, size = 138, normalized size = 0.75

$$-\frac{1}{15}b\left(\frac{3\left(-c^2dx^2+d\right)^{\frac{3}{2}}x^2}{c^2d}+\frac{2\left(-c^2dx^2+d\right)^{\frac{3}{2}}}{c^4d}\right)\arcsin(cx)-\frac{1}{15}a\left(\frac{3\left(-c^2dx^2+d\right)^{\frac{3}{2}}x^2}{c^2d}+\frac{2\left(-c^2dx^2+d\right)^{\frac{3}{2}}}{c^4d}\right)-\frac{\left(9c^4\sqrt{c}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] -1/15*b*(3*(-c^2*d*x^2 + d)^(3/2)*x^2/(c^2*d) + 2*(-c^2*d*x^2 + d)^(3/2)/(c
^4*d))*arcsin(c*x) - 1/15*a*(3*(-c^2*d*x^2 + d)^(3/2)*x^2/(c^2*d) + 2*(-c^2
*d*x^2 + d)^(3/2)/(c^4*d)) - 1/225*(9*c^4*sqrt(d)*x^5 - 5*c^2*sqrt(d)*x^3 -
 30*sqrt(d)*x)*b/c^3
```

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

$$\int x^3\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\sqrt{d-c^2\,d\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int(x^3*(a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2), x)
```

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

$$\int x^{3}\sqrt{-d\left(cx-1\right)\left(cx+1\right)}\,\left(a+b\,\mathrm{asin}\left(cx\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x)),x)
```

```
[Out] Integral(x**3*sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x)), x)
```

3.64 $\int x\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=110

$$-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3c^2d}+\frac{bx\sqrt{d-c^2dx^2}}{3c\sqrt{1-c^2x^2}}-\frac{bcx^3\sqrt{d-c^2dx^2}}{9\sqrt{1-c^2x^2}}$$

```
[Out] -1/3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/c^2/d+1/3*b*x*(-c^2*d*x^2+d)^(1
/2)/c/(-c^2*x^2+1)^(1/2)-1/9*b*c*x^3*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2
)
```

Rubi [A] time = 0.07, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {4677}

$$-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3c^2d}-\frac{bcx^3\sqrt{d-c^2dx^2}}{9\sqrt{1-c^2x^2}}+\frac{bx\sqrt{d-c^2dx^2}}{3c\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*x*Sqrt[d - c^2*d*x^2])/(3*c*Sqrt[1 - c^2*x^2]) - (b*c*x^3*Sqrt[d - c^2*d
*x^2])/(9*Sqrt[1 - c^2*x^2]) - ((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/
(3*c^2*d)
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int x\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)\,dx&=-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3c^2d}+\frac{\left(b\sqrt{d-c^2dx^2}\right)\int\left(1-c^2x^2\right)\,dx}{3c\sqrt{1-c^2x^2}}\\&=\frac{bx\sqrt{d-c^2dx^2}}{3c\sqrt{1-c^2x^2}}-\frac{bcx^3\sqrt{d-c^2dx^2}}{9\sqrt{1-c^2x^2}}-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3c^2d}\end{aligned}$$

Mathematica [A] time = 0.09, size = 70, normalized size = 0.64

$$\frac{\sqrt{d-c^2dx^2}\left(\left(c^2x^2-1\right)\left(a+b\sin^{-1}(cx)\right)+\frac{bc\left(x-\frac{c^2x^3}{3}\right)}{\sqrt{1-c^2x^2}}\right)}{3c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*((b*c*(x - (c^2*x^3)/3))/Sqrt[1 - c^2*x^2] + (-1 + c^2
*x^2)*(a + b*ArcSin[c*x])))/(3*c^2)
```

fricas [A] time = 0.55, size = 116, normalized size = 1.05

$$\frac{\left(bc^3x^3 - 3\,bcx\right)\sqrt{-c^2dx^2 + d}\,\sqrt{-c^2x^2 + 1} + 3\left(ac^4x^4 - 2\,ac^2x^2 + \left(bc^4x^4 - 2\,bc^2x^2 + b\right)\arcsin\left(cx\right) + a\right)\sqrt{-c^2dx^2 +}}{9\left(c^4x^2 - c^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/9*((b*c^3*x^3 - 3*b*c*x)*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1) + 3*(a*c
^4*x^4 - 2*a*c^2*x^2 + (b*c^4*x^4 - 2*b*c^2*x^2 + b)*arcsin(c*x) + a)*sqrt(
-c^2*d*x^2 + d))/(c^4*x^2 - c^2)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.18, size = 343, normalized size = 3.12

$$-\frac{a\left(-c^2d\,x^2 + d\right)^{\frac{3}{2}}}{3c^2d} + b\left(\frac{\sqrt{-d\left(c^2x^2 - 1\right)}\,\left(4c^4x^4 - 5c^2x^2 - 4i\sqrt{-c^2x^2 + 1}\;x^3c^3 + 3i\sqrt{-c^2x^2 + 1}\;xc + 1\right)\left(i + 3\arcsin\right.}{72c^2\left(c^2x^2 - 1\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] -1/3*a/c^2/d*(-c^2*d*x^2+d)^(3/2)+b*(1/72*(-d*(c^2*x^2-1))^(1/2)*(4*c^4*x^4
-5*c^2*x^2-4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+3*I*(-c^2*x^2+1)^(1/2)*x*c+1)*(I+
3*arcsin(c*x))/c^2/(c^2*x^2-1)-1/8*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*
x^2+1)^(1/2)*x*c-1)*(I+arcsin(c*x))/c^2/(c^2*x^2-1)-1/8*(-d*(c^2*x^2-1))^(1
/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(arcsin(c*x)-I)/c^2/(c^2*x^2-1)+1/
72*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-c
^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*(-I+3*arcsin(c*x))/c^2/(c^2*x^2-1))
```

maxima [A] time = 0.47, size = 75, normalized size = 0.68

$$-\frac{\left(-c^2dx^2 + d\right)^{\frac{3}{2}}b\arcsin\left(cx\right)}{3\,c^2d} - \frac{\left(c^2d^{\frac{3}{2}}x^3 - 3\,d^{\frac{3}{2}}x\right)b}{9\,cd} - \frac{\left(-c^2dx^2 + d\right)^{\frac{3}{2}}a}{3\,c^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] -1/3*(-c^2*d*x^2 + d)^(3/2)*b*arcsin(c*x)/(c^2*d) - 1/9*(c^2*d^(3/2)*x^3 -
3*d^(3/2)*x)*b/(c*d) - 1/3*(-c^2*d*x^2 + d)^(3/2)*a/(c^2*d)
```

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

$$\int x\,\left(a + b\,\mathrm{asin}\left(c\,x\right)\right)\,\sqrt{d - c^2\,d\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2),x)
[Out] int(x*(a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2), x)
```

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

$$\int x\sqrt{-d(cx-1)(cx+1)}\,(a+b\operatorname{asin}(cx))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x)),x)
[Out] Integral(x*sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x)), x)
```

3.65 $\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x}\,dx$

Optimal. Leaf size=203

$$\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)-\frac{2\sqrt{d-c^2dx^2}\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}+\frac{ib\sqrt{d-c^2dx^2}\,\mathrm{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)}{\sqrt{1-c^2x^2}}-$$

```
[Out] (-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))-b*c*x*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2
+1)^(1/2)-2*(a+b*arcsin(c*x))*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2
+d)^(1/2)/(-c^2*x^2+1)^(1/2)+I*b*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))*(-c^2
*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-I*b*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))*
(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.21, antiderivative size = 203, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {4697, 4709, 4183, 2279, 2391, 8}

$$\frac{ib\sqrt{d-c^2dx^2}\,\mathrm{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)}{\sqrt{1-c^2x^2}}-\frac{ib\sqrt{d-c^2dx^2}\,\mathrm{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)}{\sqrt{1-c^2x^2}}+\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)-\frac{2\sqrt{d}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/x,x]
```

```
[Out] -((b*c*x*Sqrt[d - c^2*d*x^2])/Sqrt[1 - c^2*x^2]) + Sqrt[d - c^2*d*x^2]*(a +
 b*ArcSin[c*x]) - (2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])*ArcTanh[E^(I*A
rcSin[c*x])])/Sqrt[1 - c^2*x^2] + (I*b*Sqrt[d - c^2*d*x^2]*PolyLog[2, -E^(I
*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] - (I*b*Sqrt[d - c^2*d*x^2]*PolyLog[2, E^(
I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
```

```
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x}\,dx = \sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{\sqrt{d-c^2dx^2}\int\frac{a+b\sin^{-1}(cx)}{x\sqrt{1-c^2x^2}}\,dx}{\sqrt{1-c^2x^2}}-\frac{\left(bc\sqrt{d-\right.}{\sqrt{1}}$$

$$=-\frac{bcx\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}}+\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{\sqrt{d-c^2dx^2}\,\text{Subst}\left(\right.}{}$$

$$=-\frac{bcx\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}}+\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)-\frac{2\sqrt{d-c^2dx^2}\left(a+b\right.}{}$$

$$=-\frac{bcx\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}}+\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)-\frac{2\sqrt{d-c^2dx^2}\left(a+b\right.}{}$$

$$=-\frac{bcx\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}}+\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)-\frac{2\sqrt{d-c^2dx^2}\left(a+b\right.}{}$$

Mathematica [A] time = 0.62, size = 187, normalized size = 0.92

$$a\sqrt{d-c^2dx^2}-a\sqrt{d}\log\left(\sqrt{d}\sqrt{d-c^2dx^2}+d\right)+a\sqrt{d}\log(x)+\frac{b\sqrt{d-c^2dx^2}\left(\sqrt{1-c^2x^2}\sin^{-1}(cx)+i\text{Li}_2\left(-e^{i\sin^{-1}}\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/x,x]
```

```
[Out] a*Sqrt[d - c^2*d*x^2] + a*Sqrt[d]*Log[x] - a*Sqrt[d]*Log[d + Sqrt[d]*Sqrt[d
 - c^2*d*x^2]] + (b*Sqrt[d - c^2*d*x^2]*(-(c*x) + Sqrt[1 - c^2*x^2]*ArcSin[
c*x] + ArcSin[c*x]*Log[1 - E^(I*ArcSin[c*x])] - ArcSin[c*x]*Log[1 + E^(I*Ar
cSin[c*x])] + I*PolyLog[2, -E^(I*ArcSin[c*x])] - I*PolyLog[2, E^(I*ArcSin[c
*x])]))/Sqrt[1 - c^2*x^2]
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x,x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/x, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.24, size = 413, normalized size = 2.03

$$-\sqrt{d}\ \ln\left(\frac{2d+2\sqrt{d}\ \sqrt{-c^2 d\,x^2+d}}{x}\right)a+\sqrt{-c^2 d\,x^2+d}\ a+\frac{b\sqrt{-d\left(c^2x^2-1\right)}\ \sqrt{-c^2x^2+1}\ xc}{c^2x^2-1}+\frac{b\sqrt{-d\left(c^2x^2-1\right)}\ \text{arcsi}}{c^2x^2-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x,x)
```

```
[Out] -d^(1/2)*ln((2*d+2*d^(1/2)*(-c^2*d*x^2+d)^(1/2))/x)*a+(-c^2*d*x^2+d)^(1/2)*
a+b*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x*c+b*(-d*(c^2*x^
2-1))^(1/2)/(c^2*x^2-1)*arcsin(c*x)*x^2*c^2-b*(-d*(c^2*x^2-1))^(1/2)/(c^2*x
^2-1)*arcsin(c*x)+b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*a
rcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^
2+1)^(1/2)/(c^2*x^2-1)*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))-I*b*(-d*(
c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*polylog(2,-I*c*x-(-c^2*x^2
+1)^(1/2))+I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*polylo
g(2,I*c*x+(-c^2*x^2+1)^(1/2))
```

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

$$b\sqrt{d}\int\frac{\sqrt{cx+1}\,\sqrt{-cx+1}\ \arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{x}\,dx-\left(\sqrt{d}\ \log\left(\frac{2\sqrt{-c^2dx^2+d}\,\sqrt{d}}{|x|}+\frac{2\,d}{|x|}\right)-\sqrt{-c^2dx^2+}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x,x, algorithm="maxima")
```

```
[Out] b*sqrt(d)*integrate(sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)
*sqrt(-c*x + 1))/x, x) - (sqrt(d)*log(2*sqrt(-c^2*d*x^2 + d)*sqrt(d)/abs(x)
 + 2*d/abs(x)) - sqrt(-c^2*d*x^2 + d))*a
```

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

$$\int\frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\sqrt{d-c^2\,d\,x^2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2))/x,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2))/x, x)
```

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

$$\int\frac{\sqrt{-d\left(cx-1\right)\left(cx+1\right)}\ \left(a+b\,\mathrm{asin}\left(cx\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x))/x,x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))/x, x)
```

3.66 $\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x^3}\,dx$

Optimal. Leaf size=225

$$-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2x^2}+\frac{c^2\sqrt{d-c^2dx^2}\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}-\frac{ibc^2\sqrt{d-c^2dx^2}\,\text{Li}_2\left(-e^{i\sin\cdots}\right.}{2\sqrt{1-c^2x^2}}$$

```
[Out] -1/2*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^2-1/2*b*c*(-c^2*d*x^2+d)^(1/2
)/x/(-c^2*x^2+1)^(1/2)+c^2*(a+b*arcsin(c*x))*arctanh(I*c*x+(-c^2*x^2+1)^(1/
2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-1/2*I*b*c^2*polylog(2,-I*c*x-(-
c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/2*I*b*c^2*polyl
og(2,I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.21, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {4693, 30, 4709, 4183, 2279, 2391}

$$-\frac{ibc^2\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)}{2\sqrt{1-c^2x^2}}+\frac{ibc^2\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)}{2\sqrt{1-c^2x^2}}-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(c\right.}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/x^3,x]
```

```
[Out] -(b*c*Sqrt[d - c^2*d*x^2])/(2*x*Sqrt[1 - c^2*x^2]) - (Sqrt[d - c^2*d*x^2]*(
a + b*ArcSin[c*x]))/(2*x^2) + (c^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])*
ArcTanh[E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] - ((I/2)*b*c^2*Sqrt[d - c^2*d
*x^2]*PolyLog[2, -E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] + ((I/2)*b*c^2*Sqrt
[d - c^2*d*x^2]*PolyLog[2, E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4693

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(b*c*n*Sqrt[d + e*x^2])/(f*(m + 1)*Sqr
```

```
t[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1), x], x] + Di
st[(c^2*Sqrt[d + e*x^2])/(f^2*(m + 1)*Sqrt[1 - c^2*x^2]), Int[((f*x)^(m + 2
)*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c, d, e
, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && LtQ[m, -1]
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x^3}\,dx = -\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2x^2} + \frac{\left(bc\sqrt{d-c^2dx^2}\right)\int \frac{1}{x^2}\,dx}{2\sqrt{1-c^2x^2}} - \frac{\left(c^2\sqrt{d-c^2dx^2}\right.}{2\sqrt{}}$$

$$= -\frac{bc\sqrt{d-c^2dx^2}}{2x\sqrt{1-c^2x^2}} - \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2x^2} - \frac{\left(c^2\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\right.}{2}$$

$$= -\frac{bc\sqrt{d-c^2dx^2}}{2x\sqrt{1-c^2x^2}} - \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2x^2} + \frac{c^2\sqrt{d-c^2dx^2}\left(a+b\sin\right.}{\sqrt{1}}$$

$$= -\frac{bc\sqrt{d-c^2dx^2}}{2x\sqrt{1-c^2x^2}} - \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2x^2} + \frac{c^2\sqrt{d-c^2dx^2}\left(a+b\sin\right.}{\sqrt{1}}$$

$$= -\frac{bc\sqrt{d-c^2dx^2}}{2x\sqrt{1-c^2x^2}} - \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2x^2} + \frac{c^2\sqrt{d-c^2dx^2}\left(a+b\sin\right.}{\sqrt{1}}$$

Mathematica [A] time = 2.36, size = 239, normalized size = 1.06

$$\frac{1}{8}\left(-\frac{4a\sqrt{d-c^2dx^2}}{x^2} + 4ac^2\sqrt{d}\log\left(\sqrt{d}\sqrt{d-c^2dx^2}+d\right) - 4ac^2\sqrt{d}\log(x) + \frac{bc^2d\sqrt{1-c^2x^2}\left(-4i\text{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/x^3,x]
```

```
[Out] ((-4*a*Sqrt[d - c^2*d*x^2])/x^2 - 4*a*c^2*Sqrt[d]*Log[x] + 4*a*c^2*Sqrt[d]*
Log[d + Sqrt[d]*Sqrt[d - c^2*d*x^2]] + (b*c^2*d*Sqrt[1 - c^2*x^2]*(-2*Cot[A
rcSin[c*x]/2] - ArcSin[c*x]*Csc[ArcSin[c*x]/2]^2 - 4*ArcSin[c*x]*Log[1 - E^
(I*ArcSin[c*x])] + 4*ArcSin[c*x]*Log[1 + E^(I*ArcSin[c*x])] - (4*I)*PolyLog
[2, -E^(I*ArcSin[c*x])] + (4*I)*PolyLog[2, E^(I*ArcSin[c*x])] + ArcSin[c*x]
*Sec[ArcSin[c*x]/2]^2 - 2*Tan[ArcSin[c*x]/2]))/Sqrt[d - c^2*d*x^2])/8
```

fricas [F] time = 0.86, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)}{x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^3,x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/x^3, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^3,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [B] time = 0.36, size = 462, normalized size = 2.05

$$-\frac{a\left(-c^{2} d\,x^{2}+d\right)^{\frac{3}{2}}}{2 d\,x^{2}}+\frac{a\sqrt{d}\,\ln\left(\frac{2 d+2\sqrt{d}\,\sqrt{-c^{2} d\,x^{2}+d}}{x}\right) c^{2}}{2}-\frac{a\sqrt{-c^{2} d\,x^{2}+d}\,c^{2}}{2}-\frac{b\sqrt{-d\left(c^{2} x^{2}-1\right)}\,\arcsin\left(c x\right) c^{2}}{2\left(c^{2} x^{2}-1\right)}+\frac{b\sqrt{-}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^3,x)
```

```
[Out] -1/2*a/d/x^2*(-c^2*d*x^2+d)^(3/2)+1/2*a*d^(1/2)*ln((2*d+2*d^(1/2)*(-c^2*d*x
^2+d)^(1/2))/x)*c^2-1/2*a*(-c^2*d*x^2+d)^(1/2)*c^2-1/2*b*(-d*(c^2*x^2-1))^(
1/2)/(c^2*x^2-1)*arcsin(c*x)*c^2+1/2*b*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)/x
*(-c^2*x^2+1)^(1/2)*c+1/2*b*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)/x^2*arcsin(c
*x)+b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*c^2/(2*c^2*x^2-2)*arcsin(c*
x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/
2)*c^2/(2*c^2*x^2-2)*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-I*b*(-d*(c^
2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*c^2/(2*c^2*x^2-2)*polylog(2,I*c*x+(-c^2*
x^2+1)^(1/2))+I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*c^2/(2*c^2*x^2-
2)*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))
```

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

$$b\sqrt{d}\int\frac{\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{x^{3}}\,dx+\frac{1}{2}\left(c^{2}\sqrt{d}\,\log\left(\frac{2\sqrt{-c^{2}dx^{2}+d}\,\sqrt{d}}{|x|}+\frac{2d}{|x|}\right)-\sqrt{-}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^3,x, algorithm="maxima")
```

```
[Out] b*sqrt(d)*integrate(sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)
*sqrt(-c*x + 1))/x^3, x) + 1/2*(c^2*sqrt(d)*log(2*sqrt(-c^2*d*x^2 + d)*sqrt
(d)/abs(x) + 2*d/abs(x)) - sqrt(-c^2*d*x^2 + d)*c^2 - (-c^2*d*x^2 + d)^(3/2
)/(d*x^2))*a
```

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

$$\int\frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\sqrt{d-c^{2}\,d\,x^{2}}}{x^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2))/x^3,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2))/x^3, x)
```

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

$$\int\frac{\sqrt{-d\left(cx-1\right)\left(cx+1\right)}\,\left(a+b\,\mathrm{asin}\left(cx\right)\right)}{x^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x))/x**3,x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))/x**3, x)
```

3.67 $\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x^5}\,dx$

Optimal. Leaf size=301

$$\frac{c^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{8x^2}-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{4x^4}+\frac{c^4\sqrt{d-c^2dx^2}\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(\right.}{4\sqrt{1-c^2x^2}}$$

```
[Out] -1/4*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^4+1/8*c^2*(a+b*arcsin(c*x))*(
-c^2*d*x^2+d)^(1/2)/x^2-1/12*b*c*(-c^2*d*x^2+d)^(1/2)/x^3/(-c^2*x^2+1)^(1/2
)+1/8*b*c^3*(-c^2*d*x^2+d)^(1/2)/x/(-c^2*x^2+1)^(1/2)+1/4*c^4*(a+b*arcsin(c
*x))*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1
/2)-1/8*I*b*c^4*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(
-c^2*x^2+1)^(1/2)+1/8*I*b*c^4*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*d*x
^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.29, antiderivative size = 301, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.259, Rules used = {4693, 30, 4701, 4709, 4183, 2279, 2391}

$$-\frac{ibc^4\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)}{8\sqrt{1-c^2x^2}}+\frac{ibc^4\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)}{8\sqrt{1-c^2x^2}}+\frac{c^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}\right.}{8x^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/x^5,x]
```

```
[Out] -(b*c*Sqrt[d - c^2*d*x^2])/(12*x^3*Sqrt[1 - c^2*x^2]) + (b*c^3*Sqrt[d - c^2
*d*x^2])/(8*x*Sqrt[1 - c^2*x^2]) - (Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])
)/(4*x^4) + (c^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*x^2) + (c^4*Sq
rt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])*ArcTanh[E^(I*ArcSin[c*x])])/(4*Sqrt[1
 - c^2*x^2]) - ((I/8)*b*c^4*Sqrt[d - c^2*d*x^2]*PolyLog[2, -E^(I*ArcSin[c*x
])])/Sqrt[1 - c^2*x^2] + ((I/8)*b*c^4*Sqrt[d - c^2*d*x^2]*PolyLog[2, E^(I*A
rcSin[c*x])])/Sqrt[1 - c^2*x^2]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4693

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(b*c*n*Sqrt[d + e*x^2])/(f*(m + 1)*Sqr
t[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1), x], x] + Di
st[(c^2*Sqrt[d + e*x^2])/(f^2*(m + 1)*Sqrt[1 - c^2*x^2]), Int[((f*x)^(m + 2
)*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c, d, e
, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && LtQ[m, -1]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x^5}\,dx = -\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{4x^4}+\frac{\left(bc\sqrt{d-c^2dx^2}\right)\int\frac{1}{x^4}\,dx}{4\sqrt{1-c^2x^2}}-\frac{\left(c^2\sqrt{d-c^2dx^2}\right.}{4\sqrt{}}$$

$$= -\frac{bc\sqrt{d-c^2dx^2}}{12x^3\sqrt{1-c^2x^2}}-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{4x^4}+\frac{c^2\sqrt{d-c^2dx^2}\left(a+b\,\mathrm{si}\right.}{8x^2}$$

$$= -\frac{bc\sqrt{d-c^2dx^2}}{12x^3\sqrt{1-c^2x^2}}+\frac{bc^3\sqrt{d-c^2dx^2}}{8x\sqrt{1-c^2x^2}}-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{4x^4}+\frac{c^2\sqrt{}}{}$$

$$= -\frac{bc\sqrt{d-c^2dx^2}}{12x^3\sqrt{1-c^2x^2}}+\frac{bc^3\sqrt{d-c^2dx^2}}{8x\sqrt{1-c^2x^2}}-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{4x^4}+\frac{c^2\sqrt{}}{}$$

$$= -\frac{bc\sqrt{d-c^2dx^2}}{12x^3\sqrt{1-c^2x^2}}+\frac{bc^3\sqrt{d-c^2dx^2}}{8x\sqrt{1-c^2x^2}}-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{4x^4}+\frac{c^2\sqrt{}}{}$$

$$= -\frac{bc\sqrt{d-c^2dx^2}}{12x^3\sqrt{1-c^2x^2}}+\frac{bc^3\sqrt{d-c^2dx^2}}{8x\sqrt{1-c^2x^2}}-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{4x^4}+\frac{c^2\sqrt{}}{}$$

Mathematica [A] time = 4.56, size = 321, normalized size = 1.07

$$-\frac{1}{8}ac^4\sqrt{d}\,\log(x)+\frac{a\left(c^2x^2-2\right)\sqrt{d-c^2dx^2}}{8x^4}+\frac{1}{8}ac^4\sqrt{d}\,\log\left(\sqrt{d}\sqrt{d-c^2dx^2}+d\right)+\frac{bc^4\sqrt{d-c^2dx^2}\left(-\frac{16\sin^4\left(\frac{1}{2}\sin^{-1}(cx\right.}{c^3x^3}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/x^5,x]
```

```
[Out] (a*(-2 + c^2*x^2)*Sqrt[d - c^2*d*x^2])/(8*x^4) - (a*c^4*Sqrt[d]*Log[x])/8 +
 (a*c^4*Sqrt[d]*Log[d + Sqrt[d]*Sqrt[d - c^2*d*x^2]])/8 + (b*c^4*Sqrt[d - c
^2*d*x^2]*(8*Cot[ArcSin[c*x]/2] + 6*ArcSin[c*x]*Csc[ArcSin[c*x]/2]^2 - c*x*
Csc[ArcSin[c*x]/2]^4 - 3*ArcSin[c*x]*Csc[ArcSin[c*x]/2]^4 - 24*ArcSin[c*x]*
Log[1 - E^(I*ArcSin[c*x])] + 24*ArcSin[c*x]*Log[1 + E^(I*ArcSin[c*x])] - (2
4*I)*PolyLog[2, -E^(I*ArcSin[c*x])] + (24*I)*PolyLog[2, E^(I*ArcSin[c*x])]
- 6*ArcSin[c*x]*Sec[ArcSin[c*x]/2]^2 + 3*ArcSin[c*x]*Sec[ArcSin[c*x]/2]^4 -
 (16*Sin[ArcSin[c*x]/2]^4)/(c^3*x^3) + 8*Tan[ArcSin[c*x]/2]))/(192*Sqrt[1 -
 c^2*x^2])
```

fricas [F] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)}{x^5},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^5,x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/x^5, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^5,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.45, size = 571, normalized size = 1.90

$$-\frac{a\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}}{4d\,x^4}-\frac{a\,c^2\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}}{8d\,x^2}+\frac{a\,c^4\sqrt{d}\,\ln\left(\frac{2d+2\sqrt{d}\,\sqrt{-c^2d\,x^2+d}}{x}\right)}{8}-\frac{a\,c^4\sqrt{-c^2d\,x^2+d}}{8}+\frac{b\sqrt{-d\left(c^2x^2-1\right)}}{8c^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^5,x)
```

```
[Out] -1/4*a/d/x^4*(-c^2*d*x^2+d)^(3/2)-1/8*a*c^2/d/x^2*(-c^2*d*x^2+d)^(3/2)+1/8*
a*c^4*d^(1/2)*ln((2*d+2*d^(1/2)*(-c^2*d*x^2+d)^(1/2))/x)-1/8*a*c^4*(-c^2*d*
x^2+d)^(1/2)+1/8*b*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)*arcsin(c*x)*c^4-1/8*b
*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)/x*(-c^2*x^2+1)^(1/2)*c^3-3/8*b*(-d*(c^2
*x^2-1))^(1/2)/(c^2*x^2-1)/x^2*arcsin(c*x)*c^2+1/12*b*(-d*(c^2*x^2-1))^(1/2
)/(c^2*x^2-1)/x^3*(-c^2*x^2+1)^(1/2)*c+1/4*b*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^
2-1)/x^4*arcsin(c*x)+b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*c^4/(8*c^2
*x^2-8)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))*arcsin(c*x)-b*(-d*(c^2*x^2-1))^(1/2)
*(-c^2*x^2+1)^(1/2)*c^4/(8*c^2*x^2-8)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))*arcsin
(c*x)+I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*c^4/(8*c^2*x^2-8)*polyl
og(2,-I*c*x-(-c^2*x^2+1)^(1/2))-I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/
2)*c^4/(8*c^2*x^2-8)*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))
```

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

$$b\sqrt{d}\int\frac{\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{x^5}\,dx+\frac{1}{8}\left(c^4\sqrt{d}\,\log\left(\frac{2\sqrt{-c^2dx^2+d}\,\sqrt{d}}{|x|}+\frac{2d}{|x|}\right)-\sqrt{-c\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))/x^5,x, algorithm="maxima")
```

```
[Out] b*sqrt(d)*integrate(sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)
*sqrt(-c*x + 1))/x^5, x) + 1/8*(c^4*sqrt(d)*log(2*sqrt(-c^2*d*x^2 + d)*sqrt
(d)/abs(x) + 2*d/abs(x)) - sqrt(-c^2*d*x^2 + d)*c^4 - (-c^2*d*x^2 + d)^(3/2
)*c^2/(d*x^2) - 2*(-c^2*d*x^2 + d)^(3/2)/(d*x^4))*a
```

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

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))\,\sqrt{d-c^2\,d\,x^2}}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2))/x^5,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2))/x^5, x)
```

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

$$\int \frac{\sqrt{-d\,(cx-1)\,(cx+1)}\,\left(a+b\,\mathrm{asin}\,(cx)\right)}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x))/x**5,x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))/x**5, x)
```

3.68 $\int x^4 \left(d-c^2 d x^2\right)^{3/2} \left(a+b \sin^{-1}(cx)\right) dx$

Optimal. Leaf size=340

$$\frac{1}{8} x^5 \left(d-c^2 d x^2\right)^{3/2} \left(a+b \sin^{-1}(cx)\right)+\frac{1}{16} d x^5 \sqrt{d-c^2 d x^2} \left(a+b \sin^{-1}(cx)\right)-\frac{d x^3 \sqrt{d-c^2 d x^2} \left(a+b \sin^{-1}(cx)\right)}{64 c^2}+\cdots$$

```
[Out] 1/8*x^5*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))-3/128*d*x*(a+b*arcsin(c*x))*
(-c^2*d*x^2+d)^(1/2)/c^4-1/64*d*x^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/
c^2+1/16*d*x^5*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)+3/256*b*d*x^2*(-c^2*d
*x^2+d)^(1/2)/c^3/(-c^2*x^2+1)^(1/2)+1/256*b*d*x^4*(-c^2*d*x^2+d)^(1/2)/c/(
-c^2*x^2+1)^(1/2)-1/32*b*c*d*x^6*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/
64*b*c^3*d*x^8*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+3/256*d*(a+b*arcsin(
c*x))^2*(-c^2*d*x^2+d)^(1/2)/b/c^5/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.41, antiderivative size = 340, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {4699, 4697, 4707, 4641, 30, 14}

$$\frac{1}{8} x^5 \left(d-c^2 d x^2\right)^{3/2} \left(a+b \sin^{-1}(cx)\right)+\frac{1}{16} d x^5 \sqrt{d-c^2 d x^2} \left(a+b \sin^{-1}(cx)\right)-\frac{d x^3 \sqrt{d-c^2 d x^2} \left(a+b \sin^{-1}(cx)\right)}{64 c^2}-\cdots$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (3*b*d*x^2*Sqrt[d - c^2*d*x^2])/(256*c^3*Sqrt[1 - c^2*x^2]) + (b*d*x^4*Sqrt
[d - c^2*d*x^2])/(256*c*Sqrt[1 - c^2*x^2]) - (b*c*d*x^6*Sqrt[d - c^2*d*x^2]
)/(32*Sqrt[1 - c^2*x^2]) + (b*c^3*d*x^8*Sqrt[d - c^2*d*x^2])/(64*Sqrt[1 - c
^2*x^2]) - (3*d*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(128*c^4) - (d*x
^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(64*c^2) + (d*x^5*Sqrt[d - c^2*
d*x^2]*(a + b*ArcSin[c*x]))/16 + (x^5*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c
*x]))/8 + (3*d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(256*b*c^5*Sqrt[1
 - c^2*x^2])
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
```

```
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int x^4 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right)\,dx = \frac{1}{8}x^5\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{8}(3d)\int x^4\sqrt{d-c^2dx^2}\,\left(a+b\,\mathrm{si}\right.$$

$$= \frac{1}{16}dx^5\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)+\frac{1}{8}x^5\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(\right.$$

$$= -\frac{bcdx^6\sqrt{d-c^2dx^2}}{32\sqrt{1-c^2x^2}}+\frac{bc^3dx^8\sqrt{d-c^2dx^2}}{64\sqrt{1-c^2x^2}}-\frac{dx^3\sqrt{d-c^2dx^2}\,\left(a+b\sin\right.}{64c^2}$$

$$= \frac{bdx^4\sqrt{d-c^2dx^2}}{256c\sqrt{1-c^2x^2}}-\frac{bcdx^6\sqrt{d-c^2dx^2}}{32\sqrt{1-c^2x^2}}+\frac{bc^3dx^8\sqrt{d-c^2dx^2}}{64\sqrt{1-c^2x^2}}-\frac{3dx\sqrt{d}}{}$$

$$= \frac{3bdx^2\sqrt{d-c^2dx^2}}{256c^3\sqrt{1-c^2x^2}}+\frac{bdx^4\sqrt{d-c^2dx^2}}{256c\sqrt{1-c^2x^2}}-\frac{bcdx^6\sqrt{d-c^2dx^2}}{32\sqrt{1-c^2x^2}}+\frac{bc^3dx^8\sqrt{}}{64\sqrt{1}}$$

Mathematica [A] time = 0.21, size = 193, normalized size = 0.57

$$\frac{d\sqrt{d-c^2dx^2}\,\left(3a^2-2abcx\sqrt{1-c^2x^2}\,\left(16c^6x^6-24c^4x^4+2c^2x^2+3\right)-2b\sin^{-1}(cx)\left(bcx\sqrt{1-c^2x^2}\,\left(16c^6x^6-24c^4\right.\right.\right.}{256bc^5\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d*Sqrt[d - c^2*d*x^2]*(3*a^2 + b^2*c^2*x^2*(3 + c^2*x^2 - 8*c^4*x^4 + 4*c^
6*x^6) - 2*a*b*c*x*Sqrt[1 - c^2*x^2]*(3 + 2*c^2*x^2 - 24*c^4*x^4 + 16*c^6*x
^6) - 2*b*(-3*a + b*c*x*Sqrt[1 - c^2*x^2]*(3 + 2*c^2*x^2 - 24*c^4*x^4 + 16*
c^6*x^6))*ArcSin[c*x] + 3*b^2*ArcSin[c*x]^2))/(256*b*c^5*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(ac^2dx^6 - adx^4 + \left(bc^2dx^6 - bdx^4\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2 + d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral(-(a*c^2*d*x^6 - a*d*x^4 + (b*c^2*d*x^6 - b*d*x^4)*arcsin(c*x))*sqr
t(-c^2*d*x^2 + d), x)
```

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

$$\int \left(-c^2dx^2 + d\right)^{\frac{3}{2}}(b\arcsin\left(cx\right) + a)x^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(3/2)*(b*arcsin(c*x) + a)*x^4, x)
```

maple [B] time = 0.68, size = 600, normalized size = 1.76

$$-\frac{a\,x^3\left(-c^2d\,x^2 + d\right)^{\frac{5}{2}}}{8c^2d} - \frac{ax\left(-c^2d\,x^2 + d\right)^{\frac{5}{2}}}{16c^4d} + \frac{ax\left(-c^2d\,x^2 + d\right)^{\frac{3}{2}}}{64c^4} + \frac{3adx\sqrt{-c^2d\,x^2 + d}}{128c^4} + \frac{3a\,d^2\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2d\,x^2+d}}\right)}{128c^4\sqrt{c^2d}} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] -1/8*a*x^3*(-c^2*d*x^2+d)^(5/2)/c^2/d-1/16*a/c^4*x*(-c^2*d*x^2+d)^(5/2)/d+1
/64*a/c^4*x*(-c^2*d*x^2+d)^(3/2)+3/128*a/c^4*d*x*(-c^2*d*x^2+d)^(1/2)+3/128
*a/c^4*d^2/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-3/256
*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^5/(c^2*x^2-1)*arcsin(c*x)^2*
d+5/16*b*(-d*(c^2*x^2-1))^(1/2)*d*c^2/(c^2*x^2-1)*arcsin(c*x)*x^7-13/64*b*(
-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)*arcsin(c*x)*x^5-1/128*b*(-d*(c^2*x^2-1)
)^(1/2)*d/c^2/(c^2*x^2-1)*arcsin(c*x)*x^3+15/8192*b*(-d*(c^2*x^2-1))^(1/2)*
d/c^5/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)+3/128*b*(-d*(c^2*x^2-1))^(1/2)*d/c^4/(
c^2*x^2-1)*arcsin(c*x)*x-1/8*b*(-d*(c^2*x^2-1))^(1/2)*d*c^4/(c^2*x^2-1)*arc
sin(c*x)*x^9-1/64*b*(-d*(c^2*x^2-1))^(1/2)*d*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(
1/2)*x^8+1/32*b*(-d*(c^2*x^2-1))^(1/2)*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x
^6-1/256*b*(-d*(c^2*x^2-1))^(1/2)*d/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4-3/
256*b*(-d*(c^2*x^2-1))^(1/2)*d/c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2
```

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

$$b\sqrt{d}\int -\left(c^2dx^6 - dx^4\right)\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)dx - \frac{1}{128}\left(\frac{16\left(-c^2dx^2 + d\right)^{\frac{5}{2}}x^3}{c^2d} - \frac{2(-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] b*sqrt(d)*integrate(-(c^2*d*x^6 - d*x^4)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arcta
n2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)), x) - 1/128*(16*(-c^2*d*x^2 + d)^(5/2
)*x^3/(c^2*d) - 2*(-c^2*d*x^2 + d)^(3/2)*x/c^4 + 8*(-c^2*d*x^2 + d)^(5/2)*x
/(c^4*d) - 3*sqrt(-c^2*d*x^2 + d)*d*x/c^4 - 3*d^(3/2)*arcsin(c*x)/c^5)*a
```

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

$$\int x^4\,(a+b\,\mathrm{asin}(c\,x))\,\left(d-c^2\,d\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2),x)
[Out] int(x^4*(a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x)),x)
[Out] Timed out
```

3.69 $\int x^2 \left(d-c^2 d x^2\right)^{3/2} \left(a+b \sin^{-1}(cx)\right) dx$

Optimal. Leaf size=265

$$-\frac{dx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{16c^2}+\frac{1}{6}x^3\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{8}dx^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{d}{}$$

```
[Out] 1/6*x^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))-1/16*d*x*(a+b*arcsin(c*x))*(
-c^2*d*x^2+d)^(1/2)/c^2+1/8*d*x^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)+1/
32*b*d*x^2*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-7/96*b*c*d*x^4*(-c^2*d
*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/36*b*c^3*d*x^6*(-c^2*d*x^2+d)^(1/2)/(-c^
2*x^2+1)^(1/2)+1/32*d*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/b/c^3/(-c^2*
x^2+1)^(1/2)
```

Rubi [A] time = 0.32, antiderivative size = 265, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = {4699, 4697, 4707, 4641, 30, 14}

$$\frac{1}{6}x^3\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{8}dx^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)-\frac{dx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{16c^2}+\frac{d\sqrt{}}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*d*x^2*Sqrt[d - c^2*d*x^2])/(32*c*Sqrt[1 - c^2*x^2]) - (7*b*c*d*x^4*Sqrt[
d - c^2*d*x^2])/(96*Sqrt[1 - c^2*x^2]) + (b*c^3*d*x^6*Sqrt[d - c^2*d*x^2])/
(36*Sqrt[1 - c^2*x^2]) - (d*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(16*
c^2) + (d*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/8 + (x^3*(d - c^2*d*
x^2)^(3/2)*(a + b*ArcSin[c*x]))/6 + (d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*
x])^2)/(32*b*c^3*Sqrt[1 - c^2*x^2])
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int x^2 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right) dx = \frac{1}{6}x^3 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right) + \frac{1}{2}d \int x^2\sqrt{d-c^2dx^2} \left(a+b\sin^{-1}\right.$$

$$= \frac{1}{8}dx^3\sqrt{d-c^2dx^2} \left(a+b\sin^{-1}(cx)\right) + \frac{1}{6}x^3 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(c\right.$$

$$= -\frac{7bcdx^4\sqrt{d-c^2dx^2}}{96\sqrt{1-c^2x^2}} + \frac{bc^3dx^6\sqrt{d-c^2dx^2}}{36\sqrt{1-c^2x^2}} - \frac{dx\sqrt{d-c^2dx^2} \left(a+b\sin\right.}{16c^2}$$

$$= \frac{bdx^2\sqrt{d-c^2dx^2}}{32c\sqrt{1-c^2x^2}} - \frac{7bcdx^4\sqrt{d-c^2dx^2}}{96\sqrt{1-c^2x^2}} + \frac{bc^3dx^6\sqrt{d-c^2dx^2}}{36\sqrt{1-c^2x^2}} - \frac{dx\sqrt{d\ldots}}{}$$

Mathematica [A] time = 0.18, size = 170, normalized size = 0.64

$$\frac{d\sqrt{d-c^2dx^2} \left(9a^2-6abcx\sqrt{1-c^2x^2} \left(8c^4x^4-14c^2x^2+3\right)+6b\sin^{-1}(cx)\left(3a+bcx\sqrt{1-c^2x^2} \left(-8c^4x^4+14c^2x^2-\right.\right.\right.}{288bc^3\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d*Sqrt[d - c^2*d*x^2]*(9*a^2 + b^2*c^2*x^2*(9 - 21*c^2*x^2 + 8*c^4*x^4) -
6*a*b*c*x*Sqrt[1 - c^2*x^2]*(3 - 14*c^2*x^2 + 8*c^4*x^4) + 6*b*(3*a + b*c*x
*Sqrt[1 - c^2*x^2]*(-3 + 14*c^2*x^2 - 8*c^4*x^4))*ArcSin[c*x] + 9*b^2*ArcSi
n[c*x]^2))/(288*b*c^3*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(ac^2dx^4-adx^2+\left(bc^2dx^4-bdx^2\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2+d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral(-(a*c^2*d*x^4 - a*d*x^2 + (b*c^2*d*x^4 - b*d*x^2)*arcsin(c*x))*sqr
t(-c^2*d*x^2 + d), x)
```

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

$$\int \left(-c^2dx^2 + d\right)^{\frac{3}{2}}(b \arcsin(cx) + a)x^2\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(3/2)*(b*arcsin(c*x) + a)*x^2, x)
```

maple [C] time = 0.35, size = 1725, normalized size = 6.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] -1/64*I*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d/c/(c^2*x^2-1)*arcsin(
c*x)*x^2+1/512*I*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d/c^2/(c^2*x^2
-1)*(-c^2*x^2+1)^(1/2)*x+1/12*I*b*(-d*(c^2*x^2-1))^(1/2)*d*c^3/(c^2*x^2-1)*
(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^6-1/8*I*b*(-d*(c^2*x^2-1))^(1/2)*d*c/(c^2*
x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^4+1/16*I*b*(-d*(c^2*x^2-1))^(1/2)*d
/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^2-1/192*b*(-d*(c^2*x^2-1))^
(1/2)*cos(5*arcsin(c*x))*d/c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x
+1/64*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d/c^2/(c^2*x^2-1)*(-c^2*x
^2+1)^(1/2)*arcsin(c*x)*x+1/192*I*b*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsin(c*x
))*d/c/(c^2*x^2-1)*arcsin(c*x)*x^2-11/4608*I*b*(-d*(c^2*x^2-1))^(1/2)*cos(5
*arcsin(c*x))*d/c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-1/12*b*(-d*(c^2*x^2-1)
)^(1/2)*d/(c^2*x^2-1)*arcsin(c*x)*x^3-1/288*b*(-d*(c^2*x^2-1))^(1/2)*d/c^3/
(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)+11/4608*b*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsi
n(c*x))*d/c^3/(c^2*x^2-1)-1/512*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))
*d/c^3/(c^2*x^2-1)-7/288*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)*x^3+1/16*
a/c^2*d^2/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-1/6*a*
x*(-c^2*d*x^2+d)^(5/2)/c^2/d+1/16*a/c^2*d*x*(-c^2*d*x^2+d)^(1/2)-1/96*I*b*(
-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))*d/c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/
2)*arcsin(c*x)*x+7/4608*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))*d/c^2/(
c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-1/96*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(
c*x))*d/c/(c^2*x^2-1)*arcsin(c*x)*x^2-3/512*b*(-d*(c^2*x^2-1))^(1/2)*sin(3*
arcsin(c*x))*d/c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-1/96*I*b*(-d*(c^2*x^2-1
))^(1/2)*d/c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)-1/192*I*b*(-d*(c^
2*x^2-1))^(1/2)*cos(5*arcsin(c*x))*d/c^3/(c^2*x^2-1)*arcsin(c*x)-7/4608*I*b
*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))*d/c/(c^2*x^2-1)*x^2+1/64*I*b*(-d
*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d/c^3/(c^2*x^2-1)*arcsin(c*x)+3/512*
I*b*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d/c/(c^2*x^2-1)*x^2-1/12*b*(-
d*(c^2*x^2-1))^(1/2)*d*c^4/(c^2*x^2-1)*arcsin(c*x)*x^7+1/6*b*(-d*(c^2*x^2-1
))^(1/2)*d*c^2/(c^2*x^2-1)*arcsin(c*x)*x^5+1/96*b*(-d*(c^2*x^2-1))^(1/2)*si
n(5*arcsin(c*x))*d/c^3/(c^2*x^2-1)*arcsin(c*x)-1/32*b*(-d*(c^2*x^2-1))^(1/2
)*(-c^2*x^2+1)^(1/2)/c^3/(c^2*x^2-1)*arcsin(c*x)^2*d-1/72*b*(-d*(c^2*x^2-1)
)^(1/2)*d*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^6+1/48*b*(-d*(c^2*x^2-1))^(1
/2)*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4-11/4608*b*(-d*(c^2*x^2-1))^(1/2)
*cos(5*arcsin(c*x))*d/c/(c^2*x^2-1)*x^2+1/512*b*(-d*(c^2*x^2-1))^(1/2)*cos(
3*arcsin(c*x))*d/c/(c^2*x^2-1)*x^2-1/72*I*b*(-d*(c^2*x^2-1))^(1/2)*d*c^4/(c
^2*x^2-1)*x^7+1/36*I*b*(-d*(c^2*x^2-1))^(1/2)*d*c^2/(c^2*x^2-1)*x^5+1/96*I*
b*(-d*(c^2*x^2-1))^(1/2)*d/c^2/(c^2*x^2-1)*x+7/4608*I*b*(-d*(c^2*x^2-1))^(1
```

```
/2)*sin(5*arcsin(c*x))*d/c^3/(c^2*x^2-1)-3/512*I*b*(-d*(c^2*x^2-1))^(1/2)*s
in(3*arcsin(c*x))*d/c^3/(c^2*x^2-1)+1/24*a/c^2*x*(-c^2*d*x^2+d)^(3/2)
```

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

$$b\sqrt{d}\int -\left(c^2dx^4 - dx^2\right)\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)\,dx+\frac{1}{48}\,a\left(\frac{2\left(-c^2dx^2+d\right)^{\frac{3}{2}}x}{c^2}-\frac{8\left(-c^2dx\right.}{c}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] b*sqrt(d)*integrate(-(c^2*d*x^4 - d*x^2)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arcta
n2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)), x) + 1/48*a*(2*(-c^2*d*x^2 + d)^(3/2
)*x/c^2 - 8*(-c^2*d*x^2 + d)^(5/2)*x/(c^2*d) + 3*sqrt(-c^2*d*x^2 + d)*d*x/c
^2 + 3*d^(3/2)*arcsin(c*x)/c^3)
```

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

$$\int x^2\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(d-c^2\,d\,x^2\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int(x^2*(a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2), x)
```

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

$$\int x^{2}\left(-d\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}\left(a+b\operatorname{asin}{\left(cx\right)}\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x)),x)
```

```
[Out] Integral(x**2*(-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x)), x)
```

3.70 $\int \left(d-c^2 d x^2\right)^{3/2} \left(a+b \sin^{-1}(cx)\right) \, dx$

Optimal. Leaf size=188

$$\frac{1}{4} x \left(d-c^2 d x^2\right)^{3/2} \left(a+b \sin^{-1}(cx)\right)+\frac{3}{8} d x \sqrt{d-c^2 d x^2} \left(a+b \sin^{-1}(cx)\right)+\frac{3 d \sqrt{d-c^2 d x^2} \left(a+b \sin^{-1}(cx)\right)^2}{16 b c \sqrt{1-c^2 x^2}}-\frac{5bc\cdots}{1\cdots}$$

```
[Out] 1/4*x*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))+3/8*d*x*(a+b*arcsin(c*x))*(-c^
2*d*x^2+d)^(1/2)-5/16*b*c*d*x^2*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/1
6*b*c^3*d*x^4*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+3/16*d*(a+b*arcsin(c*
x))^2*(-c^2*d*x^2+d)^(1/2)/b/c/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 188, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = {4649, 4647, 4641, 30, 14}

$$\frac{1}{4} x \left(d-c^2 d x^2\right)^{3/2} \left(a+b \sin^{-1}(cx)\right)+\frac{3}{8} d x \sqrt{d-c^2 d x^2} \left(a+b \sin^{-1}(cx)\right)+\frac{3 d \sqrt{d-c^2 d x^2} \left(a+b \sin^{-1}(cx)\right)^2}{16 b c \sqrt{1-c^2 x^2}}+\frac{b c^3 d\cdots}{1\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (-5*b*c*d*x^2*Sqrt[d - c^2*d*x^2])/(16*Sqrt[1 - c^2*x^2]) + (b*c^3*d*x^4*Sq
rt[d - c^2*d*x^2])/(16*Sqrt[1 - c^2*x^2]) + (3*d*x*Sqrt[d - c^2*d*x^2]*(a +
 b*ArcSin[c*x]))/8 + (x*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/4 + (3*d
*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(16*b*c*Sqrt[1 - c^2*x^2])
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
```

```
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rubi steps

$$\int \left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)dx=\frac{1}{4}x\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}(3d)\int \sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(c\right.$$

$$=\frac{3}{8}dx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}x\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)+$$

$$=-\frac{5bcdx^2\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}}+\frac{bc^3dx^4\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}}+\frac{3}{8}dx\sqrt{d-c^2dx^2}\left(a+b\sin^{-}\right.$$

Mathematica [A] time = 0.62, size = 210, normalized size = 1.12

$$\frac{d\sqrt{d-c^2dx^2}\left(16acx\sqrt{1-c^2x^2}\left(5-2c^2x^2\right)+16b\cos\left(2\sin^{-1}(cx)\right)+b\cos\left(4\sin^{-1}(cx)\right)\right)-48ad^{3/2}\sqrt{1-c^2x^2}\tan}{128c\sqrt{1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (24*b*d*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2 - 48*a*d^(3/2)*Sqrt[1 - c^2*x^2]*
ArcTan[(c*x*Sqrt[d - c^2*d*x^2])/(Sqrt[d]*(-1 + c^2*x^2))] + d*Sqrt[d - c^2
*d*x^2]*(16*a*c*x*(5 - 2*c^2*x^2)*Sqrt[1 - c^2*x^2] + 16*b*Cos[2*ArcSin[c*x
]] + b*Cos[4*ArcSin[c*x]]) + 4*b*d*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*(8*Sin[2
*ArcSin[c*x]] + Sin[4*ArcSin[c*x]]))/(128*c*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.54, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(ac^2dx^2-ad+\left(bc^2dx^2-bd\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2+d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral(-(a*c^2*d*x^2 - a*d + (b*c^2*d*x^2 - b*d)*arcsin(c*x))*sqrt(-c^2*d
*x^2 + d), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.17, size = 1167, normalized size = 6.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] -17/256*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d/c/(c^2*x^2-1)+7/64*I*
b*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)*x-5/16*b*(-d*(c^2*x^2-1))^(1/2)*d/(c
^2*x^2-1)*arcsin(c*x)*x-17/256*b*(-d*(c^2*x^2-1))^(1/2)*d/c/(c^2*x^2-1)*(-c
^2*x^2+1)^(1/2)+5/32*b*(-d*(c^2*x^2-1))^(1/2)*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^
(1/2)*x^2-15/256*b*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d/(c^2*x^2-1)*
(-c^2*x^2+1)^(1/2)*x+17/256*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d*c
/(c^2*x^2-1)*x^2-1/32*I*b*(-d*(c^2*x^2-1))^(1/2)*d*c^4/(c^2*x^2-1)*x^5-5/64
*I*b*(-d*(c^2*x^2-1))^(1/2)*d*c^2/(c^2*x^2-1)*x^3-15/256*I*b*(-d*(c^2*x^2-1
))^(1/2)*sin(3*arcsin(c*x))*d/c/(c^2*x^2-1)-1/8*b*(-d*(c^2*x^2-1))^(1/2)*d*
c^4/(c^2*x^2-1)*arcsin(c*x)*x^5+7/16*b*(-d*(c^2*x^2-1))^(1/2)*d*c^2/(c^2*x^
2-1)*arcsin(c*x)*x^3-9/64*b*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d/c/(
c^2*x^2-1)*arcsin(c*x)-3/16*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/(
c^2*x^2-1)*arcsin(c*x)^2*d-1/32*b*(-d*(c^2*x^2-1))^(1/2)*d*c^3/(c^2*x^2-1)*
(-c^2*x^2+1)^(1/2)*x^4+1/8*I*b*(-d*(c^2*x^2-1))^(1/2)*d*c/(c^2*x^2-1)*arcsi
n(c*x)*(-c^2*x^2+1)^(1/2)*x^2-7/64*I*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(
c*x))*d*c/(c^2*x^2-1)*arcsin(c*x)*x^2+9/64*I*b*(-d*(c^2*x^2-1))^(1/2)*sin(3
*arcsin(c*x))*d/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x+1/8*I*b*(-d*(c
^2*x^2-1))^(1/2)*d*c^3/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^4+3/8*a
*d*x*(-c^2*d*x^2+d)^(1/2)+3/8*a*d^2/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-
c^2*d*x^2+d)^(1/2))+1/4*a*x*(-c^2*d*x^2+d)^(3/2)+15/256*I*b*(-d*(c^2*x^2-1)
)^(1/2)*sin(3*arcsin(c*x))*d*c/(c^2*x^2-1)*x^2-7/64*I*b*(-d*(c^2*x^2-1))^(1
/2)*d/c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+17/256*I*b*(-d*(c^2*x^2-
1))^(1/2)*cos(3*arcsin(c*x))*d/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+7/64*I*b*(-
d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d/c/(c^2*x^2-1)*arcsin(c*x)+7/64*b*
(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x
^2+1)^(1/2)*x+9/64*b*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d*c/(c^2*x^2
-1)*arcsin(c*x)*x^2
```

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

$$b\sqrt{d}\int -\left(c^2dx^2-d\right)\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)\,dx+\frac{1}{8}\left(2\left(-c^2dx^2+d\right)^{\frac{3}{2}}x+3\sqrt{-c^2dx^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] b*sqrt(d)*integrate(-(c^2*d*x^2 - d)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c
*x, sqrt(c*x + 1)*sqrt(-c*x + 1)), x) + 1/8*(2*(-c^2*d*x^2 + d)^(3/2)*x + 3
*sqrt(-c^2*d*x^2 + d)*d*x + 3*d^(3/2)*arcsin(c*x)/c)*a
```

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

$$\int (a+b\,\mathrm{asin}\,(c\,x))\,\left(d-c^2\,d\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int((a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2), x)
```

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

$$\int (-d\,(cx-1)\,(cx+1))^{\frac{3}{2}}\,(a+b\,\mathrm{asin}\,(cx))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x)),x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x)), x)
```

3.71 $\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{x^2}\,dx$

Optimal. Leaf size=185

$$-\frac{3}{2}c^2dx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)-\frac{3cd\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{4b\sqrt{1-c^2x^2}}-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{x}+\frac{bc\cdots}{}$$

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

Rubi [A] time = 0.17, antiderivative size = 185, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {4695, 4647, 4641, 30, 14}

$$-\frac{3}{2}c^2dx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)-\frac{3cd\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{4b\sqrt{1-c^2x^2}}-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{x}+\frac{bc^3\cdots}{}$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/x^2,x]
```

```
[Out] (b*c^3*d*x^2*Sqrt[d - c^2*d*x^2])/(4*Sqrt[1 - c^2*x^2]) - (3*c^2*d*x*Sqrt[d
 - c^2*d*x^2]*(a + b*ArcSin[c*x]))/2 - ((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin
[c*x]))/x - (3*c*d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(4*b*Sqrt[1 -
 c^2*x^2]) + (b*c*d*Sqrt[d - c^2*d*x^2]*Log[x])/Sqrt[1 - c^2*x^2]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4695

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
```

```
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m +
2)*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPar
t[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f
*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /;
 FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0
] && LtQ[m, -1]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{x^2}\,dx = -\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{x} - \left(3c^2d\right)\int \sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx\right.$$

$$= -\frac{3}{2}c^2dx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right) - \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{x} +$$

$$= \frac{bc^3dx^2\sqrt{d-c^2dx^2}}{4\sqrt{1-c^2x^2}} - \frac{3}{2}c^2dx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right) - \frac{\left(d-c^2dx^2\right)^{3/}}{}$$

Mathematica [A] time = 0.62, size = 222, normalized size = 1.20

$$\frac{3}{2}acd^{3/2}\tan^{-1}\left(\frac{cx\sqrt{-d\left(c^2x^2-1\right)}}{\sqrt{d}\left(c^2x^2-1\right)}\right)+\sqrt{-d\left(c^2x^2-1\right)}\left(-\frac{1}{2}ac^2dx-\frac{ad}{x}\right)-\frac{bcd\sqrt{d\left(1-c^2x^2\right)}\left(\frac{2\sqrt{1-c^2x^2}\sin^{-1}(cx)}{cx}-2\log\right.}{2\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/x^2,x]
```

```
[Out] (-((a*d)/x) - (a*c^2*d*x)/2)*Sqrt[-(d*(-1 + c^2*x^2))] + (3*a*c*d^(3/2)*Arc
Tan[(c*x*Sqrt[-(d*(-1 + c^2*x^2))])/(Sqrt[d]*(-1 + c^2*x^2))])/2 - (b*c*d*S
qrt[d*(1 - c^2*x^2)]*((2*Sqrt[1 - c^2*x^2]*ArcSin[c*x])/(c*x) + ArcSin[c*x]
^2 - 2*Log[c*x]))/(2*Sqrt[1 - c^2*x^2]) - (b*c*d*Sqrt[d*(1 - c^2*x^2)]*(Cos
[2*ArcSin[c*x]] + 2*ArcSin[c*x]*(ArcSin[c*x] + Sin[2*ArcSin[c*x]])))/(8*Sqr
t[1 - c^2*x^2])
```

fricas [F] time = 0.52, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\left(ac^2dx^2-ad+\left(bc^2dx^2-bd\right)\arcsin(cx)\right)\sqrt{-c^2dx^2+d}}{x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^2,x, algorithm="fricas")
```

```
[Out] integral(-(a*c^2*d*x^2 - a*d + (b*c^2*d*x^2 - b*d)*arcsin(c*x))*sqrt(-c^2*d
*x^2 + d)/x^2, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.31, size = 464, normalized size = 2.51

$$-\frac{a\left(-c^{2} d\,x^{2}+d\right)^{\frac{5}{2}}}{dx}-a\,c^{2} x\left(-c^{2} d\,x^{2}+d\right)^{\frac{3}{2}}-\frac{3 a\,c^{2} d x \sqrt{-c^{2} d\,x^{2}+d}}{2}-\frac{3 a\,c^{2} d^{2} \arctan\left(\frac{\sqrt{c^{2} d}\,x}{\sqrt{-c^{2} d\,x^{2}+d}}\right)}{2 \sqrt{c^{2} d}}+\frac{3 b \sqrt{-d\left(c^{2} x^{2}-\right.}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^2,x)
```

```
[Out] -a/d/x*(-c^2*d*x^2+d)^(5/2)-a*c^2*x*(-c^2*d*x^2+d)^(3/2)-3/2*a*c^2*d*x*(-c^
2*d*x^2+d)^(1/2)-3/2*a*c^2*d^2/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d
*x^2+d)^(1/2))+3/4*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*
arcsin(c*x)^2*d*c-1/4*b*(-d*(c^2*x^2-1))^(1/2)*d*c^3/(c^2*x^2-1)*(-c^2*x^2+
1)^(1/2)*x^2-1/2*b*(-d*(c^2*x^2-1))^(1/2)*d*c^4/(c^2*x^2-1)*arcsin(c*x)*x^3
+1/8*b*(-d*(c^2*x^2-1))^(1/2)*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)+I*b*(-d*(c
^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*arcsin(c*x)*d*c-1/2*b*(-d*(
c^2*x^2-1))^(1/2)*d*c^2/(c^2*x^2-1)*arcsin(c*x)*x+b*(-d*(c^2*x^2-1))^(1/2)*
arcsin(c*x)*d/(c^2*x^2-1)/x-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^
2*x^2-1)*ln((I*c*x+(-c^2*x^2+1)^(1/2))^2-1)*d*c
```

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

$$-b\sqrt{d}\int\frac{\left(c^{2} d x^{2}-d\right)\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{x^{2}}\,dx-\frac{1}{2}\left(3\,\sqrt{-c^{2} d x^{2}+d}\,c^{2} d x+3\,c d^{\frac{3}{2}}\,\mathrm{arc}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^2,x, algorithm="maxima")
```

```
[Out] -b*sqrt(d)*integrate((c^2*d*x^2 - d)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c
*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/x^2, x) - 1/2*(3*sqrt(-c^2*d*x^2 + d)*c^2
*d*x + 3*c*d^(3/2)*arcsin(c*x) + 2*(-c^2*d*x^2 + d)^(3/2)/x)*a
```

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

$$\int\frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(d-c^2\,d\,x^2\right)}^{3/2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2))/x^2,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2))/x^2, x)
```

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

$$\int\frac{\left(-d\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}\left(a+b\,\mathrm{asin}\left(cx\right)\right)}{x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))/x**2,x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))/x**2, x)
```

3.72 $\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{x^4}\,dx$

Optimal. Leaf size=191

$$\frac{c^2d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x}-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3x^3}+\frac{c^3d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2b\sqrt{1-c^2x^2}}-\frac{bcd\sqrt{d-c}}{6x^2\sqrt{1-}}$$

```
[Out] -1/3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^3+c^2*d*(a+b*arcsin(c*x))*(-c
^2*d*x^2+d)^(1/2)/x-1/6*b*c*d*(-c^2*d*x^2+d)^(1/2)/x^2/(-c^2*x^2+1)^(1/2)+1
/2*c^3*d*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/b/(-c^2*x^2+1)^(1/2)-4/3*
b*c^3*d*ln(x)*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.23, antiderivative size = 191, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {4695, 4693, 29, 4641, 14}

$$\frac{c^3d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2b\sqrt{1-c^2x^2}}+\frac{c^2d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x}-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{bcd\sqrt{d-c}}{6x^2\sqrt{1-}}$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/x^4,x]
```

```
[Out] -(b*c*d*Sqrt[d - c^2*d*x^2])/(6*x^2*Sqrt[1 - c^2*x^2]) + (c^2*d*Sqrt[d - c^
2*d*x^2]*(a + b*ArcSin[c*x]))/x - ((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]
))/(3*x^3) + (c^3*d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*Sqrt[1
- c^2*x^2]) - (4*b*c^3*d*Sqrt[d - c^2*d*x^2]*Log[x])/(3*Sqrt[1 - c^2*x^2])
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4693

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(b*c*n*Sqrt[d + e*x^2])/(f*(m + 1)*Sqr
t[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1), x], x] + Di
st[(c^2*Sqrt[d + e*x^2])/(f^2*(m + 1)*Sqrt[1 - c^2*x^2]), Int[((f*x)^(m + 2
)*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c, d, e
, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && LtQ[m, -1]
```

Rule 4695

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
```

```
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m +
2)*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPar
t[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f
*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /;
 FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0
] && LtQ[m, -1]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{x^4}\,dx = -\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3x^3} - \left(c^2d\right)\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(\right.}{x^2}$$

$$= \frac{c^2d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x} - \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3x^3} +$$

$$= -\frac{bcd\sqrt{d-c^2dx^2}}{6x^2\sqrt{1-c^2x^2}} + \frac{c^2d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x} - \frac{\left(d-c^2dx^2\right)^{3/2}}{}$$

Mathematica [A] time = 0.85, size = 211, normalized size = 1.10

$$-\frac{d\sqrt{d-c^2dx^2}\left(2a\left(1-4c^2x^2\right)\sqrt{1-c^2x^2}+8bc^3x^3\log(cx)+bcx\right)}{6x^3\sqrt{1-c^2x^2}} - ac^3d^{3/2}\tan^{-1}\left(\frac{cx\sqrt{d-c^2dx^2}}{\sqrt{d}\left(c^2x^2-1\right)}\right) + \frac{bd\left(4c^2x^2-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/x^4,x]
```

```
[Out] (b*d*(-1 + 4*c^2*x^2)*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(3*x^3) + (b*c^3*d*S
qrt[d - c^2*d*x^2]*ArcSin[c*x]^2)/(2*Sqrt[1 - c^2*x^2]) - a*c^3*d^(3/2)*Arc
Tan[(c*x*Sqrt[d - c^2*d*x^2])/(Sqrt[d]*(-1 + c^2*x^2))] - (d*Sqrt[d - c^2*d
*x^2]*(b*c*x + 2*a*(1 - 4*c^2*x^2)*Sqrt[1 - c^2*x^2] + 8*b*c^3*x^3*Log[c*x]
))/(6*x^3*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.54, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(ac^2dx^2-ad+\left(bc^2dx^2-bd\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2+d}}{x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^4,x, algorithm="fricas")
```

```
[Out] integral(-(a*c^2*d*x^2 - a*d + (b*c^2*d*x^2 - b*d)*arcsin(c*x))*sqrt(-c^2*d
*x^2 + d)/x^4, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^4,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.41, size = 1289, normalized size = 6.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^4,x)
```

```
[Out] -1/3*a/d/x^3*(-c^2*d*x^2+d)^(5/2)+2/3*a*c^2/d/x*(-c^2*d*x^2+d)^(5/2)+2/3*a*
c^4*x*(-c^2*d*x^2+d)^(3/2)+a*c^4*d*x*(-c^2*d*x^2+d)^(1/2)+a*c^4*d^2/(c^2*d)
^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-1/2*b*(-d*(c^2*x^2-1))^
(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*arcsin(c*x)^2*d*c^3-8/3*I*b*(-d*(c^2*x
^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x^5/(c^2*x^2-1)*c^8+32*I*b*(-d*(c^2
*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2
)*arcsin(c*x)*c^7-8/3*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)
*x^3/(c^2*x^2-1)*(-c^2*x^2+1)*c^6+32*b*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4
-9*c^2*x^2+1)*x^5/(c^2*x^2-1)*arcsin(c*x)*c^8+2/3*I*b*(-d*(c^2*x^2-1))^(1/2
)*d/(24*c^4*x^4-9*c^2*x^2+1)*x/(c^2*x^2-1)*(-c^2*x^2+1)*c^4-12*I*b*(-d*(c^2
*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2
)*arcsin(c*x)*c^5-8*I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*arcsin(c*
x)*d*c^3/(3*c^2*x^2-3)-52*b*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+
1)*x^3/(c^2*x^2-1)*arcsin(c*x)*c^6+4/3*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4
*x^4-9*c^2*x^2+1)/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^3+4*b*(-d*(c
^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1
/2)*c^5+10/3*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x^3/(c^2
*x^2-1)*c^6-2/3*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x/(c^
2*x^2-1)*c^4+73/3*b*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x/(c^
2*x^2-1)*arcsin(c*x)*c^4-3/2*b*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x
^2+1)/(c^2*x^2-1)*c^3*(-c^2*x^2+1)^(1/2)-14/3*b*(-d*(c^2*x^2-1))^(1/2)*d/(2
4*c^4*x^4-9*c^2*x^2+1)/x/(c^2*x^2-1)*arcsin(c*x)*c^2+1/6*b*(-d*(c^2*x^2-1))
^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)/x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c+1/3*
b*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)/x^3/(c^2*x^2-1)*arcsin(
c*x)+4/3*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*ln((I*c*x+
(-c^2*x^2+1)^(1/2))^2-1)*d*c^3
```

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

$$-b\sqrt{d}\int\frac{\left(c^2dx^2-d\right)\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{x^4}\,dx+\frac{1}{3}\left(3\,\sqrt{-c^2dx^2+d}\,c^4dx+3\,c^3d^{\frac{3}{2}}\,\mathrm{arcsi}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^4,x, algorithm="maxima")
```

```
[Out] -b*sqrt(d)*integrate((c^2*d*x^2 - d)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c
*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/x^4, x) + 1/3*(3*sqrt(-c^2*d*x^2 + d)*c^4
*d*x + 3*c^3*d^(3/2)*arcsin(c*x) + 2*(-c^2*d*x^2 + d)^(3/2)*c^2/x - (-c^2*d
*x^2 + d)^(5/2)/(d*x^3))*a
```

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

$$\int\frac{(a+b\,\mathrm{asin}\,(c\,x))\,\left(d-c^2\,d\,x^2\right)^{3/2}}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2))/x^4,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2))/x^4, x)
```

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

$$\int \frac{(-d(cx-1)(cx+1))^{\frac{3}{2}}\,(a+b\operatorname{asin}(cx))}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))/x**4,x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))/x**4, x)
```

3.73 $\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{x^6}\,dx$

Optimal. Leaf size=154

$$-\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{5dx^5}-\frac{bcd\sqrt{d-c^2dx^2}}{20x^4\sqrt{1-c^2x^2}}+\frac{bc^5d\log(x)\sqrt{d-c^2dx^2}}{5\sqrt{1-c^2x^2}}+\frac{bc^3d\sqrt{d-c^2dx^2}}{5x^2\sqrt{1-c^2x^2}}$$

```
[Out] -1/5*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/d/x^5-1/20*b*c*d*(-c^2*d*x^2+d)
^(1/2)/x^4/(-c^2*x^2+1)^(1/2)+1/5*b*c^3*d*(-c^2*d*x^2+d)^(1/2)/x^2/(-c^2*x^
2+1)^(1/2)+1/5*b*c^5*d*ln(x)*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$, Rules used = {4681, 266, 43}

$$-\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{5dx^5}+\frac{bc^3d\sqrt{d-c^2dx^2}}{5x^2\sqrt{1-c^2x^2}}-\frac{bcd\sqrt{d-c^2dx^2}}{20x^4\sqrt{1-c^2x^2}}+\frac{bc^5d\log(x)\sqrt{d-c^2dx^2}}{5\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/x^6,x]
```

```
[Out] -(b*c*d*Sqrt[d - c^2*d*x^2])/(20*x^4*Sqrt[1 - c^2*x^2]) + (b*c^3*d*Sqrt[d -
 c^2*d*x^2])/(5*x^2*Sqrt[1 - c^2*x^2]) - ((d - c^2*d*x^2)^(5/2)*(a + b*ArcS
in[c*x]))/(5*d*x^5) + (b*c^5*d*Sqrt[d - c^2*d*x^2]*Log[x])/(5*Sqrt[1 - c^2*
x^2])
```

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4681

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^F
racPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c
^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d,
 e, f, m, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] &
& NeQ[m, -1]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{x^6}\,dx = -\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{5dx^5} + \frac{\left(bcd\sqrt{d-c^2dx^2}\right)\int \frac{\left(1-c^2x^2\right)^2}{x^5}\,dx}{5\sqrt{1-c^2x^2}}$$

$$= -\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{5dx^5} + \frac{\left(bcd\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int \frac{(1-c^2x)}{x^3}\right.}{10\sqrt{1-c^2x^2}}$$

$$= -\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{5dx^5} + \frac{\left(bcd\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int \left(\frac{1}{x^3}-\right.\right.}{10\sqrt{1-c^2x^2}}$$

$$= -\frac{bcd\sqrt{d-c^2dx^2}}{20x^4\sqrt{1-c^2x^2}} + \frac{bc^3d\sqrt{d-c^2dx^2}}{5x^2\sqrt{1-c^2x^2}} - \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right.}{5dx^5}$$

Mathematica [A] time = 0.26, size = 144, normalized size = 0.94

$$\frac{bc^5d\log(x)\sqrt{d-c^2dx^2}}{5\sqrt{1-c^2x^2}} - \frac{d\sqrt{d-c^2dx^2}\left(12a\left(c^2x^2-1\right)^3+12b\left(c^2x^2-1\right)^3\sin^{-1}(cx)+bcx\sqrt{1-c^2x^2}\left(-25c^4x^4+\right.\right.}{60x^5\left(c^2x^2-1\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/x^6,x]
```

```
[Out] -1/60*(d*Sqrt[d - c^2*d*x^2]*(12*a*(-1 + c^2*x^2)^3 + b*c*x*Sqrt[1 - c^2*x^
2]*(-3 + 12*c^2*x^2 - 25*c^4*x^4) + 12*b*(-1 + c^2*x^2)^3*ArcSin[c*x]))/(x^
5*(-1 + c^2*x^2)) + (b*c^5*d*Sqrt[d - c^2*d*x^2]*Log[x])/(5*Sqrt[1 - c^2*x^
2])
```

fricas [A] time = 0.77, size = 525, normalized size = 3.41

$$\left[\frac{2\left(bc^7dx^7-bc^5dx^5\right)\sqrt{d}\,\log\left(\frac{c^2dx^6+c^2dx^2-dx^4-\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+1}\left(x^4-1\right)\sqrt{d}-d}{c^2x^4-x^2}\right)-\left(4\,bc^3dx^3-\left(4\,bc^3-bc\right)dx^5-bcdx\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^6,x, algorithm="fricas")
```

```
[Out] [1/20*(2*(b*c^7*d*x^7 - b*c^5*d*x^5)*sqrt(d)*log((c^2*d*x^6 + c^2*d*x^2 - d
*x^4 - sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*(x^4 - 1)*sqrt(d) - d)/(c^2*
x^4 - x^2)) - (4*b*c^3*d*x^3 - (4*b*c^3 - b*c)*d*x^5 - b*c*d*x)*sqrt(-c^2*d
*x^2 + d)*sqrt(-c^2*x^2 + 1) - 4*(a*c^6*d*x^6 - 3*a*c^4*d*x^4 + 3*a*c^2*d*x
^2 - a*d + (b*c^6*d*x^6 - 3*b*c^4*d*x^4 + 3*b*c^2*d*x^2 - b*d)*arcsin(c*x))
*sqrt(-c^2*d*x^2 + d))/(c^2*x^7 - x^5), 1/20*(4*(b*c^7*d*x^7 - b*c^5*d*x^5)
*sqrt(-d)*arctan(sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*(x^2 + 1)*sqrt(-d)
/(c^2*d*x^4 - (c^2 + 1)*d*x^2 + d)) - (4*b*c^3*d*x^3 - (4*b*c^3 - b*c)*d*x^
5 - b*c*d*x)*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1) - 4*(a*c^6*d*x^6 - 3*a
*c^4*d*x^4 + 3*a*c^2*d*x^2 - a*d + (b*c^6*d*x^6 - 3*b*c^4*d*x^4 + 3*b*c^2*d
*x^2 - b*d)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d))/(c^2*x^7 - x^5)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^6,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.47, size = 2350, normalized size = 15.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^6,x)
```

```
[Out] -1/5*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(5*c^8*x^8-10*c^6*x^6+10*c^4*x^4-5*c^2*x^
2+1)/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^5+1/5*I*b*(-d*(c^2*x^2-1)
)^(1/2)*d/(5*c^8*x^8-10*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*x^7/(c^2*x^2-1)*(-c
^2*x^2+1)*c^12-9/20*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(5*c^8*x^8-10*c^6*x^6+10*c
^4*x^4-5*c^2*x^2+1)*x^5/(c^2*x^2-1)*(-c^2*x^2+1)*c^10+3/10*I*b*(-d*(c^2*x^2
-1))^(1/2)*d/(5*c^8*x^8-10*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*x^3/(c^2*x^2-1)*
(-c^2*x^2+1)*c^8-1/20*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(5*c^8*x^8-10*c^6*x^6+10
*c^4*x^4-5*c^2*x^2+1)*x/(c^2*x^2-1)*(-c^2*x^2+1)*c^6-1/5*a/d/x^5*(-c^2*d*x^
2+d)^(5/2)+I*b*(-d*(c^2*x^2-1))^(1/2)*d/(5*c^8*x^8-10*c^6*x^6+10*c^4*x^4-5*
c^2*x^2+1)*x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^7-I*b*(-d*(c^2*
x^2-1))^(1/2)*d/(5*c^8*x^8-10*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*x^8/(c^2*x^2-
1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^13+2*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(5*c^
8*x^8-10*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*x^6/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)
*arcsin(c*x)*c^11-2*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(5*c^8*x^8-10*c^6*x^6+10*c
^4*x^4-5*c^2*x^2+1)*x^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^9+1/5*
b*(-d*(c^2*x^2-1))^(1/2)*d/(5*c^8*x^8-10*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)/x^
5/(c^2*x^2-1)*arcsin(c*x)-1/5*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(
c^2*x^2-1)*ln((I*c*x+(-c^2*x^2+1)^(1/2))^2-1)*d*c^5+3/2*b*(-d*(c^2*x^2-1))^
(1/2)*d/(5*c^8*x^8-10*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)/(c^2*x^2-1)*c^5*(-c^2
*x^2+1)^(1/2)-7/20*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(5*c^8*x^8-10*c^6*x^6+10*c^
4*x^4-5*c^2*x^2+1)*x^3/(c^2*x^2-1)*c^8+1/20*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(5
*c^8*x^8-10*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*x/(c^2*x^2-1)*c^6+9/4*b*(-d*(c^
2*x^2-1))^(1/2)*d/(5*c^8*x^8-10*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*x^4/(c^2*x^
2-1)*(-c^2*x^2+1)^(1/2)*c^9+14*b*(-d*(c^2*x^2-1))^(1/2)*d/(5*c^8*x^8-10*c^6
*x^6+10*c^4*x^4-5*c^2*x^2+1)*x^3/(c^2*x^2-1)*arcsin(c*x)*c^8-5/2*b*(-d*(c^2
*x^2-1))^(1/2)*d/(5*c^8*x^8-10*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*x^2/(c^2*x^2
-1)*c^7*(-c^2*x^2+1)^(1/2)-56/5*b*(-d*(c^2*x^2-1))^(1/2)*d/(5*c^8*x^8-10*c^
6*x^6+10*c^4*x^4-5*c^2*x^2+1)*x/(c^2*x^2-1)*arcsin(c*x)*c^6+28/5*b*(-d*(c^2
*x^2-1))^(1/2)*d/(5*c^8*x^8-10*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)/x/(c^2*x^2-1
)*arcsin(c*x)*c^4-b*(-d*(c^2*x^2-1))^(1/2)*d/(5*c^8*x^8-10*c^6*x^6+10*c^4*x
^4-5*c^2*x^2+1)*x^6/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c^11-b*(-d*(c^2*x^2-1))^
(1/2)*d/(5*c^8*x^8-10*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*x^9/(c^2*x^2-1)*arcsi
n(c*x)*c^14+5*b*(-d*(c^2*x^2-1))^(1/2)*d/(5*c^8*x^8-10*c^6*x^6+10*c^4*x^4-5
*c^2*x^2+1)*x^7/(c^2*x^2-1)*arcsin(c*x)*c^12-11*b*(-d*(c^2*x^2-1))^(1/2)*d/
(5*c^8*x^8-10*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*x^5/(c^2*x^2-1)*arcsin(c*x)*c
^10-9/20*b*(-d*(c^2*x^2-1))^(1/2)*d/(5*c^8*x^8-10*c^6*x^6+10*c^4*x^4-5*c^2*
x^2+1)/x^2/(c^2*x^2-1)*c^3*(-c^2*x^2+1)^(1/2)-8/5*b*(-d*(c^2*x^2-1))^(1/2)*
d/(5*c^8*x^8-10*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)/x^3/(c^2*x^2-1)*arcsin(c*x)
*c^2+1/20*b*(-d*(c^2*x^2-1))^(1/2)*d/(5*c^8*x^8-10*c^6*x^6+10*c^4*x^4-5*c^2
*x^2+1)/x^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c+2*I*b*(-d*(c^2*x^2-1))^(1/2)*(
-c^2*x^2+1)^(1/2)*arcsin(c*x)*d*c^5/(5*c^2*x^2-5)+1/5*I*b*(-d*(c^2*x^2-1))^
(1/2)*d/(5*c^8*x^8-10*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*x^9/(c^2*x^2-1)*c^14-
13/20*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(5*c^8*x^8-10*c^6*x^6+10*c^4*x^4-5*c^2*x
^2+1)*x^7/(c^2*x^2-1)*c^12+3/4*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(5*c^8*x^8-10*c
^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*x^5/(c^2*x^2-1)*c^10
```

maxima [A] time = 0.72, size = 172, normalized size = 1.12

$$-\frac{\left(2\,(-1)^{-2\,c^2dx^2+2\,d}\,c^4d^{\frac{5}{2}}\log\left(-2\,c^2d+\frac{2\,d}{x^2}\right)+2\,c^4d^{\frac{5}{2}}\log\left(x^2-\frac{1}{c^2}\right)-\frac{3\,\sqrt{c^4dx^4-2\,c^2dx^2+d}\,c^2d^2}{x^2}+\frac{\sqrt{c^4dx^4-2\,c^2dx^2+d}\,d^2}{x^4}\right)bc}{20\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^6,x, algorithm="maxima")
```

```
[Out] -1/20*(2*(-1)^(-2*c^2*d*x^2 + 2*d)*c^4*d^(5/2)*log(-2*c^2*d + 2*d/x^2) + 2*
c^4*d^(5/2)*log(x^2 - 1/c^2) - 3*sqrt(c^4*d*x^4 - 2*c^2*d*x^2 + d)*c^2*d^2/
x^2 + sqrt(c^4*d*x^4 - 2*c^2*d*x^2 + d)*d^2/x^4)*b*c/d - 1/5*(-c^2*d*x^2 +
d)^(5/2)*b*arcsin(c*x)/(d*x^5) - 1/5*(-c^2*d*x^2 + d)^(5/2)*a/(d*x^5)
```

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

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))\,\left(d-c^2\,d\,x^2\right)^{3/2}}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2))/x^6,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2))/x^6, x)
```

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

$$\int \frac{(-d\,(cx-1)\,(cx+1))^{\frac{3}{2}}\,(a+b\,\mathrm{asin}\,(cx))}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))/x**6,x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))/x**6, x)
```

3.74 $\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{x^8}\,dx$

Optimal. Leaf size=231

$$-\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{7dx^7}-\frac{2c^2\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{35dx^5}-\frac{bcd\sqrt{d-c^2dx^2}}{42x^6\sqrt{1-c^2x^2}}+\frac{2bc^7d\log(x)\sqrt{d-c^2dx^2}}{35\sqrt{1-c^2x^2}}$$

```
[Out] -1/7*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/d/x^7-2/35*c^2*(-c^2*d*x^2+d)^(
5/2)*(a+b*arcsin(c*x))/d/x^5-1/42*b*c*d*(-c^2*d*x^2+d)^(1/2)/x^6/(-c^2*x^2+
1)^(1/2)+2/35*b*c^3*d*(-c^2*d*x^2+d)^(1/2)/x^4/(-c^2*x^2+1)^(1/2)-1/70*b*c^
5*d*(-c^2*d*x^2+d)^(1/2)/x^2/(-c^2*x^2+1)^(1/2)+2/35*b*c^7*d*ln(x)*(-c^2*d*
x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 231, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = {271, 264, 4691, 12, 446, 76}

$$-\frac{2c^2\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{35dx^5}-\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{7dx^7}-\frac{bc^5d\sqrt{d-c^2dx^2}}{70x^2\sqrt{1-c^2x^2}}+\frac{2bc^3d\sqrt{d-c^2dx^2}}{35x^4\sqrt{1-c^2x^2}}-\frac{bcd}{42x}$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/x^8,x]
```

```
[Out] -(b*c*d*Sqrt[d - c^2*d*x^2])/(42*x^6*Sqrt[1 - c^2*x^2]) + (2*b*c^3*d*Sqrt[d
 - c^2*d*x^2])/(35*x^4*Sqrt[1 - c^2*x^2]) - (b*c^5*d*Sqrt[d - c^2*d*x^2])/(
70*x^2*Sqrt[1 - c^2*x^2]) - ((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(7*
d*x^7) - (2*c^2*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(35*d*x^5) + (2*
b*c^7*d*Sqrt[d - c^2*d*x^2]*Log[x])/(35*Sqrt[1 - c^2*x^2])
```

Rule 12

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

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 264

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

Rule 271

```
Int[(x_)^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x^(m + 1)*(
a + b*x^n)^(p + 1))/(a*(m + 1)), x] - Dist[(b*(m + n*(p + 1) + 1))/(a*(m +
1)), Int[x^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, m, n, p}, x] && IL
tQ[Simplify[(m + 1)/n + p + 1], 0] && NeQ[m, -1]
```

Rule 446

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p
*(c + d*x)^q, x], x, x^n], x] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[
b*c - a*d, 0] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4691

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[a + b*ArcSi
n[c*x], Int[x^m*(d + e*x^2)^p, x], x] - Dist[(b*c*d^(p - 1/2)*Sqrt[d + e*x^
2])/Sqrt[1 - c^2*x^2], Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x
]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p + 1/2, 0] &&
 (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0])
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{x^8}\,dx = -\frac{\left(bcd\sqrt{d-c^2dx^2}\right)\int \frac{\left(-5-2c^2x^2\right)\left(1-c^2x^2\right)^2}{35x^7}\,dx}{\sqrt{1-c^2x^2}} + \left(a+b\sin^{-1}(cx)\right)\int \frac{\left(d-\right.}{}$$

$$= -\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{7dx^7} - \frac{\left(bcd\sqrt{d-c^2dx^2}\right)\int \frac{\left(-5-2c^2x^2\right)\left(1-c^2\right.}{x^7}}{35\sqrt{1-c^2x^2}}$$

$$= -\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{7dx^7} - \frac{2c^2\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right.}{35dx^5}$$

$$= -\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{7dx^7} - \frac{2c^2\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right.}{35dx^5}$$

$$= -\frac{bcd\sqrt{d-c^2dx^2}}{42x^6\sqrt{1-c^2x^2}} + \frac{2bc^3d\sqrt{d-c^2dx^2}}{35x^4\sqrt{1-c^2x^2}} - \frac{bc^5d\sqrt{d-c^2dx^2}}{70x^2\sqrt{1-c^2x^2}} - \frac{\left(d-c^2dx\right.}{}$$

Mathematica [A] time = 0.22, size = 173, normalized size = 0.75

$$\frac{2bc^7d\log(x)\sqrt{d-c^2dx^2}}{35\sqrt{1-c^2x^2}} - \frac{d\sqrt{d-c^2dx^2}\left(30a\left(2c^2x^2+5\right)\left(c^2x^2-1\right)^3+30b\left(2c^2x^2+5\right)\left(c^2x^2-1\right)^3\sin^{-1}(cx)-\right.}{1050x^7\left(c^2x^2-1\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/x^8,x]
```

```
[Out] -1/1050*(d*Sqrt[d - c^2*d*x^2]*(30*a*(-1 + c^2*x^2)^3*(5 + 2*c^2*x^2) - b*c
*x*Sqrt[1 - c^2*x^2]*(25 - 60*c^2*x^2 + 15*c^4*x^4 + 147*c^6*x^6) + 30*b*(-
1 + c^2*x^2)^3*(5 + 2*c^2*x^2)*ArcSin[c*x]))/(x^7*(-1 + c^2*x^2)) + (2*b*c^
7*d*Sqrt[d - c^2*d*x^2]*Log[x])/(35*Sqrt[1 - c^2*x^2])
```

fricas [A] time = 1.23, size = 599, normalized size = 2.59

$$\left[\frac{6\left(bc^9dx^9-bc^7dx^7\right)\sqrt{d}\,\log\left(\frac{c^2dx^6+c^2dx^2-dx^4-\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+1}\left(x^4-1\right)\sqrt{d}-d}{c^2x^4-x^2}\right)+\left(3\,bc^5dx^5-\left(3\,bc^5-12\,bc^3+5\,bc\right)\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^8,x, algorithm="fricas")
```

```
[Out] [1/210*(6*(b*c^9*d*x^9 - b*c^7*d*x^7)*sqrt(d)*log((c^2*d*x^6 + c^2*d*x^2 -
d*x^4 - sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*(x^4 - 1)*sqrt(d) - d)/(c^2
*x^4 - x^2)) + (3*b*c^5*d*x^5 - (3*b*c^5 - 12*b*c^3 + 5*b*c)*d*x^7 - 12*b*c
^3*d*x^3 + 5*b*c*d*x)*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1) - 6*(2*a*c^8*
d*x^8 - a*c^6*d*x^6 - 9*a*c^4*d*x^4 + 13*a*c^2*d*x^2 - 5*a*d + (2*b*c^8*d*x
^8 - b*c^6*d*x^6 - 9*b*c^4*d*x^4 + 13*b*c^2*d*x^2 - 5*b*d)*arcsin(c*x))*sqr
t(-c^2*d*x^2 + d))/(c^2*x^9 - x^7), 1/210*(12*(b*c^9*d*x^9 - b*c^7*d*x^7)*s
qrt(-d)*arctan(sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*(x^2 + 1)*sqrt(-d)/(
c^2*d*x^4 - (c^2 + 1)*d*x^2 + d)) + (3*b*c^5*d*x^5 - (3*b*c^5 - 12*b*c^3 +
5*b*c)*d*x^7 - 12*b*c^3*d*x^3 + 5*b*c*d*x)*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x
^2 + 1) - 6*(2*a*c^8*d*x^8 - a*c^6*d*x^6 - 9*a*c^4*d*x^4 + 13*a*c^2*d*x^2 -
 5*a*d + (2*b*c^8*d*x^8 - b*c^6*d*x^6 - 9*b*c^4*d*x^4 + 13*b*c^2*d*x^2 - 5*
b*d)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d))/(c^2*x^9 - x^7)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^8,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.57, size = 3383, normalized size = 14.65

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^8,x)
```

```
[Out] -2/35*a*c^2/d/x^5*(-c^2*d*x^2+d)^(5/2)-359/30*b*(-d*(c^2*x^2-1))^(1/2)*d/(3
5*c^10*x^10-35*c^8*x^8-70*c^6*x^6+154*c^4*x^4-105*c^2*x^2+25)/(c^2*x^2-1)*c
^7*(-c^2*x^2+1)^(1/2)+25/7*b*(-d*(c^2*x^2-1))^(1/2)*d/(35*c^10*x^10-35*c^8*
x^8-70*c^6*x^6+154*c^4*x^4-105*c^2*x^2+25)/x^7/(c^2*x^2-1)*arcsin(c*x)-2/35
*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*ln((I*c*x+(-c^2*x^
2+1)^(1/2))^2-1)*d*c^7-44/5*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(35*c^10*x^10-35*c
^8*x^8-70*c^6*x^6+154*c^4*x^4-105*c^2*x^2+25)*x^4/(c^2*x^2-1)*arcsin(c*x)*(
-c^2*x^2+1)^(1/2)*c^11+6*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(35*c^10*x^10-35*c^8*
x^8-70*c^6*x^6+154*c^4*x^4-105*c^2*x^2+25)*x^2/(c^2*x^2-1)*arcsin(c*x)*(-c^
2*x^2+1)^(1/2)*c^9+2*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(35*c^10*x^10-35*c^8*x^8-
70*c^6*x^6+154*c^4*x^4-105*c^2*x^2+25)*x^8/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^
2+1)^(1/2)*c^15+4*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(35*c^10*x^10-35*c^8*x^8-70*
c^6*x^6+154*c^4*x^4-105*c^2*x^2+25)*x^6/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1
)^(1/2)*c^13-2*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(35*c^10*x^10-35*c^8*x^8-70*c^6
*x^6+154*c^4*x^4-105*c^2*x^2+25)*x^10/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^
(1/2)*c^17-1/7*a/d/x^7*(-c^2*d*x^2+d)^(5/2)-10/7*I*b*(-d*(c^2*x^2-1))^(1/2)
*d/(35*c^10*x^10-35*c^8*x^8-70*c^6*x^6+154*c^4*x^4-105*c^2*x^2+25)/(c^2*x^2
-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^7-2/35*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(3
5*c^10*x^10-35*c^8*x^8-70*c^6*x^6+154*c^4*x^4-105*c^2*x^2+25)*x^11/(c^2*x^2
-1)*(-c^2*x^2+1)*c^18+1/5*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(35*c^10*x^10-35*c^8
*x^8-70*c^6*x^6+154*c^4*x^4-105*c^2*x^2+25)*x^9/(c^2*x^2-1)*(-c^2*x^2+1)*c^
16+26/105*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(35*c^10*x^10-35*c^8*x^8-70*c^6*x^6+
154*c^4*x^4-105*c^2*x^2+25)*x^7/(c^2*x^2-1)*(-c^2*x^2+1)*c^14-116/105*I*b*(
-d*(c^2*x^2-1))^(1/2)*d/(35*c^10*x^10-35*c^8*x^8-70*c^6*x^6+154*c^4*x^4-105
*c^2*x^2+25)*x^5/(c^2*x^2-1)*(-c^2*x^2+1)*c^12+20/21*I*b*(-d*(c^2*x^2-1))^(
1/2)*d/(35*c^10*x^10-35*c^8*x^8-70*c^6*x^6+154*c^4*x^4-105*c^2*x^2+25)*x^3/
```

```
(c^2*x^2-1)*(-c^2*x^2+1)*c^10-5/21*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(35*c^10*x^
10-35*c^8*x^8-70*c^6*x^6+154*c^4*x^4-105*c^2*x^2+25)*x/(c^2*x^2-1)*(-c^2*x^
2+1)*c^8-2*b*(-d*(c^2*x^2-1))^(1/2)*d/(35*c^10*x^10-35*c^8*x^8-70*c^6*x^6+1
54*c^4*x^4-105*c^2*x^2+25)*x^11/(c^2*x^2-1)*arcsin(c*x)*c^18+25/42*b*(-d*(c
^2*x^2-1))^(1/2)*d/(35*c^10*x^10-35*c^8*x^8-70*c^6*x^6+154*c^4*x^4-105*c^2*
x^2+25)/x^6/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c+421/42*b*(-d*(c^2*x^2-1))^(1/2
)*d/(35*c^10*x^10-35*c^8*x^8-70*c^6*x^6+154*c^4*x^4-105*c^2*x^2+25)/x^2/(c^
2*x^2-1)*c^5*(-c^2*x^2+1)^(1/2)+472/7*b*(-d*(c^2*x^2-1))^(1/2)*d/(35*c^10*x
^10-35*c^8*x^8-70*c^6*x^6+154*c^4*x^4-105*c^2*x^2+25)/x^3/(c^2*x^2-1)*arcsi
n(c*x)*c^4-55/14*b*(-d*(c^2*x^2-1))^(1/2)*d/(35*c^10*x^10-35*c^8*x^8-70*c^6
*x^6+154*c^4*x^4-105*c^2*x^2+25)/x^4/(c^2*x^2-1)*c^3*(-c^2*x^2+1)^(1/2)-170
/7*b*(-d*(c^2*x^2-1))^(1/2)*d/(35*c^10*x^10-35*c^8*x^8-70*c^6*x^6+154*c^4*x
^4-105*c^2*x^2+25)/x^5/(c^2*x^2-1)*arcsin(c*x)*c^2+3*b*(-d*(c^2*x^2-1))^(1/
2)*d/(35*c^10*x^10-35*c^8*x^8-70*c^6*x^6+154*c^4*x^4-105*c^2*x^2+25)*x^9/(c
^2*x^2-1)*arcsin(c*x)*c^16+12*b*(-d*(c^2*x^2-1))^(1/2)*d/(35*c^10*x^10-35*c
^8*x^8-70*c^6*x^6+154*c^4*x^4-105*c^2*x^2+25)*x^7/(c^2*x^2-1)*arcsin(c*x)*c
^14-5/2*b*(-d*(c^2*x^2-1))^(1/2)*d/(35*c^10*x^10-35*c^8*x^8-70*c^6*x^6+154*
c^4*x^4-105*c^2*x^2+25)*x^6/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c^13-164/5*b*(-d
*(c^2*x^2-1))^(1/2)*d/(35*c^10*x^10-35*c^8*x^8-70*c^6*x^6+154*c^4*x^4-105*c
^2*x^2+25)*x^5/(c^2*x^2-1)*arcsin(c*x)*c^12+11/6*b*(-d*(c^2*x^2-1))^(1/2)*d
/(35*c^10*x^10-35*c^8*x^8-70*c^6*x^6+154*c^4*x^4-105*c^2*x^2+25)*x^4/(c^2*x
^2-1)*(-c^2*x^2+1)^(1/2)*c^11+52/5*b*(-d*(c^2*x^2-1))^(1/2)*d/(35*c^10*x^10
-35*c^8*x^8-70*c^6*x^6+154*c^4*x^4-105*c^2*x^2+25)*x^3/(c^2*x^2-1)*arcsin(c
*x)*c^10-25/21*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(35*c^10*x^10-35*c^8*x^8-70*c^6
*x^6+154*c^4*x^4-105*c^2*x^2+25)*x^3/(c^2*x^2-1)*c^10+5/21*I*b*(-d*(c^2*x^2
-1))^(1/2)*d/(35*c^10*x^10-35*c^8*x^8-70*c^6*x^6+154*c^4*x^4-105*c^2*x^2+25
)*x/(c^2*x^2-1)*c^8+4*I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*arcsin(
c*x)*d*c^7/(35*c^2*x^2-35)-2/35*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(35*c^10*x^10-
35*c^8*x^8-70*c^6*x^6+154*c^4*x^4-105*c^2*x^2+25)*x^13/(c^2*x^2-1)*c^20+9/3
5*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(35*c^10*x^10-35*c^8*x^8-70*c^6*x^6+154*c^4*
x^4-105*c^2*x^2+25)*x^11/(c^2*x^2-1)*c^18+1/21*I*b*(-d*(c^2*x^2-1))^(1/2)*d
/(35*c^10*x^10-35*c^8*x^8-70*c^6*x^6+154*c^4*x^4-105*c^2*x^2+25)*x^9/(c^2*x
^2-1)*c^16-142/105*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(35*c^10*x^10-35*c^8*x^8-70
*c^6*x^6+154*c^4*x^4-105*c^2*x^2+25)*x^7/(c^2*x^2-1)*c^14+72/35*I*b*(-d*(c^
2*x^2-1))^(1/2)*d/(35*c^10*x^10-35*c^8*x^8-70*c^6*x^6+154*c^4*x^4-105*c^2*x
^2+25)*x^5/(c^2*x^2-1)*c^12+1/2*b*(-d*(c^2*x^2-1))^(1/2)*d/(35*c^10*x^10-35
*c^8*x^8-70*c^6*x^6+154*c^4*x^4-105*c^2*x^2+25)*x^8/(c^2*x^2-1)*(-c^2*x^2+1
)^(1/2)*c^15+161/30*b*(-d*(c^2*x^2-1))^(1/2)*d/(35*c^10*x^10-35*c^8*x^8-70*
c^6*x^6+154*c^4*x^4-105*c^2*x^2+25)*x^2/(c^2*x^2-1)*c^9*(-c^2*x^2+1)^(1/2)+
1966/35*b*(-d*(c^2*x^2-1))^(1/2)*d/(35*c^10*x^10-35*c^8*x^8-70*c^6*x^6+154*
c^4*x^4-105*c^2*x^2+25)*x/(c^2*x^2-1)*arcsin(c*x)*c^8-3272/35*b*(-d*(c^2*x^
2-1))^(1/2)*d/(35*c^10*x^10-35*c^8*x^8-70*c^6*x^6+154*c^4*x^4-105*c^2*x^2+2
5)/x/(c^2*x^2-1)*arcsin(c*x)*c^6
```

maxima [A] time = 0.56, size = 151, normalized size = 0.65

$$\frac{1}{210}\left(12\,c^{6}d^{\frac{3}{2}}\log\left(x\right)-\frac{3\,c^{4}d^{\frac{3}{2}}x^{4}-12\,c^{2}d^{\frac{3}{2}}x^{2}+5\,d^{\frac{3}{2}}}{x^{6}}\right)bc-\frac{1}{35}\,b\left(\frac{2\left(-c^{2}dx^{2}+d\right)^{\frac{5}{2}}c^{2}}{dx^{5}}+\frac{5\left(-c^{2}dx^{2}+d\right)^{\frac{5}{2}}}{dx^{7}}\right)\arcsin\left(c\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^8,x, algorithm="maxima")
```

```
[Out] 1/210*(12*c^6*d^(3/2)*log(x) - (3*c^4*d^(3/2)*x^4 - 12*c^2*d^(3/2)*x^2 + 5*
d^(3/2))/x^6)*b*c - 1/35*b*(2*(-c^2*d*x^2 + d)^(5/2)*c^2/(d*x^5) + 5*(-c^2*
d*x^2 + d)^(5/2)/(d*x^7))*arcsin(c*x) - 1/35*a*(2*(-c^2*d*x^2 + d)^(5/2)*c^
2/(d*x^5) + 5*(-c^2*d*x^2 + d)^(5/2)/(d*x^7))
```

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

$$\int \frac{(a + b \operatorname{asin}(c x)) \left(d - c^2 d x^2\right)^{3/2}}{x^8}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2))/x^8,x)
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2))/x^8, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))/x**8,x)
[Out] Timed out
```

3.75 $\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{x^{10}}\,dx$

Optimal. Leaf size=308

$$-\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{9dx^9}-\frac{4c^2\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{63dx^7}-\frac{8c^4\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{315dx^5}-\frac{bc}{72}$$

```
[Out] -1/9*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/d/x^9-4/63*c^2*(-c^2*d*x^2+d)^(
5/2)*(a+b*arcsin(c*x))/d/x^7-8/315*c^4*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x
))/d/x^5-1/72*b*c*d*(-c^2*d*x^2+d)^(1/2)/x^8/(-c^2*x^2+1)^(1/2)+5/189*b*c^3
*d*(-c^2*d*x^2+d)^(1/2)/x^6/(-c^2*x^2+1)^(1/2)-1/420*b*c^5*d*(-c^2*d*x^2+d)
^(1/2)/x^4/(-c^2*x^2+1)^(1/2)-2/315*b*c^7*d*(-c^2*d*x^2+d)^(1/2)/x^2/(-c^2*
x^2+1)^(1/2)+8/315*b*c^9*d*ln(x)*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.21, antiderivative size = 308, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = {271, 264, 4691, 12, 1251, 893}

$$-\frac{8c^4\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{315dx^5}-\frac{4c^2\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{63dx^7}-\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{9dx^9}-\frac{2}{3}$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/x^10,x]
```

```
[Out] -(b*c*d*Sqrt[d - c^2*d*x^2])/(72*x^8*Sqrt[1 - c^2*x^2]) + (5*b*c^3*d*Sqrt[d
 - c^2*d*x^2])/(189*x^6*Sqrt[1 - c^2*x^2]) - (b*c^5*d*Sqrt[d - c^2*d*x^2])/
(420*x^4*Sqrt[1 - c^2*x^2]) - (2*b*c^7*d*Sqrt[d - c^2*d*x^2])/(315*x^2*Sqrt
[1 - c^2*x^2]) - ((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(9*d*x^9) - (4
*c^2*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(63*d*x^7) - (8*c^4*(d - c^
2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(315*d*x^5) + (8*b*c^9*d*Sqrt[d - c^2*d
*x^2]*Log[x])/(315*Sqrt[1 - c^2*x^2])
```

Rule 12

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

Rule 264

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

Rule 271

```
Int[(x_)^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x^(m + 1)*(
a + b*x^n)^(p + 1))/(a*(m + 1)), x] - Dist[(b*(m + n*(p + 1) + 1))/(a*(m +
1)), Int[x^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, m, n, p}, x] && IL
tQ[Simplify[(m + 1)/n + p + 1], 0] && NeQ[m, -1]
```

Rule 893

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_.) + (b_.)*(x_)
 + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g
*x)^n*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ
[e*f - d*g, 0] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && I
ntegerQ[p] && ((EqQ[p, 1] && IntegersQ[m, n]) || (ILtQ[m, 0] && ILtQ[n, 0])
```

)

Rule 1251

```
Int[(x_)^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_
)^4)^(p_.), x_Symbol] :> Dist[1/2, Subst[Int[x^((m - 1)/2)*(d + e*x)^q*(a +
 b*x + c*x^2)^p, x], x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x] && Inte
gerQ[(m - 1)/2]
```

Rule 4691

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[a + b*ArcSi
n[c*x], Int[x^m*(d + e*x^2)^p, x], x] - Dist[(b*c*d^(p - 1/2)*Sqrt[d + e*x^
2])/Sqrt[1 - c^2*x^2], Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x
]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p + 1/2, 0] &&
 (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0])
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{x^{10}}\,dx = -\frac{\left(bcd\sqrt{d-c^2dx^2}\right)\int \frac{\left(1-c^2x^2\right)^2\left(-35-20c^2x^2-8c^4x^4\right)}{315x^9}\,dx}{\sqrt{1-c^2x^2}} + \left(a+b\sin^{-1}(cx)\right)\int$$

$$= -\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{9dx^9} - \frac{\left(bcd\sqrt{d-c^2dx^2}\right)\int \frac{\left(1-c^2x^2\right)^2\left(-35-20c^2x\right.}{x^9}}{315\sqrt{1-c^2x^2}}$$

$$= -\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{9dx^9} - \frac{4c^2\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{63dx^7} -$$

$$= -\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{9dx^9} - \frac{4c^2\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{63dx^7} -$$

$$= -\frac{bcd\sqrt{d-c^2dx^2}}{72x^8\sqrt{1-c^2x^2}} + \frac{5bc^3d\sqrt{d-c^2dx^2}}{189x^6\sqrt{1-c^2x^2}} - \frac{bc^5d\sqrt{d-c^2dx^2}}{420x^4\sqrt{1-c^2x^2}} - \frac{2bc^7d\sqrt{d-c}}{315x^2\sqrt{1-}}$$

Mathematica [A] time = 0.25, size = 197, normalized size = 0.64

$$\frac{8bc^9d\log(x)\sqrt{d-c^2dx^2}}{315\sqrt{1-c^2x^2}} - \frac{d\sqrt{d-c^2dx^2}\left(840a\left(8c^4x^4+20c^2x^2+35\right)\left(c^2x^2-1\right)^3+840b\left(8c^4x^4+20c^2x^2+35\right)\left(c\right.\right.}{264600}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/x^10,x]
```

```
[Out] -1/264600*(d*Sqrt[d - c^2*d*x^2]*(840*a*(-1 + c^2*x^2)^3*(35 + 20*c^2*x^2 +
 8*c^4*x^4) - b*c*x*Sqrt[1 - c^2*x^2]*(3675 - 7000*c^2*x^2 + 630*c^4*x^4 +
1680*c^6*x^6 + 18264*c^8*x^8) + 840*b*(-1 + c^2*x^2)^3*(35 + 20*c^2*x^2 + 8
*c^4*x^4)*ArcSin[c*x]))/(x^9*(-1 + c^2*x^2)) + (8*b*c^9*d*Sqrt[d - c^2*d*x^
2]*Log[x])/(315*Sqrt[1 - c^2*x^2])
```

fricas [A] time = 0.90, size = 671, normalized size = 2.18

$$\left[\frac{96\left(bc^{11}dx^{11}-bc^{9}dx^{9}\right)\sqrt{d}\,\log\left(\frac{c^{2}dx^{6}+c^{2}dx^{2}-dx^{4}-\sqrt{-c^{2}dx^{2}+d}\,\sqrt{-c^{2}x^{2}+1}\left(x^{4}-1\right)\sqrt{d}-d}{c^{2}x^{4}-x^{2}}\right)+\left(48\,bc^{7}dx^{7}+18\,bc^{5}dx^{5}-\left(48\,b\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^10,x, algorithm="fricas"
)
```

```
[Out] [1/7560*(96*(b*c^11*d*x^11 - b*c^9*d*x^9)*sqrt(d)*log((c^2*d*x^6 + c^2*d*x^
2 - d*x^4 - sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*(x^4 - 1)*sqrt(d) - d)/
(c^2*x^4 - x^2)) + (48*b*c^7*d*x^7 + 18*b*c^5*d*x^5 - (48*b*c^7 + 18*b*c^5
- 200*b*c^3 + 105*b*c)*d*x^9 - 200*b*c^3*d*x^3 + 105*b*c*d*x)*sqrt(-c^2*d*x
^2 + d)*sqrt(-c^2*x^2 + 1) - 24*(8*a*c^10*d*x^10 - 4*a*c^8*d*x^8 - a*c^6*d*
x^6 - 53*a*c^4*d*x^4 + 85*a*c^2*d*x^2 - 35*a*d + (8*b*c^10*d*x^10 - 4*b*c^8
*d*x^8 - b*c^6*d*x^6 - 53*b*c^4*d*x^4 + 85*b*c^2*d*x^2 - 35*b*d)*arcsin(c*x
))*sqrt(-c^2*d*x^2 + d))/(c^2*x^11 - x^9), 1/7560*(192*(b*c^11*d*x^11 - b*c
^9*d*x^9)*sqrt(-d)*arctan(sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*(x^2 + 1)
*sqrt(-d)/(c^2*d*x^4 - (c^2 + 1)*d*x^2 + d)) + (48*b*c^7*d*x^7 + 18*b*c^5*d
*x^5 - (48*b*c^7 + 18*b*c^5 - 200*b*c^3 + 105*b*c)*d*x^9 - 200*b*c^3*d*x^3
+ 105*b*c*d*x)*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1) - 24*(8*a*c^10*d*x^1
0 - 4*a*c^8*d*x^8 - a*c^6*d*x^6 - 53*a*c^4*d*x^4 + 85*a*c^2*d*x^2 - 35*a*d
+ (8*b*c^10*d*x^10 - 4*b*c^8*d*x^8 - b*c^6*d*x^6 - 53*b*c^4*d*x^4 + 85*b*c^
2*d*x^2 - 35*b*d)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d))/(c^2*x^11 - x^9)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^10,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.69, size = 4560, normalized size = 14.81

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^10,x)
```

```
[Out] -8/315*a*c^4/d/x^5*(-c^2*d*x^2+d)^(5/2)+1225/9*b*(-d*(c^2*x^2-1))^(1/2)*d/(
840*c^12*x^12-945*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*
x^2+1225)/x^9/(c^2*x^2-1)*arcsin(c*x)+30055/504*b*(-d*(c^2*x^2-1))^(1/2)*d/
(840*c^12*x^12-945*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2
*x^2+1225)/(c^2*x^2-1)*c^9*(-c^2*x^2+1)^(1/2)-8/315*b*(-d*(c^2*x^2-1))^(1/2
)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*ln((I*c*x+(-c^2*x^2+1)^(1/2))^2-1)*d*c^9-1
/9*a/d/x^9*(-c^2*d*x^2+d)^(5/2)+350/27*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^
12*x^12-945*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+12
25)*x^3/(c^2*x^2-1)*(-c^2*x^2+1)*c^12-35/9*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(84
0*c^12*x^12-945*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^
2+1225)*x/(c^2*x^2-1)*(-c^2*x^2+1)*c^10-40/63*I*b*(-d*(c^2*x^2-1))^(1/2)*d/
(840*c^12*x^12-945*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2
*x^2+1225)*x^7/(c^2*x^2-1)*(-c^2*x^2+1)*c^16-2189/189*I*b*(-d*(c^2*x^2-1))^
```

```
(1/2)*d/(840*c^12*x^12-945*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-
4725*c^2*x^2+1225)*x^5/(c^2*x^2-1)*(-c^2*x^2+1)*c^14+2306/945*I*b*(-d*(c^2*
x^2-1))^(1/2)*d/(840*c^12*x^12-945*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*
c^4*x^4-4725*c^2*x^2+1225)*x^9/(c^2*x^2-1)*(-c^2*x^2+1)*c^18+1384/945*I*b*(
-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^12-945*c^10*x^10+189*c^8*x^8-2730*c^6*x
^6+6210*c^4*x^4-4725*c^2*x^2+1225)*x^11/(c^2*x^2-1)*(-c^2*x^2+1)*c^20-128/3
15*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^12-945*c^10*x^10+189*c^8*x^8-27
30*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)*x^15/(c^2*x^2-1)*(-c^2*x^2+1)*c^
24-16/45*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^12-945*c^10*x^10+189*c^8*
x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)*x^13/(c^2*x^2-1)*(-c^2*x^2
+1)*c^22-280/9*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^12-945*c^10*x^10+18
9*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)/(c^2*x^2-1)*(-c^2*x^
2+1)^(1/2)*arcsin(c*x)*c^9-60632/105*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x
^12-945*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)*
x^5/(c^2*x^2-1)*arcsin(c*x)*c^14+1187/60*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^
12*x^12-945*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+12
25)*x^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c^13+59884/105*b*(-d*(c^2*x^2-1))^(1
/2)*d/(840*c^12*x^12-945*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-47
25*c^2*x^2+1225)*x^3/(c^2*x^2-1)*arcsin(c*x)*c^12+829/56*b*(-d*(c^2*x^2-1))
^(1/2)*d/(840*c^12*x^12-945*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4
-4725*c^2*x^2+1225)*x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c^11-4*b*(-d*(c^2*x^
2-1))^(1/2)*d/(840*c^12*x^12-945*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^
4*x^4-4725*c^2*x^2+1225)*x^8/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c^17+3151/15*b*
(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^12-945*c^10*x^10+189*c^8*x^8-2730*c^6*
x^6+6210*c^4*x^4-4725*c^2*x^2+1225)*x^7/(c^2*x^2-1)*arcsin(c*x)*c^16-4189/1
80*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^12-945*c^10*x^10+189*c^8*x^8-2730
*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)*x^6/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)
*c^15-212/15*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^12-945*c^10*x^10+189*c^
8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)*x^9/(c^2*x^2-1)*arcsin(c
*x)*c^18-7700/9*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^12-945*c^10*x^10+189
*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)/x^7/(c^2*x^2-1)*arcsi
n(c*x)*c^2+1225/72*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^12-945*c^10*x^10+
189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)/x^8/(c^2*x^2-1)*(-
c^2*x^2+1)^(1/2)*c-21175/216*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^12-945*
c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)/x^6/(c^2
*x^2-1)*c^3*(-c^2*x^2+1)^(1/2)+16/3*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^
12-945*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)*x
^10/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c^19-128/315*I*b*(-d*(c^2*x^2-1))^(1/2)*
d/(840*c^12*x^12-945*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c
^2*x^2+1225)*x^17/(c^2*x^2-1)*c^26-455/27*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(840
*c^12*x^12-945*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2
+1225)*x^3/(c^2*x^2-1)*c^12+35/9*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^1
2-945*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)*x/
(c^2*x^2-1)*c^10+16*I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*arcsin(c*
x)*d*c^9/(315*c^2*x^2-315)+104/3*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^12-
945*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)*x^11
/(c^2*x^2-1)*arcsin(c*x)*c^20-2906/945*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^
12*x^12-945*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+12
25)*x^9/(c^2*x^2-1)*c^18-2069/189*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^
12-945*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)*x
^7/(c^2*x^2-1)*c^16+4639/189*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^12-94
5*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)*x^5/(c
^2*x^2-1)*c^14-64/3*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^12-945*c^10*x^10
+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)*x^13/(c^2*x^2-1)*
arcsin(c*x)*c^22+19540/9*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^12-945*c^10
*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)/x^5/(c^2*x^2
-1)*arcsin(c*x)*c^4+16/315*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^12-945*
c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)*x^15/(c^
2*x^2-1)*c^24+344/189*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^12-945*c^10*
```

```
x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)*x^13/(c^2*x^2
-1)*c^22+922/945*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^12-945*c^10*x^10+
189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)*x^11/(c^2*x^2-1)*c
^20-43264/63*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^12-945*c^10*x^10+189*c^
8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)*x/(c^2*x^2-1)*arcsin(c*x
)*c^10+113594/63*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^12-945*c^10*x^10+18
9*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)/x/(c^2*x^2-1)*arcsin
(c*x)*c^8-25915/126*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^12-945*c^10*x^10
+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)/x^2/(c^2*x^2-1)*c
^7*(-c^2*x^2+1)^(1/2)-174520/63*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^12-9
45*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)/x^3/(
c^2*x^2-1)*arcsin(c*x)*c^6+1285/6*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^12
-945*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)/x^4
/(c^2*x^2-1)*c^5*(-c^2*x^2+1)^(1/2)+24*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^
12*x^12-945*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+12
25)*x^10/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^19-24/5*I*b*(-d*(c^2*
x^2-1))^(1/2)*d/(840*c^12*x^12-945*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*
c^4*x^4-4725*c^2*x^2+1225)*x^8/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c
^17+208/3*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^12-945*c^10*x^10+189*c^8
*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)*x^6/(c^2*x^2-1)*(-c^2*x^2
+1)^(1/2)*arcsin(c*x)*c^15-1104/7*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^
12-945*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)*x
^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^13+120*I*b*(-d*(c^2*x^2-1))
^(1/2)*d/(840*c^12*x^12-945*c^10*x^10+189*c^8*x^8-2730*c^6*x^6+6210*c^4*x^4
-4725*c^2*x^2+1225)*x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^11-64/
3*I*b*(-d*(c^2*x^2-1))^(1/2)*d/(840*c^12*x^12-945*c^10*x^10+189*c^8*x^8-273
0*c^6*x^6+6210*c^4*x^4-4725*c^2*x^2+1225)*x^12/(c^2*x^2-1)*(-c^2*x^2+1)^(1/
2)*arcsin(c*x)*c^21-4/63*a*c^2/d/x^7*(-c^2*d*x^2+d)^(5/2)
```

maxima [A] time = 0.53, size = 210, normalized size = 0.68

$$\frac{1}{7560}\left(192\,c^8 d^{\frac{3}{2}}\log(x)-\frac{48\,c^6 d^{\frac{3}{2}}x^6+18\,c^4 d^{\frac{3}{2}}x^4-200\,c^2 d^{\frac{3}{2}}x^2+105\,d^{\frac{3}{2}}}{x^8}\right)bc-\frac{1}{315}\,b\left(\frac{8\left(-c^2dx^2+d\right)^{\frac{5}{2}}c^4}{dx^5}+\frac{20\left(-c\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^10,x, algorithm="maxima"
)
```

```
[Out] 1/7560*(192*c^8*d^(3/2)*log(x) - (48*c^6*d^(3/2)*x^6 + 18*c^4*d^(3/2)*x^4 -
 200*c^2*d^(3/2)*x^2 + 105*d^(3/2))/x^8)*b*c - 1/315*b*(8*(-c^2*d*x^2 + d)^
(5/2)*c^4/(d*x^5) + 20*(-c^2*d*x^2 + d)^(5/2)*c^2/(d*x^7) + 35*(-c^2*d*x^2
+ d)^(5/2)/(d*x^9))*arcsin(c*x) - 1/315*a*(8*(-c^2*d*x^2 + d)^(5/2)*c^4/(d*
x^5) + 20*(-c^2*d*x^2 + d)^(5/2)*c^2/(d*x^7) + 35*(-c^2*d*x^2 + d)^(5/2)/(d
*x^9))
```

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

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))\,\left(d-c^2\,d\,x^2\right)^{3/2}}{x^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2))/x^10,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2))/x^10, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))/x**10,x)
```

```
[Out] Timed out
```

3.76 $\int \frac{(d-c^2dx^2)^{3/2}(a+b\sin^{-1}(cx))}{x^{12}}\,dx$

Optimal. Leaf size=385

$$-\frac{(d-c^2dx^2)^{5/2}(a+b\sin^{-1}(cx))}{11dx^{11}}-\frac{2c^2(d-c^2dx^2)^{5/2}(a+b\sin^{-1}(cx))}{33dx^9}-\frac{16c^6(d-c^2dx^2)^{5/2}(a+b\sin^{-1}(cx))}{1155dx^5}-\ldots$$

```
[Out] -1/11*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/d/x^11-2/33*c^2*(-c^2*d*x^2+d)
^(5/2)*(a+b*arcsin(c*x))/d/x^9-8/231*c^4*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c
*x))/d/x^7-16/1155*c^6*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/d/x^5-1/110*b
*c*d*(-c^2*d*x^2+d)^(1/2)/x^10/(-c^2*x^2+1)^(1/2)+1/66*b*c^3*d*(-c^2*d*x^2+
d)^(1/2)/x^8/(-c^2*x^2+1)^(1/2)-1/1386*b*c^5*d*(-c^2*d*x^2+d)^(1/2)/x^6/(-c
^2*x^2+1)^(1/2)-1/770*b*c^7*d*(-c^2*d*x^2+d)^(1/2)/x^4/(-c^2*x^2+1)^(1/2)-4
/1155*b*c^9*d*(-c^2*d*x^2+d)^(1/2)/x^2/(-c^2*x^2+1)^(1/2)+16/1155*b*c^11*d*
ln(x)*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.30, antiderivative size = 385, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {271, 264, 4691, 12, 1799, 1620}

$$-\frac{16c^6(d-c^2dx^2)^{5/2}(a+b\sin^{-1}(cx))}{1155dx^5}-\frac{8c^4(d-c^2dx^2)^{5/2}(a+b\sin^{-1}(cx))}{231dx^7}-\frac{2c^2(d-c^2dx^2)^{5/2}(a+b\sin^{-1}(cx))}{33dx^9}\ldots$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/x^12,x]
```

```
[Out] -(b*c*d*Sqrt[d - c^2*d*x^2])/(110*x^10*Sqrt[1 - c^2*x^2]) + (b*c^3*d*Sqrt[d
 - c^2*d*x^2])/(66*x^8*Sqrt[1 - c^2*x^2]) - (b*c^5*d*Sqrt[d - c^2*d*x^2])/(
1386*x^6*Sqrt[1 - c^2*x^2]) - (b*c^7*d*Sqrt[d - c^2*d*x^2])/(770*x^4*Sqrt[1
 - c^2*x^2]) - (4*b*c^9*d*Sqrt[d - c^2*d*x^2])/(1155*x^2*Sqrt[1 - c^2*x^2])
 - ((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(11*d*x^11) - (2*c^2*(d - c^
2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(33*d*x^9) - (8*c^4*(d - c^2*d*x^2)^(5/
2)*(a + b*ArcSin[c*x]))/(231*d*x^7) - (16*c^6*(d - c^2*d*x^2)^(5/2)*(a + b*
ArcSin[c*x]))/(1155*d*x^5) + (16*b*c^11*d*Sqrt[d - c^2*d*x^2]*Log[x])/(1155
*Sqrt[1 - c^2*x^2])
```

Rule 12

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

Rule 264

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

Rule 271

```
Int[(x_)^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x^(m + 1)*(
a + b*x^n)^(p + 1))/(a*(m + 1)), x] - Dist[(b*(m + n*(p + 1) + 1))/(a*(m +
1)), Int[x^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, m, n, p}, x] && IL
tQ[Simplify[(m + 1)/n + p + 1], 0] && NeQ[m, -1]
```

Rule 1620

```
Int[(Px_)*((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol]
:> Int[ExpandIntegrand[Px*(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c
```

```
, d, m, n}, x] && PolyQ[Px, x] && (IntegersQ[m, n] || IGtQ[m, -2]) && GtQ[E
xpon[Px, x], 2]
```

Rule 1799

```
Int[(Pq_)*(x_)^(m_.)*((a_) + (b_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/2, Su
bst[Int[x^((m - 1)/2)*SubstFor[x^2, Pq, x]*(a + b*x)^p, x], x, x^2], x] /;
FreeQ[{a, b, p}, x] && PolyQ[Pq, x^2] && IntegerQ[(m - 1)/2]
```

Rule 4691

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[a + b*ArcSi
n[c*x], Int[x^m*(d + e*x^2)^p, x], x] - Dist[(b*c*d^(p - 1/2)*Sqrt[d + e*x^
2])/Sqrt[1 - c^2*x^2], Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x
]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p + 1/2, 0] &&
 (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0])
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{x^{12}}\,dx = -\frac{\left(bcd\sqrt{d-c^2dx^2}\right)\int \frac{\left(1-c^2x^2\right)^2\left(-105-70c^2x^2-40c^4x^4-16c^6x^6\right)}{1155x^{11}}\,dx}{\sqrt{1-c^2x^2}} + \left(a+b\sin^{-1}(\right.$$

$$= -\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{11dx^{11}} - \frac{\left(bcd\sqrt{d-c^2dx^2}\right)\int \frac{\left(1-c^2x^2\right)^2\left(-105-70c^2\right.}{x^{1}}}{1155\sqrt{1-c^2x^2}}$$

$$= -\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{11dx^{11}} - \frac{2c^2\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{33dx^9} -$$

$$= -\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{11dx^{11}} - \frac{2c^2\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{33dx^9} -$$

$$= -\frac{bcd\sqrt{d-c^2dx^2}}{110x^{10}\sqrt{1-c^2x^2}} + \frac{bc^3d\sqrt{d-c^2dx^2}}{66x^8\sqrt{1-c^2x^2}} - \frac{bc^5d\sqrt{d-c^2dx^2}}{1386x^6\sqrt{1-c^2x^2}} - \frac{bc^7d\sqrt{d-}}{770x^4\sqrt{1-}}$$

Mathematica [A] time = 0.27, size = 221, normalized size = 0.57

$$\frac{16bc^{11}d\log(x)\sqrt{d-c^2dx^2}}{1155\sqrt{1-c^2x^2}} - \frac{d\sqrt{d-c^2dx^2}\left(630a\left(16c^6x^6+40c^4x^4+70c^2x^2+105\right)\left(c^2x^2-1\right)^3+630b\left(16c^6x^6+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/x^12,x]
```

```
[Out] -1/727650*(d*Sqrt[d - c^2*d*x^2]*(630*a*(-1 + c^2*x^2)^3*(105 + 70*c^2*x^2
+ 40*c^4*x^4 + 16*c^6*x^6) - b*c*x*Sqrt[1 - c^2*x^2]*(6615 - 11025*c^2*x^2
+ 525*c^4*x^4 + 945*c^6*x^6 + 2520*c^8*x^8 + 29524*c^10*x^10) + 630*b*(-1 +
 c^2*x^2)^3*(105 + 70*c^2*x^2 + 40*c^4*x^4 + 16*c^6*x^6)*ArcSin[c*x]))/(x^1
1*(-1 + c^2*x^2)) + (16*b*c^11*d*Sqrt[d - c^2*d*x^2]*Log[x])/(1155*Sqrt[1 -
 c^2*x^2])
```

fricas [A] time = 0.81, size = 743, normalized size = 1.93

$$\left[\frac{48\left(bc^{13}dx^{13}-bc^{11}dx^{11}\right)\sqrt{d}\log\left(\frac{c^2dx^6+c^2dx^2-dx^4-\sqrt{-c^2dx^2+d}\sqrt{-c^2x^2+1}\left(x^4-1\right)\sqrt{d}-d}{c^2x^4-x^2}\right)+\left(24\,bc^9dx^9+9\,bc^7dx^7-\left(24\,b\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^12,x, algorithm="fricas"
)
```

```
[Out] [1/6930*(48*(b*c^13*d*x^13 - b*c^11*d*x^11)*sqrt(d)*log((c^2*d*x^6 + c^2*d*
x^2 - d*x^4 - sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*(x^4 - 1)*sqrt(d) - d
)/(c^2*x^4 - x^2)) + (24*b*c^9*d*x^9 + 9*b*c^7*d*x^7 - (24*b*c^9 + 9*b*c^7
+ 5*b*c^5 - 105*b*c^3 + 63*b*c)*d*x^11 + 5*b*c^5*d*x^5 - 105*b*c^3*d*x^3 +
63*b*c*d*x)*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1) - 6*(16*a*c^12*d*x^12 -
 8*a*c^10*d*x^10 - 2*a*c^8*d*x^8 - a*c^6*d*x^6 - 145*a*c^4*d*x^4 + 245*a*c^
2*d*x^2 - 105*a*d + (16*b*c^12*d*x^12 - 8*b*c^10*d*x^10 - 2*b*c^8*d*x^8 - b
*c^6*d*x^6 - 145*b*c^4*d*x^4 + 245*b*c^2*d*x^2 - 105*b*d)*arcsin(c*x))*sqrt
(-c^2*d*x^2 + d))/(c^2*x^13 - x^11), 1/6930*(96*(b*c^13*d*x^13 - b*c^11*d*x
^11)*sqrt(-d)*arctan(sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*(x^2 + 1)*sqrt
(-d)/(c^2*d*x^4 - (c^2 + 1)*d*x^2 + d)) + (24*b*c^9*d*x^9 + 9*b*c^7*d*x^7 -
 (24*b*c^9 + 9*b*c^7 + 5*b*c^5 - 105*b*c^3 + 63*b*c)*d*x^11 + 5*b*c^5*d*x^5
 - 105*b*c^3*d*x^3 + 63*b*c*d*x)*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1) -
6*(16*a*c^12*d*x^12 - 8*a*c^10*d*x^10 - 2*a*c^8*d*x^8 - a*c^6*d*x^6 - 145*a
*c^4*d*x^4 + 245*a*c^2*d*x^2 - 105*a*d + (16*b*c^12*d*x^12 - 8*b*c^10*d*x^1
0 - 2*b*c^8*d*x^8 - b*c^6*d*x^6 - 145*b*c^4*d*x^4 + 245*b*c^2*d*x^2 - 105*b
*d)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d))/(c^2*x^13 - x^11)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^12,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.87, size = 5881, normalized size = 15.28

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^12,x)
```

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

maxima [A] time = 0.47, size = 269, normalized size = 0.70

$$\frac{1}{6930}\left(96\,c^{10}d^{\frac{3}{2}}\log(x)-\frac{24\,c^8d^{\frac{3}{2}}x^8+9\,c^6d^{\frac{3}{2}}x^6+5\,c^4d^{\frac{3}{2}}x^4-105\,c^2d^{\frac{3}{2}}x^2+63\,d^{\frac{3}{2}}}{x^{10}}\right)bc-\frac{1}{1155}\left(\frac{16\left(-c^2dx^2+d\right)^{\frac{5}{2}}c^{6}}{dx^5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^12,x, algorithm="maxima"
)
```

```
[Out] 1/6930*(96*c^10*d^(3/2)*log(x) - (24*c^8*d^(3/2)*x^8 + 9*c^6*d^(3/2)*x^6 +
5*c^4*d^(3/2)*x^4 - 105*c^2*d^(3/2)*x^2 + 63*d^(3/2))/x^10)*b*c - 1/1155*(1
6*(-c^2*d*x^2 + d)^(5/2)*c^6/(d*x^5) + 40*(-c^2*d*x^2 + d)^(5/2)*c^4/(d*x^7
) + 70*(-c^2*d*x^2 + d)^(5/2)*c^2/(d*x^9) + 105*(-c^2*d*x^2 + d)^(5/2)/(d*x
^11))*b*arcsin(c*x) - 1/1155*(16*(-c^2*d*x^2 + d)^(5/2)*c^6/(d*x^5) + 40*(-
c^2*d*x^2 + d)^(5/2)*c^4/(d*x^7) + 70*(-c^2*d*x^2 + d)^(5/2)*c^2/(d*x^9) +
105*(-c^2*d*x^2 + d)^(5/2)/(d*x^11))*a
```

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

$$\int \frac{(a + b\,\mathrm{asin}\,(c\,x))\,\left(d - c^2\,d\,x^2\right)^{3/2}}{x^{12}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2))/x^12,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2))/x^12, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))/x**12,x)
```

```
[Out] Timed out
```

3.77 $\int x^7 \left(d-c^2 d x^2\right)^{3/2} \left(a+b \sin^{-1}(c x)\right) \, dx$

Optimal. Leaf size=375

$$\frac{\left(d-c^2 d x^2\right)^{11/2} \left(a+b \sin^{-1}(c x)\right)}{11 c^8 d^4}-\frac{\left(d-c^2 d x^2\right)^{9/2} \left(a+b \sin^{-1}(c x)\right)}{3 c^8 d^3}+\frac{3 \left(d-c^2 d x^2\right)^{7/2} \left(a+b \sin^{-1}(c x)\right)}{7 c^8 d^2}-\frac{\left(d-c^2 d\right.}{}$$

```
[Out] -1/5*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/c^8/d+3/7*(-c^2*d*x^2+d)^(7/2)*
(a+b*arcsin(c*x))/c^8/d^2-1/3*(-c^2*d*x^2+d)^(9/2)*(a+b*arcsin(c*x))/c^8/d^
3+1/11*(-c^2*d*x^2+d)^(11/2)*(a+b*arcsin(c*x))/c^8/d^4+16/1155*b*d*x*(-c^2*
d*x^2+d)^(1/2)/c^7/(-c^2*x^2+1)^(1/2)+8/3465*b*d*x^3*(-c^2*d*x^2+d)^(1/2)/c
^5/(-c^2*x^2+1)^(1/2)+2/1925*b*d*x^5*(-c^2*d*x^2+d)^(1/2)/c^3/(-c^2*x^2+1)^
(1/2)+1/1617*b*d*x^7*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-4/297*b*c*d*
x^9*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/121*b*c^3*d*x^11*(-c^2*d*x^2+
d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.29, antiderivative size = 375, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {266, 43, 4691, 12, 1810}

$$\frac{\left(d-c^2 d x^2\right)^{11/2} \left(a+b \sin^{-1}(c x)\right)}{11 c^8 d^4}-\frac{\left(d-c^2 d x^2\right)^{9/2} \left(a+b \sin^{-1}(c x)\right)}{3 c^8 d^3}+\frac{3 \left(d-c^2 d x^2\right)^{7/2} \left(a+b \sin^{-1}(c x)\right)}{7 c^8 d^2}-\frac{\left(d-c^2 d\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^7*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (16*b*d*x*Sqrt[d - c^2*d*x^2])/(1155*c^7*Sqrt[1 - c^2*x^2]) + (8*b*d*x^3*Sq
rt[d - c^2*d*x^2])/(3465*c^5*Sqrt[1 - c^2*x^2]) + (2*b*d*x^5*Sqrt[d - c^2*d
*x^2])/(1925*c^3*Sqrt[1 - c^2*x^2]) + (b*d*x^7*Sqrt[d - c^2*d*x^2])/(1617*c
*Sqrt[1 - c^2*x^2]) - (4*b*c*d*x^9*Sqrt[d - c^2*d*x^2])/(297*Sqrt[1 - c^2*x
^2]) + (b*c^3*d*x^11*Sqrt[d - c^2*d*x^2])/(121*Sqrt[1 - c^2*x^2]) - ((d - c
^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(5*c^8*d) + (3*(d - c^2*d*x^2)^(7/2)*(
a + b*ArcSin[c*x]))/(7*c^8*d^2) - ((d - c^2*d*x^2)^(9/2)*(a + b*ArcSin[c*x]
))/(3*c^8*d^3) + ((d - c^2*d*x^2)^(11/2)*(a + b*ArcSin[c*x]))/(11*c^8*d^4)
```

Rule 12

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

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 1810

```
Int[(Pq_)*((a_) + (b_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[Pq*
(a + b*x^2)^p, x], x] /; FreeQ[{a, b}, x] && PolyQ[Pq, x] && IGtQ[p, -2]
```

Rule 4691

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[a + b*ArcSi
n[c*x], Int[x^m*(d + e*x^2)^p, x], x] - Dist[(b*c*d^(p - 1/2)*Sqrt[d + e*x^
2])/Sqrt[1 - c^2*x^2], Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x
]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p + 1/2, 0] &&
 (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0])
```

Rubi steps

$$\int x^7 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right) dx = -\frac{\left(bcd\sqrt{d-c^2dx^2}\right)\int \frac{\left(1-c^2x^2\right)^2\left(-16-40c^2x^2-70c^4x^4-105c^6x^6\right)}{1155c^8}dx}{\sqrt{1-c^2x^2}} + \left(a+b\sin\right.$$

$$= -\frac{\left(bd\sqrt{d-c^2dx^2}\right)\int \left(1-c^2x^2\right)^2\left(-16-40c^2x^2-70c^4x^4-105c^6x^6\right) d}{1155c^7\sqrt{1-c^2x^2}}$$

$$= -\frac{\left(bd\sqrt{d-c^2dx^2}\right)\int \left(-16-8c^2x^2-6c^4x^4-5c^6x^6+140c^8x^8-105c^{10}\right.}{1155c^7\sqrt{1-c^2x^2}}$$

$$= \frac{16bdx\sqrt{d-c^2dx^2}}{1155c^7\sqrt{1-c^2x^2}} + \frac{8bdx^3\sqrt{d-c^2dx^2}}{3465c^5\sqrt{1-c^2x^2}} + \frac{2bdx^5\sqrt{d-c^2dx^2}}{1925c^3\sqrt{1-c^2x^2}} + \frac{bdx^7\sqrt{}}{1617c}$$

Mathematica [A] time = 0.22, size = 174, normalized size = 0.46

$$\frac{d\sqrt{d-c^2dx^2}\left(-3465a\left(105c^6x^6+70c^4x^4+40c^2x^2+16\right)\left(1-c^2x^2\right)^{5/2}-3465b\left(105c^6x^6+70c^4x^4+40c^2x^2+16\right)\right.}{4002075c^8\sqrt{1-}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^7*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d*Sqrt[d - c^2*d*x^2]*(-3465*a*(1 - c^2*x^2)^(5/2)*(16 + 40*c^2*x^2 + 70*c
^4*x^4 + 105*c^6*x^6) + b*c*x*(55440 + 9240*c^2*x^2 + 4158*c^4*x^4 + 2475*c
^6*x^6 - 53900*c^8*x^8 + 33075*c^10*x^10) - 3465*b*(1 - c^2*x^2)^(5/2)*(16
+ 40*c^2*x^2 + 70*c^4*x^4 + 105*c^6*x^6)*ArcSin[c*x]))/(4002075*c^8*Sqrt[1
- c^2*x^2])
```

fricas [A] time = 1.01, size = 249, normalized size = 0.66

$$-\frac{\left(33075\,bc^{11}dx^{11}-53900\,bc^9dx^9+2475\,bc^7dx^7+4158\,bc^5dx^5+9240\,bc^3dx^3+55440\,bcdx\right)\sqrt{-c^2dx^2+d}\,\sqrt{-c^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] -1/4002075*((33075*b*c^11*d*x^11 - 53900*b*c^9*d*x^9 + 2475*b*c^7*d*x^7 + 4
158*b*c^5*d*x^5 + 9240*b*c^3*d*x^3 + 55440*b*c*d*x)*sqrt(-c^2*d*x^2 + d)*sq
rt(-c^2*x^2 + 1) + 3465*(105*a*c^12*d*x^12 - 245*a*c^10*d*x^10 + 145*a*c^8*
d*x^8 + a*c^6*d*x^6 + 2*a*c^4*d*x^4 + 8*a*c^2*d*x^2 - 16*a*d + (105*b*c^12*
d*x^12 - 245*b*c^10*d*x^10 + 145*b*c^8*d*x^8 + b*c^6*d*x^6 + 2*b*c^4*d*x^4
+ 8*b*c^2*d*x^2 - 16*b*d)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d))/(c^10*x^2 - c^
8)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.82, size = 1781, normalized size = 4.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^7*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] a*(-1/11*x^6*(-c^2*d*x^2+d)^(5/2)/c^2/d+6/11/c^2*(-1/9*x^4*(-c^2*d*x^2+d)^(
5/2)/c^2/d+4/9/c^2*(-1/7*x^2*(-c^2*d*x^2+d)^(5/2)/c^2/d-2/35/d/c^4*(-c^2*d*
x^2+d)^(5/2))))+b*(-1/247808*(-d*(c^2*x^2-1))^(1/2)*(1+1024*x^12*c^12-220*I
*(-c^2*x^2+1)^(1/2)*x^3*c^3+1232*I*(-c^2*x^2+1)^(1/2)*x^5*c^5-1024*I*(-c^2*
x^2+1)^(1/2)*x^11*c^11+2816*I*(-c^2*x^2+1)^(1/2)*x^9*c^9-3328*c^10*x^10+11*
I*(-c^2*x^2+1)^(1/2)*x*c-61*c^2*x^2+620*c^4*x^4-2352*c^6*x^6-2816*I*(-c^2*x
^2+1)^(1/2)*x^7*c^7+4096*c^8*x^8)*(I+11*arcsin(c*x))*d/c^8/(c^2*x^2-1)-1/55
296*(-d*(c^2*x^2-1))^(1/2)*(256*c^10*x^10-704*c^8*x^8-256*I*(-c^2*x^2+1)^(1
/2)*x^9*c^9+688*c^6*x^6+576*I*(-c^2*x^2+1)^(1/2)*x^7*c^7-280*c^4*x^4-432*I*
(-c^2*x^2+1)^(1/2)*x^5*c^5+41*c^2*x^2+120*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-9*I*
(-c^2*x^2+1)^(1/2)*x*c-1)*(I+9*arcsin(c*x))*d/c^8/(c^2*x^2-1)+1/100352*(-d*
(c^2*x^2-1))^(1/2)*(64*c^8*x^8-144*c^6*x^6-64*I*(-c^2*x^2+1)^(1/2)*x^7*c^7+
104*c^4*x^4+112*I*(-c^2*x^2+1)^(1/2)*x^5*c^5-25*c^2*x^2-56*I*(-c^2*x^2+1)^(
1/2)*x^3*c^3+7*I*(-c^2*x^2+1)^(1/2)*x*c+1)*(I+7*arcsin(c*x))*d/c^8/(c^2*x^2
-1)+11/51200*(-d*(c^2*x^2-1))^(1/2)*(16*c^6*x^6-28*c^4*x^4-16*I*(-c^2*x^2+1
)^(1/2)*x^5*c^5+13*c^2*x^2+20*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-5*I*(-c^2*x^2+1)
^(1/2)*x*c-1)*(I+5*arcsin(c*x))*d/c^8/(c^2*x^2-1)+1/3072*(-d*(c^2*x^2-1))^(
1/2)*(4*c^4*x^4-5*c^2*x^2-4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+3*I*(-c^2*x^2+1)^(
1/2)*x*c+1)*(I+3*arcsin(c*x))*d/c^8/(c^2*x^2-1)-7/1024*(-d*(c^2*x^2-1))^(1/
2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*(I+arcsin(c*x))*d/c^8/(c^2*x^2-1)-7
/1024*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(arcsin(c
*x)-I)*d/c^8/(c^2*x^2-1)+1/3072*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1
/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*(-I+3*arcsin(
c*x))*d/c^8/(c^2*x^2-1)+11/51200*(-d*(c^2*x^2-1))^(1/2)*(16*I*(-c^2*x^2+1)^
(1/2)*x^5*c^5+16*c^6*x^6-20*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-28*c^4*x^4+5*I*(-c
^2*x^2+1)^(1/2)*x*c+13*c^2*x^2-1)*(-I+5*arcsin(c*x))*d/c^8/(c^2*x^2-1)+1/10
0352*(-d*(c^2*x^2-1))^(1/2)*(64*I*(-c^2*x^2+1)^(1/2)*x^7*c^7+64*c^8*x^8-112
*I*(-c^2*x^2+1)^(1/2)*x^5*c^5-144*c^6*x^6+56*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+1
04*c^4*x^4-7*I*(-c^2*x^2+1)^(1/2)*x*c-25*c^2*x^2+1)*(-I+7*arcsin(c*x))*d/c^
8/(c^2*x^2-1)-1/55296*(-d*(c^2*x^2-1))^(1/2)*(256*I*(-c^2*x^2+1)^(1/2)*x^9*
c^9+256*c^10*x^10-576*I*(-c^2*x^2+1)^(1/2)*x^7*c^7-704*c^8*x^8+432*I*(-c^2*
x^2+1)^(1/2)*x^5*c^5+688*c^6*x^6-120*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-280*c^4*x
^4+9*I*(-c^2*x^2+1)^(1/2)*x*c+41*c^2*x^2-1)*(-I+9*arcsin(c*x))*d/c^8/(c^2*x
^2-1)-1/247808*(-d*(c^2*x^2-1))^(1/2)*(1024*I*(-c^2*x^2+1)^(1/2)*x^11*c^11+
1024*x^12*c^12-2816*I*(-c^2*x^2+1)^(1/2)*x^9*c^9-3328*c^10*x^10+2816*I*(-c^
2*x^2+1)^(1/2)*x^7*c^7+4096*c^8*x^8-1232*I*(-c^2*x^2+1)^(1/2)*x^5*c^5-2352*
c^6*x^6+220*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+620*c^4*x^4-11*I*(-c^2*x^2+1)^(1/2
)*x*c-61*c^2*x^2+1)*(-I+11*arcsin(c*x))*d/c^8/(c^2*x^2-1))
```

maxima [A] time = 0.99, size = 267, normalized size = 0.71

$$-\frac{1}{1155}\left(\frac{105\left(-c^2dx^2+d\right)^{\frac{5}{2}}x^6}{c^2d}+\frac{70\left(-c^2dx^2+d\right)^{\frac{5}{2}}x^4}{c^4d}+\frac{40\left(-c^2dx^2+d\right)^{\frac{5}{2}}x^2}{c^6d}+\frac{16\left(-c^2dx^2+d\right)^{\frac{5}{2}}}{c^8d}\right)b\arcsin\left(cx\right)-\frac{1}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] -1/1155*(105*(-c^2*d*x^2 + d)^(5/2)*x^6/(c^2*d) + 70*(-c^2*d*x^2 + d)^(5/2)
*x^4/(c^4*d) + 40*(-c^2*d*x^2 + d)^(5/2)*x^2/(c^6*d) + 16*(-c^2*d*x^2 + d)^
(5/2)/(c^8*d))*b*arcsin(c*x) - 1/1155*(105*(-c^2*d*x^2 + d)^(5/2)*x^6/(c^2*
d) + 70*(-c^2*d*x^2 + d)^(5/2)*x^4/(c^4*d) + 40*(-c^2*d*x^2 + d)^(5/2)*x^2/
(c^6*d) + 16*(-c^2*d*x^2 + d)^(5/2)/(c^8*d))*a + 1/4002075*(33075*c^10*d^(3
/2)*x^11 - 53900*c^8*d^(3/2)*x^9 + 2475*c^6*d^(3/2)*x^7 + 4158*c^4*d^(3/2)*
x^5 + 9240*c^2*d^(3/2)*x^3 + 55440*d^(3/2)*x)*b/c^7
```

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

$$\int x^7\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(d-c^2\,d\,x^2\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^7*(a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int(x^7*(a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**7*(-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x)),x)
```

```
[Out] Timed out
```

3.78 $\int x^5 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right) dx$

Optimal. Leaf size=301

$$-\frac{\left(d-c^2dx^2\right)^{9/2}\left(a+b\sin^{-1}(cx)\right)}{9c^6d^3}+\frac{2\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{7c^6d^2}-\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{5c^6d}-\frac{10bcdx}{441}$$

```
[Out] -1/5*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/c^6/d+2/7*(-c^2*d*x^2+d)^(7/2)*
(a+b*arcsin(c*x))/c^6/d^2-1/9*(-c^2*d*x^2+d)^(9/2)*(a+b*arcsin(c*x))/c^6/d^
3+8/315*b*d*x*(-c^2*d*x^2+d)^(1/2)/c^5/(-c^2*x^2+1)^(1/2)+4/945*b*d*x^3*(-c
^2*d*x^2+d)^(1/2)/c^3/(-c^2*x^2+1)^(1/2)+1/525*b*d*x^5*(-c^2*d*x^2+d)^(1/2)
/c/(-c^2*x^2+1)^(1/2)-10/441*b*c*d*x^7*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1
/2)+1/81*b*c^3*d*x^9*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.24, antiderivative size = 301, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {266, 43, 4691, 12, 1153}

$$-\frac{\left(d-c^2dx^2\right)^{9/2}\left(a+b\sin^{-1}(cx)\right)}{9c^6d^3}+\frac{2\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{7c^6d^2}-\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{5c^6d}+\frac{bc^3dx^9}{81\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[x^5*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (8*b*d*x*Sqrt[d - c^2*d*x^2])/(315*c^5*Sqrt[1 - c^2*x^2]) + (4*b*d*x^3*Sqrt
[d - c^2*d*x^2])/(945*c^3*Sqrt[1 - c^2*x^2]) + (b*d*x^5*Sqrt[d - c^2*d*x^2]
)/(525*c*Sqrt[1 - c^2*x^2]) - (10*b*c*d*x^7*Sqrt[d - c^2*d*x^2])/(441*Sqrt[
1 - c^2*x^2]) + (b*c^3*d*x^9*Sqrt[d - c^2*d*x^2])/(81*Sqrt[1 - c^2*x^2]) -
((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(5*c^6*d) + (2*(d - c^2*d*x^2)^
(7/2)*(a + b*ArcSin[c*x]))/(7*c^6*d^2) - ((d - c^2*d*x^2)^(9/2)*(a + b*ArcS
in[c*x]))/(9*c^6*d^3)
```

Rule 12

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

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 1153

```
Int[((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.),
 x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^q*(a + b*x^2 + c*x^4)^p, x],
x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e
 + a*e^2, 0] && IGtQ[p, 0] && IGtQ[q, -2]
```

Rule 4691

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[a + b*ArcSi
n[c*x], Int[x^m*(d + e*x^2)^p, x], x] - Dist[(b*c*d^(p - 1/2)*Sqrt[d + e*x^
2])/Sqrt[1 - c^2*x^2], Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x
]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p + 1/2, 0] &&
 (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0])
```

Rubi steps

$$\int x^5 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right) dx = -\frac{\left(bcd\sqrt{d-c^2dx^2}\right)\int \frac{\left(1-c^2x^2\right)^2\left(-8-20c^2x^2-35c^4x^4\right)}{315c^6}\,dx}{\sqrt{1-c^2x^2}} + \left(a+b\sin^{-1}(cx)\right)$$

$$= -\frac{\left(bd\sqrt{d-c^2dx^2}\right)\int \left(1-c^2x^2\right)^2\left(-8-20c^2x^2-35c^4x^4\right)dx}{315c^5\sqrt{1-c^2x^2}} + \frac{1}{2}\left(a+b\right.$$

$$= -\frac{\left(bd\sqrt{d-c^2dx^2}\right)\int \left(-8-4c^2x^2-3c^4x^4+50c^6x^6-35c^8x^8\right)dx}{315c^5\sqrt{1-c^2x^2}} + \frac{1}{2}($$

$$= \frac{8bdx\sqrt{d-c^2dx^2}}{315c^5\sqrt{1-c^2x^2}} + \frac{4bdx^3\sqrt{d-c^2dx^2}}{945c^3\sqrt{1-c^2x^2}} + \frac{bdx^5\sqrt{d-c^2dx^2}}{525c\sqrt{1-c^2x^2}} - \frac{10bcdx^7\sqrt{}}{441\sqrt{1}}$$

Mathematica [A] time = 0.20, size = 150, normalized size = 0.50

$$\frac{d\sqrt{d-c^2dx^2}\left(-315a\left(35c^4x^4+20c^2x^2+8\right)\left(1-c^2x^2\right)^{5/2}-315b\left(35c^4x^4+20c^2x^2+8\right)\left(1-c^2x^2\right)^{5/2}\sin^{-1}(cx)+b\right.}{99225c^6\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^5*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d*Sqrt[d - c^2*d*x^2]*(-315*a*(1 - c^2*x^2)^(5/2)*(8 + 20*c^2*x^2 + 35*c^4
*x^4) + b*c*x*(2520 + 420*c^2*x^2 + 189*c^4*x^4 - 2250*c^6*x^6 + 1225*c^8*x
^8) - 315*b*(1 - c^2*x^2)^(5/2)*(8 + 20*c^2*x^2 + 35*c^4*x^4)*ArcSin[c*x]))
/(99225*c^6*Sqrt[1 - c^2*x^2])
```

fricas [A] time = 2.06, size = 219, normalized size = 0.73

$$-\frac{\left(1225\,bc^9dx^9-2250\,bc^7dx^7+189\,bc^5dx^5+420\,bc^3dx^3+2520\,bcdx\right)\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+1}\,+315\left(35\,ac^{10}dx\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] -1/99225*((1225*b*c^9*d*x^9 - 2250*b*c^7*d*x^7 + 189*b*c^5*d*x^5 + 420*b*c^
3*d*x^3 + 2520*b*c*d*x)*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1) + 315*(35*a
*c^10*d*x^10 - 85*a*c^8*d*x^8 + 53*a*c^6*d*x^6 + a*c^4*d*x^4 + 4*a*c^2*d*x^
2 - 8*a*d + (35*b*c^10*d*x^10 - 85*b*c^8*d*x^8 + 53*b*c^6*d*x^6 + b*c^4*d*x
^4 + 4*b*c^2*d*x^2 - 8*b*d)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d))/(c^8*x^2 - c
^6)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.54, size = 1254, normalized size = 4.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] a*(-1/9*x^4*(-c^2*d*x^2+d)^(5/2)/c^2/d+4/9/c^2*(-1/7*x^2*(-c^2*d*x^2+d)^(5/
2)/c^2/d-2/35/d/c^4*(-c^2*d*x^2+d)^(5/2)))+b*(-1/41472*(-d*(c^2*x^2-1))^(1/
2)*(256*c^10*x^10-704*c^8*x^8-256*I*(-c^2*x^2+1)^(1/2)*x^9*c^9+688*c^6*x^6+
576*I*(-c^2*x^2+1)^(1/2)*x^7*c^7-280*c^4*x^4-432*I*(-c^2*x^2+1)^(1/2)*x^5*c
^5+41*c^2*x^2+120*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-9*I*(-c^2*x^2+1)^(1/2)*x*c-1
)*(I+9*arcsin(c*x))*d/c^6/(c^2*x^2-1)-1/25088*(-d*(c^2*x^2-1))^(1/2)*(64*c^
8*x^8-144*c^6*x^6-64*I*(-c^2*x^2+1)^(1/2)*x^7*c^7+104*c^4*x^4+112*I*(-c^2*x
^2+1)^(1/2)*x^5*c^5-25*c^2*x^2-56*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+7*I*(-c^2*x^
2+1)^(1/2)*x*c+1)*(I+7*arcsin(c*x))*d/c^6/(c^2*x^2-1)+1/3200*(-d*(c^2*x^2-1
))^(1/2)*(16*c^6*x^6-28*c^4*x^4-16*I*(-c^2*x^2+1)^(1/2)*x^5*c^5+13*c^2*x^2+
20*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-5*I*(-c^2*x^2+1)^(1/2)*x*c-1)*(I+5*arcsin(c
*x))*d/c^6/(c^2*x^2-1)-3/256*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)
^(1/2)*x*c-1)*(I+arcsin(c*x))*d/c^6/(c^2*x^2-1)-3/256*(-d*(c^2*x^2-1))^(1/2
)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(arcsin(c*x)-I)*d/c^6/(c^2*x^2-1)+1/
1152*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(
-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*(-I+3*arcsin(c*x))*d/c^6/(c^2*x^2-1)-1/2
5088*(-d*(c^2*x^2-1))^(1/2)*(64*I*(-c^2*x^2+1)^(1/2)*x^7*c^7+64*c^8*x^8-112
*I*(-c^2*x^2+1)^(1/2)*x^5*c^5-144*c^6*x^6+56*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+1
04*c^4*x^4-7*I*(-c^2*x^2+1)^(1/2)*x*c-25*c^2*x^2+1)*(-I+7*arcsin(c*x))*d/c^
6/(c^2*x^2-1)-1/41472*(-d*(c^2*x^2-1))^(1/2)*(256*I*(-c^2*x^2+1)^(1/2)*x^9*
c^9+256*c^10*x^10-576*I*(-c^2*x^2+1)^(1/2)*x^7*c^7-704*c^8*x^8+432*I*(-c^2*
x^2+1)^(1/2)*x^5*c^5+688*c^6*x^6-120*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-280*c^4*x
^4+9*I*(-c^2*x^2+1)^(1/2)*x*c+41*c^2*x^2-1)*(-I+9*arcsin(c*x))*d/c^6/(c^2*x
^2-1)-1/14400*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(
17*I+15*arcsin(c*x))*cos(4*arcsin(c*x))*d/c^6/(c^2*x^2-1)-1/3600*(-d*(c^2*x
^2-1))^(1/2)*(I*c^2*x^2-c*x*(-c^2*x^2+1)^(1/2)-I)*(2*I+15*arcsin(c*x))*sin(
4*arcsin(c*x))*d/c^6/(c^2*x^2-1))
```

maxima [A] time = 0.56, size = 208, normalized size = 0.69

$$-\frac{1}{315}\left(\frac{35\left(-c^2dx^2+d\right)^{\frac{5}{2}}x^4}{c^2d}+\frac{20\left(-c^2dx^2+d\right)^{\frac{5}{2}}x^2}{c^4d}+\frac{8\left(-c^2dx^2+d\right)^{\frac{5}{2}}}{c^6d}\right)b\arcsin\left(cx\right)-\frac{1}{315}\left(\frac{35\left(-c^2dx^2+d\right)^{\frac{5}{2}}x^4}{c^2d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] -1/315*(35*(-c^2*d*x^2 + d)^(5/2)*x^4/(c^2*d) + 20*(-c^2*d*x^2 + d)^(5/2)*x
^2/(c^4*d) + 8*(-c^2*d*x^2 + d)^(5/2)/(c^6*d))*b*arcsin(c*x) - 1/315*(35*(-
c^2*d*x^2 + d)^(5/2)*x^4/(c^2*d) + 20*(-c^2*d*x^2 + d)^(5/2)*x^2/(c^4*d) +
8*(-c^2*d*x^2 + d)^(5/2)/(c^6*d))*a + 1/99225*(1225*c^8*d^(3/2)*x^9 - 2250*
c^6*d^(3/2)*x^7 + 189*c^4*d^(3/2)*x^5 + 420*c^2*d^(3/2)*x^3 + 2520*d^(3/2)*
x)*b/c^5
```

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

$$\int x^5 \left(a+b \operatorname{asin}\left(c x\right)\right) \left(d-c^2 d x^2\right)^{3/2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2),x)
[Out] int(x^5*(a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x)),x)
[Out] Timed out
```

3.79 $\int x^3 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right) dx$

Optimal. Leaf size=227

$$\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{7c^4d^2}-\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{5c^4d}-\frac{8bcdx^5\sqrt{d-c^2dx^2}}{175\sqrt{1-c^2x^2}}+\frac{bdx^3\sqrt{d-c^2dx^2}}{105c\sqrt{1-c^2x^2}}+\frac{2bd}{35c}$$

```
[Out] -1/5*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/c^4/d+1/7*(-c^2*d*x^2+d)^(7/2)*
(a+b*arcsin(c*x))/c^4/d^2+2/35*b*d*x*(-c^2*d*x^2+d)^(1/2)/c^3/(-c^2*x^2+1)^
(1/2)+1/105*b*d*x^3*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-8/175*b*c*d*x
^5*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/49*b*c^3*d*x^7*(-c^2*d*x^2+d)^
(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.20, antiderivative size = 227, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {266, 43, 4691, 12, 373}

$$\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{7c^4d^2}-\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{5c^4d}+\frac{bc^3dx^7\sqrt{d-c^2dx^2}}{49\sqrt{1-c^2x^2}}-\frac{8bcdx^5\sqrt{d-c^2dx^2}}{175\sqrt{1-c^2x^2}}+\frac{bd}{1}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (2*b*d*x*Sqrt[d - c^2*d*x^2])/(35*c^3*Sqrt[1 - c^2*x^2]) + (b*d*x^3*Sqrt[d
 - c^2*d*x^2])/(105*c*Sqrt[1 - c^2*x^2]) - (8*b*c*d*x^5*Sqrt[d - c^2*d*x^2])
/(175*Sqrt[1 - c^2*x^2]) + (b*c^3*d*x^7*Sqrt[d - c^2*d*x^2])/(49*Sqrt[1 - c
^2*x^2]) - ((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(5*c^4*d) + ((d - c^
2*d*x^2)^(7/2)*(a + b*ArcSin[c*x]))/(7*c^4*d^2)
```

Rule 12

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

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 373

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.), x_Symbol
] :> Int[ExpandIntegrand[(a + b*x^n)^p*(c + d*x^n)^q, x], x] /; FreeQ[{a, b
, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[p, 0] && IGtQ[q, 0]
```

Rule 4691

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[a + b*ArcSi
n[c*x], Int[x^m*(d + e*x^2)^p, x], x] - Dist[(b*c*d^(p - 1/2)*Sqrt[d + e*x^
```

```
2])/Sqrt[1 - c^2*x^2], Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x
]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p + 1/2, 0] &&
 (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0])
```

Rubi steps

$$\int x^3 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right) dx = -\frac{\left(bcd\sqrt{d-c^2dx^2}\right)\int \frac{\left(-2-5c^2x^2\right)\left(1-c^2x^2\right)^2}{35c^4}dx}{\sqrt{1-c^2x^2}} + \left(a+b\sin^{-1}(cx)\right)\int x^3 \left(d\right.$$

$$= -\frac{\left(bd\sqrt{d-c^2dx^2}\right)\int \left(-2-5c^2x^2\right)\left(1-c^2x^2\right)^2 dx}{35c^3\sqrt{1-c^2x^2}} + \frac{1}{2}\left(a+b\sin^{-1}(cx)\right)$$

$$= -\frac{\left(bd\sqrt{d-c^2dx^2}\right)\int \left(-2-c^2x^2+8c^4x^4-5c^6x^6\right) dx}{35c^3\sqrt{1-c^2x^2}} + \frac{1}{2}\left(a+b\sin^{-1}(\right.$$

$$= \frac{2bdx\sqrt{d-c^2dx^2}}{35c^3\sqrt{1-c^2x^2}} + \frac{bdx^3\sqrt{d-c^2dx^2}}{105c\sqrt{1-c^2x^2}} - \frac{8bcdx^5\sqrt{d-c^2dx^2}}{175\sqrt{1-c^2x^2}} + \frac{bc^3dx^7\sqrt{}}{49\sqrt{1}}$$

Mathematica [A] time = 0.17, size = 126, normalized size = 0.56

$$\frac{d\sqrt{d-c^2dx^2}\left(-105a\left(5c^2x^2+2\right)\left(1-c^2x^2\right)^{5/2}-105b\left(5c^2x^2+2\right)\left(1-c^2x^2\right)^{5/2}\sin^{-1}(cx)+bcx\left(75c^6x^6-168c^4x^4\right.\right.}{3675c^4\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d*Sqrt[d - c^2*d*x^2]*(-105*a*(1 - c^2*x^2)^(5/2)*(2 + 5*c^2*x^2) + b*c*x*
(210 + 35*c^2*x^2 - 168*c^4*x^4 + 75*c^6*x^6) - 105*b*(1 - c^2*x^2)^(5/2)*(
2 + 5*c^2*x^2)*ArcSin[c*x]))/(3675*c^4*Sqrt[1 - c^2*x^2])
```

fricas [A] time = 0.55, size = 189, normalized size = 0.83

$$-\frac{\left(75\,bc^7dx^7-168\,bc^5dx^5+35\,bc^3dx^3+210\,bcdx\right)\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+1}\,+105\left(5\,ac^8dx^8-13\,ac^6dx^6+9\,ac^4d\right.}{3675\left(c^6x^2-c^4\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] -1/3675*((75*b*c^7*d*x^7 - 168*b*c^5*d*x^5 + 35*b*c^3*d*x^3 + 210*b*c*d*x)*
sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1) + 105*(5*a*c^8*d*x^8 - 13*a*c^6*d*x
^6 + 9*a*c^4*d*x^4 + a*c^2*d*x^2 - 2*a*d + (5*b*c^8*d*x^8 - 13*b*c^6*d*x^6
+ 9*b*c^4*d*x^4 + b*c^2*d*x^2 - 2*b*d)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d))/(
c^6*x^2 - c^4)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.30, size = 727, normalized size = 3.20

$$a\left(-\frac{x^2\left(-c^2d\,x^2+d\right)^{\frac{5}{2}}}{7c^2d}-\frac{2\left(-c^2d\,x^2+d\right)^{\frac{5}{2}}}{35d\,c^4}\right)+b\left(-\frac{\sqrt{-d\left(c^2x^2-1\right)}\,\left(64c^8x^8-144c^6x^6-64i\sqrt{-c^2x^2+1}\,x^7c^7+1\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] a*(-1/7*x^2*(-c^2*d*x^2+d)^(5/2)/c^2/d-2/35/d/c^4*(-c^2*d*x^2+d)^(5/2))+b*(
-1/6272*(-d*(c^2*x^2-1))^(1/2)*(64*c^8*x^8-144*c^6*x^6-64*I*(-c^2*x^2+1)^(1
/2)*x^7*c^7+104*c^4*x^4+112*I*(-c^2*x^2+1)^(1/2)*x^5*c^5-25*c^2*x^2-56*I*(-
c^2*x^2+1)^(1/2)*x^3*c^3+7*I*(-c^2*x^2+1)^(1/2)*x*c+1)*(I+7*arcsin(c*x))*d/
c^4/(c^2*x^2-1)-3/128*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*
x*c-1)*(I+arcsin(c*x))*d/c^4/(c^2*x^2-1)-3/128*(-d*(c^2*x^2-1))^(1/2)*(I*(-
c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(arcsin(c*x)-I)*d/c^4/(c^2*x^2-1)+1/384*(-d
*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2
+1)^(1/2)*x*c-5*c^2*x^2+1)*(-I+3*arcsin(c*x))*d/c^4/(c^2*x^2-1)+3/39200*(-d
*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(2*I+35*arcsin(c*x
))*cos(6*arcsin(c*x))*d/c^4/(c^2*x^2-1)+1/78400*(-d*(c^2*x^2-1))^(1/2)*(I*c
^2*x^2-c*x*(-c^2*x^2+1)^(1/2)-I)*(37*I+35*arcsin(c*x))*sin(6*arcsin(c*x))*d
/c^4/(c^2*x^2-1)-1/2400*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^
2*x^2-1)*(7*I+15*arcsin(c*x))*cos(4*arcsin(c*x))*d/c^4/(c^2*x^2-1)-1/4800*(
-d*(c^2*x^2-1))^(1/2)*(I*c^2*x^2-c*x*(-c^2*x^2+1)^(1/2)-I)*(11*I+45*arcsin(
c*x))*sin(4*arcsin(c*x))*d/c^4/(c^2*x^2-1))
```

maxima [A] time = 0.51, size = 149, normalized size = 0.66

$$-\frac{1}{35}\left(\frac{5\left(-c^2dx^2+d\right)^{\frac{5}{2}}x^2}{c^2d}+\frac{2\left(-c^2dx^2+d\right)^{\frac{5}{2}}}{c^4d}\right)b\arcsin\left(cx\right)-\frac{1}{35}\left(\frac{5\left(-c^2dx^2+d\right)^{\frac{5}{2}}x^2}{c^2d}+\frac{2\left(-c^2dx^2+d\right)^{\frac{5}{2}}}{c^4d}\right)a+\frac{(75}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] -1/35*(5*(-c^2*d*x^2 + d)^(5/2)*x^2/(c^2*d) + 2*(-c^2*d*x^2 + d)^(5/2)/(c^4
*d))*b*arcsin(c*x) - 1/35*(5*(-c^2*d*x^2 + d)^(5/2)*x^2/(c^2*d) + 2*(-c^2*d
*x^2 + d)^(5/2)/(c^4*d))*a + 1/3675*(75*c^6*d^(3/2)*x^7 - 168*c^4*d^(3/2)*x
^5 + 35*c^2*d^(3/2)*x^3 + 210*d^(3/2)*x)*b/c^3
```

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

$$\int x^3\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(d-c^2\,d\,x^2\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int(x^3*(a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2), x)
```

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

$$\int x^{3} \left(- d \left(c x - 1\right) \left(c x + 1\right)\right)^{\frac{3}{2}} \left(a + b \operatorname{asin}{\left(c x \right)}\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x)),x)
```

```
[Out] Integral(x**3*(-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x)), x)
```

3.80 $\int x \left(d-c^2 d x^2\right)^{3/2} \left(a+b \sin^{-1}(cx)\right) dx$

Optimal. Leaf size=153

$$-\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{5c^2d}+\frac{bdx\sqrt{d-c^2dx^2}}{5c\sqrt{1-c^2x^2}}-\frac{2bcdx^3\sqrt{d-c^2dx^2}}{15\sqrt{1-c^2x^2}}+\frac{bc^3dx^5\sqrt{d-c^2dx^2}}{25\sqrt{1-c^2x^2}}$$

```
[Out] -1/5*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/c^2/d+1/5*b*d*x*(-c^2*d*x^2+d)^
(1/2)/c/(-c^2*x^2+1)^(1/2)-2/15*b*c*d*x^3*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)
^(1/2)+1/25*b*c^3*d*x^5*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {4677, 194}

$$-\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{5c^2d}+\frac{bc^3dx^5\sqrt{d-c^2dx^2}}{25\sqrt{1-c^2x^2}}-\frac{2bcdx^3\sqrt{d-c^2dx^2}}{15\sqrt{1-c^2x^2}}+\frac{bdx\sqrt{d-c^2dx^2}}{5c\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[x*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*d*x*Sqrt[d - c^2*d*x^2])/(5*c*Sqrt[1 - c^2*x^2]) - (2*b*c*d*x^3*Sqrt[d -
 c^2*d*x^2])/(15*Sqrt[1 - c^2*x^2]) + (b*c^3*d*x^5*Sqrt[d - c^2*d*x^2])/(25
*Sqrt[1 - c^2*x^2]) - ((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(5*c^2*d)
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int x\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)dx=-\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{5c^2d}+\frac{\left(bd\sqrt{d-c^2dx^2}\right)\int\left(1-c^2x^2\right)^2 d}{5c\sqrt{1-c^2x^2}}$$

$$=-\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{5c^2d}+\frac{\left(bd\sqrt{d-c^2dx^2}\right)\int\left(1-2c^2x^2+\right.}{5c\sqrt{1-c^2x^2}}$$

$$=\frac{bdx\sqrt{d-c^2dx^2}}{5c\sqrt{1-c^2x^2}}-\frac{2bcdx^3\sqrt{d-c^2dx^2}}{15\sqrt{1-c^2x^2}}+\frac{bc^3dx^5\sqrt{d-c^2dx^2}}{25\sqrt{1-c^2x^2}}-\frac{(d-c}{}$$

Mathematica [A] time = 0.07, size = 84, normalized size = 0.55

$$\frac{d\sqrt{d-c^2dx^2}\left(\frac{bc\left(\frac{c^4x^5}{5}-\frac{2c^2x^3}{3}+x\right)}{\sqrt{1-c^2x^2}}-\left(c^2x^2-1\right)^2\left(a+b\sin^{-1}(cx)\right)\right)}{5c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d*Sqrt[d - c^2*d*x^2]*((b*c*(x - (2*c^2*x^3)/3 + (c^4*x^5)/5))/Sqrt[1 - c^
2*x^2] - (-1 + c^2*x^2)^2*(a + b*ArcSin[c*x])))/(5*c^2)
```

fricas [A] time = 0.63, size = 159, normalized size = 1.04

$$-\frac{\left(3\,bc^5dx^5-10\,bc^3dx^3+15\,bcdx\right)\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+1}\,+15\left(ac^6dx^6-3\,ac^4dx^4+3\,ac^2dx^2-ad+\left(bc^6dx^6-\right.\right.}{75\left(c^4x^2-c^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] -1/75*((3*b*c^5*d*x^5 - 10*b*c^3*d*x^3 + 15*b*c*d*x)*sqrt(-c^2*d*x^2 + d)*s
qrt(-c^2*x^2 + 1) + 15*(a*c^6*d*x^6 - 3*a*c^4*d*x^4 + 3*a*c^2*d*x^2 - a*d +
 (b*c^6*d*x^6 - 3*b*c^4*d*x^4 + 3*b*c^2*d*x^2 - b*d)*arcsin(c*x))*sqrt(-c^2
*d*x^2 + d))/(c^4*x^2 - c^2)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.19, size = 524, normalized size = 3.42

$$-\frac{a\left(-c^2d\,x^2+d\right)^{\frac{5}{2}}}{5c^2d}+b\left(-\frac{\sqrt{-d\left(c^2x^2-1\right)}\,\left(16c^6x^6-28c^4x^4-16i\sqrt{-c^2x^2+1}\,x^5c^5+13c^2x^2+20i\sqrt{-c^2x^2+1}\,x^3c^3\right.}{800c^2\left(c^2x^2-1\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] -1/5*a/c^2/d*(-c^2*d*x^2+d)^(5/2)+b*(-1/800*(-d*(c^2*x^2-1))^(1/2)*(16*c^6*
x^6-28*c^4*x^4-16*I*(-c^2*x^2+1)^(1/2)*x^5*c^5+13*c^2*x^2+20*I*(-c^2*x^2+1)
^(1/2)*x^3*c^3-5*I*(-c^2*x^2+1)^(1/2)*x*c-1)*(I+5*arcsin(c*x))*d/c^2/(c^2*x
^2-1)-1/16*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*(I+a
rcsin(c*x))*d/c^2/(c^2*x^2-1)-1/16*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(
1/2)*x*c+c^2*x^2-1)*(arcsin(c*x)-I)*d/c^2/(c^2*x^2-1)+1/96*(-d*(c^2*x^2-1))
^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c
-5*c^2*x^2+1)*(-I+3*arcsin(c*x))*d/c^2/(c^2*x^2-1)-1/1200*(-d*(c^2*x^2-1))^
(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(11*I+45*arcsin(c*x))*cos(4*arcs
in(c*x))*d/c^2/(c^2*x^2-1)-1/600*(-d*(c^2*x^2-1))^(1/2)*(I*c^2*x^2-c*x*(-c^
2*x^2+1)^(1/2)-I)*(7*I+15*arcsin(c*x))*sin(4*arcsin(c*x))*d/c^2/(c^2*x^2-1)
)
```

maxima [A] time = 0.57, size = 87, normalized size = 0.57

$$-\frac{\left(-c^2dx^2+d\right)^{\frac{5}{2}}b\arcsin\left(cx\right)}{5\,c^2d}-\frac{\left(-c^2dx^2+d\right)^{\frac{5}{2}}a}{5\,c^2d}+\frac{\left(3\,c^4d^{\frac{5}{2}}x^5-10\,c^2d^{\frac{5}{2}}x^3+15\,d^{\frac{5}{2}}x\right)b}{75\,cd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] -1/5*(-c^2*d*x^2 + d)^(5/2)*b*arcsin(c*x)/(c^2*d) - 1/5*(-c^2*d*x^2 + d)^(5
/2)*a/(c^2*d) + 1/75*(3*c^4*d^(5/2)*x^5 - 10*c^2*d^(5/2)*x^3 + 15*d^(5/2)*x
)*b/(c*d)
```

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

$$\int x\,(a+b\,\mathrm{asin}\,(c\,x))\,\left(d-c^2\,d\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int(x*(a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2), x)
```

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

$$\int x\left(-d\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}\left(a+b\,\mathrm{asin}\,(cx)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x)),x)
```

```
[Out] Integral(x*(-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x)), x)
```

3.81 $\int \frac{(d-c^2dx^2)^{3/2}(a+b\sin^{-1}(cx))}{x}\,dx$

Optimal. Leaf size=278

$$\frac{1}{3}\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)+d\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)-\frac{2d\sqrt{d-c^2dx^2}\,\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(\right.}{\sqrt{1-c^2x^2}}$$

```
[Out] 1/3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))+d*(a+b*arcsin(c*x))*(-c^2*d*x^2+
d)^(1/2)-4/3*b*c*d*x*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/9*b*c^3*d*x^
3*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-2*d*(a+b*arcsin(c*x))*arctanh(I*c
*x+(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+I*b*d*polylo
g(2,-I*c*x-(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-I*b*
d*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/
2)
```

Rubi [A] time = 0.33, antiderivative size = 278, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.259, Rules used = {4699, 4697, 4709, 4183, 2279, 2391, 8}

$$\frac{ibd\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)}{\sqrt{1-c^2x^2}}-\frac{ibd\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)}{\sqrt{1-c^2x^2}}+\frac{1}{3}\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right.$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/x,x]
```

```
[Out] (-4*b*c*d*x*Sqrt[d - c^2*d*x^2])/(3*Sqrt[1 - c^2*x^2]) + (b*c^3*d*x^3*Sqrt[
d - c^2*d*x^2])/(9*Sqrt[1 - c^2*x^2]) + d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin
[c*x]) + ((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/3 - (2*d*Sqrt[d - c^2*
d*x^2]*(a + b*ArcSin[c*x])*ArcTanh[E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] +
(I*b*d*Sqrt[d - c^2*d*x^2]*PolyLog[2, -E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2
] - (I*b*d*Sqrt[d - c^2*d*x^2]*PolyLog[2, E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*
x^2]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{x}\,dx = \frac{1}{3}\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)+d\int \frac{\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)}{x}$$

$$= -\frac{bcdx\sqrt{d-c^2dx^2}}{3\sqrt{1-c^2x^2}}+\frac{bc^3dx^3\sqrt{d-c^2dx^2}}{9\sqrt{1-c^2x^2}}+d\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(c\right.$$

$$= -\frac{4bcdx\sqrt{d-c^2dx^2}}{3\sqrt{1-c^2x^2}}+\frac{bc^3dx^3\sqrt{d-c^2dx^2}}{9\sqrt{1-c^2x^2}}+d\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}\right.$$

$$= -\frac{4bcdx\sqrt{d-c^2dx^2}}{3\sqrt{1-c^2x^2}}+\frac{bc^3dx^3\sqrt{d-c^2dx^2}}{9\sqrt{1-c^2x^2}}+d\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}\right.$$

$$= -\frac{4bcdx\sqrt{d-c^2dx^2}}{3\sqrt{1-c^2x^2}}+\frac{bc^3dx^3\sqrt{d-c^2dx^2}}{9\sqrt{1-c^2x^2}}+d\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}\right.$$

$$= -\frac{4bcdx\sqrt{d-c^2dx^2}}{3\sqrt{1-c^2x^2}}+\frac{bc^3dx^3\sqrt{d-c^2dx^2}}{9\sqrt{1-c^2x^2}}+d\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}\right.$$

Mathematica [A] time = 1.21, size = 278, normalized size = 1.00

$$-ad^{3/2}\log\left(\sqrt{d}\sqrt{d-c^2dx^2}+d\right)-\frac{1}{3}ad\left(c^2x^2-4\right)\sqrt{d-c^2dx^2}+ad^{3/2}\log(x)+\frac{bd\sqrt{d-c^2dx^2}\left(\sqrt{1-c^2x^2}\,\sin^{-1}(c\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/x,x]
```

```
[Out] -1/3*(a*d*(-4 + c^2*x^2)*Sqrt[d - c^2*d*x^2]) + a*d^(3/2)*Log[x] - a*d^(3/2
)*Log[d + Sqrt[d]*Sqrt[d - c^2*d*x^2]] + (b*d*Sqrt[d - c^2*d*x^2]*(-(c*x) +
 Sqrt[1 - c^2*x^2]*ArcSin[c*x] + ArcSin[c*x]*Log[1 - E^(I*ArcSin[c*x])] - A
rcSin[c*x]*Log[1 + E^(I*ArcSin[c*x])] + I*PolyLog[2, -E^(I*ArcSin[c*x])] -
I*PolyLog[2, E^(I*ArcSin[c*x])]))/Sqrt[1 - c^2*x^2] - (b*d*Sqrt[d - c^2*d*x
^2]*(9*c*x - 3*ArcSin[c*x]*(3*Sqrt[1 - c^2*x^2] + Cos[3*ArcSin[c*x]]) + Sin
[3*ArcSin[c*x]]))/(36*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.68, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(ac^2dx^2 - ad + \left(bc^2dx^2 - bd\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2 + d}}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x,x, algorithm="fricas")
```

```
[Out] integral(-(a*c^2*d*x^2 - a*d + (b*c^2*d*x^2 - b*d)*arcsin(c*x))*sqrt(-c^2*d
*x^2 + d)/x, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.28, size = 525, normalized size = 1.89

$$\frac{\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}a}{3} - a\,d^{\frac{3}{2}}\ln\left(\frac{2d+2\sqrt{d}\,\sqrt{-c^2d\,x^2+d}}{x}\right) + a\sqrt{-c^2d\,x^2+d}\,d - \frac{b\sqrt{-d\left(c^2x^2-1\right)}\,d\arcsin\left(cx\right)x^4c^4}{3\left(c^2x^2-1\right)} + \frac{5b\sqrt{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x,x)
```

```
[Out] 1/3*(-c^2*d*x^2+d)^(3/2)*a-a*d^(3/2)*ln((2*d+2*d^(1/2)*(-c^2*d*x^2+d)^(1/2)
)/x)+a*(-c^2*d*x^2+d)^(1/2)*d-1/3*b*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)*ar
csin(c*x)*x^4*c^4+5/3*b*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)*arcsin(c*x)*x^
2*c^2+I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d/(c^2*x^2-1)*polylog(2
,I*c*x+(-c^2*x^2+1)^(1/2))-I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d/
(c^2*x^2-1)*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))-4/3*b*(-d*(c^2*x^2-1))^(1/
2)*d/(c^2*x^2-1)*arcsin(c*x)+b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d/
(c^2*x^2-1)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))*arcsin(c*x)-1/9*b*(-d*(c^2*x^2-1
))^(1/2)*d/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^3*c^3+4/3*b*(-d*(c^2*x^2-1))^(1
/2)*d/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x*c-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2
+1)^(1/2)*d/(c^2*x^2-1)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))*arcsin(c*x)
```

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

$$-b\sqrt{d}\int\frac{\left(c^2dx^2-d\right)\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{x}\,dx - \frac{1}{3}\left(3\,d^{\frac{3}{2}}\log\left(\frac{2\,\sqrt{-c^2dx^2+d}\,\sqrt{d}}{|x|} + \frac{2\,d}{|x}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x,x, algorithm="maxima")
```

```
[Out] -b*sqrt(d)*integrate((c^2*d*x^2 - d)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c
*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/x, x) - 1/3*(3*d^(3/2)*log(2*sqrt(-c^2*d*
x^2 + d)*sqrt(d)/abs(x) + 2*d/abs(x)) - (-c^2*d*x^2 + d)^(3/2) - 3*sqrt(-c^
2*d*x^2 + d)*d)*a
```

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

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))\,\left(d-c^2\,d\,x^2\right)^{3/2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2))/x,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2))/x, x)
```

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

$$\int \frac{(-d\,(cx-1)\,(cx+1))^{\frac{3}{2}}\,(a+b\,\mathrm{asin}\,(cx))}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))/x,x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))/x, x)
```

3.82 $\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{x^3}\,dx$

Optimal. Leaf size=297

$$-\frac{3}{2}c^2d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{2x^2}+\frac{3c^2d\sqrt{d-c^2dx^2}\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\mathrm{s}\right.}{\sqrt{1-c^2x^2}}$$

```
[Out] -1/2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^2-3/2*c^2*d*(a+b*arcsin(c*x))
*(-c^2*d*x^2+d)^(1/2)-1/2*b*c*d*(-c^2*d*x^2+d)^(1/2)/x/(-c^2*x^2+1)^(1/2)+b
*c^3*d*x*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+3*c^2*d*(a+b*arcsin(c*x))*
arctanh(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-3
/2*I*b*c^2*d*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^
2*x^2+1)^(1/2)+3/2*I*b*c^2*d*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*d*x^
2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.33, antiderivative size = 297, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.296, Rules used = {4695, 4697, 4709, 4183, 2279, 2391, 8, 14}

$$-\frac{3ibc^2d\sqrt{d-c^2dx^2}\,\mathrm{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)}{2\sqrt{1-c^2x^2}}+\frac{3ibc^2d\sqrt{d-c^2dx^2}\,\mathrm{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)}{2\sqrt{1-c^2x^2}}-\frac{3}{2}c^2d\sqrt{d-c^2dx^2}\left(a+b\,\mathrm{s}\right.$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/x^3,x]
```

```
[Out] -(b*c*d*Sqrt[d - c^2*d*x^2])/(2*x*Sqrt[1 - c^2*x^2]) + (b*c^3*d*x*Sqrt[d -
c^2*d*x^2])/Sqrt[1 - c^2*x^2] - (3*c^2*d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[
c*x]))/2 - ((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(2*x^2) + (3*c^2*d*S
qrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])*ArcTanh[E^(I*ArcSin[c*x])])/Sqrt[1 -
 c^2*x^2] - (((3*I)/2)*b*c^2*d*Sqrt[d - c^2*d*x^2]*PolyLog[2, -E^(I*ArcSin[
c*x])])/Sqrt[1 - c^2*x^2] + (((3*I)/2)*b*c^2*d*Sqrt[d - c^2*d*x^2]*PolyLog[
2, E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
```

```
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4695

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m +
2)*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPar
t[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f
*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /;
 FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0
] && LtQ[m, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{x^3}\,dx = -\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{2x^2} - \frac{1}{2}\left(3c^2d\right)\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin\right.}{x}$$

$$= -\frac{3}{2}c^2d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right) - \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{2x^2}$$

$$= -\frac{bcd\sqrt{d-c^2dx^2}}{2x\sqrt{1-c^2x^2}} + \frac{bc^3dx\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} - \frac{3}{2}c^2d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}\right.$$

$$= -\frac{bcd\sqrt{d-c^2dx^2}}{2x\sqrt{1-c^2x^2}} + \frac{bc^3dx\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} - \frac{3}{2}c^2d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}\right.$$

$$= -\frac{bcd\sqrt{d-c^2dx^2}}{2x\sqrt{1-c^2x^2}} + \frac{bc^3dx\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} - \frac{3}{2}c^2d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}\right.$$

$$= -\frac{bcd\sqrt{d-c^2dx^2}}{2x\sqrt{1-c^2x^2}} + \frac{bc^3dx\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} - \frac{3}{2}c^2d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}\right.$$

Mathematica [A] time = 2.04, size = 389, normalized size = 1.31

$$\frac{3}{2}ac^2d^{3/2}\log\left(\sqrt{d}\sqrt{d-c^2dx^2}+d\right)-\frac{3}{2}ac^2d^{3/2}\log(x)-\frac{ad\left(2c^2x^2+1\right)\sqrt{d-c^2dx^2}}{2x^2}+\frac{bc^2d^2\sqrt{1-c^2x^2}\left(-4i\mathrm{Li}_2\left(-e^{i\sin}\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/x^3,x]
```

```
[Out] -1/2*(a*d*(1 + 2*c^2*x^2)*Sqrt[d - c^2*d*x^2])/x^2 - (3*a*c^2*d^(3/2)*Log[x
])/2 + (3*a*c^2*d^(3/2)*Log[d + Sqrt[d]*Sqrt[d - c^2*d*x^2]])/2 + (b*c^2*d*
Sqrt[d - c^2*d*x^2]*(c*x - Sqrt[1 - c^2*x^2]*ArcSin[c*x] - ArcSin[c*x]*Log[
1 - E^(I*ArcSin[c*x])] + ArcSin[c*x]*Log[1 + E^(I*ArcSin[c*x])] - I*PolyLog
[2, -E^(I*ArcSin[c*x])] + I*PolyLog[2, E^(I*ArcSin[c*x])]))/Sqrt[1 - c^2*x^
2] + (b*c^2*d^2*Sqrt[1 - c^2*x^2]*(-2*Cot[ArcSin[c*x]/2] - ArcSin[c*x]*Csc[
ArcSin[c*x]/2]^2 - 4*ArcSin[c*x]*Log[1 - E^(I*ArcSin[c*x])] + 4*ArcSin[c*x]
*Log[1 + E^(I*ArcSin[c*x])] - (4*I)*PolyLog[2, -E^(I*ArcSin[c*x])] + (4*I)*
PolyLog[2, E^(I*ArcSin[c*x])] + ArcSin[c*x]*Sec[ArcSin[c*x]/2]^2 - 2*Tan[Ar
cSin[c*x]/2]))/(8*Sqrt[d - c^2*d*x^2])
```

fricas [F] time = 0.68, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(ac^2dx^2-ad+\left(bc^2dx^2-bd\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2+d}}{x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^3,x, algorithm="fricas")
```

```
[Out] integral(-(a*c^2*d*x^2 - a*d + (b*c^2*d*x^2 - b*d)*arcsin(c*x))*sqrt(-c^2*d
*x^2 + d)/x^3, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^3,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [B] time = 0.35, size = 574, normalized size = 1.93

$$-\frac{a\left(-c^2d\,x^2+d\right)^{\frac{5}{2}}}{2d\,x^2}-\frac{a\,c^2\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}}{2}+\frac{3a\,c^2d^{\frac{3}{2}}\ln\left(\frac{2d+2\sqrt{d}\,\sqrt{-c^2d\,x^2+d}}{x}\right)}{2}-\frac{3a\,c^2\sqrt{-c^2d\,x^2+d}\,d}{2}-\frac{b\sqrt{-d\left(c^2x^2-1\right)}}{c^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^3,x)
```

```
[Out] -1/2*a/d/x^2*(-c^2*d*x^2+d)^(5/2)-1/2*a*c^2*(-c^2*d*x^2+d)^(3/2)+3/2*a*c^2*
d^(3/2)*ln((2*d+2*d^(1/2)*(-c^2*d*x^2+d)^(1/2))/x)-3/2*a*c^2*(-c^2*d*x^2+d)
^(1/2)*d-b*(-d*(c^2*x^2-1))^(1/2)*c^3*d/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-b*
(-d*(c^2*x^2-1))^(1/2)*c^4*d/(c^2*x^2-1)*arcsin(c*x)*x^2+1/2*b*(-d*(c^2*x^2
-1))^(1/2)*c^2*d/(c^2*x^2-1)*arcsin(c*x)+1/2*b*d*(-d*(c^2*x^2-1))^(1/2)/x/(
c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c+1/2*b*d*(-d*(c^2*x^2-1))^(1/2)/x^2/(c^2*x^2
```

```
-1)*arcsin(c*x)+3*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*c^2*d/(2*c^2*
x^2-2)*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))-3*b*(-d*(c^2*x^2-1))^(1/2
)*(-c^2*x^2+1)^(1/2)*c^2*d/(2*c^2*x^2-2)*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1
)^(1/2))-3*I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*c^2*d/(2*c^2*x^2-2
)*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))+3*I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^
2+1)^(1/2)*c^2*d/(2*c^2*x^2-2)*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))
```

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

$$-b\sqrt{d}\int\frac{\left(c^2dx^2-d\right)\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{x^3}\,dx+\frac{1}{2}\left(3\,c^2d^{\frac{3}{2}}\log\left(\frac{2\,\sqrt{-c^2dx^2+d}\,\sqrt{d}}{|x|}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^3,x, algorithm="maxima")
```

```
[Out] -b*sqrt(d)*integrate((c^2*d*x^2 - d)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c
*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/x^3, x) + 1/2*(3*c^2*d^(3/2)*log(2*sqrt(-
c^2*d*x^2 + d)*sqrt(d)/abs(x) + 2*d/abs(x)) - (-c^2*d*x^2 + d)^(3/2)*c^2 -
3*sqrt(-c^2*d*x^2 + d)*c^2*d - (-c^2*d*x^2 + d)^(5/2)/(d*x^2))*a
```

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

$$\int\frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(d-c^2\,d\,x^2\right)}^{3/2}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2))/x^3,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2))/x^3, x)
```

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

$$\int\frac{\left(-d\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}\left(a+b\,\mathrm{asin}\left(cx\right)\right)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))/x**3,x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))/x**3, x)
```

3.83 $\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{x^5}\,dx$

Optimal. Leaf size=307

$$\frac{3c^2d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{8x^2}-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{4x^4}-\frac{3c^4d\sqrt{d-c^2dx^2}\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin\right.}{4\sqrt{1-c^2x^2}}$$

```
[Out] -1/4*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^4+3/8*c^2*d*(a+b*arcsin(c*x))
*(-c^2*d*x^2+d)^(1/2)/x^2-1/12*b*c*d*(-c^2*d*x^2+d)^(1/2)/x^3/(-c^2*x^2+1)^
(1/2)+5/8*b*c^3*d*(-c^2*d*x^2+d)^(1/2)/x/(-c^2*x^2+1)^(1/2)-3/4*c^4*d*(a+b*
arcsin(c*x))*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x
^2+1)^(1/2)+3/8*I*b*c^4*d*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+
d)^(1/2)/(-c^2*x^2+1)^(1/2)-3/8*I*b*c^4*d*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2
))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.32, antiderivative size = 307, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.296, Rules used = {4695, 4693, 30, 4709, 4183, 2279, 2391, 14}

$$\frac{3ibc^4d\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)}{8\sqrt{1-c^2x^2}}-\frac{3ibc^4d\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)}{8\sqrt{1-c^2x^2}}+\frac{3c^2d\sqrt{d-c^2dx^2}\left(a+b\sin\right.}{8x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/x^5,x]
```

```
[Out] -(b*c*d*Sqrt[d - c^2*d*x^2])/(12*x^3*Sqrt[1 - c^2*x^2]) + (5*b*c^3*d*Sqrt[d
 - c^2*d*x^2])/(8*x*Sqrt[1 - c^2*x^2]) + (3*c^2*d*Sqrt[d - c^2*d*x^2]*(a +
b*ArcSin[c*x]))/(8*x^2) - ((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(4*x^
4) - (3*c^4*d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])*ArcTanh[E^(I*ArcSin[c
*x])])/(4*Sqrt[1 - c^2*x^2]) + (((3*I)/8)*b*c^4*d*Sqrt[d - c^2*d*x^2]*PolyL
og[2, -E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] - (((3*I)/8)*b*c^4*d*Sqrt[d -
c^2*d*x^2]*PolyLog[2, E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4693

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(b*c*n*Sqrt[d + e*x^2])/(f*(m + 1)*Sqr
t[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1), x], x] + Di
st[(c^2*Sqrt[d + e*x^2])/(f^2*(m + 1)*Sqrt[1 - c^2*x^2]), Int[((f*x)^(m + 2
)*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c, d, e
, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && LtQ[m, -1]
```

Rule 4695

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m +
2)*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPar
t[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f
*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /;
 FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0
] && LtQ[m, -1]
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{x^5}\,dx = -\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{4x^4} - \frac{1}{4}\left(3c^2d\right)\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin\right.}{x^3}$$

$$= \frac{3c^2d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{8x^2} - \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{4x^4} -$$

$$= -\frac{bcd\sqrt{d-c^2dx^2}}{12x^3\sqrt{1-c^2x^2}} + \frac{5bc^3d\sqrt{d-c^2dx^2}}{8x\sqrt{1-c^2x^2}} + \frac{3c^2d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}\right.}{8x^2}$$

$$= -\frac{bcd\sqrt{d-c^2dx^2}}{12x^3\sqrt{1-c^2x^2}} + \frac{5bc^3d\sqrt{d-c^2dx^2}}{8x\sqrt{1-c^2x^2}} + \frac{3c^2d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}\right.}{8x^2}$$

$$= -\frac{bcd\sqrt{d-c^2dx^2}}{12x^3\sqrt{1-c^2x^2}} + \frac{5bc^3d\sqrt{d-c^2dx^2}}{8x\sqrt{1-c^2x^2}} + \frac{3c^2d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}\right.}{8x^2}$$

$$= -\frac{bcd\sqrt{d-c^2dx^2}}{12x^3\sqrt{1-c^2x^2}} + \frac{5bc^3d\sqrt{d-c^2dx^2}}{8x\sqrt{1-c^2x^2}} + \frac{3c^2d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}\right.}{8x^2}$$

Mathematica [A] time = 5.97, size = 494, normalized size = 1.61

$$\frac{3}{8}ac^4d^{3/2}\log(x)+\frac{ad\left(5c^2x^2-2\right)\sqrt{d-c^2dx^2}}{8x^4}-\frac{3}{8}ac^4d^{3/2}\log\left(\sqrt{d}\sqrt{d-c^2dx^2}+d\right)-\frac{bc^4d^2\sqrt{1-c^2x^2}\left(-4i\text{Li}_2\left(-e^{i\sin}\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/x^5,x]
```

```
[Out] (a*d*(-2 + 5*c^2*x^2)*Sqrt[d - c^2*d*x^2])/(8*x^4) + (3*a*c^4*d^(3/2)*Log[x
])/8 - (3*a*c^4*d^(3/2)*Log[d + Sqrt[d]*Sqrt[d - c^2*d*x^2]])/8 - (b*c^4*d^
2*Sqrt[1 - c^2*x^2]*(-2*Cot[ArcSin[c*x]/2] - ArcSin[c*x]*Csc[ArcSin[c*x]/2]
^2 - 4*ArcSin[c*x]*Log[1 - E^(I*ArcSin[c*x])] + 4*ArcSin[c*x]*Log[1 + E^(I*
ArcSin[c*x])] - (4*I)*PolyLog[2, -E^(I*ArcSin[c*x])] + (4*I)*PolyLog[2, E^(
I*ArcSin[c*x])] + ArcSin[c*x]*Sec[ArcSin[c*x]/2]^2 - 2*Tan[ArcSin[c*x]/2]))
/(8*Sqrt[d - c^2*d*x^2]) + (b*c^4*d*Sqrt[d - c^2*d*x^2]*(8*Cot[ArcSin[c*x]/
2] + 6*ArcSin[c*x]*Csc[ArcSin[c*x]/2]^2 - c*x*Csc[ArcSin[c*x]/2]^4 - 3*ArcS
in[c*x]*Csc[ArcSin[c*x]/2]^4 - 24*ArcSin[c*x]*Log[1 - E^(I*ArcSin[c*x])] +
24*ArcSin[c*x]*Log[1 + E^(I*ArcSin[c*x])] - (24*I)*PolyLog[2, -E^(I*ArcSin[
c*x])] + (24*I)*PolyLog[2, E^(I*ArcSin[c*x])] - 6*ArcSin[c*x]*Sec[ArcSin[c*
x]/2]^2 + 3*ArcSin[c*x]*Sec[ArcSin[c*x]/2]^4 - (16*Sin[ArcSin[c*x]/2]^4)/(c
^3*x^3) + 8*Tan[ArcSin[c*x]/2]))/(192*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.66, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(ac^2dx^2-ad+\left(bc^2dx^2-bd\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2+d}}{x^5},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^5,x, algorithm="fricas")
```

```
[Out] integral(-(a*c^2*d*x^2 - a*d + (b*c^2*d*x^2 - b*d)*arcsin(c*x))*sqrt(-c^2*d
*x^2 + d)/x^5, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^5,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [B] time = 0.44, size = 601, normalized size = 1.96

$$-\frac{a\left(-c^2d\,x^2+d\right)^{\frac{5}{2}}}{4d\,x^4}+\frac{a\,c^2\left(-c^2d\,x^2+d\right)^{\frac{5}{2}}}{8d\,x^2}+\frac{a\,c^4\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}}{8}-\frac{3a\,c^4d^{\frac{3}{2}}\ln\left(\frac{2d+2\sqrt{d}\,\sqrt{-c^2d\,x^2+d}}{x}\right)}{8}+\frac{3a\,c^4\sqrt{-c^2d\,x^2+d}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^5,x)
```

```
[Out] -1/4*a/d/x^4*(-c^2*d*x^2+d)^(5/2)+1/8*a*c^2/d/x^2*(-c^2*d*x^2+d)^(5/2)+1/8*
a*c^4*(-c^2*d*x^2+d)^(3/2)-3/8*a*c^4*d^(3/2)*ln((2*d+2*d^(1/2)*(-c^2*d*x^2+
```

```
d)^(1/2))/x)+3/8*a*c^4*(-c^2*d*x^2+d)^(1/2)*d+5/8*b*d*(-d*(c^2*x^2-1))^(1/2
)/(c^2*x^2-1)*arcsin(c*x)*c^4-5/8*b*d*(-d*(c^2*x^2-1))^(1/2)/x/(c^2*x^2-1)*
(-c^2*x^2+1)^(1/2)*c^3-7/8*b*d*(-d*(c^2*x^2-1))^(1/2)/x^2/(c^2*x^2-1)*arcsi
n(c*x)*c^2+1/12*b*d*(-d*(c^2*x^2-1))^(1/2)/x^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/
2)*c+1/4*b*d*(-d*(c^2*x^2-1))^(1/2)/x^4/(c^2*x^2-1)*arcsin(c*x)-3*b*(-d*(c^
2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d*c^4/(8*c^2*x^2-8)*ln(1-I*c*x-(-c^2*x^2
+1)^(1/2))*arcsin(c*x)+3*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d*c^4/
(8*c^2*x^2-8)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))*arcsin(c*x)+3*I*b*(-d*(c^2*x^2
-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d*c^4/(8*c^2*x^2-8)*polylog(2,I*c*x+(-c^2*x^2
+1)^(1/2))-3*I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d*c^4/(8*c^2*x^2
-8)*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))
```

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

$$-b\sqrt{d}\int\frac{\left(c^2dx^2-d\right)\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{x^5}\,dx-\frac{1}{8}\left(3\,c^4d^{\frac{3}{2}}\log\left(\frac{2\,\sqrt{-c^2dx^2+d}\,\sqrt{d}}{|x|}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^5,x, algorithm="maxima")
```

```
[Out] -b*sqrt(d)*integrate((c^2*d*x^2 - d)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c
*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/x^5, x) - 1/8*(3*c^4*d^(3/2)*log(2*sqrt(-
c^2*d*x^2 + d)*sqrt(d)/abs(x) + 2*d/abs(x)) - (-c^2*d*x^2 + d)^(3/2)*c^4 -
3*sqrt(-c^2*d*x^2 + d)*c^4*d - (-c^2*d*x^2 + d)^(5/2)*c^2/(d*x^2) + 2*(-c^2
*d*x^2 + d)^(5/2)/(d*x^4))*a
```

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

$$\int\frac{(a+b\,\mathrm{asin}\,(c\,x))\,\left(d-c^2\,d\,x^2\right)^{3/2}}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2))/x^5,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2))/x^5, x)
```

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

$$\int\frac{(-d\,(cx-1)\,(cx+1))^{\frac{3}{2}}\,(a+b\,\mathrm{asin}\,(cx))}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))/x**5,x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))/x**5, x)
```

3.84 $\int x^4 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right) dx$

Optimal. Leaf size=430

$$\frac{1}{32}d^2x^5\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)-\frac{d^2x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{128c^2}+\frac{1}{10}x^5\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{1}$$

```
[Out] 1/16*d*x^5*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))+1/10*x^5*(-c^2*d*x^2+d)^(
5/2)*(a+b*arcsin(c*x))-3/256*d^2*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c
^4-1/128*d^2*x^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c^2+1/32*d^2*x^5*(a
+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)+3/512*b*d^2*x^2*(-c^2*d*x^2+d)^(1/2)/c
^3/(-c^2*x^2+1)^(1/2)+1/512*b*d^2*x^4*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(
1/2)-31/960*b*c*d^2*x^6*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+21/640*b*c^
3*d^2*x^8*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-1/100*b*c^5*d^2*x^10*(-c^
2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+3/512*d^2*(a+b*arcsin(c*x))^2*(-c^2*d*x
^2+d)^(1/2)/b/c^5/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.55, antiderivative size = 430, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 8, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.296, Rules used = {4699, 4697, 4707, 4641, 30, 14, 266, 43}

$$\frac{1}{32}d^2x^5\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)-\frac{d^2x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{128c^2}-\frac{3d^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{256c^4}+\frac{3d^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (3*b*d^2*x^2*Sqrt[d - c^2*d*x^2])/(512*c^3*Sqrt[1 - c^2*x^2]) + (b*d^2*x^4*
Sqrt[d - c^2*d*x^2])/(512*c*Sqrt[1 - c^2*x^2]) - (31*b*c*d^2*x^6*Sqrt[d - c
^2*d*x^2])/(960*Sqrt[1 - c^2*x^2]) + (21*b*c^3*d^2*x^8*Sqrt[d - c^2*d*x^2])
/(640*Sqrt[1 - c^2*x^2]) - (b*c^5*d^2*x^10*Sqrt[d - c^2*d*x^2])/(100*Sqrt[1
 - c^2*x^2]) - (3*d^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(256*c^4)
- (d^2*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(128*c^2) + (d^2*x^5*Sq
rt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/32 + (d*x^5*(d - c^2*d*x^2)^(3/2)*(a
 + b*ArcSin[c*x]))/16 + (x^5*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/10
+ (3*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(512*b*c^5*Sqrt[1 - c^2
*x^2])
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int x^4 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right) dx = \frac{1}{10}x^5 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right) + \frac{1}{2}d \int x^4 \left(d-c^2dx^2\right)^{3/2} \left(a+b\,\text{s}\right.$$

$$= \frac{1}{16}dx^5 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right) + \frac{1}{10}x^5 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin\right.$$

$$= \frac{1}{32}d^2x^5\sqrt{d-c^2dx^2} \left(a+b\sin^{-1}(cx)\right) + \frac{1}{16}dx^5 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin\right.$$

$$= -\frac{31bcd^2x^6\sqrt{d-c^2dx^2}}{960\sqrt{1-c^2x^2}} + \frac{21bc^3d^2x^8\sqrt{d-c^2dx^2}}{640\sqrt{1-c^2x^2}} - \frac{bc^5d^2x^{10}\sqrt{d-c^2dx}}{100\sqrt{1-c^2x^2}}$$

$$= \frac{bd^2x^4\sqrt{d-c^2dx^2}}{512c\sqrt{1-c^2x^2}} - \frac{31bcd^2x^6\sqrt{d-c^2dx^2}}{960\sqrt{1-c^2x^2}} + \frac{21bc^3d^2x^8\sqrt{d-c^2dx^2}}{640\sqrt{1-c^2x^2}} -$$

$$= \frac{3bd^2x^2\sqrt{d-c^2dx^2}}{512c^3\sqrt{1-c^2x^2}} + \frac{bd^2x^4\sqrt{d-c^2dx^2}}{512c\sqrt{1-c^2x^2}} - \frac{31bcd^2x^6\sqrt{d-c^2dx^2}}{960\sqrt{1-c^2x^2}} + \frac{21b}{}$$

Mathematica [A] time = 0.28, size = 220, normalized size = 0.51

$$\frac{d^2\sqrt{d-c^2dx^2} \left(225a^2 + 30abcx\sqrt{1-c^2x^2} \left(128c^8x^8 - 336c^6x^6 + 248c^4x^4 - 10c^2x^2 - 15\right) + 30b\sin^{-1}(cx) \left(15a + b\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d^2*Sqrt[d - c^2*d*x^2]*(225*a^2 + b^2*c^2*x^2*(225 + 75*c^2*x^2 - 1240*c^
4*x^4 + 1260*c^6*x^6 - 384*c^8*x^8) + 30*a*b*c*x*Sqrt[1 - c^2*x^2]*(-15 - 1
0*c^2*x^2 + 248*c^4*x^4 - 336*c^6*x^6 + 128*c^8*x^8) + 30*b*(15*a + b*c*x*S
qrt[1 - c^2*x^2]*(-15 - 10*c^2*x^2 + 248*c^4*x^4 - 336*c^6*x^6 + 128*c^8*x^
8))*ArcSin[c*x] + 225*b^2*ArcSin[c*x]^2))/(38400*b*c^5*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 1.38, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(ac^4d^2x^8 - 2\,ac^2d^2x^6 + ad^2x^4 + \left(bc^4d^2x^8 - 2\,bc^2d^2x^6 + bd^2x^4\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2+d}\,, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral((a*c^4*d^2*x^8 - 2*a*c^2*d^2*x^6 + a*d^2*x^4 + (b*c^4*d^2*x^8 - 2*
b*c^2*d^2*x^6 + b*d^2*x^4)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d), x)
```

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

$$\int \left(-c^2dx^2 + d\right)^{\frac{5}{2}} \left(b\arcsin\left(cx\right) + a\right)x^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(5/2)*(b*arcsin(c*x) + a)*x^4, x)
```

maple [C] time = 0.75, size = 3481, normalized size = 8.10

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] -5/98304*b*(-d*(c^2*x^2-1))^(1/2)*cos(7*arcsin(c*x))*d^2/c^3/(c^2*x^2-1)*x^
2-7/12288*b*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsin(c*x))*d^2/c^3/(c^2*x^2-1)*x
^2+1/200*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^5/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^
10+19/1024*b*(-d*(c^2*x^2-1))^(1/2)*d^2/c^2/(c^2*x^2-1)*arcsin(c*x)*x^3+1/1
60*a/c^4*x*(-c^2*d*x^2+d)^(5/2)-5/2048*I*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arc
sin(c*x))*d^2/c^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x-1/1024*I*b*(
-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d^2/c^4/(c^2*x^2-1)*(-c^2*x^2+1)^(
1/2)*arcsin(c*x)*x+7/20480*I*b*(-d*(c^2*x^2-1))^(1/2)*sin(9*arcsin(c*x))*d^
2/c^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x+3/2048*I*b*(-d*(c^2*x^2-
1))^(1/2)*cos(5*arcsin(c*x))*d^2/c^3/(c^2*x^2-1)*arcsin(c*x)*x^2-7/12288*I*
b*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsin(c*x))*d^2/c^4/(c^2*x^2-1)*(-c^2*x^2+1
)^(1/2)*x-3/1024*I*b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)*cos(3*arcsin(c*x))*
d^2/c^3/(c^2*x^2-1)*x^2-1/20*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^5/(c^2*x^2-1)
*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^10+1/8*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^3
/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^8-7/64*I*b*(-d*(c^2*x^2-1))^(
1/2)*d^2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^6+3/20480*b*(-d*(c^
2*x^2-1))^(1/2)*cos(9*arcsin(c*x))*d^2/c^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*a
rcsin(c*x)*x-3/4096*b*(-d*(c^2*x^2-1))^(1/2)*cos(7*arcsin(c*x))*d^2/c^4/(c^
2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x-3/2048*b*(-d*(c^2*x^2-1))^(1/2)*c
os(5*arcsin(c*x))*d^2/c^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x+3/10
24*b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)*cos(3*arcsin(c*x))*d^2/c^4/(c^2*x^2
-1)*(-c^2*x^2+1)^(1/2)*x+5/128*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/c/(c^2*x^2-1)
*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^4-3/1024*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/c
^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^2-3/20480*I*b*(-d*(c^2*x^2-
1))^(1/2)*cos(9*arcsin(c*x))*d^2/c^3/(c^2*x^2-1)*arcsin(c*x)*x^2+33/819200*
I*b*(-d*(c^2*x^2-1))^(1/2)*cos(9*arcsin(c*x))*d^2/c^4/(c^2*x^2-1)*(-c^2*x^2
+1)^(1/2)*x+3/4096*I*b*(-d*(c^2*x^2-1))^(1/2)*cos(7*arcsin(c*x))*d^2/c^3/(c
^2*x^2-1)*arcsin(c*x)*x^2-5/98304*I*b*(-d*(c^2*x^2-1))^(1/2)*cos(7*arcsin(c
*x))*d^2/c^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+1/128*a/c^4*d*x*(-c^2*d*x^2+d
)^(3/2)+3/256*a/c^4*d^2*x*(-c^2*d*x^2+d)^(1/2)+3/256*a/c^4*d^3/(c^2*d)^(1/2
)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-3/1024*b*(-d*(c^2*x^2-1))^(1
/2)*d^2/c^4/(c^2*x^2-1)*arcsin(c*x)*x-7/20480*b*(-d*(c^2*x^2-1))^(1/2)*sin(
9*arcsin(c*x))*d^2/c^5/(c^2*x^2-1)*arcsin(c*x)+1/4096*b*(-d*(c^2*x^2-1))^(1
/2)*sin(7*arcsin(c*x))*d^2/c^5/(c^2*x^2-1)*arcsin(c*x)+5/12288*I*b*(-d*(c^2
*x^2-1))^(1/2)*sin(5*arcsin(c*x))*d^2/c^5/(c^2*x^2-1)-1/1024*I*b*(-d*(c^2*x
^2-1))^(1/2)*sin(3*arcsin(c*x))*d^2/c^5/(c^2*x^2-1)+1/200*I*b*(-d*(c^2*x^2-
1))^(1/2)*d^2*c^6/(c^2*x^2-1)*x^11-3/200*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^4
/(c^2*x^2-1)*x^9+53/3200*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^2/(c^2*x^2-1)*x^7
+7/10240*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/c^2/(c^2*x^2-1)*x^3+9/10240*I*b*(-d
*(c^2*x^2-1))^(1/2)*d^2/c^4/(c^2*x^2-1)*x-17/819200*I*b*(-d*(c^2*x^2-1))^(1
/2)*sin(9*arcsin(c*x))*d^2/c^5/(c^2*x^2-1)+11/98304*I*b*(-d*(c^2*x^2-1))^(1
/2)*sin(7*arcsin(c*x))*d^2/c^5/(c^2*x^2-1)+5/2048*b*(-d*(c^2*x^2-1))^(1/2)*
sin(5*arcsin(c*x))*d^2/c^5/(c^2*x^2-1)*arcsin(c*x)+1/1024*b*(-d*(c^2*x^2-1)
)^(1/2)*sin(3*arcsin(c*x))*d^2/c^5/(c^2*x^2-1)*arcsin(c*x)+1/20*b*(-d*(c^2*
x^2-1))^(1/2)*d^2*c^6/(c^2*x^2-1)*arcsin(c*x)*x^11-3/20*b*(-d*(c^2*x^2-1))^
(1/2)*d^2*c^4/(c^2*x^2-1)*arcsin(c*x)*x^9+53/320*b*(-d*(c^2*x^2-1))^(1/2)*d
^2*c^2/(c^2*x^2-1)*arcsin(c*x)*x^7-3/512*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2
+1)^(1/2)/c^5/(c^2*x^2-1)*arcsin(c*x)^2*d^2-1/80*b*(-d*(c^2*x^2-1))^(1/2)*d
^2*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^8+7/640*b*(-d*(c^2*x^2-1))^(1/2)*d^
2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^6-1/256*b*(-d*(c^2*x^2-1))^(1/2)*d^2/c
/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4+3/2048*b*(-d*(c^2*x^2-1))^(1/2)*d^2/c^3
/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2+33/819200*b*(-d*(c^2*x^2-1))^(1/2)*cos(
```

```
9*arcsin(c*x))*d^2/c^3/(c^2*x^2-1)*x^2+5/98304*b*(-d*(c^2*x^2-1))^(1/2)*cos
(7*arcsin(c*x))*d^2/c^5/(c^2*x^2-1)-13/1600*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/
(c^2*x^2-1)*x^5-1/4096*I*b*(-d*(c^2*x^2-1))^(1/2)*sin(7*arcsin(c*x))*d^2/c^
4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x-13/160*b*(-d*(c^2*x^2-1))^(1
/2)*d^2/(c^2*x^2-1)*arcsin(c*x)*x^5+7/12288*b*(-d*(c^2*x^2-1))^(1/2)*cos(5*
arcsin(c*x))*d^2/c^5/(c^2*x^2-1)-51/102400*b*(-d*(c^2*x^2-1))^(1/2)*d^2/c^5
/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)-33/819200*b*(-d*(c^2*x^2-1))^(1/2)*cos(9*ar
csin(c*x))*d^2/c^5/(c^2*x^2-1)+1/1024*I*b*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcs
in(c*x))*d^2/c^3/(c^2*x^2-1)*x^2+3/1024*I*b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c
*x)*cos(3*arcsin(c*x))*d^2/c^5/(c^2*x^2-1)-9/10240*I*b*(-d*(c^2*x^2-1))^(1/
2)*d^2/c^5/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)+3/20480*I*b*(-d*(c^2*
x^2-1))^(1/2)*cos(9*arcsin(c*x))*d^2/c^5/(c^2*x^2-1)*arcsin(c*x)-1/1024*b*(
-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d^2/c^3/(c^2*x^2-1)*arcsin(c*x)*x^
2+17/819200*I*b*(-d*(c^2*x^2-1))^(1/2)*sin(9*arcsin(c*x))*d^2/c^3/(c^2*x^2-
1)*x^2-3/4096*I*b*(-d*(c^2*x^2-1))^(1/2)*cos(7*arcsin(c*x))*d^2/c^5/(c^2*x^
2-1)*arcsin(c*x)-11/98304*I*b*(-d*(c^2*x^2-1))^(1/2)*sin(7*arcsin(c*x))*d^2
/c^3/(c^2*x^2-1)*x^2-3/2048*I*b*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsin(c*x))*d
^2/c^5/(c^2*x^2-1)*arcsin(c*x)-5/12288*I*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arc
sin(c*x))*d^2/c^3/(c^2*x^2-1)*x^2-1/1024*b*(-d*(c^2*x^2-1))^(1/2)*sin(3*arc
sin(c*x))*d^2/c^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-17/819200*b*(-d*(c^2*x^2
-1))^(1/2)*sin(9*arcsin(c*x))*d^2/c^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+11/9
8304*b*(-d*(c^2*x^2-1))^(1/2)*sin(7*arcsin(c*x))*d^2/c^4/(c^2*x^2-1)*(-c^2*
x^2+1)^(1/2)*x+5/12288*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))*d^2/c^4/
(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+7/20480*b*(-d*(c^2*x^2-1))^(1/2)*sin(9*arc
sin(c*x))*d^2/c^3/(c^2*x^2-1)*arcsin(c*x)*x^2-1/4096*b*(-d*(c^2*x^2-1))^(1/
2)*sin(7*arcsin(c*x))*d^2/c^3/(c^2*x^2-1)*arcsin(c*x)*x^2-5/2048*b*(-d*(c^2
*x^2-1))^(1/2)*sin(5*arcsin(c*x))*d^2/c^3/(c^2*x^2-1)*arcsin(c*x)*x^2-1/10*
a*x^3*(-c^2*d*x^2+d)^(7/2)/c^2/d-3/80*a/c^4*x*(-c^2*d*x^2+d)^(7/2)/d
```

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

$$b\sqrt{d}\int\left(c^4d^2x^8-2\,c^2d^2x^6+d^2x^4\right)\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)dx-\frac{1}{1280}\left(\frac{128\left(-c^2dx^2+d\right.}{c^2d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] b*sqrt(d)*integrate((c^4*d^2*x^8 - 2*c^2*d^2*x^6 + d^2*x^4)*sqrt(c*x + 1)*s
qrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)), x) - 1/1280*(128*
(-c^2*d*x^2 + d)^(7/2)*x^3/(c^2*d) - 8*(-c^2*d*x^2 + d)^(5/2)*x/c^4 + 48*(-
c^2*d*x^2 + d)^(7/2)*x/(c^4*d) - 10*(-c^2*d*x^2 + d)^(3/2)*d*x/c^4 - 15*sqr
t(-c^2*d*x^2 + d)*d^2*x/c^4 - 15*d^(5/2)*arcsin(c*x)/c^5)*a
```

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

$$\int x^4\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(d-c^2\,d\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int(x^4*(a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x)),x)

[Out] Timed out
```

3.85 $\int x^2 \left(d-c^2 d x^2\right)^{5/2} \left(a+b \sin^{-1}(cx)\right) \, dx$

Optimal. Leaf size=351

$$-\frac{5d^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{128c^2}+\frac{5}{64}d^2x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{8}x^3\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)+$$

```
[Out] 5/48*d*x^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))+1/8*x^3*(-c^2*d*x^2+d)^(5
/2)*(a+b*arcsin(c*x))-5/128*d^2*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c^
2+5/64*d^2*x^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)+5/256*b*d^2*x^2*(-c^2
*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-59/768*b*c*d^2*x^4*(-c^2*d*x^2+d)^(1/2
)/(-c^2*x^2+1)^(1/2)+17/288*b*c^3*d^2*x^6*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)
^(1/2)-1/64*b*c^5*d^2*x^8*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+5/256*d^2
*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/b/c^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.47, antiderivative size = 351, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.296, Rules used = {4699, 4697, 4707, 4641, 30, 14, 266, 43}

$$\frac{5}{64}d^2x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)-\frac{5d^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{128c^2}+\frac{5d^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{256bc^3\sqrt{1-c^2x^2}}+\frac{1}{8}x^3$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (5*b*d^2*x^2*Sqrt[d - c^2*d*x^2])/(256*c*Sqrt[1 - c^2*x^2]) - (59*b*c*d^2*x
^4*Sqrt[d - c^2*d*x^2])/(768*Sqrt[1 - c^2*x^2]) + (17*b*c^3*d^2*x^6*Sqrt[d
- c^2*d*x^2])/(288*Sqrt[1 - c^2*x^2]) - (b*c^5*d^2*x^8*Sqrt[d - c^2*d*x^2])
/(64*Sqrt[1 - c^2*x^2]) - (5*d^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))
/(128*c^2) + (5*d^2*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/64 + (5*d*
x^3*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/48 + (x^3*(d - c^2*d*x^2)^(5
/2)*(a + b*ArcSin[c*x]))/8 + (5*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])
^2)/(256*b*c^3*Sqrt[1 - c^2*x^2])
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int x^2 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right) dx = \frac{1}{8}x^3 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right) + \frac{1}{8}(5d) \int x^2 \left(d-c^2dx^2\right)^{3/2} \left(a\right.$$

$$= \frac{5}{48}dx^3 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right) + \frac{1}{8}x^3 \left(d-c^2dx^2\right)^{5/2} \left(a+b\,\mathrm{s}\right.$$

$$= \frac{5}{64}d^2x^3\sqrt{d-c^2dx^2} \left(a+b\sin^{-1}(cx)\right) + \frac{5}{48}dx^3 \left(d-c^2dx^2\right)^{3/2} \left(a+b\right.$$

$$= -\frac{59bcd^2x^4\sqrt{d-c^2dx^2}}{768\sqrt{1-c^2x^2}} + \frac{17bc^3d^2x^6\sqrt{d-c^2dx^2}}{288\sqrt{1-c^2x^2}} - \frac{bc^5d^2x^8\sqrt{d-c^2d}}{64\sqrt{1-c^2x^2}}$$

$$= \frac{5bd^2x^2\sqrt{d-c^2dx^2}}{256c\sqrt{1-c^2x^2}} - \frac{59bcd^2x^4\sqrt{d-c^2dx^2}}{768\sqrt{1-c^2x^2}} + \frac{17bc^3d^2x^6\sqrt{d-c^2dx^2}}{288\sqrt{1-c^2x^2}}$$

Mathematica [A] time = 0.23, size = 196, normalized size = 0.56

$$\frac{d^2\sqrt{d-c^2dx^2}\left(45a^2+6abcx\sqrt{1-c^2x^2}\left(48c^6x^6-136c^4x^4+118c^2x^2-15\right)+6b\sin^{-1}(cx)\left(15a+bcx\sqrt{1-c^2x^2}\left(\right.\right.\right.}{2304bc^3\sqrt{1-c^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d^2*Sqrt[d - c^2*d*x^2]*(45*a^2 + b^2*c^2*x^2*(45 - 177*c^2*x^2 + 136*c^4*
x^4 - 36*c^6*x^6) + 6*a*b*c*x*Sqrt[1 - c^2*x^2]*(-15 + 118*c^2*x^2 - 136*c^
4*x^4 + 48*c^6*x^6) + 6*b*(15*a + b*c*x*Sqrt[1 - c^2*x^2]*(-15 + 118*c^2*x^
2 - 136*c^4*x^4 + 48*c^6*x^6))*ArcSin[c*x] + 45*b^2*ArcSin[c*x]^2))/(2304*b
*c^3*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 1.47, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\left(ac^4d^2x^6-2\,ac^2d^2x^4+ad^2x^2+\left(bc^4d^2x^6-2\,bc^2d^2x^4+bd^2x^2\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2+d}\,,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral((a*c^4*d^2*x^6 - 2*a*c^2*d^2*x^4 + a*d^2*x^2 + (b*c^4*d^2*x^6 - 2*
b*c^2*d^2*x^4 + b*d^2*x^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d), x)
```

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

$$\int\left(-c^2dx^2+d\right)^{\frac{5}{2}}(b\arcsin\left(cx\right)+a)x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(5/2)*(b*arcsin(c*x) + a)*x^2, x)
```

maple [C] time = 0.38, size = 2828, normalized size = 8.06

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] -7/256*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)*arcsin(c*x)*x^3+73/147456*b
*(-d*(c^2*x^2-1))^(1/2)*cos(7*arcsin(c*x))*d^2/c^3/(c^2*x^2-1)+13/9216*b*(-
d*(c^2*x^2-1))^(1/2)*cos(5*arcsin(c*x))*d^2/c^3/(c^2*x^2-1)-3/1024*b*(-d*(c
^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d^2/c^3/(c^2*x^2-1)-63/16384*b*(-d*(c^2
*x^2-1))^(1/2)*d^2/c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)-27/2048*I*b*(-d*(c^2*
x^2-1))^(1/2)*d^2/(c^2*x^2-1)*x^3+5/768*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcs
in(c*x))*d^2/c^3/(c^2*x^2-1)*arcsin(c*x)-1/256*b*(-d*(c^2*x^2-1))^(1/2)*sin
(3*arcsin(c*x))*d^2/c^3/(c^2*x^2-1)*arcsin(c*x)+1/16*b*(-d*(c^2*x^2-1))^(1/
2)*d^2*c^6/(c^2*x^2-1)*arcsin(c*x)*x^9-5/32*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^
4/(c^2*x^2-1)*arcsin(c*x)*x^7+17/128*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^2/(c^2*
x^2-1)*arcsin(c*x)*x^5-3/256*b*(-d*(c^2*x^2-1))^(1/2)*d^2/c^2/(c^2*x^2-1)*a
rcsin(c*x)*x-5/256*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/(c^2*x^2
-1)*arcsin(c*x)^2*d^2+3/1024*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d^
2/c/(c^2*x^2-1)*x^2+1/128*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^5/(c^2*x^2-1)*(-c^
2*x^2+1)^(1/2)*x^8-1/64*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^3/(c^2*x^2-1)*(-c^2*
x^2+1)^(1/2)*x^6+5/512*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c/(c^2*x^2-1)*(-c^2*x^2
```

```
+1)^(1/2)*x^4+3/512*b*(-d*(c^2*x^2-1))^(1/2)*d^2/c/(c^2*x^2-1)*(-c^2*x^2+1)
^(1/2)*x^2-73/147456*b*(-d*(c^2*x^2-1))^(1/2)*cos(7*arcsin(c*x))*d^2/c/(c^2
*x^2-1)*x^2-13/9216*b*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsin(c*x))*d^2/c/(c^2*
x^2-1)*x^2+1/48*a/c^2*x*(-c^2*d*x^2+d)^(5/2)+5/128*a/c^2*d^2*x*(-c^2*d*x^2+
d)^(1/2)+55/147456*I*b*(-d*(c^2*x^2-1))^(1/2)*sin(7*arcsin(c*x))*d^2/c^3/(c
^2*x^2-1)+5/9216*I*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))*d^2/c^3/(c^2
*x^2-1)-5/1024*I*b*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d^2/c^3/(c^2*x
^2-1)+1/128*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^6/(c^2*x^2-1)*x^9-5/256*I*b*(-
d*(c^2*x^2-1))^(1/2)*d^2*c^4/(c^2*x^2-1)*x^7+17/1024*I*b*(-d*(c^2*x^2-1))^(
1/2)*d^2*c^2/(c^2*x^2-1)*x^5+17/2048*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/c^2/(c^
2*x^2-1)*x+19/6144*b*(-d*(c^2*x^2-1))^(1/2)*sin(7*arcsin(c*x))*d^2/c^3/(c^2
*x^2-1)*arcsin(c*x)+5/128*a/c^2*d^3/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-
c^2*d*x^2+d)^(1/2))+5/192*a/c^2*d*x*(-c^2*d*x^2+d)^(3/2)-1/8*a*x*(-c^2*d*x^
2+d)^(7/2)/c^2/d-1/768*I*b*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsin(c*x))*d^2/c^
3/(c^2*x^2-1)*arcsin(c*x)-5/9216*I*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*
x))*d^2/c/(c^2*x^2-1)*x^2+5/9216*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x)
)*d^2/c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-5/1024*b*(-d*(c^2*x^2-1))^(1/2)*
sin(3*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+55/147456*b*(-d
*(c^2*x^2-1))^(1/2)*sin(7*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/
2)*x+1/256*b*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d^2/c/(c^2*x^2-1)*ar
csin(c*x)*x^2-19/6144*b*(-d*(c^2*x^2-1))^(1/2)*sin(7*arcsin(c*x))*d^2/c/(c^
2*x^2-1)*arcsin(c*x)*x^2-5/768*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))*
d^2/c/(c^2*x^2-1)*arcsin(c*x)*x^2+3/256*I*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*ar
csin(c*x))*d^2/c^3/(c^2*x^2-1)*arcsin(c*x)+5/1024*I*b*(-d*(c^2*x^2-1))^(1/2
)*sin(3*arcsin(c*x))*d^2/c/(c^2*x^2-1)*x^2-17/2048*I*b*(-d*(c^2*x^2-1))^(1/
2)*d^2/c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)-13/6144*I*b*(-d*(c^2*
x^2-1))^(1/2)*cos(7*arcsin(c*x))*d^2/c^3/(c^2*x^2-1)*arcsin(c*x)-55/147456*
I*b*(-d*(c^2*x^2-1))^(1/2)*sin(7*arcsin(c*x))*d^2/c/(c^2*x^2-1)*x^2-1/768*b
*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)*(-c^2*x^2+1)
^(1/2)*arcsin(c*x)*x+3/256*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d^2/
c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x-13/6144*b*(-d*(c^2*x^2-1))
^(1/2)*cos(7*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x
)*x-13/9216*I*b*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsin(c*x))*d^2/c^2/(c^2*x^2-
1)*(-c^2*x^2+1)^(1/2)*x-3/256*I*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))
*d^2/c/(c^2*x^2-1)*arcsin(c*x)*x^2+3/1024*I*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*
arcsin(c*x))*d^2/c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-1/16*I*b*(-d*(c^2*x^2
-1))^(1/2)*d^2*c^5/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^8+1/8*I*b*(
-d*(c^2*x^2-1))^(1/2)*d^2*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^
6-5/64*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcs
in(c*x)*x^4+1/32*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/c/(c^2*x^2-1)*(-c^2*x^2+1)^
(1/2)*arcsin(c*x)*x^2+13/6144*I*b*(-d*(c^2*x^2-1))^(1/2)*cos(7*arcsin(c*x))
*d^2/c/(c^2*x^2-1)*arcsin(c*x)*x^2-73/147456*I*b*(-d*(c^2*x^2-1))^(1/2)*cos
(7*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+1/768*I*b*(-d*(c^2
*x^2-1))^(1/2)*cos(5*arcsin(c*x))*d^2/c/(c^2*x^2-1)*arcsin(c*x)*x^2-19/6144
*I*b*(-d*(c^2*x^2-1))^(1/2)*sin(7*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)*(-c^2*x^
2+1)^(1/2)*arcsin(c*x)*x-5/768*I*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x)
)*d^2/c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x+1/256*I*b*(-d*(c^2*x
^2-1))^(1/2)*sin(3*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcs
in(c*x)*x
```

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

$$b\sqrt{d}\int\left(c^4d^2x^6-2\,c^2d^2x^4+d^2x^2\right)\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)\,dx+\frac{1}{384}\left(\frac{8\left(-c^2dx^2+d\right.}{c^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] b*sqrt(d)*integrate((c^4*d^2*x^6 - 2*c^2*d^2*x^4 + d^2*x^2)*sqrt(c*x + 1)*s
qrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)), x) + 1/384*(8*(-c
^2*d*x^2 + d)^(5/2)*x/c^2 - 48*(-c^2*d*x^2 + d)^(7/2)*x/(c^2*d) + 10*(-c^2*
d*x^2 + d)^(3/2)*d*x/c^2 + 15*sqrt(-c^2*d*x^2 + d)*d^2*x/c^2 + 15*d^(5/2)*a
rcsin(c*x)/c^3)*a
```

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

$$\int x^2\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(d-c^2\,d\,x^2\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int(x^2*(a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x)),x)
```

```
[Out] Timed out
```

3.86 $\int \left(d-c^2 d x^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right) dx$

Optimal. Leaf size=265

$$\frac{5}{16}d^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{5d^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{32bc\sqrt{1-c^2x^2}}+\frac{1}{6}x\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)+$$

```
[Out] 5/24*d*x*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))+1/6*x*(-c^2*d*x^2+d)^(5/2)*
(a+b*arcsin(c*x))+1/36*b*d^2*(-c^2*x^2+1)^(5/2)*(-c^2*d*x^2+d)^(1/2)/c+5/16
*d^2*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)-25/96*b*c*d^2*x^2*(-c^2*d*x^2
+d)^(1/2)/(-c^2*x^2+1)^(1/2)+5/96*b*c^3*d^2*x^4*(-c^2*d*x^2+d)^(1/2)/(-c^2*
x^2+1)^(1/2)+5/32*d^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/b/c/(-c^2*x^
2+1)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 265, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {4649, 4647, 4641, 30, 14, 261}

$$\frac{5}{16}d^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{5d^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{32bc\sqrt{1-c^2x^2}}+\frac{1}{6}x\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)+$$

Antiderivative was successfully verified.

```
[In] Int[(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (-25*b*c*d^2*x^2*Sqrt[d - c^2*d*x^2])/(96*Sqrt[1 - c^2*x^2]) + (5*b*c^3*d^2
*x^4*Sqrt[d - c^2*d*x^2])/(96*Sqrt[1 - c^2*x^2]) + (b*d^2*(1 - c^2*x^2)^(5/
2)*Sqrt[d - c^2*d*x^2])/(36*c) + (5*d^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin
[c*x]))/16 + (5*d*x*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/24 + (x*(d -
 c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/6 + (5*d^2*Sqrt[d - c^2*d*x^2]*(a +
b*ArcSin[c*x])^2)/(32*b*c*Sqrt[1 - c^2*x^2])
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
```

```
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rubi steps

$$\int \left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)dx = \frac{1}{6}x\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{6}(5d)\int \left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}\right.$$

$$= \frac{bd^2\left(1-c^2x^2\right)^{5/2}\sqrt{d-c^2dx^2}}{36c}+\frac{5}{24}dx\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{6}$$

$$= \frac{bd^2\left(1-c^2x^2\right)^{5/2}\sqrt{d-c^2dx^2}}{36c}+\frac{5}{16}d^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{5}{24}$$

$$= -\frac{25bcd^2x^2\sqrt{d-c^2dx^2}}{96\sqrt{1-c^2x^2}}+\frac{5bc^3d^2x^4\sqrt{d-c^2dx^2}}{96\sqrt{1-c^2x^2}}+\frac{bd^2\left(1-c^2x^2\right)^{5/2}\sqrt{d-}}{36c}$$

Mathematica [A] time = 1.07, size = 266, normalized size = 1.00

$$\frac{d^2\left(\sqrt{d-c^2dx^2}\left(1584acx\sqrt{1-c^2x^2}+384ac^5x^5\sqrt{1-c^2x^2}-1248ac^3x^3\sqrt{1-c^2x^2}+270b\cos\left(2\sin^{-1}(cx)\right)+27b\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d^2*(360*b*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2 - 720*a*Sqrt[d]*Sqrt[1 - c^2*
x^2]*ArcTan[(c*x*Sqrt[d - c^2*d*x^2])/(Sqrt[d]*(-1 + c^2*x^2))] + Sqrt[d -
c^2*d*x^2]*(1584*a*c*x*Sqrt[1 - c^2*x^2] - 1248*a*c^3*x^3*Sqrt[1 - c^2*x^2]
 + 384*a*c^5*x^5*Sqrt[1 - c^2*x^2] + 270*b*Cos[2*ArcSin[c*x]] + 27*b*Cos[4*
ArcSin[c*x]] + 2*b*Cos[6*ArcSin[c*x]]) + 12*b*Sqrt[d - c^2*d*x^2]*ArcSin[c*
x]*(45*Sin[2*ArcSin[c*x]] + 9*Sin[4*ArcSin[c*x]] + Sin[6*ArcSin[c*x]])))/(2
304*c*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.69, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\left(ac^4d^2x^4-2\,ac^2d^2x^2+ad^2+\left(bc^4d^2x^4-2\,bc^2d^2x^2+bd^2\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2+d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral((a*c^4*d^2*x^4 - 2*a*c^2*d^2*x^2 + a*d^2 + (b*c^4*d^2*x^4 - 2*b*c^
2*d^2*x^2 + b*d^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.19, size = 1985, normalized size = 7.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/6*a*x*(-c^2*d*x^2+d)^(5/2)+5/24*a*d*x*(-c^2*d*x^2+d)^(3/2)+5/16*a*d^2*x*(
-c^2*d*x^2+d)^(1/2)+5/16*a*d^3/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d
*x^2+d)^(1/2))-5/192*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))*d^2/c/(c^2
*x^2-1)*arcsin(c*x)-9/64*b*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d^2/c/
(c^2*x^2-1)*arcsin(c*x)-25/4608*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))
*d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-27/512*b*(-d*(c^2*x^2-1))^(1/2)*sin(3
*arcsin(c*x))*d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+1/72*b*(-d*(c^2*x^2-1))^
(1/2)*d^2*c^5/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^6-1/48*b*(-d*(c^2*x^2-1))^(1
/2)*d^2*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4+1/8*b*(-d*(c^2*x^2-1))^(1/2)
*d^2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2+29/4608*b*(-d*(c^2*x^2-1))^(1/2)*
cos(5*arcsin(c*x))*d^2*c/(c^2*x^2-1)*x^2+33/512*b*(-d*(c^2*x^2-1))^(1/2)*co
s(3*arcsin(c*x))*d^2*c/(c^2*x^2-1)*x^2+1/72*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2*
c^6/(c^2*x^2-1)*x^7-1/36*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^4/(c^2*x^2-1)*x^5
-29/288*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^2/(c^2*x^2-1)*x^3-25/4608*I*b*(-d*
(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))*d^2/c/(c^2*x^2-1)-27/512*I*b*(-d*(c^2
*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d^2/c/(c^2*x^2-1)-5/32*b*(-d*(c^2*x^2-1))
^(1/2)*(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcsin(c*x)^2*d^2+1/12*b*(-d*(c^2*x
^2-1))^(1/2)*d^2*c^6/(c^2*x^2-1)*arcsin(c*x)*x^7-1/6*b*(-d*(c^2*x^2-1))^(1/
2)*d^2*c^4/(c^2*x^2-1)*arcsin(c*x)*x^5+1/3*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^2
/(c^2*x^2-1)*arcsin(c*x)*x^3+1/8*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^3/(c^2*x^
2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^4+3/16*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2
*c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^2-1/48*I*b*(-d*(c^2*x^2-1))
^(1/2)*cos(5*arcsin(c*x))*d^2*c/(c^2*x^2-1)*arcsin(c*x)*x^2+9/64*I*b*(-d*(c
^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d^2/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1
)^(1/2)*x+5/192*I*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))*d^2/(c^2*x^2-
1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x-3/32*I*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*a
rcsin(c*x))*d^2*c/(c^2*x^2-1)*arcsin(c*x)*x^2-1/12*I*b*(-d*(c^2*x^2-1))^(1/
2)*d^2*c^5/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^6+27/512*I*b*(-d*(c
^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d^2*c/(c^2*x^2-1)*x^2+29/4608*I*b*(-d*(
c^2*x^2-1))^(1/2)*cos(5*arcsin(c*x))*d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+3
3/512*I*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d^2/(c^2*x^2-1)*(-c^2*x
^2+1)^(1/2)*x-11/96*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/c/(c^2*x^2-1)*arcsin(c*x
)*(-c^2*x^2+1)^(1/2)+1/48*I*b*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsin(c*x))*d^2
/c/(c^2*x^2-1)*arcsin(c*x)+25/4608*I*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(
c*x))*d^2*c/(c^2*x^2-1)*x^2+3/32*I*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*
x))*d^2/c/(c^2*x^2-1)*arcsin(c*x)+9/64*b*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsi
n(c*x))*d^2*c/(c^2*x^2-1)*arcsin(c*x)*x^2+1/48*b*(-d*(c^2*x^2-1))^(1/2)*cos
(5*arcsin(c*x))*d^2/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x+3/32*b*(-d
```

```
*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d^2/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^
2+1)^(1/2)*x+5/192*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))*d^2*c/(c^2*x
^2-1)*arcsin(c*x)*x^2-17/288*b*(-d*(c^2*x^2-1))^(1/2)*d^2/c/(c^2*x^2-1)*(-c
^2*x^2+1)^(1/2)-29/4608*b*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsin(c*x))*d^2/c/(
c^2*x^2-1)-33/512*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d^2/c/(c^2*x^
2-1)-1/4*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)*arcsin(c*x)*x+11/96*I*b*(
-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)*x
```

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

$$b\sqrt{d}\int\left(c^4d^2x^4-2\,c^2d^2x^2+d^2\right)\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)\,dx+\frac{1}{48}\left(8\left(-c^2dx^2+d\right)^{\frac{5}{2}}x+1\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] b*sqrt(d)*integrate((c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2)*sqrt(c*x + 1)*sqrt(
-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)), x) + 1/48*(8*(-c^2*d*
x^2 + d)^(5/2)*x + 10*(-c^2*d*x^2 + d)^(3/2)*d*x + 15*sqrt(-c^2*d*x^2 + d)*
d^2*x + 15*d^(5/2)*arcsin(c*x)/c)*a
```

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

$$\int (a+b\,\mathrm{asin}\left(c\,x\right))\,{\left(d-c^2\,d\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int((a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2), x)
```

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

$$\int \left(-d\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}\left(a+b\,\mathrm{asin}\left(cx\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x)),x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(5/2)*(a + b*asin(c*x)), x)
```

3.87 $\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{x^2}\,dx$

Optimal. Leaf size=268

$$-\frac{15}{8}c^2d^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)-\frac{15cd^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{16b\sqrt{1-c^2x^2}}-\frac{5}{4}c^2dx\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-}\right.$$

```
[Out] -5/4*c^2*d*x*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))-(-c^2*d*x^2+d)^(5/2)*(a
+b*arcsin(c*x))/x-15/8*c^2*d^2*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)+9/1
6*b*c^3*d^2*x^2*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-1/16*b*c^5*d^2*x^4*
(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-15/16*c*d^2*(a+b*arcsin(c*x))^2*(-c
^2*d*x^2+d)^(1/2)/b/(-c^2*x^2+1)^(1/2)+b*c*d^2*ln(x)*(-c^2*d*x^2+d)^(1/2)/(
-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.24, antiderivative size = 268, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.296, Rules used = {4695, 4649, 4647, 4641, 30, 14, 266, 43}

$$-\frac{15}{8}c^2d^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)-\frac{15cd^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{16b\sqrt{1-c^2x^2}}-\frac{5}{4}c^2dx\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-}\right.$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/x^2,x]
```

```
[Out] (9*b*c^3*d^2*x^2*Sqrt[d - c^2*d*x^2])/(16*Sqrt[1 - c^2*x^2]) - (b*c^5*d^2*x
^4*Sqrt[d - c^2*d*x^2])/(16*Sqrt[1 - c^2*x^2]) - (15*c^2*d^2*x*Sqrt[d - c^2
*d*x^2]*(a + b*ArcSin[c*x]))/8 - (5*c^2*d*x*(d - c^2*d*x^2)^(3/2)*(a + b*Ar
cSin[c*x]))/4 - ((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/x - (15*c*d^2*S
qrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(16*b*Sqrt[1 - c^2*x^2]) + (b*c*d
^2*Sqrt[d - c^2*d*x^2]*Log[x])/Sqrt[1 - c^2*x^2]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4695

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m +
2)*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPar
t[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f
*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /;
 FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0
] && LtQ[m, -1]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{x^2}\,dx = -\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{x} - \left(5c^2d\right)\int \left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(\right.$$

$$= -\frac{5}{4}c^2dx\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right) - \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{x}$$

$$= -\frac{15}{8}c^2d^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right) - \frac{5}{4}c^2dx\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin\right.$$

$$= \frac{9bc^3d^2x^2\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}} - \frac{bc^5d^2x^4\sqrt{d-c^2dx^2}}{16\sqrt{1-c^2x^2}} - \frac{15}{8}c^2d^2x\sqrt{d-c^2dx^2}\left(a+b\right.$$

Mathematica [A] time = 1.36, size = 257, normalized size = 0.96

$$d^2\left(\sqrt{d-c^2dx^2}\left(16\left(a\sqrt{1-c^2x^2}\left(2c^4x^4-9c^2x^2-8\right)+8bcx\log(cx)\right)-32bcx\cos\left(2\sin^{-1}(cx)\right)-bcx\cos\left(4\sin^{-1}\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/x^2,x]
```

```
[Out] (d^2*(-120*b*c*x*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2 + 240*a*c*Sqrt[d]*x*Sqrt
[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d - c^2*d*x^2])/(Sqrt[d]*(-1 + c^2*x^2))] +
Sqrt[d - c^2*d*x^2]*(-32*b*c*x*Cos[2*ArcSin[c*x]] - b*c*x*Cos[4*ArcSin[c*x]
] + 16*(a*Sqrt[1 - c^2*x^2]*(-8 - 9*c^2*x^2 + 2*c^4*x^4) + 8*b*c*x*Log[c*x]
)) - 4*b*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*(32*Sqrt[1 - c^2*x^2] + 16*c*x*Sin
[2*ArcSin[c*x]] + c*x*Sin[4*ArcSin[c*x]])))/(128*x*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(ac^4d^2x^4 - 2\,ac^2d^2x^2 + ad^2 + \left(bc^4d^2x^4 - 2\,bc^2d^2x^2 + bd^2\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2 + d}}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^2,x, algorithm="fricas")
```

```
[Out] integral((a*c^4*d^2*x^4 - 2*a*c^2*d^2*x^2 + a*d^2 + (b*c^4*d^2*x^4 - 2*b*c^
2*d^2*x^2 + b*d^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/x^2, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.35, size = 1391, normalized size = 5.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^2,x)
```

```
[Out] b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)*d^2/(c^2*x^2-1)/x+33/256*b*(-d*(c^2*x^
2-1))^(1/2)*d^2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)+33/256*b*(-d*(c^2*x^2-1))^
(1/2)*cos(3*arcsin(c*x))*d^2*c/(c^2*x^2-1)-15/64*b*(-d*(c^2*x^2-1))^(1/2)*c
os(3*arcsin(c*x))*d^2*c^2/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x+15/6
4*I*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d^2*c^3/(c^2*x^2-1)*arcsin(
c*x)*x^2-33/256*I*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d^2*c^2/(c^2*
x^2-1)*(-c^2*x^2+1)^(1/2)*x-1/8*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^5/(c^2*x^2
-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^4-3/8*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c
^3/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^2-a/d/x*(-c^2*d*x^2+d)^(7/2
)-a*c^2*x*(-c^2*d*x^2+d)^(5/2)-5/4*a*c^2*d*x*(-c^2*d*x^2+d)^(3/2)-15/8*a*c^
2*d^2*x*(-c^2*d*x^2+d)^(1/2)-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c
^2*x^2-1)*ln((I*c*x+(-c^2*x^2+1)^(1/2))^2-1)*d^2*c+17/64*b*(-d*(c^2*x^2-1))
^(1/2)*sin(3*arcsin(c*x))*d^2*c/(c^2*x^2-1)*arcsin(c*x)+1/8*b*(-d*(c^2*x^2-
1))^(1/2)*d^2*c^6/(c^2*x^2-1)*arcsin(c*x)*x^5-11/16*b*(-d*(c^2*x^2-1))^(1/2
)*d^2*c^4/(c^2*x^2-1)*arcsin(c*x)*x^3-9/32*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^3
/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2-33/256*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*a
rcsin(c*x))*d^2*c^3/(c^2*x^2-1)*x^2+1/32*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^5/(
c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4+31/256*I*b*(-d*(c^2*x^2-1))^(1/2)*sin(3*a
rcsin(c*x))*d^2*c/(c^2*x^2-1)+1/32*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^6/(c^2*
x^2-1)*x^5+13/64*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^4/(c^2*x^2-1)*x^3-15/64*I
*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^2/(c^2*x^2-1)*x+15/16*b*(-d*(c^2*x^2-1))^(1
```

```
/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*arcsin(c*x)^2*d^2*c-7/16*b*(-d*(c^2*x^2-
1))^(1/2)*d^2*c^2/(c^2*x^2-1)*arcsin(c*x)*x-31/256*I*b*(-d*(c^2*x^2-1))^(1/
2)*sin(3*arcsin(c*x))*d^2*c^3/(c^2*x^2-1)*x^2+79/64*I*b*(-c^2*x^2+1)^(1/2)*
(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)*arcsin(c*x)*d^2*c+31/256*b*(-d*(c^2*x^2-
1))^(1/2)*sin(3*arcsin(c*x))*d^2*c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-17/64
*b*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d^2*c^3/(c^2*x^2-1)*arcsin(c*x
)*x^2-15/64*I*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d^2*c/(c^2*x^2-1)
*arcsin(c*x)-17/64*I*b*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d^2*c^2/(c
^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x-15/8*a*c^2*d^3/(c^2*d)^(1/2)*arc
tan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))
```

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

$$b\sqrt{d}\int\frac{\left(c^4d^2x^4-2\,c^2d^2x^2+d^2\right)\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{x^2}\,dx-\frac{1}{8}\left(10\left(-c^2dx^2+d\right)^{\frac{3}{2}}c^2dx\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^2,x, algorithm="maxima")
```

```
[Out] b*sqrt(d)*integrate((c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2)*sqrt(c*x + 1)*sqrt(
-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/x^2, x) - 1/8*(10*(-c^
2*d*x^2 + d)^(3/2)*c^2*d*x + 15*sqrt(-c^2*d*x^2 + d)*c^2*d^2*x + 15*c*d^(5/
2)*arcsin(c*x) + 8*(-c^2*d*x^2 + d)^(5/2)/x)*a
```

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

$$\int\frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(d-c^2\,d\,x^2\right)}^{5/2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2))/x^2,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2))/x^2, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))/x**2,x)
```

```
[Out] Timed out
```

3.88 $\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{x^4}\,dx$

Optimal. Leaf size=277

$$\frac{5c^2d\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3x}-\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{3x^3}+\frac{5}{2}c^4d^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+$$

```
[Out] 5/3*c^2*d*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x-1/3*(-c^2*d*x^2+d)^(5/2)
*(a+b*arcsin(c*x))/x^3+5/2*c^4*d^2*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)
-1/6*b*c*d^2*(-c^2*d*x^2+d)^(1/2)/x^2/(-c^2*x^2+1)^(1/2)-1/4*b*c^5*d^2*x^2*
(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+5/4*c^3*d^2*(a+b*arcsin(c*x))^2*(-c
^2*d*x^2+d)^(1/2)/b/(-c^2*x^2+1)^(1/2)-7/3*b*c^3*d^2*ln(x)*(-c^2*d*x^2+d)^(
1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.30, antiderivative size = 277, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.259, Rules used = {4695, 4647, 4641, 30, 14, 266, 43}

$$\frac{5}{2}c^4d^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{5c^3d^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{4b\sqrt{1-c^2x^2}}+\frac{5c^2d\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx\right.}{3x}$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/x^4,x]
```

```
[Out] -(b*c*d^2*Sqrt[d - c^2*d*x^2])/(6*x^2*Sqrt[1 - c^2*x^2]) - (b*c^5*d^2*x^2*S
qrt[d - c^2*d*x^2])/(4*Sqrt[1 - c^2*x^2]) + (5*c^4*d^2*x*Sqrt[d - c^2*d*x^2
]*(a + b*ArcSin[c*x]))/2 + (5*c^2*d*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x
]))/(3*x) - ((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(3*x^3) + (5*c^3*d^
2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(4*b*Sqrt[1 - c^2*x^2]) - (7*b
*c^3*d^2*Sqrt[d - c^2*d*x^2]*Log[x])/(3*Sqrt[1 - c^2*x^2])
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4695

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m +
2)*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPar
t[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f
*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /;
 FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0
] && LtQ[m, -1]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{x^4}\,dx = -\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{3x^3} - \frac{1}{3}\left(5c^2d\right)\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin\right.}{x^2}$$

$$= \frac{5c^2d\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3x} - \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{3x^3} +$$

$$= \frac{5}{2}c^4d^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right) + \frac{5c^2d\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(c\right.}{3x}$$

$$= -\frac{bcd^2\sqrt{d-c^2dx^2}}{6x^2\sqrt{1-c^2x^2}} - \frac{bc^5d^2x^2\sqrt{d-c^2dx^2}}{4\sqrt{1-c^2x^2}} + \frac{5}{2}c^4d^2x\sqrt{d-c^2dx^2}\left(a+b\sin\right.$$

Mathematica [A] time = 1.65, size = 243, normalized size = 0.88

$$\frac{1}{24}d^2\left(\frac{\sqrt{d-c^2dx^2}\left(4a\sqrt{1-c^2x^2}\left(3c^4x^4+14c^2x^2-2\right)-56bc^3x^3\log(cx)+b\left(-6c^5x^5+3c^3x^3-4cx\right)\right)}{x^3\sqrt{1-c^2x^2}} - 60ac^3\sqrt{d}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/x^4,x]
```

```
[Out] (d^2*((4*b*Sqrt[d - c^2*d*x^2]*(-2 + 14*c^2*x^2 + 3*c^4*x^4)*ArcSin[c*x])/x
^3 + (30*b*c^3*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2)/Sqrt[1 - c^2*x^2] - 60*a*
c^3*Sqrt[d]*ArcTan[(c*x*Sqrt[d - c^2*d*x^2])/(Sqrt[d]*(-1 + c^2*x^2))] + (S
qrt[d - c^2*d*x^2]*(4*a*Sqrt[1 - c^2*x^2]*(-2 + 14*c^2*x^2 + 3*c^4*x^4) + b
*(-4*c*x + 3*c^3*x^3 - 6*c^5*x^5) - 56*b*c^3*x^3*Log[c*x]))/(x^3*Sqrt[1 - c
^2*x^2])))/24
```

fricas [F] time = 3.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(ac^4d^2x^4 - 2\,ac^2d^2x^2 + ad^2 + \left(bc^4d^2x^4 - 2\,bc^2d^2x^2 + bd^2\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2 + d}}{x^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^4,x, algorithm="fricas")
```

```
[Out] integral((a*c^4*d^2*x^4 - 2*a*c^2*d^2*x^2 + a*d^2 + (b*c^4*d^2*x^4 - 2*b*c^
2*d^2*x^2 + b*d^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/x^4, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^4,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.48, size = 1527, normalized size = 5.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^4,x)
```

```
[Out] 5/2*a*c^4*d^3/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+4/
3*a*c^2/d/x*(-c^2*d*x^2+d)^(7/2)+5/3*a*c^4*d*x*(-c^2*d*x^2+d)^(3/2)-5/4*b*(
-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*arcsin(c*x)^2*d^2*c^3-
5/2*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)/(c^2*x^2-1)*c^3*
(-c^2*x^2+1)^(1/2)-1/2*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^4/(c^2*x^2-1)*arcsin(
c*x)*x+1/3*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)/x^3/(c^2*
x^2-1)*arcsin(c*x)+1/2*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^6/(c^2*x^2-1)*arcsin(
c*x)*x^3+7/3*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*ln((I*
c*x+(-c^2*x^2+1)^(1/2))^2-1)*d^2*c^3+1/4*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^5/(
c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2-1/3*a/d/x^3*(-c^2*d*x^2+d)^(7/2)+4/3*a*c^
4*x*(-c^2*d*x^2+d)^(5/2)+7/3*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*
c^2*x^2+1)/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^3-49/6*I*b*(-d*(c^2
*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)*x^3/(c^2*x^2-1)*(-c^2*x^2+1)*c
^6+7/6*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)*x/(c^2*x^2-
1)*(-c^2*x^2+1)*c^4-35*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^
2+1)*x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^5+147*I*b*(-d*(c^2*x^
2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)*x^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2
)*arcsin(c*x)*c^7-1/8*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^3/(c^2*x^2-1)*(-c^2*x^
2+1)^(1/2)+21/2*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)*x^2/
(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c^5+190/3*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c
^4*x^4-15*c^2*x^2+1)*x/(c^2*x^2-1)*arcsin(c*x)*c^4-23/3*b*(-d*(c^2*x^2-1))^
(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)/x/(c^2*x^2-1)*arcsin(c*x)*c^2+1/6*b*(-d
*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)/x^2/(c^2*x^2-1)*(-c^2*x^2
+1)^(1/2)*c-14*I*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)*d^
2*c^3/(3*c^2*x^2-3)-49/6*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*
x^2+1)*x^5/(c^2*x^2-1)*c^8+28/3*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-
15*c^2*x^2+1)*x^3/(c^2*x^2-1)*c^6-7/6*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^
4*x^4-15*c^2*x^2+1)*x/(c^2*x^2-1)*c^4+147*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*
c^4*x^4-15*c^2*x^2+1)*x^5/(c^2*x^2-1)*arcsin(c*x)*c^8-203*b*(-d*(c^2*x^2-1)
```

```
)^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)*x^3/(c^2*x^2-1)*arcsin(c*x)*c^6+5/2*a
*c^4*d^2*x*(-c^2*d*x^2+d)^(1/2)
```

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

$$b\sqrt{d}\int \frac{\left(c^4d^2x^4-2\,c^2d^2x^2+d^2\right)\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{x^4}\,dx+\frac{1}{6}\left(10\left(-c^2dx^2+d\right)^{\frac{3}{2}}c^4dx\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^4,x, algorithm="maxima")
```

```
[Out] b*sqrt(d)*integrate((c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2)*sqrt(c*x + 1)*sqrt(
-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/x^4, x) + 1/6*(10*(-c^
2*d*x^2 + d)^(3/2)*c^4*d*x + 15*sqrt(-c^2*d*x^2 + d)*c^4*d^2*x + 15*c^3*d^(
5/2)*arcsin(c*x) + 8*(-c^2*d*x^2 + d)^(5/2)*c^2/x - 2*(-c^2*d*x^2 + d)^(7/2
)/(d*x^3))*a
```

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

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))\,\left(d-c^2\,d\,x^2\right)^{5/2}}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2))/x^4,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2))/x^4, x)
```

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

$$\int \frac{(-d\,(cx-1)\,(cx+1))^{\frac{5}{2}}\,(a+b\,\mathrm{asin}\,(cx))}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))/x**4,x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(5/2)*(a + b*asin(c*x))/x**4, x)
```

3.89 $\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{x^6}\,dx$

Optimal. Leaf size=277

$$-\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{5x^5}+\frac{c^2d\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{c^5d^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2b\sqrt{1-c^2x^2}}-\frac{c^4}{\ldots}$$

```
[Out] 1/3*c^2*d*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^3-1/5*(-c^2*d*x^2+d)^(5/
2)*(a+b*arcsin(c*x))/x^5-c^4*d^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/x-1
/20*b*c*d^2*(-c^2*d*x^2+d)^(1/2)/x^4/(-c^2*x^2+1)^(1/2)+11/30*b*c^3*d^2*(-c
^2*d*x^2+d)^(1/2)/x^2/(-c^2*x^2+1)^(1/2)-1/2*c^5*d^2*(a+b*arcsin(c*x))^2*(-
c^2*d*x^2+d)^(1/2)/b/(-c^2*x^2+1)^(1/2)+23/15*b*c^5*d^2*ln(x)*(-c^2*d*x^2+d
)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.35, antiderivative size = 277, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.259, Rules used = {4695, 4693, 29, 4641, 14, 266, 43}

$$-\frac{c^5d^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2b\sqrt{1-c^2x^2}}-\frac{c^4d^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x}+\frac{c^2d\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\ldots$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/x^6,x]
```

```
[Out] -(b*c*d^2*Sqrt[d - c^2*d*x^2])/(20*x^4*Sqrt[1 - c^2*x^2]) + (11*b*c^3*d^2*S
qrt[d - c^2*d*x^2])/(30*x^2*Sqrt[1 - c^2*x^2]) - (c^4*d^2*Sqrt[d - c^2*d*x^
2]*(a + b*ArcSin[c*x]))/x + (c^2*d*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]
))/(3*x^3) - ((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(5*x^5) - (c^5*d^2
*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*Sqrt[1 - c^2*x^2]) + (23*b
*c^5*d^2*Sqrt[d - c^2*d*x^2]*Log[x])/(15*Sqrt[1 - c^2*x^2])
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
```

```
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4693

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(b*c*n*Sqrt[d + e*x^2])/(f*(m + 1)*Sqr
t[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1), x], x] + Di
st[(c^2*Sqrt[d + e*x^2])/(f^2*(m + 1)*Sqrt[1 - c^2*x^2]), Int[((f*x)^(m + 2
)*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c, d, e
, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && LtQ[m, -1]
```

Rule 4695

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m +
2)*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPar
t[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f
*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /;
 FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0
] && LtQ[m, -1]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{x^6}\,dx = -\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{5x^5} - \left(c^2d\right)\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(c$$

$$= \frac{c^2d\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3x^3} - \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{5x^5} +$$

$$= -\frac{c^4d^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x} + \frac{c^2d\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3x^3}$$

$$= -\frac{bcd^2\sqrt{d-c^2dx^2}}{20x^4\sqrt{1-c^2x^2}} + \frac{11bc^3d^2\sqrt{d-c^2dx^2}}{30x^2\sqrt{1-c^2x^2}} - \frac{c^4d^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(\right.}{x}$$

Mathematica [A] time = 1.60, size = 234, normalized size = 0.84

$$\frac{1}{60}d^2\left(\frac{\sqrt{d-c^2dx^2}\left(-4a\sqrt{1-c^2x^2}\left(23c^4x^4-11c^2x^2+3\right)+92bc^5x^5\log(cx)+bcx\left(22c^2x^2-3\right)\right)}{x^5\sqrt{1-c^2x^2}}+60ac^5\sqrt{d}\tan^{-}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/x^6,x]
```

```
[Out] (d^2*((-4*b*Sqrt[d - c^2*d*x^2]*(3 - 11*c^2*x^2 + 23*c^4*x^4)*ArcSin[c*x])/
x^5 - (30*b*c^5*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2)/Sqrt[1 - c^2*x^2] + 60*a
*c^5*Sqrt[d]*ArcTan[(c*x*Sqrt[d - c^2*d*x^2])/(Sqrt[d]*(-1 + c^2*x^2))] + (
Sqrt[d - c^2*d*x^2]*(b*c*x*(-3 + 22*c^2*x^2) - 4*a*Sqrt[1 - c^2*x^2]*(3 - 1
1*c^2*x^2 + 23*c^4*x^4) + 92*b*c^5*x^5*Log[c*x]))/(x^5*Sqrt[1 - c^2*x^2])))
/60
```

fricas [F] time = 0.78, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(ac^4d^2x^4 - 2\,ac^2d^2x^2 + ad^2 + \left(bc^4d^2x^4 - 2\,bc^2d^2x^2 + bd^2\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2 + d}}{x^6}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^6,x, algorithm="fricas")
```

```
[Out] integral((a*c^4*d^2*x^4 - 2*a*c^2*d^2*x^2 + a*d^2 + (b*c^4*d^2*x^4 - 2*b*c^
2*d^2*x^2 + b*d^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/x^6, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^6,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.51, size = 2615, normalized size = 9.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^6,x)
```

```
[Out] -69/5*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(1035*c^8*x^8-765*c^6*x^6+325*c^4*x^4-
75*c^2*x^2+9)/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^5-7153/60*I*b*(-
d*(c^2*x^2-1))^(1/2)*d^2/(1035*c^8*x^8-765*c^6*x^6+325*c^4*x^4-75*c^2*x^2+9
)*x^5/(c^2*x^2-1)*(-c^2*x^2+1)*c^10+759/20*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(
1035*c^8*x^8-765*c^6*x^6+325*c^4*x^4-75*c^2*x^2+9)*x^3/(c^2*x^2-1)*(-c^2*x^
2+1)*c^8-69/20*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(1035*c^8*x^8-765*c^6*x^6+325
*c^4*x^4-75*c^2*x^2+9)*x/(c^2*x^2-1)*(-c^2*x^2+1)*c^6+5819/30*I*b*(-d*(c^2*
x^2-1))^(1/2)*d^2/(1035*c^8*x^8-765*c^6*x^6+325*c^4*x^4-75*c^2*x^2+9)*x^7/(
c^2*x^2-1)*(-c^2*x^2+1)*c^12+9/5*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(1035*c^8*x^8
-765*c^6*x^6+325*c^4*x^4-75*c^2*x^2+9)/x^5/(c^2*x^2-1)*arcsin(c*x)-23/15*b*
(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*ln((I*c*x+(-c^2*x^2+1
)^(1/2))^2-1)*d^2*c^5+1/2*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*
x^2-1)*arcsin(c*x)^2*d^2*c^5+175/4*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(1035*c^8*x
^8-765*c^6*x^6+325*c^4*x^4-75*c^2*x^2+9)/(c^2*x^2-1)*c^5*(-c^2*x^2+1)^(1/2)
-1/5*a/d/x^5*(-c^2*d*x^2+d)^(7/2)-8/15*a*c^6*x*(-c^2*d*x^2+d)^(5/2)-8/15*a*
c^4/d/x*(-c^2*d*x^2+d)^(7/2)-2/3*a*c^6*d*x*(-c^2*d*x^2+d)^(3/2)-a*c^6*d^2*x
*(-c^2*d*x^2+d)^(1/2)-1587*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(1035*c^8*x^8-765*c
^6*x^6+325*c^4*x^4-75*c^2*x^2+9)*x^9/(c^2*x^2-1)*arcsin(c*x)*c^14+46*I*b*(-
c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)*d^2*c^5/(15*c^2*x^2-15)
+5819/30*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(1035*c^8*x^8-765*c^6*x^6+325*c^4*x
^4-75*c^2*x^2+9)*x^9/(c^2*x^2-1)*c^14-18791/60*I*b*(-d*(c^2*x^2-1))^(1/2)*d
^2/(1035*c^8*x^8-765*c^6*x^6+325*c^4*x^4-75*c^2*x^2+9)*x^7/(c^2*x^2-1)*c^12
+943/6*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(1035*c^8*x^8-765*c^6*x^6+325*c^4*x^4
-75*c^2*x^2+9)*x^5/(c^2*x^2-1)*c^10-207/5*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(1
035*c^8*x^8-765*c^6*x^6+325*c^4*x^4-75*c^2*x^2+9)*x^3/(c^2*x^2-1)*c^8-759/2
*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(1035*c^8*x^8-765*c^6*x^6+325*c^4*x^4-75*c^2*
x^2+9)*x^6/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c^11+777/5*b*(-d*(c^2*x^2-1))^(1/
2)*d^2/(1035*c^8*x^8-765*c^6*x^6+325*c^4*x^4-75*c^2*x^2+9)/x/(c^2*x^2-1)*ar
csin(c*x)*c^4-141/20*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(1035*c^8*x^8-765*c^6*x^6
```

```
+325*c^4*x^4-75*c^2*x^2+9)/x^2/(c^2*x^2-1)*c^3*(-c^2*x^2+1)^(1/2)-117/5*b*(
-d*(c^2*x^2-1))^(1/2)*d^2/(1035*c^8*x^8-765*c^6*x^6+325*c^4*x^4-75*c^2*x^2+
9)/x^3/(c^2*x^2-1)*arcsin(c*x)*c^2+9/20*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(1035*
c^8*x^8-765*c^6*x^6+325*c^4*x^4-75*c^2*x^2+9)/x^4/(c^2*x^2-1)*(-c^2*x^2+1)^
(1/2)*c+69/20*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(1035*c^8*x^8-765*c^6*x^6+325*
c^4*x^4-75*c^2*x^2+9)*x/(c^2*x^2-1)*c^6+3519*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(
1035*c^8*x^8-765*c^6*x^6+325*c^4*x^4-75*c^2*x^2+9)*x^7/(c^2*x^2-1)*arcsin(c
*x)*c^12-9595/3*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(1035*c^8*x^8-765*c^6*x^6+325*
c^4*x^4-75*c^2*x^2+9)*x^5/(c^2*x^2-1)*arcsin(c*x)*c^10+1329/4*b*(-d*(c^2*x^
2-1))^(1/2)*d^2/(1035*c^8*x^8-765*c^6*x^6+325*c^4*x^4-75*c^2*x^2+9)*x^4/(c^
2*x^2-1)*(-c^2*x^2+1)^(1/2)*c^9+5318/3*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(1035*c
^8*x^8-765*c^6*x^6+325*c^4*x^4-75*c^2*x^2+9)*x^3/(c^2*x^2-1)*arcsin(c*x)*c^
8-1889/12*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(1035*c^8*x^8-765*c^6*x^6+325*c^4*x^
4-75*c^2*x^2+9)*x^2/(c^2*x^2-1)*c^7*(-c^2*x^2+1)^(1/2)-9602/15*b*(-d*(c^2*x
^2-1))^(1/2)*d^2/(1035*c^8*x^8-765*c^6*x^6+325*c^4*x^4-75*c^2*x^2+9)*x/(c^2
*x^2-1)*arcsin(c*x)*c^6+115*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(1035*c^8*x^8-76
5*c^6*x^6+325*c^4*x^4-75*c^2*x^2+9)*x^2/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1
)^(1/2)*c^7+1173*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(1035*c^8*x^8-765*c^6*x^6+3
25*c^4*x^4-75*c^2*x^2+9)*x^6/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^1
1-1495/3*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(1035*c^8*x^8-765*c^6*x^6+325*c^4*x
^4-75*c^2*x^2+9)*x^4/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^9-1587*I*
b*(-d*(c^2*x^2-1))^(1/2)*d^2/(1035*c^8*x^8-765*c^6*x^6+325*c^4*x^4-75*c^2*x
^2+9)*x^8/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^13+2/15*a*c^2/d/x^3*
(-c^2*d*x^2+d)^(7/2)-a*c^6*d^3/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d
*x^2+d)^(1/2))
```

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

$$b\sqrt{d}\int\frac{\left(c^4d^2x^4-2\,c^2d^2x^2+d^2\right)\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\,\right)}{x^6}\,dx-\frac{1}{15}\left(10\left(-c^2dx^2+d\right)^{\frac{3}{2}}c^6dx\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^6,x, algorithm="maxima")
```

```
[Out] b*sqrt(d)*integrate((c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2)*sqrt(c*x + 1)*sqrt(
-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/x^6, x) - 1/15*(10*(-c
^2*d*x^2 + d)^(3/2)*c^6*d*x + 15*sqrt(-c^2*d*x^2 + d)*c^6*d^2*x + 15*c^5*d^
(5/2)*arcsin(c*x) + 8*(-c^2*d*x^2 + d)^(5/2)*c^4/x - 2*(-c^2*d*x^2 + d)^(7/
2)*c^2/(d*x^3) + 3*(-c^2*d*x^2 + d)^(7/2)/(d*x^5))*a
```

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

$$\int\frac{(a+b\,\mathrm{asin}\,(c\,x))\,\left(d-c^2\,d\,x^2\right)^{5/2}}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2))/x^6,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2))/x^6, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))/x**6,x)
```

```
[Out] Timed out
```

3.90 $\int \frac{(d-c^2dx^2)^{5/2}(a+b\sin^{-1}(cx))}{x^8}\,dx$

Optimal. Leaf size=203

$$-\frac{(d-c^2dx^2)^{7/2}(a+b\sin^{-1}(cx))}{7dx^7}-\frac{bcd^2\sqrt{d-c^2dx^2}}{42x^6\sqrt{1-c^2x^2}}-\frac{bc^7d^2\log(x)\sqrt{d-c^2dx^2}}{7\sqrt{1-c^2x^2}}-\frac{3bc^5d^2\sqrt{d-c^2dx^2}}{14x^2\sqrt{1-c^2x^2}}+\frac{3bc^3d^2\sqrt{d}}{28x^4\sqrt{1}}$$

```
[Out] -1/7*(-c^2*d*x^2+d)^(7/2)*(a+b*arcsin(c*x))/d/x^7-1/42*b*c*d^2*(-c^2*d*x^2+
d)^(1/2)/x^6/(-c^2*x^2+1)^(1/2)+3/28*b*c^3*d^2*(-c^2*d*x^2+d)^(1/2)/x^4/(-c
^2*x^2+1)^(1/2)-3/14*b*c^5*d^2*(-c^2*d*x^2+d)^(1/2)/x^2/(-c^2*x^2+1)^(1/2)-
1/7*b*c^7*d^2*ln(x)*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 203, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {4681, 266, 43}

$$-\frac{(d-c^2dx^2)^{7/2}(a+b\sin^{-1}(cx))}{7dx^7}-\frac{3bc^5d^2\sqrt{d-c^2dx^2}}{14x^2\sqrt{1-c^2x^2}}+\frac{3bc^3d^2\sqrt{d-c^2dx^2}}{28x^4\sqrt{1-c^2x^2}}-\frac{bcd^2\sqrt{d-c^2dx^2}}{42x^6\sqrt{1-c^2x^2}}-\frac{bc^7d^2\log(x)\sqrt{d}}{7\sqrt{1-c^2x}}$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/x^8,x]
```

```
[Out] -(b*c*d^2*Sqrt[d - c^2*d*x^2])/(42*x^6*Sqrt[1 - c^2*x^2]) + (3*b*c^3*d^2*Sq
rt[d - c^2*d*x^2])/(28*x^4*Sqrt[1 - c^2*x^2]) - (3*b*c^5*d^2*Sqrt[d - c^2*d
*x^2])/(14*x^2*Sqrt[1 - c^2*x^2]) - ((d - c^2*d*x^2)^(7/2)*(a + b*ArcSin[c*
x]))/(7*d*x^7) - (b*c^7*d^2*Sqrt[d - c^2*d*x^2]*Log[x])/(7*Sqrt[1 - c^2*x^2
])
```

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4681

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^F
racPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c
^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d,
 e, f, m, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] &
& NeQ[m, -1]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{x^8}\,dx = -\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{7dx^7} + \frac{\left(bcd^2\sqrt{d-c^2dx^2}\right)\int \frac{\left(1-c^2x^2\right)^3}{x^7}\,dx}{7\sqrt{1-c^2x^2}}$$

$$= -\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{7dx^7} + \frac{\left(bcd^2\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int \frac{\left(1-c^2x\right)^3}{x^4}\right.}{14\sqrt{1-c^2x^2}}$$

$$= -\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{7dx^7} + \frac{\left(bcd^2\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int\left(\frac{1}{x^4}-\frac{3c}{x^3}\right.\right.}{14\sqrt{1-c^2x^2}}$$

$$= -\frac{bcd^2\sqrt{d-c^2dx^2}}{42x^6\sqrt{1-c^2x^2}} + \frac{3bc^3d^2\sqrt{d-c^2dx^2}}{28x^4\sqrt{1-c^2x^2}} - \frac{3bc^5d^2\sqrt{d-c^2dx^2}}{14x^2\sqrt{1-c^2x^2}} - \frac{\left(d-c^2d\right.}{}$$

Mathematica [A] time = 0.31, size = 156, normalized size = 0.77

$$\frac{d^2\sqrt{d-c^2dx^2}\left(60a\left(c^2x^2-1\right)^4+60b\left(c^2x^2-1\right)^4\sin^{-1}(cx)+bcx\sqrt{1-c^2x^2}\left(-147c^6x^6+90c^4x^4-45c^2x^2+10\right)\right)}{420x^7\left(c^2x^2-1\right)} -$$

Antiderivative was successfully verified.

```
[In] Integrate[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/x^8,x]
```

```
[Out] (d^2*Sqrt[d - c^2*d*x^2]*(60*a*(-1 + c^2*x^2)^4 + b*c*x*Sqrt[1 - c^2*x^2]*(
10 - 45*c^2*x^2 + 90*c^4*x^4 - 147*c^6*x^6) + 60*b*(-1 + c^2*x^2)^4*ArcSin[
c*x]))/(420*x^7*(-1 + c^2*x^2)) - (b*c^7*d^2*Sqrt[d - c^2*d*x^2]*Log[x])/(7
*Sqrt[1 - c^2*x^2])
```

fricas [A] time = 0.77, size = 655, normalized size = 3.23

$$\left[\frac{6\left(bc^9d^2x^9-bc^7d^2x^7\right)\sqrt{d}\,\log\left(\frac{c^2dx^6+c^2dx^2-dx^4+\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+1}\left(x^4-1\right)\sqrt{d}-d}{c^2x^4-x^2}\right)+\left(18\,bc^5d^2x^5-\left(18\,bc^5-9\,bc^3+2\,b\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^8,x, algorithm="fricas")
```

```
[Out] [1/84*(6*(b*c^9*d^2*x^9 - b*c^7*d^2*x^7)*sqrt(d)*log((c^2*d*x^6 + c^2*d*x^2
 - d*x^4 + sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*(x^4 - 1)*sqrt(d) - d)/(
c^2*x^4 - x^2)) + (18*b*c^5*d^2*x^5 - (18*b*c^5 - 9*b*c^3 + 2*b*c)*d^2*x^7
- 9*b*c^3*d^2*x^3 + 2*b*c*d^2*x)*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1) +
12*(a*c^8*d^2*x^8 - 4*a*c^6*d^2*x^6 + 6*a*c^4*d^2*x^4 - 4*a*c^2*d^2*x^2 + a
*d^2 + (b*c^8*d^2*x^8 - 4*b*c^6*d^2*x^6 + 6*b*c^4*d^2*x^4 - 4*b*c^2*d^2*x^2
 + b*d^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d))/(c^2*x^9 - x^7), -1/84*(12*(b*
c^9*d^2*x^9 - b*c^7*d^2*x^7)*sqrt(-d)*arctan(sqrt(-c^2*d*x^2 + d)*sqrt(-c^2
*x^2 + 1)*(x^2 + 1)*sqrt(-d)/(c^2*d*x^4 - (c^2 + 1)*d*x^2 + d)) - (18*b*c^5
*d^2*x^5 - (18*b*c^5 - 9*b*c^3 + 2*b*c)*d^2*x^7 - 9*b*c^3*d^2*x^3 + 2*b*c*d
^2*x)*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1) - 12*(a*c^8*d^2*x^8 - 4*a*c^6
*d^2*x^6 + 6*a*c^4*d^2*x^4 - 4*a*c^2*d^2*x^2 + a*d^2 + (b*c^8*d^2*x^8 - 4*b
*c^6*d^2*x^6 + 6*b*c^4*d^2*x^4 - 4*b*c^2*d^2*x^2 + b*d^2)*arcsin(c*x))*sqrt
(-c^2*d*x^2 + d))/(c^2*x^9 - x^7)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^8,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.58, size = 4031, normalized size = 19.86

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^8,x)
```

```
[Out] 17/28*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*c^10*x^10+35*c^8*x^8-3
5*c^6*x^6+21*c^4*x^4-7*c^2*x^2+1)*x^5/(c^2*x^2-1)*(-c^2*x^2+1)*c^12+1/7*I*b
*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*c^10*x^10+35*c^8*x^8-35*c^6*x^6
+21*c^4*x^4-7*c^2*x^2+1)/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^7-5/2
8*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*c^10*x^10+35*c^8*x^8-35*c^
6*x^6+21*c^4*x^4-7*c^2*x^2+1)*x^3/(c^2*x^2-1)*(-c^2*x^2+1)*c^10+1/42*I*b*(-
d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*c^10*x^10+35*c^8*x^8-35*c^6*x^6+21
*c^4*x^4-7*c^2*x^2+1)*x/(c^2*x^2-1)*(-c^2*x^2+1)*c^8-3/14*I*b*(-d*(c^2*x^2-
1))^(1/2)*d^2/(7*c^12*x^12-21*c^10*x^10+35*c^8*x^8-35*c^6*x^6+21*c^4*x^4-7*
c^2*x^2+1)*x^11/(c^2*x^2-1)*(-c^2*x^2+1)*c^18+3/4*I*b*(-d*(c^2*x^2-1))^(1/2
)*d^2/(7*c^12*x^12-21*c^10*x^10+35*c^8*x^8-35*c^6*x^6+21*c^4*x^4-7*c^2*x^2+
1)*x^9/(c^2*x^2-1)*(-c^2*x^2+1)*c^16-83/84*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(
7*c^12*x^12-21*c^10*x^10+35*c^8*x^8-35*c^6*x^6+21*c^4*x^4-7*c^2*x^2+1)*x^7/
(c^2*x^2-1)*(-c^2*x^2+1)*c^14-55/12*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^
12-21*c^10*x^10+35*c^8*x^8-35*c^6*x^6+21*c^4*x^4-7*c^2*x^2+1)/(c^2*x^2-1)*c
^7*(-c^2*x^2+1)^(1/2)+1/7*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*c^10
*x^10+35*c^8*x^8-35*c^6*x^6+21*c^4*x^4-7*c^2*x^2+1)/x^7/(c^2*x^2-1)*arcsin(
c*x)+1/7*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*ln((I*c*x+
(-c^2*x^2+1)^(1/2))^2-1)*d^2*c^7-1/7*a/d/x^7*(-c^2*d*x^2+d)^(7/2)-1/42*I*b*
(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*c^10*x^10+35*c^8*x^8-35*c^6*x^6+
21*c^4*x^4-7*c^2*x^2+1)*x/(c^2*x^2-1)*c^8-2*I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^
2*x^2+1)^(1/2)*arcsin(c*x)*d^2*c^7/(7*c^2*x^2-7)-3/14*I*b*(-d*(c^2*x^2-1))^
(1/2)*d^2/(7*c^12*x^12-21*c^10*x^10+35*c^8*x^8-35*c^6*x^6+21*c^4*x^4-7*c^2*
x^2+1)*x^13/(c^2*x^2-1)*c^20+3/2*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-
21*c^10*x^10+35*c^8*x^8-35*c^6*x^6+21*c^4*x^4-7*c^2*x^2+1)*x^10/(c^2*x^2-1)
*(-c^2*x^2+1)^(1/2)*c^17-21/4*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*
c^10*x^10+35*c^8*x^8-35*c^6*x^6+21*c^4*x^4-7*c^2*x^2+1)*x^8/(c^2*x^2-1)*(-c
^2*x^2+1)^(1/2)*c^15-23/84*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*c^1
0*x^10+35*c^8*x^8-35*c^6*x^6+21*c^4*x^4-7*c^2*x^2+1)/x^4/(c^2*x^2-1)*c^3*(-
c^2*x^2+1)^(1/2)-11/7*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*c^10*x^1
0+35*c^8*x^8-35*c^6*x^6+21*c^4*x^4-7*c^2*x^2+1)/x^5/(c^2*x^2-1)*arcsin(c*x)
*c^2+1/42*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*c^10*x^10+35*c^8*x^8
-35*c^6*x^6+21*c^4*x^4-7*c^2*x^2+1)/x^6/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c+41
/28*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*c^10*x^10+35*c^8*x^8-35*c^
6*x^6+21*c^4*x^4-7*c^2*x^2+1)/x^2/(c^2*x^2-1)*c^5*(-c^2*x^2+1)^(1/2)+55/7*b
*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*c^10*x^10+35*c^8*x^8-35*c^6*x^6
+21*c^4*x^4-7*c^2*x^2+1)/x^3/(c^2*x^2-1)*arcsin(c*x)*c^4-165/7*b*(-d*(c^2*x
^2-1))^(1/2)*d^2/(7*c^12*x^12-21*c^10*x^10+35*c^8*x^8-35*c^6*x^6+21*c^4*x^4
-7*c^2*x^2+1)/x/(c^2*x^2-1)*arcsin(c*x)*c^6+27/28*I*b*(-d*(c^2*x^2-1))^(1/2
)*d^2/(7*c^12*x^12-21*c^10*x^10+35*c^8*x^8-35*c^6*x^6+21*c^4*x^4-7*c^2*x^2+
1)*x^11/(c^2*x^2-1)*c^18-73/42*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-
21*c^10*x^10+35*c^8*x^8-35*c^6*x^6+21*c^4*x^4-7*c^2*x^2+1)*x^9/(c^2*x^2-1)*
c^16+67/42*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*c^10*x^10+35*c^8*
x^8-35*c^6*x^6+21*c^4*x^4-7*c^2*x^2+1)*x^7/(c^2*x^2-1)*c^14-11/14*I*b*(-d*(
c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*c^10*x^10+35*c^8*x^8-35*c^6*x^6+21*c^
```

```
4*x^4-7*c^2*x^2+1)*x^5/(c^2*x^2-1)*c^12+17/84*I*b*(-d*(c^2*x^2-1))^(1/2)*d^
2/(7*c^12*x^12-21*c^10*x^10+35*c^8*x^8-35*c^6*x^6+21*c^4*x^4-7*c^2*x^2+1)*x
^3/(c^2*x^2-1)*c^10+b*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*c^10*x^10+
35*c^8*x^8-35*c^6*x^6+21*c^4*x^4-7*c^2*x^2+1)*x^13/(c^2*x^2-1)*arcsin(c*x)*
c^20-7*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*c^10*x^10+35*c^8*x^8-35
*c^6*x^6+21*c^4*x^4-7*c^2*x^2+1)*x^11/(c^2*x^2-1)*arcsin(c*x)*c^18+23*b*(-d
*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*c^10*x^10+35*c^8*x^8-35*c^6*x^6+21*
c^4*x^4-7*c^2*x^2+1)*x^9/(c^2*x^2-1)*arcsin(c*x)*c^16-47*b*(-d*(c^2*x^2-1))
^(1/2)*d^2/(7*c^12*x^12-21*c^10*x^10+35*c^8*x^8-35*c^6*x^6+21*c^4*x^4-7*c^2
*x^2+1)*x^7/(c^2*x^2-1)*arcsin(c*x)*c^14+119/12*b*(-d*(c^2*x^2-1))^(1/2)*d^
2/(7*c^12*x^12-21*c^10*x^10+35*c^8*x^8-35*c^6*x^6+21*c^4*x^4-7*c^2*x^2+1)*x
^6/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c^13+66*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c
^12*x^12-21*c^10*x^10+35*c^8*x^8-35*c^6*x^6+21*c^4*x^4-7*c^2*x^2+1)*x^5/(c^
2*x^2-1)*arcsin(c*x)*c^12-47/4*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21
*c^10*x^10+35*c^8*x^8-35*c^6*x^6+21*c^4*x^4-7*c^2*x^2+1)*x^4/(c^2*x^2-1)*(-
c^2*x^2+1)^(1/2)*c^11-66*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*c^10*
x^10+35*c^8*x^8-35*c^6*x^6+21*c^4*x^4-7*c^2*x^2+1)*x^3/(c^2*x^2-1)*arcsin(c
*x)*c^10+109/12*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*c^10*x^10+35*c
^8*x^8-35*c^6*x^6+21*c^4*x^4-7*c^2*x^2+1)*x^2/(c^2*x^2-1)*c^9*(-c^2*x^2+1)^
(1/2)+330/7*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*c^10*x^10+35*c^8*x
^8-35*c^6*x^6+21*c^4*x^4-7*c^2*x^2+1)*x/(c^2*x^2-1)*arcsin(c*x)*c^8+I*b*(-d
*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*c^10*x^10+35*c^8*x^8-35*c^6*x^6+21*
c^4*x^4-7*c^2*x^2+1)*x^12/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^19-3
*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*c^10*x^10+35*c^8*x^8-35*c^6
*x^6+21*c^4*x^4-7*c^2*x^2+1)*x^10/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x
)*c^17+5*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*c^10*x^10+35*c^8*x^
8-35*c^6*x^6+21*c^4*x^4-7*c^2*x^2+1)*x^8/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arc
sin(c*x)*c^15-5*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*c^10*x^10+35
*c^8*x^8-35*c^6*x^6+21*c^4*x^4-7*c^2*x^2+1)*x^6/(c^2*x^2-1)*(-c^2*x^2+1)^(1
/2)*arcsin(c*x)*c^13+3*I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*c^10*
x^10+35*c^8*x^8-35*c^6*x^6+21*c^4*x^4-7*c^2*x^2+1)*x^4/(c^2*x^2-1)*(-c^2*x^
2+1)^(1/2)*arcsin(c*x)*c^11-I*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(7*c^12*x^12-21*
c^10*x^10+35*c^8*x^8-35*c^6*x^6+21*c^4*x^4-7*c^2*x^2+1)*x^2/(c^2*x^2-1)*(-c
^2*x^2+1)^(1/2)*arcsin(c*x)*c^9
```

maxima [A] time = 0.46, size = 205, normalized size = 1.01

$$\frac{\left(6\,(-1)^{-2\,c^2dx^2+2\,d}\,c^6d^{\frac{7}{2}}\log\left(-2\,c^2d+\frac{2\,d}{x^2}\right)+6\,c^6d^{\frac{7}{2}}\log\left(x^2-\frac{1}{c^2}\right)-\frac{11\,\sqrt{c^4dx^4-2\,c^2dx^2+d}\,c^4d^3}{x^2}+\frac{7\,\sqrt{c^4dx^4-2\,c^2dx^2+d}\,c^2d^3}{x^4}-2}{84\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^8,x, algorithm="maxima")
```

```
[Out] 1/84*(6*(-1)^(-2*c^2*d*x^2 + 2*d)*c^6*d^(7/2)*log(-2*c^2*d + 2*d/x^2) + 6*c
^6*d^(7/2)*log(x^2 - 1/c^2) - 11*sqrt(c^4*d*x^4 - 2*c^2*d*x^2 + d)*c^4*d^3/
x^2 + 7*sqrt(c^4*d*x^4 - 2*c^2*d*x^2 + d)*c^2*d^3/x^4 - 2*sqrt(c^4*d*x^4 -
2*c^2*d*x^2 + d)*d^3/x^6)*b*c/d - 1/7*(-c^2*d*x^2 + d)^(7/2)*b*arcsin(c*x)/
(d*x^7) - 1/7*(-c^2*d*x^2 + d)^(7/2)*a/(d*x^7)
```

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

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))\,\left(d-c^2\,d\,x^2\right)^{5/2}}{x^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2))/x^8,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2))/x^8, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))/x**8,x)
```

```
[Out] Timed out
```

3.91 $\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{x^{10}}\,dx$

Optimal. Leaf size=282

$$-\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{9dx^9}-\frac{2c^2\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{63dx^7}-\frac{bcd^2\left(1-c^2x^2\right)^{7/2}\sqrt{d-c^2dx^2}}{72x^8}-\frac{2bc^9d^2\log}{63\sqrt{}}$$

```
[Out] -1/9*(-c^2*d*x^2+d)^(7/2)*(a+b*arcsin(c*x))/d/x^9-2/63*c^2*(-c^2*d*x^2+d)^(
7/2)*(a+b*arcsin(c*x))/d/x^7-1/72*b*c*d^2*(-c^2*x^2+1)^(7/2)*(-c^2*d*x^2+d)
^(1/2)/x^8-1/189*b*c^3*d^2*(-c^2*d*x^2+d)^(1/2)/x^6/(-c^2*x^2+1)^(1/2)+1/42
*b*c^5*d^2*(-c^2*d*x^2+d)^(1/2)/x^4/(-c^2*x^2+1)^(1/2)-1/21*b*c^7*d^2*(-c^2
*d*x^2+d)^(1/2)/x^2/(-c^2*x^2+1)^(1/2)-2/63*b*c^9*d^2*ln(x)*(-c^2*d*x^2+d)^
(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 282, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.259, Rules used = {271, 264, 4691, 12, 446, 78, 43}

$$-\frac{2c^2\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{63dx^7}-\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{9dx^9}-\frac{bc^7d^2\sqrt{d-c^2dx^2}}{21x^2\sqrt{1-c^2x^2}}+\frac{bc^5d^2\sqrt{d-c^2dx^2}}{42x^4\sqrt{1-c^2x^2}}-\frac{bc^3}{18}$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/x^10,x]
```

```
[Out] -(b*c^3*d^2*Sqrt[d - c^2*d*x^2])/(189*x^6*Sqrt[1 - c^2*x^2]) + (b*c^5*d^2*S
qrt[d - c^2*d*x^2])/(42*x^4*Sqrt[1 - c^2*x^2]) - (b*c^7*d^2*Sqrt[d - c^2*d*
x^2])/(21*x^2*Sqrt[1 - c^2*x^2]) - (b*c*d^2*(1 - c^2*x^2)^(7/2)*Sqrt[d - c^
2*d*x^2])/(72*x^8) - ((d - c^2*d*x^2)^(7/2)*(a + b*ArcSin[c*x]))/(9*d*x^9)
- (2*c^2*(d - c^2*d*x^2)^(7/2)*(a + b*ArcSin[c*x]))/(63*d*x^7) - (2*b*c^9*d
^2*Sqrt[d - c^2*d*x^2]*Log[x])/(63*Sqrt[1 - c^2*x^2])
```

Rule 12

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

Rule 43

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

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 264

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

Rule 271

```
Int[(x_)^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x^(m + 1)*(
a + b*x^n)^(p + 1))/(a*(m + 1)), x] - Dist[(b*(m + n*(p + 1) + 1))/(a*(m +
1)), Int[x^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, m, n, p}, x] && IL
tQ[Simplify[(m + 1)/n + p + 1], 0] && NeQ[m, -1]
```

Rule 446

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p
*(c + d*x)^q, x], x, x^n], x] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[
b*c - a*d, 0] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4691

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[a + b*ArcSi
n[c*x], Int[x^m*(d + e*x^2)^p, x], x] - Dist[(b*c*d^(p - 1/2)*Sqrt[d + e*x^
2])/Sqrt[1 - c^2*x^2], Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x
]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p + 1/2, 0] &&
 (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0])
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{x^{10}}\,dx = -\frac{\left(bcd^2\sqrt{d-c^2dx^2}\right)\int \frac{\left(-7-2c^2x^2\right)\left(1-c^2x^2\right)^3}{63x^9}\,dx}{\sqrt{1-c^2x^2}} + \left(a+b\sin^{-1}(cx)\right)\int \frac{(d-$$

$$= -\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{9dx^9} - \frac{\left(bcd^2\sqrt{d-c^2dx^2}\right)\int \frac{\left(-7-2c^2x^2\right)\left(1-c\right.}{x^9}}{63\sqrt{1-c^2x^2}}$$

$$= -\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{9dx^9} - \frac{2c^2\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{63dx^7}$$

$$= -\frac{bcd^2\left(1-c^2x^2\right)^{7/2}\sqrt{d-c^2dx^2}}{72x^8} - \frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{9dx^9} - \frac{2}{}$$

$$= -\frac{bcd^2\left(1-c^2x^2\right)^{7/2}\sqrt{d-c^2dx^2}}{72x^8} - \frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{9dx^9} - \frac{2}{}$$

$$= -\frac{bc^3d^2\sqrt{d-c^2dx^2}}{189x^6\sqrt{1-c^2x^2}} + \frac{bc^5d^2\sqrt{d-c^2dx^2}}{42x^4\sqrt{1-c^2x^2}} - \frac{bc^7d^2\sqrt{d-c^2dx^2}}{21x^2\sqrt{1-c^2x^2}} - \frac{bcd^2\left(1\right.}{}$$

Mathematica [A] time = 0.26, size = 184, normalized size = 0.65

$$\frac{d^2\sqrt{d-c^2dx^2}\left(840a\left(2c^2x^2+7\right)\left(c^2x^2-1\right)^4+840b\left(2c^2x^2+7\right)\left(c^2x^2-1\right)^4\sin^{-1}(cx)+bcx\sqrt{1-c^2x^2}\left(-4566c\right.\right.}{52920x^9\left(c^2x^2-1\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/x^10,x]
```

```
[Out] (d^2*Sqrt[d - c^2*d*x^2]*(840*a*(-1 + c^2*x^2)^4*(7 + 2*c^2*x^2) + b*c*x*Sq
rt[1 - c^2*x^2]*(735 - 2660*c^2*x^2 + 3150*c^4*x^4 - 420*c^6*x^6 - 4566*c^8
*x^8) + 840*b*(-1 + c^2*x^2)^4*(7 + 2*c^2*x^2)*ArcSin[c*x]))/(52920*x^9*(-1
 + c^2*x^2)) - (2*b*c^9*d^2*Sqrt[d - c^2*d*x^2]*Log[x])/(63*Sqrt[1 - c^2*x^
2])
```

fricas [A] time = 0.86, size = 747, normalized size = 2.65

$$\left[\frac{24\left(bc^{11}d^2x^{11}-bc^9d^2x^9\right)\sqrt{d}\,\log\left(\frac{c^2dx^6+c^2dx^2-dx^4+\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+1}\left(x^4-1\right)\sqrt{d}-d}{c^2x^4-x^2}\right)-\left(12\,bc^7d^2x^7-90\,bc^5d^2x^5-\left(12\,b\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^10,x, algorithm="fricas"
)
```

```
[Out] [1/1512*(24*(b*c^11*d^2*x^11 - b*c^9*d^2*x^9)*sqrt(d)*log((c^2*d*x^6 + c^2*
d*x^2 - d*x^4 + sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*(x^4 - 1)*sqrt(d) -
 d)/(c^2*x^4 - x^2)) - (12*b*c^7*d^2*x^7 - 90*b*c^5*d^2*x^5 - (12*b*c^7 - 9
0*b*c^5 + 76*b*c^3 - 21*b*c)*d^2*x^9 + 76*b*c^3*d^2*x^3 - 21*b*c*d^2*x)*sqr
t(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1) + 24*(2*a*c^10*d^2*x^10 - a*c^8*d^2*x^
8 - 16*a*c^6*d^2*x^6 + 34*a*c^4*d^2*x^4 - 26*a*c^2*d^2*x^2 + 7*a*d^2 + (2*b
*c^10*d^2*x^10 - b*c^8*d^2*x^8 - 16*b*c^6*d^2*x^6 + 34*b*c^4*d^2*x^4 - 26*b
*c^2*d^2*x^2 + 7*b*d^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d))/(c^2*x^11 - x^9)
, -1/1512*(48*(b*c^11*d^2*x^11 - b*c^9*d^2*x^9)*sqrt(-d)*arctan(sqrt(-c^2*d
*x^2 + d)*sqrt(-c^2*x^2 + 1)*(x^2 + 1)*sqrt(-d)/(c^2*d*x^4 - (c^2 + 1)*d*x^
2 + d)) + (12*b*c^7*d^2*x^7 - 90*b*c^5*d^2*x^5 - (12*b*c^7 - 90*b*c^5 + 76*
b*c^3 - 21*b*c)*d^2*x^9 + 76*b*c^3*d^2*x^3 - 21*b*c*d^2*x)*sqrt(-c^2*d*x^2
+ d)*sqrt(-c^2*x^2 + 1) - 24*(2*a*c^10*d^2*x^10 - a*c^8*d^2*x^8 - 16*a*c^6*
d^2*x^6 + 34*a*c^4*d^2*x^4 - 26*a*c^2*d^2*x^2 + 7*a*d^2 + (2*b*c^10*d^2*x^1
0 - b*c^8*d^2*x^8 - 16*b*c^6*d^2*x^6 + 34*b*c^4*d^2*x^4 - 26*b*c^2*d^2*x^2
+ 7*b*d^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d))/(c^2*x^11 - x^9)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^10,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.73, size = 5323, normalized size = 18.88

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^10,x)
```

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

maxima [A] time = 0.54, size = 162, normalized size = 0.57

$$-\frac{1}{1512}\left(48\,c^8d^{\frac{5}{2}}\log(x)-\frac{12\,c^6d^{\frac{5}{2}}x^6-90\,c^4d^{\frac{5}{2}}x^4+76\,c^2d^{\frac{5}{2}}x^2-21\,d^{\frac{5}{2}}}{x^8}\right)bc-\frac{1}{63}\,b\left(\frac{2\left(-c^2dx^2+d\right)^{\frac{7}{2}}c^2}{dx^7}+\frac{7\left(-c^2dx^2+\right.}{dx^9}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^10,x, algorithm="maxima"
)
```

```
[Out] -1/1512*(48*c^8*d^(5/2)*log(x) - (12*c^6*d^(5/2)*x^6 - 90*c^4*d^(5/2)*x^4 +
 76*c^2*d^(5/2)*x^2 - 21*d^(5/2))/x^8)*b*c - 1/63*b*(2*(-c^2*d*x^2 + d)^(7/
2)*c^2/(d*x^7) + 7*(-c^2*d*x^2 + d)^(7/2)/(d*x^9))*arcsin(c*x) - 1/63*a*(2*
(-c^2*d*x^2 + d)^(7/2)*c^2/(d*x^7) + 7*(-c^2*d*x^2 + d)^(7/2)/(d*x^9))
```

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

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))\,\left(d-c^2\,d\,x^2\right)^{5/2}}{x^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2))/x^10,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2))/x^10, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))/x**10,x)
```

```
[Out] Timed out
```

3.92 $\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{x^{12}}\,dx$

Optimal. Leaf size=361

$$-\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{11dx^{11}}-\frac{4c^2\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{99dx^9}-\frac{8c^4\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{693dx^7}-\frac{bcd^2}{110x}$$

```
[Out] -1/11*(-c^2*d*x^2+d)^(7/2)*(a+b*arcsin(c*x))/d/x^11-4/99*c^2*(-c^2*d*x^2+d)
^(7/2)*(a+b*arcsin(c*x))/d/x^9-8/693*c^4*(-c^2*d*x^2+d)^(7/2)*(a+b*arcsin(c
*x))/d/x^7-1/110*b*c*d^2*(-c^2*d*x^2+d)^(1/2)/x^10/(-c^2*x^2+1)^(1/2)+23/79
2*b*c^3*d^2*(-c^2*d*x^2+d)^(1/2)/x^8/(-c^2*x^2+1)^(1/2)-113/4158*b*c^5*d^2*
(-c^2*d*x^2+d)^(1/2)/x^6/(-c^2*x^2+1)^(1/2)+1/924*b*c^7*d^2*(-c^2*d*x^2+d)^
(1/2)/x^4/(-c^2*x^2+1)^(1/2)+2/693*b*c^9*d^2*(-c^2*d*x^2+d)^(1/2)/x^2/(-c^2
*x^2+1)^(1/2)-8/693*b*c^11*d^2*ln(x)*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2
)
```

Rubi [A] time = 0.22, antiderivative size = 361, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {271, 264, 4691, 12, 1251, 893}

$$-\frac{8c^4\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{693dx^7}-\frac{4c^2\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{99dx^9}-\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{11dx^{11}}+\frac{2bc^9}{693}$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/x^12,x]
```

```
[Out] -(b*c*d^2*Sqrt[d - c^2*d*x^2])/(110*x^10*Sqrt[1 - c^2*x^2]) + (23*b*c^3*d^2
*Sqrt[d - c^2*d*x^2])/(792*x^8*Sqrt[1 - c^2*x^2]) - (113*b*c^5*d^2*Sqrt[d -
 c^2*d*x^2])/(4158*x^6*Sqrt[1 - c^2*x^2]) + (b*c^7*d^2*Sqrt[d - c^2*d*x^2])
/(924*x^4*Sqrt[1 - c^2*x^2]) + (2*b*c^9*d^2*Sqrt[d - c^2*d*x^2])/(693*x^2*S
qrt[1 - c^2*x^2]) - ((d - c^2*d*x^2)^(7/2)*(a + b*ArcSin[c*x]))/(11*d*x^11)
 - (4*c^2*(d - c^2*d*x^2)^(7/2)*(a + b*ArcSin[c*x]))/(99*d*x^9) - (8*c^4*(d
 - c^2*d*x^2)^(7/2)*(a + b*ArcSin[c*x]))/(693*d*x^7) - (8*b*c^11*d^2*Sqrt[d
 - c^2*d*x^2]*Log[x])/(693*Sqrt[1 - c^2*x^2])
```

Rule 12

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

Rule 264

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

Rule 271

```
Int[(x_)^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x^(m + 1)*(
a + b*x^n)^(p + 1))/(a*(m + 1)), x] - Dist[(b*(m + n*(p + 1) + 1))/(a*(m +
1)), Int[x^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, m, n, p}, x] && IL
tQ[Simplify[(m + 1)/n + p + 1], 0] && NeQ[m, -1]
```

Rule 893

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_.) + (b_.)*(x_)
 + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g
```

```
*x)^n*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ
[e*f - d*g, 0] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && I
ntegerQ[p] && ((EqQ[p, 1] && IntegersQ[m, n]) || (ILtQ[m, 0] && ILtQ[n, 0])
)
```

Rule 1251

```
Int[(x_)^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_
)^4)^(p_.), x_Symbol] :> Dist[1/2, Subst[Int[x^((m - 1)/2)*(d + e*x)^q*(a +
 b*x + c*x^2)^p, x], x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x] && Inte
gerQ[(m - 1)/2]
```

Rule 4691

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[a + b*ArcSi
n[c*x], Int[x^m*(d + e*x^2)^p, x], x] - Dist[(b*c*d^(p - 1/2)*Sqrt[d + e*x^
2])/Sqrt[1 - c^2*x^2], Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x
]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p + 1/2, 0] &&
 (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0])
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{x^{12}}\,dx = -\frac{\left(bcd^2\sqrt{d-c^2dx^2}\right)\int \frac{\left(1-c^2x^2\right)^3\left(-63-28c^2x^2-8c^4x^4\right)}{693x^{11}}\,dx}{\sqrt{1-c^2x^2}} + \left(a+b\sin^{-1}(cx)\right)$$

$$= -\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{11dx^{11}} - \frac{\left(bcd^2\sqrt{d-c^2dx^2}\right)\int \frac{\left(1-c^2x^2\right)^3\left(-63-\right.}{x^{1}}}{693\sqrt{1-c^2x^2}}$$

$$= -\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{11dx^{11}} - \frac{4c^2\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{99dx^9}$$

$$= -\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{11dx^{11}} - \frac{4c^2\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{99dx^9}$$

$$= -\frac{bcd^2\sqrt{d-c^2dx^2}}{110x^{10}\sqrt{1-c^2x^2}} + \frac{23bc^3d^2\sqrt{d-c^2dx^2}}{792x^8\sqrt{1-c^2x^2}} - \frac{113bc^5d^2\sqrt{d-c^2dx^2}}{4158x^6\sqrt{1-c^2x^2}} + \frac{b}{9}$$

Mathematica [A] time = 0.30, size = 209, normalized size = 0.58

$$\frac{d^2\sqrt{d-c^2dx^2}\left(2520a\left(8c^4x^4+28c^2x^2+63\right)\left(c^2x^2-1\right)^4+2520b\left(8c^4x^4+28c^2x^2+63\right)\left(c^2x^2-1\right)^4\sin^{-1}(cx)\right.}{1746360x^{11}\left(c^2x^2-1\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/x^12,x]
```

```
[Out] (d^2*Sqrt[d - c^2*d*x^2]*(2520*a*(-1 + c^2*x^2)^4*(63 + 28*c^2*x^2 + 8*c^4*
x^4) - b*c*x*Sqrt[1 - c^2*x^2]*(-15876 + 50715*c^2*x^2 - 47460*c^4*x^4 + 18
90*c^6*x^6 + 5040*c^8*x^8 + 59048*c^10*x^10) + 2520*b*(-1 + c^2*x^2)^4*(63
+ 28*c^2*x^2 + 8*c^4*x^4)*ArcSin[c*x]))/(1746360*x^11*(-1 + c^2*x^2)) - (8*
b*c^11*d^2*Sqrt[d - c^2*d*x^2]*Log[x])/(693*Sqrt[1 - c^2*x^2])
```

fricas [A] time = 0.96, size = 831, normalized size = 2.30

$$\left[\frac{480\left(bc^{13}d^{2}x^{13}-bc^{11}d^{2}x^{11}\right)\sqrt{d}\log\left(\frac{c^{2}dx^{6}+c^{2}dx^{2}-dx^{4}+\sqrt{-c^{2}dx^{2}+d}\sqrt{-c^{2}x^{2}+1}\left(x^{4}-1\right)\sqrt{d}-d}{c^{2}x^{4}-x^{2}}\right)-\left(240\,bc^{9}d^{2}x^{9}+90\,bc^{7}d^{2}x^{7}-\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^12,x, algorithm="fricas"
)
```

```
[Out] [1/83160*(480*(b*c^13*d^2*x^13 - b*c^11*d^2*x^11)*sqrt(d)*log((c^2*d*x^6 +
c^2*d*x^2 - d*x^4 + sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*(x^4 - 1)*sqrt(
d) - d)/(c^2*x^4 - x^2)) - (240*b*c^9*d^2*x^9 + 90*b*c^7*d^2*x^7 - (240*b*c
^9 + 90*b*c^7 - 2260*b*c^5 + 2415*b*c^3 - 756*b*c)*d^2*x^11 - 2260*b*c^5*d^
2*x^5 + 2415*b*c^3*d^2*x^3 - 756*b*c*d^2*x)*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*
x^2 + 1) + 120*(8*a*c^12*d^2*x^12 - 4*a*c^10*d^2*x^10 - a*c^8*d^2*x^8 - 116
*a*c^6*d^2*x^6 + 274*a*c^4*d^2*x^4 - 224*a*c^2*d^2*x^2 + 63*a*d^2 + (8*b*c^
12*d^2*x^12 - 4*b*c^10*d^2*x^10 - b*c^8*d^2*x^8 - 116*b*c^6*d^2*x^6 + 274*b
*c^4*d^2*x^4 - 224*b*c^2*d^2*x^2 + 63*b*d^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 +
 d))/(c^2*x^13 - x^11), -1/83160*(960*(b*c^13*d^2*x^13 - b*c^11*d^2*x^11)*s
qrt(-d)*arctan(sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*(x^2 + 1)*sqrt(-d)/(
c^2*d*x^4 - (c^2 + 1)*d*x^2 + d)) + (240*b*c^9*d^2*x^9 + 90*b*c^7*d^2*x^7 -
 (240*b*c^9 + 90*b*c^7 - 2260*b*c^5 + 2415*b*c^3 - 756*b*c)*d^2*x^11 - 2260
*b*c^5*d^2*x^5 + 2415*b*c^3*d^2*x^3 - 756*b*c*d^2*x)*sqrt(-c^2*d*x^2 + d)*s
qrt(-c^2*x^2 + 1) - 120*(8*a*c^12*d^2*x^12 - 4*a*c^10*d^2*x^10 - a*c^8*d^2*
x^8 - 116*a*c^6*d^2*x^6 + 274*a*c^4*d^2*x^4 - 224*a*c^2*d^2*x^2 + 63*a*d^2
+ (8*b*c^12*d^2*x^12 - 4*b*c^10*d^2*x^10 - b*c^8*d^2*x^8 - 116*b*c^6*d^2*x^
6 + 274*b*c^4*d^2*x^4 - 224*b*c^2*d^2*x^2 + 63*b*d^2)*arcsin(c*x))*sqrt(-c^
2*d*x^2 + d))/(c^2*x^13 - x^11)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^12,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.93, size = 6758, normalized size = 18.72

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^12,x)
```

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

maxima [A] time = 0.80, size = 221, normalized size = 0.61

$$-\frac{1}{83160}\left(960\,c^{10}d^{\frac{5}{2}}\log(x)-\frac{240\,c^{8}d^{\frac{5}{2}}x^{8}+90\,c^{6}d^{\frac{5}{2}}x^{6}-2260\,c^{4}d^{\frac{5}{2}}x^{4}+2415\,c^{2}d^{\frac{5}{2}}x^{2}-756\,d^{\frac{5}{2}}}{x^{10}}\right)bc-\frac{1}{693}\,b\left(\frac{8\left(-c^{2}dx^{2}\right.}{dx}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^12,x, algorithm="maxima"
)
```

```
[Out] -1/83160*(960*c^10*d^(5/2)*log(x) - (240*c^8*d^(5/2)*x^8 + 90*c^6*d^(5/2)*x
^6 - 2260*c^4*d^(5/2)*x^4 + 2415*c^2*d^(5/2)*x^2 - 756*d^(5/2))/x^10)*b*c -
 1/693*b*(8*(-c^2*d*x^2 + d)^(7/2)*c^4/(d*x^7) + 28*(-c^2*d*x^2 + d)^(7/2)*
c^2/(d*x^9) + 63*(-c^2*d*x^2 + d)^(7/2)/(d*x^11))*arcsin(c*x) - 1/693*a*(8*
(-c^2*d*x^2 + d)^(7/2)*c^4/(d*x^7) + 28*(-c^2*d*x^2 + d)^(7/2)*c^2/(d*x^9)
+ 63*(-c^2*d*x^2 + d)^(7/2)/(d*x^11))
```

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

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))\,\left(d-c^2\,d\,x^2\right)^{5/2}}{x^{12}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2))/x^12,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2))/x^12, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))/x**12,x)
```

```
[Out] Timed out
```

3.93 $\int x^5 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right) \, dx$

Optimal. Leaf size=354

$$-\frac{\left(d-c^2dx^2\right)^{11/2}\left(a+b\sin^{-1}(cx)\right)}{11c^6d^3}+\frac{2\left(d-c^2dx^2\right)^{9/2}\left(a+b\sin^{-1}(cx)\right)}{9c^6d^2}-\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{7c^6d}-\frac{113bcd^2x}{4851}$$

```
[Out] -1/7*(-c^2*d*x^2+d)^(7/2)*(a+b*arcsin(c*x))/c^6/d+2/9*(-c^2*d*x^2+d)^(9/2)*
(a+b*arcsin(c*x))/c^6/d^2-1/11*(-c^2*d*x^2+d)^(11/2)*(a+b*arcsin(c*x))/c^6/
d^3+8/693*b*d^2*x*(-c^2*d*x^2+d)^(1/2)/c^5/(-c^2*x^2+1)^(1/2)+4/2079*b*d^2*
x^3*(-c^2*d*x^2+d)^(1/2)/c^3/(-c^2*x^2+1)^(1/2)+1/1155*b*d^2*x^5*(-c^2*d*x^
2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-113/4851*b*c*d^2*x^7*(-c^2*d*x^2+d)^(1/2)/(
-c^2*x^2+1)^(1/2)+23/891*b*c^3*d^2*x^9*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1
/2)-1/121*b*c^5*d^2*x^11*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.25, antiderivative size = 354, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {266, 43, 4691, 12, 1153}

$$-\frac{\left(d-c^2dx^2\right)^{11/2}\left(a+b\sin^{-1}(cx)\right)}{11c^6d^3}+\frac{2\left(d-c^2dx^2\right)^{9/2}\left(a+b\sin^{-1}(cx)\right)}{9c^6d^2}-\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{7c^6d}-\frac{bc^5d^2x^{11}}{121\sqrt{1}}$$

Antiderivative was successfully verified.

```
[In] Int[x^5*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (8*b*d^2*x*Sqrt[d - c^2*d*x^2])/(693*c^5*Sqrt[1 - c^2*x^2]) + (4*b*d^2*x^3*
Sqrt[d - c^2*d*x^2])/(2079*c^3*Sqrt[1 - c^2*x^2]) + (b*d^2*x^5*Sqrt[d - c^2
*d*x^2])/(1155*c*Sqrt[1 - c^2*x^2]) - (113*b*c*d^2*x^7*Sqrt[d - c^2*d*x^2])
/(4851*Sqrt[1 - c^2*x^2]) + (23*b*c^3*d^2*x^9*Sqrt[d - c^2*d*x^2])/(891*Sqr
t[1 - c^2*x^2]) - (b*c^5*d^2*x^11*Sqrt[d - c^2*d*x^2])/(121*Sqrt[1 - c^2*x^
2]) - ((d - c^2*d*x^2)^(7/2)*(a + b*ArcSin[c*x]))/(7*c^6*d) + (2*(d - c^2*d
*x^2)^(9/2)*(a + b*ArcSin[c*x]))/(9*c^6*d^2) - ((d - c^2*d*x^2)^(11/2)*(a +
 b*ArcSin[c*x]))/(11*c^6*d^3)
```

Rule 12

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

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 1153

```
Int[((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.),
 x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^q*(a + b*x^2 + c*x^4)^p, x],
x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e
```

```
 + a*e^2, 0] && IGtQ[p, 0] && IGtQ[q, -2]
```

Rule 4691

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[a + b*ArcSi
n[c*x], Int[x^m*(d + e*x^2)^p, x], x] - Dist[(b*c*d^(p - 1/2)*Sqrt[d + e*x^
2])/Sqrt[1 - c^2*x^2], Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x
]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p + 1/2, 0] &&
 (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0])
```

Rubi steps

$$\int x^5 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right)\,dx = -\frac{\left(bcd^2\sqrt{d-c^2dx^2}\right)\int \frac{\left(1-c^2x^2\right)^3\left(-8-28c^2x^2-63c^4x^4\right)}{693c^6}\,dx}{\sqrt{1-c^2x^2}} + \left(a+b\sin^{-1}(c\right.$$

$$= -\frac{\left(bd^2\sqrt{d-c^2dx^2}\right)\int \left(1-c^2x^2\right)^3\left(-8-28c^2x^2-63c^4x^4\right)\,dx}{693c^5\sqrt{1-c^2x^2}} + \frac{1}{2}\left(a\right.$$

$$= -\frac{\left(bd^2\sqrt{d-c^2dx^2}\right)\int \left(-8-4c^2x^2-3c^4x^4+113c^6x^6-161c^8x^8+6\right.}{693c^5\sqrt{1-c^2x^2}}$$

$$= \frac{8bd^2x\sqrt{d-c^2dx^2}}{693c^5\sqrt{1-c^2x^2}} + \frac{4bd^2x^3\sqrt{d-c^2dx^2}}{2079c^3\sqrt{1-c^2x^2}} + \frac{bd^2x^5\sqrt{d-c^2dx^2}}{1155c\sqrt{1-c^2x^2}} - 113$$

Mathematica [A] time = 0.25, size = 160, normalized size = 0.45

$$-\frac{d^2\sqrt{d-c^2dx^2}\left(3465a\left(63c^4x^4+28c^2x^2+8\right)\left(1-c^2x^2\right)^{7/2}+3465b\left(63c^4x^4+28c^2x^2+8\right)\left(1-c^2x^2\right)^{7/2}\sin^{-1}(\right.}{2401245c^6\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^5*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] -1/2401245*(d^2*Sqrt[d - c^2*d*x^2]*(3465*a*(1 - c^2*x^2)^(7/2)*(8 + 28*c^2
*x^2 + 63*c^4*x^4) + b*c*x*(-27720 - 4620*c^2*x^2 - 2079*c^4*x^4 + 55935*c^
6*x^6 - 61985*c^8*x^8 + 19845*c^10*x^10) + 3465*b*(1 - c^2*x^2)^(7/2)*(8 +
28*c^2*x^2 + 63*c^4*x^4)*ArcSin[c*x]))/(c^6*Sqrt[1 - c^2*x^2])
```

fricas [A] time = 1.22, size = 291, normalized size = 0.82

$$\left(19845\,bc^{11}d^2x^{11}-61985\,bc^9d^2x^9+55935\,bc^7d^2x^7-2079\,bc^5d^2x^5-4620\,bc^3d^2x^3-27720\,bcd^2x\right)\sqrt{-c^2dx^2+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/2401245*((19845*b*c^11*d^2*x^11 - 61985*b*c^9*d^2*x^9 + 55935*b*c^7*d^2*x
^7 - 2079*b*c^5*d^2*x^5 - 4620*b*c^3*d^2*x^3 - 27720*b*c*d^2*x)*sqrt(-c^2*d
*x^2 + d)*sqrt(-c^2*x^2 + 1) + 3465*(63*a*c^12*d^2*x^12 - 224*a*c^10*d^2*x^
10 + 274*a*c^8*d^2*x^8 - 116*a*c^6*d^2*x^6 - a*c^4*d^2*x^4 - 4*a*c^2*d^2*x^
2 + 8*a*d^2 + (63*b*c^12*d^2*x^12 - 224*b*c^10*d^2*x^10 + 274*b*c^8*d^2*x^8
 - 116*b*c^6*d^2*x^6 - b*c^4*d^2*x^4 - 4*b*c^2*d^2*x^2 + 8*b*d^2)*arcsin(c*
x))*sqrt(-c^2*d*x^2 + d))/(c^8*x^2 - c^6)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.64, size = 1644, normalized size = 4.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] a*(-1/11*x^4*(-c^2*d*x^2+d)^(7/2)/c^2/d+4/11/c^2*(-1/9*x^2*(-c^2*d*x^2+d)^(
7/2)/c^2/d-2/63/d/c^4*(-c^2*d*x^2+d)^(7/2)))+b*(1/247808*(-d*(c^2*x^2-1))^(
1/2)*(1+1024*x^12*c^12-220*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+1232*I*(-c^2*x^2+1)
^(1/2)*x^5*c^5-1024*I*(-c^2*x^2+1)^(1/2)*x^11*c^11+2816*I*(-c^2*x^2+1)^(1/2
)*x^9*c^9-3328*c^10*x^10+11*I*(-c^2*x^2+1)^(1/2)*x*c-61*c^2*x^2+620*c^4*x^4
-2352*c^6*x^6-2816*I*(-c^2*x^2+1)^(1/2)*x^7*c^7+4096*c^8*x^8)*(I+11*arcsin(
c*x))*d^2/c^6/(c^2*x^2-1)-1/165888*(-d*(c^2*x^2-1))^(1/2)*(256*c^10*x^10-70
4*c^8*x^8-256*I*(-c^2*x^2+1)^(1/2)*x^9*c^9+688*c^6*x^6+576*I*(-c^2*x^2+1)^(
1/2)*x^7*c^7-280*c^4*x^4-432*I*(-c^2*x^2+1)^(1/2)*x^5*c^5+41*c^2*x^2+120*I*
(-c^2*x^2+1)^(1/2)*x^3*c^3-9*I*(-c^2*x^2+1)^(1/2)*x*c-1)*(I+9*arcsin(c*x))*
d^2/c^6/(c^2*x^2-1)-5/100352*(-d*(c^2*x^2-1))^(1/2)*(64*c^8*x^8-144*c^6*x^6
-64*I*(-c^2*x^2+1)^(1/2)*x^7*c^7+104*c^4*x^4+112*I*(-c^2*x^2+1)^(1/2)*x^5*c
^5-25*c^2*x^2-56*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+7*I*(-c^2*x^2+1)^(1/2)*x*c+1)
*(I+7*arcsin(c*x))*d^2/c^6/(c^2*x^2-1)+5/9216*(-d*(c^2*x^2-1))^(1/2)*(4*c^4
*x^4-5*c^2*x^2-4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+3*I*(-c^2*x^2+1)^(1/2)*x*c+1)
*(I+3*arcsin(c*x))*d^2/c^6/(c^2*x^2-1)-5/1024*(-d*(c^2*x^2-1))^(1/2)*(c^2*x
^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*(I+arcsin(c*x))*d^2/c^6/(c^2*x^2-1)-5/1024*(
-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(arcsin(c*x)-I)*
d^2/c^6/(c^2*x^2-1)+5/9216*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x
^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*(-I+3*arcsin(c*x))
*d^2/c^6/(c^2*x^2-1)+1/10240*(-d*(c^2*x^2-1))^(1/2)*(16*I*(-c^2*x^2+1)^(1/2
)*x^5*c^5+16*c^6*x^6-20*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-28*c^4*x^4+5*I*(-c^2*x
^2+1)^(1/2)*x*c+13*c^2*x^2-1)*(-I+5*arcsin(c*x))*d^2/c^6/(c^2*x^2-1)-1/1658
88*(-d*(c^2*x^2-1))^(1/2)*(256*I*(-c^2*x^2+1)^(1/2)*x^9*c^9+256*c^10*x^10-5
76*I*(-c^2*x^2+1)^(1/2)*x^7*c^7-704*c^8*x^8+432*I*(-c^2*x^2+1)^(1/2)*x^5*c^
5+688*c^6*x^6-120*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-280*c^4*x^4+9*I*(-c^2*x^2+1)
^(1/2)*x*c+41*c^2*x^2-1)*(-I+9*arcsin(c*x))*d^2/c^6/(c^2*x^2-1)+1/247808*(-
d*(c^2*x^2-1))^(1/2)*(1024*I*(-c^2*x^2+1)^(1/2)*x^11*c^11+1024*x^12*c^12-28
16*I*(-c^2*x^2+1)^(1/2)*x^9*c^9-3328*c^10*x^10+2816*I*(-c^2*x^2+1)^(1/2)*x^
7*c^7+4096*c^8*x^8-1232*I*(-c^2*x^2+1)^(1/2)*x^5*c^5-2352*c^6*x^6+220*I*(-c
^2*x^2+1)^(1/2)*x^3*c^3+620*c^4*x^4-11*I*(-c^2*x^2+1)^(1/2)*x*c-61*c^2*x^2+
1)*(-I+11*arcsin(c*x))*d^2/c^6/(c^2*x^2-1)+3/125440*(-d*(c^2*x^2-1))^(1/2)*
(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(2*I+35*arcsin(c*x))*cos(6*arcsin(c*x)
)*d^2/c^6/(c^2*x^2-1)+1/250880*(-d*(c^2*x^2-1))^(1/2)*(I*c^2*x^2-c*x*(-c^2*
x^2+1)^(1/2)-I)*(37*I+35*arcsin(c*x))*sin(6*arcsin(c*x))*d^2/c^6/(c^2*x^2-1
))
```

maxima [A] time = 0.55, size = 219, normalized size = 0.62

$$-\frac{1}{693}\left(\frac{63\left(-c^2dx^2+d\right)^{\frac{7}{2}}x^4}{c^2d}+\frac{28\left(-c^2dx^2+d\right)^{\frac{7}{2}}x^2}{c^4d}+\frac{8\left(-c^2dx^2+d\right)^{\frac{7}{2}}}{c^6d}\right)b\arcsin\left(cx\right)-\frac{1}{693}\left(\frac{63\left(-c^2dx^2+d\right)^{\frac{7}{2}}x^4}{c^2d}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] -1/693*(63*(-c^2*d*x^2 + d)^(7/2)*x^4/(c^2*d) + 28*(-c^2*d*x^2 + d)^(7/2)*x
^2/(c^4*d) + 8*(-c^2*d*x^2 + d)^(7/2)/(c^6*d))*b*arcsin(c*x) - 1/693*(63*(-
c^2*d*x^2 + d)^(7/2)*x^4/(c^2*d) + 28*(-c^2*d*x^2 + d)^(7/2)*x^2/(c^4*d) +
8*(-c^2*d*x^2 + d)^(7/2)/(c^6*d))*a - 1/2401245*(19845*c^10*d^(5/2)*x^11 -
61985*c^8*d^(5/2)*x^9 + 55935*c^6*d^(5/2)*x^7 - 2079*c^4*d^(5/2)*x^5 - 4620
*c^2*d^(5/2)*x^3 - 27720*d^(5/2)*x)*b/c^5
```

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

$$\int x^5\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(d-c^2\,d\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int(x^5*(a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x)),x)
```

```
[Out] Timed out
```

3.94 $\int x^3 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=278

$$\frac{\left(d-c^2dx^2\right)^{9/2}\left(a+b\sin^{-1}(cx)\right)}{9c^4d^2}-\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{7c^4d}-\frac{bcd^2x^5\sqrt{d-c^2dx^2}}{21\sqrt{1-c^2x^2}}+\frac{bd^2x^3\sqrt{d-c^2dx^2}}{189c\sqrt{1-c^2x^2}}-\frac{bc^5d^2x}{81}$$

```
[Out] -1/7*(-c^2*d*x^2+d)^(7/2)*(a+b*arcsin(c*x))/c^4/d+1/9*(-c^2*d*x^2+d)^(9/2)*
(a+b*arcsin(c*x))/c^4/d^2+2/63*b*d^2*x*(-c^2*d*x^2+d)^(1/2)/c^3/(-c^2*x^2+1
)^(1/2)+1/189*b*d^2*x^3*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-1/21*b*c*
d^2*x^5*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+19/441*b*c^3*d^2*x^7*(-c^2*
d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-1/81*b*c^5*d^2*x^9*(-c^2*d*x^2+d)^(1/2)/(
-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.20, antiderivative size = 278, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {266, 43, 4691, 12, 373}

$$\frac{\left(d-c^2dx^2\right)^{9/2}\left(a+b\sin^{-1}(cx)\right)}{9c^4d^2}-\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{7c^4d}-\frac{bc^5d^2x^9\sqrt{d-c^2dx^2}}{81\sqrt{1-c^2x^2}}+\frac{19bc^3d^2x^7\sqrt{d-c^2dx^2}}{441\sqrt{1-c^2x^2}}-b$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (2*b*d^2*x*Sqrt[d - c^2*d*x^2])/(63*c^3*Sqrt[1 - c^2*x^2]) + (b*d^2*x^3*Sqr
t[d - c^2*d*x^2])/(189*c*Sqrt[1 - c^2*x^2]) - (b*c*d^2*x^5*Sqrt[d - c^2*d*x
^2])/(21*Sqrt[1 - c^2*x^2]) + (19*b*c^3*d^2*x^7*Sqrt[d - c^2*d*x^2])/(441*S
qrt[1 - c^2*x^2]) - (b*c^5*d^2*x^9*Sqrt[d - c^2*d*x^2])/(81*Sqrt[1 - c^2*x^
2]) - ((d - c^2*d*x^2)^(7/2)*(a + b*ArcSin[c*x]))/(7*c^4*d) + ((d - c^2*d*x
^2)^(9/2)*(a + b*ArcSin[c*x]))/(9*c^4*d^2)
```

Rule 12

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

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 373

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.), x_Symbol
] :> Int[ExpandIntegrand[(a + b*x^n)^p*(c + d*x^n)^q, x], x] /; FreeQ[{a, b
, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[p, 0] && IGtQ[q, 0]
```

Rule 4691

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[a + b*ArcSi
n[c*x], Int[x^m*(d + e*x^2)^p, x], x] - Dist[(b*c*d^(p - 1/2)*Sqrt[d + e*x^
2])/Sqrt[1 - c^2*x^2], Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x
]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p + 1/2, 0] &&
 (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0])
```

Rubi steps

$$\int x^3\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)dx=-\frac{\left(bcd^2\sqrt{d-c^2dx^2}\right)\int\frac{\left(-2-7c^2x^2\right)\left(1-c^2x^2\right)^3}{63c^4}dx}{\sqrt{1-c^2x^2}}+\left(a+b\sin^{-1}(cx)\right)\int x$$

$$=-\frac{\left(bd^2\sqrt{d-c^2dx^2}\right)\int\left(-2-7c^2x^2\right)\left(1-c^2x^2\right)^3dx}{63c^3\sqrt{1-c^2x^2}}+\frac{1}{2}\left(a+b\sin^{-1}(\right.$$

$$=-\frac{\left(bd^2\sqrt{d-c^2dx^2}\right)\int\left(-2-c^2x^2+15c^4x^4-19c^6x^6+7c^8x^8\right)dx}{63c^3\sqrt{1-c^2x^2}}+$$

$$=\frac{2bd^2x\sqrt{d-c^2dx^2}}{63c^3\sqrt{1-c^2x^2}}+\frac{bd^2x^3\sqrt{d-c^2dx^2}}{189c\sqrt{1-c^2x^2}}-\frac{bcd^2x^5\sqrt{d-c^2dx^2}}{21\sqrt{1-c^2x^2}}+\frac{19b}{}$$

Mathematica [A] time = 0.23, size = 137, normalized size = 0.49

$$\frac{d^2\sqrt{d-c^2dx^2}\left(-63a\left(7c^2x^2+2\right)\left(1-c^2x^2\right)^{7/2}-63b\left(7c^2x^2+2\right)\left(1-c^2x^2\right)^{7/2}\sin^{-1}(cx)+b\left(-49c^9x^9+171c^7x\right.\right.}{3969c^4\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d^2*Sqrt[d - c^2*d*x^2]*(-63*a*(1 - c^2*x^2)^(7/2)*(2 + 7*c^2*x^2) + b*(12
6*c*x + 21*c^3*x^3 - 189*c^5*x^5 + 171*c^7*x^7 - 49*c^9*x^9) - 63*b*(1 - c^
2*x^2)^(7/2)*(2 + 7*c^2*x^2)*ArcSin[c*x]))/(3969*c^4*Sqrt[1 - c^2*x^2])
```

fricas [A] time = 0.53, size = 255, normalized size = 0.92

$$\frac{\left(49\,bc^9d^2x^9-171\,bc^7d^2x^7+189\,bc^5d^2x^5-21\,bc^3d^2x^3-126\,bcd^2x\right)\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+1}\,+63\left(7\,ac^{10}d^2x^{10}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/3969*((49*b*c^9*d^2*x^9 - 171*b*c^7*d^2*x^7 + 189*b*c^5*d^2*x^5 - 21*b*c^
3*d^2*x^3 - 126*b*c*d^2*x)*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1) + 63*(7*
a*c^10*d^2*x^10 - 26*a*c^8*d^2*x^8 + 34*a*c^6*d^2*x^6 - 16*a*c^4*d^2*x^4 -
a*c^2*d^2*x^2 + 2*a*d^2 + (7*b*c^10*d^2*x^10 - 26*b*c^8*d^2*x^8 + 34*b*c^6*
d^2*x^6 - 16*b*c^4*d^2*x^4 - b*c^2*d^2*x^2 + 2*b*d^2)*arcsin(c*x))*sqrt(-c^
2*d*x^2 + d))/(c^6*x^2 - c^4)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.38, size = 1063, normalized size = 3.82

$$a\left(-\frac{x^2\left(-c^2d\,x^2+d\right)^{\frac{7}{2}}}{9c^2d}-\frac{2\left(-c^2d\,x^2+d\right)^{\frac{7}{2}}}{63d\,c^4}\right)+b\left(\frac{\sqrt{-d\left(c^2x^2-1\right)}\,\left(256c^{10}x^{10}-704c^8x^8-256i\sqrt{-c^2x^2+1}\,x^9c^9+6\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] a*(-1/9*x^2*(-c^2*d*x^2+d)^(7/2)/c^2/d-2/63/d/c^4*(-c^2*d*x^2+d)^(7/2))+b*(
1/41472*(-d*(c^2*x^2-1))^(1/2)*(256*c^10*x^10-704*c^8*x^8-256*I*(-c^2*x^2+1
)^(1/2)*x^9*c^9+688*c^6*x^6+576*I*(-c^2*x^2+1)^(1/2)*x^7*c^7-280*c^4*x^4-43
2*I*(-c^2*x^2+1)^(1/2)*x^5*c^5+41*c^2*x^2+120*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-
9*I*(-c^2*x^2+1)^(1/2)*x*c-1)*(I+9*arcsin(c*x))*d^2/c^4/(c^2*x^2-1)-3/25088
*(-d*(c^2*x^2-1))^(1/2)*(64*c^8*x^8-144*c^6*x^6-64*I*(-c^2*x^2+1)^(1/2)*x^7
*c^7+104*c^4*x^4+112*I*(-c^2*x^2+1)^(1/2)*x^5*c^5-25*c^2*x^2-56*I*(-c^2*x^2
+1)^(1/2)*x^3*c^3+7*I*(-c^2*x^2+1)^(1/2)*x*c+1)*(I+7*arcsin(c*x))*d^2/c^4/(
c^2*x^2-1)+1/576*(-d*(c^2*x^2-1))^(1/2)*(4*c^4*x^4-5*c^2*x^2-4*I*(-c^2*x^2+
1)^(1/2)*x^3*c^3+3*I*(-c^2*x^2+1)^(1/2)*x*c+1)*(I+3*arcsin(c*x))*d^2/c^4/(c
^2*x^2-1)-3/256*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)
*(I+arcsin(c*x))*d^2/c^4/(c^2*x^2-1)-3/256*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*
x^2+1)^(1/2)*x*c+c^2*x^2-1)*(arcsin(c*x)-I)*d^2/c^4/(c^2*x^2-1)+1/576*(-d*(
c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1
)^(1/2)*x*c-5*c^2*x^2+1)*(-I+3*arcsin(c*x))*d^2/c^4/(c^2*x^2-1)-3/25088*(-d
*(c^2*x^2-1))^(1/2)*(64*I*(-c^2*x^2+1)^(1/2)*x^7*c^7+64*c^8*x^8-112*I*(-c^2
*x^2+1)^(1/2)*x^5*c^5-144*c^6*x^6+56*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+104*c^4*x
^4-7*I*(-c^2*x^2+1)^(1/2)*x*c-25*c^2*x^2+1)*(-I+7*arcsin(c*x))*d^2/c^4/(c^2
*x^2-1)+1/41472*(-d*(c^2*x^2-1))^(1/2)*(256*I*(-c^2*x^2+1)^(1/2)*x^9*c^9+25
6*c^10*x^10-576*I*(-c^2*x^2+1)^(1/2)*x^7*c^7-704*c^8*x^8+432*I*(-c^2*x^2+1)
^(1/2)*x^5*c^5+688*c^6*x^6-120*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-280*c^4*x^4+9*I
*(-c^2*x^2+1)^(1/2)*x*c+41*c^2*x^2-1)*(-I+9*arcsin(c*x))*d^2/c^4/(c^2*x^2-1
))
```

maxima [A] time = 0.42, size = 160, normalized size = 0.58

$$-\frac{1}{63}\left(\frac{7\left(-c^2dx^2+d\right)^{\frac{7}{2}}x^2}{c^2d}+\frac{2\left(-c^2dx^2+d\right)^{\frac{7}{2}}}{c^4d}\right)b\arcsin\left(cx\right)-\frac{1}{63}\left(\frac{7\left(-c^2dx^2+d\right)^{\frac{7}{2}}x^2}{c^2d}+\frac{2\left(-c^2dx^2+d\right)^{\frac{7}{2}}}{c^4d}\right)a-\frac{\left(49\,c^8d\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] -1/63*(7*(-c^2*d*x^2 + d)^(7/2)*x^2/(c^2*d) + 2*(-c^2*d*x^2 + d)^(7/2)/(c^4
*d))*b*arcsin(c*x) - 1/63*(7*(-c^2*d*x^2 + d)^(7/2)*x^2/(c^2*d) + 2*(-c^2*d
*x^2 + d)^(7/2)/(c^4*d))*a - 1/3969*(49*c^8*d^(5/2)*x^9 - 171*c^6*d^(5/2)*x
^7 + 189*c^4*d^(5/2)*x^5 - 21*c^2*d^(5/2)*x^3 - 126*d^(5/2)*x)*b/c^3
```

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

$$\int x^3\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(d-c^2\,d\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2),x)
[Out] int(x^3*(a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x)),x)
[Out] Timed out
```

3.95 $\int x\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=202

$$-\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{7c^2d}+\frac{bd^2x\sqrt{d-c^2dx^2}}{7c\sqrt{1-c^2x^2}}-\frac{bcd^2x^3\sqrt{d-c^2dx^2}}{7\sqrt{1-c^2x^2}}-\frac{bc^5d^2x^7\sqrt{d-c^2dx^2}}{49\sqrt{1-c^2x^2}}+\frac{3bc^3d^2x^5\sqrt{d-c^2dx^2}}{35\sqrt{1-c^2x^2}}$$

```
[Out] -1/7*(-c^2*d*x^2+d)^(7/2)*(a+b*arcsin(c*x))/c^2/d+1/7*b*d^2*x*(-c^2*d*x^2+d
)^(1/2)/c/(-c^2*x^2+1)^(1/2)-1/7*b*c*d^2*x^3*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2
+1)^(1/2)+3/35*b*c^3*d^2*x^5*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-1/49*b
*c^5*d^2*x^7*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 202, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {4677, 194}

$$-\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{7c^2d}-\frac{bc^5d^2x^7\sqrt{d-c^2dx^2}}{49\sqrt{1-c^2x^2}}+\frac{3bc^3d^2x^5\sqrt{d-c^2dx^2}}{35\sqrt{1-c^2x^2}}-\frac{bcd^2x^3\sqrt{d-c^2dx^2}}{7\sqrt{1-c^2x^2}}+\frac{bd^2x\sqrt{d-c^2dx^2}}{7c\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[x*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*d^2*x*Sqrt[d - c^2*d*x^2])/(7*c*Sqrt[1 - c^2*x^2]) - (b*c*d^2*x^3*Sqrt[d
 - c^2*d*x^2])/(7*Sqrt[1 - c^2*x^2]) + (3*b*c^3*d^2*x^5*Sqrt[d - c^2*d*x^2]
)/(35*Sqrt[1 - c^2*x^2]) - (b*c^5*d^2*x^7*Sqrt[d - c^2*d*x^2])/(49*Sqrt[1 -
 c^2*x^2]) - ((d - c^2*d*x^2)^(7/2)*(a + b*ArcSin[c*x]))/(7*c^2*d)
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int x\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)\,dx &= -\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{7c^2d}+\frac{\left(bd^2\sqrt{d-c^2dx^2}\right)\int\left(1-c^2x^2\right)^3\,dx}{7c\sqrt{1-c^2x^2}}\\ &= -\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{7c^2d}+\frac{\left(bd^2\sqrt{d-c^2dx^2}\right)\int\left(1-3c^2x^2+3c\right.}{7c\sqrt{1-c^2x^2}}\\ &= \frac{bd^2x\sqrt{d-c^2dx^2}}{7c\sqrt{1-c^2x^2}}-\frac{bcd^2x^3\sqrt{d-c^2dx^2}}{7\sqrt{1-c^2x^2}}+\frac{3bc^3d^2x^5\sqrt{d-c^2dx^2}}{35\sqrt{1-c^2x^2}}-\frac{bc^5d^2}{49}\end{aligned}$$

Mathematica [A] time = 0.09, size = 93, normalized size = 0.46

$$\frac{d^2\sqrt{d-c^2dx^2}\left(\left(c^2x^2-1\right)^3\left(a+b\sin^{-1}(cx)\right)+\frac{bc\left(-\frac{1}{7}c^6x^7+\frac{3c^4x^5}{5}-c^2x^3+x\right)}{\sqrt{1-c^2x^2}}\right)}{7c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d^2*Sqrt[d - c^2*d*x^2]*((b*c*(x - c^2*x^3 + (3*c^4*x^5)/5 - (c^6*x^7)/7))
/Sqrt[1 - c^2*x^2] + (-1 + c^2*x^2)^3*(a + b*ArcSin[c*x])))/(7*c^2)
```

fricas [A] time = 0.71, size = 215, normalized size = 1.06

$$\frac{\left(5\,bc^7d^2x^7-21\,bc^5d^2x^5+35\,bc^3d^2x^3-35\,bcd^2x\right)\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+1}\,+35\left(ac^8d^2x^8-4\,ac^6d^2x^6+6\,ac^4d\right.}{245\left(c^4x^2-\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/245*((5*b*c^7*d^2*x^7 - 21*b*c^5*d^2*x^5 + 35*b*c^3*d^2*x^3 - 35*b*c*d^2*
x)*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1) + 35*(a*c^8*d^2*x^8 - 4*a*c^6*d^
2*x^6 + 6*a*c^4*d^2*x^4 - 4*a*c^2*d^2*x^2 + a*d^2 + (b*c^8*d^2*x^8 - 4*b*c^
6*d^2*x^6 + 6*b*c^4*d^2*x^4 - 4*b*c^2*d^2*x^2 + b*d^2)*arcsin(c*x))*sqrt(-c
^2*d*x^2 + d))/(c^4*x^2 - c^2)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.23, size = 717, normalized size = 3.55

$$-\frac{a\left(-c^2d\,x^2+d\right)^{\frac{7}{2}}}{7c^2d}+b\left(\frac{\sqrt{-d\left(c^2x^2-1\right)}\,\left(64c^8x^8-144c^6x^6-64i\sqrt{-c^2x^2+1}\,x^7c^7+104c^4x^4+112i\sqrt{-c^2x^2+1}\right.}{6272c^2\left(c^2x\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] -1/7*a/c^2/d*(-c^2*d*x^2+d)^(7/2)+b*(1/6272*(-d*(c^2*x^2-1))^(1/2)*(64*c^8*
x^8-144*c^6*x^6-64*I*(-c^2*x^2+1)^(1/2)*x^7*c^7+104*c^4*x^4+112*I*(-c^2*x^2
+1)^(1/2)*x^5*c^5-25*c^2*x^2-56*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+7*I*(-c^2*x^2+
1)^(1/2)*x*c+1)*(I+7*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)-5/128*(-d*(c^2*x^2-1)
)^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*(I+arcsin(c*x))*d^2/c^2/(c^2*x
^2-1)-5/128*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(ar
csin(c*x)-I)*d^2/c^2/(c^2*x^2-1)+1/128*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^
2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*(-I+3*
arcsin(c*x))*d^2/c^2/(c^2*x^2-1)-1/7840*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2
+1)^(1/2)*x*c+c^2*x^2-1)*(11*I+70*arcsin(c*x))*cos(6*arcsin(c*x))*d^2/c^2/(
```

```
c^2*x^2-1)-3/15680*(-d*(c^2*x^2-1))^(1/2)*(I*c^2*x^2-c*x*(-c^2*x^2+1)^(1/2)
-I)*(9*I+35*arcsin(c*x))*sin(6*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)-1/160*(-d*(
c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(I+5*arcsin(c*x))*co
s(4*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)-1/320*(-d*(c^2*x^2-1))^(1/2)*(I*c^2*x^
2-c*x*(-c^2*x^2+1)^(1/2)-I)*(3*I+5*arcsin(c*x))*sin(4*arcsin(c*x))*d^2/c^2/
(c^2*x^2-1))
```

maxima [A] time = 0.50, size = 98, normalized size = 0.49

$$-\frac{\left(-c^2dx^2+d\right)^{\frac{7}{2}}b\arcsin\left(cx\right)}{7\,c^2d}-\frac{\left(-c^2dx^2+d\right)^{\frac{7}{2}}a}{7\,c^2d}-\frac{\left(5\,c^6d^{\frac{7}{2}}x^7-21\,c^4d^{\frac{7}{2}}x^5+35\,c^2d^{\frac{7}{2}}x^3-35\,d^{\frac{7}{2}}x\right)b}{245\,cd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] -1/7*(-c^2*d*x^2 + d)^(7/2)*b*arcsin(c*x)/(c^2*d) - 1/7*(-c^2*d*x^2 + d)^(7
/2)*a/(c^2*d) - 1/245*(5*c^6*d^(7/2)*x^7 - 21*c^4*d^(7/2)*x^5 + 35*c^2*d^(7
/2)*x^3 - 35*d^(7/2)*x)*b/(c*d)
```

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

$$\int x\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(d-c^2\,d\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int(x*(a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x)),x)
```

```
[Out] Timed out
```

3.96 $\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{x}\,dx$

Optimal. Leaf size=361

$$d^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)-\frac{2d^2\sqrt{d-c^2dx^2}\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}+\frac{1}{5}\left(d-c^2dx^2\right)^{5/2}\left(a+b\,\mathrm{s}\right.$$

```
[Out] 1/3*d*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))+1/5*(-c^2*d*x^2+d)^(5/2)*(a+b*
arcsin(c*x))+d^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)-23/15*b*c*d^2*x*(-c
^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+11/45*b*c^3*d^2*x^3*(-c^2*d*x^2+d)^(1/
2)/(-c^2*x^2+1)^(1/2)-1/25*b*c^5*d^2*x^5*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^
(1/2)-2*d^2*(a+b*arcsin(c*x))*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2
+d)^(1/2)/(-c^2*x^2+1)^(1/2)+I*b*d^2*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))*(
-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-I*b*d^2*polylog(2,I*c*x+(-c^2*x^2+1)
^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.46, antiderivative size = 361, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 8, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.296, Rules used = {4699, 4697, 4709, 4183, 2279, 2391, 8, 194}

$$\frac{ibd^2\sqrt{d-c^2dx^2}\,\mathrm{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)}{\sqrt{1-c^2x^2}}-\frac{ibd^2\sqrt{d-c^2dx^2}\,\mathrm{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)}{\sqrt{1-c^2x^2}}+d^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(\right.$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/x,x]
```

```
[Out] (-23*b*c*d^2*x*Sqrt[d - c^2*d*x^2])/(15*Sqrt[1 - c^2*x^2]) + (11*b*c^3*d^2*
x^3*Sqrt[d - c^2*d*x^2])/(45*Sqrt[1 - c^2*x^2]) - (b*c^5*d^2*x^5*Sqrt[d - c
^2*d*x^2])/(25*Sqrt[1 - c^2*x^2]) + d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c
*x]) + (d*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/3 + ((d - c^2*d*x^2)^(
5/2)*(a + b*ArcSin[c*x]))/5 - (2*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]
)*ArcTanh[E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] + (I*b*d^2*Sqrt[d - c^2*d*x
^2]*PolyLog[2, -E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] - (I*b*d^2*Sqrt[d - c
^2*d*x^2]*PolyLog[2, E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{x}\,dx = \frac{1}{5}\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)+d\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx\right.}{x}$$

$$= \frac{1}{3}d\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{5}\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right.$$

$$= -\frac{8bcd^2x\sqrt{d-c^2dx^2}}{15\sqrt{1-c^2x^2}}+\frac{11bc^3d^2x^3\sqrt{d-c^2dx^2}}{45\sqrt{1-c^2x^2}}-\frac{bc^5d^2x^5\sqrt{d-c^2dx^2}}{25\sqrt{1-c^2x^2}}-$$

$$= -\frac{23bcd^2x\sqrt{d-c^2dx^2}}{15\sqrt{1-c^2x^2}}+\frac{11bc^3d^2x^3\sqrt{d-c^2dx^2}}{45\sqrt{1-c^2x^2}}-\frac{bc^5d^2x^5\sqrt{d-c^2dx^2}}{25\sqrt{1-c^2x^2}}$$

$$= -\frac{23bcd^2x\sqrt{d-c^2dx^2}}{15\sqrt{1-c^2x^2}}+\frac{11bc^3d^2x^3\sqrt{d-c^2dx^2}}{45\sqrt{1-c^2x^2}}-\frac{bc^5d^2x^5\sqrt{d-c^2dx^2}}{25\sqrt{1-c^2x^2}}$$

$$= -\frac{23bcd^2x\sqrt{d-c^2dx^2}}{15\sqrt{1-c^2x^2}}+\frac{11bc^3d^2x^3\sqrt{d-c^2dx^2}}{45\sqrt{1-c^2x^2}}-\frac{bc^5d^2x^5\sqrt{d-c^2dx^2}}{25\sqrt{1-c^2x^2}}$$

$$= -\frac{23bcd^2x\sqrt{d-c^2dx^2}}{15\sqrt{1-c^2x^2}}+\frac{11bc^3d^2x^3\sqrt{d-c^2dx^2}}{45\sqrt{1-c^2x^2}}-\frac{bc^5d^2x^5\sqrt{d-c^2dx^2}}{25\sqrt{1-c^2x^2}}$$

Mathematica [A] time = 2.03, size = 394, normalized size = 1.09

$$-ad^{5/2}\log\left(\sqrt{d}\sqrt{d-c^2dx^2}+d\right)+\frac{1}{15}ad^2\left(3c^4x^4-11c^2x^2+23\right)\sqrt{d-c^2dx^2}+ad^{5/2}\log(x)+\frac{bd^2\sqrt{d-c^2dx^2}\left(\sqrt{1\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/x,x]
```

```
[Out] (a*d^2*Sqrt[d - c^2*d*x^2]*(23 - 11*c^2*x^2 + 3*c^4*x^4))/15 + a*d^(5/2)*Lo
g[x] - a*d^(5/2)*Log[d + Sqrt[d]*Sqrt[d - c^2*d*x^2]] + (b*d^2*Sqrt[d - c^2
*d*x^2]*(-(c*x) + Sqrt[1 - c^2*x^2]*ArcSin[c*x] + ArcSin[c*x]*Log[1 - E^(I*
ArcSin[c*x])] - ArcSin[c*x]*Log[1 + E^(I*ArcSin[c*x])] + I*PolyLog[2, -E^(I
*ArcSin[c*x])] - I*PolyLog[2, E^(I*ArcSin[c*x])]))/Sqrt[1 - c^2*x^2] - (b*d
^2*Sqrt[d - c^2*d*x^2]*(9*c*x - 3*ArcSin[c*x]*(3*Sqrt[1 - c^2*x^2] + Cos[3*
ArcSin[c*x]]) + Sin[3*ArcSin[c*x]]))/(18*Sqrt[1 - c^2*x^2]) + (b*d^2*Sqrt[d
 - c^2*d*x^2]*(450*c*x - 15*ArcSin[c*x]*(30*Sqrt[1 - c^2*x^2] + 5*Cos[3*Arc
Sin[c*x]] - 3*Cos[5*ArcSin[c*x]]) + 25*Sin[3*ArcSin[c*x]] - 9*Sin[5*ArcSin[
c*x]]))/(3600*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 1.57, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(ac^4d^2x^4-2\,ac^2d^2x^2+ad^2+\left(bc^4d^2x^4-2\,bc^2d^2x^2+bd^2\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2+d}}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x,x, algorithm="fricas")
```

```
[Out] integral((a*c^4*d^2*x^4 - 2*a*c^2*d^2*x^2 + a*d^2 + (b*c^4*d^2*x^4 - 2*b*c^
2*d^2*x^2 + b*d^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/x, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.34, size = 652, normalized size = 1.81

$$\frac{\left(-c^2 d\,x^2+d\right)^{\frac{5}{2}} a}{5}+\frac{ad\left(-c^2 d\,x^2+d\right)^{\frac{3}{2}}}{3}-a\,d^{\frac{5}{2}}\ln\left(\frac{2d+2\sqrt{d}\,\sqrt{-c^2 d\,x^2+d}}{x}\right)+a\sqrt{-c^2 d\,x^2+d}\,d^2+\frac{ib\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x,x)
```

```
[Out] 1/5*(-c^2*d*x^2+d)^(5/2)*a+1/3*a*d*(-c^2*d*x^2+d)^(3/2)-a*d^(5/2)*ln((2*d+2
*d^(1/2)*(-c^2*d*x^2+d)^(1/2))/x)+a*(-c^2*d*x^2+d)^(1/2)*d^2+I*b*(-d*(c^2*x
^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d^2/(c^2*x^2-1)*polylog(2,I*c*x+(-c^2*x^2+1
)^(1/2))-I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d^2/(c^2*x^2-1)*poly
log(2,-I*c*x-(-c^2*x^2+1)^(1/2))-23/15*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^
2-1)*arcsin(c*x)+34/15*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)*arcsin(c*x)
*x^2*c^2+1/5*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)*arcsin(c*x)*x^6*c^6-1
4/15*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)*arcsin(c*x)*x^4*c^4+1/25*b*(-
d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^5*c^5-11/45*b*(-d
*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^3*c^3+23/15*b*(-d*
(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x*c-b*(-d*(c^2*x^2-1)
)^(1/2)*(-c^2*x^2+1)^(1/2)*d^2/(c^2*x^2-1)*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2
+1)^(1/2))+b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d^2/(c^2*x^2-1)*arcs
in(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))
```

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

$$b\sqrt{d}\int\frac{\left(c^4d^2x^4-2\,c^2d^2x^2+d^2\right)\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{x}\,dx-\frac{1}{15}\left(15\,d^{\frac{5}{2}}\log\left(\frac{2\sqrt{-c^2dx^2}}{|x|}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x,x, algorithm="maxima")
```

```
[Out] b*sqrt(d)*integrate((c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2)*sqrt(c*x + 1)*sqrt(
-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/x, x) - 1/15*(15*d^(5/
2)*log(2*sqrt(-c^2*d*x^2 + d)*sqrt(d)/abs(x) + 2*d/abs(x)) - 3*(-c^2*d*x^2
+ d)^(5/2) - 5*(-c^2*d*x^2 + d)^(3/2)*d - 15*sqrt(-c^2*d*x^2 + d)*d^2)*a
```

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

$$\int\frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\left(d-c^2\,d\,x^2\right)^{5/2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2))/x,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2))/x, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))/x,x)
```

```
[Out] Timed out
```

3.97 $\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{x^3}\,dx$

Optimal. Leaf size=386

$$-\frac{5}{2}c^2d^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)+\frac{5c^2d^2\sqrt{d-c^2dx^2}\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}-\frac{5}{6}c^2d\left(d-c^2dx^2\right)^{3/2}$$

```
[Out] -5/6*c^2*d*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))-1/2*(-c^2*d*x^2+d)^(5/2)*
(a+b*arcsin(c*x))/x^2-5/2*c^2*d^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)-1/
2*b*c*d^2*(-c^2*d*x^2+d)^(1/2)/x/(-c^2*x^2+1)^(1/2)+7/3*b*c^3*d^2*x*(-c^2*d
*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-1/9*b*c^5*d^2*x^3*(-c^2*d*x^2+d)^(1/2)/(-c
^2*x^2+1)^(1/2)+5*c^2*d^2*(a+b*arcsin(c*x))*arctanh(I*c*x+(-c^2*x^2+1)^(1/2
))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-5/2*I*b*c^2*d^2*polylog(2,-I*c*x
-(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+5/2*I*b*c^2*d^
2*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/
2)
```

Rubi [A] time = 0.46, antiderivative size = 386, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 9, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4695, 4699, 4697, 4709, 4183, 2279, 2391, 8, 270}

$$-\frac{5ibc^2d^2\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)}{2\sqrt{1-c^2x^2}}+\frac{5ibc^2d^2\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)}{2\sqrt{1-c^2x^2}}-\frac{5}{2}c^2d^2\sqrt{d-c^2dx^2}\left(a+\right.$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/x^3,x]
```

```
[Out] -(b*c*d^2*Sqrt[d - c^2*d*x^2])/(2*x*Sqrt[1 - c^2*x^2]) + (7*b*c^3*d^2*x*Sqr
t[d - c^2*d*x^2])/(3*Sqrt[1 - c^2*x^2]) - (b*c^5*d^2*x^3*Sqrt[d - c^2*d*x^2
])/(9*Sqrt[1 - c^2*x^2]) - (5*c^2*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x
]))/2 - (5*c^2*d*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/6 - ((d - c^2*d
*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(2*x^2) + (5*c^2*d^2*Sqrt[d - c^2*d*x^2]*(
a + b*ArcSin[c*x])*ArcTanh[E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] - (((5*I)/
2)*b*c^2*d^2*Sqrt[d - c^2*d*x^2]*PolyLog[2, -E^(I*ArcSin[c*x])])/Sqrt[1 - c
^2*x^2] + (((5*I)/2)*b*c^2*d^2*Sqrt[d - c^2*d*x^2]*PolyLog[2, E^(I*ArcSin[c
*x])])/Sqrt[1 - c^2*x^2]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4695

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m +
2)*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPar
t[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f
*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /;
 FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0
] && LtQ[m, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{x^3}\,dx = -\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{2x^2} - \frac{1}{2}\left(5c^2d\right)\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin\right.}{x}$$

$$= -\frac{5}{6}c^2d\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right) - \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{2x^2}$$

$$= -\frac{bcd^2\sqrt{d-c^2dx^2}}{2x\sqrt{1-c^2x^2}} - \frac{bc^3d^2x\sqrt{d-c^2dx^2}}{6\sqrt{1-c^2x^2}} - \frac{bc^5d^2x^3\sqrt{d-c^2dx^2}}{9\sqrt{1-c^2x^2}} - \frac{5}{2}c^2d^2\sqrt{}$$

$$= -\frac{bcd^2\sqrt{d-c^2dx^2}}{2x\sqrt{1-c^2x^2}} + \frac{7bc^3d^2x\sqrt{d-c^2dx^2}}{3\sqrt{1-c^2x^2}} - \frac{bc^5d^2x^3\sqrt{d-c^2dx^2}}{9\sqrt{1-c^2x^2}} - \frac{5}{2}c^2d^2$$

$$= -\frac{bcd^2\sqrt{d-c^2dx^2}}{2x\sqrt{1-c^2x^2}} + \frac{7bc^3d^2x\sqrt{d-c^2dx^2}}{3\sqrt{1-c^2x^2}} - \frac{bc^5d^2x^3\sqrt{d-c^2dx^2}}{9\sqrt{1-c^2x^2}} - \frac{5}{2}c^2d^2$$

$$= -\frac{bcd^2\sqrt{d-c^2dx^2}}{2x\sqrt{1-c^2x^2}} + \frac{7bc^3d^2x\sqrt{d-c^2dx^2}}{3\sqrt{1-c^2x^2}} - \frac{bc^5d^2x^3\sqrt{d-c^2dx^2}}{9\sqrt{1-c^2x^2}} - \frac{5}{2}c^2d^2$$

$$= -\frac{bcd^2\sqrt{d-c^2dx^2}}{2x\sqrt{1-c^2x^2}} + \frac{7bc^3d^2x\sqrt{d-c^2dx^2}}{3\sqrt{1-c^2x^2}} - \frac{bc^5d^2x^3\sqrt{d-c^2dx^2}}{9\sqrt{1-c^2x^2}} - \frac{5}{2}c^2d^2$$

Mathematica [A] time = 5.70, size = 484, normalized size = 1.25

$$\frac{-180ac^2d^{5/2}x^2\log(x)\sqrt{d-c^2dx^2} + 180ac^2d^{5/2}x^2\sqrt{d-c^2dx^2}\,\log\left(\sqrt{d}\sqrt{d-c^2dx^2}+d\right) - 12ad^3\left(c^2x^2-1\right)\left(2c^4x^4\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/x^3,x]
```

```
[Out] (-12*a*d^3*(-1 + c^2*x^2)*(-3 - 14*c^2*x^2 + 2*c^4*x^4) - 180*a*c^2*d^(5/2)
*x^2*Sqrt[d - c^2*d*x^2]*Log[x] + 180*a*c^2*d^(5/2)*x^2*Sqrt[d - c^2*d*x^2]
*Log[d + Sqrt[d]*Sqrt[d - c^2*d*x^2]] + 144*b*c^2*d^3*x^2*Sqrt[1 - c^2*x^2]
*(c*x - Sqrt[1 - c^2*x^2]*ArcSin[c*x] - ArcSin[c*x]*(Log[1 - E^(I*ArcSin[c*
x])] - Log[1 + E^(I*ArcSin[c*x])]) - I*(PolyLog[2, -E^(I*ArcSin[c*x])] - Po
lyLog[2, E^(I*ArcSin[c*x])])) + 2*b*c^2*d^3*x^2*Sqrt[1 - c^2*x^2]*(9*c*x -
3*ArcSin[c*x]*(3*Sqrt[1 - c^2*x^2] + Cos[3*ArcSin[c*x]]) + Sin[3*ArcSin[c*x
]]) - 9*b*c^2*d^3*x^2*Sqrt[1 - c^2*x^2]*(2*Cot[ArcSin[c*x]/2] + ArcSin[c*x]
*Csc[ArcSin[c*x]/2]^2 + 4*ArcSin[c*x]*Log[1 - E^(I*ArcSin[c*x])] - 4*ArcSin
[c*x]*Log[1 + E^(I*ArcSin[c*x])] + (4*I)*PolyLog[2, -E^(I*ArcSin[c*x])] - (
4*I)*PolyLog[2, E^(I*ArcSin[c*x])] - ArcSin[c*x]*Sec[ArcSin[c*x]/2]^2 + 2*T
an[ArcSin[c*x]/2]))/(72*x^2*Sqrt[d - c^2*d*x^2])
```

fricas [F] time = 0.69, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(ac^4d^2x^4 - 2\,ac^2d^2x^2 + ad^2 + \left(bc^4d^2x^4 - 2\,bc^2d^2x^2 + bd^2\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2+d}}{x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^3,x, algorithm="fricas")
```

```
[Out] integral((a*c^4*d^2*x^4 - 2*a*c^2*d^2*x^2 + a*d^2 + (b*c^4*d^2*x^4 - 2*b*c^
2*d^2*x^2 + b*d^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/x^3, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^3,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.42, size = 704, normalized size = 1.82

$$-\frac{a\left(-c^{2} d\,x^{2}+d\right)^{\frac{7}{2}}}{2 d\,x^{2}}-\frac{a\,c^{2}\left(-c^{2} d\,x^{2}+d\right)^{\frac{5}{2}}}{2}-\frac{5 a\,c^{2} d\left(-c^{2} d\,x^{2}+d\right)^{\frac{3}{2}}}{6}+\frac{5 a\,c^{2} d^{\frac{5}{2}} \ln\left(\frac{2 d+2\sqrt{d}\,\sqrt{-c^{2} d\,x^{2}+d}}{x}\right)}{2}-\frac{5 a\,c^{2}\sqrt{-c^{2} d\,x^{2}}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^3,x)
```

```
[Out] -1/2*a/d/x^2*(-c^2*d*x^2+d)^(7/2)-1/2*a*c^2*(-c^2*d*x^2+d)^(5/2)-5/6*a*c^2*
d*(-c^2*d*x^2+d)^(3/2)+5/2*a*c^2*d^(5/2)*ln((2*d+2*d^(1/2)*(-c^2*d*x^2+d)^(
1/2))/x)-5/2*a*c^2*(-c^2*d*x^2+d)^(1/2)*d^2+1/2*b*d^2*(-d*(c^2*x^2-1))^(1/2
)/x/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c+1/3*b*(-d*(c^2*x^2-1))^(1/2)*c^6*d^2/(
c^2*x^2-1)*arcsin(c*x)*x^4-8/3*b*(-d*(c^2*x^2-1))^(1/2)*c^4*d^2/(c^2*x^2-1)
*arcsin(c*x)*x^2+1/9*b*(-d*(c^2*x^2-1))^(1/2)*c^5*d^2/(c^2*x^2-1)*(-c^2*x^2
+1)^(1/2)*x^3-7/3*b*(-d*(c^2*x^2-1))^(1/2)*c^3*d^2/(c^2*x^2-1)*(-c^2*x^2+1)
^(1/2)*x-5*I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*c^2*d^2/(2*c^2*x^2
-2)*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))+5*I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*
x^2+1)^(1/2)*c^2*d^2/(2*c^2*x^2-2)*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))+11/
6*b*(-d*(c^2*x^2-1))^(1/2)*c^2*d^2/(c^2*x^2-1)*arcsin(c*x)+1/2*b*d^2*(-d*(c
^2*x^2-1))^(1/2)/x^2/(c^2*x^2-1)*arcsin(c*x)-5*b*(-d*(c^2*x^2-1))^(1/2)*(-c
^2*x^2+1)^(1/2)*c^2*d^2/(2*c^2*x^2-2)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))*arcsin
(c*x)+5*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*c^2*d^2/(2*c^2*x^2-2)*l
n(1-I*c*x-(-c^2*x^2+1)^(1/2))*arcsin(c*x)
```

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

$$b\sqrt{d}\int\frac{\left(c^{4} d^{2} x^{4}-2\,c^{2} d^{2} x^{2}+d^{2}\right)\sqrt{c x+1}\,\sqrt{-c x+1}\,\arctan\left(c x,\sqrt{c x+1}\,\sqrt{-c x+1}\right)}{x^{3}}\,dx+\frac{1}{6}\left(15\,c^{2} d^{\frac{5}{2}}\log\left(\frac{2\sqrt{-c}}{}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^3,x, algorithm="maxima")
```

```
[Out] b*sqrt(d)*integrate((c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2)*sqrt(c*x + 1)*sqrt(
-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/x^3, x) + 1/6*(15*c^2*
d^(5/2)*log(2*sqrt(-c^2*d*x^2 + d)*sqrt(d)/abs(x) + 2*d/abs(x)) - 3*(-c^2*d
*x^2 + d)^(5/2)*c^2 - 5*(-c^2*d*x^2 + d)^(3/2)*c^2*d - 15*sqrt(-c^2*d*x^2 +
 d)*c^2*d^2 - 3*(-c^2*d*x^2 + d)^(7/2)/(d*x^2))*a
```

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

$$\int\frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(d-c^{2}\,d\,x^{2}\right)}^{5/2}}{x^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2))/x^3,x)
```

```
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2))/x^3, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))/x**3,x)
```

```
[Out] Timed out
```

3.98 $\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{x^5}\,dx$

Optimal. Leaf size=389

$$\frac{5c^2d\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{8x^2}-\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{4x^4}+\frac{15}{8}c^4d^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)-\ldots$$

```
[Out] 5/8*c^2*d*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/x^2-1/4*(-c^2*d*x^2+d)^(5/
2)*(a+b*arcsin(c*x))/x^4+15/8*c^4*d^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2
)-1/12*b*c*d^2*(-c^2*d*x^2+d)^(1/2)/x^3/(-c^2*x^2+1)^(1/2)+9/8*b*c^3*d^2*(-
c^2*d*x^2+d)^(1/2)/x/(-c^2*x^2+1)^(1/2)-b*c^5*d^2*x*(-c^2*d*x^2+d)^(1/2)/(-
c^2*x^2+1)^(1/2)-15/4*c^4*d^2*(a+b*arcsin(c*x))*arctanh(I*c*x+(-c^2*x^2+1)^
(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+15/8*I*b*c^4*d^2*polylog(2,-
I*c*x-(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-15/8*I*b*
c^4*d^2*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+
1)^(1/2)
```

Rubi [A] time = 0.46, antiderivative size = 389, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 9, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4695, 4697, 4709, 4183, 2279, 2391, 8, 14, 270}

$$\frac{15ibc^4d^2\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)}{8\sqrt{1-c^2x^2}}-\frac{15ibc^4d^2\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)}{8\sqrt{1-c^2x^2}}+\frac{15}{8}c^4d^2\sqrt{d-c^2dx^2}\ldots$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/x^5,x]
```

```
[Out] -(b*c*d^2*Sqrt[d - c^2*d*x^2])/(12*x^3*Sqrt[1 - c^2*x^2]) + (9*b*c^3*d^2*Sq
rt[d - c^2*d*x^2])/(8*x*Sqrt[1 - c^2*x^2]) - (b*c^5*d^2*x*Sqrt[d - c^2*d*x^
2])/Sqrt[1 - c^2*x^2] + (15*c^4*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])
)/8 + (5*c^2*d*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(8*x^2) - ((d - c
^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(4*x^4) - (15*c^4*d^2*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x])*ArcTanh[E^(I*ArcSin[c*x])])/(4*Sqrt[1 - c^2*x^2]) +
 (((15*I)/8)*b*c^4*d^2*Sqrt[d - c^2*d*x^2]*PolyLog[2, -E^(I*ArcSin[c*x])])/
Sqrt[1 - c^2*x^2] - (((15*I)/8)*b*c^4*d^2*Sqrt[d - c^2*d*x^2]*PolyLog[2, E^
(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 2279

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

```
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4695

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m +
2)*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPar
t[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f
*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /;
 FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0
] && LtQ[m, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{x^5}\,dx = -\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{4x^4} - \frac{1}{4}\left(5c^2d\right)\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\,\mathrm{s}\right.}{x^3}$$

$$= \frac{5c^2d\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{8x^2} - \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right.}{4x^4}$$

$$= -\frac{bcd^2\sqrt{d-c^2dx^2}}{12x^3\sqrt{1-c^2x^2}} + \frac{bc^3d^2\sqrt{d-c^2dx^2}}{2x\sqrt{1-c^2x^2}} + \frac{bc^5d^2x\sqrt{d-c^2dx^2}}{4\sqrt{1-c^2x^2}} + \frac{15}{8}c^4d$$

$$= -\frac{bcd^2\sqrt{d-c^2dx^2}}{12x^3\sqrt{1-c^2x^2}} + \frac{9bc^3d^2\sqrt{d-c^2dx^2}}{8x\sqrt{1-c^2x^2}} - \frac{bc^5d^2x\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} + \frac{15}{8}c^4$$

$$= -\frac{bcd^2\sqrt{d-c^2dx^2}}{12x^3\sqrt{1-c^2x^2}} + \frac{9bc^3d^2\sqrt{d-c^2dx^2}}{8x\sqrt{1-c^2x^2}} - \frac{bc^5d^2x\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} + \frac{15}{8}c^4$$

$$= -\frac{bcd^2\sqrt{d-c^2dx^2}}{12x^3\sqrt{1-c^2x^2}} + \frac{9bc^3d^2\sqrt{d-c^2dx^2}}{8x\sqrt{1-c^2x^2}} - \frac{bc^5d^2x\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} + \frac{15}{8}c^4$$

$$= -\frac{bcd^2\sqrt{d-c^2dx^2}}{12x^3\sqrt{1-c^2x^2}} + \frac{9bc^3d^2\sqrt{d-c^2dx^2}}{8x\sqrt{1-c^2x^2}} - \frac{bc^5d^2x\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} + \frac{15}{8}c^4$$

Mathematica [A] time = 6.46, size = 640, normalized size = 1.65

$$\frac{15}{8}ac^4d^{5/2}\log(x) - \frac{15}{8}ac^4d^{5/2}\log\left(\sqrt{d}\sqrt{d-c^2dx^2}+d\right) + \frac{ad^2\left(8c^4x^4+9c^2x^2-2\right)\sqrt{d-c^2dx^2}}{8x^4} - \frac{bc^4d^3\sqrt{1-c^2x^2}}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/x^5,x]
```

```
[Out] (a*d^2*Sqrt[d - c^2*d*x^2]*(-2 + 9*c^2*x^2 + 8*c^4*x^4))/(8*x^4) + (15*a*c^
4*d^(5/2)*Log[x])/8 - (15*a*c^4*d^(5/2)*Log[d + Sqrt[d]*Sqrt[d - c^2*d*x^2]
])/8 + (b*c^4*d^2*Sqrt[d - c^2*d*x^2]*(-(c*x) + Sqrt[1 - c^2*x^2]*ArcSin[c*
x] + ArcSin[c*x]*Log[1 - E^(I*ArcSin[c*x])] - ArcSin[c*x]*Log[1 + E^(I*ArcS
in[c*x])] + I*PolyLog[2, -E^(I*ArcSin[c*x])] - I*PolyLog[2, E^(I*ArcSin[c*x
])]))/Sqrt[1 - c^2*x^2] - (b*c^4*d^3*Sqrt[1 - c^2*x^2]*(-2*Cot[ArcSin[c*x]/
2] - ArcSin[c*x]*Csc[ArcSin[c*x]/2]^2 - 4*ArcSin[c*x]*Log[1 - E^(I*ArcSin[c
*x])] + 4*ArcSin[c*x]*Log[1 + E^(I*ArcSin[c*x])] - (4*I)*PolyLog[2, -E^(I*A
rcSin[c*x])] + (4*I)*PolyLog[2, E^(I*ArcSin[c*x])] + ArcSin[c*x]*Sec[ArcSin
[c*x]/2]^2 - 2*Tan[ArcSin[c*x]/2]))/(4*Sqrt[d - c^2*d*x^2]) + (b*c^4*d^2*Sq
rt[d - c^2*d*x^2]*(8*Cot[ArcSin[c*x]/2] + 6*ArcSin[c*x]*Csc[ArcSin[c*x]/2]^
2 - c*x*Csc[ArcSin[c*x]/2]^4 - 3*ArcSin[c*x]*Csc[ArcSin[c*x]/2]^4 - 24*ArcS
in[c*x]*Log[1 - E^(I*ArcSin[c*x])] + 24*ArcSin[c*x]*Log[1 + E^(I*ArcSin[c*x
])] - (24*I)*PolyLog[2, -E^(I*ArcSin[c*x])] + (24*I)*PolyLog[2, E^(I*ArcSin
[c*x])] - 6*ArcSin[c*x]*Sec[ArcSin[c*x]/2]^2 + 3*ArcSin[c*x]*Sec[ArcSin[c*x
]/2]^4 - (16*Sin[ArcSin[c*x]/2]^4)/(c^3*x^3) + 8*Tan[ArcSin[c*x]/2]))/(192*
Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.75, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(ac^4d^2x^4-2\,ac^2d^2x^2+ad^2+\left(bc^4d^2x^4-2\,bc^2d^2x^2+bd^2\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2+d}}{x^5},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^5,x, algorithm="fricas")
```

```
[Out] integral((a*c^4*d^2*x^4 - 2*a*c^2*d^2*x^2 + a*d^2 + (b*c^4*d^2*x^4 - 2*b*c^
2*d^2*x^2 + b*d^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/x^5, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^5,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.48, size = 727, normalized size = 1.87

$$-\frac{a\left(-c^{2} d\,x^{2}+d\right)^{\frac{7}{2}}}{4 d\,x^{4}}+\frac{3 a\,c^{2}\left(-c^{2} d\,x^{2}+d\right)^{\frac{7}{2}}}{8 d\,x^{2}}+\frac{3 a\,c^{4}\left(-c^{2} d\,x^{2}+d\right)^{\frac{5}{2}}}{8}+\frac{5 a\,c^{4} d\left(-c^{2} d\,x^{2}+d\right)^{\frac{3}{2}}}{8}-\frac{15 a\,c^{4} d^{\frac{5}{2}} \ln\left(\frac{2 d+2\sqrt{d}\,\sqrt{-c^{2}d}}{x}\right.}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^5,x)
```

```
[Out] -1/4*a/d/x^4*(-c^2*d*x^2+d)^(7/2)+3/8*a*c^2/d/x^2*(-c^2*d*x^2+d)^(7/2)+3/8*
a*c^4*(-c^2*d*x^2+d)^(5/2)+5/8*a*c^4*d*(-c^2*d*x^2+d)^(3/2)-15/8*a*c^4*d^(5
/2)*ln((2*d+2*d^(1/2)*(-c^2*d*x^2+d)^(1/2))/x)+15/8*a*c^4*(-c^2*d*x^2+d)^(1
/2)*d^2+b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^5/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+b
*(-d*(c^2*x^2-1))^(1/2)*d^2*c^6/(c^2*x^2-1)*arcsin(c*x)*x^2+1/8*b*(-d*(c^2*
x^2-1))^(1/2)*d^2*c^4/(c^2*x^2-1)*arcsin(c*x)-9/8*b*d^2*(-d*(c^2*x^2-1))^(1
/2)/x/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c^3-11/8*b*d^2*(-d*(c^2*x^2-1))^(1/2)/
x^2/(c^2*x^2-1)*arcsin(c*x)*c^2+1/12*b*d^2*(-d*(c^2*x^2-1))^(1/2)/x^3/(c^2*
x^2-1)*(-c^2*x^2+1)^(1/2)*c+1/4*b*d^2*(-d*(c^2*x^2-1))^(1/2)/x^4/(c^2*x^2-1
)*arcsin(c*x)-15*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d^2*c^4/(8*c^2
*x^2-8)*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))+15*b*(-d*(c^2*x^2-1))^(1
/2)*(-c^2*x^2+1)^(1/2)*d^2*c^4/(8*c^2*x^2-8)*arcsin(c*x)*ln(1+I*c*x+(-c^2*x
^2+1)^(1/2))-15*I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d^2*c^4/(8*c^
2*x^2-8)*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))+15*I*b*(-d*(c^2*x^2-1))^(1/2)
*(-c^2*x^2+1)^(1/2)*d^2*c^4/(8*c^2*x^2-8)*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2
))
```

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

$$b\sqrt{d}\int\frac{\left(c^{4}d^{2}x^{4}-2\,c^{2}d^{2}x^{2}+d^{2}\right)\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{x^{5}}\,dx-\frac{1}{8}\left(15\,c^{4}d^{\frac{5}{2}}\log\left(\frac{2\sqrt{-c^{2}dx}}{|x}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/x^5,x, algorithm="maxima")
```

```
[Out] b*sqrt(d)*integrate((c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2)*sqrt(c*x + 1)*sqrt(
-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/x^5, x) - 1/8*(15*c^4*
d^(5/2)*log(2*sqrt(-c^2*d*x^2 + d)*sqrt(d)/abs(x) + 2*d/abs(x)) - 3*(-c^2*d
*x^2 + d)^(5/2)*c^4 - 5*(-c^2*d*x^2 + d)^(3/2)*c^4*d - 15*sqrt(-c^2*d*x^2 +
 d)*c^4*d^2 - 3*(-c^2*d*x^2 + d)^(7/2)*c^2/(d*x^2) + 2*(-c^2*d*x^2 + d)^(7/
2)/(d*x^4))*a
```

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

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))\,\left(d-c^2\,d\,x^2\right)^{5/2}}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2))/x^5,x)
[Out] int(((a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2))/x^5, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))/x**5,x)
[Out] Timed out
```

3.99 $\int \sqrt{1-x^2} \sin^{-1}(x) \, dx$

Optimal. Leaf size=34

$$-\frac{x^2}{4} + \frac{1}{2}\sqrt{1-x^2}\, x \sin^{-1}(x) + \frac{1}{4}\sin^{-1}(x)^2$$

```
[Out] -1/4*x^2+1/4*arcsin(x)^2+1/2*x*arcsin(x)*(-x^2+1)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 34, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.214$, Rules used = $\{4647, 4641, 30\}$

$$-\frac{x^2}{4} + \frac{1}{2}\sqrt{1-x^2}\, x \sin^{-1}(x) + \frac{1}{4}\sin^{-1}(x)^2$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[1 - x^2]*ArcSin[x],x]
```

```
[Out] -x^2/4 + (x*Sqrt[1 - x^2]*ArcSin[x])/2 + ArcSin[x]^2/4
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \sqrt{1-x^2} \sin^{-1}(x) \, dx &= \frac{1}{2} x \sqrt{1-x^2} \sin^{-1}(x) - \frac{\int x \, dx}{2} + \frac{1}{2} \int \frac{\sin^{-1}(x)}{\sqrt{1-x^2}} \, dx \\
&= -\frac{x^2}{4} + \frac{1}{2} x \sqrt{1-x^2} \sin^{-1}(x) + \frac{1}{4} \sin^{-1}(x)^2
\end{aligned}$$

Mathematica [A] time = 0.01, size = 30, normalized size = 0.88

$$\frac{1}{4}\left(-x^2 + 2\sqrt{1-x^2}\, x \sin^{-1}(x) + \sin^{-1}(x)^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[1 - x^2]*ArcSin[x],x]
```

```
[Out] (-x^2 + 2*x*Sqrt[1 - x^2]*ArcSin[x] + ArcSin[x]^2)/4
```

fricas [A] time = 1.95, size = 26, normalized size = 0.76

$$\frac{1}{2}\sqrt{-x^2+1}\,x\arcsin(x)-\frac{1}{4}\,x^2+\frac{1}{4}\,\arcsin(x)^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x)*(-x^2+1)^(1/2),x, algorithm="fricas")
[Out] 1/2*sqrt(-x^2 + 1)*x*arcsin(x) - 1/4*x^2 + 1/4*arcsin(x)^2
```

giac [A] time = 0.61, size = 27, normalized size = 0.79

$$\frac{1}{2}\sqrt{-x^2+1}\,x\arcsin(x)-\frac{1}{4}\,x^2+\frac{1}{4}\,\arcsin(x)^2+\frac{1}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x)*(-x^2+1)^(1/2),x, algorithm="giac")
[Out] 1/2*sqrt(-x^2 + 1)*x*arcsin(x) - 1/4*x^2 + 1/4*arcsin(x)^2 + 1/8
```

maple [A] time = 0.08, size = 31, normalized size = 0.91

$$\frac{\arcsin(x)\left(x\sqrt{-x^2+1}\,+\arcsin(x)\right)}{2}-\frac{\arcsin(x)^2}{4}-\frac{x^2}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(x)*(-x^2+1)^(1/2),x)
[Out] 1/2*arcsin(x)*(x*(-x^2+1)^(1/2)+arcsin(x))-1/4*arcsin(x)^2-1/4*x^2
```

maxima [A] time = 0.56, size = 30, normalized size = 0.88

$$-\frac{1}{4}\,x^2+\frac{1}{2}\left(\sqrt{-x^2+1}\,x+\arcsin(x)\right)\arcsin(x)-\frac{1}{4}\,\arcsin(x)^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x)*(-x^2+1)^(1/2),x, algorithm="maxima")
[Out] -1/4*x^2 + 1/2*(sqrt(-x^2 + 1)*x + arcsin(x))*arcsin(x) - 1/4*arcsin(x)^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int \mathrm{asin}(x)\,\sqrt{1-x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(x)*(1 - x^2)^(1/2),x)
[Out] int(asin(x)*(1 - x^2)^(1/2), x)
```

sympy [A] time = 20.82, size = 48, normalized size = 1.41

$$\left(\begin{cases}\frac{x\sqrt{1-x^2}}{2}+\frac{\mathrm{asin}\,(x)}{2} & \text{for } x>-1\wedge x<1\end{cases}\right)\mathrm{asin}\,(x)-\begin{cases}\text{NaN} & \text{for } x<-1\\ \frac{x^2}{4}+\frac{\mathrm{asin}^2\,(x)}{4}-\frac{\pi^2}{16}-\frac{1}{4} & \text{for } x<1\\ \text{NaN} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(x)*(-x**2+1)**(1/2),x)
```

```
[Out] Piecewise((x*sqrt(1 - x**2)/2 + asin(x)/2, (x > -1) & (x < 1)))*asin(x) - P
iecewise((nan, x < -1), (x**2/4 + asin(x)**2/4 - pi**2/16 - 1/4, x < 1), (n
an, True))
```

3.100 $\int \sqrt{\pi - c^2\pi x^2} \left(a + b\sin^{-1}(cx)\right) dx$

Optimal. Leaf size=68

$$\frac{1}{2}x\sqrt{\pi - \pi c^2x^2} \left(a + b\sin^{-1}(cx)\right) + \frac{\sqrt{\pi} \left(a + b\sin^{-1}(cx)\right)^2}{4bc} - \frac{1}{4}\sqrt{\pi}\, bcx^2$$

```
[Out] -1/4*b*c*x^2*Pi^(1/2)+1/4*(a+b*arcsin(c*x))^2*Pi^(1/2)/b/c+1/2*x*(a+b*arcsi
n(c*x))*(-Pi*c^2*x^2+Pi)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 116, normalized size of antiderivative = 1.71, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {4647, 4641, 30}

$$\frac{1}{2}x\sqrt{\pi - \pi c^2x^2} \left(a + b\sin^{-1}(cx)\right) + \frac{\sqrt{\pi - \pi c^2x^2} \left(a + b\sin^{-1}(cx)\right)^2}{4bc\sqrt{1 - c^2x^2}} - \frac{bcx^2\sqrt{\pi - \pi c^2x^2}}{4\sqrt{1 - c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[Pi - c^2*Pi*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] -(b*c*x^2*Sqrt[Pi - c^2*Pi*x^2])/(4*Sqrt[1 - c^2*x^2]) + (x*Sqrt[Pi - c^2*P
i*x^2]*(a + b*ArcSin[c*x]))/2 + (Sqrt[Pi - c^2*Pi*x^2]*(a + b*ArcSin[c*x])^
2)/(4*b*c*Sqrt[1 - c^2*x^2])
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rubi steps

$$\begin{aligned}\int \sqrt{\pi - c^2\pi x^2} \left(a + b\sin^{-1}(cx)\right) dx &= \frac{1}{2}x\sqrt{\pi - c^2\pi x^2} \left(a + b\sin^{-1}(cx)\right) + \frac{\sqrt{\pi - c^2\pi x^2} \int \frac{a+b\sin^{-1}(cx)}{\sqrt{1-c^2x^2}} dx}{2\sqrt{1 - c^2x^2}} - \frac{(bc}{} \\ &= -\frac{bcx^2\sqrt{\pi - c^2\pi x^2}}{4\sqrt{1 - c^2x^2}} + \frac{1}{2}x\sqrt{\pi - c^2\pi x^2} \left(a + b\sin^{-1}(cx)\right) + \frac{\sqrt{\pi - c^2\pi x^2} (}{4bc\sqrt{}}\end{aligned}$$

Mathematica [A] time = 0.05, size = 87, normalized size = 1.28

$$\frac{\sqrt{\pi} \left(a^2 + 2abcx\sqrt{1 - c^2x^2} + 2b\sin^{-1}(cx)\left(a + bcx\sqrt{1 - c^2x^2}\right) - b^2c^2x^2 + b^2\sin^{-1}(cx)^2\right)}{4bc}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[Pi - c^2*Pi*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (Sqrt[Pi]*(a^2 - b^2*c^2*x^2 + 2*a*b*c*x*Sqrt[1 - c^2*x^2] + 2*b*(a + b*c*x
*Sqrt[1 - c^2*x^2])*ArcSin[c*x] + b^2*ArcSin[c*x]^2))/(4*b*c)
```

fricas [F] time = 0.83, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{\pi - \pi c^2 x^2}\,(b \arcsin(cx) + a), x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*(-pi*c^2*x^2+pi)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(pi - pi*c^2*x^2)*(b*arcsin(c*x) + a), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*(-pi*c^2*x^2+pi)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.06, size = 101, normalized size = 1.49

$$\frac{ax\sqrt{-\pi c^2x^2+\pi}}{2}+\frac{a\pi \arctan\left(\frac{\sqrt{\pi c^2}\,x}{\sqrt{-\pi c^2x^2+\pi}}\right)}{2\sqrt{\pi c^2}}+\frac{b\sqrt{\pi}\,\arcsin(cx)\sqrt{-c^2x^2+1}\,x}{2}-\frac{bc\,x^2\sqrt{\pi}}{4}+\frac{b\sqrt{\pi}\,\arcsin(cx)^2}{4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))*(-Pi*c^2*x^2+Pi)^(1/2),x)
```

```
[Out] 1/2*a*x*(-Pi*c^2*x^2+Pi)^(1/2)+1/2*a*Pi/(Pi*c^2)^(1/2)*arctan((Pi*c^2)^(1/2
)*x/(-Pi*c^2*x^2+Pi)^(1/2))+1/2*b*Pi^(1/2)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x
-1/4*b*c*x^2*Pi^(1/2)+1/4*b*Pi^(1/2)/c*arcsin(c*x)^2
```

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

$$\sqrt{\pi}\,b\int\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)dx+\frac{1}{2}\left(\sqrt{\pi-\pi c^2x^2}\,x+\frac{\sqrt{\pi}\,\arcsin(cx)}{c}\right)a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*(-pi*c^2*x^2+pi)^(1/2),x, algorithm="maxima")
```

```
[Out] sqrt(pi)*b*integrate(sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1
)*sqrt(-c*x + 1)), x) + 1/2*(sqrt(pi - pi*c^2*x^2)*x + sqrt(pi)*arcsin(c*x)
/c)*a
```

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

$$\int (a+b\,\mathrm{asin}(c\,x))\,\sqrt{\Pi-\Pi\,c^2\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(Pi - Pi*c^2*x^2)^(1/2),x)
```

```
[Out] int((a + b*asin(c*x))*(Pi - Pi*c^2*x^2)^(1/2), x)
```

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

$$\sqrt{\pi}\left(\int a\sqrt{-c^2x^2+1}\,dx+\int b\sqrt{-c^2x^2+1}\,\operatorname{asin}(cx)\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))*(-pi*c**2*x**2+pi)**(1/2),x)
```

```
[Out] sqrt(pi)*(Integral(a*sqrt(-c**2*x**2 + 1), x) + Integral(b*sqrt(-c**2*x**2
+ 1)*asin(c*x), x))
```

3.101 $\int \frac{x^4 \sin^{-1}(ax)}{\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=88

$$\frac{3\sin^{-1}(ax)^2}{16a^5}+\frac{3x^2}{16a^3}-\frac{x^3\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{4a^2}-\frac{3x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{8a^4}+\frac{x^4}{16a}$$

```
[Out] 3/16*x^2/a^3+1/16*x^4/a+3/16*arcsin(a*x)^2/a^5-3/8*x*arcsin(a*x)*(-a^2*x^2+
1)^(1/2)/a^4-1/4*x^3*arcsin(a*x)*(-a^2*x^2+1)^(1/2)/a^2
```

Rubi [A] time = 0.15, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$, Rules used = {4707, 4641, 30}

$$\frac{3x^2}{16a^3}-\frac{x^3\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{4a^2}-\frac{3x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{8a^4}+\frac{3\sin^{-1}(ax)^2}{16a^5}+\frac{x^4}{16a}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*ArcSin[a*x])/Sqrt[1 - a^2*x^2],x]
```

```
[Out] (3*x^2)/(16*a^3) + x^4/(16*a) - (3*x*Sqrt[1 - a^2*x^2]*ArcSin[a*x])/(8*a^4)
 - (x^3*Sqrt[1 - a^2*x^2]*ArcSin[a*x])/(4*a^2) + (3*ArcSin[a*x]^2)/(16*a^5)
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^4\sin^{-1}(ax)}{\sqrt{1-a^2x^2}}\,dx &= -\frac{x^3\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{4a^2}+\frac{3\int \frac{x^2\sin^{-1}(ax)}{\sqrt{1-a^2x^2}}\,dx}{4a^2}+\frac{\int x^3\,dx}{4a}\\
&= \frac{x^4}{16a}-\frac{3x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{8a^4}-\frac{x^3\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{4a^2}+\frac{3\int \frac{\sin^{-1}(ax)}{\sqrt{1-a^2x^2}}\,dx}{8a^4}+\frac{3\int x\,dx}{8a^3}\\
&= \frac{3x^2}{16a^3}+\frac{x^4}{16a}-\frac{3x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{8a^4}-\frac{x^3\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{4a^2}+\frac{3\sin^{-1}(ax)^2}{16a^5}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 64, normalized size = 0.73

$$\frac{a^2x^2\left(a^2x^2+3\right)-2ax\sqrt{1-a^2x^2}\left(2a^2x^2+3\right)\sin^{-1}(ax)+3\sin^{-1}(ax)^2}{16a^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*ArcSin[a*x])/Sqrt[1 - a^2*x^2],x]
```

```
[Out] (a^2*x^2*(3 + a^2*x^2) - 2*a*x*Sqrt[1 - a^2*x^2]*(3 + 2*a^2*x^2)*ArcSin[a*x
] + 3*ArcSin[a*x]^2)/(16*a^5)
```

fricas [A] time = 3.43, size = 60, normalized size = 0.68

$$\frac{a^4x^4+3\,a^2x^2-2\left(2\,a^3x^3+3\,ax\right)\sqrt{-a^2x^2+1}\,\arcsin\left(ax\right)+3\,\arcsin\left(ax\right)^2}{16\,a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/16*(a^4*x^4 + 3*a^2*x^2 - 2*(2*a^3*x^3 + 3*a*x)*sqrt(-a^2*x^2 + 1)*arcsin
(a*x) + 3*arcsin(a*x)^2)/a^5
```

giac [A] time = 0.40, size = 91, normalized size = 1.03

$$\frac{\left(-a^2x^2+1\right)^{\frac{3}{2}}x\arcsin\left(ax\right)}{4\,a^4}-\frac{5\,\sqrt{-a^2x^2+1}\,x\arcsin\left(ax\right)}{8\,a^4}+\frac{\left(a^2x^2-1\right)^2}{16\,a^5}+\frac{3\,\arcsin\left(ax\right)^2}{16\,a^5}+\frac{5\left(a^2x^2-1\right)}{16\,a^5}+\frac{17}{128\,a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*(-a^2*x^2 + 1)^(3/2)*x*arcsin(a*x)/a^4 - 5/8*sqrt(-a^2*x^2 + 1)*x*arcsi
n(a*x)/a^4 + 1/16*(a^2*x^2 - 1)^2/a^5 + 3/16*arcsin(a*x)^2/a^5 + 5/16*(a^2*
x^2 - 1)/a^5 + 17/128/a^5
```

maple [A] time = 0.10, size = 74, normalized size = 0.84

$$\frac{-4\arcsin\left(ax\right)\sqrt{-a^2x^2+1}\;x^3a^3+a^4x^4-6\arcsin\left(ax\right)\sqrt{-a^2x^2+1}\;xa+3a^2x^2+3\arcsin\left(ax\right)^2}{16a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*arcsin(a*x)/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] 1/16*(-4*arcsin(a*x)*(-a^2*x^2+1)^(1/2)*x^3*a^3+a^4*x^4-6*arcsin(a*x)*(-a^2
*x^2+1)^(1/2)*x*a+3*a^2*x^2+3*arcsin(a*x)^2)/a^5
```

maxima [A] time = 0.50, size = 85, normalized size = 0.97

$$\frac{1}{16}\left(\frac{x^4}{a^2}+\frac{3\,x^2}{a^4}-\frac{3\,\arcsin\left(ax\right)^2}{a^6}\right)a-\frac{1}{8}\left(\frac{2\,\sqrt{-a^2x^2+1}\,x^3}{a^2}+\frac{3\,\sqrt{-a^2x^2+1}\,x}{a^4}-\frac{3\,\arcsin\left(ax\right)}{a^5}\right)\arcsin\left(ax\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/16*(x^4/a^2 + 3*x^2/a^4 - 3*arcsin(a*x)^2/a^6)*a - 1/8*(2*sqrt(-a^2*x^2 +
 1)*x^3/a^2 + 3*sqrt(-a^2*x^2 + 1)*x/a^4 - 3*arcsin(a*x)/a^5)*arcsin(a*x)
```

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

$$\int \frac{x^4 \operatorname{asin}(a\,x)}{\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*asin(a*x))/(1 - a^2*x^2)^(1/2),x)
```

```
[Out] int((x^4*asin(a*x))/(1 - a^2*x^2)^(1/2), x)
```

sympy [A] time = 2.12, size = 82, normalized size = 0.93

$$\begin{cases} \frac{x^4}{16a} - \frac{x^3\sqrt{-a^2x^2+1}\operatorname{asin}(ax)}{4a^2} + \frac{3x^2}{16a^3} - \frac{3x\sqrt{-a^2x^2+1}\operatorname{asin}(ax)}{8a^4} + \frac{3\operatorname{asin}^2(ax)}{16a^5} & \text{for } a \neq 0 \\ 0 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*asin(a*x)/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Piecewise((x**4/(16*a) - x**3*sqrt(-a**2*x**2 + 1)*asin(a*x)/(4*a**2) + 3*x
**2/(16*a**3) - 3*x*sqrt(-a**2*x**2 + 1)*asin(a*x)/(8*a**4) + 3*asin(a*x)**
2/(16*a**5), Ne(a, 0)), (0, True))
```

3.102 $\int \frac{x^3 \sin^{-1}(ax)}{\sqrt{1-a^2x^2}} \, dx$

Optimal. Leaf size=72

$$\frac{2x}{3a^3} - \frac{x^2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{3a^2} - \frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{3a^4} + \frac{x^3}{9a}$$

```
[Out] 2/3*x/a^3+1/9*x^3/a-2/3*arcsin(a*x)*(-a^2*x^2+1)^(1/2)/a^4-1/3*x^2*arcsin(a
*x)*(-a^2*x^2+1)^(1/2)/a^2
```

Rubi [A] time = 0.11, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {4707, 4677, 8, 30}

$$-\frac{x^2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{3a^2} - \frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{3a^4} + \frac{2x}{3a^3} + \frac{x^3}{9a}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*ArcSin[a*x])/Sqrt[1 - a^2*x^2],x]
```

```
[Out] (2*x)/(3*a^3) + x^3/(9*a) - (2*Sqrt[1 - a^2*x^2]*ArcSin[a*x])/(3*a^4) - (x^
2*Sqrt[1 - a^2*x^2]*ArcSin[a*x])/(3*a^2)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^3 \sin^{-1}(ax)}{\sqrt{1-a^2x^2}}\,dx = -\frac{x^2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{3a^2} + \frac{2\int \frac{x\sin^{-1}(ax)}{\sqrt{1-a^2x^2}}\,dx}{3a^2} + \frac{\int x^2\,dx}{3a}$$
$$= \frac{x^3}{9a} - \frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{3a^4} - \frac{x^2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{3a^2} + \frac{2\int 1\,dx}{3a^3}$$
$$= \frac{2x}{3a^3} + \frac{x^3}{9a} - \frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{3a^4} - \frac{x^2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{3a^2}$$

Mathematica [A] time = 0.04, size = 49, normalized size = 0.68

$$\frac{ax\left(a^2x^2+6\right)-3\sqrt{1-a^2x^2}\left(a^2x^2+2\right)\sin^{-1}(ax)}{9a^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*ArcSin[a*x])/Sqrt[1 - a^2*x^2],x]
[Out] (a*x*(6 + a^2*x^2) - 3*Sqrt[1 - a^2*x^2]*(2 + a^2*x^2)*ArcSin[a*x])/(9*a^4)
```

fricas [A] time = 0.50, size = 44, normalized size = 0.61

$$\frac{a^3x^3-3\left(a^2x^2+2\right)\sqrt{-a^2x^2+1}\,\arcsin(ax)+6\,ax}{9\,a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
[Out] 1/9*(a^3*x^3 - 3*(a^2*x^2 + 2)*sqrt(-a^2*x^2 + 1)*arcsin(a*x) + 6*a*x)/a^4
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.09, size = 95, normalized size = 1.32

$$-\frac{\left(3a^4x^4\arcsin(ax)+3a^2x^2\arcsin(ax)+a^3x^3\sqrt{-a^2x^2+1}-6\arcsin(ax)+6ax\sqrt{-a^2x^2+1}\right)\sqrt{-a^2x^2+1}}{9a^4\left(a^2x^2-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*arcsin(a*x)/(-a^2*x^2+1)^(1/2),x)
[Out] -1/9/a^4*(3*a^4*x^4*arcsin(a*x)+3*a^2*x^2*arcsin(a*x)+a^3*x^3*(-a^2*x^2+1)^
(1/2)-6*arcsin(a*x)+6*a*x*(-a^2*x^2+1)^(1/2))*(-a^2*x^2+1)^(1/2)/(a^2*x^2-1
)
```

maxima [A] time = 0.48, size = 61, normalized size = 0.85

$$\frac{1}{9}a\left(\frac{x^3}{a^2}+\frac{6x}{a^4}\right)-\frac{1}{3}\left(\frac{\sqrt{-a^2x^2+1}\,x^2}{a^2}+\frac{2\sqrt{-a^2x^2+1}}{a^4}\right)\arcsin(ax)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/9*a*(x^3/a^2 + 6*x/a^4) - 1/3*(sqrt(-a^2*x^2 + 1)*x^2/a^2 + 2*sqrt(-a^2*x
^2 + 1)/a^4)*arcsin(a*x)
```

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

$$\int \frac{x^3 \operatorname{asin}(a\,x)}{\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*asin(a*x))/(1 - a^2*x^2)^(1/2),x)
```

```
[Out] int((x^3*asin(a*x))/(1 - a^2*x^2)^(1/2), x)
```

sympy [A] time = 1.12, size = 65, normalized size = 0.90

$$\begin{cases} \frac{x^3}{9a} - \frac{x^2\sqrt{-a^2x^2+1}\,\operatorname{asin}(ax)}{3a^2} + \frac{2x}{3a^3} - \frac{2\sqrt{-a^2x^2+1}\,\operatorname{asin}(ax)}{3a^4} & \text{for } a \neq 0 \\ 0 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*asin(a*x)/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Piecewise((x**3/(9*a) - x**2*sqrt(-a**2*x**2 + 1)*asin(a*x)/(3*a**2) + 2*x/
(3*a**3) - 2*sqrt(-a**2*x**2 + 1)*asin(a*x)/(3*a**4), Ne(a, 0)), (0, True))
```

3.103 $\int \frac{x^2 \sin^{-1}(ax)}{\sqrt{1-a^2x^2}} \, dx$

Optimal. Leaf size=50

$$\frac{\sin^{-1}(ax)^2}{4a^3} - \frac{x\sqrt{1-a^2x^2}\sin^{-1}(ax)}{2a^2} + \frac{x^2}{4a}$$

```
[Out] 1/4*x^2/a+1/4*arcsin(a*x)^2/a^3-1/2*x*arcsin(a*x)*(-a^2*x^2+1)^(1/2)/a^2
```

Rubi [A] time = 0.08, antiderivative size = 50, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$, Rules used = $\{4707, 4641, 30\}$

$$-\frac{x\sqrt{1-a^2x^2}\sin^{-1}(ax)}{2a^2} + \frac{\sin^{-1}(ax)^2}{4a^3} + \frac{x^2}{4a}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*ArcSin[a*x])/Sqrt[1 - a^2*x^2],x]
```

```
[Out] x^2/(4*a) - (x*Sqrt[1 - a^2*x^2]*ArcSin[a*x])/(2*a^2) + ArcSin[a*x]^2/(4*a^
3)
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^2 \sin^{-1}(ax)}{\sqrt{1-a^2x^2}} \, dx &= -\frac{x\sqrt{1-a^2x^2}\sin^{-1}(ax)}{2a^2} + \frac{\int \frac{\sin^{-1}(ax)}{\sqrt{1-a^2x^2}} \, dx}{2a^2} + \frac{\int x \, dx}{2a} \\
&= \frac{x^2}{4a} - \frac{x\sqrt{1-a^2x^2}\sin^{-1}(ax)}{2a^2} + \frac{\sin^{-1}(ax)^2}{4a^3}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 43, normalized size = 0.86

$$\frac{a^2x^2 - 2ax\sqrt{1-a^2x^2}\sin^{-1}(ax) + \sin^{-1}(ax)^2}{4a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*ArcSin[a*x])/Sqrt[1 - a^2*x^2],x]
```

```
[Out] (a^2*x^2 - 2*a*x*Sqrt[1 - a^2*x^2]*ArcSin[a*x] + ArcSin[a*x]^2)/(4*a^3)
```

fricas [A] time = 2.43, size = 39, normalized size = 0.78

$$\frac{a^2x^2 - 2\sqrt{-a^2x^2+1}\,ax\arcsin(ax) + \arcsin(ax)^2}{4\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/4*(a^2*x^2 - 2*sqrt(-a^2*x^2 + 1)*a*x*arcsin(a*x) + arcsin(a*x)^2)/a^3
```

giac [A] time = 0.40, size = 53, normalized size = 1.06

$$-\frac{\sqrt{-a^2x^2+1}\,x\arcsin(ax)}{2\,a^2} + \frac{\arcsin(ax)^2}{4\,a^3} + \frac{a^2x^2-1}{4\,a^3} + \frac{1}{8\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(-a^2*x^2 + 1)*x*arcsin(a*x)/a^2 + 1/4*arcsin(a*x)^2/a^3 + 1/4*(a^
2*x^2 - 1)/a^3 + 1/8/a^3
```

maple [A] time = 0.09, size = 40, normalized size = 0.80

$$\frac{-2\arcsin(ax)\sqrt{-a^2x^2+1}\;xa + a^2x^2 + \arcsin(ax)^2}{4a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arcsin(a*x)/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] 1/4*(-2*arcsin(a*x)*(-a^2*x^2+1)^(1/2)*x*a+a^2*x^2+arcsin(a*x)^2)/a^3
```

maxima [A] time = 0.51, size = 56, normalized size = 1.12

$$\frac{1}{4}a\left(\frac{x^2}{a^2} - \frac{\arcsin(ax)^2}{a^4}\right) - \frac{1}{2}\left(\frac{\sqrt{-a^2x^2+1}\,x}{a^2} - \frac{\arcsin(ax)}{a^3}\right)\arcsin(ax)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*a*(x^2/a^2 - arcsin(a*x)^2/a^4) - 1/2*(sqrt(-a^2*x^2 + 1)*x/a^2 - arcsi
n(a*x)/a^3)*arcsin(a*x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{x^2\,\mathrm{asin}(a\,x)}{\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*asin(a*x))/(1 - a^2*x^2)^(1/2),x)
```

```
[Out] int((x^2*asin(a*x))/(1 - a^2*x^2)^(1/2), x)
```

sympy [A] time = 0.73, size = 42, normalized size = 0.84

$$\begin{cases} \frac{x^2}{4a} - \frac{x\sqrt{-a^2x^2+1}\,\operatorname{asin}(ax)}{2a^2} + \frac{\operatorname{asin}^2(ax)}{4a^3} & \text{for } a \neq 0 \\ 0 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*asin(a*x)/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Piecewise((x**2/(4*a) - x*sqrt(-a**2*x**2 + 1)*asin(a*x)/(2*a**2) + asin(a*
x)**2/(4*a**3), Ne(a, 0)), (0, True))
```

3.104 $\int \frac{x \sin^{-1}(ax)}{\sqrt{1-a^2x^2}} \, dx$

Optimal. Leaf size=29

$$\frac{x}{a} - \frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{a^2}$$

[Out] x/a-arcsin(a*x)*(-a^2*x^2+1)^(1/2)/a^2

Rubi [A] time = 0.04, antiderivative size = 29, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {4677, 8}

$$\frac{x}{a} - \frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{a^2}$$

Antiderivative was successfully verified.

[In] Int[(x*ArcSin[a*x])/Sqrt[1 - a^2*x^2],x]

[Out] x/a - (Sqrt[1 - a^2*x^2]*ArcSin[a*x])/a^2

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{x \sin^{-1}(ax)}{\sqrt{1-a^2x^2}} \, dx &= -\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{a^2} + \frac{\int 1 \, dx}{a}\\ &= \frac{x}{a} - \frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{a^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 29, normalized size = 1.00

$$\frac{x}{a} - \frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{a^2}$$

Antiderivative was successfully verified.

[In] Integrate[(x*ArcSin[a*x])/Sqrt[1 - a^2*x^2],x]

[Out] x/a - (Sqrt[1 - a^2*x^2]*ArcSin[a*x])/a^2

fricas [A] time = 0.65, size = 26, normalized size = 0.90

$$\frac{ax - \sqrt{-a^2x^2+1}\,\arcsin(ax)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
[Out] (a*x - sqrt(-a^2*x^2 + 1)*arcsin(a*x))/a^2
```

giac [A] time = 0.42, size = 27, normalized size = 0.93

$$\frac{x}{a} - \frac{\sqrt{-a^2x^2+1}\arcsin(ax)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
[Out] x/a - sqrt(-a^2*x^2 + 1)*arcsin(a*x)/a^2
```

maple [B] time = 0.08, size = 62, normalized size = 2.14

$$-\frac{\sqrt{-a^2x^2+1}\,\left(a^2x^2\arcsin(ax) - \arcsin(ax) + ax\sqrt{-a^2x^2+1}\right)}{a^2\left(a^2x^2-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arcsin(a*x)/(-a^2*x^2+1)^(1/2),x)
[Out] -1/a^2*(-a^2*x^2+1)^(1/2)/(a^2*x^2-1)*(a^2*x^2*arcsin(a*x)-arcsin(a*x)+a*x*
(-a^2*x^2+1)^(1/2))
```

maxima [A] time = 0.49, size = 27, normalized size = 0.93

$$\frac{x}{a} - \frac{\sqrt{-a^2x^2+1}\arcsin(ax)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
[Out] x/a - sqrt(-a^2*x^2 + 1)*arcsin(a*x)/a^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x\,\mathrm{asin}(a\,x)}{\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*asin(a*x))/(1 - a^2*x^2)^(1/2),x)
[Out] int((x*asin(a*x))/(1 - a^2*x^2)^(1/2), x)
```

sympy [A] time = 0.41, size = 24, normalized size = 0.83

$$\begin{cases} \frac{x}{a} - \frac{\sqrt{-a^2x^2+1}\,\mathrm{asin}(ax)}{a^2} & \text{for}\ a \neq 0 \\ 0 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*asin(a*x)/(-a**2*x**2+1)**(1/2),x)
[Out] Piecewise((x/a - sqrt(-a**2*x**2 + 1)*asin(a*x)/a**2, Ne(a, 0)), (0, True))
```

3.105 $\int \frac{\sin^{-1}(ax)}{\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=13

$$\frac{\sin^{-1}(ax)^2}{2a}$$

[Out] 1/2*arcsin(a*x)^2/a

Rubi [A] time = 0.02, antiderivative size = 13, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {4641}

$$\frac{\sin^{-1}(ax)^2}{2a}$$

Antiderivative was successfully verified.

[In] Int[ArcSin[a*x]/Sqrt[1 - a^2*x^2],x]

[Out] ArcSin[a*x]^2/(2*a)

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{\sin^{-1}(ax)}{\sqrt{1-a^2x^2}}\,dx = \frac{\sin^{-1}(ax)^2}{2a}$$

Mathematica [A] time = 0.00, size = 13, normalized size = 1.00

$$\frac{\sin^{-1}(ax)^2}{2a}$$

Antiderivative was successfully verified.

[In] Integrate[ArcSin[a*x]/Sqrt[1 - a^2*x^2],x]

[Out] ArcSin[a*x]^2/(2*a)

fricas [A] time = 0.55, size = 11, normalized size = 0.85

$$\frac{\arcsin\left(ax\right)^2}{2\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")

[Out] 1/2*arcsin(a*x)^2/a

giac [A] time = 0.36, size = 11, normalized size = 0.85

$$\frac{\arcsin\left(ax\right)^2}{2\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*arcsin(a*x)^2/a
```

maple [A] time = 0.01, size = 12, normalized size = 0.92

$$\frac{\arcsin\left(ax\right)^{2}}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] 1/2*arcsin(a*x)^2/a
```

maxima [A] time = 0.55, size = 11, normalized size = 0.85

$$\frac{\arcsin\left(ax\right)^{2}}{2\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*arcsin(a*x)^2/a
```

mupad [B] time = 0.14, size = 11, normalized size = 0.85

$$\frac{\mathrm{asin}\left(a\,x\right)^2}{2\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)/(1 - a^2*x^2)^(1/2),x)
```

```
[Out] asin(a*x)^2/(2*a)
```

sympy [A] time = 0.33, size = 10, normalized size = 0.77

$$\begin{cases} \frac{\operatorname{asin}^{2}{\left(ax \right)}}{2a} & \text{for}\: a \neq 0 \\0 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Piecewise((asin(a*x)**2/(2*a), Ne(a, 0)), (0, True))
```

3.106 $\int \frac{\sin^{-1}(ax)}{x\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=52

$$i\text{Li}_2\left(-e^{i\sin^{-1}(ax)}\right)-i\text{Li}_2\left(e^{i\sin^{-1}(ax)}\right)-2\sin^{-1}(ax)\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right)$$

```
[Out] -2*arcsin(a*x)*arctanh(I*a*x+(-a^2*x^2+1)^(1/2))+I*polylog(2,-I*a*x-(-a^2*x
^2+1)^(1/2))-I*polylog(2,I*a*x+(-a^2*x^2+1)^(1/2))
```

Rubi [A] time = 0.08, antiderivative size = 52, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {4709, 4183, 2279, 2391}

$$i\text{PolyLog}\left(2,-e^{i\sin^{-1}(ax)}\right)-i\text{PolyLog}\left(2,e^{i\sin^{-1}(ax)}\right)-2\sin^{-1}(ax)\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right)$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a*x]/(x*Sqrt[1 - a^2*x^2]),x]
```

```
[Out] -2*ArcSin[a*x]*ArcTanh[E^(I*ArcSin[a*x])] + I*PolyLog[2, -E^(I*ArcSin[a*x])
] - I*PolyLog[2, E^(I*ArcSin[a*x])]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{\sin^{-1}(ax)}{x\sqrt{1-a^2x^2}}\,dx &= \text{Subst}\left(\int x\csc(x)\,dx,x,\sin^{-1}(ax)\right)\\ &= -2\sin^{-1}(ax)\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right)-\text{Subst}\left(\int \log\left(1-e^{ix}\right)\,dx,x,\sin^{-1}(ax)\right)+\text{Subst}\left(\int \text{lo}\right.\\ &= -2\sin^{-1}(ax)\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right)+i\,\text{Subst}\left(\int \frac{\log(1-x)}{x}\,dx,x,e^{i\sin^{-1}(ax)}\right)-i\,\text{Subst}\left(\int \frac{\text{lo}}{}\right.\\ &= -2\sin^{-1}(ax)\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right)+i\text{Li}_2\left(-e^{i\sin^{-1}(ax)}\right)-i\text{Li}_2\left(e^{i\sin^{-1}(ax)}\right)\end{aligned}$$

Mathematica [A] time = 0.13, size = 71, normalized size = 1.37

$$i\text{Li}_2\left(-e^{i\sin^{-1}(ax)}\right)-i\text{Li}_2\left(e^{i\sin^{-1}(ax)}\right)+\sin^{-1}(ax)\left(\log\left(1-e^{i\sin^{-1}(ax)}\right)-\log\left(1+e^{i\sin^{-1}(ax)}\right)\right)$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcSin[a*x]/(x*Sqrt[1 - a^2*x^2]),x]
```

```
[Out] ArcSin[a*x]*(Log[1 - E^(I*ArcSin[a*x])] - Log[1 + E^(I*ArcSin[a*x])]) + I*P
olyLog[2, -E^(I*ArcSin[a*x])] - I*PolyLog[2, E^(I*ArcSin[a*x])]
```

fricas [F] time = 2.03, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-a^2x^2+1}\,\arcsin(ax)}{a^2x^3-x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)/x/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-a^2*x^2 + 1)*arcsin(a*x)/(a^2*x^3 - x), x)
```

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

$$\int\frac{\arcsin(ax)}{\sqrt{-a^2x^2+1}\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)/x/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(arcsin(a*x)/(sqrt(-a^2*x^2 + 1)*x), x)
```

maple [A] time = 0.08, size = 103, normalized size = 1.98

$$\arcsin(ax)\ln\left(1-iax-\sqrt{-a^2x^2+1}\right)-\arcsin(ax)\ln\left(1+iax+\sqrt{-a^2x^2+1}\right)+i\,\text{dilog}\left(1+iax+\sqrt{-a^2x^2+1}\right)-i$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)/x/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] arcsin(a*x)*ln(1-I*a*x-(-a^2*x^2+1)^(1/2))-arcsin(a*x)*ln(1+I*a*x+(-a^2*x^2
+1)^(1/2))+I*dilog(1+I*a*x+(-a^2*x^2+1)^(1/2))-I*dilog(1-I*a*x-(-a^2*x^2+1)
^(1/2))
```

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

$$\int\frac{\arcsin(ax)}{\sqrt{-a^2x^2+1}\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)/x/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(arcsin(a*x)/(sqrt(-a^2*x^2 + 1)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int\frac{\text{asin}(a\,x)}{x\,\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)/(x*(1 - a^2*x^2)^(1/2)),x)
[Out] int(asin(a*x)/(x*(1 - a^2*x^2)^(1/2)), x)
```

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

$$\int \frac{\operatorname{asin}\left(ax\right)}{x\sqrt{-\left(ax-1\right)\left(ax+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)/x/(-a**2*x**2+1)**(1/2),x)
[Out] Integral(asin(a*x)/(x*sqrt(-(a*x - 1)*(a*x + 1))), x)
```

3.107 $\int \frac{\sin^{-1}(ax)}{x^2\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=28

$$a\log(x) - \frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{x}$$

[Out] a*ln(x)-arcsin(a*x)*(-a^2*x^2+1)^(1/2)/x

Rubi [A] time = 0.06, antiderivative size = 28, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{4681, 29\}$

$$a\log(x) - \frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{x}$$

Antiderivative was successfully verified.

[In] Int[ArcSin[a*x]/(x^2*Sqrt[1 - a^2*x^2]),x]

[Out] -((Sqrt[1 - a^2*x^2]*ArcSin[a*x])/x) + a*Log[x]

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 4681

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^F
racPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c
^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d,
 e, f, m, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] &
& NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{\sin^{-1}(ax)}{x^2\sqrt{1-a^2x^2}}\,dx &= -\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{x} + a\int \frac{1}{x}\,dx\\ &= -\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{x} + a\log(x)\end{aligned}$$

Mathematica [A] time = 0.03, size = 28, normalized size = 1.00

$$a\log(x) - \frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{x}$$

Antiderivative was successfully verified.

[In] Integrate[ArcSin[a*x]/(x^2*Sqrt[1 - a^2*x^2]),x]

[Out] -((Sqrt[1 - a^2*x^2]*ArcSin[a*x])/x) + a*Log[x]

fricas [A] time = 0.97, size = 28, normalized size = 1.00

$$\frac{ax\log(x) - \sqrt{-a^2x^2+1}\,\arcsin(ax)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)/x^2/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] (a*x*log(x) - sqrt(-a^2*x^2 + 1)*arcsin(a*x))/x
```

giac [B] time = 0.36, size = 67, normalized size = 2.39

$$\frac{1}{2}\left(\frac{a^4x}{\left(\sqrt{-a^2x^2+1}\,|a|+a\right)|a|}-\frac{\sqrt{-a^2x^2+1}\,|a|+a}{x|a|}\right)\arcsin(ax)+a\log(|x|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)/x^2/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*(a^4*x/((sqrt(-a^2*x^2 + 1)*abs(a) + a)*abs(a)) - (sqrt(-a^2*x^2 + 1)*a
bs(a) + a)/(x*abs(a)))*arcsin(a*x) + a*log(abs(x))
```

maple [A] time = 0.09, size = 32, normalized size = 1.14

$$-\frac{-\ln(ax)\,ax+\arcsin(ax)\sqrt{-a^2x^2+1}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)/x^2/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] -(-ln(a*x)*a*x+arcsin(a*x)*(-a^2*x^2+1)^(1/2))/x
```

maxima [A] time = 0.54, size = 26, normalized size = 0.93

$$a\log(x)-\frac{\sqrt{-a^2x^2+1}\,\arcsin(ax)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)/x^2/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] a*log(x) - sqrt(-a^2*x^2 + 1)*arcsin(a*x)/x
```

mupad [F] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\mathrm{asin}(a\,x)}{x^2\,\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)/(x^2*(1 - a^2*x^2)^(1/2)),x)
```

```
[Out] int(asin(a*x)/(x^2*(1 - a^2*x^2)^(1/2)), x)
```

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

$$\int \frac{\mathrm{asin}(ax)}{x^2\sqrt{-(ax-1)(ax+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)/x**2/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(asin(a*x)/(x**2*sqrt(-(a*x - 1)*(a*x + 1))), x)
```

3.108 $\int \frac{\sin^{-1}(ax)}{x^3\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=98

$$\frac{1}{2}ia^2\mathrm{Li}_2\left(-e^{i\sin^{-1}(ax)}\right)-\frac{1}{2}ia^2\mathrm{Li}_2\left(e^{i\sin^{-1}(ax)}\right)-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{2x^2}+a^2\left(-\sin^{-1}(ax)\right)\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right)-\frac{a}{2x}$$

```
[Out] -1/2*a/x-a^2*arcsin(a*x)*arctanh(I*a*x+(-a^2*x^2+1)^(1/2))+1/2*I*a^2*polylo
g(2,-I*a*x-(-a^2*x^2+1)^(1/2))-1/2*I*a^2*polylog(2,I*a*x+(-a^2*x^2+1)^(1/2)
)-1/2*arcsin(a*x)*(-a^2*x^2+1)^(1/2)/x^2
```

Rubi [A] time = 0.15, antiderivative size = 98, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {4701, 4709, 4183, 2279, 2391, 30}

$$\frac{1}{2}ia^2\mathrm{PolyLog}\left(2,-e^{i\sin^{-1}(ax)}\right)-\frac{1}{2}ia^2\mathrm{PolyLog}\left(2,e^{i\sin^{-1}(ax)}\right)-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{2x^2}+a^2\left(-\sin^{-1}(ax)\right)\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right.$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a*x]/(x^3*Sqrt[1 - a^2*x^2]),x]
```

```
[Out] -a/(2*x) - (Sqrt[1 - a^2*x^2]*ArcSin[a*x])/(2*x^2) - a^2*ArcSin[a*x]*ArcTan
h[E^(I*ArcSin[a*x])] + (I/2)*a^2*PolyLog[2, -E^(I*ArcSin[a*x])] - (I/2)*a^2
*PolyLog[2, E^(I*ArcSin[a*x])]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
```

```
0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{\sin^{-1}(ax)}{x^3\sqrt{1-a^2x^2}}\,dx = -\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{2x^2}+\frac{1}{2}a\int\frac{1}{x^2}\,dx+\frac{1}{2}a^2\int\frac{\sin^{-1}(ax)}{x\sqrt{1-a^2x^2}}\,dx$$

$$= -\frac{a}{2x}-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{2x^2}+\frac{1}{2}a^2\,\text{Subst}\left(\int x\csc(x)\,dx,x,\sin^{-1}(ax)\right)$$

$$= -\frac{a}{2x}-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{2x^2}-a^2\sin^{-1}(ax)\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right)-\frac{1}{2}a^2\,\text{Subst}\left(\int\log\left(1-\right.\right.$$

$$= -\frac{a}{2x}-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{2x^2}-a^2\sin^{-1}(ax)\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right)+\frac{1}{2}\left(ia^2\right)\text{Subst}\left(\int\frac{\log(1}{x}\right.$$

$$= -\frac{a}{2x}-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{2x^2}-a^2\sin^{-1}(ax)\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right)+\frac{1}{2}ia^2\text{Li}_2\left(-e^{i\sin^{-1}(ax)}\right)-$$

Mathematica [A] time = 0.92, size = 137, normalized size = 1.40

$$\frac{1}{8}a^2\left(4i\text{Li}_2\left(-e^{i\sin^{-1}(ax)}\right)-4i\text{Li}_2\left(e^{i\sin^{-1}(ax)}\right)+4\sin^{-1}(ax)\log\left(1-e^{i\sin^{-1}(ax)}\right)-4\sin^{-1}(ax)\log\left(1+e^{i\sin^{-1}(ax)}\right)-\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcSin[a*x]/(x^3*Sqrt[1 - a^2*x^2]),x]
```

```
[Out] (a^2*(-2*Cot[ArcSin[a*x]/2] - ArcSin[a*x]*Csc[ArcSin[a*x]/2]^2 + 4*ArcSin[a
*x]*Log[1 - E^(I*ArcSin[a*x])] - 4*ArcSin[a*x]*Log[1 + E^(I*ArcSin[a*x])] +
 (4*I)*PolyLog[2, -E^(I*ArcSin[a*x])] - (4*I)*PolyLog[2, E^(I*ArcSin[a*x])]
 + ArcSin[a*x]*Sec[ArcSin[a*x]/2]^2 - 2*Tan[ArcSin[a*x]/2]))/8
```

fricas [F] time = 1.37, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-a^2x^2+1}\,\arcsin(ax)}{a^2x^5-x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)/x^3/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-a^2*x^2 + 1)*arcsin(a*x)/(a^2*x^5 - x^3), x)
```

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

$$\int\frac{\arcsin(ax)}{\sqrt{-a^2x^2+1}\,x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)/x^3/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(arcsin(a*x)/(sqrt(-a^2*x^2 + 1)*x^3), x)
```

maple [A] time = 0.35, size = 178, normalized size = 1.82

$$-\frac{\sqrt{-a^2x^2+1}\,\left(a^2x^2\arcsin\left(ax\right)-ax\sqrt{-a^2x^2+1}-\arcsin\left(ax\right)\right)}{2\left(a^2x^2-1\right)x^2}-\frac{a^2\arcsin\left(ax\right)\ln\left(1+iax+\sqrt{-a^2x^2+1}\right)}{2}+\frac{a^2 \mathrm{a}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)/x^3/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] -1/2*(-a^2*x^2+1)^(1/2)/(a^2*x^2-1)/x^2*(a^2*x^2*arcsin(a*x)-a*x*(-a^2*x^2+
1)^(1/2)-arcsin(a*x))-1/2*a^2*arcsin(a*x)*ln(1+I*a*x+(-a^2*x^2+1)^(1/2))+1/
2*a^2*arcsin(a*x)*ln(1-I*a*x-(-a^2*x^2+1)^(1/2))+1/2*I*a^2*polylog(2,-I*a*x
-(-a^2*x^2+1)^(1/2))-1/2*I*a^2*polylog(2,I*a*x+(-a^2*x^2+1)^(1/2))
```

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

$$\int \frac{\arcsin\left(ax\right)}{\sqrt{-a^2x^2+1}\,x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)/x^3/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(arcsin(a*x)/(sqrt(-a^2*x^2 + 1)*x^3), x)
```

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

$$\int \frac{\mathrm{asin}\left(a\,x\right)}{x^3\,\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)/(x^3*(1 - a^2*x^2)^(1/2)),x)
```

```
[Out] int(asin(a*x)/(x^3*(1 - a^2*x^2)^(1/2)), x)
```

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

$$\int \frac{\mathrm{asin}\left(ax\right)}{x^3\sqrt{-\left(ax-1\right)\left(ax+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)/x**3/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(asin(a*x)/(x**3*sqrt(-(a*x - 1)*(a*x + 1))), x)
```

3.109 $\int \frac{x^5\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=224

$$-\frac{x^4\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{5c^2d}-\frac{8\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{15c^6d}-\frac{4x^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{15c^4d}+\frac{bx^5\sqrt{1-}}{25c\sqrt{d-}}$$

```
[Out] 8/15*b*x*(-c^2*x^2+1)^(1/2)/c^5/(-c^2*d*x^2+d)^(1/2)+4/45*b*x^3*(-c^2*x^2+1
)^(1/2)/c^3/(-c^2*d*x^2+d)^(1/2)+1/25*b*x^5*(-c^2*x^2+1)^(1/2)/c/(-c^2*d*x^
2+d)^(1/2)-8/15*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c^6/d-4/15*x^2*(a+b*
arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c^4/d-1/5*x^4*(a+b*arcsin(c*x))*(-c^2*d*x
^2+d)^(1/2)/c^2/d
```

Rubi [A] time = 0.27, antiderivative size = 224, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {4707, 4677, 8, 30}

$$-\frac{x^4\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{5c^2d}-\frac{4x^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{15c^4d}-\frac{8\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{15c^6d}+\frac{bx^5\sqrt{1-}}{25c\sqrt{d-}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (8*b*x*Sqrt[1 - c^2*x^2])/(15*c^5*Sqrt[d - c^2*d*x^2]) + (4*b*x^3*Sqrt[1 -
c^2*x^2])/(45*c^3*Sqrt[d - c^2*d*x^2]) + (b*x^5*Sqrt[1 - c^2*x^2])/(25*c*Sq
rt[d - c^2*d*x^2]) - (8*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(15*c^6*d)
 - (4*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(15*c^4*d) - (x^4*Sqrt[d
 - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(5*c^2*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^5\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx = -\frac{x^4\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{5c^2d}+\frac{4\int\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx}{5c^2}+\frac{\left(b\sqrt{1-c^2x^2}\right)\int x^4\,dx}{5c\sqrt{d-c^2dx^2}}$$

$$=\frac{bx^5\sqrt{1-c^2x^2}}{25c\sqrt{d-c^2dx^2}}-\frac{4x^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{15c^4d}-\frac{x^4\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx\right.}{5c^2d}$$

$$=\frac{4bx^3\sqrt{1-c^2x^2}}{45c^3\sqrt{d-c^2dx^2}}+\frac{bx^5\sqrt{1-c^2x^2}}{25c\sqrt{d-c^2dx^2}}-\frac{8\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{15c^6d}-\frac{4x^2\sqrt{d-c^2d}}{}$$

$$=\frac{8bx\sqrt{1-c^2x^2}}{15c^5\sqrt{d-c^2dx^2}}+\frac{4bx^3\sqrt{1-c^2x^2}}{45c^3\sqrt{d-c^2dx^2}}+\frac{bx^5\sqrt{1-c^2x^2}}{25c\sqrt{d-c^2dx^2}}-\frac{8\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(\right.}{15c^6d}$$

Mathematica [A] time = 0.11, size = 119, normalized size = 0.53

$$\frac{15a\left(3c^6x^6+c^4x^4+4c^2x^2-8\right)+bcx\sqrt{1-c^2x^2}\left(9c^4x^4+20c^2x^2+120\right)+15b\left(3c^6x^6+c^4x^4+4c^2x^2-8\right)\sin^{-1}(c}{225c^6\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (b*c*x*Sqrt[1 - c^2*x^2]*(120 + 20*c^2*x^2 + 9*c^4*x^4) + 15*a*(-8 + 4*c^2*
x^2 + c^4*x^4 + 3*c^6*x^6) + 15*b*(-8 + 4*c^2*x^2 + c^4*x^4 + 3*c^6*x^6)*Ar
cSin[c*x])/(225*c^6*Sqrt[d - c^2*d*x^2])
```

fricas [A] time = 0.74, size = 150, normalized size = 0.67

$$-\frac{\left(9\,bc^5x^5+20\,bc^3x^3+120\,bcx\right)\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+1}\,+15\left(3\,ac^6x^6+ac^4x^4+4\,ac^2x^2+\left(3\,bc^6x^6+bc^4x^4+4\right.\right.}{225\left(c^8dx^2-c^6d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/225*((9*b*c^5*x^5 + 20*b*c^3*x^3 + 120*b*c*x)*sqrt(-c^2*d*x^2 + d)*sqrt(
-c^2*x^2 + 1) + 15*(3*a*c^6*x^6 + a*c^4*x^4 + 4*a*c^2*x^2 + (3*b*c^6*x^6 +
b*c^4*x^4 + 4*b*c^2*x^2 - 8*b)*arcsin(c*x) - 8*a)*sqrt(-c^2*d*x^2 + d))/(c^
8*d*x^2 - c^6*d)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.50, size = 521, normalized size = 2.33

$$a\left(-\frac{x^4\sqrt{-c^2d\,x^2+d}}{5c^2d}+\frac{-\frac{4x^2\sqrt{-c^2d\,x^2+d}}{15c^2d}-\frac{8\sqrt{-c^2d\,x^2+d}}{15d\,c^4}}{c^2}\right)+b\left(\frac{5\sqrt{-d\left(c^2x^2-1\right)}\left(2c^2x^2-2i\sqrt{-c^2x^2+1}\,xc-1\right)(i+3}{576c^6d\left(c^2x^2-1\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] a*(-1/5*x^4/c^2/d*(-c^2*d*x^2+d)^(1/2)+4/5/c^2*(-1/3*x^2/c^2/d*(-c^2*d*x^2+
d)^(1/2)-2/3/d/c^4*(-c^2*d*x^2+d)^(1/2)))+b*(5/576*(-d*(c^2*x^2-1))^(1/2)*(
2*c^2*x^2-2*I*(-c^2*x^2+1)^(1/2)*x*c-1)*(I+3*arcsin(c*x))/c^6/d/(c^2*x^2-1)
-5/16*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*(I+arcsin
(c*x))/c^6/d/(c^2*x^2-1)-5/16*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*
x*c+c^2*x^2-1)*(arcsin(c*x)-I)/c^6/d/(c^2*x^2-1)+5/576*(-d*(c^2*x^2-1))^(1/
2)*(2*I*(-c^2*x^2+1)^(1/2)*x*c+2*c^2*x^2-1)*(-I+3*arcsin(c*x))/c^6/d/(c^2*x
^2-1)+1/160*(-d*(c^2*x^2-1))^(1/2)/c^6/d/(c^2*x^2-1)*arcsin(c*x)*cos(6*arcs
in(c*x))-1/800*(-d*(c^2*x^2-1))^(1/2)/c^6/d/(c^2*x^2-1)*sin(6*arcsin(c*x))-
11/240*(-d*(c^2*x^2-1))^(1/2)/c^6/d/(c^2*x^2-1)*arcsin(c*x)*cos(4*arcsin(c*
x))+29/1800*(-d*(c^2*x^2-1))^(1/2)/c^6/d/(c^2*x^2-1)*sin(4*arcsin(c*x)))
```

maxima [A] time = 0.60, size = 180, normalized size = 0.80

$$-\frac{1}{15}\left(\frac{3\sqrt{-c^2dx^2+d}\,x^4}{c^2d}+\frac{4\sqrt{-c^2dx^2+d}\,x^2}{c^4d}+\frac{8\sqrt{-c^2dx^2+d}}{c^6d}\right)b\arcsin(cx)-\frac{1}{15}\left(\frac{3\sqrt{-c^2dx^2+d}\,x^4}{c^2d}+\frac{4\sqrt{-c^2}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/15*(3*sqrt(-c^2*d*x^2 + d)*x^4/(c^2*d) + 4*sqrt(-c^2*d*x^2 + d)*x^2/(c^4
*d) + 8*sqrt(-c^2*d*x^2 + d)/(c^6*d))*b*arcsin(c*x) - 1/15*(3*sqrt(-c^2*d*x
^2 + d)*x^4/(c^2*d) + 4*sqrt(-c^2*d*x^2 + d)*x^2/(c^4*d) + 8*sqrt(-c^2*d*x^
2 + d)/(c^6*d))*a + 1/225*(9*c^4*x^5 + 20*c^2*x^3 + 120*x)*b/(c^5*sqrt(d))
```

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

$$\int \frac{x^5\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int((x^5*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(1/2), x)
```

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

$$\int \frac{x^5\left(a+b\,\mathrm{asin}\left(cx\right)\right)}{\sqrt{-d\left(cx-1\right)\left(cx+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral(x**5*(a + b*asin(c*x))/sqrt(-d*(c*x - 1)*(c*x + 1)), x)
```

3.110 $\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=200

$$-\frac{x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{4c^2d}+\frac{3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{16bc^5\sqrt{d-c^2dx^2}}-\frac{3x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{8c^4d}+\frac{bx^4\sqrt{1-c^2x^2}}{16c\sqrt{d-c^2dx^2}}$$

```
[Out] 3/16*b*x^2*(-c^2*x^2+1)^(1/2)/c^3/(-c^2*d*x^2+d)^(1/2)+1/16*b*x^4*(-c^2*x^2
+1)^(1/2)/c/(-c^2*d*x^2+d)^(1/2)+3/16*(a+b*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2
)/b/c^5/(-c^2*d*x^2+d)^(1/2)-3/8*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c
^4/d-1/4*x^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c^2/d
```

Rubi [A] time = 0.25, antiderivative size = 200, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {4707, 4643, 4641, 30}

$$-\frac{x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{4c^2d}-\frac{3x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{8c^4d}+\frac{3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{16bc^5\sqrt{d-c^2dx^2}}+\frac{bx^4\sqrt{1-c^2x^2}}{16c\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (3*b*x^2*Sqrt[1 - c^2*x^2])/(16*c^3*Sqrt[d - c^2*d*x^2]) + (b*x^4*Sqrt[1 -
c^2*x^2])/(16*c*Sqrt[d - c^2*d*x^2]) - (3*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcS
in[c*x]))/(8*c^4*d) - (x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(4*c^2*
d) + (3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(16*b*c^5*Sqrt[d - c^2*d*x
^2])
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4643

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcSin[c*x])^n
/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e
, 0] &&  !GtQ[d, 0]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx = -\frac{x^3\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)}{4c^2d} + \frac{3\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx}{4c^2} + \frac{\left(b\sqrt{1-c^2x^2}\right)\int x^3\,dx}{4c\sqrt{d-c^2dx^2}}$$

$$= \frac{bx^4\sqrt{1-c^2x^2}}{16c\sqrt{d-c^2dx^2}} - \frac{3x\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)}{8c^4d} - \frac{x^3\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(c\right.}{4c^2d}$$

$$= \frac{3bx^2\sqrt{1-c^2x^2}}{16c^3\sqrt{d-c^2dx^2}} + \frac{bx^4\sqrt{1-c^2x^2}}{16c\sqrt{d-c^2dx^2}} - \frac{3x\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)}{8c^4d} - \frac{x^3\sqrt{d-c}}{}$$

$$= \frac{3bx^2\sqrt{1-c^2x^2}}{16c^3\sqrt{d-c^2dx^2}} + \frac{bx^4\sqrt{1-c^2x^2}}{16c\sqrt{d-c^2dx^2}} - \frac{3x\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)}{8c^4d} - \frac{x^3\sqrt{d-c}}{}$$

Mathematica [A] time = 0.97, size = 161, normalized size = 0.80

$$\frac{-\frac{16acx\left(2c^2x^2+3\right)\sqrt{d-c^2dx^2}}{d} - \frac{48a\tan^{-1}\left(\frac{cx\sqrt{d-c^2dx^2}}{\sqrt{d}\left(c^2x^2-1\right)}\right)}{\sqrt{d}} + \frac{b\sqrt{1-c^2x^2}\left(4\sin^{-1}(cx)\left(6\sin^{-1}(cx)-8\sin\left(2\sin^{-1}(cx)\right)+\sin\left(4\sin^{-1}(cx)\right)\right)-16\cos\left(2\sin\right.}{\sqrt{d-c^2dx^2}}}{128c^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] ((-16*a*c*x*(3 + 2*c^2*x^2)*Sqrt[d - c^2*d*x^2])/d - (48*a*ArcTan[(c*x*Sqrt
[d - c^2*d*x^2])/(Sqrt[d]*(-1 + c^2*x^2))])/Sqrt[d] + (b*Sqrt[1 - c^2*x^2]*
(-16*Cos[2*ArcSin[c*x]] + Cos[4*ArcSin[c*x]] + 4*ArcSin[c*x]*(6*ArcSin[c*x]
 - 8*Sin[2*ArcSin[c*x]] + Sin[4*ArcSin[c*x]])))/Sqrt[d - c^2*d*x^2])/(128*c
^5)
```

fricas [F] time = 1.56, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\left(bx^4\arcsin\left(cx\right)+ax^4\right)\sqrt{-c^2dx^2+d}}{c^2dx^2-d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-(b*x^4*arcsin(c*x) + a*x^4)*sqrt(-c^2*d*x^2 + d)/(c^2*d*x^2 - d),
 x)
```

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

$$\int \frac{\left(b\arcsin\left(cx\right)+a\right)x^4}{\sqrt{-c^2dx^2+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)*x^4/sqrt(-c^2*d*x^2 + d), x)
```

maple [B] time = 0.60, size = 381, normalized size = 1.90

$$-\frac{a\,x^3\sqrt{-c^2d\,x^2+d}}{4c^2d} - \frac{3ax\sqrt{-c^2d\,x^2+d}}{8c^4d} + \frac{3a\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2d\,x^2+d}}\right)}{8c^4\sqrt{c^2d}} - \frac{3b\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x^2+1}\,\arcsin\left(cx\right)^2}{16c^5d\left(c^2x^2-1\right)} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] -1/4*a*x^3/c^2/d*(-c^2*d*x^2+d)^(1/2)-3/8*a/c^4*x/d*(-c^2*d*x^2+d)^(1/2)+3/
8*a/c^4/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-3/16*b*(
-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^5/d/(c^2*x^2-1)*arcsin(c*x)^2-1/
16*b/c^5/(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)+1/8*b*(-d*(c^2*x^2-1))^(
1/2)/c^4/d/(c^2*x^2-1)*arcsin(c*x)*x-1/256*b*(-d*(c^2*x^2-1))^(1/2)/c^5/d/(
c^2*x^2-1)*cos(5*arcsin(c*x))-1/64*b*(-d*(c^2*x^2-1))^(1/2)/c^5/d/(c^2*x^2-
1)*arcsin(c*x)*sin(5*arcsin(c*x))+15/256*b*(-d*(c^2*x^2-1))^(1/2)/c^5/d/(c^
2*x^2-1)*cos(3*arcsin(c*x))+7/64*b*(-d*(c^2*x^2-1))^(1/2)/c^5/d/(c^2*x^2-1)
*arcsin(c*x)*sin(3*arcsin(c*x))
```

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

$$-\frac{1}{8}a\left(\frac{2\sqrt{-c^2dx^2+d}\,x^3}{c^2d}+\frac{3\sqrt{-c^2dx^2+d}\,x}{c^4d}-\frac{3\arcsin(cx)}{c^5\sqrt{d}}\right)+\frac{b\int\frac{x^4\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)}{\sqrt{cx+1}\sqrt{-cx+1}}\,dx}{\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/8*a*(2*sqrt(-c^2*d*x^2 + d)*x^3/(c^2*d) + 3*sqrt(-c^2*d*x^2 + d)*x/(c^4*
d) - 3*arcsin(c*x)/(c^5*sqrt(d))) + b*integrate(x^4*arctan2(c*x, sqrt(c*x +
 1)*sqrt(-c*x + 1))/(sqrt(c*x + 1)*sqrt(-c*x + 1)), x)/sqrt(d)
```

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

$$\int\frac{x^4\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int((x^4*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(1/2), x)
```

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

$$\int\frac{x^4\left(a+b\,\mathrm{asin}\,(cx)\right)}{\sqrt{-d\,(cx-1)\,(cx+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral(x**4*(a + b*asin(c*x))/sqrt(-d*(c*x - 1)*(c*x + 1)), x)
```

3.111 $\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=148

$$-\frac{x^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3c^2d}-\frac{2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3c^4d}+\frac{bx^3\sqrt{1-c^2x^2}}{9c\sqrt{d-c^2dx^2}}+\frac{2bx\sqrt{1-c^2x^2}}{3c^3\sqrt{d-c^2dx^2}}$$

```
[Out] 2/3*b*x*(-c^2*x^2+1)^(1/2)/c^3/(-c^2*d*x^2+d)^(1/2)+1/9*b*x^3*(-c^2*x^2+1)^
(1/2)/c/(-c^2*d*x^2+d)^(1/2)-2/3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c^4
/d-1/3*x^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c^2/d
```

Rubi [A] time = 0.16, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {4707, 4677, 8, 30}

$$-\frac{x^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3c^2d}-\frac{2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3c^4d}+\frac{bx^3\sqrt{1-c^2x^2}}{9c\sqrt{d-c^2dx^2}}+\frac{2bx\sqrt{1-c^2x^2}}{3c^3\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (2*b*x*Sqrt[1 - c^2*x^2])/(3*c^3*Sqrt[d - c^2*d*x^2]) + (b*x^3*Sqrt[1 - c^2
*x^2])/(9*c*Sqrt[d - c^2*d*x^2]) - (2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x
]))/(3*c^4*d) - (x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*c^2*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^3 \left(a + b \sin^{-1}(cx)\right)}{\sqrt{d - c^2dx^2}} dx = -\frac{x^2\sqrt{d - c^2dx^2} \left(a + b \sin^{-1}(cx)\right)}{3c^2d} + \frac{2 \int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}} dx}{3c^2} + \frac{\left(b\sqrt{1 - c^2x^2}\right) \int x^2 dx}{3c\sqrt{d - c^2dx^2}}$$

$$= \frac{bx^3\sqrt{1 - c^2x^2}}{9c\sqrt{d - c^2dx^2}} - \frac{2\sqrt{d - c^2dx^2} \left(a + b \sin^{-1}(cx)\right)}{3c^4d} - \frac{x^2\sqrt{d - c^2dx^2} \left(a + b \sin^{-1}(cx)\right)}{3c^2d} +$$

$$= \frac{2bx\sqrt{1 - c^2x^2}}{3c^3\sqrt{d - c^2dx^2}} + \frac{bx^3\sqrt{1 - c^2x^2}}{9c\sqrt{d - c^2dx^2}} - \frac{2\sqrt{d - c^2dx^2} \left(a + b \sin^{-1}(cx)\right)}{3c^4d} - \frac{x^2\sqrt{d - c^2dx^2} (}{3c}$$

Mathematica [A] time = 0.06, size = 92, normalized size = 0.62

$$\frac{3a \left(c^4x^4 + c^2x^2 - 2\right) + bcx\sqrt{1 - c^2x^2} \left(c^2x^2 + 6\right) + 3b \left(c^4x^4 + c^2x^2 - 2\right) \sin^{-1}(cx)}{9c^4\sqrt{d - c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (b*c*x*Sqrt[1 - c^2*x^2]*(6 + c^2*x^2) + 3*a*(-2 + c^2*x^2 + c^4*x^4) + 3*b
*(-2 + c^2*x^2 + c^4*x^4)*ArcSin[c*x])/(9*c^4*Sqrt[d - c^2*d*x^2])
```

fricas [A] time = 0.58, size = 120, normalized size = 0.81

$$-\frac{\left(bc^3x^3 + 6\,bcx\right)\sqrt{-c^2dx^2 + d}\,\sqrt{-c^2x^2 + 1}\, + 3\left(ac^4x^4 + ac^2x^2 + \left(bc^4x^4 + bc^2x^2 - 2\,b\right)\arcsin\left(cx\right) - 2\,a\right)\sqrt{-c^2dx^2}}{9\left(c^6dx^2 - c^4d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/9*((b*c^3*x^3 + 6*b*c*x)*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1) + 3*(a*
c^4*x^4 + a*c^2*x^2 + (b*c^4*x^4 + b*c^2*x^2 - 2*b)*arcsin(c*x) - 2*a)*sqrt
(-c^2*d*x^2 + d))/(c^6*d*x^2 - c^4*d)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.29, size = 407, normalized size = 2.75

$$a\left(-\frac{x^2\sqrt{-c^2d\,x^2 + d}}{3c^2d} - \frac{2\sqrt{-c^2d\,x^2 + d}}{3d\,c^4}\right)+b\left(\frac{\sqrt{-d\left(c^2x^2 - 1\right)}\,\left(2c^2x^2 - 2i\sqrt{-c^2x^2 + 1}\,xc - 1\right)\left(i + 3\arcsin\left(cx\right)\right)}{144c^4d\left(c^2x^2 - 1\right)} - \right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] a*(-1/3*x^2/c^2/d*(-c^2*d*x^2+d)^(1/2)-2/3/d/c^4*(-c^2*d*x^2+d)^(1/2))+b*(1
/144*(-d*(c^2*x^2-1))^(1/2)*(2*c^2*x^2-2*I*(-c^2*x^2+1)^(1/2)*x*c-1)*(I+3*a
rcsin(c*x))/c^4/d/(c^2*x^2-1)-3/8*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x
^2+1)^(1/2)*x*c-1)*(I+arcsin(c*x))/c^4/d/(c^2*x^2-1)-3/8*(-d*(c^2*x^2-1))^(
1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(arcsin(c*x)-I)/c^4/d/(c^2*x^2-1)
+1/144*(-d*(c^2*x^2-1))^(1/2)*(2*I*(-c^2*x^2+1)^(1/2)*x*c+2*c^2*x^2-1)*(-I+
3*arcsin(c*x))/c^4/d/(c^2*x^2-1)-1/24*(-d*(c^2*x^2-1))^(1/2)/c^4/d/(c^2*x^2
-1)*arcsin(c*x)*cos(4*arcsin(c*x))+1/72*(-d*(c^2*x^2-1))^(1/2)/c^4/d/(c^2*x
^2-1)*sin(4*arcsin(c*x)))
```

maxima [A] time = 0.43, size = 121, normalized size = 0.82

$$-\frac{1}{3}\,b\left(\frac{\sqrt{-c^2dx^2+d}\,x^2}{c^2d}+\frac{2\,\sqrt{-c^2dx^2+d}}{c^4d}\right)\arcsin\left(cx\right)-\frac{1}{3}\,a\left(\frac{\sqrt{-c^2dx^2+d}\,x^2}{c^2d}+\frac{2\,\sqrt{-c^2dx^2+d}}{c^4d}\right)+\frac{\left(c^2x^3+6\,x\right)b}{9\,c^3\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/3*b*(sqrt(-c^2*d*x^2 + d)*x^2/(c^2*d) + 2*sqrt(-c^2*d*x^2 + d)/(c^4*d))*
arcsin(c*x) - 1/3*a*(sqrt(-c^2*d*x^2 + d)*x^2/(c^2*d) + 2*sqrt(-c^2*d*x^2 +
 d)/(c^4*d)) + 1/9*(c^2*x^3 + 6*x)*b/(c^3*sqrt(d))
```

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

$$\int \frac{x^3\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int((x^3*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(1/2), x)
```

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

$$\int \frac{x^3\left(a+b\,\mathrm{asin}\left(cx\right)\right)}{\sqrt{-d\left(cx-1\right)\left(cx+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral(x**3*(a + b*asin(c*x))/sqrt(-d*(c*x - 1)*(c*x + 1)), x)
```

3.112 $\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=124

$$-\frac{x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2c^2d}+\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{4bc^3\sqrt{d-c^2dx^2}}+\frac{bx^2\sqrt{1-c^2x^2}}{4c\sqrt{d-c^2dx^2}}$$

```
[Out] 1/4*b*x^2*(-c^2*x^2+1)^(1/2)/c/(-c^2*d*x^2+d)^(1/2)+1/4*(a+b*arcsin(c*x))^2
*(-c^2*x^2+1)^(1/2)/b/c^3/(-c^2*d*x^2+d)^(1/2)-1/2*x*(a+b*arcsin(c*x))*(-c^
2*d*x^2+d)^(1/2)/c^2/d
```

Rubi [A] time = 0.15, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {4707, 4643, 4641, 30}

$$-\frac{x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2c^2d}+\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{4bc^3\sqrt{d-c^2dx^2}}+\frac{bx^2\sqrt{1-c^2x^2}}{4c\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (b*x^2*Sqrt[1 - c^2*x^2])/(4*c*Sqrt[d - c^2*d*x^2]) - (x*Sqrt[d - c^2*d*x^2
]*(a + b*ArcSin[c*x]))/(2*c^2*d) + (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2
)/(4*b*c^3*Sqrt[d - c^2*d*x^2])
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4643

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcSin[c*x])^n
/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e
, 0] &&  !GtQ[d, 0]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx = -\frac{x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2c^2d} + \frac{\int \frac{a+b\sin^{-1}(cx)}{\sqrt{d-c^2dx^2}}\,dx}{2c^2} + \frac{\left(b\sqrt{1-c^2x^2}\right)\int x\,dx}{2c\sqrt{d-c^2dx^2}}$$
$$= \frac{bx^2\sqrt{1-c^2x^2}}{4c\sqrt{d-c^2dx^2}} - \frac{x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2c^2d} + \frac{\sqrt{1-c^2x^2}\int \frac{a+b\sin^{-1}(cx)}{\sqrt{1-c^2x^2}}\,dx}{2c^2\sqrt{d-c^2dx^2}}$$
$$= \frac{bx^2\sqrt{1-c^2x^2}}{4c\sqrt{d-c^2dx^2}} - \frac{x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2c^2d} + \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{4bc^3\sqrt{d-c^2dx^2}}$$

Mathematica [A] time = 1.41, size = 134, normalized size = 1.08

$$-\frac{\frac{4acx\sqrt{d-c^2dx^2}}{d} + \frac{4a\tan^{-1}\left(\frac{cx\sqrt{d-c^2dx^2}}{\sqrt{d}(c^2x^2-1)}\right)}{\sqrt{d}} + \frac{b\sqrt{1-c^2x^2}\left(-2\sin^{-1}(cx)^2+2\sin\left(2\sin^{-1}(cx)\right)\sin^{-1}(cx)+\cos\left(2\sin^{-1}(cx)\right)\right)}{\sqrt{d-c^2dx^2}}}{8c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] -1/8*((4*a*c*x*Sqrt[d - c^2*d*x^2])/d + (4*a*ArcTan[(c*x*Sqrt[d - c^2*d*x^2
])/(Sqrt[d]*(-1 + c^2*x^2))])/Sqrt[d] + (b*Sqrt[1 - c^2*x^2]*(-2*ArcSin[c*x
]^2 + Cos[2*ArcSin[c*x]] + 2*ArcSin[c*x]*Sin[2*ArcSin[c*x]]))/Sqrt[d - c^2*
d*x^2])/c^3
```

fricas [F] time = 1.04, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\left(bx^2\arcsin(cx)+ax^2\right)}{c^2dx^2-d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b*x^2*arcsin(c*x) + a*x^2)/(c^2*d*x^2 - d),
 x)
```

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

$$\int \frac{(b\arcsin(cx)+a)x^2}{\sqrt{-c^2dx^2+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)*x^2/sqrt(-c^2*d*x^2 + d), x)
```

maple [B] time = 0.28, size = 270, normalized size = 2.18

$$-\frac{ax\sqrt{-c^2d\,x^2+d}}{2c^2d}+\frac{a\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2d\,x^2+d}}\right)}{2c^2\sqrt{c^2d}}-\frac{b\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x^2+1}\,\arcsin(cx)^2}{4c^3d\left(c^2x^2-1\right)}-\frac{b\sqrt{-c^2x^2+1}}{16c^3\sqrt{-d\left(c^2x^2-1\right)}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] -1/2*a*x/c^2/d*(-c^2*d*x^2+d)^(1/2)+1/2*a/c^2/(c^2*d)^(1/2)*arctan((c^2*d)^
(1/2)*x/(-c^2*d*x^2+d)^(1/2))-1/4*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/
2)/c^3/d/(c^2*x^2-1)*arcsin(c*x)^2-1/16*b/c^3/(-d*(c^2*x^2-1))^(1/2)*(-c^2*
x^2+1)^(1/2)+1/8*b*(-d*(c^2*x^2-1))^(1/2)/c^2/d/(c^2*x^2-1)*arcsin(c*x)*x+1
/16*b*(-d*(c^2*x^2-1))^(1/2)/c^3/d/(c^2*x^2-1)*cos(3*arcsin(c*x))+1/8*b*(-d
*(c^2*x^2-1))^(1/2)/c^3/d/(c^2*x^2-1)*arcsin(c*x)*sin(3*arcsin(c*x))
```

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

$$-\frac{1}{2}\,a\left(\frac{\sqrt{-c^2dx^2+d}\,x}{c^2d}-\frac{\arcsin\left(cx\right)}{c^3\sqrt{d}}\right)+\frac{b\int\frac{x^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{\sqrt{cx+1}\,\sqrt{-cx+1}}\,dx}{\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/2*a*(sqrt(-c^2*d*x^2 + d)*x/(c^2*d) - arcsin(c*x)/(c^3*sqrt(d))) + b*int
egrate(x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(sqrt(c*x + 1)*sqrt(-
c*x + 1)), x)/sqrt(d)
```

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

$$\int\frac{x^2\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int((x^2*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(1/2), x)
```

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

$$\int\frac{x^2\left(a+b\,\mathrm{asin}\left(cx\right)\right)}{\sqrt{-d\left(cx-1\right)\left(cx+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral(x**2*(a + b*asin(c*x))/sqrt(-d*(c*x - 1)*(c*x + 1)), x)
```

3.113 $\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=67

$$\frac{bx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}}-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{c^2d}$$

```
[Out] b*x*(-c^2*x^2+1)^(1/2)/c/(-c^2*d*x^2+d)^(1/2)-(a+b*arcsin(c*x))*(-c^2*d*x^2
+d)^(1/2)/c^2/d
```

Rubi [A] time = 0.06, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {4677, 8}

$$\frac{bx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}}-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{c^2d}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (b*x*Sqrt[1 - c^2*x^2])/(c*Sqrt[d - c^2*d*x^2]) - (Sqrt[d - c^2*d*x^2]*(a +
 b*ArcSin[c*x]))/(c^2*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx &= -\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{c^2d}+\frac{\left(b\sqrt{1-c^2x^2}\right)\int 1\,dx}{c\sqrt{d-c^2dx^2}}\\ &= \frac{bx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}}-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{c^2d}\end{aligned}$$

Mathematica [A] time = 0.03, size = 64, normalized size = 0.96

$$\frac{a\left(c^2x^2-1\right)+bcx\sqrt{1-c^2x^2}+b\left(c^2x^2-1\right)\sin^{-1}(cx)}{c^2\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (b*c*x*Sqrt[1 - c^2*x^2] + a*(-1 + c^2*x^2) + b*(-1 + c^2*x^2)*ArcSin[c*x])
/(c^2*Sqrt[d - c^2*d*x^2])
```

fricas [A] time = 1.37, size = 92, normalized size = 1.37

$$-\frac{\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+1}\,bcx+\left(ac^2x^2+\left(bc^2x^2-b\right)\arcsin\left(cx\right)-a\right)\sqrt{-c^2dx^2+d}}{c^4dx^2-c^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="fricas")
```

```
[Out] -(sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*b*c*x + (a*c^2*x^2 + (b*c^2*x^2 -
 b)*arcsin(c*x) - a)*sqrt(-c^2*d*x^2 + d))/(c^4*d*x^2 - c^2*d)
```

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

$$\int \frac{(b\arcsin\left(cx\right)+a)x}{\sqrt{-c^2dx^2+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)*x/sqrt(-c^2*d*x^2 + d), x)
```

maple [C] time = 0.13, size = 159, normalized size = 2.37

$$-\frac{a\sqrt{-c^2d\,x^2+d}}{c^2d}+b\left(-\frac{\sqrt{-d\left(c^2x^2-1\right)}\,\left(c^2x^2-i\sqrt{-c^2x^2+1}\,xc-1\right)\left(i+\arcsin\left(cx\right)\right)}{2c^2d\left(c^2x^2-1\right)}-\frac{\sqrt{-d\left(c^2x^2-1\right)}\,\left(i\sqrt{-c^2x^2}\right.}{2c}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] -a/c^2/d*(-c^2*d*x^2+d)^(1/2)+b*(-1/2*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c
^2*x^2+1)^(1/2)*x*c-1)*(I+arcsin(c*x))/c^2/d/(c^2*x^2-1)-1/2*(-d*(c^2*x^2-1
))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(arcsin(c*x)-I)/c^2/d/(c^2*x^
2-1))
```

maxima [A] time = 0.49, size = 58, normalized size = 0.87

$$\frac{bx}{c\sqrt{d}}-\frac{\sqrt{-c^2dx^2+d}\,b\arcsin\left(cx\right)}{c^2d}-\frac{\sqrt{-c^2dx^2+d}\,a}{c^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxima")
```

```
[Out] b*x/(c*sqrt(d)) - sqrt(-c^2*d*x^2 + d)*b*arcsin(c*x)/(c^2*d) - sqrt(-c^2*d*
x^2 + d)*a/(c^2*d)
```

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

$$\int \frac{x\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int((x*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(1/2), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Exception raised: TypeError
```

3.114 $\int \frac{a+b\sin^{-1}(cx)}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=49

$$\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\sqrt{d-c^2dx^2}}$$

```
[Out] 1/2*(a+b*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/b/c/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {4643, 4641}

$$\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c*Sqrt[d - c^2*d*x^2])
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4643

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcSin[c*x])^n
/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e
, 0] &&  !GtQ[d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\sin^{-1}(cx)}{\sqrt{d-c^2dx^2}}\,dx &= \frac{\sqrt{1-c^2x^2}\int \frac{a+b\sin^{-1}(cx)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}\\ &= \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\sqrt{d-c^2dx^2}}\end{aligned}$$

Mathematica [A] time = 0.07, size = 50, normalized size = 1.02

$$\frac{\sqrt{1-c^2x^2}\sin^{-1}(cx)\left(2a+b\sin^{-1}(cx)\right)}{2c\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*ArcSin[c*x]*(2*a + b*ArcSin[c*x]))/(2*c*Sqrt[d - c^2*d*x
^2])
```

fricas [F] time = 1.08, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)}{c^2dx^2-d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="fricas")
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(c^2*d*x^2 - d), x)
```

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

$$\int \frac{b\arcsin(cx)+a}{\sqrt{-c^2dx^2+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac")
[Out] integrate((b*arcsin(c*x) + a)/sqrt(-c^2*d*x^2 + d), x)
```

maple [A] time = 0.06, size = 86, normalized size = 1.76

$$\frac{a\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2d\,x^2+d}}\right)}{\sqrt{c^2d}}-\frac{b\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x^2+1}\,\arcsin(cx)^2}{2cd\left(c^2x^2-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x)
[Out] a/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-1/2*b*(-d*(c^2
*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/d/(c^2*x^2-1)*arcsin(c*x)^2
```

maxima [A] time = 0.43, size = 28, normalized size = 0.57

$$\frac{b\arcsin(cx)^2}{2\,c\sqrt{d}}+\frac{a\arcsin(cx)}{c\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxima")
[Out] 1/2*b*arcsin(c*x)^2/(c*sqrt(d)) + a*arcsin(c*x)/(c*sqrt(d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{a+b\,\mathrm{asin}(c\,x)}{\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(d - c^2*d*x^2)^(1/2),x)
[Out] int((a + b*asin(c*x))/(d - c^2*d*x^2)^(1/2), x)
```

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

$$\int \frac{a+b\,\mathrm{asin}(cx)}{\sqrt{-d\,(cx-1)\,(cx+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(-c**2*d*x**2+d)**(1/2),x)
[Out] Integral((a + b*asin(c*x))/sqrt(-d*(c*x - 1)*(c*x + 1)), x)
```

3.115 $\int \frac{a+b\sin^{-1}(cx)}{x\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=145

$$-\frac{2\sqrt{1-c^2x^2}\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}+\frac{ib\sqrt{1-c^2x^2}\,\text{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)}{\sqrt{d-c^2dx^2}}-\frac{ib\sqrt{1-c^2x^2}\,\text{Li}_2\left(e^{i\sin^{-1}(cx)}\right)}{\sqrt{d-c^2dx^2}}$$

```
[Out] -2*(a+b*arcsin(c*x))*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/(
-c^2*d*x^2+d)^(1/2)+I*b*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(
1/2)/(-c^2*d*x^2+d)^(1/2)-I*b*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2
+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.19, antiderivative size = 145, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {4713, 4709, 4183, 2279, 2391}

$$\frac{ib\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)}{\sqrt{d-c^2dx^2}}-\frac{ib\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)}{\sqrt{d-c^2dx^2}}-\frac{2\sqrt{1-c^2x^2}\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\right.}{\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] (-2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcTanh[E^(I*ArcSin[c*x])])/Sqrt[
d - c^2*d*x^2] + (I*b*Sqrt[1 - c^2*x^2]*PolyLog[2, -E^(I*ArcSin[c*x])])/Sqr
t[d - c^2*d*x^2] - (I*b*Sqrt[1 - c^2*x^2]*PolyLog[2, E^(I*ArcSin[c*x])])/Sq
rt[d - c^2*d*x^2]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4713

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(
(f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c,
```

```
 d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&  !GtQ[d, 0] && (Integ
erQ[m] || EqQ[n, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\sin^{-1}(cx)}{x\sqrt{d-c^2dx^2}}\,dx &= \frac{\sqrt{1-c^2x^2}\int\frac{a+b\sin^{-1}(cx)}{x\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}\\ &= \frac{\sqrt{1-c^2x^2}\,\mathrm{Subst}\left(\int(a+bx)\csc(x)\,dx,x,\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\\ &= -\frac{2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{\sqrt{d-c^2dx^2}}-\frac{\left(b\sqrt{1-c^2x^2}\right)\mathrm{Subst}\left(\int\log\left(1-e\right.\right.}{\sqrt{d-c^2dx^2}}\\ &= -\frac{2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{\sqrt{d-c^2dx^2}}+\frac{\left(ib\sqrt{1-c^2x^2}\right)\mathrm{Subst}\left(\int\frac{\log(1-x)}{x}\,d\right.}{\sqrt{d-c^2dx^2}}\\ &= -\frac{2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{\sqrt{d-c^2dx^2}}+\frac{ib\sqrt{1-c^2x^2}\,\mathrm{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)}{\sqrt{d-c^2dx^2}}-\frac{ib}{}\end{aligned}$$

Mathematica [A] time = 0.34, size = 146, normalized size = 1.01

$$-\frac{a\log\left(\sqrt{d}\sqrt{-d\left(c^2x^2-1\right)}+d\right)}{\sqrt{d}}+\frac{a\log(x)}{\sqrt{d}}+\frac{b\sqrt{1-c^2x^2}\left(i\mathrm{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)-i\mathrm{Li}_2\left(e^{i\sin^{-1}(cx)}\right)+\sin^{-1}(cx)\left(\log\right.\right.}{\sqrt{d\left(1-c^2x^2\right)}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] (a*Log[x])/Sqrt[d] - (a*Log[d + Sqrt[d]*Sqrt[-(d*(-1 + c^2*x^2))]])/Sqrt[d]
 + (b*Sqrt[1 - c^2*x^2]*(ArcSin[c*x]*(Log[1 - E^(I*ArcSin[c*x])] - Log[1 +
E^(I*ArcSin[c*x])]) + I*PolyLog[2, -E^(I*ArcSin[c*x])] - I*PolyLog[2, E^(I*
ArcSin[c*x])]))/Sqrt[d*(1 - c^2*x^2)]
```

fricas [F] time = 1.08, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)}{c^2dx^3-dx},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x/(-c^2*d*x^2+d)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(c^2*d*x^3 - d*x), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

maple [A] time = 0.18, size = 180, normalized size = 1.24

$$-\frac{a\ln\left(\frac{2d+2\sqrt{d}\,\sqrt{-c^2d\,x^2+d}}{x}\right)}{\sqrt{d}}-\frac{ib\sqrt{-c^2x^2+1}\,\sqrt{-d\left(c^2x^2-1\right)}\,\left(i\arcsin\left(cx\right)\ln\left(1+icx+\sqrt{-c^2x^2+1}\right)-i\arcsin\left(cx\right)\right.}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] -a/d^(1/2)*ln((2*d+2*d^(1/2)*(-c^2*d*x^2+d)^(1/2))/x)-I*b*(-c^2*x^2+1)^(1/2
)*(-d*(c^2*x^2-1))^(1/2)*(I*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-I*ar
csin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))+polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2
))-polylog(2,I*c*x+(-c^2*x^2+1)^(1/2)))/d/(c^2*x^2-1)
```

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

$$\frac{b\int\frac{\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{\sqrt{cx+1}\,\sqrt{-cx+1}\,x}\,dx}{\sqrt{d}}-\frac{a\log\left(\frac{2\sqrt{-c^2dx^2+d}\,\sqrt{d}}{|x|}+\frac{2\,d}{|x|}\right)}{\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxima")
```

```
[Out] b*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(sqrt(c*x + 1)*sqrt(
-c*x + 1)*x), x)/sqrt(d) - a*log(2*sqrt(-c^2*d*x^2 + d)*sqrt(d)/abs(x) + 2*
d/abs(x))/sqrt(d)
```

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

$$\int\frac{a+b\,\mathrm{asin}\left(c\,x\right)}{x\,\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x*(d - c^2*d*x^2)^(1/2)),x)
```

```
[Out] int((a + b*asin(c*x))/(x*(d - c^2*d*x^2)^(1/2)), x)
```

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

$$\int\frac{a+b\,\mathrm{asin}\left(cx\right)}{x\sqrt{-d\left(cx-1\right)\left(cx+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral((a + b*asin(c*x))/(x*sqrt(-d*(c*x - 1)*(c*x + 1))), x)
```

3.116 $\int \frac{a+b\sin^{-1}(cx)}{x^2\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=66

$$\frac{bc\sqrt{1-c^2x^2}\log(x)}{\sqrt{d-c^2dx^2}}-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{dx}$$

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

Rubi [A] time = 0.09, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {4681, 29}

$$\frac{bc\sqrt{1-c^2x^2}\log(x)}{\sqrt{d-c^2dx^2}}-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{dx}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x^2*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] -((Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(d*x)) + (b*c*Sqrt[1 - c^2*x^2]
*Log[x])/Sqrt[d - c^2*d*x^2]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 4681

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^F
racPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c
^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d,
 e, f, m, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] &
& NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\sin^{-1}(cx)}{x^2\sqrt{d-c^2dx^2}}\,dx &= -\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{dx}+\frac{\left(bc\sqrt{1-c^2x^2}\right)\int \frac{1}{x}\,dx}{\sqrt{d-c^2dx^2}}\\ &= -\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{dx}+\frac{bc\sqrt{1-c^2x^2}\log(x)}{\sqrt{d-c^2dx^2}}\end{aligned}$$

Mathematica [A] time = 0.17, size = 69, normalized size = 1.05

$$\frac{bc\log(x)\sqrt{d-c^2dx^2}}{d\sqrt{1-c^2x^2}}-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{dx}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x^2*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] -((Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(d*x)) + (b*c*Sqrt[d - c^2*d*x^
2]*Log[x])/(d*Sqrt[1 - c^2*x^2])
```

fricas [A] time = 0.91, size = 218, normalized size = 3.30

$$\left[\frac{bc\sqrt{d}\,x\log\left(\frac{c^2dx^6+c^2dx^2-dx^4-\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+1}\,(x^4-1)\sqrt{d}-d}{c^2x^4-x^2}\right)-2\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)}{2\,dx}, \frac{bc\sqrt{-d}\,x\arctan\left(\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/2*(b*c*sqrt(d)*x*log((c^2*d*x^6 + c^2*d*x^2 - d*x^4 - sqrt(-c^2*d*x^2 +
d)*sqrt(-c^2*x^2 + 1)*(x^4 - 1)*sqrt(d) - d)/(c^2*x^4 - x^2)) - 2*sqrt(-c^2
*d*x^2 + d)*(b*arcsin(c*x) + a))/(d*x), (b*c*sqrt(-d)*x*arctan(sqrt(-c^2*d*
x^2 + d)*sqrt(-c^2*x^2 + 1)*(x^2 + 1)*sqrt(-d)/(c^2*d*x^4 - (c^2 + 1)*d*x^2
 + d)) - sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a))/(d*x)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

maple [C] time = 0.26, size = 216, normalized size = 3.27

$$-\frac{a\sqrt{-c^2d\,x^2+d}}{dx}+\frac{ib\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x^2+1}\,\arcsin(cx)\,c}{d\left(c^2x^2-1\right)}-\frac{b\sqrt{-d\left(c^2x^2-1\right)}\,\arcsin(cx)\,x\,c^2}{d\left(c^2x^2-1\right)}+\frac{b\sqrt{-d\left(c^2x^2-\right.}}{dx\left(c^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x^2/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] -a/d/x*(-c^2*d*x^2+d)^(1/2)+I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d
/(c^2*x^2-1)*arcsin(c*x)*c-b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/d*x/(c^2*x^
2-1)*c^2+b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/d/x/(c^2*x^2-1)-b*(-d*(c^2*x^
2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d/(c^2*x^2-1)*ln((I*c*x+(-c^2*x^2+1)^(1/2))^
2-1)*c
```

maxima [A] time = 0.61, size = 104, normalized size = 1.58

$$-\frac{\left((-1)^{-2\,c^2dx^2+2\,d}\,\sqrt{d}\,\log\left(-2\,c^2d+\frac{2\,d}{x^2}\right)+\sqrt{d}\,\log\left(x^2-\frac{1}{c^2}\right)\right)bc}{2\,d}-\frac{\sqrt{-c^2dx^2+d}\,b\arcsin(cx)}{dx}-\frac{\sqrt{-c^2dx^2+d}\,a}{dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/2*((-1)^(-2*c^2*d*x^2 + 2*d)*sqrt(d)*log(-2*c^2*d + 2*d/x^2) + sqrt(d)*l
og(x^2 - 1/c^2))*b*c/d - sqrt(-c^2*d*x^2 + d)*b*arcsin(c*x)/(d*x) - sqrt(-c
^2*d*x^2 + d)*a/(d*x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{a+b\,\mathrm{asin}\left(c\,x\right)}{x^2\,\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x^2*(d - c^2*d*x^2)^(1/2)),x)
[Out] int((a + b*asin(c*x))/(x^2*(d - c^2*d*x^2)^(1/2)), x)
```

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

$$\int \frac{a+b\,\mathrm{asin}\,(cx)}{x^2\sqrt{-d\,(cx-1)\,(cx+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x**2/(-c**2*d*x**2+d)**(1/2),x)
[Out] Integral((a + b*asin(c*x))/(x**2*sqrt(-d*(c*x - 1)*(c*x + 1))), x)
```

3.117 $\int \frac{a+b\sin^{-1}(cx)}{x^3\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=229

$$-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2dx^2}-\frac{c^2\sqrt{1-c^2x^2}\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}+\frac{ibc^2\sqrt{1-c^2x^2}\,\mathrm{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)}{2\sqrt{d-c^2dx^2}}$$

```
[Out] -1/2*b*c*(-c^2*x^2+1)^(1/2)/x/(-c^2*d*x^2+d)^(1/2)-c^2*(a+b*arcsin(c*x))*ar
ctanh(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)+1/2
*I*b*c^2*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/(-c^2*d*x^
2+d)^(1/2)-1/2*I*b*c^2*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/
2)/(-c^2*d*x^2+d)^(1/2)-1/2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/d/x^2
```

Rubi [A] time = 0.30, antiderivative size = 229, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.259$, Rules used = {4701, 4713, 4709, 4183, 2279, 2391, 30}

$$\frac{ibc^2\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)}{2\sqrt{d-c^2dx^2}}-\frac{ibc^2\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)}{2\sqrt{d-c^2dx^2}}-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2dx^2}-\frac{c^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x^3*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] -(b*c*Sqrt[1 - c^2*x^2])/(2*x*Sqrt[d - c^2*d*x^2]) - (Sqrt[d - c^2*d*x^2]*(
a + b*ArcSin[c*x]))/(2*d*x^2) - (c^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*
ArcTanh[E^(I*ArcSin[c*x])])/Sqrt[d - c^2*d*x^2] + ((I/2)*b*c^2*Sqrt[1 - c^2
*x^2]*PolyLog[2, -E^(I*ArcSin[c*x])])/Sqrt[d - c^2*d*x^2] - ((I/2)*b*c^2*Sq
rt[1 - c^2*x^2]*PolyLog[2, E^(I*ArcSin[c*x])])/Sqrt[d - c^2*d*x^2]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
```

```
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4713

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(
(f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c,
 d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&  !GtQ[d, 0] && (Integ
erQ[m] || EqQ[n, 1])
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x^3\sqrt{d-c^2dx^2}}\,dx = -\frac{\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)}{2dx^2}+\frac{1}{2}c^2\int \frac{a+b\sin^{-1}(cx)}{x\sqrt{d-c^2dx^2}}\,dx+\frac{\left(bc\sqrt{1-c^2x^2}\right)\int \frac{1}{x^2}\,dx}{2\sqrt{d-c^2dx^2}}$$
$$= -\frac{bc\sqrt{1-c^2x^2}}{2x\sqrt{d-c^2dx^2}}-\frac{\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)}{2dx^2}+\frac{\left(c^2\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{x\sqrt{1-c^2x^2}}\,dx}{2\sqrt{d-c^2dx^2}}$$
$$= -\frac{bc\sqrt{1-c^2x^2}}{2x\sqrt{d-c^2dx^2}}-\frac{\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)}{2dx^2}+\frac{\left(c^2\sqrt{1-c^2x^2}\right)\mathrm{Subst}\left(\int (a+bx)\,\mathrm{cs}\ldots\right.}{2\sqrt{d-c^2dx^2}}$$
$$= -\frac{bc\sqrt{1-c^2x^2}}{2x\sqrt{d-c^2dx^2}}-\frac{\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)}{2dx^2}-\frac{c^2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)\tanh\ldots}{\sqrt{d-c^2dx^2}}$$
$$= -\frac{bc\sqrt{1-c^2x^2}}{2x\sqrt{d-c^2dx^2}}-\frac{\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)}{2dx^2}-\frac{c^2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)\tanh\ldots}{\sqrt{d-c^2dx^2}}$$
$$= -\frac{bc\sqrt{1-c^2x^2}}{2x\sqrt{d-c^2dx^2}}-\frac{\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)}{2dx^2}-\frac{c^2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)\tanh\ldots}{\sqrt{d-c^2dx^2}}$$

Mathematica [A] time = 2.78, size = 244, normalized size = 1.07

$$\frac{-\frac{4a\sqrt{d-c^2dx^2}}{x^2}-4ac^2\sqrt{d}\,\log\left(\sqrt{d}\,\sqrt{d-c^2dx^2}+d\right)+4ac^2\sqrt{d}\,\log(x)+\frac{bc^2d^2\left(1-c^2x^2\right)^{3/2}\left(4i\mathrm{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)-4i\mathrm{Li}_2\left(e^{i\sin^{-1}(cx)}\right)\ldots\right.}{\ldots}}{\ldots}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x^3*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] ((-4*a*Sqrt[d - c^2*d*x^2])/x^2 + 4*a*c^2*Sqrt[d]*Log[x] - 4*a*c^2*Sqrt[d]*
Log[d + Sqrt[d]*Sqrt[d - c^2*d*x^2]] + (b*c^2*d^2*(1 - c^2*x^2)^(3/2)*(-2*C
ot[ArcSin[c*x]/2] - ArcSin[c*x]*Csc[ArcSin[c*x]/2]^2 + 4*ArcSin[c*x]*Log[1
- E^(I*ArcSin[c*x])] - 4*ArcSin[c*x]*Log[1 + E^(I*ArcSin[c*x])] + (4*I)*Pol
```

```
yLog[2, -E^(I*ArcSin[c*x])] - (4*I)*PolyLog[2, E^(I*ArcSin[c*x])] + ArcSin[
c*x]*Sec[ArcSin[c*x]/2]^2 - 2*Tan[ArcSin[c*x]/2]))/(d - c^2*d*x^2)^(3/2))/(
8*d)
```

fricas [F] time = 1.87, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)}{c^2dx^5-dx^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(-c^2*d*x^2+d)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(c^2*d*x^5 - d*x^3), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

maple [B] time = 0.37, size = 461, normalized size = 2.01

$$-\frac{a\sqrt{-c^2d\,x^2+d}}{2d\,x^2}-\frac{a\,c^2\ln\left(\frac{2d+2\sqrt{d}\,\sqrt{-c^2d\,x^2+d}}{x}\right)}{2\sqrt{d}}-\frac{b\sqrt{-d\left(c^2x^2-1\right)}\,\arcsin(cx)\,c^2}{2d\left(c^2x^2-1\right)}+\frac{b\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x^2+1}\,c}{2xd\left(c^2x^2-1\right)}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x^3/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] -1/2*a/d/x^2*(-c^2*d*x^2+d)^(1/2)-1/2*a*c^2/d^(1/2)*ln((2*d+2*d^(1/2)*(-c^2
*d*x^2+d)^(1/2))/x)-1/2*b*(-d*(c^2*x^2-1))^(1/2)/d/(c^2*x^2-1)*arcsin(c*x)*
c^2+1/2*b*(-d*(c^2*x^2-1))^(1/2)/x/d/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c+1/2*b
*(-d*(c^2*x^2-1))^(1/2)/x^2/d/(c^2*x^2-1)*arcsin(c*x)+1/2*b*(-c^2*x^2+1)^(1
/2)*(-d*(c^2*x^2-1))^(1/2)/d/(c^2*x^2-1)*c^2*arcsin(c*x)*ln(1+I*c*x+(-c^2*x
^2+1)^(1/2))-1/2*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d/(c^2*x^2-1)*
c^2*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))-1/2*I*b*(-c^2*x^2+1)^(1/2)*(
-d*(c^2*x^2-1))^(1/2)/d/(c^2*x^2-1)*c^2*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2)
)+1/2*I*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d/(c^2*x^2-1)*c^2*polyl
og(2,I*c*x+(-c^2*x^2+1)^(1/2))
```

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

$$-\frac{1}{2}\left(\frac{c^2\log\left(\frac{2\sqrt{-c^2dx^2+d}\,\sqrt{d}}{|x|}+\frac{2d}{|x|}\right)}{\sqrt{d}}+\frac{\sqrt{-c^2dx^2+d}}{dx^2}\right)a+\frac{b\int\frac{\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{\sqrt{cx+1}\,\sqrt{-cx+1}\,x^3}\,dx}{\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/2*(c^2*log(2*sqrt(-c^2*d*x^2 + d)*sqrt(d)/abs(x) + 2*d/abs(x))/sqrt(d) +
 sqrt(-c^2*d*x^2 + d)/(d*x^2))*a + b*integrate(arctan2(c*x, sqrt(c*x + 1)*s
qrt(-c*x + 1))/(sqrt(c*x + 1)*sqrt(-c*x + 1)*x^3), x)/sqrt(d)
```

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

$$\int \frac{a+b\,\mathrm{asin}\left(c\,x\right)}{x^3\,\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x^3*(d - c^2*d*x^2)^(1/2)),x)
[Out] int((a + b*asin(c*x))/(x^3*(d - c^2*d*x^2)^(1/2)), x)
```

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

$$\int \frac{a+b\,\mathrm{asin}\,(cx)}{x^3\sqrt{-d\,(cx-1)\,(cx+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x**3/(-c**2*d*x**2+d)**(1/2),x)
[Out] Integral((a + b*asin(c*x))/(x**3*sqrt(-d*(c*x - 1)*(c*x + 1))), x)
```

3.118 $\int \frac{a+b\sin^{-1}(cx)}{x^4\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=147

$$-\frac{2c^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3dx}-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3dx^3}-\frac{bc\sqrt{1-c^2x^2}}{6x^2\sqrt{d-c^2dx^2}}+\frac{2bc^3\sqrt{1-c^2x^2}\log(x)}{3\sqrt{d-c^2dx^2}}$$

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

Rubi [A] time = 0.19, antiderivative size = 147, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {4701, 4681, 29, 30}

$$-\frac{2c^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3dx}-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3dx^3}-\frac{bc\sqrt{1-c^2x^2}}{6x^2\sqrt{d-c^2dx^2}}+\frac{2bc^3\sqrt{1-c^2x^2}\log(x)}{3\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x^4*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] -(b*c*Sqrt[1 - c^2*x^2])/(6*x^2*Sqrt[d - c^2*d*x^2]) - (Sqrt[d - c^2*d*x^2]
*(a + b*ArcSin[c*x]))/(3*d*x^3) - (2*c^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[
c*x]))/(3*d*x) + (2*b*c^3*Sqrt[1 - c^2*x^2]*Log[x])/(3*Sqrt[d - c^2*d*x^2])
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4681

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^F
racPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c
^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d,
 e, f, m, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] &
& NeQ[m, -1]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x^4\sqrt{d-c^2dx^2}}\,dx = -\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3dx^3} + \frac{1}{3}\left(2c^2\right)\int \frac{a+b\sin^{-1}(cx)}{x^2\sqrt{d-c^2dx^2}}\,dx + \frac{\left(bc\sqrt{1-c^2x^2}\right)\int \frac{1}{x^3}}{3\sqrt{d-c^2dx^2}}$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{6x^2\sqrt{d-c^2dx^2}} - \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3dx^3} - \frac{2c^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3dx}$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{6x^2\sqrt{d-c^2dx^2}} - \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3dx^3} - \frac{2c^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3dx}$$

Mathematica [A] time = 0.26, size = 152, normalized size = 1.03

$$\frac{\sqrt{d-c^2dx^2}\left(a\left(-4c^4x^4+2c^2x^2+2\right)+bcx\sqrt{1-c^2x^2}\left(6c^2x^2+1\right)+2b\left(-2c^4x^4+c^2x^2+1\right)\sin^{-1}(cx)\right)}{6dx^3\left(c^2x^2-1\right)}+\frac{2bc^3\log}{3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x^4*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(b*c*x*Sqrt[1 - c^2*x^2]*(1 + 6*c^2*x^2) + a*(2 + 2*c^
2*x^2 - 4*c^4*x^4) + 2*b*(1 + c^2*x^2 - 2*c^4*x^4)*ArcSin[c*x]))/(6*d*x^3*(
-1 + c^2*x^2)) + (2*b*c^3*Sqrt[d - c^2*d*x^2]*Log[x])/(3*d*Sqrt[1 - c^2*x^2
])
```

fricas [A] time = 1.52, size = 433, normalized size = 2.95

$$\left[\frac{2\left(bc^5x^5-bc^3x^3\right)\sqrt{d}\,\log\left(\frac{c^2dx^6+c^2dx^2-dx^4-\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+1}\left(x^4-1\right)\sqrt{d}-d}{c^2x^4-x^2}\right)-\sqrt{-c^2dx^2+d}\left(bcx^3-bcx\right)\sqrt{-c^2x^2+}}{6\left(c^2dx^5-dx^3\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^4/(-c^2*d*x^2+d)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/6*(2*(b*c^5*x^5 - b*c^3*x^3)*sqrt(d)*log((c^2*d*x^6 + c^2*d*x^2 - d*x^4
- sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*(x^4 - 1)*sqrt(d) - d)/(c^2*x^4 -
 x^2)) - sqrt(-c^2*d*x^2 + d)*(b*c*x^3 - b*c*x)*sqrt(-c^2*x^2 + 1) - 2*(2*a
*c^4*x^4 - a*c^2*x^2 + (2*b*c^4*x^4 - b*c^2*x^2 - b)*arcsin(c*x) - a)*sqrt(
-c^2*d*x^2 + d))/(c^2*d*x^5 - d*x^3), 1/6*(4*(b*c^5*x^5 - b*c^3*x^3)*sqrt(-
d)*arctan(sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*(x^2 + 1)*sqrt(-d)/(c^2*d
*x^4 - (c^2 + 1)*d*x^2 + d)) - sqrt(-c^2*d*x^2 + d)*(b*c*x^3 - b*c*x)*sqrt(
-c^2*x^2 + 1) - 2*(2*a*c^4*x^4 - a*c^2*x^2 + (2*b*c^4*x^4 - b*c^2*x^2 - b)*
arcsin(c*x) - a)*sqrt(-c^2*d*x^2 + d))/(c^2*d*x^5 - d*x^3)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^4/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

maple [C] time = 0.49, size = 849, normalized size = 5.78

$$-\frac{a\sqrt{-c^2 d\,x^2+d}}{3d\,x^3}-\frac{2a\,c^2\sqrt{-c^2 d\,x^2+d}}{3dx}-\frac{ib\sqrt{-d\left(c^2x^2-1\right)}\,x\left(-c^2x^2+1\right)c^4}{3\left(3c^4x^4-2c^2x^2-1\right)d}-\frac{2ib\sqrt{-d\left(c^2x^2-1\right)}\,x^5c^8}{3\left(3c^4x^4-2c^2x^2-1\right)d}-\frac{2ib\sqrt{-d\left(c^2x\right.}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x^4/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] -1/3*a/d/x^3*(-c^2*d*x^2+d)^(1/2)-2/3*a*c^2/d/x*(-c^2*d*x^2+d)^(1/2)-1/3*I*
b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*x*(-c^2*x^2+1)*c^4-2/3*I
*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*x^5*c^8-2*I*b*(-d*(c^2*
x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*x^2*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*
c^5+4/3*I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d/(c^2*x^2-1)*arcsin(
c*x)*c^3-2*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*x^3*arcsin(c*
x)*c^6+1/3*I*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*x^3*c^6-2/3
*I*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*(-c^2*x^2+1)^(1/2)*ar
csin(c*x)*c^3+1/3*I*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*x*c^
4+1/3*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*x*arcsin(c*x)*c^4-
2/3*I*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*x^3*(-c^2*x^2+1)*c
^6+1/2*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*c^3*(-c^2*x^2+1)^
(1/2)+4/3*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d/x*arcsin(c*x)*
c^2+1/6*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d/x^2*(-c^2*x^2+1)
^(1/2)*c+1/3*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d/x^3*arcsin(
c*x)-2/3*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d/(c^2*x^2-1)*ln((I*c*
x+(-c^2*x^2+1)^(1/2))^2-1)*c^3
```

maxima [A] time = 0.75, size = 124, normalized size = 0.84

$$\frac{1}{6}\left(\frac{4\,c^2\log(x)}{\sqrt{d}}-\frac{1}{\sqrt{d}\,x^2}\right)bc-\frac{1}{3}\,b\left(\frac{2\,\sqrt{-c^2dx^2+d}\,c^2}{dx}+\frac{\sqrt{-c^2dx^2+d}}{dx^3}\right)\arcsin\left(cx\right)-\frac{1}{3}\,a\left(\frac{2\,\sqrt{-c^2dx^2+d}\,c^2}{dx}+\frac{\sqrt{-c^2dx^2+d}}{dx^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^4/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/6*(4*c^2*log(x)/sqrt(d) - 1/(sqrt(d)*x^2))*b*c - 1/3*b*(2*sqrt(-c^2*d*x^2
 + d)*c^2/(d*x) + sqrt(-c^2*d*x^2 + d)/(d*x^3))*arcsin(c*x) - 1/3*a*(2*sqrt
(-c^2*d*x^2 + d)*c^2/(d*x) + sqrt(-c^2*d*x^2 + d)/(d*x^3))
```

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

$$\int \frac{a+b\,\mathrm{asin}\left(c\,x\right)}{x^4\,\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x^4*(d - c^2*d*x^2)^(1/2)),x)
```

```
[Out] int((a + b*asin(c*x))/(x^4*(d - c^2*d*x^2)^(1/2)), x)
```

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

$$\int \frac{a+b\,\mathrm{asin}\left(cx\right)}{x^4\sqrt{-d\left(cx-1\right)\left(cx+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x**4/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral((a + b*asin(c*x))/(x**4*sqrt(-d*(c*x - 1)*(c*x + 1))), x)
```

3.119 $\int \frac{x^5\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=221

$$-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3c^6d^3}+\frac{2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{c^6d^2}+\frac{a+b\sin^{-1}(cx)}{c^6d\sqrt{d-c^2dx^2}}-\frac{b\sqrt{d-c^2dx^2}\tanh^{-1}(cx)}{c^6d^2\sqrt{1-c^2x^2}}-$$

```
[Out] -1/3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/c^6/d^3+(a+b*arcsin(c*x))/c^6/d
/(-c^2*d*x^2+d)^(1/2)+2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c^6/d^2-5/3*
b*x*(-c^2*d*x^2+d)^(1/2)/c^5/d^2/(-c^2*x^2+1)^(1/2)-1/9*b*x^3*(-c^2*d*x^2+d
)^(1/2)/c^3/d^2/(-c^2*x^2+1)^(1/2)-b*arctanh(c*x)*(-c^2*d*x^2+d)^(1/2)/c^6/
d^2/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.29, antiderivative size = 229, normalized size of antiderivative = 1.04, number of steps used = 8, number of rules used = 7, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.259, Rules used = {4703, 4707, 4677, 8, 30, 302, 206}

$$\frac{4x^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3c^4d^2}+\frac{8\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3c^6d^2}+\frac{x^4\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}}-\frac{bx^3\sqrt{1-c^2x^2}}{9c^3d\sqrt{d-c^2dx^2}}-\frac{5b}{3c^5}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (-5*b*x*Sqrt[1 - c^2*x^2])/(3*c^5*d*Sqrt[d - c^2*d*x^2]) - (b*x^3*Sqrt[1 -
c^2*x^2])/(9*c^3*d*Sqrt[d - c^2*d*x^2]) + (x^4*(a + b*ArcSin[c*x]))/(c^2*d*
Sqrt[d - c^2*d*x^2]) + (8*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*c^6*d
^2) + (4*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*c^4*d^2) - (b*Sqrt
[1 - c^2*x^2]*ArcTanh[c*x])/(c^6*d*Sqrt[d - c^2*d*x^2])
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 302

```
Int[(x_)^(m_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Int[PolynomialDivide[x
^m, a + b*x^n, x], x] /; FreeQ[{a, b}, x] && IGtQ[m, 0] && IGtQ[n, 0] && Gt
Q[m, 2*n - 1]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
```

```
, 0] && NeQ[p, -1]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^5\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{3/2}}\,dx = \frac{x^4\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}} - \frac{4\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx}{c^2d} - \frac{\left(b\sqrt{1-c^2x^2}\right)\int \frac{x^4}{1-c^2x^2}\,dx}{cd\sqrt{d-c^2dx^2}}$$

$$= \frac{x^4\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}} + \frac{4x^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3c^4d^2} - \frac{8\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx}{3c^4d} - \frac{(4\ldots}{\ldots}$$

$$= \frac{bx\sqrt{1-c^2x^2}}{c^5d\sqrt{d-c^2dx^2}} - \frac{bx^3\sqrt{1-c^2x^2}}{9c^3d\sqrt{d-c^2dx^2}} + \frac{x^4\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}} + \frac{8\sqrt{d-c^2dx^2}\left(a+b\sin\ldots\right.}{3c^6d^2}$$

$$= -\frac{5bx\sqrt{1-c^2x^2}}{3c^5d\sqrt{d-c^2dx^2}} - \frac{bx^3\sqrt{1-c^2x^2}}{9c^3d\sqrt{d-c^2dx^2}} + \frac{x^4\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}} + \frac{8\sqrt{d-c^2dx^2}\left(a+b\,s\ldots\right.}{3c^6d^2}$$

Mathematica [C] time = 0.31, size = 166, normalized size = 0.75

$$\frac{\sqrt{d-c^2dx^2}\left(\sqrt{-c^2}\left(3a\left(c^4x^4+4c^2x^2-8\right)+bcx\sqrt{1-c^2x^2}\left(c^2x^2+15\right)+3b\left(c^4x^4+4c^2x^2-8\right)\sin^{-1}(cx)\right)-9ibc\ldots\right.}{9c^6\sqrt{-c^2}\,d^2\left(c^2x^2-1\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(Sqrt[-c^2]*(b*c*x*Sqrt[1 - c^2*x^2]*(15 + c^2*x^2) +
3*a*(-8 + 4*c^2*x^2 + c^4*x^4) + 3*b*(-8 + 4*c^2*x^2 + c^4*x^4)*ArcSin[c*x]
) - (9*I)*b*c*Sqrt[1 - c^2*x^2]*EllipticF[I*ArcSinh[Sqrt[-c^2]*x], 1]))/(9*
c^6*Sqrt[-c^2]*d^2*(-1 + c^2*x^2))
```

fricas [A] time = 1.01, size = 441, normalized size = 2.00

$$\left[\frac{9\left(bc^2x^2-b\right)\sqrt{d}\log\left(-\frac{c^6dx^6+5c^4dx^4-5c^2dx^2+4\left(c^3x^3+cx\right)\sqrt{-c^2dx^2+d}\sqrt{-c^2x^2+1}\sqrt{d}-d}{c^6x^6-3c^4x^4+3c^2x^2-1}\right)+4\left(bc^3x^3+15bcx\right)\sqrt{-c^2dx^2+d}}{36\left(c^8d^2x^2-c^6d^2\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/36*(9*(b*c^2*x^2 - b)*sqrt(d)*log(-(c^6*d*x^6 + 5*c^4*d*x^4 - 5*c^2*d*x^
2 + 4*(c^3*x^3 + c*x)*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*sqrt(d) - d)/
(c^6*x^6 - 3*c^4*x^4 + 3*c^2*x^2 - 1)) + 4*(b*c^3*x^3 + 15*b*c*x)*sqrt(-c^2
*d*x^2 + d)*sqrt(-c^2*x^2 + 1) + 12*(a*c^4*x^4 + 4*a*c^2*x^2 + (b*c^4*x^4 +
 4*b*c^2*x^2 - 8*b)*arcsin(c*x) - 8*a)*sqrt(-c^2*d*x^2 + d))/(c^8*d^2*x^2 -
 c^6*d^2), -1/18*(9*(b*c^2*x^2 - b)*sqrt(-d)*arctan(2*sqrt(-c^2*d*x^2 + d)*
sqrt(-c^2*x^2 + 1)*c*sqrt(-d)*x/(c^4*d*x^4 - d)) - 2*(b*c^3*x^3 + 15*b*c*x)
*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1) - 6*(a*c^4*x^4 + 4*a*c^2*x^2 + (b*
c^4*x^4 + 4*b*c^2*x^2 - 8*b)*arcsin(c*x) - 8*a)*sqrt(-c^2*d*x^2 + d))/(c^8*
d^2*x^2 - c^6*d^2)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.50, size = 419, normalized size = 1.90

$$-\frac{a x^4}{3c^2d\sqrt{-c^2d x^2+d}}-\frac{4a x^2}{3c^4d\sqrt{-c^2d x^2+d}}+\frac{8a}{3c^6d\sqrt{-c^2d x^2+d}}+\frac{b\sqrt{-d\left(c^2x^2-1\right)}\sqrt{-c^2x^2+1}\ \ln\left(icx+\sqrt{-c^2x^2}\right.}{d^2c^6\left(c^2x^2-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] -1/3*a*x^4/c^2/d/(-c^2*d*x^2+d)^(1/2)-4/3*a/c^4*x^2/d/(-c^2*d*x^2+d)^(1/2)+
8/3*a/c^6/d/(-c^2*d*x^2+d)^(1/2)+b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2
)/d^2/c^6/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)+1/24*b*(-d*(c^2*x^2-1)
)^(1/2)/d^2/c^6/(c^2*x^2-1)*arcsin(c*x)*cos(4*arcsin(c*x))+5/3*b*(-d*(c^2*x
^2-1))^(1/2)/d^2/c^4/(c^2*x^2-1)*arcsin(c*x)*x^2-b*(-d*(c^2*x^2-1))^(1/2)*(
-c^2*x^2+1)^(1/2)/d^2/c^6/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)+31/18*
b*(-d*(c^2*x^2-1))^(1/2)/d^2/c^5/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-65/24*b*(
-d*(c^2*x^2-1))^(1/2)/d^2/c^6/(c^2*x^2-1)*arcsin(c*x)-1/72*b*(-d*(c^2*x^2-1
))^(1/2)/d^2/c^6/(c^2*x^2-1)*sin(4*arcsin(c*x))
```

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

$$-\frac{1}{3}a\left(\frac{x^4}{\sqrt{-c^2dx^2+d}\,c^2d}+\frac{4x^2}{\sqrt{-c^2dx^2+d}\,c^4d}-\frac{8}{\sqrt{-c^2dx^2+d}\,c^6d}\right)-\frac{\frac{1}{30}\left(\sqrt{cx+1}\sqrt{-cx+1}\,c^6d^2\left(\frac{2\left(3c^4x^5+25c^2x^3-45\right.}{c^5d^2}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/3*a*(x^4/(sqrt(-c^2*d*x^2 + d)*c^2*d) + 4*x^2/(sqrt(-c^2*d*x^2 + d)*c^4*
d) - 8/(sqrt(-c^2*d*x^2 + d)*c^6*d)) - 1/3*(3*sqrt(c*x + 1)*sqrt(-c*x + 1)*
c^6*d^2*integrate(1/3*(c^4*x^6 + 4*c^2*x^4 - 8*x^2)/(c^7*d^2*x^4 - c^5*d^2*
x^2 + (c^5*d^2*x^2 - c^3*d^2)*e^(log(c*x + 1) + log(-c*x + 1))), x) + (c^4*
x^4 + 4*c^2*x^2 - 8)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*b/(sqrt(c*
x + 1)*sqrt(-c*x + 1)*c^6*d^(3/2))
```

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

$$\int \frac{x^5\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(d-c^2\,d\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int((x^5*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(3/2), x)
```

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

$$\int \frac{x^{5} \left(a + b \operatorname{asin}{\left(c x \right)}\right)}{\left(- d \left(c x - 1\right) \left(c x + 1\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral(x**5*(a + b*asin(c*x))/(-d*(c*x - 1)*(c*x + 1))**(3/2), x)
```

3.120 $\int \frac{x^4(a+b\sin^{-1}(cx))}{(d-c^2dx^2)^{3/2}}\,dx$

Optimal. Leaf size=214

$$\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}}-\frac{3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{4bc^5d\sqrt{d-c^2dx^2}}+\frac{3x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2c^4d^2}+\frac{b\sqrt{1-c^2x^2}\log\left(1-c^2\right.}{2c^5d\sqrt{d-c^2dx^2}}$$

```
[Out] x^3*(a+b*arcsin(c*x))/c^2/d/(-c^2*d*x^2+d)^(1/2)-1/4*b*x^2*(-c^2*x^2+1)^(1/
2)/c^3/d/(-c^2*d*x^2+d)^(1/2)-3/4*(a+b*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/b/
c^5/d/(-c^2*d*x^2+d)^(1/2)+1/2*b*ln(-c^2*x^2+1)*(-c^2*x^2+1)^(1/2)/c^5/d/(-
c^2*d*x^2+d)^(1/2)+3/2*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c^4/d^2
```

Rubi [A] time = 0.29, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.259, Rules used = {4703, 4707, 4643, 4641, 30, 266, 43}

$$\frac{3x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2c^4d^2}+\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}}-\frac{3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{4bc^5d\sqrt{d-c^2dx^2}}-\frac{bx^2\sqrt{1-c^2x^2}}{4c^3d\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] -(b*x^2*Sqrt[1 - c^2*x^2])/(4*c^3*d*Sqrt[d - c^2*d*x^2]) + (x^3*(a + b*ArcS
in[c*x]))/(c^2*d*Sqrt[d - c^2*d*x^2]) + (3*x*Sqrt[d - c^2*d*x^2]*(a + b*Arc
Sin[c*x]))/(2*c^4*d^2) - (3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(4*b*c
^5*d*Sqrt[d - c^2*d*x^2]) + (b*Sqrt[1 - c^2*x^2]*Log[1 - c^2*x^2])/(2*c^5*d
*Sqrt[d - c^2*d*x^2])
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4643

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcSin[c*x])^n
/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e
```

```
, 0] &&  !GtQ[d, 0]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{3/2}}\,dx=\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}}-\frac{3\int\frac{x^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx}{c^2d}-\frac{\left(b\sqrt{1-c^2x^2}\right)\int\frac{x^3}{1-c^2x^2}\,dx}{cd\sqrt{d-c^2dx^2}}$$

$$=\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}}+\frac{3x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2c^4d^2}-\frac{3\int\frac{a+b\sin^{-1}(cx)}{\sqrt{d-c^2dx^2}}\,dx}{2c^4d}-\frac{\left(3b\sqrt{1\right.}}{2c^3}$$

$$=-\frac{3bx^2\sqrt{1-c^2x^2}}{4c^3d\sqrt{d-c^2dx^2}}+\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}}+\frac{3x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2c^4d^2}-\left(3\sqrt{1\right.}$$

$$=-\frac{bx^2\sqrt{1-c^2x^2}}{4c^3d\sqrt{d-c^2dx^2}}+\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}}+\frac{3x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2c^4d^2}-3\sqrt{1-}$$

Mathematica [A] time = 0.52, size = 173, normalized size = 0.81

$$\frac{-4ac\sqrt{d}\,x\left(c^2x^2-3\right)+12a\sqrt{d-c^2dx^2}\,\tan^{-1}\left(\frac{cx\sqrt{d-c^2dx^2}}{\sqrt{d}\left(c^2x^2-1\right)}\right)+b\sqrt{d}\left(\sqrt{1-c^2x^2}\left(4\log\left(1-c^2x^2\right)-6\sin^{-1}(cx)^2+2\right.\right.}{8c^5d^{3/2}\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (-4*a*c*Sqrt[d]*x*(-3 + c^2*x^2) + 12*a*Sqrt[d - c^2*d*x^2]*ArcTan[(c*x*Sqr
t[d - c^2*d*x^2])/(Sqrt[d]*(-1 + c^2*x^2))] + b*Sqrt[d]*(8*c*x*ArcSin[c*x]
+ Sqrt[1 - c^2*x^2]*(-6*ArcSin[c*x]^2 + Cos[2*ArcSin[c*x]] + 4*Log[1 - c^2*
x^2] + 2*ArcSin[c*x]*Sin[2*ArcSin[c*x]])))/(8*c^5*d^(3/2)*Sqrt[d - c^2*d*x^
2])
```

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(bx^4 \arcsin(cx) + ax^4\right)\sqrt{-c^2dx^2 + d}}{c^4d^2x^4 - 2\,c^2d^2x^2 + d^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((b*x^4*arcsin(c*x) + a*x^4)*sqrt(-c^2*d*x^2 + d)/(c^4*d^2*x^4 - 2*
c^2*d^2*x^2 + d^2), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Warning, integration of abs or sign assumes
constant sign by intervals (correct if the argument is real):Check [abs(t_n
ostep^4-1)]index.cc index_m i_lex_is_greater Error: Bad Argument Value
```

maple [C] time = 0.60, size = 432, normalized size = 2.02

$$-\frac{a\,x^3}{2c^2d\sqrt{-c^2d\,x^2+d}}+\frac{3ax}{2c^4d\sqrt{-c^2d\,x^2+d}}-\frac{3a\arctan\left(\frac{\sqrt{c^2d}\;x}{\sqrt{-c^2d\,x^2+d}}\right)}{2c^4d\sqrt{c^2d}}+\frac{3b\sqrt{-d\left(c^2x^2-1\right)}\;\sqrt{-c^2x^2+1}\;\arcsin(cx)^2}{4c^5d^2\left(c^2x^2-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] -1/2*a*x^3/c^2/d/(-c^2*d*x^2+d)^(1/2)+3/2*a/c^4*x/d/(-c^2*d*x^2+d)^(1/2)-3/
2*a/c^4/d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+3/4*b*
(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^5/d^2/(c^2*x^2-1)*arcsin(c*x)^2
+I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^5/d^2/(c^2*x^2-1)*arcsin(c
*x)-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^5/d^2/(c^2*x^2-1)*ln(1+(I
*c*x+(-c^2*x^2+1)^(1/2))^2)-1/16*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2
)/c^5/d^2/(c^2*x^2-1)-9/8*b*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)/c^4*arcs
in(c*x)*x-1/16*b*(-d*(c^2*x^2-1))^(1/2)/c^5/d^2/(c^2*x^2-1)*cos(3*arcsin(c*
x))-1/8*b*(-d*(c^2*x^2-1))^(1/2)/c^5/d^2/(c^2*x^2-1)*arcsin(c*x)*sin(3*arcs
in(c*x))
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{x^4\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(d-c^2\,d\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int((x^4*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(3/2), x)
```

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

$$\int \frac{x^4 (a + b \operatorname{asin}(cx))}{(-d (cx - 1) (cx + 1))^{\frac{3}{2}}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral(x**4*(a + b*asin(c*x))/(-d*(c*x - 1)*(c*x + 1))**(3/2), x)
```

3.121 $\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=142

$$\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{c^4d^2}+\frac{a+b\sin^{-1}(cx)}{c^4d\sqrt{d-c^2dx^2}}-\frac{b\sqrt{d-c^2dx^2}\tanh^{-1}(cx)}{c^4d^2\sqrt{1-c^2x^2}}-\frac{bx\sqrt{d-c^2dx^2}}{c^3d^2\sqrt{1-c^2x^2}}$$

```
[Out] (a+b*arcsin(c*x))/c^4/d/(-c^2*d*x^2+d)^(1/2)+(a+b*arcsin(c*x))*(-c^2*d*x^2+
d)^(1/2)/c^4/d^2-b*x*(-c^2*d*x^2+d)^(1/2)/c^3/d^2/(-c^2*x^2+1)^(1/2)-b*arct
anh(c*x)*(-c^2*d*x^2+d)^(1/2)/c^4/d^2/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 146, normalized size of antiderivative = 1.03, number of steps used = 5, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {4703, 4677, 8, 321, 206}

$$\frac{2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{c^4d^2}+\frac{x^2\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}}-\frac{bx\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}}-\frac{b\sqrt{1-c^2x^2}\tanh^{-1}(cx)}{c^4d\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] -((b*x*Sqrt[1 - c^2*x^2])/(c^3*d*Sqrt[d - c^2*d*x^2])) + (x^2*(a + b*ArcSin
[c*x]))/(c^2*d*Sqrt[d - c^2*d*x^2]) + (2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[
c*x]))/(c^4*d^2) - (b*Sqrt[1 - c^2*x^2]*ArcTanh[c*x])/(c^4*d*Sqrt[d - c^2*d
*x^2])
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 321

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

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
```

```
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rubi steps

$$\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{3/2}}\,dx = \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}} - \frac{2\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx}{c^2d} - \frac{\left(b\sqrt{1-c^2x^2}\right)\int \frac{x^2}{1-c^2x^2}\,dx}{cd\sqrt{d-c^2dx^2}}$$

$$= \frac{bx\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} + \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}} + \frac{2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{c^4d^2} - \frac{\left(b\sqrt{1-c^2\right.}}{c^3d\sqrt{\ }}$$

$$= -\frac{bx\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} + \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}} + \frac{2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{c^4d^2} - \frac{b\sqrt{1-c}}{c^4d}$$

Mathematica [C] time = 0.24, size = 136, normalized size = 0.96

$$\frac{\sqrt{d-c^2dx^2}\left(\sqrt{-c^2}\left(ac^2x^2-2a+bcx\sqrt{1-c^2x^2}+b\left(c^2x^2-2\right)\sin^{-1}(cx)\right)-ibc\sqrt{1-c^2x^2}\,F\left(i\sinh^{-1}\left(\sqrt{-c^2}\,x\right)\middle|1\right)\right.}{c^4\sqrt{-c^2}\,d^2\left(c^2x^2-1\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(Sqrt[-c^2]*(-2*a + a*c^2*x^2 + b*c*x*Sqrt[1 - c^2*x^2
] + b*(-2 + c^2*x^2)*ArcSin[c*x]) - I*b*c*Sqrt[1 - c^2*x^2]*EllipticF[I*Arc
Sinh[Sqrt[-c^2]*x], 1]))/(c^4*Sqrt[-c^2]*d^2*(-1 + c^2*x^2))
```

fricas [A] time = 0.72, size = 382, normalized size = 2.69

$$\left[\frac{4\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+1}\,bcx+\left(bc^2x^2-b\right)\sqrt{d}\,\log\left(-\frac{c^6dx^6+5\,c^4dx^4-5\,c^2dx^2+4\left(c^3x^3+cx\right)\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+1}\,\sqrt{d}-d}{c^6x^6-3\,c^4x^4+3\,c^2x^2-1}\right)+4\left(\right.}{4\left(c^6d^2x^2-c^4d^2\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/4*(4*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*b*c*x + (b*c^2*x^2 - b)*sqr
t(d)*log(-(c^6*d*x^6 + 5*c^4*d*x^4 - 5*c^2*d*x^2 + 4*(c^3*x^3 + c*x)*sqrt(-
c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*sqrt(d) - d)/(c^6*x^6 - 3*c^4*x^4 + 3*c^2
*x^2 - 1)) + 4*(a*c^2*x^2 + (b*c^2*x^2 - 2*b)*arcsin(c*x) - 2*a)*sqrt(-c^2*
d*x^2 + d))/(c^6*d^2*x^2 - c^4*d^2), 1/2*(2*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*
x^2 + 1)*b*c*x - (b*c^2*x^2 - b)*sqrt(-d)*arctan(2*sqrt(-c^2*d*x^2 + d)*sqr
t(-c^2*x^2 + 1)*c*sqrt(-d)*x/(c^4*d*x^4 - d)) + 2*(a*c^2*x^2 + (b*c^2*x^2 -
 2*b)*arcsin(c*x) - 2*a)*sqrt(-c^2*d*x^2 + d))/(c^6*d^2*x^2 - c^4*d^2)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.27, size = 306, normalized size = 2.15

$$-\frac{a\,x^{2}}{c^{2}d\sqrt{-c^{2}d\,x^{2}+d}}+\frac{2a}{d\,c^{4}\sqrt{-c^{2}d\,x^{2}+d}}+\frac{b\sqrt{-d\left(c^{2}x^{2}-1\right)}\,\sqrt{-c^{2}x^{2}+1}\,x}{c^{3}d^{2}\left(c^{2}x^{2}-1\right)}+\frac{b\sqrt{-d\left(c^{2}x^{2}-1\right)}\,\arcsin\left(cx\right)x^{2}}{c^{2}d^{2}\left(c^{2}x^{2}-1\right)}-\frac{2b}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] -a*x^2/c^2/d/(-c^2*d*x^2+d)^(1/2)+2*a/d/c^4/(-c^2*d*x^2+d)^(1/2)+b*(-d*(c^2
*x^2-1))^(1/2)/c^3/d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+b*(-d*(c^2*x^2-1))^
(1/2)/c^2/d^2/(c^2*x^2-1)*arcsin(c*x)*x^2-2*b*(-d*(c^2*x^2-1))^(1/2)/c^4/d^
2/(c^2*x^2-1)*arcsin(c*x)+b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^4/d
^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)-b*(-d*(c^2*x^2-1))^(1/2)*(-c^
2*x^2+1)^(1/2)/c^4/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)
```

maxima [A] time = 0.67, size = 142, normalized size = 1.00

$$-\frac{1}{2}\,bc\left(\frac{2\,x}{c^{4}d^{\frac{3}{2}}}+\frac{\log\left(cx+1\right)}{c^{5}d^{\frac{3}{2}}}-\frac{\log\left(cx-1\right)}{c^{5}d^{\frac{3}{2}}}\right)-b\left(\frac{x^{2}}{\sqrt{-c^{2}dx^{2}+d}\,c^{2}d}-\frac{2}{\sqrt{-c^{2}dx^{2}+d}\,c^{4}d}\right)\arcsin\left(cx\right)-a\left(\frac{x^{2}}{\sqrt{-c^{2}dx^{2}}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/2*b*c*(2*x/(c^4*d^(3/2)) + log(c*x + 1)/(c^5*d^(3/2)) - log(c*x - 1)/(c^
5*d^(3/2))) - b*(x^2/(sqrt(-c^2*d*x^2 + d)*c^2*d) - 2/(sqrt(-c^2*d*x^2 + d)
*c^4*d))*arcsin(c*x) - a*(x^2/(sqrt(-c^2*d*x^2 + d)*c^2*d) - 2/(sqrt(-c^2*d
*x^2 + d)*c^4*d))
```

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

$$\int \frac{x^3\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(d-c^2\,d\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int((x^3*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(3/2), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Exception raised: TypeError
```

3.122 $\int \frac{x^2\left(a+b \sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=135

$$\frac{x\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}}-\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc^3d\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x^2}\log\left(1-c^2x^2\right)}{2c^3d\sqrt{d-c^2dx^2}}$$

```
[Out] x*(a+b*arcsin(c*x))/c^2/d/(-c^2*d*x^2+d)^(1/2)-1/2*(a+b*arcsin(c*x))^2*(-c^
2*x^2+1)^(1/2)/b/c^3/d/(-c^2*d*x^2+d)^(1/2)+1/2*b*ln(-c^2*x^2+1)*(-c^2*x^2+
1)^(1/2)/c^3/d/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {4703, 4643, 4641, 260}

$$-\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc^3d\sqrt{d-c^2dx^2}}+\frac{x\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x^2}\log\left(1-c^2x^2\right)}{2c^3d\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (x*(a + b*ArcSin[c*x]))/(c^2*d*Sqrt[d - c^2*d*x^2]) - (Sqrt[1 - c^2*x^2]*(a
 + b*ArcSin[c*x])^2)/(2*b*c^3*d*Sqrt[d - c^2*d*x^2]) + (b*Sqrt[1 - c^2*x^2]
*Log[1 - c^2*x^2])/(2*c^3*d*Sqrt[d - c^2*d*x^2])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4643

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcSin[c*x])^n
/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e
, 0] &&  !GtQ[d, 0]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rubi steps

$$\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{3/2}}\,dx = \frac{x\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}} - \frac{\int \frac{a+b\sin^{-1}(cx)}{\sqrt{d-c^2dx^2}}\,dx}{c^2d} - \frac{\left(b\sqrt{1-c^2x^2}\right)\int \frac{x}{1-c^2x^2}\,dx}{cd\sqrt{d-c^2dx^2}}$$

$$= \frac{x\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}} + \frac{b\sqrt{1-c^2x^2}\,\log\left(1-c^2x^2\right)}{2c^3d\sqrt{d-c^2dx^2}} - \frac{\sqrt{1-c^2x^2}\int \frac{a+b\sin^{-1}(cx)}{\sqrt{1-c^2x^2}}\,dx}{c^2d\sqrt{d-c^2dx^2}}$$

$$= \frac{x\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}} - \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc^3d\sqrt{d-c^2dx^2}} + \frac{b\sqrt{1-c^2x^2}\,\log\left(1-c^2x^2\right)}{2c^3d\sqrt{d-c^2dx^2}}$$

Mathematica [A] time = 0.22, size = 160, normalized size = 1.19

$$-\frac{ax\sqrt{-d\left(c^2x^2-1\right)}}{c^2d^2\left(c^2x^2-1\right)} + \frac{a\tan^{-1}\left(\frac{cx\sqrt{-d\left(c^2x^2-1\right)}}{\sqrt{d}\left(c^2x^2-1\right)}\right)}{c^3d^{3/2}} + \frac{b\left(2cx\sin^{-1}(cx)-\sqrt{1-c^2x^2}\left(\sin^{-1}(cx)^2-2\log\left(\sqrt{1-c^2x^2}\right)\right)\right)}{2c^3d\sqrt{d\left(1-c^2x^2\right)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] -((a*x*Sqrt[-(d*(-1 + c^2*x^2))])/(c^2*d^2*(-1 + c^2*x^2))) + (a*ArcTan[(c*
x*Sqrt[-(d*(-1 + c^2*x^2))])/(Sqrt[d]*(-1 + c^2*x^2))])/(c^3*d^(3/2)) + (b*
(2*c*x*ArcSin[c*x] - Sqrt[1 - c^2*x^2]*(ArcSin[c*x]^2 - 2*Log[Sqrt[1 - c^2*
x^2]])))/(2*c^3*d*Sqrt[d*(1 - c^2*x^2)])
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}\left(bx^2\arcsin\left(cx\right)+ax^2\right)}{c^4d^2x^4-2\,c^2d^2x^2+d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b*x^2*arcsin(c*x) + a*x^2)/(c^4*d^2*x^4 - 2*
c^2*d^2*x^2 + d^2), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Warning, integration of abs or sign assumes
constant sign by intervals (correct if the argument is real):Check [abs(t_n
ostep^4-1)]index.cc index_m i_lex_is_greater Error: Bad Argument Value
```

maple [C] time = 0.28, size = 274, normalized size = 2.03

$$\frac{ax}{c^2d\sqrt{-c^2d\,x^2+d}} - \frac{a\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2d\,x^2+d}}\right)}{c^2d\sqrt{c^2d}} + \frac{b\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x^2+1}\,\arcsin\left(cx\right)^2}{2d^2c^3\left(c^2x^2-1\right)} + \frac{ib\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2}}{d^2c^3\left(c^2x^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] a*x/c^2/d/(-c^2*d*x^2+d)^(1/2)-a/c^2/d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x
/(-c^2*d*x^2+d)^(1/2))+1/2*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^2/
c^3/(c^2*x^2-1)*arcsin(c*x)^2+I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)
/d^2/c^3/(c^2*x^2-1)*arcsin(c*x)-b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/d^2/c
^2/(c^2*x^2-1)*x-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^2/c^3/(c^2*x
^2-1)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{x^2\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(d-c^2\,d\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int((x^2*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(3/2), x)
```

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

$$\int \frac{x^{2} \left(a + b \operatorname{asin}{\left(cx \right)}\right)}{\left(- d \left(cx - 1\right) \left(cx + 1\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral(x**2*(a + b*asin(c*x))/(-d*(c*x - 1)*(c*x + 1))**(3/2), x)
```

3.123 $\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=73

$$\frac{a+b\sin^{-1}(cx)}{c^2d\sqrt{d-c^2dx^2}}-\frac{b\sqrt{1-c^2x^2}\,\tanh^{-1}(cx)}{c^2d\sqrt{d-c^2dx^2}}$$

```
[Out] (a+b*arcsin(c*x))/c^2/d/(-c^2*d*x^2+d)^(1/2)-b*arctanh(c*x)*(-c^2*x^2+1)^(1
/2)/c^2/d/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {4677, 206}

$$\frac{a+b\sin^{-1}(cx)}{c^2d\sqrt{d-c^2dx^2}}-\frac{b\sqrt{1-c^2x^2}\,\tanh^{-1}(cx)}{c^2d\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (a + b*ArcSin[c*x])/(c^2*d*Sqrt[d - c^2*d*x^2]) - (b*Sqrt[1 - c^2*x^2]*ArcT
anh[c*x])/(c^2*d*Sqrt[d - c^2*d*x^2])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{3/2}}\,dx &= \frac{a+b\sin^{-1}(cx)}{c^2d\sqrt{d-c^2dx^2}}-\frac{\left(b\sqrt{1-c^2x^2}\right)\int \frac{1}{1-c^2x^2}\,dx}{cd\sqrt{d-c^2dx^2}}\\ &= \frac{a+b\sin^{-1}(cx)}{c^2d\sqrt{d-c^2dx^2}}-\frac{b\sqrt{1-c^2x^2}\,\tanh^{-1}(cx)}{c^2d\sqrt{d-c^2dx^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 51, normalized size = 0.70

$$\frac{a-b\sqrt{1-c^2x^2}\,\tanh^{-1}(cx)+b\sin^{-1}(cx)}{c^2d\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (a + b*ArcSin[c*x] - b*Sqrt[1 - c^2*x^2]*ArcTanh[c*x])/(c^2*d*Sqrt[d - c^2*
d*x^2])
```

fricas [A] time = 0.70, size = 279, normalized size = 3.82

$$\left[\frac{\left(bc^2x^2-b\right)\sqrt{d}\log\left(-\frac{c^6dx^6+5c^4dx^4-5c^2dx^2+4\left(c^3x^3+cx\right)\sqrt{-c^2dx^2+d}\sqrt{-c^2x^2+1}\sqrt{d}-d}{c^6x^6-3c^4x^4+3c^2x^2-1}\right)-4\sqrt{-c^2dx^2+d}\left(b\arcsin\left(cx\right)+a\right)}{4\left(c^4d^2x^2-c^2d^2\right)},-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/4*((b*c^2*x^2 - b)*sqrt(d)*log(-(c^6*d*x^6 + 5*c^4*d*x^4 - 5*c^2*d*x^2 +
 4*(c^3*x^3 + c*x)*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*sqrt(d) - d)/(c^
6*x^6 - 3*c^4*x^4 + 3*c^2*x^2 - 1)) - 4*sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x)
 + a))/(c^4*d^2*x^2 - c^2*d^2), -1/2*((b*c^2*x^2 - b)*sqrt(-d)*arctan(2*sqr
t(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*c*sqrt(-d)*x/(c^4*d*x^4 - d)) + 2*sqrt
(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a))/(c^4*d^2*x^2 - c^2*d^2)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Warning, integration of abs or sign assumes
constant sign by intervals (correct if the argument is real):Check [abs(t_n
ostep^4-1)]index.cc index_m i_lex_is_greater Error: Bad Argument Value
```

maple [C] time = 0.13, size = 194, normalized size = 2.66

$$\frac{a}{c^2d\sqrt{-c^2d\,x^2+d}}-\frac{b\sqrt{-d\left(c^2x^2-1\right)}\,\arcsin\left(cx\right)}{c^2d^2\left(c^2x^2-1\right)}-\frac{b\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x^2+1}\,\ln\left(icx+\sqrt{-c^2x^2+1}-i\right)}{c^2d^2\left(c^2x^2-1\right)}+\frac{b\sqrt{-}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] a/c^2/d/(-c^2*d*x^2+d)^(1/2)-b*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^2-1)*a
rcsin(c*x)-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^2/d^2/(c^2*x^2-1)*
ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)+b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/
c^2/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)
```

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

$$\frac{\frac{1}{2}\left(\sqrt{cx+1}\sqrt{-cx+1}\,c^3d^2\left(\frac{2\,x}{c^2d^2}-\frac{\log(cx+1)}{c^3d^2}+\frac{\log(cx-1)}{c^3d^2}\right)+2\,\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)\right)b}{\sqrt{cx+1}\sqrt{-cx+1}\,c^2d^{\frac{3}{2}}}+\frac{a}{\sqrt{-c^2dx^2+d}\,c^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxima")
```

```
[Out] (sqrt(c*x + 1)*sqrt(-c*x + 1)*c^3*d^2*integrate(x^2/(c^4*d^2*x^4 - c^2*d^2*
x^2 + (c^2*d^2*x^2 - d^2)*e^(log(c*x + 1) + log(-c*x + 1))), x) + arctan2(c
```

```
*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*b/(sqrt(c*x + 1)*sqrt(-c*x + 1)*c^2*d^(3
/2)) + a/(sqrt(-c^2*d*x^2 + d)*c^2*d)
```

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

$$\int \frac{x\,(a+b\,\mathrm{asin}\,(c\,x))}{\left(d-c^2\,d\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(3/2),x)
[Out] int((x*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(3/2), x)
```

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

$$\int \frac{x\,(a+b\,\mathrm{asin}\,(cx))}{(-d\,(cx-1)\,(cx+1))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(3/2),x)
[Out] Integral(x*(a + b*asin(c*x))/(-d*(c*x - 1)*(c*x + 1))**(3/2), x)
```

3.124 $\int \frac{a+b\sin^{-1}(cx)}{(d-c^2dx^2)^{3/2}}\,dx$

Optimal. Leaf size=80

$$\frac{x\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x^2}\,\log\left(1-c^2x^2\right)}{2cd\sqrt{d-c^2dx^2}}$$

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

Rubi [A] time = 0.04, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {4653, 260}

$$\frac{x\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x^2}\,\log\left(1-c^2x^2\right)}{2cd\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (x*(a + b*ArcSin[c*x]))/(d*Sqrt[d - c^2*d*x^2]) + (b*Sqrt[1 - c^2*x^2]*Log[
1 - c^2*x^2])/(2*c*d*Sqrt[d - c^2*d*x^2])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 4653

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n*Sqrt[1 - c^2*x^2])/(d*Sqrt[d + e*x^2]), Int[(x*(a + b*ArcSin[c*x])^(n
 - 1))/(1 - c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e,
 0] && GtQ[n, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\sin^{-1}(cx)}{\left(d-c^2dx^2\right)^{3/2}}\,dx&=\frac{x\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d-c^2dx^2}}-\frac{\left(bc\sqrt{1-c^2x^2}\right)\int \frac{x}{1-c^2x^2}\,dx}{d\sqrt{d-c^2dx^2}}\\&=\frac{x\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x^2}\,\log\left(1-c^2x^2\right)}{2cd\sqrt{d-c^2dx^2}}\end{aligned}$$

Mathematica [A] time = 0.22, size = 77, normalized size = 0.96

$$-\frac{\sqrt{d-c^2dx^2}\left(2acx+b\sqrt{1-c^2x^2}\,\log\left(c^2x^2-1\right)+2bcx\sin^{-1}(cx)\right)}{2cd^2\left(c^2x^2-1\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] -1/2*(Sqrt[d - c^2*d*x^2]*(2*a*c*x + 2*b*c*x*ArcSin[c*x] + b*Sqrt[1 - c^2*x
^2]*Log[-1 + c^2*x^2]))/(c*d^2*(-1 + c^2*x^2))
```

fricas [F] time = 0.65, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)}{c^4d^2x^4-2\,c^2d^2x^2+d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(c^4*d^2*x^4 - 2*c^2*d^2*
x^2 + d^2), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Warning, integration of abs or sign assumes
constant sign by intervals (correct if the argument is real):Check [abs(t_n
ostep^4-1)]index.cc index_m i_lex_is_greater Error: Bad Argument Value
```

maple [C] time = 0.11, size = 177, normalized size = 2.21

$$\frac{ax}{d\sqrt{-c^2d\,x^2+d}}+\frac{ib\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x^2+1}\,\arcsin(cx)}{c\,d^2\left(c^2x^2-1\right)}-\frac{b\sqrt{-d\left(c^2x^2-1\right)}\,\arcsin(cx)\,x}{d^2\left(c^2x^2-1\right)}-\frac{b\sqrt{-d\left(c^2x^2-1\right)}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] a*x/d/(-c^2*d*x^2+d)^(1/2)+I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/
d^2/(c^2*x^2-1)*arcsin(c*x)-b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/d^2/(c^2*x
^2-1)*x-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/d^2/(c^2*x^2-1)*ln(1+
(I*c*x+(-c^2*x^2+1)^(1/2))^2)
```

maxima [A] time = 0.66, size = 62, normalized size = 0.78

$$\frac{bx\arcsin(cx)}{\sqrt{-c^2dx^2+d}\,d}+\frac{ax}{\sqrt{-c^2dx^2+d}\,d}-\frac{b\log\left(x^2-\frac{1}{c^2}\right)}{2\,cd^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxima")
```

```
[Out] b*x*arcsin(c*x)/(sqrt(-c^2*d*x^2 + d)*d) + a*x/(sqrt(-c^2*d*x^2 + d)*d) - 1
/2*b*log(x^2 - 1/c^2)/(c*d^(3/2))
```

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

$$\int \frac{a+b\,\mathrm{asin}\left(c\,x\right)}{{\left(d-c^2\,d\,x^2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(d - c^2*d*x^2)^(3/2),x)
[Out] int((a + b*asin(c*x))/(d - c^2*d*x^2)^(3/2), x)
```

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

$$\int \frac{a + b \operatorname{asin}(cx)}{(-d(cx-1)(cx+1))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(-c**2*d*x**2+d)**(3/2),x)
[Out] Integral((a + b*asin(c*x))/(-d*(c*x - 1)*(c*x + 1))**(3/2), x)
```

3.125 $\int \frac{a+b\sin^{-1}(cx)}{x(d-c^2dx^2)^{3/2}}\,dx$

Optimal. Leaf size=220

$$\frac{a+b\sin^{-1}(cx)}{d\sqrt{d-c^2dx^2}}-\frac{2\sqrt{1-c^2x^2}\,\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d-c^2dx^2}}+\frac{ib\sqrt{1-c^2x^2}\,\text{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)}{d\sqrt{d-c^2dx^2}}-\frac{ib\sqrt{1-c^2x^2}\,\text{I}}{d\sqrt{d-}}$$

```
[Out] (a+b*arcsin(c*x))/d/(-c^2*d*x^2+d)^(1/2)-2*(a+b*arcsin(c*x))*arctanh(I*c*x+
(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x^2+d)^(1/2)-b*arctanh(c*x
)*(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x^2+d)^(1/2)+I*b*polylog(2,-I*c*x-(-c^2*x^2+
1)^(1/2))*(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x^2+d)^(1/2)-I*b*polylog(2,I*c*x+(-c
^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.31, antiderivative size = 220, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.259, Rules used = {4705, 4713, 4709, 4183, 2279, 2391, 206}

$$\frac{ib\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)}{d\sqrt{d-c^2dx^2}}-\frac{ib\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)}{d\sqrt{d-c^2dx^2}}+\frac{a+b\sin^{-1}(cx)}{d\sqrt{d-c^2dx^2}}-\frac{2\sqrt{1-c^2x^2}\,\tanh}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x*(d - c^2*d*x^2)^(3/2)),x]
```

```
[Out] (a + b*ArcSin[c*x])/(d*Sqrt[d - c^2*d*x^2]) - (2*Sqrt[1 - c^2*x^2]*(a + b*A
rcSin[c*x])*ArcTanh[E^(I*ArcSin[c*x])])/(d*Sqrt[d - c^2*d*x^2]) - (b*Sqrt[1
 - c^2*x^2]*ArcTanh[c*x])/(d*Sqrt[d - c^2*d*x^2]) + (I*b*Sqrt[1 - c^2*x^2]*
PolyLog[2, -E^(I*ArcSin[c*x])])/(d*Sqrt[d - c^2*d*x^2]) - (I*b*Sqrt[1 - c^2
*x^2]*PolyLog[2, E^(I*ArcSin[c*x])])/(d*Sqrt[d - c^2*d*x^2])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4705

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> -Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a +
```

```
b*ArcSin[c*x])^n)/(2*d*f*(p + 1)), x] + (Dist[(m + 2*p + 3)/(2*d*(p + 1)),
Int[(f*x)^m*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[(b*c*n
*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*f*(p + 1)*(1 - c^2*x^2)^FracPart[
p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
0] && LtQ[p, -1] &&  !GtQ[m, 1] && (IntegerQ[m] || IntegerQ[p] || EqQ[n, 1]
)
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4713

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(
(f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c,
 d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&  !GtQ[d, 0] && (Integ
erQ[m] || EqQ[n, 1])
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}(cx)}{x\left(d-c^2dx^2\right)^{3/2}}\,dx &= \frac{a+b\sin^{-1}(cx)}{d\sqrt{d-c^2dx^2}}+\frac{\int \frac{a+b\sin^{-1}(cx)}{x\sqrt{d-c^2dx^2}}\,dx}{d}-\frac{\left(bc\sqrt{1-c^2x^2}\right)\int \frac{1}{1-c^2x^2}\,dx}{d\sqrt{d-c^2dx^2}}\\
&= \frac{a+b\sin^{-1}(cx)}{d\sqrt{d-c^2dx^2}}-\frac{b\sqrt{1-c^2x^2}\,\tanh^{-1}(cx)}{d\sqrt{d-c^2dx^2}}+\frac{\sqrt{1-c^2x^2}\int \frac{a+b\sin^{-1}(cx)}{x\sqrt{1-c^2x^2}}\,dx}{d\sqrt{d-c^2dx^2}}\\
&= \frac{a+b\sin^{-1}(cx)}{d\sqrt{d-c^2dx^2}}-\frac{b\sqrt{1-c^2x^2}\,\tanh^{-1}(cx)}{d\sqrt{d-c^2dx^2}}+\frac{\sqrt{1-c^2x^2}\,\mathrm{Subst}\left(\int(a+bx)\csc(x)\,dx,x,\sin\right.}{d\sqrt{d-c^2dx^2}}\\
&= \frac{a+b\sin^{-1}(cx)}{d\sqrt{d-c^2dx^2}}-\frac{2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{d\sqrt{d-c^2dx^2}}-\frac{b\sqrt{1-c^2x^2}\,\tanh^{-1}}{d\sqrt{d-c^2dx^2}}\\
&= \frac{a+b\sin^{-1}(cx)}{d\sqrt{d-c^2dx^2}}-\frac{2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{d\sqrt{d-c^2dx^2}}-\frac{b\sqrt{1-c^2x^2}\,\tanh^{-1}}{d\sqrt{d-c^2dx^2}}\\
&= \frac{a+b\sin^{-1}(cx)}{d\sqrt{d-c^2dx^2}}-\frac{2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{d\sqrt{d-c^2dx^2}}-\frac{b\sqrt{1-c^2x^2}\,\tanh^{-1}}{d\sqrt{d-c^2dx^2}}
\end{aligned}$$

Mathematica [A] time = 1.16, size = 300, normalized size = 1.36

$$-\frac{a\sqrt{d-c^2dx^2}}{c^2x^2-1}-a\sqrt{d}\log\left(\sqrt{d}\sqrt{d-c^2dx^2}+d\right)+a\sqrt{d}\log(x)+\frac{bd\left(i\sqrt{1-c^2x^2}\,\mathrm{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)-i\sqrt{1-c^2x^2}\,\mathrm{Li}_2\left(e^{i\sin^{-1}(cx)}\right)+\sqrt{1-c^2x^2}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x*(d - c^2*d*x^2)^(3/2)),x]
```

```
[Out] (-((a*Sqrt[d - c^2*d*x^2])/(-1 + c^2*x^2)) + a*Sqrt[d]*Log[x] - a*Sqrt[d]*L
og[d + Sqrt[d]*Sqrt[d - c^2*d*x^2]] + (b*d*(ArcSin[c*x] + Sqrt[1 - c^2*x^2]
```

```
*ArcSin[c*x]*Log[1 - E^(I*ArcSin[c*x])] - Sqrt[1 - c^2*x^2]*ArcSin[c*x]*Log
[1 + E^(I*ArcSin[c*x])] + Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*x]/2] - Sin[Ar
cSin[c*x]/2]] - Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/
2]] + I*Sqrt[1 - c^2*x^2]*PolyLog[2, -E^(I*ArcSin[c*x])] - I*Sqrt[1 - c^2*x
^2]*PolyLog[2, E^(I*ArcSin[c*x])]))/Sqrt[d - c^2*d*x^2])/d^2
```

fricas [F] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)}{c^4d^2x^5-2\,c^2d^2x^3+d^2x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x/(-c^2*d*x^2+d)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(c^4*d^2*x^5 - 2*c^2*d^2*
x^3 + d^2*x), x)
```

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

$$\int \frac{b\arcsin(cx)+a}{\left(-c^2dx^2+d\right)^{\frac{3}{2}}x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/((-c^2*d*x^2 + d)^(3/2)*x), x)
```

maple [A] time = 0.22, size = 344, normalized size = 1.56

$$\frac{a}{d\sqrt{-c^2d\,x^2+d}}-\frac{a\ln\left(\frac{2d+2\sqrt{d}\,\sqrt{-c^2d\,x^2+d}}{x}\right)}{d^{\frac{3}{2}}}-\frac{b\sqrt{-d\left(c^2x^2-1\right)}\,\arcsin(cx)}{d^2\left(c^2x^2-1\right)}-\frac{2ib\sqrt{-c^2x^2+1}\,\sqrt{-d\left(c^2x^2-1\right)}\,\text{arct}}{d^2\left(c^2x^2-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] a/d/(-c^2*d*x^2+d)^(1/2)-a/d^(3/2)*ln((2*d+2*d^(1/2)*(-c^2*d*x^2+d)^(1/2))/
x)-b*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)*arcsin(c*x)-2*I*b*(-c^2*x^2+1)^
(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)*arctan(I*c*x+(-c^2*x^2+1)^(1/2
))-I*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)*dilog(1+I*
c*x+(-c^2*x^2+1)^(1/2))-I*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^2/(
c^2*x^2-1)*dilog(I*c*x+(-c^2*x^2+1)^(1/2))+b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^
2-1))^(1/2)/d^2/(c^2*x^2-1)*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))
```

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

$$-a\left(\frac{\log\left(\frac{2\sqrt{-c^2dx^2+d}\,\sqrt{d}}{|x|}+\frac{2\,d}{|x|}\right)}{d^{\frac{3}{2}}}-\frac{1}{\sqrt{-c^2dx^2+d}\,d}\right)-\frac{b\int\frac{\arctan\left(cx,\,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{(cx+1)^{\frac{3}{2}}(cx-1)\sqrt{-cx+1}\,x}\,dx}{\frac{d}{\sqrt{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxima")
```

```
[Out] -a*(log(2*sqrt(-c^2*d*x^2 + d)*sqrt(d)/abs(x) + 2*d/abs(x))/d^(3/2) - 1/(sq
rt(-c^2*d*x^2 + d)*d)) - b*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x +
 1))/((c^2*d*x^3 - d*x)*sqrt(c*x + 1)*sqrt(-c*x + 1)), x)/sqrt(d)
```

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

$$\int \frac{a+b\,\mathrm{asin}\left(c\,x\right)}{x\,{\left(d-c^2\,d\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x*(d - c^2*d*x^2)^(3/2)),x)
[Out] int((a + b*asin(c*x))/(x*(d - c^2*d*x^2)^(3/2)), x)
```

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

$$\int \frac{a+b\,\mathrm{asin}\,(cx)}{x\,(-d\,(cx-1)\,(cx+1))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x/(-c**2*d*x**2+d)**(3/2),x)
[Out] Integral((a + b*asin(c*x))/(x*(-d*(c*x - 1)*(c*x + 1))**(3/2)), x)
```

3.126 $\int \frac{a+b\sin^{-1}(cx)}{x^2\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=150

$$\frac{2c^2x\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d-c^2dx^2}}-\frac{a+b\sin^{-1}(cx)}{dx\sqrt{d-c^2dx^2}}+\frac{bc\log(x)\sqrt{d-c^2dx^2}}{d^2\sqrt{1-c^2x^2}}+\frac{bc\sqrt{d-c^2dx^2}\log\left(1-c^2x^2\right)}{2d^2\sqrt{1-c^2x^2}}$$

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

Rubi [A] time = 0.16, antiderivative size = 150, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.259, Rules used = {4701, 4653, 260, 266, 36, 29, 31}

$$\frac{2c^2x\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d-c^2dx^2}}-\frac{a+b\sin^{-1}(cx)}{dx\sqrt{d-c^2dx^2}}+\frac{bc\sqrt{1-c^2x^2}\log(x)}{d\sqrt{d-c^2dx^2}}+\frac{bc\sqrt{1-c^2x^2}\log\left(1-c^2x^2\right)}{2d\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x^2*(d - c^2*d*x^2)^(3/2)),x]
```

```
[Out] -((a + b*ArcSin[c*x])/(d*x*Sqrt[d - c^2*d*x^2])) + (2*c^2*x*(a + b*ArcSin[c
*x]))/(d*Sqrt[d - c^2*d*x^2]) + (b*c*Sqrt[1 - c^2*x^2]*Log[x])/(d*Sqrt[d -
c^2*d*x^2]) + (b*c*Sqrt[1 - c^2*x^2]*Log[1 - c^2*x^2])/(2*d*Sqrt[d - c^2*d*
x^2])
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

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

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4653

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n*Sqrt[1 - c^2*x^2])/(d*Sqrt[d + e*x^2]), Int[(x*(a + b*ArcSin[c*x])^(n
```

```
- 1))/(1 - c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e,
 0] && GtQ[n, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rubi steps

$$
\begin{aligned}
\int \frac{a+b\sin^{-1}(cx)}{x^2\left(d-c^2dx^2\right)^{3/2}}\,dx &= -\frac{a+b\sin^{-1}(cx)}{dx\sqrt{d-c^2dx^2}}+\left(2c^2\right)\int \frac{a+b\sin^{-1}(cx)}{\left(d-c^2dx^2\right)^{3/2}}\,dx+\frac{\left(bc\sqrt{1-c^2x^2}\right)\int \frac{1}{x\left(1-c^2x^2\right)}\,dx}{d\sqrt{d-c^2dx^2}}\\
&= -\frac{a+b\sin^{-1}(cx)}{dx\sqrt{d-c^2dx^2}}+\frac{2c^2x\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d-c^2dx^2}}+\frac{\left(bc\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int \frac{1}{x\left(1-c^2x\right)}\,dx,x,x^2\right)}{2d\sqrt{d-c^2dx^2}}\\
&= -\frac{a+b\sin^{-1}(cx)}{dx\sqrt{d-c^2dx^2}}+\frac{2c^2x\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d-c^2dx^2}}+\frac{bc\sqrt{1-c^2x^2}\,\log\left(1-c^2x^2\right)}{d\sqrt{d-c^2dx^2}}+\frac{\left(bc\sqrt{1-c^2x\right.}}{2}\\
&= -\frac{a+b\sin^{-1}(cx)}{dx\sqrt{d-c^2dx^2}}+\frac{2c^2x\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d-c^2dx^2}}+\frac{bc\sqrt{1-c^2x^2}\,\log(x)}{d\sqrt{d-c^2dx^2}}+\frac{bc\sqrt{1-c^2x^2}\,\log\left(1\right.}{2d\sqrt{d-c^2dx^2}}
\end{aligned}
$$

Mathematica [A] time = 0.27, size = 117, normalized size = 0.78

$$
-\frac{\sqrt{d-c^2dx^2}\left(4ac^2x^2-2a+bcx\sqrt{1-c^2x^2}\,\log\left(x^2\right)+bcx\sqrt{1-c^2x^2}\,\log\left(1-c^2x^2\right)+2b\left(2c^2x^2-1\right)\sin^{-1}(cx)\right)}{2d^2x\left(c^2x^2-1\right)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x^2*(d - c^2*d*x^2)^(3/2)),x]
```

```
[Out] -1/2*(Sqrt[d - c^2*d*x^2]*(-2*a + 4*a*c^2*x^2 + 2*b*(-1 + 2*c^2*x^2)*ArcSin
[c*x] + b*c*x*Sqrt[1 - c^2*x^2]*Log[x^2] + b*c*x*Sqrt[1 - c^2*x^2]*Log[1 -
c^2*x^2]))/(d^2*x*(-1 + c^2*x^2))
```

fricas [F] time = 15.03, size = 0, normalized size = 0.00

$$
\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)}{c^4d^2x^6-2\,c^2d^2x^4+d^2x^2},x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(c^4*d^2*x^6 - 2*c^2*d^2*
x^4 + d^2*x^2), x)
```

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

$$\int \frac{b \arcsin(cx) + a}{\left(-c^2dx^2 + d\right)^{\frac{3}{2}} x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/((-c^2*d*x^2 + d)^(3/2)*x^2), x)
```

maple [C] time = 0.26, size = 239, normalized size = 1.59

$$-\frac{a}{dx\sqrt{-c^2d\,x^2+d}}+\frac{2a\,c^2x}{d\sqrt{-c^2d\,x^2+d}}+\frac{2ib\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x^2+1}\,\arcsin(cx)\,c}{d^2\left(c^2x^2-1\right)}-\frac{2b\sqrt{-d\left(c^2x^2-1\right)}\,\arcsin}{\left(c^2x^2-1\right)d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x^2/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] -a/d/x/(-c^2*d*x^2+d)^(1/2)+2*a*c^2/d*x/(-c^2*d*x^2+d)^(1/2)+2*I*b*(-d*(c^2
*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)*arcsin(c*x)*c-2*b*(-d*(c^
2*x^2-1))^(1/2)*arcsin(c*x)/(c^2*x^2-1)/d^2*x*c^2+b*(-d*(c^2*x^2-1))^(1/2)*
arcsin(c*x)/(c^2*x^2-1)/d^2/x-b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d
^2/(c^2*x^2-1)*ln((I*c*x+(-c^2*x^2+1)^(1/2))^4-1)*c
```

maxima [A] time = 0.43, size = 129, normalized size = 0.86

$$\frac{1}{2}\,bc\left(\frac{\log(cx+1)}{d^{\frac{3}{2}}}+\frac{\log(cx-1)}{d^{\frac{3}{2}}}+\frac{2\,\log(x)}{d^{\frac{3}{2}}}\right)+\left(\frac{2\,c^2x}{\sqrt{-c^2dx^2+d}\,d}-\frac{1}{\sqrt{-c^2dx^2+d}\,dx}\right)b\arcsin(cx)+\left(\frac{2\,c^2x}{\sqrt{-c^2dx^2+}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/2*b*c*(log(c*x + 1)/d^(3/2) + log(c*x - 1)/d^(3/2) + 2*log(x)/d^(3/2)) +
(2*c^2*x/(sqrt(-c^2*d*x^2 + d)*d) - 1/(sqrt(-c^2*d*x^2 + d)*d*x))*b*arcsin(
c*x) + (2*c^2*x/(sqrt(-c^2*d*x^2 + d)*d) - 1/(sqrt(-c^2*d*x^2 + d)*d*x))*a
```

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

$$\int \frac{a + b\,\mathrm{asin}(c\,x)}{x^2\left(d - c^2\,d\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x^2*(d - c^2*d*x^2)^(3/2)),x)
```

```
[Out] int((a + b*asin(c*x))/(x^2*(d - c^2*d*x^2)^(3/2)), x)
```

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

$$\int \frac{a + b\,\mathrm{asin}(cx)}{x^2\left(-d(cx-1)(cx+1)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x**2/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c*x))/(x**2*(-d*(c*x - 1)*(c*x + 1))**(3/2)), x)
```

3.127 $\int \frac{a+b\sin^{-1}(cx)}{x^3(d-c^2dx^2)^{3/2}}\,dx$

Optimal. Leaf size=316

$$\frac{3c^2\left(a+b\sin^{-1}(cx)\right)}{2d\sqrt{d-c^2dx^2}}-\frac{a+b\sin^{-1}(cx)}{2dx^2\sqrt{d-c^2dx^2}}-\frac{3c^2\sqrt{1-c^2x^2}\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d-c^2dx^2}}+\frac{3ibc^2\sqrt{1-c^2x^2}\,\mathrm{Li}_2\left(\right.}{2d\sqrt{d-c^2d}}$$

```
[Out] 3/2*c^2*(a+b*arcsin(c*x))/d/(-c^2*d*x^2+d)^(1/2)+1/2*(-a-b*arcsin(c*x))/d/x
^2/(-c^2*d*x^2+d)^(1/2)-1/2*b*c*(-c^2*x^2+1)^(1/2)/d/x/(-c^2*d*x^2+d)^(1/2)
-3*c^2*(a+b*arcsin(c*x))*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/
2)/d/(-c^2*d*x^2+d)^(1/2)-b*c^2*arctanh(c*x)*(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x
^2+d)^(1/2)+3/2*I*b*c^2*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(
1/2)/d/(-c^2*d*x^2+d)^(1/2)-3/2*I*b*c^2*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))
*(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.44, antiderivative size = 316, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4701, 4705, 4713, 4709, 4183, 2279, 2391, 206, 325}

$$\frac{3ibc^2\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)}{2d\sqrt{d-c^2dx^2}}-\frac{3ibc^2\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)}{2d\sqrt{d-c^2dx^2}}+\frac{3c^2\left(a+b\sin^{-1}(cx)\right)}{2d\sqrt{d-c^2dx^2}}-\frac{a+b\,\mathrm{si}}{2dx^2\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x^3*(d - c^2*d*x^2)^(3/2)),x]
```

```
[Out] -(b*c*Sqrt[1 - c^2*x^2])/(2*d*x*Sqrt[d - c^2*d*x^2]) + (3*c^2*(a + b*ArcSin
[c*x]))/(2*d*Sqrt[d - c^2*d*x^2]) - (a + b*ArcSin[c*x])/(2*d*x^2*Sqrt[d - c
^2*d*x^2]) - (3*c^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcTanh[E^(I*ArcS
in[c*x])])/(d*Sqrt[d - c^2*d*x^2]) - (b*c^2*Sqrt[1 - c^2*x^2]*ArcTanh[c*x])
/(d*Sqrt[d - c^2*d*x^2]) + (((3*I)/2)*b*c^2*Sqrt[1 - c^2*x^2]*PolyLog[2, -E
^(I*ArcSin[c*x])])/(d*Sqrt[d - c^2*d*x^2]) - (((3*I)/2)*b*c^2*Sqrt[1 - c^2*
x^2]*PolyLog[2, E^(I*ArcSin[c*x])])/(d*Sqrt[d - c^2*d*x^2])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 325

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

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4705

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> -Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a +
b*ArcSin[c*x])^n)/(2*d*f*(p + 1)), x] + (Dist[(m + 2*p + 3)/(2*d*(p + 1)),
Int[(f*x)^m*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[(b*c*n
*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*f*(p + 1)*(1 - c^2*x^2)^FracPart[
p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
0] && LtQ[p, -1] &&  !GtQ[m, 1] && (IntegerQ[m] || IntegerQ[p] || EqQ[n, 1]
)
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4713

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(
(f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c,
 d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&  !GtQ[d, 0] && (Integ
erQ[m] || EqQ[n, 1])
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x^3\left(d-c^2dx^2\right)^{3/2}}\,dx = -\frac{a+b\sin^{-1}(cx)}{2dx^2\sqrt{d-c^2dx^2}} + \frac{1}{2}\left(3c^2\right)\int \frac{a+b\sin^{-1}(cx)}{x\left(d-c^2dx^2\right)^{3/2}}\,dx + \frac{\left(bc\sqrt{1-c^2x^2}\right)\int \frac{1}{x^2\left(1-c^2x^2\right)}\,dx}{2d\sqrt{d-c^2dx^2}}$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{2dx\sqrt{d-c^2dx^2}} + \frac{3c^2\left(a+b\sin^{-1}(cx)\right)}{2d\sqrt{d-c^2dx^2}} - \frac{a+b\sin^{-1}(cx)}{2dx^2\sqrt{d-c^2dx^2}} + \frac{\left(3c^2\right)\int \frac{a+b\sin^{-1}(cx)}{x\sqrt{d-c^2dx^2}}\,dx}{2d} +$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{2dx\sqrt{d-c^2dx^2}} + \frac{3c^2\left(a+b\sin^{-1}(cx)\right)}{2d\sqrt{d-c^2dx^2}} - \frac{a+b\sin^{-1}(cx)}{2dx^2\sqrt{d-c^2dx^2}} - \frac{bc^2\sqrt{1-c^2x^2}\,\tanh^{-1}(c}{d\sqrt{d-c^2dx^2}}$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{2dx\sqrt{d-c^2dx^2}} + \frac{3c^2\left(a+b\sin^{-1}(cx)\right)}{2d\sqrt{d-c^2dx^2}} - \frac{a+b\sin^{-1}(cx)}{2dx^2\sqrt{d-c^2dx^2}} - \frac{bc^2\sqrt{1-c^2x^2}\,\tanh^{-1}(c}{d\sqrt{d-c^2dx^2}}$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{2dx\sqrt{d-c^2dx^2}} + \frac{3c^2\left(a+b\sin^{-1}(cx)\right)}{2d\sqrt{d-c^2dx^2}} - \frac{a+b\sin^{-1}(cx)}{2dx^2\sqrt{d-c^2dx^2}} - \frac{3c^2\sqrt{1-c^2x^2}\,\left(a+b\sin\right.}{d\sqrt{d}}$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{2dx\sqrt{d-c^2dx^2}} + \frac{3c^2\left(a+b\sin^{-1}(cx)\right)}{2d\sqrt{d-c^2dx^2}} - \frac{a+b\sin^{-1}(cx)}{2dx^2\sqrt{d-c^2dx^2}} - \frac{3c^2\sqrt{1-c^2x^2}\,\left(a+b\sin\right.}{d\sqrt{d}}$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{2dx\sqrt{d-c^2dx^2}} + \frac{3c^2\left(a+b\sin^{-1}(cx)\right)}{2d\sqrt{d-c^2dx^2}} - \frac{a+b\sin^{-1}(cx)}{2dx^2\sqrt{d-c^2dx^2}} - \frac{3c^2\sqrt{1-c^2x^2}\,\left(a+b\sin\right.}{d\sqrt{d}}$$

Mathematica [A] time = 2.47, size = 404, normalized size = 1.28

$$\frac{\frac{4a\sqrt{d}\left(3c^2x^2-1\right)}{x^2\sqrt{d-c^2dx^2}} - 12ac^2\log\left(\sqrt{d}\sqrt{d-c^2dx^2}+d\right) + 12ac^2\log(x) + \frac{b\sqrt{d}\left(\sqrt{1-c^2x^2}\left(2\left(\log\left(\cos\left(\frac{1}{2}\sin^{-1}(cx)\right)-\sin\left(\frac{1}{2}\sin^{-1}(cx)\right)\right)-\log\right.\right.\right.}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x^3*(d - c^2*d*x^2)^(3/2)),x]
```

```
[Out] ((4*a*Sqrt[d]*(-1 + 3*c^2*x^2))/(x^2*Sqrt[d - c^2*d*x^2]) + 12*a*c^2*Log[x]
 - 12*a*c^2*Log[d + Sqrt[d]*Sqrt[d - c^2*d*x^2]] + (b*Sqrt[d]*(2*ArcSin[c*x
] - 6*ArcSin[c*x]*Cos[2*ArcSin[c*x]] - 3*ArcSin[c*x]*Cos[3*ArcSin[c*x]]*Log
[1 - E^(I*ArcSin[c*x])] + 3*ArcSin[c*x]*Cos[3*ArcSin[c*x]]*Log[1 + E^(I*Arc
Sin[c*x])] - 2*Cos[3*ArcSin[c*x]]*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/
2]] + Sqrt[1 - c^2*x^2]*(3*ArcSin[c*x]*(Log[1 - E^(I*ArcSin[c*x])] - Log[1
+ E^(I*ArcSin[c*x])]) + 2*(Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] - L
og[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]])) + 2*Cos[3*ArcSin[c*x]]*Log[Co
s[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]] - 2*Sin[2*ArcSin[c*x]] + (6*I)*c*x*P
olyLog[2, -E^(I*ArcSin[c*x])]*Sin[2*ArcSin[c*x]] - (6*I)*c*x*PolyLog[2, E^(
I*ArcSin[c*x])]*Sin[2*ArcSin[c*x]]))/(x^2*Sqrt[d - c^2*d*x^2]))/(8*d^(3/2))
```

fricas [F] time = 0.54, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)}{c^4d^2x^7-2\,c^2d^2x^5+d^2x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(-c^2*d*x^2+d)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(c^4*d^2*x^7 - 2*c^2*d^2*
x^5 + d^2*x^3), x)
```

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

$$\int \frac{b \arcsin(cx) + a}{\left(-c^2dx^2 + d\right)^{\frac{3}{2}} x^3} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/((-c^2*d*x^2 + d)^(3/2)*x^3), x)
```

maple [A] time = 0.38, size = 474, normalized size = 1.50

$$-\frac{a}{2d\,x^2\sqrt{-c^2d\,x^2+d}}+\frac{3a\,c^2}{2d\sqrt{-c^2d\,x^2+d}}-\frac{3a\,c^2\ln\left(\frac{2d+2\sqrt{d}\,\sqrt{-c^2d\,x^2+d}}{x}\right)}{2d^{\frac{3}{2}}}-\frac{3b\sqrt{-d\left(c^2x^2-1\right)}\,\arcsin(cx)\,c^2}{2d^2\left(c^2x^2-1\right)}+\frac{b\sqrt{-\cdots}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x^3/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] -1/2*a/d/x^2/(-c^2*d*x^2+d)^(1/2)+3/2*a*c^2/d/(-c^2*d*x^2+d)^(1/2)-3/2*a*c^
2/d^(3/2)*ln((2*d+2*d^(1/2)*(-c^2*d*x^2+d)^(1/2))/x)-3/2*b*(-d*(c^2*x^2-1))
^(1/2)/d^2/(c^2*x^2-1)*arcsin(c*x)*c^2+1/2*b*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^
2*x^2-1)/x*(-c^2*x^2+1)^(1/2)*c+1/2*b*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1
)/x^2*arcsin(c*x)-2*I*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*c^2/(c^2*
x^2-1)/d^2*arctan(I*c*x+(-c^2*x^2+1)^(1/2))-3/2*I*b*(-c^2*x^2+1)^(1/2)*(-d*
(c^2*x^2-1))^(1/2)*c^2/(c^2*x^2-1)/d^2*dilog(1+I*c*x+(-c^2*x^2+1)^(1/2))+3/
2*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*c^2/(c^2*x^2-1)/d^2*arcsin(c*
x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-3/2*I*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1
))^(1/2)*c^2/(c^2*x^2-1)/d^2*dilog(I*c*x+(-c^2*x^2+1)^(1/2))
```

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

$$-\frac{1}{2}\left(\frac{3\,c^2\log\left(\frac{2\sqrt{-c^2dx^2+d}\,\sqrt{d}}{|x|}+\frac{2\,d}{|x|}\right)}{d^{\frac{3}{2}}}-\frac{3\,c^2}{\sqrt{-c^2dx^2+d}\,d}+\frac{1}{\sqrt{-c^2dx^2+d}\,dx^2}\right)a-\frac{\frac{b\int\frac{\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{(cx+1)^{\frac{3}{2}}(cx-1)\sqrt{-cx+1}\,x^3}\,dx}{d}}{\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/2*(3*c^2*log(2*sqrt(-c^2*d*x^2 + d)*sqrt(d)/abs(x) + 2*d/abs(x))/d^(3/2)
 - 3*c^2/(sqrt(-c^2*d*x^2 + d)*d) + 1/(sqrt(-c^2*d*x^2 + d)*d*x^2))*a - b*i
ntegrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/((c^2*d*x^5 - d*x^3)*sq
rt(c*x + 1)*sqrt(-c*x + 1)), x)/sqrt(d)
```

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

$$\int \frac{a + b\,\mathrm{asin}\left(c\,x\right)}{x^3\,\left(d - c^2\,d\,x^2\right)^{3/2}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x^3*(d - c^2*d*x^2)^(3/2)),x)
```

```
[Out] int((a + b*asin(c*x))/(x^3*(d - c^2*d*x^2)^(3/2)), x)
```

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

$$\int \frac{a + b\,\mathrm{asin}\,(cx)}{x^3\,(-d\,(cx-1)\,(cx+1))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x**3/(-c**2*d*x**2+d)**(3/2),x)
[Out] Integral((a + b*asin(c*x))/(x**3*(-d*(c*x - 1)*(c*x + 1))**(3/2)), x)
```

3.128 $\int \frac{a+b\sin^{-1}(cx)}{x^4\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=238

$$-\frac{4c^2\left(a+b\sin^{-1}(cx)\right)}{3dx\sqrt{d-c^2dx^2}}-\frac{a+b\sin^{-1}(cx)}{3dx^3\sqrt{d-c^2dx^2}}+\frac{8c^4x\left(a+b\sin^{-1}(cx)\right)}{3d\sqrt{d-c^2dx^2}}-\frac{bc\sqrt{d-c^2dx^2}}{6d^2x^2\sqrt{1-c^2x^2}}+\frac{5bc^3\log(x)\sqrt{d-c^2dx^2}}{3d^2\sqrt{1-c^2x^2}}+$$

```
[Out] 1/3*(-a-b*arcsin(c*x))/d/x^3/(-c^2*d*x^2+d)^(1/2)-4/3*c^2*(a+b*arcsin(c*x))
/d/x/(-c^2*d*x^2+d)^(1/2)+8/3*c^4*x*(a+b*arcsin(c*x))/d/(-c^2*d*x^2+d)^(1/2
)-1/6*b*c*(-c^2*d*x^2+d)^(1/2)/d^2/x^2/(-c^2*x^2+1)^(1/2)+5/3*b*c^3*ln(x)*(
-c^2*d*x^2+d)^(1/2)/d^2/(-c^2*x^2+1)^(1/2)+1/2*b*c^3*ln(-c^2*x^2+1)*(-c^2*d
*x^2+d)^(1/2)/d^2/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.29, antiderivative size = 238, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.296, Rules used = {4701, 4653, 260, 266, 36, 29, 31, 44}

$$\frac{8c^4x\left(a+b\sin^{-1}(cx)\right)}{3d\sqrt{d-c^2dx^2}}-\frac{4c^2\left(a+b\sin^{-1}(cx)\right)}{3dx\sqrt{d-c^2dx^2}}-\frac{a+b\sin^{-1}(cx)}{3dx^3\sqrt{d-c^2dx^2}}-\frac{bc\sqrt{1-c^2x^2}}{6dx^2\sqrt{d-c^2dx^2}}+\frac{5bc^3\sqrt{1-c^2x^2}\log(x)}{3d\sqrt{d-c^2dx^2}}+\frac{bc^3}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x^4*(d - c^2*d*x^2)^(3/2)),x]
```

```
[Out] -(b*c*Sqrt[1 - c^2*x^2])/(6*d*x^2*Sqrt[d - c^2*d*x^2]) - (a + b*ArcSin[c*x]
)/(3*d*x^3*Sqrt[d - c^2*d*x^2]) - (4*c^2*(a + b*ArcSin[c*x]))/(3*d*x*Sqrt[d
 - c^2*d*x^2]) + (8*c^4*x*(a + b*ArcSin[c*x]))/(3*d*Sqrt[d - c^2*d*x^2]) +
(5*b*c^3*Sqrt[1 - c^2*x^2]*Log[x])/(3*d*Sqrt[d - c^2*d*x^2]) + (b*c^3*Sqrt[
1 - c^2*x^2]*Log[1 - c^2*x^2])/(2*d*Sqrt[d - c^2*d*x^2])
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

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

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 44

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

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4653

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n*Sqrt[1 - c^2*x^2])/(d*Sqrt[d + e*x^2]), Int[(x*(a + b*ArcSin[c*x])^(n
 - 1))/(1 - c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e,
 0] && GtQ[n, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x^4\left(d-c^2dx^2\right)^{3/2}}\,dx = -\frac{a+b\sin^{-1}(cx)}{3dx^3\sqrt{d-c^2dx^2}}+\frac{1}{3}\left(4c^2\right)\int\frac{a+b\sin^{-1}(cx)}{x^2\left(d-c^2dx^2\right)^{3/2}}\,dx+\frac{\left(bc\sqrt{1-c^2x^2}\right)\int\frac{1}{x^3\left(1-c^2x^2\right)}\,dx}{3d\sqrt{d-c^2dx^2}}$$

$$= -\frac{a+b\sin^{-1}(cx)}{3dx^3\sqrt{d-c^2dx^2}}-\frac{4c^2\left(a+b\sin^{-1}(cx)\right)}{3dx\sqrt{d-c^2dx^2}}+\frac{1}{3}\left(8c^4\right)\int\frac{a+b\sin^{-1}(cx)}{\left(d-c^2dx^2\right)^{3/2}}\,dx+\frac{\left(bc\sqrt{1-c\ldots}\right.}{}$$

$$= -\frac{a+b\sin^{-1}(cx)}{3dx^3\sqrt{d-c^2dx^2}}-\frac{4c^2\left(a+b\sin^{-1}(cx)\right)}{3dx\sqrt{d-c^2dx^2}}+\frac{8c^4x\left(a+b\sin^{-1}(cx)\right)}{3d\sqrt{d-c^2dx^2}}+\frac{\left(bc\sqrt{1-c^2x^2}\right)\mathrm{Su}\ldots}{}$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{6dx^2\sqrt{d-c^2dx^2}}-\frac{a+b\sin^{-1}(cx)}{3dx^3\sqrt{d-c^2dx^2}}-\frac{4c^2\left(a+b\sin^{-1}(cx)\right)}{3dx\sqrt{d-c^2dx^2}}+\frac{8c^4x\left(a+b\sin^{-1}(cx)\right)}{3d\sqrt{d-c^2dx^2}}\ldots$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{6dx^2\sqrt{d-c^2dx^2}}-\frac{a+b\sin^{-1}(cx)}{3dx^3\sqrt{d-c^2dx^2}}-\frac{4c^2\left(a+b\sin^{-1}(cx)\right)}{3dx\sqrt{d-c^2dx^2}}+\frac{8c^4x\left(a+b\sin^{-1}(cx)\right)}{3d\sqrt{d-c^2dx^2}}\ldots$$

Mathematica [A] time = 0.35, size = 162, normalized size = 0.68

$$\frac{\sqrt{d-c^2dx^2}\left(-16ac^4x^4+8ac^2x^2+2a+bcx\sqrt{1-c^2x^2}+2b\left(-8c^4x^4+4c^2x^2+1\right)\sin^{-1}(cx)-5bc^3x^3\sqrt{1-c^2x^2}\,\mathrm{lo}\ldots\right.}{6d^2x^3\left(c^2x^2-1\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x^4*(d - c^2*d*x^2)^(3/2)),x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(2*a + 8*a*c^2*x^2 - 16*a*c^4*x^4 + b*c*x*Sqrt[1 - c^2
*x^2] + 2*b*(1 + 4*c^2*x^2 - 8*c^4*x^4)*ArcSin[c*x] - 5*b*c^3*x^3*Sqrt[1 -
c^2*x^2]*Log[x^2] - 3*b*c^3*x^3*Sqrt[1 - c^2*x^2]*Log[1 - c^2*x^2]))/(6*d^2
*x^3*(-1 + c^2*x^2))
```

fricas [F] time = 19.56, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)}{c^4d^2x^8-2\,c^2d^2x^6+d^2x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^4/(-c^2*d*x^2+d)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(c^4*d^2*x^8 - 2*c^2*d^2*
x^6 + d^2*x^4), x)
```

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

$$\int \frac{b\arcsin(cx)+a}{\left(-c^2dx^2+d\right)^{\frac{3}{2}}x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^4/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/((-c^2*d*x^2 + d)^(3/2)*x^4), x)
```

maple [C] time = 0.50, size = 1045, normalized size = 4.39

$$-\frac{a}{3d\,x^3\sqrt{-c^2d\,x^2+d}}-\frac{4a\,c^2}{3dx\sqrt{-c^2d\,x^2+d}}+\frac{8a\,c^4x}{3d\sqrt{-c^2d\,x^2+d}}+\frac{4ib\sqrt{-d\left(c^2x^2-1\right)}\,x\,c^4}{3\left(8c^4x^4-7c^2x^2-1\right)d^2}+\frac{4ib\sqrt{-d\left(c^2x^2-1\right)}\,x^3c^6}{\left(8c^4x^4-7c^2x^2-1\right)d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x^4/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] -1/3*a/d/x^3/(-c^2*d*x^2+d)^(1/2)-4/3*a*c^2/d/x/(-c^2*d*x^2+d)^(1/2)+8/3*a*
c^4/d*x/(-c^2*d*x^2+d)^(1/2)+4/3*I*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^
2*x^2-1)/d^2*x*c^4+4*I*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2
*x^3*c^6+16/3*I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)
*arcsin(c*x)*c^3-8/3*I*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2
*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^3-64/3*I*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*
x^4-7*c^2*x^2-1)/d^2*x^2*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^5+32/3*I*b*(-d*(c
^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2*x^7*c^10+32/3*I*b*(-d*(c^2*x^2
-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2*x^5*(-c^2*x^2+1)*c^8-64/3*b*(-d*(c^2
*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2*x^3*arcsin(c*x)*c^6-4/3*I*b*(-d*
(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2*x*(-c^2*x^2+1)*c^4-16*I*b*(-
d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2*x^5*c^8-16/3*I*b*(-d*(c^2*
x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2*x^3*(-c^2*x^2+1)*c^6+8*b*(-d*(c^2
*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2*x*arcsin(c*x)*c^4+4/3*b*(-d*(c^2
*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2*c^3*(-c^2*x^2+1)^(1/2)+4*b*(-d*(
c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2/x*arcsin(c*x)*c^2+1/6*b*(-d*(
c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2/x^2*(-c^2*x^2+1)^(1/2)*c+1/3*
b*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2/x^3*arcsin(c*x)-b*(-d*
(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)*ln(1+(I*c*x+(-c^2*x^2
+1)^(1/2))^2)*c^3-5/3*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^2/(c^2*
x^2-1)*ln((I*c*x+(-c^2*x^2+1)^(1/2))^2-1)*c^3
```

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

$$\frac{1}{3}\left(\frac{8\,c^4x}{\sqrt{-c^2dx^2+d}\,d}-\frac{4\,c^2}{\sqrt{-c^2dx^2+d}\,dx}-\frac{1}{\sqrt{-c^2dx^2+d}\,dx^3}\right)a-\frac{-\frac{1}{6}\,b\left(\frac{3\,c^3\log(cx+1)+3\,c^3\log(cx-1)+10\,c^3\log(x)-\frac{c}{x^2}}{d}+\frac{2\,(8\,c}{}\right.}{\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^4/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/3*(8*c^4*x/(sqrt(-c^2*d*x^2 + d)*d) - 4*c^2/(sqrt(-c^2*d*x^2 + d)*d*x) -
1/(sqrt(-c^2*d*x^2 + d)*d*x^3))*a - b*integrate(arctan2(c*x, sqrt(c*x + 1)*
sqrt(-c*x + 1))/((c^2*d*x^6 - d*x^4)*sqrt(c*x + 1)*sqrt(-c*x + 1)), x)/sqrt
(d)
```

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

$$\int \frac{a+b\,\mathrm{asin}\left(c\,x\right)}{x^4\,{\left(d-c^2\,d\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x^4*(d - c^2*d*x^2)^(3/2)),x)
```

```
[Out] int((a + b*asin(c*x))/(x^4*(d - c^2*d*x^2)^(3/2)), x)
```

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

$$\int \frac{a + b \operatorname{asin}{\left(c x \right)}}{x^{4} \left(- d \left(c x - 1\right) \left(c x + 1\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x**4/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c*x))/(x**4*(-d*(c*x - 1)*(c*x + 1))**(3/2)), x)
```

3.129 $\int \frac{x^6\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=293

$$\frac{x^5\left(a+b\sin^{-1}(cx)\right)}{3c^2d\left(d-c^2dx^2\right)^{3/2}}+\frac{5\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{4bc^7d^2\sqrt{d-c^2dx^2}}-\frac{5x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2c^6d^3}-\frac{5x^3\left(a+b\sin^{-1}(cx)\right)}{3c^4d^2\sqrt{d-c^2dx^2}}-$$

```
[Out] 1/3*x^5*(a+b*arcsin(c*x))/c^2/d/(-c^2*d*x^2+d)^(3/2)-5/3*x^3*(a+b*arcsin(c*
x))/c^4/d^2/(-c^2*d*x^2+d)^(1/2)-1/6*b/c^7/d^2/(-c^2*x^2+1)^(1/2)/(-c^2*d*x
^2+d)^(1/2)+1/4*b*x^2*(-c^2*x^2+1)^(1/2)/c^5/d^2/(-c^2*d*x^2+d)^(1/2)+5/4*(
a+b*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/b/c^7/d^2/(-c^2*d*x^2+d)^(1/2)-7/6*b*
ln(-c^2*x^2+1)*(-c^2*x^2+1)^(1/2)/c^7/d^2/(-c^2*d*x^2+d)^(1/2)-5/2*x*(a+b*a
rcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c^6/d^3
```

Rubi [A] time = 0.44, antiderivative size = 293, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 7, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.259, Rules used = {4703, 4707, 4643, 4641, 30, 266, 43}

$$-\frac{5x^3\left(a+b\sin^{-1}(cx)\right)}{3c^4d^2\sqrt{d-c^2dx^2}}-\frac{5x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2c^6d^3}+\frac{5\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{4bc^7d^2\sqrt{d-c^2dx^2}}+\frac{x^5\left(a+b\sin^{-1}(cx)\right)}{3c^2d\left(d-c^2dx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^6*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] -b/(6*c^7*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) + (b*x^2*Sqrt[1 - c^2*
x^2])/(4*c^5*d^2*Sqrt[d - c^2*d*x^2]) + (x^5*(a + b*ArcSin[c*x]))/(3*c^2*d*
(d - c^2*d*x^2)^(3/2)) - (5*x^3*(a + b*ArcSin[c*x]))/(3*c^4*d^2*Sqrt[d - c^
2*d*x^2]) - (5*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(2*c^6*d^3) + (5*
Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(4*b*c^7*d^2*Sqrt[d - c^2*d*x^2])
 - (7*b*Sqrt[1 - c^2*x^2]*Log[1 - c^2*x^2])/(6*c^7*d^2*Sqrt[d - c^2*d*x^2])
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4643

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcSin[c*x])^n
/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e
, 0] &&  !GtQ[d, 0]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^6\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{5/2}}\,dx = \frac{x^5\left(a+b\sin^{-1}(cx)\right)}{3c^2d\left(d-c^2dx^2\right)^{3/2}} - \frac{5\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{3/2}}\,dx}{3c^2d} - \frac{\left(b\sqrt{1-c^2x^2}\right)\int \frac{x^5}{\left(1-c^2x^2\right)^2}\,dx}{3cd^2\sqrt{d-c^2dx^2}}$$

$$= \frac{x^5\left(a+b\sin^{-1}(cx)\right)}{3c^2d\left(d-c^2dx^2\right)^{3/2}} - \frac{5x^3\left(a+b\sin^{-1}(cx)\right)}{3c^4d^2\sqrt{d-c^2dx^2}} + \frac{5\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx}{c^4d^2} + \frac{\left(5b\sqrt{1-c^2x^2}\right.}{3c^3d^2\sqrt{d}}$$

$$= \frac{x^5\left(a+b\sin^{-1}(cx)\right)}{3c^2d\left(d-c^2dx^2\right)^{3/2}} - \frac{5x^3\left(a+b\sin^{-1}(cx)\right)}{3c^4d^2\sqrt{d-c^2dx^2}} - \frac{5x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2c^6d^3} + \frac{5\int}{}$$

$$= -\frac{b}{6c^7d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{13bx^2\sqrt{1-c^2x^2}}{12c^5d^2\sqrt{d-c^2dx^2}} + \frac{x^5\left(a+b\sin^{-1}(cx)\right)}{3c^2d\left(d-c^2dx^2\right)^{3/2}} - \frac{5x^3\left(a\right.}{3c^4d^2}$$

$$= -\frac{b}{6c^7d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{bx^2\sqrt{1-c^2x^2}}{4c^5d^2\sqrt{d-c^2dx^2}} + \frac{x^5\left(a+b\sin^{-1}(cx)\right)}{3c^2d\left(d-c^2dx^2\right)^{3/2}} - \frac{5x^3\left(a+\right.}{3c^4d^2}$$

Mathematica [A] time = 0.69, size = 253, normalized size = 0.86

$$\frac{\sqrt{d}\left(4acx\left(3c^4x^4-20c^2x^2+15\right)+28b\left(1-c^2x^2\right)^{3/2}\log\left(1-c^2x^2\right)+b\left(6c^4x^4-9c^2x^2+7\right)\sqrt{1-c^2x^2}\right)-60a\left(c^2x\right.}{24c^7d^{5/2}\left(c^2x^2\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^6*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (4*b*c*Sqrt[d]*x*(15 - 20*c^2*x^2 + 3*c^4*x^4)*ArcSin[c*x] - 30*b*Sqrt[d]*(
1 - c^2*x^2)^(3/2)*ArcSin[c*x]^2 - 60*a*(-1 + c^2*x^2)*Sqrt[d - c^2*d*x^2]*
ArcTan[(c*x*Sqrt[d - c^2*d*x^2])/(Sqrt[d]*(-1 + c^2*x^2))] + Sqrt[d]*(4*a*c
*x*(15 - 20*c^2*x^2 + 3*c^4*x^4) + b*Sqrt[1 - c^2*x^2]*(7 - 9*c^2*x^2 + 6*c
^4*x^4) + 28*b*(1 - c^2*x^2)^(3/2)*Log[1 - c^2*x^2]))/(24*c^7*d^(5/2)*(-1 +
 c^2*x^2)*Sqrt[d - c^2*d*x^2])
```

fricas [F] time = 0.72, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(bx^6 \arcsin\left(cx\right) + ax^6\right)\sqrt{-c^2dx^2 + d}}{c^6d^3x^6 - 3\,c^4d^3x^4 + 3\,c^2d^3x^2 - d^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-(b*x^6*arcsin(c*x) + a*x^6)*sqrt(-c^2*d*x^2 + d)/(c^6*d^3*x^6 - 3
*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3), x)
```

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

$$\int \frac{\left(b \arcsin\left(cx\right) + a\right)x^6}{\left(-c^2dx^2 + d\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)*x^6/(-c^2*d*x^2 + d)^(5/2), x)
```

maple [C] time = 0.69, size = 2245, normalized size = 7.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^6*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] -14/3*I*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^7/d^3/(c^2*x^2-1)*arc
sin(c*x)-7/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)/c^7*arcsi
n(c*x)*(-c^2*x^2+1)^(1/2)-1/4*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2
*x^2+1)/c^2*(-c^2*x^2+1)*x^5+3/8*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*
c^2*x^2+1)/c^4*(-c^2*x^2+1)*x^3-1/8*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4
-2*c^2*x^2+1)/c^6*(-c^2*x^2+1)*x-10*I*b*(-d*(c^2*x^2-1))^(1/2)*x^5/d^3/(111
*c^8*x^8-384*c^6*x^6+386*c^4*x^4-64*c^2*x^2-49)/c^2*(-c^2*x^2+1)+10*I*b*(-d
*(c^2*x^2-1))^(1/2)*x^3/d^3/(111*c^8*x^8-384*c^6*x^6+386*c^4*x^4-64*c^2*x^2
-49)/c^4*(-c^2*x^2+1)-185/2*I*b*(-d*(c^2*x^2-1))^(1/2)*x^6/d^3/(111*c^8*x^8
-384*c^6*x^6+386*c^4*x^4-64*c^2*x^2-49)/c*(-c^2*x^2+1)^(1/2)*arcsin(c*x)+19
/6*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)/c^5*(-c^2*x^2+1)^(1
/2)*arcsin(c*x)*x^2+135*I*b*(-d*(c^2*x^2-1))^(1/2)*x^4/d^3/(111*c^8*x^8-384
*c^6*x^6+386*c^4*x^4-64*c^2*x^2-49)/c^3*(-c^2*x^2+1)^(1/2)*arcsin(c*x)+245/
6*I*b*(-d*(c^2*x^2-1))^(1/2)*x^2/d^3/(111*c^8*x^8-384*c^6*x^6+386*c^4*x^4-6
4*c^2*x^2-49)/c^5*(-c^2*x^2+1)^(1/2)*arcsin(c*x)+1/16*b*(-d*(c^2*x^2-1))^(1
/2)/c^7/d^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)-11/48*b*(-d*(c^2*x^2-1))^(1/2)/d
^3/(c^4*x^4-2*c^2*x^2+1)/c^7*(-c^2*x^2+1)^(1/2)-629/8*b*(-d*(c^2*x^2-1))^(1
/2)*x^7/d^3/(111*c^8*x^8-384*c^6*x^6+386*c^4*x^4-64*c^2*x^2-49)*arcsin(c*x)
-1/4*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)*x^7+17/2*I*b*(-d*
```

```
(c^2*x^2-1))^(1/2)*x^7/d^3/(111*c^8*x^8-384*c^6*x^6+386*c^4*x^4-64*c^2*x^2-
49)+11/48*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)/c^5*(-c^2*x^2+
1)^(1/2)*x^2-37/2*b*(-d*(c^2*x^2-1))^(1/2)*x^6/d^3/(111*c^8*x^8-384*c^6*x^6
+386*c^4*x^4-64*c^2*x^2-49)/c*(-c^2*x^2+1)^(1/2)+19/6*b*(-d*(c^2*x^2-1))^(1
/2)/d^3/(c^4*x^4-2*c^2*x^2+1)/c^4*arcsin(c*x)*x^3+7/3*b*(-d*(c^2*x^2-1))^(1
/2)*(-c^2*x^2+1)^(1/2)/c^7/d^3/(c^2*x^2-1)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^
2)+1177/8*b*(-d*(c^2*x^2-1))^(1/2)*x^5/d^3/(111*c^8*x^8-384*c^6*x^6+386*c^4
*x^4-64*c^2*x^2-49)/c^2*arcsin(c*x)-301/24*b*(-d*(c^2*x^2-1))^(1/2)*x^3/d^3
/(111*c^8*x^8-384*c^6*x^6+386*c^4*x^4-64*c^2*x^2-49)/c^4*arcsin(c*x)-343/24
*b*(-d*(c^2*x^2-1))^(1/2)*x/d^3/(111*c^8*x^8-384*c^6*x^6+386*c^4*x^4-64*c^2
*x^2-49)/c^6*arcsin(c*x)-5/4*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^
7/d^3/(c^2*x^2-1)*arcsin(c*x)^2+5/24*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^
4-2*c^2*x^2+1)/c^6*x+5/8*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+
1)/c^2*x^5-2/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)/c^4*x^3
-65/4*I*b*(-d*(c^2*x^2-1))^(1/2)*x^5/d^3/(111*c^8*x^8-384*c^6*x^6+386*c^4*x
^4-64*c^2*x^2-49)/c^2-14/3*I*b*(-d*(c^2*x^2-1))^(1/2)*x^3/d^3/(111*c^8*x^8-
384*c^6*x^6+386*c^4*x^4-64*c^2*x^2-49)/c^4+49/12*I*b*(-d*(c^2*x^2-1))^(1/2)
*x/d^3/(111*c^8*x^8-384*c^6*x^6+386*c^4*x^4-64*c^2*x^2-49)/c^6-1/2*b*(-d*(c
^2*x^2-1))^(1/2)/c^4/d^3/(c^2*x^2-1)*arcsin(c*x)*x^3+3/8*b*(-d*(c^2*x^2-1))
^(1/2)/c^6/d^3/(c^2*x^2-1)*arcsin(c*x)*x-29/12*b*(-d*(c^2*x^2-1))^(1/2)/d^3
/(c^4*x^4-2*c^2*x^2+1)/c^6*arcsin(c*x)*x+27*b*(-d*(c^2*x^2-1))^(1/2)*x^4/d^
3/(111*c^8*x^8-384*c^6*x^6+386*c^4*x^4-64*c^2*x^2-49)/c^3*(-c^2*x^2+1)^(1/2
)+49/6*b*(-d*(c^2*x^2-1))^(1/2)*x^2/d^3/(111*c^8*x^8-384*c^6*x^6+386*c^4*x^
4-64*c^2*x^2-49)/c^5*(-c^2*x^2+1)^(1/2)-1/4*b*(-d*(c^2*x^2-1))^(1/2)/c^5/d^
3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2-5/2*a/c^6/d^2*x/(-c^2*d*x^2+d)^(1/2)+5
/2*a/c^6/d^2/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-1/2
*a*x^5/c^2/d/(-c^2*d*x^2+d)^(3/2)+5/6*a/c^4*x^3/d/(-c^2*d*x^2+d)^(3/2)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxima")
[Out] Timed out
```

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

$$\int \frac{x^6\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(d-c^2\,d\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^6*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(5/2),x)
[Out] int((x^6*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(5/2), x)
```

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

$$\int \frac{x^{6} \left(a + b \operatorname{asin}{\left(c x \right)}\right)}{\left(- d \left(c x - 1\right) \left(c x + 1\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**6*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(5/2),x)
[Out] Integral(x**6*(a + b*asin(c*x))/(-d*(c*x - 1)*(c*x + 1))**(5/2), x)
```

3.130 $\int \frac{x^5(a+b\sin^{-1}(cx))}{(d-c^2dx^2)^{5/2}}\,dx$

Optimal. Leaf size=219

$$-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{c^6d^3}-\frac{2\left(a+b\sin^{-1}(cx)\right)}{c^6d^2\sqrt{d-c^2dx^2}}+\frac{a+b\sin^{-1}(cx)}{3c^6d\left(d-c^2dx^2\right)^{3/2}}+\frac{11b\sqrt{d-c^2dx^2}\tanh^{-1}(cx)}{6c^6d^3\sqrt{1-c^2x^2}}+\frac{bx\sqrt{d-}}{c^5d^3\sqrt{1}}$$

```
[Out] 1/3*(a+b*arcsin(c*x))/c^6/d/(-c^2*d*x^2+d)^(3/2)-2*(a+b*arcsin(c*x))/c^6/d^
2/(-c^2*d*x^2+d)^(1/2)-1/6*b*x*(-c^2*d*x^2+d)^(1/2)/c^5/d^3/(-c^2*x^2+1)^(3
/2)-(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c^6/d^3+b*x*(-c^2*d*x^2+d)^(1/2)
/c^5/d^3/(-c^2*x^2+1)^(1/2)+11/6*b*arctanh(c*x)*(-c^2*d*x^2+d)^(1/2)/c^6/d^
3/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.32, antiderivative size = 234, normalized size of antiderivative = 1.07, number of steps used = 9, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {4703, 4677, 8, 321, 206, 288}

$$-\frac{4x^2\left(a+b\sin^{-1}(cx)\right)}{3c^4d^2\sqrt{d-c^2dx^2}}-\frac{8\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3c^6d^3}+\frac{x^4\left(a+b\sin^{-1}(cx)\right)}{3c^2d\left(d-c^2dx^2\right)^{3/2}}-\frac{bx^3}{6c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{}{6c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] -(b*x^3)/(6*c^3*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) + (5*b*x*Sqrt[1
- c^2*x^2])/(6*c^5*d^2*Sqrt[d - c^2*d*x^2]) + (x^4*(a + b*ArcSin[c*x]))/(3*
c^2*d*(d - c^2*d*x^2)^(3/2)) - (4*x^2*(a + b*ArcSin[c*x]))/(3*c^4*d^2*Sqrt[
d - c^2*d*x^2]) - (8*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*c^6*d^3) +
 (11*b*Sqrt[1 - c^2*x^2]*ArcTanh[c*x])/(6*c^6*d^2*Sqrt[d - c^2*d*x^2])
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 321

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

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rubi steps

$$\int \frac{x^5\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{5/2}}\,dx=\frac{x^4\left(a+b\sin^{-1}(cx)\right)}{3c^2d\left(d-c^2dx^2\right)^{3/2}}-\frac{4\int\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{3/2}}\,dx}{3c^2d}-\frac{\left(b\sqrt{1-c^2x^2}\right)\int\frac{x^4}{\left(1-c^2x^2\right)^2}\,dx}{3cd^2\sqrt{d-c^2dx^2}}$$

$$=-\frac{bx^3}{6c^3d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}}+\frac{x^4\left(a+b\sin^{-1}(cx)\right)}{3c^2d\left(d-c^2dx^2\right)^{3/2}}-\frac{4x^2\left(a+b\sin^{-1}(cx)\right)}{3c^4d^2\sqrt{d-c^2dx^2}}+\frac{8\int \cdots}{\cdots}$$

$$=-\frac{bx^3}{6c^3d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}}-\frac{11bx\sqrt{1-c^2x^2}}{6c^5d^2\sqrt{d-c^2dx^2}}+\frac{x^4\left(a+b\sin^{-1}(cx)\right)}{3c^2d\left(d-c^2dx^2\right)^{3/2}}-\frac{4x^2\left(a+\cdots\right)}{3c^4d^2\cdots}$$

$$=-\frac{bx^3}{6c^3d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}}+\frac{5bx\sqrt{1-c^2x^2}}{6c^5d^2\sqrt{d-c^2dx^2}}+\frac{x^4\left(a+b\sin^{-1}(cx)\right)}{3c^2d\left(d-c^2dx^2\right)^{3/2}}-\frac{4x^2\left(a+\cdots\right)}{3c^4d^2\cdots}$$

Mathematica [C] time = 0.34, size = 169, normalized size = 0.77

$$\frac{\sqrt{d-c^2dx^2}\left(\sqrt{-c^2}\left(2a\left(3c^4x^4-12c^2x^2+8\right)+bcx\sqrt{1-c^2x^2}\left(6c^2x^2-5\right)+2b\left(3c^4x^4-12c^2x^2+8\right)\sin^{-1}(cx)\right)+\cdots\right.}{6c^4\left(-c^2\right)^{3/2}d^3\left(c^2x^2-1\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(Sqrt[-c^2]*(b*c*x*Sqrt[1 - c^2*x^2]*(-5 + 6*c^2*x^2)
+ 2*a*(8 - 12*c^2*x^2 + 3*c^4*x^4) + 2*b*(8 - 12*c^2*x^2 + 3*c^4*x^4)*ArcSi
n[c*x]) + (11*I)*b*c*(1 - c^2*x^2)^(3/2)*EllipticF[I*ArcSinh[Sqrt[-c^2]*x],
 1]))/(6*c^4*(-c^2)^(3/2)*d^3*(-1 + c^2*x^2)^2)
```

fricas [A] time = 1.14, size = 481, normalized size = 2.20

$$\left[\frac{11\left(bc^4x^4-2\,bc^2x^2+b\right)\sqrt{d}\,\log\left(-\frac{c^6dx^6+5\,c^4dx^4-5\,c^2dx^2-4\left(c^3x^3+cx\right)\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+1}\,\sqrt{d}-d}{c^6x^6-3\,c^4x^4+3\,c^2x^2-1}\right)-4\left(6\,bc^3x^3-5\,bcx\right)\sqrt{-c^2\cdots}}{24\left(c^{10}d^3x^4-2\,c^8d^3\cdots\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/24*(11*(b*c^4*x^4 - 2*b*c^2*x^2 + b)*sqrt(d)*log(-(c^6*d*x^6 + 5*c^4*d*x
^4 - 5*c^2*d*x^2 - 4*(c^3*x^3 + c*x)*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1
)*sqrt(d) - d)/(c^6*x^6 - 3*c^4*x^4 + 3*c^2*x^2 - 1)) - 4*(6*b*c^3*x^3 - 5*
b*c*x)*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1) - 8*(3*a*c^4*x^4 - 12*a*c^2*
x^2 + (3*b*c^4*x^4 - 12*b*c^2*x^2 + 8*b)*arcsin(c*x) + 8*a)*sqrt(-c^2*d*x^2
 + d))/(c^10*d^3*x^4 - 2*c^8*d^3*x^2 + c^6*d^3), 1/12*(11*(b*c^4*x^4 - 2*b*
c^2*x^2 + b)*sqrt(-d)*arctan(2*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*c*sq
rt(-d)*x/(c^4*d*x^4 - d)) - 2*(6*b*c^3*x^3 - 5*b*c*x)*sqrt(-c^2*d*x^2 + d)*
sqrt(-c^2*x^2 + 1) - 4*(3*a*c^4*x^4 - 12*a*c^2*x^2 + (3*b*c^4*x^4 - 12*b*c^
2*x^2 + 8*b)*arcsin(c*x) + 8*a)*sqrt(-c^2*d*x^2 + d))/(c^10*d^3*x^4 - 2*c^8
*d^3*x^2 + c^6*d^3)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.50, size = 459, normalized size = 2.10

$$-\frac{a\,x^{4}}{c^{2} d \left(-c^{2} d\,x^{2}+d\right)^{\frac{3}{2}}}+\frac{4 a\,x^{2}}{c^{4} d \left(-c^{2} d\,x^{2}+d\right)^{\frac{3}{2}}}-\frac{8 a}{3 c^{6} d \left(-c^{2} d\,x^{2}+d\right)^{\frac{3}{2}}}-\frac{b \sqrt{-d \left(c^{2} x^{2}-1\right)}\,\sqrt{-c^{2} x^{2}+1}\,x}{c^{5} d^{3} \left(c^{2} x^{2}-1\right)}-\frac{b \sqrt{-d \left(c^{2} x^{2}\right.}}{c^{4} d^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] -a*x^4/c^2/d/(-c^2*d*x^2+d)^(3/2)+4*a/c^4*x^2/d/(-c^2*d*x^2+d)^(3/2)-8/3*a/
c^6/d/(-c^2*d*x^2+d)^(3/2)-b*(-d*(c^2*x^2-1))^(1/2)/c^5/d^3/(c^2*x^2-1)*(-c
^2*x^2+1)^(1/2)*x-b*(-d*(c^2*x^2-1))^(1/2)/c^4/d^3/(c^2*x^2-1)*arcsin(c*x)*
x^2+b*(-d*(c^2*x^2-1))^(1/2)/c^6/d^3/(c^2*x^2-1)*arcsin(c*x)+2*b*(-d*(c^2*x
^2-1))^(1/2)/c^4/(c^2*x^2-1)^2/d^3*arcsin(c*x)*x^2-1/6*b*(-d*(c^2*x^2-1))^(
1/2)/c^5/(c^2*x^2-1)^2/d^3*(-c^2*x^2+1)^(1/2)*x-5/3*b*(-d*(c^2*x^2-1))^(1/2
)/c^6/(c^2*x^2-1)^2/d^3*arcsin(c*x)-11/6*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2
+1)^(1/2)/c^6/d^3/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)+11/6*b*(-d*(c^
2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^6/d^3/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1
)^(1/2)-I)
```

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

$$-\frac{1}{3}\,a\left(\frac{3\,x^{4}}{\left(-c^{2} d x^{2}+d\right)^{\frac{3}{2}} c^{2} d}-\frac{12\,x^{2}}{\left(-c^{2} d x^{2}+d\right)^{\frac{3}{2}} c^{4} d}+\frac{8}{\left(-c^{2} d x^{2}+d\right)^{\frac{3}{2}} c^{6} d}\right)+\frac{\frac{1}{4}\left(\left(c^{8} d^{3} x^{2}-c^{6} d^{3}\right)\sqrt{c x+1}\,\sqrt{-c x+1}\,\sqrt{d}\,\left(\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*a*(3*x^4/((-c^2*d*x^2 + d)^(3/2)*c^2*d) - 12*x^2/((-c^2*d*x^2 + d)^(3/
2)*c^4*d) + 8/((-c^2*d*x^2 + d)^(3/2)*c^6*d)) + 1/3*(3*(c^8*d^3*x^2 - c^6*d
```

```
^3)*sqrt(c*x + 1)*sqrt(-c*x + 1)*sqrt(d)*integrate(1/3*(3*c^4*x^6 - 12*c^2*
x^4 + 8*x^2)/(c^9*d^3*x^6 - 2*c^7*d^3*x^4 + c^5*d^3*x^2 + (c^7*d^3*x^4 - 2*
c^5*d^3*x^2 + c^3*d^3)*e^(log(c*x + 1) + log(-c*x + 1))), x) + (3*c^4*x^4 -
 12*c^2*x^2 + 8)*sqrt(d)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*b/((c^
8*d^3*x^2 - c^6*d^3)*sqrt(c*x + 1)*sqrt(-c*x + 1))
```

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

$$\int \frac{x^5\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(d-c^2\,d\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int((x^5*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(5/2), x)
```

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

$$\int \frac{x^{5} \left(a + b \operatorname{asin}{\left(cx \right)}\right)}{\left(- d \left(cx - 1\right) \left(cx + 1\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Integral(x**5*(a + b*asin(c*x))/(-d*(c*x - 1)*(c*x + 1))**(5/2), x)
```

3.131 $\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=212

$$\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{3c^2d\left(d-c^2dx^2\right)^{3/2}}+\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc^5d^2\sqrt{d-c^2dx^2}}-\frac{x\left(a+b\sin^{-1}(cx)\right)}{c^4d^2\sqrt{d-c^2dx^2}}-\frac{b}{6c^5d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}-\frac{2b\sqrt{1-}}{3c}$$

```
[Out] 1/3*x^3*(a+b*arcsin(c*x))/c^2/d/(-c^2*d*x^2+d)^(3/2)-x*(a+b*arcsin(c*x))/c^
4/d^2/(-c^2*d*x^2+d)^(1/2)-1/6*b/c^5/d^2/(-c^2*x^2+1)^(1/2)/(-c^2*d*x^2+d)^
(1/2)+1/2*(a+b*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/b/c^5/d^2/(-c^2*d*x^2+d)^(
1/2)-2/3*b*ln(-c^2*x^2+1)*(-c^2*x^2+1)^(1/2)/c^5/d^2/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.30, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {4703, 4643, 4641, 260, 266, 43}

$$-\frac{x\left(a+b\sin^{-1}(cx)\right)}{c^4d^2\sqrt{d-c^2dx^2}}+\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc^5d^2\sqrt{d-c^2dx^2}}+\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{3c^2d\left(d-c^2dx^2\right)^{3/2}}-\frac{b}{6c^5d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}-\frac{2b\sqrt{1}}{3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] -b/(6*c^5*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) + (x^3*(a + b*ArcSin[c
*x]))/(3*c^2*d*(d - c^2*d*x^2)^(3/2)) - (x*(a + b*ArcSin[c*x]))/(c^4*d^2*Sq
rt[d - c^2*d*x^2]) + (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c^5*d^2
*Sqrt[d - c^2*d*x^2]) - (2*b*Sqrt[1 - c^2*x^2]*Log[1 - c^2*x^2])/(3*c^5*d^2
*Sqrt[d - c^2*d*x^2])
```

Rule 43

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

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4643

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcSin[c*x])^n
```

```
/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e
, 0] &&  !GtQ[d, 0]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rubi steps

$$\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{5/2}}\,dx = \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{3c^2d\left(d-c^2dx^2\right)^{3/2}} - \frac{\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{3/2}}\,dx}{c^2d} - \frac{\left(b\sqrt{1-c^2x^2}\right)\int \frac{x^3}{\left(1-c^2x^2\right)^2}\,dx}{3cd^2\sqrt{d-c^2dx^2}}$$

$$= \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{3c^2d\left(d-c^2dx^2\right)^{3/2}} - \frac{x\left(a+b\sin^{-1}(cx)\right)}{c^4d^2\sqrt{d-c^2dx^2}} + \frac{\int \frac{a+b\sin^{-1}(cx)}{\sqrt{d-c^2dx^2}}\,dx}{c^4d^2} + \frac{\left(b\sqrt{1-c^2x^2}\right)\int \frac{x}{1-c^2 \ldots}}{c^3d^2\sqrt{d-c^2dx^2}} \ldots$$

$$= \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{3c^2d\left(d-c^2dx^2\right)^{3/2}} - \frac{x\left(a+b\sin^{-1}(cx)\right)}{c^4d^2\sqrt{d-c^2dx^2}} - \frac{b\sqrt{1-c^2x^2}\,\log\left(1-c^2x^2\right)}{2c^5d^2\sqrt{d-c^2dx^2}} + \frac{\sqrt{1-c^2x^2}\ldots}{c^4d^2 \ldots} \ldots$$

$$= -\frac{b}{6c^5d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} + \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{3c^2d\left(d-c^2dx^2\right)^{3/2}} - \frac{x\left(a+b\sin^{-1}(cx)\right)}{c^4d^2\sqrt{d-c^2dx^2}} + \frac{\sqrt{1-c^{\ldots}}}{2b\ldots} \ldots$$

Mathematica [A] time = 0.46, size = 213, normalized size = 1.00

$$\frac{\sqrt{d}\left(-8ac^3x^3+6acx+b\sqrt{1-c^2x^2}+4b\left(1-c^2x^2\right)^{3/2}\log\left(1-c^2x^2\right)\right)-6a\left(c^2x^2-1\right)\sqrt{d-c^2dx^2}\,\tan^{-1}\left(\frac{cx\sqrt{d-c^2dx^{\ldots}}}{\sqrt{d}\left(c^2x^2-1\ldots\right)}\right)\ldots}{6c^5d^{5/2}\left(c^2x^2-1\right)\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (-3*b*Sqrt[d]*(1 - c^2*x^2)^(3/2)*ArcSin[c*x]^2 - 6*a*(-1 + c^2*x^2)*Sqrt[d
 - c^2*d*x^2]*ArcTan[(c*x*Sqrt[d - c^2*d*x^2])/(Sqrt[d]*(-1 + c^2*x^2))] +
Sqrt[d]*(6*a*c*x - 8*a*c^3*x^3 + b*Sqrt[1 - c^2*x^2] + 4*b*(1 - c^2*x^2)^(3
/2)*Log[1 - c^2*x^2]) + 2*b*Sqrt[d]*ArcSin[c*x]*Sin[3*ArcSin[c*x]])/(6*c^5*
d^(5/2)*(-1 + c^2*x^2)*Sqrt[d - c^2*d*x^2])
```

fricas [F] time = 2.93, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(bx^4\arcsin\left(cx\right)+ax^4\right)\sqrt{-c^2dx^2+d}}{c^6d^3x^6-3\,c^4d^3x^4+3\,c^2d^3x^2-d^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="fricas")
```

[Out] integral(-(b*x^4*arcsin(c*x) + a*x^4)*sqrt(-c^2*d*x^2 + d)/(c^6*d^3*x^6 - 3
*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3), x)

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

$$\int \frac{(b\arcsin(cx)+a)x^4}{\left(-c^2dx^2+d\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac")

[Out] integrate((b*arcsin(c*x) + a)*x^4/(-c^2*d*x^2 + d)^(5/2), x)

maple [C] time = 0.60, size = 531, normalized size = 2.50

$$\frac{a\,x^3}{3c^2d\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}}-\frac{ax}{c^4d^2\sqrt{-c^2d\,x^2+d}}+\frac{a\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2d\,x^2+d}}\right)}{c^4d^2\sqrt{c^2d}}-\frac{b\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x^2+1}\,\arcsin(cx)^2}{2c^5d^3\left(c^2x^2-1\right)}-$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(x^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x)

[Out] 1/3*a*x^3/c^2/d/(-c^2*d*x^2+d)^(3/2)-a/c^4/d^2*x/(-c^2*d*x^2+d)^(1/2)+a/c^4
/d^2/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-1/2*b*(-d*(
c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^5/d^3/(c^2*x^2-1)*arcsin(c*x)^2-8/3*
I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^5/d^3/(c^2*x^2-1)*arcsin(c*
x)-1/6*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)/c^5*(-c^2*x^2+1)^
(1/2)-4/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)/c^5*arcsin(c
x)(-c^2*x^2+1)^(1/2)-b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)/c
^4*arcsin(c*x)*x+4/3*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^5/d^3/(c
^2*x^2-1)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)+4/3*I*b*(-d*(c^2*x^2-1))^(1/2)
/d^3/(c^4*x^4-2*c^2*x^2+1)/c^3*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^2+4/3*b*(-d
*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)/c^2*arcsin(c*x)*x^3

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^4*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxima")

[Out] Timed out

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

$$\int \frac{x^4\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(d-c^2\,d\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((x^4*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(5/2),x)

[Out] int((x^4*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(5/2), x)

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

$$\int \frac{x^4\left(a+b\,\mathrm{asin}\,(cx)\right)}{\left(-d\,(cx-1)\,(cx+1)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Integral(x**4*(a + b*asin(c*x))/(-d*(c*x - 1)*(c*x + 1))**(5/2), x)
```

3.132 $\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=150

$$-\frac{a+b\sin^{-1}(cx)}{c^4d^2\sqrt{d-c^2dx^2}}+\frac{a+b\sin^{-1}(cx)}{3c^4d\left(d-c^2dx^2\right)^{3/2}}+\frac{5b\sqrt{d-c^2dx^2}\,\tanh^{-1}(cx)}{6c^4d^3\sqrt{1-c^2x^2}}-\frac{bx\sqrt{d-c^2dx^2}}{6c^3d^3\left(1-c^2x^2\right)^{3/2}}$$

```
[Out] 1/3*(a+b*arcsin(c*x))/c^4/d/(-c^2*d*x^2+d)^(3/2)+(-a-b*arcsin(c*x))/c^4/d^2
/(-c^2*d*x^2+d)^(1/2)-1/6*b*x*(-c^2*d*x^2+d)^(1/2)/c^3/d^3/(-c^2*x^2+1)^(3/
2)+5/6*b*arctanh(c*x)*(-c^2*d*x^2+d)^(1/2)/c^4/d^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.20, antiderivative size = 155, normalized size of antiderivative = 1.03, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {4703, 4677, 206, 288}

$$-\frac{2\left(a+b\sin^{-1}(cx)\right)}{3c^4d^2\sqrt{d-c^2dx^2}}+\frac{x^2\left(a+b\sin^{-1}(cx)\right)}{3c^2d\left(d-c^2dx^2\right)^{3/2}}-\frac{bx}{6c^3d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}}+\frac{5b\sqrt{1-c^2x^2}\,\tanh^{-1}(cx)}{6c^4d^2\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] -(b*x)/(6*c^3*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) + (x^2*(a + b*ArcS
in[c*x]))/(3*c^2*d*(d - c^2*d*x^2)^(3/2)) - (2*(a + b*ArcSin[c*x]))/(3*c^4*
d^2*Sqrt[d - c^2*d*x^2]) + (5*b*Sqrt[1 - c^2*x^2]*ArcTanh[c*x])/(6*c^4*d^2*
Sqrt[d - c^2*d*x^2])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
```

```
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rubi steps

$$\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{5/2}}\,dx=\frac{x^2\left(a+b\sin^{-1}(cx)\right)}{3c^2d\left(d-c^2dx^2\right)^{3/2}}-\frac{2\int\frac{x\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{3/2}}\,dx}{3c^2d}-\frac{\left(b\sqrt{1-c^2x^2}\right)\int\frac{x^2}{\left(1-c^2x^2\right)^2}\,dx}{3cd^2\sqrt{d-c^2dx^2}}$$

$$=-\frac{bx}{6c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{x^2\left(a+b\sin^{-1}(cx)\right)}{3c^2d\left(d-c^2dx^2\right)^{3/2}}-\frac{2\left(a+b\sin^{-1}(cx)\right)}{3c^4d^2\sqrt{d-c^2dx^2}}+\frac{\left(b\sqrt{1-\right.}{6c^3}$$

$$=-\frac{bx}{6c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{x^2\left(a+b\sin^{-1}(cx)\right)}{3c^2d\left(d-c^2dx^2\right)^{3/2}}-\frac{2\left(a+b\sin^{-1}(cx)\right)}{3c^4d^2\sqrt{d-c^2dx^2}}+\frac{5b\sqrt{1-}}{6c^4}$$

Mathematica [C] time = 0.25, size = 143, normalized size = 0.95

$$\frac{\sqrt{d-c^2dx^2}\left(\sqrt{-c^2}\left(6ac^2x^2-4a-bcx\sqrt{1-c^2x^2}+2b\left(3c^2x^2-2\right)\sin^{-1}(cx)\right)-5ibc\left(1-c^2x^2\right)^{3/2}F\left(i\sinh^{-1}\left(\sqrt{-}\right.\right.\right.}{6c^4\sqrt{-c^2}\,d^3\left(c^2x^2-1\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(Sqrt[-c^2]*(-4*a + 6*a*c^2*x^2 - b*c*x*Sqrt[1 - c^2*x
^2] + 2*b*(-2 + 3*c^2*x^2)*ArcSin[c*x]) - (5*I)*b*c*(1 - c^2*x^2)^(3/2)*Ell
ipticF[I*ArcSinh[Sqrt[-c^2]*x], 1]))/(6*c^4*Sqrt[-c^2]*d^3*(-1 + c^2*x^2)^2
)
```

fricas [A] time = 2.89, size = 421, normalized size = 2.81

$$\left[-\frac{4\sqrt{-c^2dx^2+d}\sqrt{-c^2x^2+1}\,bcx-5\left(bc^4x^4-2\,bc^2x^2+b\right)\sqrt{d}\,\log\left(-\frac{c^6dx^6+5\,c^4dx^4-5\,c^2dx^2-4\left(c^3x^3+cx\right)\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+}}{c^6x^6-3\,c^4x^4+3\,c^2x^2-1}\right.}{24\left(c^8d^3x^4-2\,c^6d^3x^2+c^4d^3\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/24*(4*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*b*c*x - 5*(b*c^4*x^4 - 2*
b*c^2*x^2 + b)*sqrt(d)*log(-(c^6*d*x^6 + 5*c^4*d*x^4 - 5*c^2*d*x^2 - 4*(c^3
*x^3 + c*x)*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*sqrt(d) - d)/(c^6*x^6 -
 3*c^4*x^4 + 3*c^2*x^2 - 1)) - 8*(3*a*c^2*x^2 + (3*b*c^2*x^2 - 2*b)*arcsin(
c*x) - 2*a)*sqrt(-c^2*d*x^2 + d))/(c^8*d^3*x^4 - 2*c^6*d^3*x^2 + c^4*d^3),
-1/12*(2*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*b*c*x - 5*(b*c^4*x^4 - 2*b
*c^2*x^2 + b)*sqrt(-d)*arctan(2*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*c*s
qrt(-d)*x/(c^4*d*x^4 - d)) - 4*(3*a*c^2*x^2 + (3*b*c^2*x^2 - 2*b)*arcsin(c*
x) - 2*a)*sqrt(-c^2*d*x^2 + d))/(c^8*d^3*x^4 - 2*c^6*d^3*x^2 + c^4*d^3)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.28, size = 307, normalized size = 2.05

$$\frac{a\,x^2}{c^2 d\left(-c^2 d\,x^2+d\right)^{\frac{3}{2}}}-\frac{2a}{3d\,c^4\left(-c^2 d\,x^2+d\right)^{\frac{3}{2}}}+\frac{b\sqrt{-d\left(c^2x^2-1\right)}\;\arcsin\left(cx\right)x^2}{d^3\left(c^2x^2-1\right)^2 c^2}-\frac{b\sqrt{-d\left(c^2x^2-1\right)}\;\sqrt{-c^2x^2+1}\;x}{6d^3\left(c^2x^2-1\right)^2 c^3}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] a*x^2/c^2/d/(-c^2*d*x^2+d)^(3/2)-2/3*a/d/c^4/(-c^2*d*x^2+d)^(3/2)+b*(-d*(c^
2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)^2/c^2*arcsin(c*x)*x^2-1/6*b*(-d*(c^2*x^2-1)
)^(1/2)/d^3/(c^2*x^2-1)^2/c^3*(-c^2*x^2+1)^(1/2)*x-2/3*b*(-d*(c^2*x^2-1))^(
1/2)/d^3/(c^2*x^2-1)^2/c^4*arcsin(c*x)-5/6*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x
^2+1)^(1/2)/c^4/d^3/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)+5/6*b*(-d*(c
^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^4/d^3/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+
1)^(1/2)-I)
```

maxima [A] time = 0.57, size = 160, normalized size = 1.07

$$\frac{1}{12}bc\left(\frac{2\,x}{c^6 d^{\frac{5}{2}}x^2-c^4 d^{\frac{5}{2}}}+\frac{5\,\log\left(cx+1\right)}{c^5 d^{\frac{5}{2}}}-\frac{5\,\log\left(cx-1\right)}{c^5 d^{\frac{5}{2}}}\right)+\frac{1}{3}b\left(\frac{3\,x^2}{\left(-c^2dx^2+d\right)^{\frac{3}{2}}c^2d}-\frac{2}{\left(-c^2dx^2+d\right)^{\frac{3}{2}}c^4d}\right)\arcsin($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/12*b*c*(2*x/(c^6*d^(5/2)*x^2 - c^4*d^(5/2)) + 5*log(c*x + 1)/(c^5*d^(5/2)
) - 5*log(c*x - 1)/(c^5*d^(5/2))) + 1/3*b*(3*x^2/((-c^2*d*x^2 + d)^(3/2)*c^
2*d) - 2/((-c^2*d*x^2 + d)^(3/2)*c^4*d))*arcsin(c*x) + 1/3*a*(3*x^2/((-c^2*
d*x^2 + d)^(3/2)*c^2*d) - 2/((-c^2*d*x^2 + d)^(3/2)*c^4*d))
```

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

$$\int \frac{x^3\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(d-c^2\,d\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int((x^3*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(5/2), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Exception raised: TypeError
```

3.133 $\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=125

$$\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{3d\left(d-c^2dx^2\right)^{3/2}}-\frac{b}{6c^3d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}}-\frac{b\sqrt{1-c^2x^2}\,\log\left(1-c^2x^2\right)}{6c^3d^2\sqrt{d-c^2dx^2}}$$

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

Rubi [A] time = 0.13, antiderivative size = 125, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {4681, 266, 43}

$$\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{3d\left(d-c^2dx^2\right)^{3/2}}-\frac{b}{6c^3d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}}-\frac{b\sqrt{1-c^2x^2}\,\log\left(1-c^2x^2\right)}{6c^3d^2\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] -b/(6*c^3*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) + (x^3*(a + b*ArcSin[c
*x]))/(3*d*(d - c^2*d*x^2)^(3/2)) - (b*Sqrt[1 - c^2*x^2]*Log[1 - c^2*x^2])/
(6*c^3*d^2*Sqrt[d - c^2*d*x^2])
```

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4681

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^F
racPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c
^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d,
 e, f, m, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] &
& NeQ[m, -1]
```

Rubi steps

$$\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{5/2}}\,dx = \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{3d\left(d-c^2dx^2\right)^{3/2}} - \frac{\left(bc\sqrt{1-c^2x^2}\right)\int \frac{x^3}{\left(1-c^2x^2\right)^2}\,dx}{3d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{3d\left(d-c^2dx^2\right)^{3/2}} - \frac{\left(bc\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int \frac{x}{\left(1-c^2x\right)^2}\,dx,x,x^2\right)}{6d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{3d\left(d-c^2dx^2\right)^{3/2}} - \frac{\left(bc\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int \left(\frac{1}{c^2\left(-1+c^2x\right)^2}+\frac{1}{c^2\left(-1+c^2x\right)}\right)dx,x,x^2\right)}{6d^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{b}{6c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{3d\left(d-c^2dx^2\right)^{3/2}} - \frac{b\sqrt{1-c^2x^2}\log\left(1-c^2x^2\right)}{6c^3d^2\sqrt{d-c^2dx^2}}$$

Mathematica [A] time = 0.23, size = 103, normalized size = 0.82

$$\frac{\sqrt{d-c^2dx^2}\left(2ac^3x^3+2bc^3x^3\sin^{-1}(cx)-b\sqrt{1-c^2x^2}-b\left(1-c^2x^2\right)^{3/2}\log\left(c^2x^2-1\right)\right)}{6c^3d^3\left(c^2x^2-1\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(2*a*c^3*x^3 - b*Sqrt[1 - c^2*x^2] + 2*b*c^3*x^3*ArcSi
n[c*x] - b*(1 - c^2*x^2)^(3/2)*Log[-1 + c^2*x^2]))/(6*c^3*d^3*(-1 + c^2*x^2
)^2)
```

fricas [F] time = 0.88, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\left(bx^2\arcsin(cx)+ax^2\right)}{c^6d^3x^6-3c^4d^3x^4+3c^2d^3x^2-d^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b*x^2*arcsin(c*x) + a*x^2)/(c^6*d^3*x^6 - 3
*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3), x)
```

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

$$\int \frac{(b\arcsin(cx)+a)x^2}{\left(-c^2dx^2+d\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)*x^2/(-c^2*d*x^2 + d)^(5/2), x)
```

maple [C] time = 0.33, size = 1219, normalized size = 9.75

$$\frac{ax}{3c^2d\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}}-\frac{ax}{3c^2d^2\sqrt{-c^2d\,x^2+d}}+\frac{ib\sqrt{-d\left(c^2x^2-1\right)}\,c^2x^5}{3d^3\left(3c^8x^8-9c^6x^6+10c^4x^4-5c^2x^2+1\right)}+\frac{ib\sqrt{-d\left(c^2x^2-1\right)}\,(}{6d^3\left(3c^8x^8-9c^6x^6+10\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] 1/3*a/c^2*x/d/(-c^2*d*x^2+d)^(3/2)-1/3*a/c^2/d^2*x/(-c^2*d*x^2+d)^(1/2)+1/3
*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1
)*c^2*x^5+1/6*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^
4-5*c^2*x^2+1)*(-c^2*x^2+1)*x^3-1/6*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x
^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*c^2*(-c^2*x^2+1)*x^5+b*(-d*(c^2*x^2-1)
)^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*c^4*arcsin(c*x)*x^
7-2*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^
2+1)*c*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^4-1/2*b*(-d*(c^2*x^2-1))^(1/2)/d^3/
(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*c*(-c^2*x^2+1)^(1/2)*x^4+4/3*I
*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)/
c*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^2-2/3*I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x
^2+1)^(1/2)/c^3/d^3/(c^2*x^2-1)*arcsin(c*x)-b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3
*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*c^2*arcsin(c*x)*x^5-1/6*I*b*(-d*
(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*x^3+1/2
*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)/
c*(-c^2*x^2+1)^(1/2)*x^2-1/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^
6*x^6+10*c^4*x^4-5*c^2*x^2+1)/c^3*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+I*b*(-d*(c
^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*c^3*(-c^2
*x^2+1)^(1/2)*arcsin(c*x)*x^6+1/3*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9
*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*arcsin(c*x)*x^3-1/6*b*(-d*(c^2*x^2-1))^(1/
2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)/c^3*(-c^2*x^2+1)^(1/2)-
1/6*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^
2+1)*c^4*x^7+1/3*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d^3/(c^2*x
^2-1)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)
```

maxima [A] time = 0.71, size = 153, normalized size = 1.22

$$\frac{1}{6}bc\left(\frac{1}{c^6d^{\frac{5}{2}}x^2-c^4d^{\frac{5}{2}}}-\frac{\log(cx+1)}{c^4d^{\frac{5}{2}}}-\frac{\log(cx-1)}{c^4d^{\frac{5}{2}}}\right)-\frac{1}{3}b\left(\frac{x}{\sqrt{-c^2dx^2+d}\,c^2d^2}-\frac{x}{\left(-c^2dx^2+d\right)^{\frac{3}{2}}c^2d}\right)\arcsin(cx)-\frac{1}{3}a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/6*b*c*(1/(c^6*d^(5/2)*x^2 - c^4*d^(5/2)) - log(c*x + 1)/(c^4*d^(5/2)) - l
og(c*x - 1)/(c^4*d^(5/2))) - 1/3*b*(x/(sqrt(-c^2*d*x^2 + d)*c^2*d^2) - x/((
-c^2*d*x^2 + d)^(3/2)*c^2*d))*arcsin(c*x) - 1/3*a*(x/(sqrt(-c^2*d*x^2 + d)*
c^2*d^2) - x/((-c^2*d*x^2 + d)^(3/2)*c^2*d))
```

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

$$\int \frac{x^2\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(d-c^2\,d\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int((x^2*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(5/2), x)
```

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

$$\int \frac{x^2\left(a+b\,\mathrm{asin}(cx)\right)}{\left(-d(cx-1)(cx+1)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(5/2),x)
[Out] Integral(x**2*(a + b*asin(c*x))/(-d*(c*x - 1)*(c*x + 1))**(5/2), x)
```

3.134 $\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=119

$$\frac{a+b\sin^{-1}(cx)}{3c^2d\left(d-c^2dx^2\right)^{3/2}}-\frac{bx}{6cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}-\frac{b\sqrt{1-c^2x^2}\tanh^{-1}(cx)}{6c^2d^2\sqrt{d-c^2dx^2}}$$

```
[Out] 1/3*(a+b*arcsin(c*x))/c^2/d/(-c^2*d*x^2+d)^(3/2)-1/6*b*x/c/d^2/(-c^2*x^2+1)
^(1/2)/(-c^2*d*x^2+d)^(1/2)-1/6*b*arctanh(c*x)*(-c^2*x^2+1)^(1/2)/c^2/d^2/(
-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {4677, 199, 206}

$$\frac{a+b\sin^{-1}(cx)}{3c^2d\left(d-c^2dx^2\right)^{3/2}}-\frac{bx}{6cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}-\frac{b\sqrt{1-c^2x^2}\tanh^{-1}(cx)}{6c^2d^2\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] -(b*x)/(6*c*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) + (a + b*ArcSin[c*x]
)/(3*c^2*d*(d - c^2*d*x^2)^(3/2)) - (b*Sqrt[1 - c^2*x^2]*ArcTanh[c*x])/(6*c
^2*d^2*Sqrt[d - c^2*d*x^2])
```

Rule 199

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && LtQ[p, -1] && (Integer
Q[2*p] || (n == 2 && IntegerQ[4*p]) || (n == 2 && IntegerQ[3*p]) || Denomin
ator[p + 1/n] < Denominator[p])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{5/2}}\,dx = \frac{a+b\sin^{-1}(cx)}{3c^2d\left(d-c^2dx^2\right)^{3/2}} - \frac{\left(b\sqrt{1-c^2x^2}\right)\int\frac{1}{\left(1-c^2x^2\right)^2}\,dx}{3cd^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{bx}{6cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{a+b\sin^{-1}(cx)}{3c^2d\left(d-c^2dx^2\right)^{3/2}} - \frac{\left(b\sqrt{1-c^2x^2}\right)\int\frac{1}{1-c^2x^2}\,dx}{6cd^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{bx}{6cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{a+b\sin^{-1}(cx)}{3c^2d\left(d-c^2dx^2\right)^{3/2}} - \frac{b\sqrt{1-c^2x^2}\tanh^{-1}(cx)}{6c^2d^2\sqrt{d-c^2dx^2}}$$

Mathematica [A] time = 0.05, size = 85, normalized size = 0.71

$$\frac{-2a+bcx\sqrt{1-c^2x^2}+b\left(1-c^2x^2\right)^{3/2}\tanh^{-1}(cx)-2b\sin^{-1}(cx)}{6c^2d^2\left(c^2x^2-1\right)\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (-2*a + b*c*x*Sqrt[1 - c^2*x^2] - 2*b*ArcSin[c*x] + b*(1 - c^2*x^2)^(3/2)*A
rcTanh[c*x])/(6*c^2*d^2*(-1 + c^2*x^2)*Sqrt[d - c^2*d*x^2])
```

fricas [A] time = 1.22, size = 374, normalized size = 3.14

$$\left[-\frac{4\sqrt{-c^2dx^2+d}\sqrt{-c^2x^2+1}\,bcx-\left(bc^4x^4-2\,bc^2x^2+b\right)\sqrt{d}\,\log\left(-\frac{c^6dx^6+5\,c^4dx^4-5\,c^2dx^2+4\left(c^3x^3+cx\right)\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2}}{c^6x^6-3\,c^4x^4+3\,c^2x^2-1}\right.}{24\left(c^6d^3x^4-2\,c^4d^3x^2+c^2d^3\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/24*(4*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*b*c*x - (b*c^4*x^4 - 2*b*
c^2*x^2 + b)*sqrt(d)*log(-(c^6*d*x^6 + 5*c^4*d*x^4 - 5*c^2*d*x^2 + 4*(c^3*x
^3 + c*x)*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*sqrt(d) - d)/(c^6*x^6 - 3
*c^4*x^4 + 3*c^2*x^2 - 1)) - 8*sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a))/(c
^6*d^3*x^4 - 2*c^4*d^3*x^2 + c^2*d^3), -1/12*(2*sqrt(-c^2*d*x^2 + d)*sqrt(-
c^2*x^2 + 1)*b*c*x + (b*c^4*x^4 - 2*b*c^2*x^2 + b)*sqrt(-d)*arctan(2*sqrt(-
c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)*c*sqrt(-d)*x/(c^4*d*x^4 - d)) - 4*sqrt(-c
^2*d*x^2 + d)*(b*arcsin(c*x) + a))/(c^6*d^3*x^4 - 2*c^4*d^3*x^2 + c^2*d^3)]
```

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

$$\int \frac{(b\arcsin(cx)+a)x}{\left(-c^2dx^2+d\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)*x/(-c^2*d*x^2 + d)^(5/2), x)
```

maple [C] time = 0.18, size = 259, normalized size = 2.18

$$\frac{a}{3c^2d\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}}-\frac{b\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x^2+1}\,x}{6d^3\left(c^4x^4-2c^2x^2+1\right)c}+\frac{b\sqrt{-d\left(c^2x^2-1\right)}\,\arcsin(cx)}{3d^3\left(c^4x^4-2c^2x^2+1\right)c^2}-\frac{b\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x}}{6c^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] 1/3*a/c^2/d/(-c^2*d*x^2+d)^(3/2)-1/6*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-
2*c^2*x^2+1)/c*(-c^2*x^2+1)^(1/2)*x+1/3*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x
^4-2*c^2*x^2+1)/c^2*arcsin(c*x)-1/6*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(
1/2)/c^2/d^3/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)+1/6*b*(-d*(c^2*x^2-
1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^2/d^3/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2
)+I)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{x\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(d-c^2\,d\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int((x*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(5/2), x)
```

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

$$\int \frac{x \left(a + b \operatorname{asin}{\left(c x \right)}\right)}{\left(- d \left(c x - 1\right) \left(c x + 1\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Integral(x*(a + b*asin(c*x))/(-d*(c*x - 1)*(c*x + 1))**(5/2), x)
```

3.135 $\int \frac{a+b\sin^{-1}(cx)}{\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=154

$$\frac{2x\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{d-c^2dx^2}}+\frac{x\left(a+b\sin^{-1}(cx)\right)}{3d\left(d-c^2dx^2\right)^{3/2}}-\frac{b}{6cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x^2}\log\left(1-c^2x^2\right)}{3cd^2\sqrt{d-c^2dx^2}}$$

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

Rubi [A] time = 0.08, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {4655, 4653, 260, 261}

$$\frac{2x\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{d-c^2dx^2}}+\frac{x\left(a+b\sin^{-1}(cx)\right)}{3d\left(d-c^2dx^2\right)^{3/2}}-\frac{b}{6cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{b\sqrt{1-c^2x^2}\log\left(1-c^2x^2\right)}{3cd^2\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] -b/(6*c*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) + (x*(a + b*ArcSin[c*x])
)/(3*d*(d - c^2*d*x^2)^(3/2)) + (2*x*(a + b*ArcSin[c*x]))/(3*d^2*Sqrt[d - c
^2*d*x^2]) + (b*Sqrt[1 - c^2*x^2]*Log[1 - c^2*x^2])/(3*c*d^2*Sqrt[d - c^2*d
*x^2])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 4653

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n*Sqrt[1 - c^2*x^2])/(d*Sqrt[d + e*x^2]), Int[(x*(a + b*ArcSin[c*x])^(n
 - 1))/(1 - c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e,
 0] && GtQ[n, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{(d-c^2dx^2)^{5/2}}\,dx = \frac{x(a+b\sin^{-1}(cx))}{3d(d-c^2dx^2)^{3/2}} + \frac{2\int \frac{a+b\sin^{-1}(cx)}{(d-c^2dx^2)^{3/2}}\,dx}{3d} - \frac{\left(bc\sqrt{1-c^2x^2}\right)\int \frac{x}{(1-c^2x^2)^2}\,dx}{3d^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{b}{6cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{x(a+b\sin^{-1}(cx))}{3d(d-c^2dx^2)^{3/2}} + \frac{2x(a+b\sin^{-1}(cx))}{3d^2\sqrt{d-c^2dx^2}} - \frac{\left(2bc\sqrt{1-c^2\right.}{3d^2\sqrt{d}}$$

$$= -\frac{b}{6cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{x(a+b\sin^{-1}(cx))}{3d(d-c^2dx^2)^{3/2}} + \frac{2x(a+b\sin^{-1}(cx))}{3d^2\sqrt{d-c^2dx^2}} + \frac{b\sqrt{1-c^2x^2}\ }{3cd^2\sqrt{d}}$$

Mathematica [A] time = 0.25, size = 113, normalized size = 0.73

$$-\frac{\sqrt{d-c^2dx^2}\left(4ac^3x^3-6acx+b\sqrt{1-c^2x^2}-2b\left(1-c^2x^2\right)^{3/2}\log\left(c^2x^2-1\right)+2bcx\left(2c^2x^2-3\right)\sin^{-1}(cx)\right)}{6cd^3\left(c^2x^2-1\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] -1/6*(Sqrt[d - c^2*d*x^2]*(-6*a*c*x + 4*a*c^3*x^3 + b*Sqrt[1 - c^2*x^2] + 2
*b*c*x*(-3 + 2*c^2*x^2)*ArcSin[c*x] - 2*b*(1 - c^2*x^2)^(3/2)*Log[-1 + c^2*
x^2]))/(c*d^3*(-1 + c^2*x^2)^2)
```

fricas [F] time = 0.74, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)}{c^6d^3x^6-3\,c^4d^3x^4+3\,c^2d^3x^2-d^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(c^6*d^3*x^6 - 3*c^4*d^3
*x^4 + 3*c^2*d^3*x^2 - d^3), x)
```

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

$$\int \frac{b\arcsin(cx)+a}{\left(-c^2dx^2+d\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/(-c^2*d*x^2 + d)^(5/2), x)
```

maple [C] time = 0.16, size = 1071, normalized size = 6.95

$$\frac{ax}{3d\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}}+\frac{2ax}{3d^2\sqrt{-c^2d\,x^2+d}}+\frac{4ib\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x^2+1}\,\arcsin(cx)}{3c\,d^3\left(c^2x^2-1\right)}+\frac{8ib\sqrt{-d\left(c^2x^2-1\right)}\,c^2x^3}{3d^3\left(3c^6x^6-10c^4x^4+11c^2x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] 1/3*a*x/d/(-c^2*d*x^2+d)^(3/2)+2/3*a/d^2*x/(-c^2*d*x^2+d)^(1/2)+4/3*I*b*(-d
*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/d^3/(c^2*x^2-1)*arcsin(c*x)+8/3*I*
b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^2*x^3+14
/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c*arc
sin(c*x)*(-c^2*x^2+1)^(1/2)*x^2-I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-1
0*c^4*x^4+11*c^2*x^2-4)*x-2*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^
4*x^4+11*c^2*x^2-4)*c^3*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^4-2*b*(-d*(c^2*x^2
-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*arcsin(c*x)*x^5+I*b*
(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*(-c^2*x^2+1)
*x-1/2*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c*(
-c^2*x^2+1)^(1/2)*x^2-5/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*
x^4+11*c^2*x^2-4)*c^2*(-c^2*x^2+1)*x^3+2/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(
3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*(-c^2*x^2+1)*x^5+17/3*b*(-d*(c^2*x^2
-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^2*arcsin(c*x)*x^3-7/3*
I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*x^5+
2/3*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)/c*(-c^
2*x^2+1)^(1/2)+2/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*
c^2*x^2-4)*c^6*x^7-8/3*I*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4
+11*c^2*x^2-4)/c*arcsin(c*x)*(-c^2*x^2+1)^(1/2)-4*b*(-d*(c^2*x^2-1))^(1/2)/
d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*arcsin(c*x)*x-2/3*b*(-d*(c^2*x^2-1)
)^(1/2)*(-c^2*x^2+1)^(1/2)/c/d^3/(c^2*x^2-1)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2)
)^2)
```

maxima [A] time = 0.71, size = 141, normalized size = 0.92

$$\frac{1}{6}\,bc\left(\frac{1}{c^4d^{\frac{5}{2}}x^2-c^2d^{\frac{5}{2}}}+\frac{2\,\log\left(cx+1\right)}{c^2d^{\frac{5}{2}}}+\frac{2\,\log\left(cx-1\right)}{c^2d^{\frac{5}{2}}}\right)+\frac{1}{3}\,b\left(\frac{2\,x}{\sqrt{-c^2dx^2+d}\,d^2}+\frac{x}{\left(-c^2dx^2+d\right)^{\frac{3}{2}}d}\right)\arcsin\left(cx\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxima")
```

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

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

$$\int \frac{a+b\,\mathrm{asin}\left(c\,x\right)}{{\left(d-c^2\,d\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int((a + b*asin(c*x))/(d - c^2*d*x^2)^(5/2), x)
```

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

$$\int \frac{a+b\,\mathrm{asin}\left(cx\right)}{\left(-d\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Integral((a + b*asin(c*x))/(-d*(c*x - 1)*(c*x + 1))**(5/2), x)
```

3.136 $\int \frac{a+b\sin^{-1}(cx)}{x(d-c^2dx^2)^{5/2}}\,dx$

Optimal. Leaf size=291

$$\frac{a+b\sin^{-1}(cx)}{d^2\sqrt{d-c^2dx^2}}-\frac{2\sqrt{1-c^2x^2}\ \tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{d-c^2dx^2}}+\frac{a+b\sin^{-1}(cx)}{3d\left(d-c^2dx^2\right)^{3/2}}+\frac{ib\sqrt{1-c^2x^2}\,\mathrm{Li}_2\left(-e^{i\sin^{-1}(cx)}\right.}{d^2\sqrt{d-c^2dx^2}}$$

```
[Out] 1/3*(a+b*arcsin(c*x))/d/(-c^2*d*x^2+d)^(3/2)+(a+b*arcsin(c*x))/d^2/(-c^2*d*
x^2+d)^(1/2)-1/6*b*c*x/d^2/(-c^2*x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)-2*(a+b*a
rcsin(c*x))*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/d^2/(-c^2*
d*x^2+d)^(1/2)-7/6*b*arctanh(c*x)*(-c^2*x^2+1)^(1/2)/d^2/(-c^2*d*x^2+d)^(1/
2)+I*b*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/d^2/(-c^2*d*
x^2+d)^(1/2)-I*b*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/d^2
/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.44, antiderivative size = 291, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.296, Rules used = {4705, 4713, 4709, 4183, 2279, 2391, 206, 199}

$$\frac{ib\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)}{d^2\sqrt{d-c^2dx^2}}-\frac{ib\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)}{d^2\sqrt{d-c^2dx^2}}+\frac{a+b\sin^{-1}(cx)}{d^2\sqrt{d-c^2dx^2}}-\frac{2\sqrt{1-c^2x^2}\ \tanh^{-1}\left(\right.}{d^2\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x*(d - c^2*d*x^2)^(5/2)),x]
```

```
[Out] -(b*c*x)/(6*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) + (a + b*ArcSin[c*x]
)/(3*d*(d - c^2*d*x^2)^(3/2)) + (a + b*ArcSin[c*x])/(d^2*Sqrt[d - c^2*d*x^2
]) - (2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcTanh[E^(I*ArcSin[c*x])])/(
d^2*Sqrt[d - c^2*d*x^2]) - (7*b*Sqrt[1 - c^2*x^2]*ArcTanh[c*x])/(6*d^2*Sqrt
[d - c^2*d*x^2]) + (I*b*Sqrt[1 - c^2*x^2]*PolyLog[2, -E^(I*ArcSin[c*x])])/(
d^2*Sqrt[d - c^2*d*x^2]) - (I*b*Sqrt[1 - c^2*x^2]*PolyLog[2, E^(I*ArcSin[c*
x])])/(d^2*Sqrt[d - c^2*d*x^2])
```

Rule 199

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && LtQ[p, -1] && (Integer
Q[2*p] || (n == 2 && IntegerQ[4*p]) || (n == 2 && IntegerQ[3*p]) || Denomin
ator[p + 1/n] < Denominator[p])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4705

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> -Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a +
b*ArcSin[c*x])^n)/(2*d*f*(p + 1)), x] + (Dist[(m + 2*p + 3)/(2*d*(p + 1)),
Int[(f*x)^m*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[(b*c*n
*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*f*(p + 1)*(1 - c^2*x^2)^FracPart[
p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
0] && LtQ[p, -1] &&  !GtQ[m, 1] && (IntegerQ[m] || IntegerQ[p] || EqQ[n, 1]
)
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4713

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(
(f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c,
 d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&  !GtQ[d, 0] && (Integ
erQ[m] || EqQ[n, 1])
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x\left(d-c^2dx^2\right)^{5/2}}\,dx = \frac{a+b\sin^{-1}(cx)}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{\int \frac{a+b\sin^{-1}(cx)}{x\left(d-c^2dx^2\right)^{3/2}}\,dx}{d} - \frac{\left(bc\sqrt{1-c^2x^2}\right)\int \frac{1}{\left(1-c^2x^2\right)^2}\,dx}{3d^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{bcx}{6d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} + \frac{a+b\sin^{-1}(cx)}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{a+b\sin^{-1}(cx)}{d^2\sqrt{d-c^2dx^2}} + \frac{\int \frac{a+b\sin^{-1}(cx)}{x\sqrt{d-c^2dx^2}}\,dx}{d^2} - \cdots$$

$$= -\frac{bcx}{6d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} + \frac{a+b\sin^{-1}(cx)}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{a+b\sin^{-1}(cx)}{d^2\sqrt{d-c^2dx^2}} - \frac{7b\sqrt{1-c^2x^2}\,\tanh^{-}\cdots}{6d^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{bcx}{6d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} + \frac{a+b\sin^{-1}(cx)}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{a+b\sin^{-1}(cx)}{d^2\sqrt{d-c^2dx^2}} - \frac{7b\sqrt{1-c^2x^2}\,\tanh^{-}\cdots}{6d^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{bcx}{6d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} + \frac{a+b\sin^{-1}(cx)}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{a+b\sin^{-1}(cx)}{d^2\sqrt{d-c^2dx^2}} - \frac{2\sqrt{1-c^2x^2}\left(a+b\,\mathrm{s}\cdots\right.}{d^2\cdots}$$

$$= -\frac{bcx}{6d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} + \frac{a+b\sin^{-1}(cx)}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{a+b\sin^{-1}(cx)}{d^2\sqrt{d-c^2dx^2}} - \frac{2\sqrt{1-c^2x^2}\left(a+b\,\mathrm{s}\cdots\right.}{d^2\cdots}$$

$$= -\frac{bcx}{6d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} + \frac{a+b\sin^{-1}(cx)}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{a+b\sin^{-1}(cx)}{d^2\sqrt{d-c^2dx^2}} - \frac{2\sqrt{1-c^2x^2}\left(a+b\,\mathrm{s}\cdots\right.}{d^2\cdots}$$

Mathematica [A] time = 2.24, size = 456, normalized size = 1.57

$$-\frac{a\log\left(\sqrt{d}\,\sqrt{d-c^2dx^2}+d\right)}{d^{5/2}} - \frac{a\left(3c^2x^2-4\right)\sqrt{d-c^2dx^2}}{3d^3\left(c^2x^2-1\right)^2} + \frac{a\log(x)}{d^{5/2}} + \frac{b\left(24i\left(1-c^2x^2\right)^{3/2}\operatorname{Li}_2\left(-e^{i\sin^{-1}(cx)}\right) - 24i\left(1-\cdots\right.\right.}{\cdots}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x*(d - c^2*d*x^2)^(5/2)),x]
```

```
[Out] -1/3*(a*(-4 + 3*c^2*x^2)*Sqrt[d - c^2*d*x^2])/(d^3*(-1 + c^2*x^2)^2) + (a*L
og[x])/d^(5/2) - (a*Log[d + Sqrt[d]*Sqrt[d - c^2*d*x^2]])/d^(5/2) + (b*(20*
ArcSin[c*x] + 12*ArcSin[c*x]*Cos[2*ArcSin[c*x]] + 18*Sqrt[1 - c^2*x^2]*ArcS
in[c*x]*Log[1 - E^(I*ArcSin[c*x])] + 6*ArcSin[c*x]*Cos[3*ArcSin[c*x]]*Log[1
 - E^(I*ArcSin[c*x])] - 18*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*Log[1 + E^(I*ArcSi
n[c*x])] - 6*ArcSin[c*x]*Cos[3*ArcSin[c*x]]*Log[1 + E^(I*ArcSin[c*x])] + 21
*Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] + 7*Cos[3*A
rcSin[c*x]]*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] - 21*Sqrt[1 - c^2*
x^2]*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]] - 7*Cos[3*ArcSin[c*x]]*Lo
g[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]] + (24*I)*(1 - c^2*x^2)^(3/2)*Pol
yLog[2, -E^(I*ArcSin[c*x])] - (24*I)*(1 - c^2*x^2)^(3/2)*PolyLog[2, E^(I*Ar
cSin[c*x])] - 2*Sin[2*ArcSin[c*x]]))/(24*d*(d - c^2*d*x^2)^(3/2))
```

fricas [F] time = 0.85, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)}{c^6d^3x^7-3\,c^4d^3x^5+3\,c^2d^3x^3-d^3x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x/(-c^2*d*x^2+d)^(5/2),x, algorithm="fricas")
```

[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(c^6*d^3*x^7 - 3*c^4*d^3*x^5 + 3*c^2*d^3*x^3 - d^3*x), x)

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

$$\int \frac{b\arcsin(cx) + a}{\left(-c^2dx^2 + d\right)^{\frac{5}{2}}x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*arcsin(c*x))/x/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac")

[Out] integrate((b*arcsin(c*x) + a)/((-c^2*d*x^2 + d)^(5/2)*x), x)

maple [A] time = 0.25, size = 449, normalized size = 1.54

$$\frac{a}{3d\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}}+\frac{a}{d^2\sqrt{-c^2d\,x^2+d}}-\frac{a\ln\left(\frac{2d+2\sqrt{d}\,\sqrt{-c^2d\,x^2+d}}{x}\right)}{d^{\frac{5}{2}}}-\frac{b\sqrt{-d\left(c^2x^2-1\right)}\,\arcsin(cx)\,x^2c^2}{d^3\left(c^2x^2-1\right)^2}-\frac{b\sqrt{-d\left(c^2x\right.}}{6d}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a+b*arcsin(c*x))/x/(-c^2*d*x^2+d)^(5/2),x)

[Out] 1/3*a/d/(-c^2*d*x^2+d)^(3/2)+a/d^2/(-c^2*d*x^2+d)^(1/2)-a/d^(5/2)*ln((2*d+2*d^(1/2)*(-c^2*d*x^2+d)^(1/2))/x)-b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)^2*arcsin(c*x)*x^2*c^2-1/6*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)^2*(-c^2*x^2+1)^(1/2)*x*c+4/3*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)^2*arcsin(c*x)-7/3*I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^3/(c^2*x^2-1)*arctan(I*c*x+(-c^2*x^2+1)^(1/2))-I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^3/(c^2*x^2-1)*dilog(1+I*c*x+(-c^2*x^2+1)^(1/2))+b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^3/(c^2*x^2-1)*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^3/(c^2*x^2-1)*dilog(I*c*x+(-c^2*x^2+1)^(1/2))

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

$$-\frac{1}{3}a\left(\frac{3\log\left(\frac{2\sqrt{-c^2dx^2+d}\,\sqrt{d}}{|x|}+\frac{2d}{|x|}\right)}{d^{\frac{5}{2}}}-\frac{3}{\sqrt{-c^2dx^2+d}\,d^2}-\frac{1}{\left(-c^2dx^2+d\right)^{\frac{3}{2}}d}\right)+\frac{b\int\frac{\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{(cx+1)^{\frac{5}{2}}(cx-1)^2\sqrt{-cx+1}\,x}\,dx}{\frac{d^2}{\sqrt{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*arcsin(c*x))/x/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxima")

[Out] -1/3*a*(3*log(2*sqrt(-c^2*d*x^2 + d)*sqrt(d)/abs(x) + 2*d/abs(x))/d^(5/2) - 3/(sqrt(-c^2*d*x^2 + d)*d^2) - 1/((-c^2*d*x^2 + d)^(3/2)*d)) + b*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/((c^4*d^2*x^5 - 2*c^2*d^2*x^3 + d^2*x)*sqrt(c*x + 1)*sqrt(-c*x + 1)), x)/sqrt(d)

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

$$\int \frac{a + b\,\mathrm{asin}(c\,x)}{x\left(d - c^2\,d\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a + b*asin(c*x))/(x*(d - c^2*d*x^2)^(5/2)),x)

```
[Out] int((a + b*asin(c*x))/(x*(d - c^2*d*x^2)^(5/2)), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Timed out
```

3.137 $\int \frac{a+b\sin^{-1}(cx)}{x^2\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=224

$$\frac{8c^2x\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{d-c^2dx^2}}+\frac{4c^2x\left(a+b\sin^{-1}(cx)\right)}{3d\left(d-c^2dx^2\right)^{3/2}}-\frac{a+b\sin^{-1}(cx)}{dx\left(d-c^2dx^2\right)^{3/2}}-\frac{bc\sqrt{d-c^2dx^2}}{6d^3\left(1-c^2x^2\right)^{3/2}}+\frac{bc\log(x)\sqrt{d-c^2dx^2}}{d^3\sqrt{1-c^2x^2}}+\frac{5b}{}$$

```
[Out] (-a-b*arcsin(c*x))/d/x/(-c^2*d*x^2+d)^(3/2)+4/3*c^2*x*(a+b*arcsin(c*x))/d/(
-c^2*d*x^2+d)^(3/2)+8/3*c^2*x*(a+b*arcsin(c*x))/d^2/(-c^2*d*x^2+d)^(1/2)-1/
6*b*c*(-c^2*d*x^2+d)^(1/2)/d^3/(-c^2*x^2+1)^(3/2)+b*c*ln(x)*(-c^2*d*x^2+d)^
(1/2)/d^3/(-c^2*x^2+1)^(1/2)+5/6*b*c*ln(-c^2*x^2+1)*(-c^2*d*x^2+d)^(1/2)/d^
3/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.22, antiderivative size = 224, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.259, Rules used = {4701, 4655, 4653, 260, 261, 266, 44}

$$\frac{8c^2x\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{d-c^2dx^2}}+\frac{4c^2x\left(a+b\sin^{-1}(cx)\right)}{3d\left(d-c^2dx^2\right)^{3/2}}-\frac{a+b\sin^{-1}(cx)}{dx\left(d-c^2dx^2\right)^{3/2}}-\frac{bc}{6d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{bc\sqrt{1-c^2x^2}\log}{d^2\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x^2*(d - c^2*d*x^2)^(5/2)),x]
```

```
[Out] -(b*c)/(6*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) - (a + b*ArcSin[c*x])/
(d*x*(d - c^2*d*x^2)^(3/2)) + (4*c^2*x*(a + b*ArcSin[c*x]))/(3*d*(d - c^2*d
*x^2)^(3/2)) + (8*c^2*x*(a + b*ArcSin[c*x]))/(3*d^2*Sqrt[d - c^2*d*x^2]) +
(b*c*Sqrt[1 - c^2*x^2]*Log[x])/(d^2*Sqrt[d - c^2*d*x^2]) + (5*b*c*Sqrt[1 -
c^2*x^2]*Log[1 - c^2*x^2])/(6*d^2*Sqrt[d - c^2*d*x^2])
```

Rule 44

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

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4653

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
```

```
b*c*n*Sqrt[1 - c^2*x^2])/(d*Sqrt[d + e*x^2]), Int[(x*(a + b*ArcSin[c*x])^(n
 - 1))/(1 - c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e,
 0] && GtQ[n, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x^2\left(d-c^2dx^2\right)^{5/2}}\,dx = -\frac{a+b\sin^{-1}(cx)}{dx\left(d-c^2dx^2\right)^{3/2}}+\left(4c^2\right)\int \frac{a+b\sin^{-1}(cx)}{\left(d-c^2dx^2\right)^{5/2}}\,dx+\frac{\left(bc\sqrt{1-c^2x^2}\right)\int \frac{1}{x\left(1-c^2x^2\right)^2}\,dx}{d^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{a+b\sin^{-1}(cx)}{dx\left(d-c^2dx^2\right)^{3/2}}+\frac{4c^2x\left(a+b\sin^{-1}(cx)\right)}{3d\left(d-c^2dx^2\right)^{3/2}}+\frac{\left(8c^2\right)\int \frac{a+b\sin^{-1}(cx)}{\left(d-c^2dx^2\right)^{3/2}}\,dx}{3d}+\frac{\left(bc\sqrt{1-c^2x^2}\right)}{2d}$$

$$= -\frac{2bc}{3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}-\frac{a+b\sin^{-1}(cx)}{dx\left(d-c^2dx^2\right)^{3/2}}+\frac{4c^2x\left(a+b\sin^{-1}(cx)\right)}{3d\left(d-c^2dx^2\right)^{3/2}}+\frac{8c^2x\left(a+b\right.}{3d^2\sqrt{d-}}$$

$$= -\frac{bc}{6d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}-\frac{a+b\sin^{-1}(cx)}{dx\left(d-c^2dx^2\right)^{3/2}}+\frac{4c^2x\left(a+b\sin^{-1}(cx)\right)}{3d\left(d-c^2dx^2\right)^{3/2}}+\frac{8c^2x\left(a+b\right.}{3d^2\sqrt{d-}}$$

Mathematica [A] time = 0.34, size = 188, normalized size = 0.84

$$-\frac{\sqrt{d-c^2dx^2}\left(16ac^4x^4-24ac^2x^2+6a+bcx\sqrt{1-c^2x^2}-3bcx\left(1-c^2x^2\right)^{3/2}\log\left(x^2\right)-5bcx\sqrt{1-c^2x^2}\log\left(1-c^2\right.\right.}{6d^3x\left(c^2x^2-1\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x^2*(d - c^2*d*x^2)^(5/2)),x]
```

```
[Out] -1/6*(Sqrt[d - c^2*d*x^2]*(6*a - 24*a*c^2*x^2 + 16*a*c^4*x^4 + b*c*x*Sqrt[1
 - c^2*x^2] + 2*b*(3 - 12*c^2*x^2 + 8*c^4*x^4)*ArcSin[c*x] - 3*b*c*x*(1 - c
```

```
^2*x^2)^(3/2)*Log[x^2] - 5*b*c*x*Sqrt[1 - c^2*x^2]*Log[1 - c^2*x^2] + 5*b*c
^3*x^3*Sqrt[1 - c^2*x^2]*Log[1 - c^2*x^2]))/(d^3*x*(-1 + c^2*x^2)^2)
```

fricas [F] time = 13.04, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\,(b\arcsin{(cx)}+a)}{c^6d^3x^8-3\,c^4d^3x^6+3\,c^2d^3x^4-d^3x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(c^6*d^3*x^8 - 3*c^4*d^3
*x^6 + 3*c^2*d^3*x^4 - d^3*x^2), x)
```

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

$$\int \frac{b\arcsin{(cx)}+a}{\left(-c^2dx^2+d\right)^{\frac{5}{2}}x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/((-c^2*d*x^2 + d)^(5/2)*x^2), x)
```

maple [C] time = 0.33, size = 1346, normalized size = 6.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x^2/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] -a/d/x/(-c^2*d*x^2+d)^(3/2)+4/3*a*c^2*x/d/(-c^2*d*x^2+d)^(3/2)+8/3*a*c^2/d^
2*x/(-c^2*d*x^2+d)^(1/2)+4*I*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4
+26*c^2*x^2-9)/d^3*x*c^2-80/3*I*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*
x^4+26*c^2*x^2-9)/d^3*x^5*(-c^2*x^2+1)*c^6+9*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^
6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3/x*arcsin(c*x)+3/2*b*(-d*(c^2*x^2-1))^(1/
2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*(-c^2*x^2+1)^(1/2)*c-b*(-d*(c^2*
x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^3/(c^2*x^2-1)*ln((I*c*x+(-c^2*x^2+1)^(1/
2))^2-1)*c-64/3*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9
)/d^3*x^5*arcsin(c*x)*c^6+56*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4
+26*c^2*x^2-9)/d^3*x^3*arcsin(c*x)*c^4-4/3*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*
x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x^2*c^3*(-c^2*x^2+1)^(1/2)-5/3*b*(-d*(c^2*
x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^3/(c^2*x^2-1)*ln(1+(I*c*x+(-c^2*x^2+1)^(
1/2))^2)*c-44*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/
d^3*x*arcsin(c*x)*c^2-64/3*I*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4
+26*c^2*x^2-9)/d^3*x^4*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^5+140/3*I*b*(-d*(c^
2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x^5*c^6-24*I*b*(-d*
(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*arcsin(c*x)*(-c^
2*x^2+1)^(1/2)*c-112/3*I*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*
c^2*x^2-9)/d^3*x^7*c^8+32/3*I*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^
4+26*c^2*x^2-9)/d^3*x^7*(-c^2*x^2+1)*c^8+136/3*I*b*(-d*(c^2*x^2-1))^(1/2)/(
8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x^2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c
^3+16/3*I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^3/(c^2*x^2-1)*arcsi
n(c*x)*c+20*I*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/
d^3*x^3*(-c^2*x^2+1)*c^4-24*I*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^
4+26*c^2*x^2-9)/d^3*x^3*c^4-4*I*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*
x^4+26*c^2*x^2-9)/d^3*x*(-c^2*x^2+1)*c^2+32/3*I*b*(-d*(c^2*x^2-1))^(1/2)/(8
*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x^9*c^10
```

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

$$\frac{1}{3}a\left(\frac{8c^2x}{\sqrt{-c^2dx^2+d}\,d^2}+\frac{4c^2x}{\left(-c^2dx^2+d\right)^{\frac{3}{2}}d}-\frac{3}{\left(-c^2dx^2+d\right)^{\frac{3}{2}}dx}\right)+\frac{\frac{1}{6}b\left(\frac{c}{c^2d^2x^2-d^2}+\frac{2\left(8c^4x^4-12c^2x^2+3\right)\arctan\left(\frac{cx}{\sqrt{cx+1}\sqrt{-cx+1}}\right)}{\left(c^2d^2x^3-d^2x\right)\sqrt{cx+1}\sqrt{-cx+1}}-\right.}{\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/3*a*(8*c^2*x/(sqrt(-c^2*d*x^2 + d)*d^2) + 4*c^2*x/((-c^2*d*x^2 + d)^(3/2)
*d) - 3/((-c^2*d*x^2 + d)^(3/2)*d*x)) + b*integrate(arctan2(c*x, sqrt(c*x +
 1)*sqrt(-c*x + 1))/((c^4*d^2*x^6 - 2*c^2*d^2*x^4 + d^2*x^2)*sqrt(c*x + 1)*
sqrt(-c*x + 1)), x)/sqrt(d)
```

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

$$\int \frac{a+b\,\mathrm{asin}\left(c\,x\right)}{x^2\,{\left(d-c^2\,d\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x^2*(d - c^2*d*x^2)^(5/2)),x)
```

```
[Out] int((a + b*asin(c*x))/(x^2*(d - c^2*d*x^2)^(5/2)), x)
```

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

$$\int \frac{a+b\,\mathrm{asin}\,(cx)}{x^2\,(-d\,(cx-1)\,(cx+1))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x**2/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Integral((a + b*asin(c*x))/(x**2*(-d*(c*x - 1)*(c*x + 1))**(5/2)), x)
```

3.138 $\int \frac{a+b\sin^{-1}(cx)}{x^3\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=433

$$\frac{5c^2\left(a+b\sin^{-1}(cx)\right)}{2d^2\sqrt{d-c^2dx^2}}-\frac{5c^2\sqrt{1-c^2x^2}\,\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{d-c^2dx^2}}+\frac{5c^2\left(a+b\sin^{-1}(cx)\right)}{6d\left(d-c^2dx^2\right)^{3/2}}-\frac{a+b\sin^{-1}}{2dx^2\left(d-c^2d\right.}$$

```
[Out] 5/6*c^2*(a+b*arcsin(c*x))/d/(-c^2*d*x^2+d)^(3/2)+1/2*(-a-b*arcsin(c*x))/d/x
^2/(-c^2*d*x^2+d)^(3/2)+5/2*c^2*(a+b*arcsin(c*x))/d^2/(-c^2*d*x^2+d)^(1/2)+
1/4*b*c/d^2/x/(-c^2*x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)-5/12*b*c^3*x/d^2/(-c^
2*x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)-3/4*b*c*(-c^2*x^2+1)^(1/2)/d^2/x/(-c^2*
d*x^2+d)^(1/2)-5*c^2*(a+b*arcsin(c*x))*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))*(-
c^2*x^2+1)^(1/2)/d^2/(-c^2*d*x^2+d)^(1/2)-13/6*b*c^2*arctanh(c*x)*(-c^2*x^2
+1)^(1/2)/d^2/(-c^2*d*x^2+d)^(1/2)+5/2*I*b*c^2*polylog(2,-I*c*x-(-c^2*x^2+1
)^(1/2))*(-c^2*x^2+1)^(1/2)/d^2/(-c^2*d*x^2+d)^(1/2)-5/2*I*b*c^2*polylog(2,
I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/d^2/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.58, antiderivative size = 433, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 11, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.407, Rules used = {4701, 4705, 4713, 4709, 4183, 2279, 2391, 206, 199, 290, 325}

$$\frac{5ibc^2\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)}{2d^2\sqrt{d-c^2dx^2}}-\frac{5ibc^2\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)}{2d^2\sqrt{d-c^2dx^2}}+\frac{5c^2\left(a+b\sin^{-1}(cx)\right)}{2d^2\sqrt{d-c^2dx^2}}-\frac{5c^2\sqrt{\cdots}}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x^3*(d - c^2*d*x^2)^(5/2)),x]
```

```
[Out] (b*c)/(4*d^2*x*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) - (5*b*c^3*x)/(12*d^2
*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) - (3*b*c*Sqrt[1 - c^2*x^2])/(4*d^2*
x*Sqrt[d - c^2*d*x^2]) + (5*c^2*(a + b*ArcSin[c*x]))/(6*d*(d - c^2*d*x^2)^(
3/2)) - (a + b*ArcSin[c*x])/(2*d*x^2*(d - c^2*d*x^2)^(3/2)) + (5*c^2*(a + b
*ArcSin[c*x]))/(2*d^2*Sqrt[d - c^2*d*x^2]) - (5*c^2*Sqrt[1 - c^2*x^2]*(a +
b*ArcSin[c*x])*ArcTanh[E^(I*ArcSin[c*x])])/(d^2*Sqrt[d - c^2*d*x^2]) - (13*
b*c^2*Sqrt[1 - c^2*x^2]*ArcTanh[c*x])/(6*d^2*Sqrt[d - c^2*d*x^2]) + (((5*I)
/2)*b*c^2*Sqrt[1 - c^2*x^2]*PolyLog[2, -E^(I*ArcSin[c*x])])/(d^2*Sqrt[d - c
^2*d*x^2]) - (((5*I)/2)*b*c^2*Sqrt[1 - c^2*x^2]*PolyLog[2, E^(I*ArcSin[c*x]
)])/(d^2*Sqrt[d - c^2*d*x^2])
```

Rule 199

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && LtQ[p, -1] && (Integer
Q[2*p] || (n == 2 && IntegerQ[4*p]) || (n == 2 && IntegerQ[3*p]) || Denomin
ator[p + 1/n] < Denominator[p])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 290

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[((
c*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*n*(p + 1)), x] + Dist[(m + n*(p + 1)
```

```
 + 1)/(a*n*(p + 1)), Int[(c*x)^m*(a + b*x^n)^(p + 1), x], x] /; FreeQ[{a, b
, c, m}, x] && IGtQ[n, 0] && LtQ[p, -1] && IntBinomialQ[a, b, c, n, m, p, x
]
```

Rule 325

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

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4705

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> -Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a +
b*ArcSin[c*x])^n)/(2*d*f*(p + 1)), x] + (Dist[(m + 2*p + 3)/(2*d*(p + 1)),
Int[(f*x)^m*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[(b*c*n
*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*f*(p + 1)*(1 - c^2*x^2)^FracPart[
p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
0] && LtQ[p, -1] &&  !GtQ[m, 1] && (IntegerQ[m] || IntegerQ[p] || EqQ[n, 1]
)
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
```

```
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4713

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(
(f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c,
 d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&  !GtQ[d, 0] && (Integ
erQ[m] || EqQ[n, 1])
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x^3\left(d-c^2dx^2\right)^{5/2}}\,dx = -\frac{a+b\sin^{-1}(cx)}{2dx^2\left(d-c^2dx^2\right)^{3/2}} + \frac{1}{2}\left(5c^2\right)\int \frac{a+b\sin^{-1}(cx)}{x\left(d-c^2dx^2\right)^{5/2}}\,dx + \frac{\left(bc\sqrt{1-c^2x^2}\right)\int \frac{1}{x^2\left(1-c^2x^2\right)^2}}{2d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{bc}{4d^2x\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} + \frac{5c^2\left(a+b\sin^{-1}(cx)\right)}{6d\left(d-c^2dx^2\right)^{3/2}} - \frac{a+b\sin^{-1}(cx)}{2dx^2\left(d-c^2dx^2\right)^{3/2}} + \frac{\left(5c^2\right)\int}{}$$

$$= \frac{bc}{4d^2x\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} - \frac{5bc^3x}{12d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} - \frac{3bc\sqrt{1-c^2x^2}}{4d^2x\sqrt{d-c^2dx^2}} + \frac{5c^2(}{6d}$$

$$= \frac{bc}{4d^2x\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} - \frac{5bc^3x}{12d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} - \frac{3bc\sqrt{1-c^2x^2}}{4d^2x\sqrt{d-c^2dx^2}} + \frac{5c^2(}{6d}$$

$$= \frac{bc}{4d^2x\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} - \frac{5bc^3x}{12d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} - \frac{3bc\sqrt{1-c^2x^2}}{4d^2x\sqrt{d-c^2dx^2}} + \frac{5c^2(}{6d}$$

$$= \frac{bc}{4d^2x\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} - \frac{5bc^3x}{12d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} - \frac{3bc\sqrt{1-c^2x^2}}{4d^2x\sqrt{d-c^2dx^2}} + \frac{5c^2(}{6d}$$

$$= \frac{bc}{4d^2x\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} - \frac{5bc^3x}{12d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} - \frac{3bc\sqrt{1-c^2x^2}}{4d^2x\sqrt{d-c^2dx^2}} + \frac{5c^2(}{6d}$$

$$= \frac{bc}{4d^2x\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} - \frac{5bc^3x}{12d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} - \frac{3bc\sqrt{1-c^2x^2}}{4d^2x\sqrt{d-c^2dx^2}} + \frac{5c^2(}{6d}$$

Mathematica [A] time = 8.24, size = 537, normalized size = 1.24

$$-\frac{5ac^2\log\left(\sqrt{d}\sqrt{-d\left(c^2x^2-1\right)}+d\right)}{2d^{5/2}} + \frac{5ac^2\log(x)}{2d^{5/2}} + \sqrt{-d\left(c^2x^2-1\right)}\left(-\frac{2ac^2}{d^3\left(c^2x^2-1\right)} + \frac{ac^2}{3d^3\left(c^2x^2-1\right)^2} - \frac{a}{2d^3x^2}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x^3*(d - c^2*d*x^2)^(5/2)),x]
```

```
[Out] Sqrt[-(d*(-1 + c^2*x^2))]*(-1/2*a/(d^3*x^2) + (a*c^2)/(3*d^3*(-1 + c^2*x^2)
^2) - (2*a*c^2)/(d^3*(-1 + c^2*x^2))) + (5*a*c^2*Log[x])/(2*d^(5/2)) - (5*a
*c^2*Log[d + Sqrt[d]*Sqrt[-(d*(-1 + c^2*x^2))]])/(2*d^(5/2)) + (b*c^2*Sqrt[
```

```
1 - c^2*x^2]*((-2*(-1 + ArcSin[c*x]))/(-1 + c*x) + 52*ArcSin[c*x] - 6*Cot[A
rcSin[c*x]/2] - 3*ArcSin[c*x]*Csc[ArcSin[c*x]/2]^2 + 60*ArcSin[c*x]*(Log[1
- E^(I*ArcSin[c*x])] - Log[1 + E^(I*ArcSin[c*x])]) + 52*Log[Cos[ArcSin[c*x]
/2] - Sin[ArcSin[c*x]/2]] - 52*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]
 + (60*I)*(PolyLog[2, -E^(I*ArcSin[c*x])] - PolyLog[2, E^(I*ArcSin[c*x])])
+ 3*ArcSin[c*x]*Sec[ArcSin[c*x]/2]^2 + (4*ArcSin[c*x]*Sin[ArcSin[c*x]/2])/(
Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^3 + (52*ArcSin[c*x]*Sin[ArcSin[c*x
]/2])/(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]) - (4*ArcSin[c*x]*Sin[ArcSin
[c*x]/2])/(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^3 + (2*(1 + ArcSin[c*x]
))/(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^2 - (52*ArcSin[c*x]*Sin[ArcSin
[c*x]/2])/(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]) - 6*Tan[ArcSin[c*x]/2])
)/(24*d^2*Sqrt[d*(1 - c^2*x^2)])
```

fricas [F] time = 1.27, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)}{c^6d^3x^9-3\,c^4d^3x^7+3\,c^2d^3x^5-d^3x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(-c^2*d*x^2+d)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(c^6*d^3*x^9 - 3*c^4*d^3
*x^7 + 3*c^2*d^3*x^5 - d^3*x^3), x)
```

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

$$\int\frac{b\arcsin(cx)+a}{\left(-c^2dx^2+d\right)^{\frac{5}{2}}x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/((-c^2*d*x^2 + d)^(5/2)*x^3), x)
```

maple [A] time = 0.45, size = 624, normalized size = 1.44

$$-\frac{a}{2d\,x^2\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}}+\frac{5a\,c^2}{6d\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}}+\frac{5a\,c^2}{2d^2\sqrt{-c^2d\,x^2+d}}-\frac{5a\,c^2\ln\left(\frac{2d+2\sqrt{d}\,\sqrt{-c^2d\,x^2+d}}{x}\right)}{2d^{\frac{5}{2}}}-\frac{5b\sqrt{-d\left(c^2x^2-1\right)}\,x^2}{2d^3\left(c^4x^4-2c\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x^3/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] -1/2*a/d/x^2/(-c^2*d*x^2+d)^(3/2)+5/6*a*c^2/d/(-c^2*d*x^2+d)^(3/2)+5/2*a*c^
2/d^2/(-c^2*d*x^2+d)^(1/2)-5/2*a*c^2/d^(5/2)*ln((2*d+2*d^(1/2)*(-c^2*d*x^2+
d)^(1/2))/x)-5/2*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)*x^2*arc
sin(c*x)*c^4+1/3*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)*x*c^3*(
-c^2*x^2+1)^(1/2)+10/3*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)*a
rcsin(c*x)*c^2-1/2*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)/x*(-c
^2*x^2+1)^(1/2)*c-1/2*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)/x^
2*arcsin(c*x)-13/3*I*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*c^2/d^3/(c
^2*x^2-1)*arctan(I*c*x+(-c^2*x^2+1)^(1/2))-5/2*I*b*(-c^2*x^2+1)^(1/2)*(-d*(
c^2*x^2-1))^(1/2)*c^2/d^3/(c^2*x^2-1)*dilog(1+I*c*x+(-c^2*x^2+1)^(1/2))+5/2
*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*c^2/d^3/(c^2*x^2-1)*arcsin(c*x
)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-5/2*I*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1)
)^(1/2)*c^2/d^3/(c^2*x^2-1)*dilog(I*c*x+(-c^2*x^2+1)^(1/2))
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxima")
[Out] Timed out
```

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

$$\int \frac{a + b\,\mathrm{asin}\left(c\,x\right)}{x^3\,{\left(d - c^2\,d\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x^3*(d - c^2*d*x^2)^(5/2)),x)
[Out] int((a + b*asin(c*x))/(x^3*(d - c^2*d*x^2)^(5/2)), x)
```

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

$$\int \frac{a + b\,\mathrm{asin}\left(cx\right)}{x^{3} \left(-d \left(cx - 1\right) \left(cx + 1\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x**3/(-c**2*d*x**2+d)**(5/2),x)
[Out] Integral((a + b*asin(c*x))/(x**3*(-d*(c*x - 1)*(c*x + 1))**(5/2)), x)
```

3.139 $\int \frac{a+b\sin^{-1}(cx)}{x^4\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=310

$$-\frac{2c^2\left(a+b\sin^{-1}(cx)\right)}{dx\left(d-c^2dx^2\right)^{3/2}}-\frac{a+b\sin^{-1}(cx)}{3dx^3\left(d-c^2dx^2\right)^{3/2}}+\frac{16c^4x\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{d-c^2dx^2}}+\frac{8c^4x\left(a+b\sin^{-1}(cx)\right)}{3d\left(d-c^2dx^2\right)^{3/2}}-\frac{bc\sqrt{d-c^2dx^2}}{6d^3x^2\sqrt{1-c^2x^2}}-\cdots$$

```
[Out] 1/3*(-a-b*arcsin(c*x))/d/x^3/(-c^2*d*x^2+d)^(3/2)-2*c^2*(a+b*arcsin(c*x))/d
/x/(-c^2*d*x^2+d)^(3/2)+8/3*c^4*x*(a+b*arcsin(c*x))/d/(-c^2*d*x^2+d)^(3/2)+
16/3*c^4*x*(a+b*arcsin(c*x))/d^2/(-c^2*d*x^2+d)^(1/2)-1/6*b*c^3*(-c^2*d*x^2
+d)^(1/2)/d^3/(-c^2*x^2+1)^(3/2)-1/6*b*c*(-c^2*d*x^2+d)^(1/2)/d^3/x^2/(-c^2
*x^2+1)^(1/2)+8/3*b*c^3*ln(x)*(-c^2*d*x^2+d)^(1/2)/d^3/(-c^2*x^2+1)^(1/2)+4
/3*b*c^3*ln(-c^2*x^2+1)*(-c^2*d*x^2+d)^(1/2)/d^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.39, antiderivative size = 310, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 7, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.259$, Rules used = $\{4701, 4655, 4653, 260, 261, 266, 44\}$

$$\frac{16c^4x\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{d-c^2dx^2}}+\frac{8c^4x\left(a+b\sin^{-1}(cx)\right)}{3d\left(d-c^2dx^2\right)^{3/2}}-\frac{2c^2\left(a+b\sin^{-1}(cx)\right)}{dx\left(d-c^2dx^2\right)^{3/2}}-\frac{a+b\sin^{-1}(cx)}{3dx^3\left(d-c^2dx^2\right)^{3/2}}-\frac{bc^3}{6d^2\sqrt{1-c^2x^2}\sqrt{d-c\cdots}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x^4*(d - c^2*d*x^2)^(5/2)),x]
```

```
[Out] -(b*c^3)/(6*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) - (b*c*Sqrt[1 - c^2*
x^2])/(6*d^2*x^2*Sqrt[d - c^2*d*x^2]) - (a + b*ArcSin[c*x])/(3*d*x^3*(d - c
^2*d*x^2)^(3/2)) - (2*c^2*(a + b*ArcSin[c*x]))/(d*x*(d - c^2*d*x^2)^(3/2))
+ (8*c^4*x*(a + b*ArcSin[c*x]))/(3*d*(d - c^2*d*x^2)^(3/2)) + (16*c^4*x*(a
+ b*ArcSin[c*x]))/(3*d^2*Sqrt[d - c^2*d*x^2]) + (8*b*c^3*Sqrt[1 - c^2*x^2]*
Log[x])/(3*d^2*Sqrt[d - c^2*d*x^2]) + (4*b*c^3*Sqrt[1 - c^2*x^2]*Log[1 - c^
2*x^2])/(3*d^2*Sqrt[d - c^2*d*x^2])
```

Rule 44

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

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4653

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n*Sqrt[1 - c^2*x^2])/(d*Sqrt[d + e*x^2]), Int[(x*(a + b*ArcSin[c*x])^(n
 - 1))/(1 - c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e,
 0] && GtQ[n, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x^4\left(d-c^2dx^2\right)^{5/2}}\,dx = -\frac{a+b\sin^{-1}(cx)}{3dx^3\left(d-c^2dx^2\right)^{3/2}} + \left(2c^2\right)\int \frac{a+b\sin^{-1}(cx)}{x^2\left(d-c^2dx^2\right)^{5/2}}\,dx + \frac{\left(bc\sqrt{1-c^2x^2}\right)\int \frac{1}{x^3\left(1-c^2x^2\right)^2}\,d}{3d^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{a+b\sin^{-1}(cx)}{3dx^3\left(d-c^2dx^2\right)^{3/2}} - \frac{2c^2\left(a+b\sin^{-1}(cx)\right)}{dx\left(d-c^2dx^2\right)^{3/2}} + \left(8c^4\right)\int \frac{a+b\sin^{-1}(cx)}{\left(d-c^2dx^2\right)^{5/2}}\,dx + \frac{\left(bc\sqrt{1\right.}{}$$

$$= -\frac{a+b\sin^{-1}(cx)}{3dx^3\left(d-c^2dx^2\right)^{3/2}} - \frac{2c^2\left(a+b\sin^{-1}(cx)\right)}{dx\left(d-c^2dx^2\right)^{3/2}} + \frac{8c^4x\left(a+b\sin^{-1}(cx)\right)}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{\left(16c^4\right)\int \frac{a+}{(d}}{3}$$

$$= -\frac{7bc^3}{6d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{bc\sqrt{1-c^2x^2}}{6d^2x^2\sqrt{d-c^2dx^2}} - \frac{a+b\sin^{-1}(cx)}{3dx^3\left(d-c^2dx^2\right)^{3/2}} - \frac{2c^2\left(a+b\,s\right.}{dx\left(d-c\right.}$$

$$= -\frac{bc^3}{6d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{bc\sqrt{1-c^2x^2}}{6d^2x^2\sqrt{d-c^2dx^2}} - \frac{a+b\sin^{-1}(cx)}{3dx^3\left(d-c^2dx^2\right)^{3/2}} - \frac{2c^2\left(a+b\,s\right.}{dx\left(d-c\right.}$$

Mathematica [A] time = 0.34, size = 213, normalized size = 0.69

$$-\frac{\sqrt{d-c^2dx^2}\left(32ac^6x^6-48ac^4x^4+12ac^2x^2+2a+bcx\sqrt{1-c^2x^2}+8bc^5x^5\sqrt{1-c^2x^2}\log\left(1-c^2x^2\right)-8bc^3x^3\right.}{6d^3x^3\left(c^2x^2\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x^4*(d - c^2*d*x^2)^(5/2)),x]
```

```
[Out] -1/6*(Sqrt[d - c^2*d*x^2]*(2*a + 12*a*c^2*x^2 - 48*a*c^4*x^4 + 32*a*c^6*x^6
 + b*c*x*Sqrt[1 - c^2*x^2] + 2*b*(1 + 6*c^2*x^2 - 24*c^4*x^4 + 16*c^6*x^6)*
ArcSin[c*x] - 8*b*c^3*x^3*(1 - c^2*x^2)^(3/2)*Log[x^2] - 8*b*c^3*x^3*Sqrt[1
 - c^2*x^2]*Log[1 - c^2*x^2] + 8*b*c^5*x^5*Sqrt[1 - c^2*x^2]*Log[1 - c^2*x^
2]))/(d^3*x^3*(-1 + c^2*x^2)^2)
```

fricas [F] time = 1.19, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)}{c^6d^3x^{10}-3\,c^4d^3x^8+3\,c^2d^3x^6-d^3x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^4/(-c^2*d*x^2+d)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)/(c^6*d^3*x^10 - 3*c^4*d^
3*x^8 + 3*c^2*d^3*x^6 - d^3*x^4), x)
```

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

$$\int\frac{b\arcsin(cx)+a}{\left(-c^2dx^2+d\right)^{\frac{5}{2}}x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^4/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/((-c^2*d*x^2 + d)^(5/2)*x^4), x)
```

maple [C] time = 0.52, size = 1875, normalized size = 6.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x^4/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] 6*b*(-d*(c^2*x^2-1))^(1/2)/(12*c^8*x^8-36*c^6*x^6+35*c^4*x^4-10*c^2*x^2-1)/
d^3/x*arcsin(c*x)*c^2+1/6*b*(-d*(c^2*x^2-1))^(1/2)/(12*c^8*x^8-36*c^6*x^6+3
5*c^4*x^4-10*c^2*x^2-1)/d^3/x^2*(-c^2*x^2+1)^(1/2)*c-64*b*(-d*(c^2*x^2-1))^
(1/2)/(12*c^8*x^8-36*c^6*x^6+35*c^4*x^4-10*c^2*x^2-1)/d^3*x^7*arcsin(c*x)*c
^10+160*b*(-d*(c^2*x^2-1))^(1/2)/(12*c^8*x^8-36*c^6*x^6+35*c^4*x^4-10*c^2*x
^2-1)/d^3*x^5*arcsin(c*x)*c^8-8/3*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/
2)/d^3/(c^2*x^2-1)*ln((I*c*x+(-c^2*x^2+1)^(1/2))^4-1)*c^3-344/3*b*(-d*(c^2*
x^2-1))^(1/2)/(12*c^8*x^8-36*c^6*x^6+35*c^4*x^4-10*c^2*x^2-1)/d^3*x^3*arcsi
n(c*x)*c^6-2*b*(-d*(c^2*x^2-1))^(1/2)/(12*c^8*x^8-36*c^6*x^6+35*c^4*x^4-10*
c^2*x^2-1)/d^3*x^2*c^5*(-c^2*x^2+1)^(1/2)+12*b*(-d*(c^2*x^2-1))^(1/2)/(12*c
^8*x^8-36*c^6*x^6+35*c^4*x^4-10*c^2*x^2-1)/d^3*x*arcsin(c*x)*c^4+128/3*I*b*
(-d*(c^2*x^2-1))^(1/2)/(12*c^8*x^8-36*c^6*x^6+35*c^4*x^4-10*c^2*x^2-1)/d^3*
x^11*c^14-448/3*I*b*(-d*(c^2*x^2-1))^(1/2)/(12*c^8*x^8-36*c^6*x^6+35*c^4*x^
4-10*c^2*x^2-1)/d^3*x^9*c^12+128*I*b*(-d*(c^2*x^2-1))^(1/2)/(12*c^8*x^8-36*
c^6*x^6+35*c^4*x^4-10*c^2*x^2-1)/d^3*x^4*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^7
-176/3*I*b*(-d*(c^2*x^2-1))^(1/2)/(12*c^8*x^8-36*c^6*x^6+35*c^4*x^4-10*c^2*
x^2-1)/d^3*x^2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^5-64*I*b*(-d*(c^2*x^2-1))^(
1/2)/(12*c^8*x^8-36*c^6*x^6+35*c^4*x^4-10*c^2*x^2-1)/d^3*x^6*arcsin(c*x)*(-
c^2*x^2+1)^(1/2)*c^9+560/3*I*b*(-d*(c^2*x^2-1))^(1/2)/(12*c^8*x^8-36*c^6*x^
6+35*c^4*x^4-10*c^2*x^2-1)/d^3*x^7*c^10-280/3*I*b*(-d*(c^2*x^2-1))^(1/2)/(1
```

```
2*c^8*x^8-36*c^6*x^6+35*c^4*x^4-10*c^2*x^2-1)/d^3*x^5*c^8+32/3*I*b*(-d*(c^2
*x^2-1))^(1/2)/(12*c^8*x^8-36*c^6*x^6+35*c^4*x^4-10*c^2*x^2-1)/d^3*x^3*c^6+
8/3*I*b*(-d*(c^2*x^2-1))^(1/2)/(12*c^8*x^8-36*c^6*x^6+35*c^4*x^4-10*c^2*x^2
-1)/d^3*x*c^4-1/3*a/d/x^3/(-c^2*d*x^2+d)^(3/2)+128/3*I*b*(-d*(c^2*x^2-1))^(
1/2)/(12*c^8*x^8-36*c^6*x^6+35*c^4*x^4-10*c^2*x^2-1)/d^3*x^9*(-c^2*x^2+1)*c
^12-320/3*I*b*(-d*(c^2*x^2-1))^(1/2)/(12*c^8*x^8-36*c^6*x^6+35*c^4*x^4-10*c
^2*x^2-1)/d^3*x^7*(-c^2*x^2+1)*c^10+80*I*b*(-d*(c^2*x^2-1))^(1/2)/(12*c^8*x
^8-36*c^6*x^6+35*c^4*x^4-10*c^2*x^2-1)/d^3*x^5*(-c^2*x^2+1)*c^8-8/3*I*b*(-d
*(c^2*x^2-1))^(1/2)/(12*c^8*x^8-36*c^6*x^6+35*c^4*x^4-10*c^2*x^2-1)/d^3*x*(
-c^2*x^2+1)*c^4+32/3*I*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^3/(c^2
*x^2-1)*arcsin(c*x)*c^3-16/3*I*b*(-d*(c^2*x^2-1))^(1/2)/(12*c^8*x^8-36*c^6*
x^6+35*c^4*x^4-10*c^2*x^2-1)/d^3*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^3-40/3*I*
b*(-d*(c^2*x^2-1))^(1/2)/(12*c^8*x^8-36*c^6*x^6+35*c^4*x^4-10*c^2*x^2-1)/d^
3*x^3*(-c^2*x^2+1)*c^6+2*b*(-d*(c^2*x^2-1))^(1/2)/(12*c^8*x^8-36*c^6*x^6+35
*c^4*x^4-10*c^2*x^2-1)/d^3*c^3*(-c^2*x^2+1)^(1/2)+1/3*b*(-d*(c^2*x^2-1))^(1
/2)/(12*c^8*x^8-36*c^6*x^6+35*c^4*x^4-10*c^2*x^2-1)/d^3/x^3*arcsin(c*x)+8/3
*a*c^4*x/d/(-c^2*d*x^2+d)^(3/2)+16/3*a*c^4/d^2*x/(-c^2*d*x^2+d)^(1/2)-2*a*c
^2/d/x/(-c^2*d*x^2+d)^(3/2)
```

maxima [A] time = 1.33, size = 255, normalized size = 0.82

$$\frac{1}{6}\,bc\left(\frac{8\,c^2\log\left(cx+1\right)}{d^{\frac{5}{2}}}+\frac{8\,c^2\log\left(cx-1\right)}{d^{\frac{5}{2}}}+\frac{16\,c^2\log(x)}{d^{\frac{5}{2}}}+\frac{1}{c^2d^{\frac{5}{2}}x^4-d^{\frac{5}{2}}x^2}\right)+\frac{1}{3}\left(\frac{16\,c^4x}{\sqrt{-c^2dx^2+d}\,d^2}+\frac{8\,c^4x}{\left(-c^2dx^2+d\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^4/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/6*b*c*(8*c^2*log(c*x + 1)/d^(5/2) + 8*c^2*log(c*x - 1)/d^(5/2) + 16*c^2*l
og(x)/d^(5/2) + 1/(c^2*d^(5/2)*x^4 - d^(5/2)*x^2)) + 1/3*(16*c^4*x/(sqrt(-c
^2*d*x^2 + d)*d^2) + 8*c^4*x/((-c^2*d*x^2 + d)^(3/2)*d) - 6*c^2/((-c^2*d*x^
2 + d)^(3/2)*d*x) - 1/((-c^2*d*x^2 + d)^(3/2)*d*x^3))*b*arcsin(c*x) + 1/3*(
16*c^4*x/(sqrt(-c^2*d*x^2 + d)*d^2) + 8*c^4*x/((-c^2*d*x^2 + d)^(3/2)*d) -
6*c^2/((-c^2*d*x^2 + d)^(3/2)*d*x) - 1/((-c^2*d*x^2 + d)^(3/2)*d*x^3))*a
```

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

$$\int \frac{a+b\,\mathrm{asin}\left(c\,x\right)}{x^4\,{\left(d-c^2\,d\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x^4*(d - c^2*d*x^2)^(5/2)),x)
```

```
[Out] int((a + b*asin(c*x))/(x^4*(d - c^2*d*x^2)^(5/2)), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x**4/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Timed out
```

3.140 $\int \frac{\sin^{-1}(ax)}{\left(c-a^2cx^2\right)^{7/2}}\,dx$

Optimal. Leaf size=210

$$-\frac{2}{15ac^3\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}}-\frac{1}{20ac^3\left(1-a^2x^2\right)^{3/2}\sqrt{c-a^2cx^2}}+\frac{4\sqrt{1-a^2x^2}\log\left(1-a^2x^2\right)}{15ac^3\sqrt{c-a^2cx^2}}+\frac{8x\sin^{-1}(ax)}{15c^3\sqrt{c-a^2cx^2}}+\frac{}{15}$$

```
[Out] 1/5*x*arcsin(a*x)/c/(-a^2*c*x^2+c)^(5/2)+4/15*x*arcsin(a*x)/c^2/(-a^2*c*x^2
+c)^(3/2)-1/20/a/c^3/(-a^2*x^2+1)^(3/2)/(-a^2*c*x^2+c)^(1/2)+8/15*x*arcsin(
a*x)/c^3/(-a^2*c*x^2+c)^(1/2)-2/15/a/c^3/(-a^2*x^2+1)^(1/2)/(-a^2*c*x^2+c)^
(1/2)+4/15*ln(-a^2*x^2+1)*(-a^2*x^2+1)^(1/2)/a/c^3/(-a^2*c*x^2+c)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {4655, 4653, 260, 261}

$$-\frac{2}{15ac^3\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}}-\frac{1}{20ac^3\left(1-a^2x^2\right)^{3/2}\sqrt{c-a^2cx^2}}+\frac{4\sqrt{1-a^2x^2}\log\left(1-a^2x^2\right)}{15ac^3\sqrt{c-a^2cx^2}}+\frac{8x\sin^{-1}(ax)}{15c^3\sqrt{c-a^2cx^2}}+\frac{}{15}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a*x]/(c - a^2*c*x^2)^(7/2),x]
```

```
[Out] -1/(20*a*c^3*(1 - a^2*x^2)^(3/2)*Sqrt[c - a^2*c*x^2]) - 2/(15*a*c^3*Sqrt[1
- a^2*x^2]*Sqrt[c - a^2*c*x^2]) + (x*ArcSin[a*x])/(5*c*(c - a^2*c*x^2)^(5/2
)) + (4*x*ArcSin[a*x])/(15*c^2*(c - a^2*c*x^2)^(3/2)) + (8*x*ArcSin[a*x])/(
15*c^3*Sqrt[c - a^2*c*x^2]) + (4*Sqrt[1 - a^2*x^2]*Log[1 - a^2*x^2])/(15*a*
c^3*Sqrt[c - a^2*c*x^2])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 4653

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n*Sqrt[1 - c^2*x^2])/(d*Sqrt[d + e*x^2]), Int[(x*(a + b*ArcSin[c*x])^(n
 - 1))/(1 - c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e,
 0] && GtQ[n, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\int \frac{\sin^{-1}(ax)}{\left(c-a^2cx^2\right)^{7/2}}\,dx = \frac{x\sin^{-1}(ax)}{5c\left(c-a^2cx^2\right)^{5/2}} + \frac{4\int \frac{\sin^{-1}(ax)}{\left(c-a^2cx^2\right)^{5/2}}\,dx}{5c} - \frac{\left(a\sqrt{1-a^2x^2}\right)\int \frac{x}{\left(1-a^2x^2\right)^3}\,dx}{5c^3\sqrt{c-a^2cx^2}}$$

$$= -\frac{1}{20ac^3\left(1-a^2x^2\right)^{3/2}\sqrt{c-a^2cx^2}} + \frac{x\sin^{-1}(ax)}{5c\left(c-a^2cx^2\right)^{5/2}} + \frac{4x\sin^{-1}(ax)}{15c^2\left(c-a^2cx^2\right)^{3/2}} + \frac{8\int \frac{\sin^{-1}(}{(c-a^2cx}}{15c^2}$$

$$= -\frac{1}{20ac^3\left(1-a^2x^2\right)^{3/2}\sqrt{c-a^2cx^2}} - \frac{2}{15ac^3\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}} + \frac{x\sin^{-1}(ax)}{5c\left(c-a^2cx^2\right)^{5/2}} + -\frac{}{1}$$

$$= -\frac{1}{20ac^3\left(1-a^2x^2\right)^{3/2}\sqrt{c-a^2cx^2}} - \frac{2}{15ac^3\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}} + \frac{x\sin^{-1}(ax)}{5c\left(c-a^2cx^2\right)^{5/2}} + -\frac{}{1}$$

Mathematica [A] time = 0.22, size = 111, normalized size = 0.53

$$-\frac{\sqrt{c-a^2cx^2}\left(\sqrt{1-a^2x^2}\left(8a^2x^2+16\left(a^2x^2-1\right)^2\log\left(a^2x^2-1\right)-11\right)+4ax\left(8a^4x^4-20a^2x^2+15\right)\sin^{-1}(ax)\right)}{60ac^4\left(a^2x^2-1\right)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a*x]/(c - a^2*c*x^2)^(7/2),x]
```

```
[Out] -1/60*(Sqrt[c - a^2*c*x^2]*(4*a*x*(15 - 20*a^2*x^2 + 8*a^4*x^4)*ArcSin[a*x]
 + Sqrt[1 - a^2*x^2]*(-11 + 8*a^2*x^2 + 16*(-1 + a^2*x^2)^2*Log[-1 + a^2*x^
2])))/(a*c^4*(-1 + a^2*x^2)^3)
```

fricas [F] time = 1.94, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-a^2cx^2+c}\,\arcsin(ax)}{a^8c^4x^8-4\,a^6c^4x^6+6\,a^4c^4x^4-4\,a^2c^4x^2+c^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)/(-a^2*c*x^2+c)^(7/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-a^2*c*x^2 + c)*arcsin(a*x)/(a^8*c^4*x^8 - 4*a^6*c^4*x^6 + 6*
a^4*c^4*x^4 - 4*a^2*c^4*x^2 + c^4), x)
```

giac [A] time = 0.81, size = 128, normalized size = 0.61

$$-\frac{1}{60}\sqrt{c}\left(\frac{16\log\left(\left|a^2x^2-1\right|\right)}{ac^4} - \frac{24\,a^4x^4-56\,a^2x^2+35}{\left(a^2x^2-1\right)^2ac^4}\right) - \frac{\sqrt{-a^2cx^2+c}\left(4\left(\frac{2\,a^4x^2}{c}-\frac{5\,a^2}{c}\right)x^2+\frac{15}{c}\right)x\arcsin(ax)}{15\left(a^2cx^2-c\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)/(-a^2*c*x^2+c)^(7/2),x, algorithm="giac")
```

```
[Out] -1/60*sqrt(c)*(16*log(abs(a^2*x^2 - 1))/(a*c^4) - (24*a^4*x^4 - 56*a^2*x^2
+ 35)/((a^2*x^2 - 1)^2*a*c^4)) - 1/15*sqrt(-a^2*c*x^2 + c)*(4*(2*a^4*x^2/c
- 5*a^2/c)*x^2 + 15/c)*x*arcsin(a*x)/(a^2*c*x^2 - c)^3
```

maple [C] time = 0.33, size = 409, normalized size = 1.95

$$\frac{16i\sqrt{-c\left(a^{2}x^{2}-1\right)}\,\sqrt{-a^{2}x^{2}+1}\,\arcsin\left(ax\right)}{15a\,c^{4}\left(a^{2}x^{2}-1\right)}-\frac{\sqrt{-c\left(a^{2}x^{2}-1\right)}\,\left(8a^{5}x^{5}-20a^{3}x^{3}+8i\sqrt{-a^{2}x^{2}+1}\,x^{4}a^{4}+15ax-16\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)/(-a^2*c*x^2+c)^(7/2),x)
```

```
[Out] 16/15*I*(-c*(a^2*x^2-1))^(1/2)*(-a^2*x^2+1)^(1/2)/a/c^4/(a^2*x^2-1)*arcsin(
a*x)-1/60*(-c*(a^2*x^2-1))^(1/2)*(8*a^5*x^5-20*a^3*x^3+8*I*(-a^2*x^2+1)^(1/
2)*x^4*a^4+15*a*x-16*I*(-a^2*x^2+1)^(1/2)*x^2*a^2+8*I*(-a^2*x^2+1)^(1/2))*(
64*I*x^8*a^8+64*(-a^2*x^2+1)^(1/2)*x^7*a^7-280*I*x^6*a^6-248*(-a^2*x^2+1)^(
1/2)*a^5*x^5+160*a^4*x^4*arcsin(a*x)+456*I*x^4*a^4+340*a^3*x^3*(-a^2*x^2+1)
^(1/2)-380*a^2*x^2*arcsin(a*x)-328*I*x^2*a^2-165*a*x*(-a^2*x^2+1)^(1/2)+256
*arcsin(a*x)+88*I)/c^4/(40*a^10*x^10-215*a^8*x^8+469*a^6*x^6-517*a^4*x^4+28
7*a^2*x^2-64)/a-8/15*(-c*(a^2*x^2-1))^(1/2)*(-a^2*x^2+1)^(1/2)/a/c^4/(a^2*x
^2-1)*ln(1+(I*a*x+(-a^2*x^2+1)^(1/2))^2)
```

maxima [A] time = 1.06, size = 149, normalized size = 0.71

$$-\frac{1}{60}a\left(\frac{3}{\left(a^{6}c^{\frac{5}{2}}x^{4}-2\,a^{4}c^{\frac{5}{2}}x^{2}+a^{2}c^{\frac{5}{2}}\right)c}-\frac{8}{\left(a^{4}c^{\frac{3}{2}}x^{2}-a^{2}c^{\frac{3}{2}}\right)c^{2}}+\frac{16\,\log\left(x^{2}-\frac{1}{a^{2}}\right)}{a^{2}c^{\frac{7}{2}}}\right)+\frac{1}{15}\left(\frac{8\,x}{\sqrt{-a^{2}cx^{2}+c}\,c^{3}}+\frac{4\,x}{\left(-a^{2}cx^{2}+\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)/(-a^2*c*x^2+c)^(7/2),x, algorithm="maxima")
```

```
[Out] -1/60*a*(3/((a^6*c^(5/2)*x^4 - 2*a^4*c^(5/2)*x^2 + a^2*c^(5/2))*c) - 8/((a^
4*c^(3/2)*x^2 - a^2*c^(3/2))*c^2) + 16*log(x^2 - 1/a^2)/(a^2*c^(7/2))) + 1/
15*(8*x/(sqrt(-a^2*c*x^2 + c)*c^3) + 4*x/((-a^2*c*x^2 + c)^(3/2)*c^2) + 3*x
/((-a^2*c*x^2 + c)^(5/2)*c))*arcsin(a*x)
```

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

$$\int \frac{\mathrm{asin}\left(a\,x\right)}{{\left(c-a^2\,c\,x^2\right)}^{7/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)/(c - a^2*c*x^2)^(7/2),x)
```

```
[Out] int(asin(a*x)/(c - a^2*c*x^2)^(7/2), x)
```

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

$$\int \frac{\operatorname{asin}{\left(ax \right)}}{\left(-c\left(ax-1\right)\left(ax+1\right)\right)^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)/(-a**2*c*x**2+c)**(7/2),x)
```

```
[Out] Integral(asin(a*x)/(-c*(a*x - 1)*(a*x + 1))**(7/2), x)
```

3.141 $\int \frac{(fx)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx$

Optimal. Leaf size=79

$$\frac{2(fx)^{5/2}\,{}_2F_1\left(\frac{1}{2},\frac{5}{4};\frac{9}{4};c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{5f}-\frac{4bc(fx)^{7/2}\,{}_3F_2\left(1,\frac{7}{4},\frac{7}{4};\frac{9}{4},\frac{11}{4};c^2x^2\right)}{35f^2}$$

```
[Out] 2/5*(f*x)^(5/2)*(a+b*arcsin(c*x))*hypergeom([1/2, 5/4],[9/4],c^2*x^2)/f-4/3
5*b*c*(f*x)^(7/2)*HypergeometricPFQ([1, 7/4, 7/4],[9/4, 11/4],c^2*x^2)/f^2
```

Rubi [A] time = 0.10, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.033, Rules used = {4711}

$$\frac{2(fx)^{5/2}\,{}_2F_1\left(\frac{1}{2},\frac{5}{4};\frac{9}{4};c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{5f}-\frac{4bc(fx)^{7/2}\,{}_3F_2\left(1,\frac{7}{4},\frac{7}{4};\frac{9}{4},\frac{11}{4};c^2x^2\right)}{35f^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f*x)^(3/2)*(a + b*ArcSin[c*x]))/Sqrt[1 - c^2*x^2],x]
```

```
[Out] (2*(f*x)^(5/2)*(a + b*ArcSin[c*x])*Hypergeometric2F1[1/2, 5/4, 9/4, c^2*x^2
])/(5*f) - (4*b*c*(f*x)^(7/2)*HypergeometricPFQ[{1, 7/4, 7/4}, {9/4, 11/4},
 c^2*x^2])/(35*f^2)
```

Rule 4711

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*(a + b*ArcSin[c*x])*Hypergeomet
ric2F1[1/2, (1 + m)/2, (3 + m)/2, c^2*x^2])/(Sqrt[d]*f*(m + 1)), x] - Simp[
(b*c*(f*x)^(m + 2)*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 +
 m/2}, c^2*x^2])/(Sqrt[d]*f^2*(m + 1)*(m + 2)), x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] &&  !IntegerQ[m]
```

Rubi steps

$$\int \frac{(fx)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx=\frac{2(fx)^{5/2}\left(a+b\sin^{-1}(cx)\right)\,{}_2F_1\left(\frac{1}{2},\frac{5}{4};\frac{9}{4};c^2x^2\right)}{5f}-\frac{4bc(fx)^{7/2}\,{}_3F_2\left(1,\frac{7}{4},\frac{7}{4};\frac{9}{4},\frac{11}{4};c^2x^2\right)}{35f^2}$$

Mathematica [A] time = 0.05, size = 68, normalized size = 0.86

$$\frac{2}{35}x(fx)^{3/2}\left(7\,{}_2F_1\left(\frac{1}{2},\frac{5}{4};\frac{9}{4};c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)-2bcx\,{}_3F_2\left(1,\frac{7}{4},\frac{7}{4};\frac{9}{4},\frac{11}{4};c^2x^2\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((f*x)^(3/2)*(a + b*ArcSin[c*x]))/Sqrt[1 - c^2*x^2],x]
```

```
[Out] (2*x*(f*x)^(3/2)*(7*(a + b*ArcSin[c*x])*Hypergeometric2F1[1/2, 5/4, 9/4, c^
2*x^2] - 2*b*c*x*HypergeometricPFQ[{1, 7/4, 7/4}, {9/4, 11/4}, c^2*x^2]))/3
5
```

fricas [F] time = 0.88, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}\left(bfx\arcsin(cx)+afx\right)\sqrt{fx}}{c^2x^2-1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)^(3/2)*(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="fr
icas")
```

```
[Out] integral(-sqrt(-c^2*x^2 + 1)*(b*f*x*arcsin(c*x) + a*f*x)*sqrt(f*x)/(c^2*x^2
 - 1), x)
```

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

$$\int \frac{(fx)^{\frac{3}{2}}(b \arcsin(cx) + a)}{\sqrt{-c^2x^2 + 1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)^(3/2)*(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="gi
ac")
```

```
[Out] integrate((f*x)^(3/2)*(b*arcsin(c*x) + a)/sqrt(-c^2*x^2 + 1), x)
```

maple [F] time = 0.38, size = 0, normalized size = 0.00

$$\int \frac{(fx)^{\frac{3}{2}}(a + b \arcsin(cx))}{\sqrt{-c^2x^2 + 1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x)^(3/2)*(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] int((f*x)^(3/2)*(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x)
```

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

$$\int \frac{(fx)^{\frac{3}{2}}(b \arcsin(cx) + a)}{\sqrt{-c^2x^2 + 1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)^(3/2)*(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="ma
xima")
```

```
[Out] integrate((f*x)^(3/2)*(b*arcsin(c*x) + a)/sqrt(-c^2*x^2 + 1), x)
```

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

$$\int \frac{(a + b \operatorname{asin}(c\,x))\,(f\,x)^{3/2}}{\sqrt{1 - c^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(f*x)^(3/2))/(1 - c^2*x^2)^(1/2),x)
```

```
[Out] int(((a + b*asin(c*x))*(f*x)^(3/2))/(1 - c^2*x^2)^(1/2), x)
```

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

$$\int \frac{(fx)^{\frac{3}{2}}(a + b \operatorname{asin}(cx))}{\sqrt{-(cx - 1)(cx + 1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)**(3/2)*(a+b*asin(c*x))/(-c**2*x**2+1)**(1/2),x)
```

```
[Out] Integral((f*x)**(3/2)*(a + b*asin(c*x))/sqrt(-(c*x - 1)*(c*x + 1)), x)
```

3.142 $\int \frac{(fx)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=137

$$\frac{2\sqrt{1-c^2x^2}\,(fx)^{5/2}\,{}_2F_1\left(\frac{1}{2},\frac{5}{4};\frac{9}{4};c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{5f\sqrt{d-c^2dx^2}}-\frac{4bc\sqrt{1-c^2x^2}\,(fx)^{7/2}\,{}_3F_2\left(1,\frac{7}{4},\frac{7}{4};\frac{9}{4},\frac{11}{4};c^2x^2\right)}{35f^2\sqrt{d-c^2dx^2}}$$

```
[Out] 2/5*(f*x)^(5/2)*(a+b*arcsin(c*x))*hypergeom([1/2, 5/4],[9/4],c^2*x^2)*(-c^2
*x^2+1)^(1/2)/f/(-c^2*d*x^2+d)^(1/2)-4/35*b*c*(f*x)^(7/2)*HypergeometricPFQ
([1, 7/4, 7/4],[9/4, 11/4],c^2*x^2)*(-c^2*x^2+1)^(1/2)/f^2/(-c^2*d*x^2+d)^(
1/2)
```

Rubi [A] time = 0.22, antiderivative size = 137, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {4713, 4711}

$$\frac{2\sqrt{1-c^2x^2}\,(fx)^{5/2}\,{}_2F_1\left(\frac{1}{2},\frac{5}{4};\frac{9}{4};c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{5f\sqrt{d-c^2dx^2}}-\frac{4bc\sqrt{1-c^2x^2}\,(fx)^{7/2}\,{}_3F_2\left(1,\frac{7}{4},\frac{7}{4};\frac{9}{4},\frac{11}{4};c^2x^2\right)}{35f^2\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f*x)^(3/2)*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (2*(f*x)^(5/2)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Hypergeometric2F1[1/2,
 5/4, 9/4, c^2*x^2])/(5*f*Sqrt[d - c^2*d*x^2]) - (4*b*c*(f*x)^(7/2)*Sqrt[1
- c^2*x^2]*HypergeometricPFQ[{1, 7/4, 7/4}, {9/4, 11/4}, c^2*x^2])/(35*f^2*
Sqrt[d - c^2*d*x^2])
```

Rule 4711

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*(a + b*ArcSin[c*x])*Hypergeomet
ric2F1[1/2, (1 + m)/2, (3 + m)/2, c^2*x^2])/(Sqrt[d]*f*(m + 1)), x] - Simp[
(b*c*(f*x)^(m + 2)*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 +
 m/2}, c^2*x^2])/(Sqrt[d]*f^2*(m + 1)*(m + 2)), x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] &&  !IntegerQ[m]
```

Rule 4713

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(
(f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c,
 d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&  !GtQ[d, 0] && (Integ
erQ[m] || EqQ[n, 1])
```

Rubi steps

$$\int \frac{(fx)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(fx)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}$$

$$= \frac{2(fx)^{5/2}\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right){}_2F_1\left(\frac{1}{2},\frac{5}{4};\frac{9}{4};c^2x^2\right)}{5f\sqrt{d-c^2dx^2}} - \frac{4bc(fx)^{7/2}\sqrt{1-c^2x}}{35f^2}$$

Mathematica [A] time = 0.04, size = 97, normalized size = 0.71

$$-\frac{2x\sqrt{1-c^2x^2}\,(fx)^{3/2}\left(2bcx\,{}_3F_2\left(1,\frac{7}{4},\frac{7}{4};\frac{9}{4},\frac{11}{4};c^2x^2\right)-7\,{}_2F_1\left(\frac{1}{2},\frac{5}{4};\frac{9}{4};c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)\right)}{35\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f*x)^(3/2)*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (-2*x*(f*x)^(3/2)*Sqrt[1 - c^2*x^2]*(-7*(a + b*ArcSin[c*x])*Hypergeometric2
F1[1/2, 5/4, 9/4, c^2*x^2] + 2*b*c*x*HypergeometricPFQ[{1, 7/4, 7/4}, {9/4,
 11/4}, c^2*x^2]))/(35*Sqrt[d - c^2*d*x^2])
```

fricas [F] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\left(bfx\arcsin(cx)+afx\right)\sqrt{fx}}{c^2dx^2-d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)^(3/2)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="
fricas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b*f*x*arcsin(c*x) + a*f*x)*sqrt(f*x)/(c^2*d
*x^2 - d), x)
```

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

$$\int\frac{(fx)^{\frac{3}{2}}(b\arcsin(cx)+a)}{\sqrt{-c^2dx^2+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)^(3/2)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="
giac")
```

```
[Out] integrate((f*x)^(3/2)*(b*arcsin(c*x) + a)/sqrt(-c^2*d*x^2 + d), x)
```

maple [F] time = 0.83, size = 0, normalized size = 0.00

$$\int\frac{(fx)^{\frac{3}{2}}(a+b\arcsin(cx))}{\sqrt{-c^2d\,x^2+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x)^(3/2)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] int((f*x)^(3/2)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x)
```

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

$$\int\frac{(fx)^{\frac{3}{2}}(b\arcsin(cx)+a)}{\sqrt{-c^2dx^2+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)^(3/2)*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="
maxima")
```

```
[Out] integrate((f*x)^(3/2)*(b*arcsin(c*x) + a)/sqrt(-c^2*d*x^2 + d), x)
```

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

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))\,\left(f\,x\right)^{3/2}}{\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(f*x)^(3/2))/(d - c^2*d*x^2)^(1/2),x)
[Out] int(((a + b*asin(c*x))*(f*x)^(3/2))/(d - c^2*d*x^2)^(1/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)**(3/2)*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(1/2),x)
[Out] Timed out
```

3.143 $\int x^m \left(d-c^2dx^2\right)^3 \left(a+b\sin^{-1}(cx)\right) dx$

Optimal. Leaf size=315

$$-\frac{c^6d^3x^{m+7}\left(a+b\sin^{-1}(cx)\right)}{m+7}+\frac{3c^4d^3x^{m+5}\left(a+b\sin^{-1}(cx)\right)}{m+5}-\frac{3c^2d^3x^{m+3}\left(a+b\sin^{-1}(cx)\right)}{m+3}+\frac{d^3x^{m+1}\left(a+b\sin^{-1}(cx)\right)}{m+1}$$

```
[Out] d^3*x^(1+m)*(a+b*arcsin(c*x))/(1+m)-3*c^2*d^3*x^(3+m)*(a+b*arcsin(c*x))/(3+
m)+3*c^4*d^3*x^(5+m)*(a+b*arcsin(c*x))/(5+m)-c^6*d^3*x^(7+m)*(a+b*arcsin(c*
x))/(7+m)-3*b*c*d^3*(35*m^3+455*m^2+1813*m+2161)*x^(2+m)*hypergeom([1/2, 1+
1/2*m],[2+1/2*m],c^2*x^2)/(m^2+3*m+2)/(m^3+15*m^2+71*m+105)^2-b*c*d^3*(m^4+
27*m^3+284*m^2+1329*m+2271)*x^(2+m)*(-c^2*x^2+1)^(1/2)/(7+m)^2/(m^2+8*m+15)
^2+b*c^3*d^3*(9+m)*(13+2*m)*x^(4+m)*(-c^2*x^2+1)^(1/2)/(5+m)^2/(7+m)^2-b*c^
5*d^3*x^(6+m)*(-c^2*x^2+1)^(1/2)/(7+m)^2
```

Rubi [A] time = 2.16, antiderivative size = 315, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.280$, Rules used = {270, 4687, 12, 1809, 1267, 459, 364}

$$-\frac{3c^2d^3x^{m+3}\left(a+b\sin^{-1}(cx)\right)}{m+3}+\frac{3c^4d^3x^{m+5}\left(a+b\sin^{-1}(cx)\right)}{m+5}-\frac{c^6d^3x^{m+7}\left(a+b\sin^{-1}(cx)\right)}{m+7}+\frac{d^3x^{m+1}\left(a+b\sin^{-1}(cx)\right)}{m+1}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x]),x]
```

```
[Out] -((b*c*d^3*(2271 + 1329*m + 284*m^2 + 27*m^3 + m^4)*x^(2 + m)*Sqrt[1 - c^2*
x^2])/((3 + m)^2*(5 + m)^2*(7 + m)^2)) + (b*c^3*d^3*(9 + m)*(13 + 2*m)*x^(4
 + m)*Sqrt[1 - c^2*x^2])/((5 + m)^2*(7 + m)^2) - (b*c^5*d^3*x^(6 + m)*Sqrt[
1 - c^2*x^2])/(7 + m)^2 + (d^3*x^(1 + m)*(a + b*ArcSin[c*x]))/(1 + m) - (3*
c^2*d^3*x^(3 + m)*(a + b*ArcSin[c*x]))/(3 + m) + (3*c^4*d^3*x^(5 + m)*(a +
b*ArcSin[c*x]))/(5 + m) - (c^6*d^3*x^(7 + m)*(a + b*ArcSin[c*x]))/(7 + m) -
 (3*b*c*d^3*(2161 + 1813*m + 455*m^2 + 35*m^3)*x^(2 + m)*Hypergeometric2F1[
1/2, (2 + m)/2, (4 + m)/2, c^2*x^2])/((1 + m)*(2 + m)*(3 + m)^2*(5 + m)^2*(
7 + m)^2)
```

Rule 12

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

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 459

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

```
 + 1) + 1)), Int[(e*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, d, e, m,
n, p}, x] && NeQ[b*c - a*d, 0] && NeQ[m + n*(p + 1) + 1, 0]
```

Rule 1267

```
Int[((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (
c_.)*(x_)^4)^(p_.), x_Symbol] :> Simp[(c^p*(f*x)^(m + 4*p - 1)*(d + e*x^2)^
(q + 1))/(e*f^(4*p - 1)*(m + 4*p + 2*q + 1)), x] + Dist[1/(e*(m + 4*p + 2*q
 + 1)), Int[(f*x)^m*(d + e*x^2)^q*ExpandToSum[e*(m + 4*p + 2*q + 1)*((a + b
*x^2 + c*x^4)^p - c^p*x^(4*p)) - d*c^p*(m + 4*p - 1)*x^(4*p - 2), x], x], x
] /; FreeQ[{a, b, c, d, e, f, m, q}, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[p, 0
] &&  !IntegerQ[q] && NeQ[m + 4*p + 2*q + 1, 0]
```

Rule 1809

```
Int[(Pq_)*((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2)^(p_), x_Symbol] :> With[
{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[(f*(c*x)^(m + q -
1)*(a + b*x^2)^(p + 1))/(b*c^(q - 1)*(m + q + 2*p + 1)), x] + Dist[1/(b*(m
+ q + 2*p + 1)), Int[(c*x)^m*(a + b*x^2)^p*ExpandToSum[b*(m + q + 2*p + 1)*
Pq - b*f*(m + q + 2*p + 1)*x^q - a*f*(m + q - 1)*x^(q - 2), x], x], x] /; G
tQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, m, p}, x] && PolyQ[
Pq, x] && ( !IGtQ[m, 0] || IGtQ[p + 1/2, -1])
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rubi steps

$$\int x^m \left(d-c^2dx^2\right)^3 \left(a+b\sin^{-1}(cx)\right) dx = \frac{d^3x^{1+m}\left(a+b\sin^{-1}(cx)\right)}{1+m} - \frac{3c^2d^3x^{3+m}\left(a+b\sin^{-1}(cx)\right)}{3+m} + \frac{3c^4d^3x^{5+}}{}$$

$$= \frac{d^3x^{1+m}\left(a+b\sin^{-1}(cx)\right)}{1+m} - \frac{3c^2d^3x^{3+m}\left(a+b\sin^{-1}(cx)\right)}{3+m} + \frac{3c^4d^3x^{5+}}{}$$

$$= -\frac{bc^5d^3x^{6+m}\sqrt{1-c^2x^2}}{(7+m)^2} + \frac{d^3x^{1+m}\left(a+b\sin^{-1}(cx)\right)}{1+m} - \frac{3c^2d^3x^{3+m}\left(a+\right.}{3+}$$

$$= \frac{bc^3d^3(9+m)(13+2m)x^{4+m}\sqrt{1-c^2x^2}}{(5+m)^2(7+m)^2} - \frac{bc^5d^3x^{6+m}\sqrt{1-c^2x^2}}{(7+m)^2} + \frac{d^3}{}$$

$$= -\frac{bcd^3\left(2271+1329m+284m^2+27m^3+m^4\right)x^{2+m}\sqrt{1-c^2x^2}}{(3+m)^2(5+m)^2(7+m)^2} + \frac{bc^3}{}$$

$$= -\frac{bcd^3\left(2271+1329m+284m^2+27m^3+m^4\right)x^{2+m}\sqrt{1-c^2x^2}}{(3+m)^2(5+m)^2(7+m)^2} + \frac{bc^3}{}$$

Mathematica [A] time = 0.47, size = 256, normalized size = 0.81

$$\frac{x^{m+1}\left(\frac{6d\left(-\frac{4d^2\left((m+2)\left(m\left(c^2x^2-1\right)+c^2x^2-3\right)\left(a+b\sin^{-1}(cx)\right)+bc(m+1)x\,{}_2F_1\left(-\frac{1}{2},\frac{m}{2}+1;\frac{m}{2}+2;c^2x^2\right)+2bcx\,{}_2F_1\left(\frac{1}{2},\frac{m}{2}+1;\frac{m}{2}+2;c^2x^2\right)\right)}{(m+1)(m+2)(m+3)}+\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)-\frac{bcd^2x}{}\right.}{m+5}\right.}{m+7}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x]),x]
```

```
[Out] (x^(1 + m)*((d - c^2*d*x^2)^3*(a + b*ArcSin[c*x]) - (b*c*d^3*x*Hypergeometr
ic2F1[-5/2, 1 + m/2, 2 + m/2, c^2*x^2])/(2 + m) + (6*d*((d - c^2*d*x^2)^2*(
a + b*ArcSin[c*x]) - (b*c*d^2*x*Hypergeometric2F1[-3/2, 1 + m/2, 2 + m/2, c
^2*x^2])/(2 + m) - (4*d^2*((2 + m)*(-3 + c^2*x^2 + m*(-1 + c^2*x^2))*(a + b
*ArcSin[c*x]) + b*c*(1 + m)*x*Hypergeometric2F1[-1/2, 1 + m/2, 2 + m/2, c^2
*x^2] + 2*b*c*x*Hypergeometric2F1[1/2, 1 + m/2, 2 + m/2, c^2*x^2]))/((1 + m
)*(2 + m)*(3 + m))))/(5 + m)))/(7 + m)
```

fricas [F] time = 0.69, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(ac^6d^3x^6-3\,ac^4d^3x^4+3\,ac^2d^3x^2-ad^3+\left(bc^6d^3x^6-3\,bc^4d^3x^4+3\,bc^2d^3x^2-bd^3\right)\arcsin(cx)\right)x^m,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral(-(a*c^6*d^3*x^6 - 3*a*c^4*d^3*x^4 + 3*a*c^2*d^3*x^2 - a*d^3 + (b*c
^6*d^3*x^6 - 3*b*c^4*d^3*x^4 + 3*b*c^2*d^3*x^2 - b*d^3)*arcsin(c*x))*x^m, x
)
```

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

$$\int -\left(c^2dx^2-d\right)^3(b\arcsin(cx)+a)x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] integrate(-(c^2*d*x^2 - d)^3*(b*arcsin(c*x) + a)*x^m, x)
```

maple [F] time = 12.57, size = 0, normalized size = 0.00

$$\int x^m\left(-c^2d\,x^2+d\right)^3(a+b\arcsin(cx))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x)),x)
```

```
[Out] int(x^m*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x)),x)
```

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

$$-\frac{ac^6d^3x^{m+7}}{m+7}+\frac{3\,ac^4d^3x^{m+5}}{m+5}-\frac{3\,ac^2d^3x^{m+3}}{m+3}+\frac{ad^3x^{m+1}}{m+1}-\frac{\left(\left(bc^6d^3m^3+9\,bc^6d^3m^2+23\,bc^6d^3m+15\,bc^6d^3\right)x^7-3\left(bc^4d\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] -a*c^6*d^3*x^(m + 7)/(m + 7) + 3*a*c^4*d^3*x^(m + 5)/(m + 5) - 3*a*c^2*d^3*
x^(m + 3)/(m + 3) + a*d^3*x^(m + 1)/(m + 1) - (((b*c^6*d^3*m^3 + 9*b*c^6*d^
3*m^2 + 23*b*c^6*d^3*m + 15*b*c^6*d^3)*x^7 - 3*(b*c^4*d^3*m^3 + 11*b*c^4*d^
3*m^2 + 31*b*c^4*d^3*m + 21*b*c^4*d^3)*x^5 + 3*(b*c^2*d^3*m^3 + 13*b*c^2*d^
3*m^2 + 47*b*c^2*d^3*m + 35*b*c^2*d^3)*x^3 - (b*d^3*m^3 + 15*b*d^3*m^2 + 71
*b*d^3*m + 105*b*d^3)*x)*x^m*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + (
m^4 + 16*m^3 + 86*m^2 + 176*m + 105)*integrate(-((b*c^7*d^3*m^3 + 9*b*c^7*d
^3*m^2 + 23*b*c^7*d^3*m + 15*b*c^7*d^3)*x^7 - 3*(b*c^5*d^3*m^3 + 11*b*c^5*d
^3*m^2 + 31*b*c^5*d^3*m + 21*b*c^5*d^3)*x^5 + 3*(b*c^3*d^3*m^3 + 13*b*c^3*d
^3*m^2 + 47*b*c^3*d^3*m + 35*b*c^3*d^3)*x^3 - (b*c*d^3*m^3 + 15*b*c*d^3*m^2
 + 71*b*c*d^3*m + 105*b*c*d^3)*x)*sqrt(c*x + 1)*sqrt(-c*x + 1)*x^m/(m^4 + 1
6*m^3 - (c^2*m^4 + 16*c^2*m^3 + 86*c^2*m^2 + 176*c^2*m + 105*c^2)*x^2 + 86*
m^2 + 176*m + 105), x))/(m^4 + 16*m^3 + 86*m^2 + 176*m + 105)
```

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

$$\int x^m\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(d-c^2\,d\,x^2\right)}^3 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a + b*asin(c*x))*(d - c^2*d*x^2)^3,x)
```

```
[Out] int(x^m*(a + b*asin(c*x))*(d - c^2*d*x^2)^3, x)
```

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

$$-d^3\left(\int(-ax^m)\,dx+\int(-bx^m\operatorname{asin}(cx))\,dx+\int 3ac^2x^2x^m\,dx+\int\left(-3ac^4x^4x^m\right)dx+\int ac^6x^6x^m\,dx+\int 3bc$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(-c**2*d*x**2+d)**3*(a+b*asin(c*x)),x)
```

```
[Out] -d**3*(Integral(-a*x**m, x) + Integral(-b*x**m*asin(c*x), x) + Integral(3*a
*c**2*x**2*x**m, x) + Integral(-3*a*c**4*x**4*x**m, x) + Integral(a*c**6*x*
*6*x**m, x) + Integral(3*b*c**2*x**2*x**m*asin(c*x), x) + Integral(-3*b*c**
4*x**4*x**m*asin(c*x), x) + Integral(b*c**6*x**6*x**m*asin(c*x), x))
```

3.144 $\int x^m \left(d-c^2dx^2\right)^2 \left(a+b\sin^{-1}(cx)\right) dx$

Optimal. Leaf size=217

$$\frac{c^4d^2x^{m+5}\left(a+b\sin^{-1}(cx)\right)}{m+5}-\frac{2c^2d^2x^{m+3}\left(a+b\sin^{-1}(cx)\right)}{m+3}+\frac{d^2x^{m+1}\left(a+b\sin^{-1}(cx)\right)}{m+1}-\frac{bcd^2\left(15m^2+100m+149\right)x}{(m+1)(m+2)(}$$

```
[Out] d^2*x^(1+m)*(a+b*arcsin(c*x))/(1+m)-2*c^2*d^2*x^(3+m)*(a+b*arcsin(c*x))/(3+
m)+c^4*d^2*x^(5+m)*(a+b*arcsin(c*x))/(5+m)-b*c*d^2*(15*m^2+100*m+149)*x^(2+
m)*hypergeom([1/2, 1+1/2*m],[2+1/2*m],c^2*x^2)/(m^2+3*m+2)/(m^2+8*m+15)^2-b
*c*d^2*(m^2+13*m+38)*x^(2+m)*(-c^2*x^2+1)^(1/2)/(3+m)^2/(5+m)^2+b*c^3*d^2*x
^(4+m)*(-c^2*x^2+1)^(1/2)/(5+m)^2
```

Rubi [A] time = 0.31, antiderivative size = 217, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.240$, Rules used = {270, 4687, 12, 1267, 459, 364}

$$-\frac{2c^2d^2x^{m+3}\left(a+b\sin^{-1}(cx)\right)}{m+3}+\frac{c^4d^2x^{m+5}\left(a+b\sin^{-1}(cx)\right)}{m+5}+\frac{d^2x^{m+1}\left(a+b\sin^{-1}(cx)\right)}{m+1}-\frac{bcd^2\left(15m^2+100m+149\right)}{(m+1)(m+2)}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x]),x]
```

```
[Out] -((b*c*d^2*(38 + 13*m + m^2)*x^(2 + m)*Sqrt[1 - c^2*x^2])/((3 + m)^2*(5 + m
)^2)) + (b*c^3*d^2*x^(4 + m)*Sqrt[1 - c^2*x^2])/(5 + m)^2 + (d^2*x^(1 + m)*
(a + b*ArcSin[c*x]))/(1 + m) - (2*c^2*d^2*x^(3 + m)*(a + b*ArcSin[c*x]))/(3
 + m) + (c^4*d^2*x^(5 + m)*(a + b*ArcSin[c*x]))/(5 + m) - (b*c*d^2*(149 + 1
00*m + 15*m^2)*x^(2 + m)*Hypergeometric2F1[1/2, (2 + m)/2, (4 + m)/2, c^2*x
^2])/((1 + m)*(2 + m)*(3 + m)^2*(5 + m)^2)
```

Rule 12

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

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 459

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

Rule 1267

```
Int[((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (
c_.)*(x_)^4)^(p_.), x_Symbol] :> Simp[(c^p*(f*x)^(m + 4*p - 1)*(d + e*x^2)^
(q + 1))/(e*f^(4*p - 1)*(m + 4*p + 2*q + 1)), x] + Dist[1/(e*(m + 4*p + 2*q
 + 1)), Int[(f*x)^m*(d + e*x^2)^q*ExpandToSum[e*(m + 4*p + 2*q + 1)*((a + b
*x^2 + c*x^4)^p - c^p*x^(4*p)) - d*c^p*(m + 4*p - 1)*x^(4*p - 2), x], x], x
] /; FreeQ[{a, b, c, d, e, f, m, q}, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[p, 0
] &&  !IntegerQ[q] && NeQ[m + 4*p + 2*q + 1, 0]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rubi steps

$$\int x^m \left(d-c^2dx^2\right)^2 \left(a+b\sin^{-1}(cx)\right)\,dx = \frac{d^2x^{1+m}\left(a+b\sin^{-1}(cx)\right)}{1+m} - \frac{2c^2d^2x^{3+m}\left(a+b\sin^{-1}(cx)\right)}{3+m} + \frac{c^4d^2x^{5+m}}{}$$

$$= \frac{d^2x^{1+m}\left(a+b\sin^{-1}(cx)\right)}{1+m} - \frac{2c^2d^2x^{3+m}\left(a+b\sin^{-1}(cx)\right)}{3+m} + \frac{c^4d^2x^{5+m}}{}$$

$$= \frac{bc^3d^2x^{4+m}\sqrt{1-c^2x^2}}{(5+m)^2} + \frac{d^2x^{1+m}\left(a+b\sin^{-1}(cx)\right)}{1+m} - \frac{2c^2d^2x^{3+m}\left(a+\right.}{3+m}$$

$$= -\frac{bcd^2\left(38+13m+m^2\right)x^{2+m}\sqrt{1-c^2x^2}}{(3+m)^2(5+m)^2} + \frac{bc^3d^2x^{4+m}\sqrt{1-c^2x^2}}{(5+m)^2} + \frac{d}{}$$

$$= -\frac{bcd^2\left(38+13m+m^2\right)x^{2+m}\sqrt{1-c^2x^2}}{(3+m)^2(5+m)^2} + \frac{bc^3d^2x^{4+m}\sqrt{1-c^2x^2}}{(5+m)^2} + \frac{d}{}$$

Mathematica [A] time = 0.02, size = 187, normalized size = 0.86

$$\frac{x^{m+1}\left(-\frac{4d^2\left((m+2)\left(m\left(c^2x^2-1\right)+c^2x^2-3\right)\left(a+b\sin^{-1}(cx)\right)+bc(m+1)x\,{}_2F_1\left(-\frac{1}{2},\frac{m}{2}+1;\frac{m}{2}+2;c^2x^2\right)+2bcx\,{}_2F_1\left(\frac{1}{2},\frac{m}{2}+1;\frac{m}{2}+2;c^2x^2\right)\right)}{(m+1)(m+2)(m+3)} + \left(d-c^2dx^2\right)\right.}{m+5}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x]),x]
```

```
[Out] (x^(1 + m)*((d - c^2*d*x^2)^2*(a + b*ArcSin[c*x]) - (b*c*d^2*x*Hypergeometr
ic2F1[-3/2, 1 + m/2, 2 + m/2, c^2*x^2])/(2 + m) - (4*d^2*((2 + m)*(-3 + c^2
*x^2 + m*(-1 + c^2*x^2))*(a + b*ArcSin[c*x]) + b*c*(1 + m)*x*Hypergeometric
2F1[-1/2, 1 + m/2, 2 + m/2, c^2*x^2] + 2*b*c*x*Hypergeometric2F1[1/2, 1 + m
/2, 2 + m/2, c^2*x^2]))/((1 + m)*(2 + m)*(3 + m))))/(5 + m)
```

fricas [F] time = 1.65, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(ac^4d^2x^4 - 2\,ac^2d^2x^2 + ad^2 + \left(bc^4d^2x^4 - 2\,bc^2d^2x^2 + bd^2\right)\arcsin\left(cx\right)\right)x^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral((a*c^4*d^2*x^4 - 2*a*c^2*d^2*x^2 + a*d^2 + (b*c^4*d^2*x^4 - 2*b*c^
2*d^2*x^2 + b*d^2)*arcsin(c*x))*x^m, x)
```

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

$$\int \left(c^2dx^2 - d\right)^2 (b\arcsin(cx) + a)x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] integrate((c^2*d*x^2 - d)^2*(b*arcsin(c*x) + a)*x^m, x)
```

maple [F] time = 7.35, size = 0, normalized size = 0.00

$$\int x^m \left(-c^2d\,x^2 + d\right)^2 (a + b\arcsin(cx))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x)),x)
```

```
[Out] int(x^m*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x)),x)
```

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

$$\frac{ac^4d^2x^{m+5}}{m+5} - \frac{2\,ac^2d^2x^{m+3}}{m+3} + \frac{ad^2x^{m+1}}{m+1} + \frac{\left(\left(bc^4d^2m^2 + 4\,bc^4d^2m + 3\,bc^4d^2\right)x^5 - 2\left(bc^2d^2m^2 + 6\,bc^2d^2m + 5\,bc^2d^2\right)x^3 +}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] a*c^4*d^2*x^(m + 5)/(m + 5) - 2*a*c^2*d^2*x^(m + 3)/(m + 3) + a*d^2*x^(m +
1)/(m + 1) + (((b*c^4*d^2*m^2 + 4*b*c^4*d^2*m + 3*b*c^4*d^2)*x^5 - 2*(b*c^2
*d^2*m^2 + 6*b*c^2*d^2*m + 5*b*c^2*d^2)*x^3 + (b*d^2*m^2 + 8*b*d^2*m + 15*b
*d^2)*x)*x^m*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + (m^3 + 9*m^2 + 23
*m + 15)*integrate(-((b*c^5*d^2*m^2 + 4*b*c^5*d^2*m + 3*b*c^5*d^2)*x^5 - 2*
(b*c^3*d^2*m^2 + 6*b*c^3*d^2*m + 5*b*c^3*d^2)*x^3 + (b*c*d^2*m^2 + 8*b*c*d^
2*m + 15*b*c*d^2)*x)*sqrt(c*x + 1)*sqrt(-c*x + 1)*x^m/(m^3 - (c^2*m^3 + 9*c
^2*m^2 + 23*c^2*m + 15*c^2)*x^2 + 9*m^2 + 23*m + 15), x))/(m^3 + 9*m^2 + 23
*m + 15)
```

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

$$\int x^m\,\left(a + b\,\mathrm{asin}(c\,x)\right)\,\left(d - c^2\,d\,x^2\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a + b*asin(c*x))*(d - c^2*d*x^2)^2,x)
```

```
[Out] int(x^m*(a + b*asin(c*x))*(d - c^2*d*x^2)^2, x)
```

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

$$d^2\left(\int ax^m\,dx + \int bx^m\operatorname{asin}(cx)\,dx + \int \left(-2ac^2x^2x^m\right)dx + \int ac^4x^4x^m\,dx + \int \left(-2bc^2x^2x^m\operatorname{asin}(cx)\right)dx + \int bc\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(-c**2*d*x**2+d)**2*(a+b*asin(c*x)),x)
```

```
[Out] d**2*(Integral(a*x**m, x) + Integral(b*x**m*asin(c*x), x) + Integral(-2*a*c
**2*x**2*x**m, x) + Integral(a*c**4*x**4*x**m, x) + Integral(-2*b*c**2*x**2
*x**m*asin(c*x), x) + Integral(b*c**4*x**4*x**m*asin(c*x), x))
```

3.145 $\int x^m \left(d-c^2 d x^2\right) \left(a+b \sin^{-1}(cx)\right) \, dx$

Optimal. Leaf size=129

$$-\frac{c^2 d x^{m+3} \left(a+b \sin^{-1}(cx)\right)}{m+3}+\frac{d x^{m+1} \left(a+b \sin^{-1}(cx)\right)}{m+1}-\frac{bcd(3m+7)x^{m+2} {}_2F_1\left(\frac{1}{2},\frac{m+2}{2};\frac{m+4}{2};c^2x^2\right)}{(m+1)(m+2)(m+3)^2}-\frac{bcd\sqrt{1-c^2x^2}}{(m+3)}$$

```
[Out] d*x^(1+m)*(a+b*arcsin(c*x))/(1+m)-c^2*d*x^(3+m)*(a+b*arcsin(c*x))/(3+m)-b*c
*d*(7+3*m)*x^(2+m)*hypergeom([1/2, 1+1/2*m],[2+1/2*m],c^2*x^2)/(3+m)^2/(m^2
+3*m+2)-b*c*d*x^(2+m)*(-c^2*x^2+1)^(1/2)/(3+m)^2
```

Rubi [A] time = 0.14, antiderivative size = 129, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {14, 4687, 12, 459, 364}

$$-\frac{c^2 d x^{m+3} \left(a+b \sin^{-1}(cx)\right)}{m+3}+\frac{d x^{m+1} \left(a+b \sin^{-1}(cx)\right)}{m+1}-\frac{bcd(3m+7)x^{m+2} {}_2F_1\left(\frac{1}{2},\frac{m+2}{2};\frac{m+4}{2};c^2x^2\right)}{(m+1)(m+2)(m+3)^2}-\frac{bcd\sqrt{1-c^2x^2}}{(m+3)}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(d - c^2*d*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] -((b*c*d*x^(2 + m)*Sqrt[1 - c^2*x^2])/(3 + m)^2) + (d*x^(1 + m)*(a + b*ArcS
in[c*x]))/(1 + m) - (c^2*d*x^(3 + m)*(a + b*ArcSin[c*x]))/(3 + m) - (b*c*d*
(7 + 3*m)*x^(2 + m)*Hypergeometric2F1[1/2, (2 + m)/2, (4 + m)/2, c^2*x^2])/
((1 + m)*(2 + m)*(3 + m)^2)
```

Rule 12

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

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] && !LinearQ[u, x] && !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] && !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 459

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

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
```

```
IGtQ[p, 0]
```

Rubi steps

$$\int x^m\left(d-c^2dx^2\right)\left(a+b\sin^{-1}(cx)\right)dx=\frac{dx^{1+m}\left(a+b\sin^{-1}(cx)\right)}{1+m}-\frac{c^2dx^{3+m}\left(a+b\sin^{-1}(cx)\right)}{3+m}-(bc)\int\frac{dx^{1+m}\left(\frac{}{1+}\right.}{\sqrt{1-}}$$

$$=\frac{dx^{1+m}\left(a+b\sin^{-1}(cx)\right)}{1+m}-\frac{c^2dx^{3+m}\left(a+b\sin^{-1}(cx)\right)}{3+m}-(bcd)\int\frac{x^{1+m}\left(\frac{}{1+}\right.}{\sqrt{1-}}$$

$$=-\frac{bcdx^{2+m}\sqrt{1-c^2x^2}}{(3+m)^2}+\frac{dx^{1+m}\left(a+b\sin^{-1}(cx)\right)}{1+m}-\frac{c^2dx^{3+m}\left(a+b\sin^{-1}(\right.}{3+m}$$

$$=-\frac{bcdx^{2+m}\sqrt{1-c^2x^2}}{(3+m)^2}+\frac{dx^{1+m}\left(a+b\sin^{-1}(cx)\right)}{1+m}-\frac{c^2dx^{3+m}\left(a+b\sin^{-1}(\right.}{3+m}$$

Mathematica [A] time = 0.06, size = 118, normalized size = 0.91

$$-\frac{dx^{m+1}\left((m+2)\left(m\left(c^2x^2-1\right)+c^2x^2-3\right)\left(a+b\sin^{-1}(cx)\right)+bc(m+1)x\,{}_2F_1\left(-\frac{1}{2},\frac{m}{2}+1;\frac{m}{2}+2;c^2x^2\right)+2bcx\,{}_2F_1\right.}{(m+1)(m+2)(m+3)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*(d - c^2*d*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] -((d*x^(1 + m)*((2 + m)*(-3 + c^2*x^2 + m*(-1 + c^2*x^2))*(a + b*ArcSin[c*x
]) + b*c*(1 + m)*x*Hypergeometric2F1[-1/2, 1 + m/2, 2 + m/2, c^2*x^2] + 2*b
*c*x*Hypergeometric2F1[1/2, 1 + m/2, 2 + m/2, c^2*x^2]))/((1 + m)*(2 + m)*(
3 + m)))
```

fricas [F] time = 0.73, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(ac^2dx^2-ad+\left(bc^2dx^2-bd\right)\arcsin(cx)\right)x^m,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral(-(a*c^2*d*x^2 - a*d + (b*c^2*d*x^2 - b*d)*arcsin(c*x))*x^m, x)
```

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

$$\int-\left(c^2dx^2-d\right)(b\arcsin(cx)+a)x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] integrate(-(c^2*d*x^2 - d)*(b*arcsin(c*x) + a)*x^m, x)
```

maple [F] time = 4.43, size = 0, normalized size = 0.00

$$\int x^m\left(-c^2d\,x^2+d\right)(a+b\arcsin(cx))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(-c^2*d*x^2+d)*(a+b*arcsin(c*x)),x)
```

```
[Out] int(x^m*(-c^2*d*x^2+d)*(a+b*arcsin(c*x)),x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int x^m\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\left(d-c^2\,d\,x^2\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a + b*asin(c*x))*(d - c^2*d*x^2),x)
```

```
[Out] int(x^m*(a + b*asin(c*x))*(d - c^2*d*x^2), x)
```

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

$$-d\left(\int\left(-ax^m\right)\,dx+\int\left(-bx^m\operatorname{asin}\left(cx\right)\right)\,dx+\int ac^2x^2x^m\,dx+\int bc^2x^2x^m\operatorname{asin}\left(cx\right)dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(-c**2*d*x**2+d)*(a+b*asin(c*x)),x)
```

```
[Out] -d*(Integral(-a*x**m, x) + Integral(-b*x**m*asin(c*x), x) + Integral(a*c**2
*x**2*x**m, x) + Integral(b*c**2*x**2*x**m*asin(c*x), x))
```

3.146 $\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)}{d-c^2dx^2}\,dx$

Optimal. Leaf size=28

$$\text{Int}\left(\frac{x^m\left(a+b\sin^{-1}(cx)\right)}{d-c^2dx^2},x\right)$$

```
[Out] Unintegrable(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)}{d-c^2dx^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(x^m*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2),x]
[Out] Defer[Int][(x^m*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2), x]
```

Rubi steps

$$\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)}{d-c^2dx^2}\,dx=\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)}{d-c^2dx^2}\,dx$$

Mathematica [A] time = 4.01, size = 0, normalized size = 0.00

$$\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)}{d-c^2dx^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(x^m*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2),x]
[Out] Integrate[(x^m*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2), x]
```

fricas [A] time = 0.73, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{(b\arcsin(cx)+a)x^m}{c^2dx^2-d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d),x, algorithm="fricas")
[Out] integral(-(b*arcsin(c*x) + a)*x^m/(c^2*d*x^2 - d), x)
```

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

$$\int -\frac{(b\arcsin(cx)+a)x^m}{c^2dx^2-d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d),x, algorithm="giac")
[Out] integrate(-(b*arcsin(c*x) + a)*x^m/(c^2*d*x^2 - d), x)
```

maple [A] time = 0.65, size = 0, normalized size = 0.00

$$\int \frac{x^{m} \left(a +b \arcsin \left(c x \right)\right)}{-c^{2} d \,x^{2}+d}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d),x)
```

```
[Out] int(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d),x)
```

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

$$-\int \frac{(b \arcsin(cx) + a)x^m}{c^2dx^2 - d}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d),x, algorithm="maxima")
```

```
[Out] -integrate((b*arcsin(c*x) + a)*x^m/(c^2*d*x^2 - d), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{x^m\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{d-c^2\,d\,x^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*(a + b*asin(c*x)))/(d - c^2*d*x^2),x)
```

```
[Out] int((x^m*(a + b*asin(c*x)))/(d - c^2*d*x^2), x)
```

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

$$-\frac{\int \frac{ax^{m}}{c^{2}x^{2}-1}\, dx + \int \frac{bx^{m}\operatorname{asin}(cx)}{c^{2}x^{2}-1}\, dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(a+b*asin(c*x))/(-c**2*d*x**2+d),x)
```

```
[Out] -(Integral(a*x**m/(c**2*x**2 - 1), x) + Integral(b*x**m*asin(c*x)/(c**2*x**
2 - 1), x))/d
```

3.147 $\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^2}\,dx$

Optimal. Leaf size=117

$$\frac{(1-m)\text{Int}\left(\frac{x^m\left(a+b\sin^{-1}(cx)\right)}{d-c^2dx^2},x\right)}{2d}+\frac{x^{m+1}\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(1-c^2x^2\right)}-\frac{bcx^{m+2}\,{}_2F_1\left(\frac{3}{2},\frac{m+2}{2};\frac{m+4}{2};c^2x^2\right)}{2d^2(m+2)}$$

```
[Out] 1/2*x^(1+m)*(a+b*arcsin(c*x))/d^2/(-c^2*x^2+1)-1/2*b*c*x^(2+m)*hypergeom([3
/2, 1+1/2*m],[2+1/2*m],c^2*x^2)/d^2/(2+m)+1/2*(1-m)*Unintegrable(x^m*(a+b*a
rcsin(c*x))/(-c^2*d*x^2+d),x)/d
```

Rubi [A] time = 0.16, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(x^m*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^2,x]
```

```
[Out] (x^(1 + m)*(a + b*ArcSin[c*x]))/(2*d^2*(1 - c^2*x^2)) - (b*c*x^(2 + m)*Hype
rgeometric2F1[3/2, (2 + m)/2, (4 + m)/2, c^2*x^2])/(2*d^2*(2 + m)) + ((1 -
m)*Defer[Int][(x^m*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2), x])/(2*d)
```

Rubi steps

$$\begin{aligned}\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^2}\,dx &= \frac{x^{1+m}\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(1-c^2x^2\right)}-\frac{(bc)\int \frac{x^{1+m}}{\left(1-c^2x^2\right)^{3/2}}\,dx}{2d^2}+\frac{(1-m)\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)}{d-c^2dx^2}\,dx}{2d}\\ &= \frac{x^{1+m}\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(1-c^2x^2\right)}-\frac{bcx^{2+m}\,{}_2F_1\left(\frac{3}{2},\frac{2+m}{2};\frac{4+m}{2};c^2x^2\right)}{2d^2(2+m)}+\frac{(1-m)\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)}{d-c^2dx^2}}{2d}\end{aligned}$$

Mathematica [A] time = 5.96, size = 0, normalized size = 0.00

$$\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(x^m*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^2,x]
```

```
[Out] Integrate[(x^m*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^2, x]
```

fricas [A] time = 0.81, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(b\arcsin(cx)+a)x^m}{c^4d^2x^4-2\,c^2d^2x^2+d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^2,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(c*x) + a)*x^m/(c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2), x)
```

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

$$\int \frac{(b \arcsin(cx) + a)x^m}{(c^2dx^2 - d)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^2,x, algorithm="giac")
[Out] integrate((b*arcsin(c*x) + a)*x^m/(c^2*d*x^2 - d)^2, x)
```

maple [A] time = 0.72, size = 0, normalized size = 0.00

$$\int \frac{x^m (a + b \arcsin(cx))}{(-c^2 d x^2 + d)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^2,x)
[Out] int(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^2,x)
```

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

$$\int \frac{(b \arcsin(cx) + a)x^m}{(c^2dx^2 - d)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^2,x, algorithm="maxima")
[Out] integrate((b*arcsin(c*x) + a)*x^m/(c^2*d*x^2 - d)^2, x)
```

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

$$\int \frac{x^m \, (a + b \operatorname{asin}(c\,x))}{(d - c^2\,d\,x^2)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*(a + b*asin(c*x)))/(d - c^2*d*x^2)^2,x)
[Out] int((x^m*(a + b*asin(c*x)))/(d - c^2*d*x^2)^2, x)
```

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

$$\frac{\int \frac{ax^m}{c^4x^4 - 2c^2x^2 + 1} \, dx + \int \frac{bx^m \operatorname{asin}(cx)}{c^4x^4 - 2c^2x^2 + 1} \, dx}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(a+b*asin(c*x))/(-c**2*d*x**2+d)**2,x)
[Out] (Integral(a*x**m/(c**4*x**4 - 2*c**2*x**2 + 1), x) + Integral(b*x**m*asin(c
*x)/(c**4*x**4 - 2*c**2*x**2 + 1), x))/d**2
```

3.148 $\int \frac{x^m(a+b\sin^{-1}(cx))}{(d-c^2dx^2)^3}\,dx$

Optimal. Leaf size=208

$$\frac{(1-m)(3-m)\text{Int}\left(\frac{x^m(a+b\sin^{-1}(cx))}{d-c^2dx^2},x\right)}{8d^2}+\frac{(3-m)x^{m+1}\left(a+b\sin^{-1}(cx)\right)}{8d^3\left(1-c^2x^2\right)}+\frac{x^{m+1}\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2}-\frac{bc(3-m)x^{m+2}\,{}_2F}{8d^3(}$$

```
[Out] 1/4*x^(1+m)*(a+b*arcsin(c*x))/d^3/(-c^2*x^2+1)^2+1/8*(3-m)*x^(1+m)*(a+b*arc
sin(c*x))/d^3/(-c^2*x^2+1)-1/8*b*c*(3-m)*x^(2+m)*hypergeom([3/2, 1+1/2*m],[
2+1/2*m],c^2*x^2)/d^3/(2+m)-1/4*b*c*x^(2+m)*hypergeom([5/2, 1+1/2*m],[2+1/2
*m],c^2*x^2)/d^3/(2+m)+1/8*(1-m)*(3-m)*Unintegrable(x^m*(a+b*arcsin(c*x))/(
-c^2*d*x^2+d),x)/d^2
```

Rubi [A] time = 0.25, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(x^m*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^3,x]
```

```
[Out] (x^(1 + m)*(a + b*ArcSin[c*x]))/(4*d^3*(1 - c^2*x^2)^2) + ((3 - m)*x^(1 + m
)*(a + b*ArcSin[c*x]))/(8*d^3*(1 - c^2*x^2)) - (b*c*(3 - m)*x^(2 + m)*Hyper
geometric2F1[3/2, (2 + m)/2, (4 + m)/2, c^2*x^2])/(8*d^3*(2 + m)) - (b*c*x^
(2 + m)*Hypergeometric2F1[5/2, (2 + m)/2, (4 + m)/2, c^2*x^2])/(4*d^3*(2 +
m)) + ((1 - m)*(3 - m)*Defer[Int][(x^m*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)
, x])/(8*d^2)
```

Rubi steps

$$\begin{aligned}\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^3}\,dx &= \frac{x^{1+m}\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2}-\frac{(bc)\int \frac{x^{1+m}}{\left(1-c^2x^2\right)^{5/2}}\,dx}{4d^3}+\frac{(3-m)\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^2}\,dx}{4d}\\ &= \frac{x^{1+m}\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2}+\frac{(3-m)x^{1+m}\left(a+b\sin^{-1}(cx)\right)}{8d^3\left(1-c^2x^2\right)}-\frac{bcx^{2+m}\,{}_2F_1\left(\frac{5}{2},\frac{2+m}{2};\frac{4+m}{2};\right.}{4d^3(2+m)}\\ &= \frac{x^{1+m}\left(a+b\sin^{-1}(cx)\right)}{4d^3\left(1-c^2x^2\right)^2}+\frac{(3-m)x^{1+m}\left(a+b\sin^{-1}(cx)\right)}{8d^3\left(1-c^2x^2\right)}-\frac{bc(3-m)x^{2+m}\,{}_2F_1\left(\frac{3}{2},\frac{2+}{2}\right.}{8d^3(2+m)}\end{aligned}$$

Mathematica [A] time = 6.41, size = 0, normalized size = 0.00

$$\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(x^m*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^3,x]
```

```
[Out] Integrate[(x^m*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^3, x]
```

fricas [A] time = 0.76, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{(b\arcsin(cx)+a)x^m}{c^6d^3x^6-3\,c^4d^3x^4+3\,c^2d^3x^2-d^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^3,x, algorithm="fricas")
```

```
[Out] integral(-(b*arcsin(c*x) + a)*x^m/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*
x^2 - d^3), x)
```

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

$$\int -\frac{(b\arcsin(cx)+a)x^m}{\left(c^2dx^2-d\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^3,x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)*x^m/(c^2*d*x^2 - d)^3, x)
```

maple [A] time = 0.82, size = 0, normalized size = 0.00

$$\int \frac{x^m\,(a+b\arcsin(cx))}{\left(-c^2d\,x^2+d\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^3,x)
```

```
[Out] int(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^3,x)
```

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

$$-\int \frac{(b\arcsin(cx)+a)x^m}{\left(c^2dx^2-d\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] -integrate((b*arcsin(c*x) + a)*x^m/(c^2*d*x^2 - d)^3, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^m\,\left(a+b\,\mathrm{asin}(c\,x)\right)}{\left(d-c^2\,d\,x^2\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*(a + b*asin(c*x)))/(d - c^2*d*x^2)^3,x)
```

```
[Out] int((x^m*(a + b*asin(c*x)))/(d - c^2*d*x^2)^3, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(a+b*asin(c*x))/(-c**2*d*x**2+d)**3,x)
```

```
[Out] Timed out
```

3.149 $\int x^m \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right) dx$

Optimal. Leaf size=635

$$-\frac{15bcd^2x^{m+2}\sqrt{d-c^2dx^2}\ {}_3F_2\left(1,\frac{m}{2}+1,\frac{m}{2}+1;\frac{m}{2}+\frac{3}{2},\frac{m}{2}+2;c^2x^2\right)}{(m+1)(m+2)^2(m+4)(m+6)\sqrt{1-c^2x^2}}+\frac{15d^2x^{m+1}\sqrt{d-c^2dx^2}\ {}_2F_1\left(\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};c^2x^2\right)}{(m+6)\left(m^3+7m^2+14m+8\right)\sqrt{1}}$$

```
[Out] 5*d*x^(1+m)*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/(4+m)/(6+m)+x^(1+m)*(-c^
2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))/(6+m)+15*d^2*x^(1+m)*(a+b*arcsin(c*x))*(
-c^2*d*x^2+d)^(1/2)/(6+m)/(m^2+6*m+8)-15*b*c*d^2*x^(2+m)*(-c^2*d*x^2+d)^(1/
2)/(2+m)^2/(4+m)/(6+m)/(-c^2*x^2+1)^(1/2)-5*b*c*d^2*x^(2+m)*(-c^2*d*x^2+d)^
(1/2)/(6+m)/(m^2+6*m+8)/(-c^2*x^2+1)^(1/2)-b*c*d^2*x^(2+m)*(-c^2*d*x^2+d)^(
1/2)/(m^2+8*m+12)/(-c^2*x^2+1)^(1/2)+5*b*c^3*d^2*x^(4+m)*(-c^2*d*x^2+d)^(1/
2)/(4+m)^2/(6+m)/(-c^2*x^2+1)^(1/2)+2*b*c^3*d^2*x^(4+m)*(-c^2*d*x^2+d)^(1/2
)/(4+m)/(6+m)/(-c^2*x^2+1)^(1/2)-b*c^5*d^2*x^(6+m)*(-c^2*d*x^2+d)^(1/2)/(6+
m)^2/(-c^2*x^2+1)^(1/2)+15*d^2*x^(1+m)*(a+b*arcsin(c*x))*hypergeom([1/2, 1/
2+1/2*m],[3/2+1/2*m],c^2*x^2)*(-c^2*d*x^2+d)^(1/2)/(6+m)/(m^3+7*m^2+14*m+8)
/(-c^2*x^2+1)^(1/2)-15*b*c*d^2*x^(2+m)*HypergeometricPFQ([1, 1+1/2*m, 1+1/2
*m],[3/2+1/2*m, 2+1/2*m],c^2*x^2)*(-c^2*d*x^2+d)^(1/2)/(2+m)^2/(6+m)/(m^2+5
*m+4)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.56, antiderivative size = 635, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {4699, 4697, 4711, 30, 14, 270}

$$-\frac{15bcd^2x^{m+2}\sqrt{d-c^2dx^2}\ {}_3F_2\left(1,\frac{m}{2}+1,\frac{m}{2}+1;\frac{m}{2}+\frac{3}{2},\frac{m}{2}+2;c^2x^2\right)}{(m+1)(m+2)^2(m+4)(m+6)\sqrt{1-c^2x^2}}+\frac{15d^2x^{m+1}\sqrt{d-c^2dx^2}\ {}_2F_1\left(\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};c^2x^2\right)}{(m+6)\left(m^3+7m^2+14m+8\right)\sqrt{1}}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (-15*b*c*d^2*x^(2 + m)*Sqrt[d - c^2*d*x^2])/((2 + m)^2*(4 + m)*(6 + m)*Sqrt
[1 - c^2*x^2]) - (5*b*c*d^2*x^(2 + m)*Sqrt[d - c^2*d*x^2])/((6 + m)*(8 + 6*
m + m^2)*Sqrt[1 - c^2*x^2]) - (b*c*d^2*x^(2 + m)*Sqrt[d - c^2*d*x^2])/((12
+ 8*m + m^2)*Sqrt[1 - c^2*x^2]) + (5*b*c^3*d^2*x^(4 + m)*Sqrt[d - c^2*d*x^2
])/((4 + m)^2*(6 + m)*Sqrt[1 - c^2*x^2]) + (2*b*c^3*d^2*x^(4 + m)*Sqrt[d -
c^2*d*x^2])/((4 + m)*(6 + m)*Sqrt[1 - c^2*x^2]) - (b*c^5*d^2*x^(6 + m)*Sqrt
[d - c^2*d*x^2])/((6 + m)^2*Sqrt[1 - c^2*x^2]) + (15*d^2*x^(1 + m)*Sqrt[d -
 c^2*d*x^2]*(a + b*ArcSin[c*x]))/((6 + m)*(8 + 6*m + m^2)) + (5*d*x^(1 + m)
*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/((4 + m)*(6 + m)) + (x^(1 + m)*
(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(6 + m) + (15*d^2*x^(1 + m)*Sqrt
[d - c^2*d*x^2]*(a + b*ArcSin[c*x])*Hypergeometric2F1[1/2, (1 + m)/2, (3 +
m)/2, c^2*x^2])/((6 + m)*(8 + 14*m + 7*m^2 + m^3)*Sqrt[1 - c^2*x^2]) - (15*
b*c*d^2*x^(2 + m)*Sqrt[d - c^2*d*x^2]*HypergeometricPFQ[{1, 1 + m/2, 1 + m/
2}, {3/2 + m/2, 2 + m/2}, c^2*x^2])/((1 + m)*(2 + m)^2*(4 + m)*(6 + m)*Sqrt
[1 - c^2*x^2])
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] && !LinearQ[u, x] && !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4711

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*(a + b*ArcSin[c*x])*Hypergeomet
ric2F1[1/2, (1 + m)/2, (3 + m)/2, c^2*x^2])/(Sqrt[d]*f*(m + 1)), x] - Simp[
(b*c*(f*x)^(m + 2)*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 +
 m/2}, c^2*x^2])/(Sqrt[d]*f^2*(m + 1)*(m + 2)), x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] &&  !IntegerQ[m]
```

Rubi steps

$$\int x^m \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right)\,dx = \frac{x^{1+m}\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{6+m} + \frac{(5d)\int x^m\left(d-c^2dx^2\right)^{3/2}\left(a\right.}{6+m}$$

$$= \frac{5dx^{1+m}\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{(4+m)(6+m)} + \frac{x^{1+m}\left(d-c^2dx^2\right)^{5/2}\left(a+\right.}{6+m}$$

$$= -\frac{bcd^2x^{2+m}\sqrt{d-c^2dx^2}}{\left(12+8m+m^2\right)\sqrt{1-c^2x^2}} + \frac{2bc^3d^2x^{4+m}\sqrt{d-c^2dx^2}}{(4+m)(6+m)\sqrt{1-c^2x^2}} - \frac{bc^5d^2}{(6+}$$

$$= -\frac{15bcd^2x^{2+m}\sqrt{d-c^2dx^2}}{(2+m)^2(4+m)(6+m)\sqrt{1-c^2x^2}} - \frac{5bcd^2x^{2+m}\sqrt{d-c^2dx^2}}{(2+m)(4+m)(6+m)\sqrt{1-}}$$

Mathematica [A] time = 1.27, size = 338, normalized size = 0.53

$$d^2x^{m+1}\sqrt{d-c^2dx^2}\left(-5(m+6)\left(3(m+4)\left(bcx\,{}_3F_2\left(1,\frac{m}{2}+1,\frac{m}{2}+1;\frac{m}{2}+\frac{3}{2},\frac{m}{2}+2;c^2x^2\right)-(m+2)\,{}_2F_1\left(\frac{1}{2},\frac{m+1}{2};\right.\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d^2*x^(1 + m)*Sqrt[d - c^2*d*x^2]*(-(b*c*(1 + m)*(2 + m)*(4 + m)*x*((4 + m
)*(6 + m) - 2*c^2*(2 + m)*(6 + m)*x^2 + c^4*(2 + m)*(4 + m)*x^4)) + (1 + m)
*(2 + m)^2*(4 + m)^2*(6 + m)*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x]) - 5*(6
 + m)*(b*c*(1 + m)*(2 + m)*x*(4 + m - c^2*(2 + m)*x^2) - (1 + m)*(2 + m)^2*
(4 + m)*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x]) + 3*(4 + m)*(b*c*(1 + m)*x
- (1 + m)*(2 + m)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) - (2 + m)*(a + b*Ar
cSin[c*x])*Hypergeometric2F1[1/2, (1 + m)/2, (3 + m)/2, c^2*x^2] + b*c*x*Hy
pergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 + m/2}, c^2*x^2]))))/(
(1 + m)*(2 + m)^2*(4 + m)^2*(6 + m)^2*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.71, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\left(ac^4d^2x^4 - 2\,ac^2d^2x^2 + ad^2 + \left(bc^4d^2x^4 - 2\,bc^2d^2x^2 + bd^2\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2 + d}\,x^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral((a*c^4*d^2*x^4 - 2*a*c^2*d^2*x^2 + a*d^2 + (b*c^4*d^2*x^4 - 2*b*c^
2*d^2*x^2 + b*d^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)*x^m, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [F] time = 6.80, size = 0, normalized size = 0.00

$$\int x^{m} \left(-c^{2} d\,x^{2}+d\right)^{\frac{5}{2}} \left(a +b \arcsin \left(c x \right)\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] int(x^m*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x)
```

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

$$\int \left(-c^2dx^2 + d\right)^{\frac{5}{2}}(b\arcsin\left(cx\right) + a)x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(5/2)*(b*arcsin(c*x) + a)*x^m, x)
```

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

$$\int x^m\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(d-c^2\,d\,x^2\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int(x^m*(a + b*asin(c*x))*(d - c^2*d*x^2)^(5/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x)),x)
```

```
[Out] Timed out
```

3.150 $\int x^m \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=399

$$-\frac{3bcdx^{m+2}\sqrt{d-c^2dx^2}\;{}_3F_2\left(1,\frac{m}{2}+1,\frac{m}{2}+1;\frac{m}{2}+\frac{3}{2},\frac{m}{2}+2;c^2x^2\right)}{(m+1)(m+2)^2(m+4)\sqrt{1-c^2x^2}}+\frac{3dx^{m+1}\sqrt{d-c^2dx^2}\;{}_2F_1\left(\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};c^2x^2\right)\left(a+\right.}{\left(m^3+7m^2+14m+8\right)\sqrt{1-c^2x^2}}$$

```
[Out] x^(1+m)*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))/(4+m)+3*d*x^(1+m)*(a+b*arcsi
n(c*x))*(-c^2*d*x^2+d)^(1/2)/(m^2+6*m+8)-3*b*c*d*x^(2+m)*(-c^2*d*x^2+d)^(1/
2)/(2+m)^2/(4+m)/(-c^2*x^2+1)^(1/2)-b*c*d*x^(2+m)*(-c^2*d*x^2+d)^(1/2)/(m^2
+6*m+8)/(-c^2*x^2+1)^(1/2)+b*c^3*d*x^(4+m)*(-c^2*d*x^2+d)^(1/2)/(4+m)^2/(-c
^2*x^2+1)^(1/2)+3*d*x^(1+m)*(a+b*arcsin(c*x))*hypergeom([1/2, 1/2+1/2*m],[3
/2+1/2*m],c^2*x^2)*(-c^2*d*x^2+d)^(1/2)/(m^3+7*m^2+14*m+8)/(-c^2*x^2+1)^(1/
2)-3*b*c*d*x^(2+m)*HypergeometricPFQ([1, 1+1/2*m, 1+1/2*m],[3/2+1/2*m, 2+1/
2*m],c^2*x^2)*(-c^2*d*x^2+d)^(1/2)/(2+m)^2/(m^2+5*m+4)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.33, antiderivative size = 399, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {4699, 4697, 4711, 30, 14}

$$-\frac{3bcdx^{m+2}\sqrt{d-c^2dx^2}\;{}_3F_2\left(1,\frac{m}{2}+1,\frac{m}{2}+1;\frac{m}{2}+\frac{3}{2},\frac{m}{2}+2;c^2x^2\right)}{(m+1)(m+2)^2(m+4)\sqrt{1-c^2x^2}}+\frac{3dx^{m+1}\sqrt{d-c^2dx^2}\;{}_2F_1\left(\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};c^2x^2\right)\left(a+\right.}{\left(m^3+7m^2+14m+8\right)\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (-3*b*c*d*x^(2 + m)*Sqrt[d - c^2*d*x^2])/((2 + m)^2*(4 + m)*Sqrt[1 - c^2*x^
2]) - (b*c*d*x^(2 + m)*Sqrt[d - c^2*d*x^2])/((8 + 6*m + m^2)*Sqrt[1 - c^2*x
^2]) + (b*c^3*d*x^(4 + m)*Sqrt[d - c^2*d*x^2])/((4 + m)^2*Sqrt[1 - c^2*x^2]
) + (3*d*x^(1 + m)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8 + 6*m + m^2)
 + (x^(1 + m)*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(4 + m) + (3*d*x^(
1 + m)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])*Hypergeometric2F1[1/2, (1 +
m)/2, (3 + m)/2, c^2*x^2])/((8 + 14*m + 7*m^2 + m^3)*Sqrt[1 - c^2*x^2]) - (
3*b*c*d*x^(2 + m)*Sqrt[d - c^2*d*x^2]*HypergeometricPFQ[{1, 1 + m/2, 1 + m/
2}, {3/2 + m/2, 2 + m/2}, c^2*x^2])/((1 + m)*(2 + m)^2*(4 + m)*Sqrt[1 - c^2
*x^2])
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
```

```
Q[c^2*d + e, 0] && GtQ[n, 0] && !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] && !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4711

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*(a + b*ArcSin[c*x])*Hypergeomet
ric2F1[1/2, (1 + m)/2, (3 + m)/2, c^2*x^2])/(Sqrt[d]*f*(m + 1)), x] - Simp[
(b*c*(f*x)^(m + 2)*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 +
 m/2}, c^2*x^2])/(Sqrt[d]*f^2*(m + 1)*(m + 2)), x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && !IntegerQ[m]
```

Rubi steps

$$\int x^m \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right) dx = \frac{x^{1+m}\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{4+m} + \frac{(3d)\int x^m\sqrt{d-c^2dx^2}\,\left(a+\right.}{4+m}$$

$$= \frac{3dx^{1+m}\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)}{8+6m+m^2} + \frac{x^{1+m}\left(d-c^2dx^2\right)^{3/2}\left(a+b\right.}{4+m}$$

$$= -\frac{3bcdx^{2+m}\sqrt{d-c^2dx^2}}{(2+m)^2(4+m)\sqrt{1-c^2x^2}} - \frac{bcdx^{2+m}\sqrt{d-c^2dx^2}}{\left(8+6m+m^2\right)\sqrt{1-c^2x^2}} + \frac{bc^3dx}{(4+}$$

Mathematica [A] time = 0.56, size = 237, normalized size = 0.59

$$\frac{dx^{m+1}\sqrt{d-c^2dx^2}\left(-\frac{3\left(bcx\,{}_3F_2\left(1,\frac{m}{2}+1,\frac{m}{2}+1;\frac{m}{2}+\frac{3}{2},\frac{m}{2}+2;c^2x^2\right)-(m+2)\,{}_2F_1\left(\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)-(m+1)(m+2)\sqrt{1-c^2x^2}\left(a+b\sin\right.\right.}{(m+1)(m+2)^2\sqrt{1-c^2x^2}}\right.}{m+4}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d*x^(1 + m)*Sqrt[d - c^2*d*x^2]*(-((b*c*x*(4 + m - c^2*(2 + m)*x^2))/((2 +
 m)*(4 + m)*Sqrt[1 - c^2*x^2])) + (1 - c^2*x^2)*(a + b*ArcSin[c*x]) - (3*(b
*c*(1 + m)*x - (1 + m)*(2 + m)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) - (2 +
 m)*(a + b*ArcSin[c*x])*Hypergeometric2F1[1/2, (1 + m)/2, (3 + m)/2, c^2*x^
2] + b*c*x*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 + m/2}, c
^2*x^2]))/((1 + m)*(2 + m)^2*Sqrt[1 - c^2*x^2])))/(4 + m)
```

fricas [F] time = 1.43, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(ac^2dx^2-ad+\left(bc^2dx^2-bd\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2+d}\,x^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral(-(a*c^2*d*x^2 - a*d + (b*c^2*d*x^2 - b*d)*arcsin(c*x))*sqrt(-c^2*d
*x^2 + d)*x^m, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [F] time = 3.92, size = 0, normalized size = 0.00

$$\int x^{m} \left(-c^{2} d\, x^{2}+d\right)^{\frac{3}{2}} \left(a+b \arcsin \left(c x\right)\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] int(x^m*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x)
```

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

$$\int \left(-c^{2} d x^{2}+d\right)^{\frac{3}{2}} (b \arcsin \left(c x\right)+a) x^{m}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(3/2)*(b*arcsin(c*x) + a)*x^m, x)
```

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

$$\int x^m\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(d-c^2\,d\,x^2\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int(x^m*(a + b*asin(c*x))*(d - c^2*d*x^2)^(3/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x)),x)
```

```
[Out] Timed out
```

3.151 $\int x^m \sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)dx$

Optimal. Leaf size=245

$$-\frac{bcx^{m+2}\sqrt{d-c^2dx^2}\,{}_3F_2\left(1,\frac{m}{2}+1,\frac{m}{2}+1;\frac{m}{2}+\frac{3}{2},\frac{m}{2}+2;c^2x^2\right)}{(m+1)(m+2)^2\sqrt{1-c^2x^2}}+\frac{x^{m+1}\sqrt{d-c^2dx^2}\,{}_2F_1\left(\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};c^2x^2\right)\left(a+b\right.}{\left(m^2+3m+2\right)\sqrt{1-c^2x^2}}$$

```
[Out] x^(1+m)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(2+m)-b*c*x^(2+m)*(-c^2*d*x^
2+d)^(1/2)/(2+m)^2/(-c^2*x^2+1)^(1/2)+x^(1+m)*(a+b*arcsin(c*x))*hypergeom([
1/2, 1/2+1/2*m],[3/2+1/2*m],c^2*x^2)*(-c^2*d*x^2+d)^(1/2)/(m^2+3*m+2)/(-c^2
*x^2+1)^(1/2)-b*c*x^(2+m)*HypergeometricPFQ([1, 1+1/2*m, 1+1/2*m],[3/2+1/2*
m, 2+1/2*m],c^2*x^2)*(-c^2*d*x^2+d)^(1/2)/(1+m)/(2+m)^2/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.20, antiderivative size = 245, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {4697, 4711, 30}

$$-\frac{bcx^{m+2}\sqrt{d-c^2dx^2}\,{}_3F_2\left(1,\frac{m}{2}+1,\frac{m}{2}+1;\frac{m}{2}+\frac{3}{2},\frac{m}{2}+2;c^2x^2\right)}{(m+1)(m+2)^2\sqrt{1-c^2x^2}}+\frac{x^{m+1}\sqrt{d-c^2dx^2}\,{}_2F_1\left(\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};c^2x^2\right)\left(a+b\right.}{\left(m^2+3m+2\right)\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] -((b*c*x^(2 + m)*Sqrt[d - c^2*d*x^2])/((2 + m)^2*Sqrt[1 - c^2*x^2])) + (x^(
1 + m)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(2 + m) + (x^(1 + m)*Sqrt[d
 - c^2*d*x^2]*(a + b*ArcSin[c*x])*Hypergeometric2F1[1/2, (1 + m)/2, (3 + m)
/2, c^2*x^2])/((2 + 3*m + m^2)*Sqrt[1 - c^2*x^2]) - (b*c*x^(2 + m)*Sqrt[d -
 c^2*d*x^2]*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 + m/2},
c^2*x^2])/((1 + m)*(2 + m)^2*Sqrt[1 - c^2*x^2])
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4711

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*(a + b*ArcSin[c*x])*Hypergeomet
ric2F1[1/2, (1 + m)/2, (3 + m)/2, c^2*x^2])/(Sqrt[d]*f*(m + 1)), x] - Simp[
(b*c*(f*x)^(m + 2)*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 +
 m/2}, c^2*x^2])/(Sqrt[d]*f^2*(m + 1)*(m + 2)), x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] &&  !IntegerQ[m]
```

Rubi steps

$$\int x^m\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)dx=\frac{x^{1+m}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2+m}+\frac{\sqrt{d-c^2dx^2}\int\frac{x^m\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}dx}{(2+m)\sqrt{1-c^2x^2}}-$$

$$=-\frac{bcx^{2+m}\sqrt{d-c^2dx^2}}{(2+m)^2\sqrt{1-c^2x^2}}+\frac{x^{1+m}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2+m}+\frac{x^{1+m}\sqrt{d-}}{}$$

Mathematica [A] time = 0.07, size = 181, normalized size = 0.74

$$\frac{x^{m+1}\sqrt{d-c^2dx^2}\left(-bcx\,{}_3F_2\left(1,\frac{m}{2}+1,\frac{m}{2}+1;\frac{m}{2}+\frac{3}{2},\frac{m}{2}+2;c^2x^2\right)+(m+2)\,{}_2F_1\left(\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};c^2x^2\right)\left(a+b\sin^{-1}(cx\right.\right.}{(m+1)(m+2)^2\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (x^(1 + m)*Sqrt[d - c^2*d*x^2]*((1 + m)*(-(b*c*x) + a*(2 + m)*Sqrt[1 - c^2*
x^2] + b*(2 + m)*Sqrt[1 - c^2*x^2]*ArcSin[c*x]) + (2 + m)*(a + b*ArcSin[c*x
])*Hypergeometric2F1[1/2, (1 + m)/2, (3 + m)/2, c^2*x^2] - b*c*x*Hypergeome
tricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 + m/2}, c^2*x^2]))/((1 + m)*(2
 + m)^2*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 1.95, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)x^m,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)*x^m, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [F] time = 2.61, size = 0, normalized size = 0.00

$$\int x^m\sqrt{-c^2d\,x^2+d}\;\left(a+b\arcsin(cx)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] int(x^m*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x)
```

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

$$\int\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x, algorithm="maxima")
[Out] integrate(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)*x^m, x)
```

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

$$\int x^m\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\sqrt{d-c^2\,d\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2),x)
[Out] int(x^m*(a + b*asin(c*x))*(d - c^2*d*x^2)^(1/2), x)
```

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

$$\int x^{m}\sqrt{-d\left(cx-1\right)\left(cx+1\right)}\left(a+b\operatorname{asin}\left(cx\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x)),x)
[Out] Integral(x**m*sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x)), x)
```

3.152 $\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=163

$$\frac{\sqrt{1-c^2x^2}\,x^{m+1}\,{}_2F_1\left(\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{(m+1)\sqrt{d-c^2dx^2}}-\frac{bc\sqrt{1-c^2x^2}\,x^{m+2}\,{}_3F_2\left(1,\frac{m}{2}+1,\frac{m}{2}+1;\frac{m}{2}+\frac{3}{2},\frac{m}{2}+2;c^2\right.}{\left(m^2+3m+2\right)\sqrt{d-c^2dx^2}}$$

```
[Out] x^(1+m)*(a+b*arcsin(c*x))*hypergeom([1/2, 1/2+1/2*m],[3/2+1/2*m],c^2*x^2)*(
-c^2*x^2+1)^(1/2)/(1+m)/(-c^2*d*x^2+d)^(1/2)-b*c*x^(2+m)*HypergeometricPFQ(
[1, 1+1/2*m, 1+1/2*m],[3/2+1/2*m, 2+1/2*m],c^2*x^2)*(-c^2*x^2+1)^(1/2)/(m^2
+3*m+2)/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.20, antiderivative size = 163, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {4713, 4711}

$$\frac{\sqrt{1-c^2x^2}\,x^{m+1}\,{}_2F_1\left(\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{(m+1)\sqrt{d-c^2dx^2}}-\frac{bc\sqrt{1-c^2x^2}\,x^{m+2}\,{}_3F_2\left(1,\frac{m}{2}+1,\frac{m}{2}+1;\frac{m}{2}+\frac{3}{2},\frac{m}{2}+2;c^2\right.}{\left(m^2+3m+2\right)\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^m*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (x^(1 + m)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Hypergeometric2F1[1/2, (1
+ m)/2, (3 + m)/2, c^2*x^2])/((1 + m)*Sqrt[d - c^2*d*x^2]) - (b*c*x^(2 + m)
*Sqrt[1 - c^2*x^2]*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 +
 m/2}, c^2*x^2])/((2 + 3*m + m^2)*Sqrt[d - c^2*d*x^2])
```

Rule 4711

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*(a + b*ArcSin[c*x])*Hypergeomet
ric2F1[1/2, (1 + m)/2, (3 + m)/2, c^2*x^2])/(Sqrt[d]*f*(m + 1)), x] - Simp[
(b*c*(f*x)^(m + 2)*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 +
 m/2}, c^2*x^2])/(Sqrt[d]*f^2*(m + 1)*(m + 2)), x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] &&  !IntegerQ[m]
```

Rule 4713

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(
(f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c,
 d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&  !GtQ[d, 0] && (Integ
erQ[m] || EqQ[n, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx &= \frac{\sqrt{1-c^2x^2}\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}\\ &= \frac{x^{1+m}\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right){}_2F_1\left(\frac{1}{2},\frac{1+m}{2};\frac{3+m}{2};c^2x^2\right)}{(1+m)\sqrt{d-c^2dx^2}}-\frac{bcx^{2+m}\sqrt{1-c^2x^2}\,{}_3F_2\left(1\right.}{\left(2+3m\right.}\end{aligned}$$

Mathematica [A] time = 0.06, size = 129, normalized size = 0.79

$$\frac{\sqrt{1-c^2x^2}\,x^{m+1}\left((m+2)\,{}_2F_1\left(\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)-bcx\,{}_3F_2\left(1,\frac{m}{2}+1,\frac{m}{2}+1;\frac{m}{2}+\frac{3}{2},\frac{m}{2}+2;c^2x^2\right)\right)}{(m+1)(m+2)\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^m*(a + b*ArcSin[c*x]))/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (x^(1 + m)*Sqrt[1 - c^2*x^2]*((2 + m)*(a + b*ArcSin[c*x])*Hypergeometric2F1
[1/2, (1 + m)/2, (3 + m)/2, c^2*x^2] - b*c*x*HypergeometricPFQ[{1, 1 + m/2,
 1 + m/2}, {3/2 + m/2, 2 + m/2}, c^2*x^2]))/((1 + m)*(2 + m)*Sqrt[d - c^2*d
*x^2])
```

fricas [F] time = 0.51, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)x^m}{c^2dx^2-d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)*x^m/(c^2*d*x^2 - d), x)
```

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

$$\int\frac{(b\arcsin(cx)+a)x^m}{\sqrt{-c^2dx^2+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)*x^m/sqrt(-c^2*d*x^2 + d), x)
```

maple [F] time = 1.24, size = 0, normalized size = 0.00

$$\int\frac{x^m\,(a+b\arcsin(cx))}{\sqrt{-c^2d\,x^2+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] int(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x)
```

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

$$\int\frac{(b\arcsin(cx)+a)x^m}{\sqrt{-c^2dx^2+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(c*x) + a)*x^m/sqrt(-c^2*d*x^2 + d), x)
```

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

$$\int\frac{x^m\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int((x^m*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(1/2), x)
```

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

$$\int \frac{x^m (a + b \operatorname{asin}(cx))}{\sqrt{-d (cx - 1) (cx + 1)}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral(x**m*(a + b*asin(c*x))/sqrt(-d*(c*x - 1)*(c*x + 1)), x)
```

3.153 $\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=272

$$\frac{bcm\sqrt{1-c^2x^2}\,x^{m+2}\,{}_3F_2\left(1,\frac{m}{2}+1,\frac{m}{2}+1;\frac{m}{2}+\frac{3}{2},\frac{m}{2}+2;c^2x^2\right)}{d\left(m^2+3m+2\right)\sqrt{d-c^2dx^2}}-\frac{m\sqrt{1-c^2x^2}\,x^{m+1}\,{}_2F_1\left(\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};c^2x^2\right)\left(a+b\right.}{d(m+1)\sqrt{d-c^2dx^2}}$$

```
[Out] x^(1+m)*(a+b*arcsin(c*x))/d/(-c^2*d*x^2+d)^(1/2)-m*x^(1+m)*(a+b*arcsin(c*x)
)*hypergeom([1/2, 1/2+1/2*m],[3/2+1/2*m],c^2*x^2)*(-c^2*x^2+1)^(1/2)/d/(1+m
)/(-c^2*d*x^2+d)^(1/2)-b*c*x^(2+m)*hypergeom([1, 1+1/2*m],[2+1/2*m],c^2*x^2
)*(-c^2*x^2+1)^(1/2)/d/(2+m)/(-c^2*d*x^2+d)^(1/2)+b*c*m*x^(2+m)*Hypergeomet
ricPFQ([1, 1+1/2*m, 1+1/2*m],[3/2+1/2*m, 2+1/2*m],c^2*x^2)*(-c^2*x^2+1)^(1/
2)/d/(m^2+3*m+2)/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.31, antiderivative size = 272, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {4705, 4713, 4711, 364}

$$\frac{bcm\sqrt{1-c^2x^2}\,x^{m+2}\,{}_3F_2\left(1,\frac{m}{2}+1,\frac{m}{2}+1;\frac{m}{2}+\frac{3}{2},\frac{m}{2}+2;c^2x^2\right)}{d\left(m^2+3m+2\right)\sqrt{d-c^2dx^2}}-\frac{m\sqrt{1-c^2x^2}\,x^{m+1}\,{}_2F_1\left(\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};c^2x^2\right)\left(a+b\right.}{d(m+1)\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^m*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (x^(1 + m)*(a + b*ArcSin[c*x]))/(d*Sqrt[d - c^2*d*x^2]) - (m*x^(1 + m)*Sqrt
[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Hypergeometric2F1[1/2, (1 + m)/2, (3 + m)
/2, c^2*x^2])/(d*(1 + m)*Sqrt[d - c^2*d*x^2]) - (b*c*x^(2 + m)*Sqrt[1 - c^2
*x^2]*Hypergeometric2F1[1, (2 + m)/2, (4 + m)/2, c^2*x^2])/(d*(2 + m)*Sqrt[
d - c^2*d*x^2]) + (b*c*m*x^(2 + m)*Sqrt[1 - c^2*x^2]*HypergeometricPFQ[{1,
1 + m/2, 1 + m/2}, {3/2 + m/2, 2 + m/2}, c^2*x^2])/(d*(2 + 3*m + m^2)*Sqrt[
d - c^2*d*x^2])
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 4705

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> -Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a +
b*ArcSin[c*x])^n)/(2*d*f*(p + 1)), x] + (Dist[(m + 2*p + 3)/(2*d*(p + 1)),
Int[(f*x)^m*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[(b*c*n
*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*f*(p + 1)*(1 - c^2*x^2)^FracPart[
p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
0] && LtQ[p, -1] &&  !GtQ[m, 1] && (IntegerQ[m] || IntegerQ[p] || EqQ[n, 1]
)
```

Rule 4711

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*(a + b*ArcSin[c*x])*Hypergeomet
ric2F1[1/2, (1 + m)/2, (3 + m)/2, c^2*x^2])/(Sqrt[d]*f*(m + 1)), x] - Simp[
```

```
(b*c*(f*x)^(m + 2)*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 +
 m/2}, c^2*x^2])/(Sqrt[d]*f^2*(m + 1)*(m + 2)), x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] &&  !IntegerQ[m]
```

Rule 4713

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(
(f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c,
 d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&  !GtQ[d, 0] && (Integ
erQ[m] || EqQ[n, 1])
```

Rubi steps

$$\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{3/2}}\,dx=\frac{x^{1+m}\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d-c^2dx^2}}-\frac{m\int\frac{x^m\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}\,dx}{d}-\frac{\left(bc\sqrt{1-c^2x^2}\right)\int\frac{x^{1+m}}{1-c^2x^2}\,dx}{d\sqrt{d-c^2dx^2}}$$

$$=\frac{x^{1+m}\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d-c^2dx^2}}-\frac{bcx^{2+m}\sqrt{1-c^2x^2}\,{}_2F_1\left(1,\frac{2+m}{2};\frac{4+m}{2};c^2x^2\right)}{d(2+m)\sqrt{d-c^2dx^2}}-\frac{\left(m\sqrt{1-c^2x^2}\right)\ldots}{d\sqrt{d\ldots}}$$

$$=\frac{x^{1+m}\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d-c^2dx^2}}-\frac{mx^{1+m}\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\,{}_2F_1\left(\frac{1}{2},\frac{1+m}{2};\frac{3+m}{2};c^2x^2\right)\ldots}{d(1+m)\sqrt{d-c^2dx^2}}$$

Mathematica [A] time = 0.25, size = 207, normalized size = 0.76

$$\frac{x^{m+1}\left(bcmx\sqrt{1-c^2x^2}\,{}_3F_2\left(1,\frac{m}{2}+1,\frac{m}{2}+1;\frac{m}{2}+\frac{3}{2},\frac{m}{2}+2;c^2x^2\right)-m(m+2)\sqrt{1-c^2x^2}\,{}_2F_1\left(\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};c^2x^2\right)\left(a+\ldots\right.\right.}{d(m+1)(m+2)\sqrt{d-c\ldots}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^m*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (x^(1 + m)*(-(m*(2 + m)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Hypergeometri
c2F1[1/2, (1 + m)/2, (3 + m)/2, c^2*x^2]) + (1 + m)*((2 + m)*(a + b*ArcSin[
c*x]) - b*c*x*Sqrt[1 - c^2*x^2]*Hypergeometric2F1[1, 1 + m/2, 2 + m/2, c^2*
x^2]) + b*c*m*x*Sqrt[1 - c^2*x^2]*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2},
{3/2 + m/2, 2 + m/2}, c^2*x^2]))/(d*(1 + m)*(2 + m)*Sqrt[d - c^2*d*x^2])
```

fricas [F] time = 0.58, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)x^m}{c^4d^2x^4-2\,c^2d^2x^2+d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)*x^m/(c^4*d^2*x^4 - 2*c^2*
d^2*x^2 + d^2), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Warning, integration of abs or sign assumes
constant sign by intervals (correct if the argument is real):Check [abs(t_n
ostep^4-1)]Evaluation time: 0.59index.cc index_m i_lex_is_greater Error: Ba
d Argument Value
```

maple [F] time = 0.79, size = 0, normalized size = 0.00

$$\int \frac{x^{m} \left(a+b \arcsin \left(c x\right)\right)}{\left(-c^{2} d \,x^{2}+d \right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] int(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x)
```

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

$$\int \frac{(b \arcsin \left(cx\right) + a)x^{m}}{\left(-c^{2}dx^{2} + d\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(c*x) + a)*x^m/(-c^2*d*x^2 + d)^(3/2), x)
```

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

$$\int \frac{x^m\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(d-c^2\,d\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int((x^m*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(3/2), x)
```

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

$$\int \frac{x^{m} \left(a + b \operatorname{asin}{\left(cx \right)}\right)}{\left(- d \left(cx - 1\right) \left(cx + 1\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral(x**m*(a + b*asin(c*x))/(-d*(c*x - 1)*(c*x + 1))**(3/2), x)
```

3.154 $\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=408

$$\frac{bc(2-m)m\sqrt{1-c^2x^2}\,x^{m+2}\,{}_3F_2\left(1,\frac{m}{2}+1,\frac{m}{2}+1;\frac{m}{2}+\frac{3}{2},\frac{m}{2}+2;c^2x^2\right)}{3d^2\left(m^2+3m+2\right)\sqrt{d-c^2dx^2}}-\frac{(2-m)m\sqrt{1-c^2x^2}\,x^{m+1}\,{}_2F_1\left(\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};c\right.}{3d^2(m+1)\sqrt{d-c^2dx^2}}$$

```
[Out] 1/3*x^(1+m)*(a+b*arcsin(c*x))/d/(-c^2*d*x^2+d)^(3/2)+1/3*(2-m)*x^(1+m)*(a+b
*arcsin(c*x))/d^2/(-c^2*d*x^2+d)^(1/2)-1/3*(2-m)*m*x^(1+m)*(a+b*arcsin(c*x)
)*hypergeom([1/2, 1/2+1/2*m],[3/2+1/2*m],c^2*x^2)*(-c^2*x^2+1)^(1/2)/d^2/(1
+m)/(-c^2*d*x^2+d)^(1/2)-1/3*b*c*(2-m)*x^(2+m)*hypergeom([1, 1+1/2*m],[2+1/
2*m],c^2*x^2)*(-c^2*x^2+1)^(1/2)/d^2/(2+m)/(-c^2*d*x^2+d)^(1/2)-1/3*b*c*x^(
2+m)*hypergeom([2, 1+1/2*m],[2+1/2*m],c^2*x^2)*(-c^2*x^2+1)^(1/2)/d^2/(2+m)
/(-c^2*d*x^2+d)^(1/2)+1/3*b*c*(2-m)*m*x^(2+m)*HypergeometricPFQ([1, 1+1/2*m
, 1+1/2*m],[3/2+1/2*m, 2+1/2*m],c^2*x^2)*(-c^2*x^2+1)^(1/2)/d^2/(m^2+3*m+2)
/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.45, antiderivative size = 408, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {4705, 4713, 4711, 364}

$$\frac{bc(2-m)m\sqrt{1-c^2x^2}\,x^{m+2}\,{}_3F_2\left(1,\frac{m}{2}+1,\frac{m}{2}+1;\frac{m}{2}+\frac{3}{2},\frac{m}{2}+2;c^2x^2\right)}{3d^2\left(m^2+3m+2\right)\sqrt{d-c^2dx^2}}-\frac{(2-m)m\sqrt{1-c^2x^2}\,x^{m+1}\,{}_2F_1\left(\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};c\right.}{3d^2(m+1)\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^m*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (x^(1 + m)*(a + b*ArcSin[c*x]))/(3*d*(d - c^2*d*x^2)^(3/2)) + ((2 - m)*x^(1
 + m)*(a + b*ArcSin[c*x]))/(3*d^2*Sqrt[d - c^2*d*x^2]) - ((2 - m)*m*x^(1 +
m)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Hypergeometric2F1[1/2, (1 + m)/2,
(3 + m)/2, c^2*x^2])/(3*d^2*(1 + m)*Sqrt[d - c^2*d*x^2]) - (b*c*(2 - m)*x^(
2 + m)*Sqrt[1 - c^2*x^2]*Hypergeometric2F1[1, (2 + m)/2, (4 + m)/2, c^2*x^2
])/(3*d^2*(2 + m)*Sqrt[d - c^2*d*x^2]) - (b*c*x^(2 + m)*Sqrt[1 - c^2*x^2]*H
ypergeometric2F1[2, (2 + m)/2, (4 + m)/2, c^2*x^2])/(3*d^2*(2 + m)*Sqrt[d -
 c^2*d*x^2]) + (b*c*(2 - m)*m*x^(2 + m)*Sqrt[1 - c^2*x^2]*HypergeometricPFQ
[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 + m/2}, c^2*x^2])/(3*d^2*(2 + 3*m + m
^2)*Sqrt[d - c^2*d*x^2])
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 4705

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> -Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a +
b*ArcSin[c*x])^n)/(2*d*f*(p + 1)), x] + (Dist[(m + 2*p + 3)/(2*d*(p + 1)),
Int[(f*x)^m*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[(b*c*n
*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*f*(p + 1)*(1 - c^2*x^2)^FracPart[
p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
0] && LtQ[p, -1] &&  !GtQ[m, 1] && (IntegerQ[m] || IntegerQ[p] || EqQ[n, 1]
```

)

Rule 4711

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*(a + b*ArcSin[c*x])*Hypergeomet
ric2F1[1/2, (1 + m)/2, (3 + m)/2, c^2*x^2])/(Sqrt[d]*f*(m + 1)), x] - Simp[
(b*c*(f*x)^(m + 2)*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 +
 m/2}, c^2*x^2])/(Sqrt[d]*f^2*(m + 1)*(m + 2)), x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] &&  !IntegerQ[m]
```

Rule 4713

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(
(f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c,
 d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&  !GtQ[d, 0] && (Integ
erQ[m] || EqQ[n, 1])
```

Rubi steps

$$\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{5/2}}\,dx = \frac{x^{1+m}\left(a+b\sin^{-1}(cx)\right)}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{(2-m)\int\frac{x^m\left(a+b\sin^{-1}(cx)\right)}{\left(d-c^2dx^2\right)^{3/2}}\,dx}{3d} - \frac{\left(bc\sqrt{1-c^2x^2}\right)\int\frac{x^{1+m}}{\left(1-c^2x^2\right)^{\cdots}}}{3d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{x^{1+m}\left(a+b\sin^{-1}(cx)\right)}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{(2-m)x^{1+m}\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{d-c^2dx^2}} - \frac{bcx^{2+m}\sqrt{1-c^2x^2}\,{}_2F_1\left(\cdots\right.}{3d^2(2+m)\sqrt{\cdots}}$$

$$= \frac{x^{1+m}\left(a+b\sin^{-1}(cx)\right)}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{(2-m)x^{1+m}\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{d-c^2dx^2}} - \frac{bc(2-m)x^{2+m}\sqrt{1-c^2\cdots}}{3d^2(2+\cdots}$$

$$= \frac{x^{1+m}\left(a+b\sin^{-1}(cx)\right)}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{(2-m)x^{1+m}\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{d-c^2dx^2}} - \frac{(2-m)mx^{1+m}\sqrt{1-c^2\cdots}}{3\cdots}$$

Mathematica [A] time = 0.39, size = 279, normalized size = 0.68

$$\frac{x^{m+1}\left((2-m)\left(d-c^2dx^2\right)\left(-m\sqrt{1-c^2x^2}\left((m+2)\,{}_2F_1\left(\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)-bcx\,{}_3F_2\left(1,\frac{m}{2}+1\cdots\right.\right.\right.\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^m*(a + b*ArcSin[c*x]))/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (x^(1 + m)*(d*(1 + m)*(2 + m)*(a + b*ArcSin[c*x]) - b*c*d*(1 + m)*x*(1 - c^
2*x^2)^(3/2)*Hypergeometric2F1[2, 1 + m/2, 2 + m/2, c^2*x^2] + (2 - m)*(d -
 c^2*d*x^2)*((1 + m)*(2 + m)*(a + b*ArcSin[c*x]) - b*c*(1 + m)*x*Sqrt[1 - c
^2*x^2]*Hypergeometric2F1[1, 1 + m/2, 2 + m/2, c^2*x^2] - m*Sqrt[1 - c^2*x^
2]*((2 + m)*(a + b*ArcSin[c*x])*Hypergeometric2F1[1/2, (1 + m)/2, (3 + m)/2
, c^2*x^2] - b*c*x*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 +
 m/2}, c^2*x^2]))))/(3*d^2*(1 + m)*(2 + m)*(d - c^2*d*x^2)^(3/2))
```

fricas [F] time = 1.97, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)x^m}{c^6d^3x^6-3\,c^4d^3x^4+3\,c^2d^3x^2-d^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)*x^m/(c^6*d^3*x^6 - 3*c^4
*d^3*x^4 + 3*c^2*d^3*x^2 - d^3), x)
```

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

$$\int \frac{(b\arcsin(cx) + a)x^m}{\left(-c^2dx^2 + d\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)*x^m/(-c^2*d*x^2 + d)^(5/2), x)
```

maple [F] time = 0.81, size = 0, normalized size = 0.00

$$\int \frac{x^m\,(a + b\arcsin(cx))}{\left(-c^2d\,x^2 + d\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] int(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x)
```

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

$$\int \frac{(b\arcsin(cx) + a)x^m}{\left(-c^2dx^2 + d\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(c*x) + a)*x^m/(-c^2*d*x^2 + d)^(5/2), x)
```

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

$$\int \frac{x^m\,\left(a + b\,\mathrm{asin}\left(c\,x\right)\right)}{\left(d - c^2\,d\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int((x^m*(a + b*asin(c*x)))/(d - c^2*d*x^2)^(5/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(a+b*asin(c*x))/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Timed out
```

3.155 $\int \frac{x^m \sin^{-1}(ax)}{\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=100

$$\frac{x^{m+1}\sin^{-1}(ax)\,_2F_1\left(\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};a^2x^2\right)}{m+1}-\frac{ax^{m+2}\,_3F_2\left(1,\frac{m}{2}+1,\frac{m}{2}+1;\frac{m}{2}+\frac{3}{2},\frac{m}{2}+2;a^2x^2\right)}{m^2+3m+2}$$

```
[Out] x^(1+m)*arcsin(a*x)*hypergeom([1/2, 1/2+1/2*m],[3/2+1/2*m],a^2*x^2)/(1+m)-a
*x^(2+m)*HypergeometricPFQ([1, 1+1/2*m, 1+1/2*m],[3/2+1/2*m, 2+1/2*m],a^2*x
^2)/(m^2+3*m+2)
```

Rubi [A] time = 0.07, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {4711}

$$\frac{x^{m+1}\sin^{-1}(ax)\,_2F_1\left(\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};a^2x^2\right)}{m+1}-\frac{ax^{m+2}\,_3F_2\left(1,\frac{m}{2}+1,\frac{m}{2}+1;\frac{m}{2}+\frac{3}{2},\frac{m}{2}+2;a^2x^2\right)}{m^2+3m+2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^m*ArcSin[a*x])/Sqrt[1 - a^2*x^2],x]
```

```
[Out] (x^(1 + m)*ArcSin[a*x]*Hypergeometric2F1[1/2, (1 + m)/2, (3 + m)/2, a^2*x^2
])/(1 + m) - (a*x^(2 + m)*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m
/2, 2 + m/2}, a^2*x^2])/(2 + 3*m + m^2)
```

Rule 4711

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_))/Sqrt[(d_) + (e_.
)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*(a + b*ArcSin[c*x])*Hypergeomet
ric2F1[1/2, (1 + m)/2, (3 + m)/2, c^2*x^2])/(Sqrt[d]*f*(m + 1)), x] - Simp[
(b*c*(f*x)^(m + 2)*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 +
 m/2}, c^2*x^2])/(Sqrt[d]*f^2*(m + 1)*(m + 2)), x] /; FreeQ[{a, b, c, d, e,
 f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] &&  !IntegerQ[m]
```

Rubi steps

$$\int \frac{x^m \sin^{-1}(ax)}{\sqrt{1-a^2x^2}}\,dx=\frac{x^{1+m}\sin^{-1}(ax)\,_2F_1\left(\frac{1}{2},\frac{1+m}{2};\frac{3+m}{2};a^2x^2\right)}{1+m}-\frac{ax^{2+m}\,_3F_2\left(1,1+\frac{m}{2},1+\frac{m}{2};\frac{3}{2}+\frac{m}{2},2+\frac{m}{2};a^2x^2\right)}{2+3m+m^2}$$

Mathematica [A] time = 0.03, size = 95, normalized size = 0.95

$$\frac{x^{m+1}\left((m+2)\sin^{-1}(ax)\,_2F_1\left(\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};a^2x^2\right)-ax\,_3F_2\left(1,\frac{m}{2}+1,\frac{m}{2}+1;\frac{m}{2}+\frac{3}{2},\frac{m}{2}+2;a^2x^2\right)\right)}{(m+1)(m+2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^m*ArcSin[a*x])/Sqrt[1 - a^2*x^2],x]
```

```
[Out] (x^(1 + m)*((2 + m)*ArcSin[a*x]*Hypergeometric2F1[1/2, (1 + m)/2, (3 + m)/2
, a^2*x^2] - a*x*HypergeometricPFQ[{1, 1 + m/2, 1 + m/2}, {3/2 + m/2, 2 + m
/2}, a^2*x^2]))/((1 + m)*(2 + m))
```

fricas [F] time = 0.69, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-a^2x^2+1}\,x^m \arcsin(ax)}{a^2x^2-1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
[Out] integral(-sqrt(-a^2*x^2 + 1)*x^m*arcsin(a*x)/(a^2*x^2 - 1), x)
```

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

$$\int \frac{x^m \arcsin(ax)}{\sqrt{-a^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
[Out] integrate(x^m*arcsin(a*x)/sqrt(-a^2*x^2 + 1), x)
```

maple [F] time = 0.68, size = 0, normalized size = 0.00

$$\int \frac{x^m \arcsin(ax)}{\sqrt{-a^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*arcsin(a*x)/(-a^2*x^2+1)^(1/2),x)
[Out] int(x^m*arcsin(a*x)/(-a^2*x^2+1)^(1/2),x)
```

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

$$\int \frac{x^m \arcsin(ax)}{\sqrt{-a^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
[Out] integrate(x^m*arcsin(a*x)/sqrt(-a^2*x^2 + 1), x)
```

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

$$\int \frac{x^m \operatorname{asin}(a\,x)}{\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*asin(a*x))/(1 - a^2*x^2)^(1/2),x)
[Out] int((x^m*asin(a*x))/(1 - a^2*x^2)^(1/2), x)
```

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

$$\int \frac{x^m \operatorname{asin}(ax)}{\sqrt{-(ax-1)(ax+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*asin(a*x)/(-a**2*x**2+1)**(1/2),x)
[Out] Integral(x**m*asin(a*x)/sqrt(-(a*x - 1)*(a*x + 1)), x)
```

3.156 $\int x^4 \left(d-c^2 d x^2\right) \left(a+b \sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=290

$$\frac{1}{7} d x^5 \left(1-c^2 x^2\right) \left(a+b \sin^{-1}(cx)\right)^2+\frac{4 b d x^4 \sqrt{1-c^2 x^2} \left(a+b \sin^{-1}(cx)\right)}{175 c}+\frac{2 b d \left(1-c^2 x^2\right)^{7/2} \left(a+b \sin^{-1}(cx)\right)}{49 c^5}-\frac{4b\ldots}{\ldots}$$

```
[Out] -304/3675*b^2*d*x/c^4-152/11025*b^2*d*x^3/c^2-38/6125*b^2*d*x^5+2/343*b^2*c
^2*d*x^7+2/21*b*d*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))/c^5-4/35*b*d*(-c^2*x
^2+1)^(5/2)*(a+b*arcsin(c*x))/c^5+2/49*b*d*(-c^2*x^2+1)^(7/2)*(a+b*arcsin(c
*x))/c^5+2/35*d*x^5*(a+b*arcsin(c*x))^2+1/7*d*x^5*(-c^2*x^2+1)*(a+b*arcsin(
c*x))^2+32/525*b*d*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^5+16/525*b*d*x^2*
(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3+4/175*b*d*x^4*(a+b*arcsin(c*x))*(-
c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.46, antiderivative size = 290, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {4699, 4627, 4707, 4677, 8, 30, 266, 43, 4689, 12}

$$\frac{1}{7} d x^5 \left(1-c^2 x^2\right) \left(a+b \sin^{-1}(cx)\right)^2+\frac{4 b d x^4 \sqrt{1-c^2 x^2} \left(a+b \sin^{-1}(cx)\right)}{175 c}+\frac{16 b d x^2 \sqrt{1-c^2 x^2} \left(a+b \sin^{-1}(cx)\right)}{525 c^3}+\frac{2b\ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(d - c^2*d*x^2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (-304*b^2*d*x)/(3675*c^4) - (152*b^2*d*x^3)/(11025*c^2) - (38*b^2*d*x^5)/61
25 + (2*b^2*c^2*d*x^7)/343 + (32*b*d*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))
/(525*c^5) + (16*b*d*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(525*c^3) +
 (4*b*d*x^4*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(175*c) + (2*b*d*(1 - c^
2*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(21*c^5) - (4*b*d*(1 - c^2*x^2)^(5/2)*(a
+ b*ArcSin[c*x]))/(35*c^5) + (2*b*d*(1 - c^2*x^2)^(7/2)*(a + b*ArcSin[c*x])
)/(49*c^5) + (2*d*x^5*(a + b*ArcSin[c*x])^2)/35 + (d*x^5*(1 - c^2*x^2)*(a +
 b*ArcSin[c*x])^2)/7
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 12

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

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
```

```
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4689

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[d^p*(a + b*
ArcSin[c*x]), u, x] - Dist[b*c*d^p, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^
2], x], x], x]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && Intege
rQ[p - 1/2] && (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0]) && NeQ[p, -
2^(-1)] && GtQ[d, 0]
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int x^4 \left(d-c^2dx^2\right) \left(a+b\sin^{-1}(cx)\right)^2 dx = \frac{1}{7}dx^5\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2+\frac{1}{7}(2d)\int x^4\left(a+b\sin^{-1}(cx)\right)^2 d$$

$$= \frac{2bd\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{21c^5} - \frac{4bd\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(c\right.}{35c^5}$$

$$= \frac{4bdx^4\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{175c} + \frac{2bd\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(c\right.}{21c^5}$$

$$= -\frac{16b^2dx}{735c^4} - \frac{8b^2dx^3}{2205c^2} - \frac{38b^2dx^5}{6125} + \frac{2}{343}b^2c^2dx^7 + \frac{16bdx^2\sqrt{1-c^2x^2}\left(a\right.}{525c^3}$$

$$= -\frac{16b^2dx}{735c^4} - \frac{152b^2dx^3}{11025c^2} - \frac{38b^2dx^5}{6125} + \frac{2}{343}b^2c^2dx^7 + \frac{32bd\sqrt{1-c^2x^2}\left(a\right.}{525c}$$

$$= -\frac{304b^2dx}{3675c^4} - \frac{152b^2dx^3}{11025c^2} - \frac{38b^2dx^5}{6125} + \frac{2}{343}b^2c^2dx^7 + \frac{32bd\sqrt{1-c^2x^2}\left(\right.}{525}$$

Mathematica [A] time = 0.29, size = 203, normalized size = 0.70

$$-\frac{d\left(11025a^2c^5x^5\left(5c^2x^2-7\right)+210ab\sqrt{1-c^2x^2}\left(75c^6x^6-57c^4x^4-76c^2x^2-152\right)+210b\sin^{-1}(cx)\left(105ac^5x^5\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(d - c^2*d*x^2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -1/385875*(d*(11025*a^2*c^5*x^5*(-7 + 5*c^2*x^2) + 210*a*b*Sqrt[1 - c^2*x^2
]*(-152 - 76*c^2*x^2 - 57*c^4*x^4 + 75*c^6*x^6) + b^2*(31920*c*x + 5320*c^3
*x^3 + 2394*c^5*x^5 - 2250*c^7*x^7) + 210*b*(105*a*c^5*x^5*(-7 + 5*c^2*x^2)
 + b*Sqrt[1 - c^2*x^2]*(-152 - 76*c^2*x^2 - 57*c^4*x^4 + 75*c^6*x^6))*ArcSi
n[c*x] + 11025*b^2*c^5*x^5*(-7 + 5*c^2*x^2)*ArcSin[c*x]^2))/c^5
```

fricas [A] time = 0.56, size = 229, normalized size = 0.79

$$-\frac{1125\left(49\,a^2-2\,b^2\right)c^7dx^7-63\left(1225\,a^2-38\,b^2\right)c^5dx^5+5320\,b^2c^3dx^3+31920\,b^2cdx+11025\left(5\,b^2c^7dx^7-7\,b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] -1/385875*(1125*(49*a^2 - 2*b^2)*c^7*d*x^7 - 63*(1225*a^2 - 38*b^2)*c^5*d*x
^5 + 5320*b^2*c^3*d*x^3 + 31920*b^2*c*d*x + 11025*(5*b^2*c^7*d*x^7 - 7*b^2*
c^5*d*x^5)*arcsin(c*x)^2 + 22050*(5*a*b*c^7*d*x^7 - 7*a*b*c^5*d*x^5)*arcsin
(c*x) + 210*(75*a*b*c^6*d*x^6 - 57*a*b*c^4*d*x^4 - 76*a*b*c^2*d*x^2 - 152*a
*b*d + (75*b^2*c^6*d*x^6 - 57*b^2*c^4*d*x^4 - 76*b^2*c^2*d*x^2 - 152*b^2*d)
*arcsin(c*x))*sqrt(-c^2*x^2 + 1))/c^5
```

giac [A] time = 0.46, size = 495, normalized size = 1.71

$$-\frac{1}{7}a^2c^2dx^7+\frac{1}{5}a^2dx^5-\frac{\left(c^2x^2-1\right)^3b^2dx\arcsin(cx)^2}{7c^4}-\frac{2\left(c^2x^2-1\right)^3abdx\arcsin(cx)}{7c^4}-\frac{8\left(c^2x^2-1\right)^2b^2dx\arcsin(c\right.}{35c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] -1/7*a^2*c^2*d*x^7 + 1/5*a^2*d*x^5 - 1/7*(c^2*x^2 - 1)^3*b^2*d*x*arcsin(c*x
)^2/c^4 - 2/7*(c^2*x^2 - 1)^3*a*b*d*x*arcsin(c*x)/c^4 - 8/35*(c^2*x^2 - 1)^
2*b^2*d*x*arcsin(c*x)^2/c^4 + 2/343*(c^2*x^2 - 1)^3*b^2*d*x/c^4 - 16/35*(c^
2*x^2 - 1)^2*a*b*d*x*arcsin(c*x)/c^4 - 1/35*(c^2*x^2 - 1)*b^2*d*x*arcsin(c*
x)^2/c^4 - 2/49*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*b^2*d*arcsin(c*x)/c^5 +
484/42875*(c^2*x^2 - 1)^2*b^2*d*x/c^4 - 2/35*(c^2*x^2 - 1)*a*b*d*x*arcsin(c
*x)/c^4 + 2/35*b^2*d*x*arcsin(c*x)^2/c^4 - 2/49*(c^2*x^2 - 1)^3*sqrt(-c^2*x
^2 + 1)*a*b*d/c^5 - 16/175*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b^2*d*arcsin(
c*x)/c^5 - 3358/385875*(c^2*x^2 - 1)*b^2*d*x/c^4 + 4/35*a*b*d*x*arcsin(c*x)
/c^4 - 16/175*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*a*b*d/c^5 + 2/105*(-c^2*x^
2 + 1)^(3/2)*b^2*d*arcsin(c*x)/c^5 - 37384/385875*b^2*d*x/c^4 + 2/105*(-c^2
*x^2 + 1)^(3/2)*a*b*d/c^5 + 4/35*sqrt(-c^2*x^2 + 1)*b^2*d*arcsin(c*x)/c^5 +
 4/35*sqrt(-c^2*x^2 + 1)*a*b*d/c^5
```

maple [A] time = 0.20, size = 276, normalized size = 0.95

$$-d\,a^2\left(\frac{1}{7}c^7x^7-\frac{1}{5}c^5x^5\right)-d\,b^2\left(-\frac{\arcsin(cx)^2c^5x^5}{5}-\frac{2\arcsin(cx)\left(3c^4x^4+4c^2x^2+8\right)\sqrt{-c^2x^2+1}}{75}+\frac{38c^5x^5}{6125}+\frac{152c^3x^3}{11025}+\frac{304cx}{3675}+\frac{\arcsin(cx}{7}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/c^5*(-d*a^2*(1/7*c^7*x^7-1/5*c^5*x^5)-d*b^2*(-1/5*arcsin(c*x)^2*c^5*x^5-2
/75*arcsin(c*x)*(3*c^4*x^4+4*c^2*x^2+8)*(-c^2*x^2+1)^(1/2)+38/6125*c^5*x^5+
152/11025*c^3*x^3+304/3675*c*x+1/7*arcsin(c*x)^2*c^7*x^7+2/245*arcsin(c*x)*
(5*c^6*x^6+6*c^4*x^4+8*c^2*x^2+16)*(-c^2*x^2+1)^(1/2)-2/343*c^7*x^7)-2*d*a*
b*(1/7*arcsin(c*x)*c^7*x^7-1/5*arcsin(c*x)*c^5*x^5+1/49*c^6*x^6*(-c^2*x^2+1
)^(1/2)-19/1225*c^4*x^4*(-c^2*x^2+1)^(1/2)-76/3675*c^2*x^2*(-c^2*x^2+1)^(1/
2)-152/3675*(-c^2*x^2+1)^(1/2)))
```

maxima [A] time = 0.47, size = 453, normalized size = 1.56

$$-\frac{1}{7}\,b^2c^2dx^7\arcsin\left(cx\right)^2-\frac{1}{7}\,a^2c^2dx^7+\frac{1}{5}\,b^2dx^5\arcsin\left(cx\right)^2+\frac{1}{5}\,a^2dx^5-\frac{2}{245}\left(35\,x^7\arcsin\left(cx\right)+\left(\frac{5\,\sqrt{-c^2x^2+1}\,x^6}{c^2}+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] -1/7*b^2*c^2*d*x^7*arcsin(c*x)^2 - 1/7*a^2*c^2*d*x^7 + 1/5*b^2*d*x^5*arcsin
(c*x)^2 + 1/5*a^2*d*x^5 - 2/245*(35*x^7*arcsin(c*x) + (5*sqrt(-c^2*x^2 + 1)
*x^6/c^2 + 6*sqrt(-c^2*x^2 + 1)*x^4/c^4 + 8*sqrt(-c^2*x^2 + 1)*x^2/c^6 + 16
*sqrt(-c^2*x^2 + 1)/c^8)*c)*a*b*c^2*d - 2/25725*(105*(5*sqrt(-c^2*x^2 + 1)*
x^6/c^2 + 6*sqrt(-c^2*x^2 + 1)*x^4/c^4 + 8*sqrt(-c^2*x^2 + 1)*x^2/c^6 + 16*
sqrt(-c^2*x^2 + 1)/c^8)*c*arcsin(c*x) - (75*c^6*x^7 + 126*c^4*x^5 + 280*c^2
*x^3 + 1680*x)/c^6)*b^2*c^2*d + 2/75*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2
 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)
*a*b*d + 2/1125*(15*(3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^
2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c*arcsin(c*x) - (9*c^4*x^5 + 20*c^2*x^3 +
 120*x)/c^4)*b^2*d
```

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

$$\int x^4\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,\left(d-c^2\,d\,x^2\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a + b*asin(c*x))^2*(d - c^2*d*x^2),x)
```

```
[Out] int(x^4*(a + b*asin(c*x))^2*(d - c^2*d*x^2), x)
```

sympy [A] time = 10.80, size = 388, normalized size = 1.34

$$\begin{cases} -\frac{a^2c^2dx^7}{7} + \frac{a^2dx^5}{5} - \frac{2abc^2dx^7\operatorname{asin}(cx)}{7} - \frac{2abcdx^6\sqrt{-c^2x^2+1}}{49} + \frac{2abdx^5\operatorname{asin}(cx)}{5} + \frac{38abdx^4\sqrt{-c^2x^2+1}}{1225c} + \frac{152abdx^2\sqrt{-c^2x^2+1}}{3675c^3} + \frac{304al}{} \\ \frac{a^2dx^5}{5} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(-c**2*d*x**2+d)*(a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((-a**2*c**2*d*x**7/7 + a**2*d*x**5/5 - 2*a*b*c**2*d*x**7*asin(c*x
)/7 - 2*a*b*c*d*x**6*sqrt(-c**2*x**2 + 1)/49 + 2*a*b*d*x**5*asin(c*x)/5 + 3
8*a*b*d*x**4*sqrt(-c**2*x**2 + 1)/(1225*c) + 152*a*b*d*x**2*sqrt(-c**2*x**2
 + 1)/(3675*c**3) + 304*a*b*d*sqrt(-c**2*x**2 + 1)/(3675*c**5) - b**2*c**2*
d*x**7*asin(c*x)**2/7 + 2*b**2*c**2*d*x**7/343 - 2*b**2*c*d*x**6*sqrt(-c**2
*x**2 + 1)*asin(c*x)/49 + b**2*d*x**5*asin(c*x)**2/5 - 38*b**2*d*x**5/6125
+ 38*b**2*d*x**4*sqrt(-c**2*x**2 + 1)*asin(c*x)/(1225*c) - 152*b**2*d*x**3/
(11025*c**2) + 152*b**2*d*x**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(3675*c**3) -
 304*b**2*d*x/(3675*c**4) + 304*b**2*d*sqrt(-c**2*x**2 + 1)*asin(c*x)/(3675
*c**5), Ne(c, 0)), (a**2*d*x**5/5, True))
```

3.157 $\int x^3 \left(d-c^2dx^2\right) \left(a+b\sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=202

$$-\frac{d\left(a+b\sin^{-1}(cx)\right)^2}{24c^4}-\frac{1}{18}bcdx^5\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{6}dx^4\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2+\frac{bdx^3\sqrt{1-c^2x^2}\,(}{18}$$

```
[Out] -1/24*b^2*d*x^2/c^2-1/72*b^2*d*x^4+1/108*b^2*c^2*d*x^6-1/24*d*(a+b*arcsin(c
*x))^2/c^4+1/12*d*x^4*(a+b*arcsin(c*x))^2+1/6*d*x^4*(-c^2*x^2+1)*(a+b*arcsi
n(c*x))^2+1/12*b*d*x*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3+1/18*b*d*x^3*
(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c-1/18*b*c*d*x^5*(a+b*arcsin(c*x))*(-c
^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.54, antiderivative size = 202, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {4699, 4627, 4707, 4641, 30, 4697}

$$-\frac{1}{18}bcdx^5\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{6}dx^4\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2+\frac{bdx^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{18c}+\frac{bdx}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(d - c^2*d*x^2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -(b^2*d*x^2)/(24*c^2) - (b^2*d*x^4)/72 + (b^2*c^2*d*x^6)/108 + (b*d*x*Sqrt[
1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(12*c^3) + (b*d*x^3*Sqrt[1 - c^2*x^2]*(a
+ b*ArcSin[c*x]))/(18*c) - (b*c*d*x^5*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])
)/18 - (d*(a + b*ArcSin[c*x])^2)/(24*c^4) + (d*x^4*(a + b*ArcSin[c*x])^2)/1
2 + (d*x^4*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/6
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int x^3\left(d-c^2dx^2\right)\left(a+b\sin^{-1}(cx)\right)^2\,dx=\frac{1}{6}dx^4\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2+\frac{1}{3}d\int x^3\left(a+b\sin^{-1}(cx)\right)^2\,dx-$$

$$=-\frac{1}{18}bcdx^5\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{12}dx^4\left(a+b\sin^{-1}(cx)\right)^2+$$

$$=\frac{1}{108}b^2c^2dx^6+\frac{bdx^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{18c}-\frac{1}{18}bcdx^5\sqrt{1-c^2x^2}$$

$$=-\frac{1}{72}b^2dx^4+\frac{1}{108}b^2c^2dx^6+\frac{bdx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{12c^3}+\frac{bdx^3\sqrt{}}{}$$

$$=-\frac{b^2dx^2}{24c^2}-\frac{1}{72}b^2dx^4+\frac{1}{108}b^2c^2dx^6+\frac{bdx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{12c^3}$$

Mathematica [A] time = 0.17, size = 192, normalized size = 0.95

$$-\frac{d\left(9a^2\left(4c^6x^6-6c^4x^4+1\right)+6abcx\sqrt{1-c^2x^2}\left(2c^4x^4-2c^2x^2-3\right)+6b\sin^{-1}(cx)\left(3a\left(4c^6x^6-6c^4x^4+1\right)+b\right.\right.}{216c^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(d - c^2*d*x^2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -1/216*(d*(b^2*c^2*x^2*(9 + 3*c^2*x^2 - 2*c^4*x^4) + 6*a*b*c*x*Sqrt[1 - c^2
*x^2]*(-3 - 2*c^2*x^2 + 2*c^4*x^4) + 9*a^2*(1 - 6*c^4*x^4 + 4*c^6*x^6) + 6*
b*(b*c*x*Sqrt[1 - c^2*x^2]*(-3 - 2*c^2*x^2 + 2*c^4*x^4) + 3*a*(1 - 6*c^4*x^
4 + 4*c^6*x^6))*ArcSin[c*x] + 9*b^2*(1 - 6*c^4*x^4 + 4*c^6*x^6)*ArcSin[c*x]
^2))/c^4
```

fricas [A] time = 0.70, size = 211, normalized size = 1.04

$$-\frac{2\left(18\,a^2-b^2\right)c^6dx^6-3\left(18\,a^2-b^2\right)c^4dx^4+9\,b^2c^2dx^2+9\left(4\,b^2c^6dx^6-6\,b^2c^4dx^4+b^2d\right)\arcsin\left(cx\right)^2+18\left(4\,a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] -1/216*(2*(18*a^2 - b^2)*c^6*d*x^6 - 3*(18*a^2 - b^2)*c^4*d*x^4 + 9*b^2*c^2
*d*x^2 + 9*(4*b^2*c^6*d*x^6 - 6*b^2*c^4*d*x^4 + b^2*d)*arcsin(c*x)^2 + 18*(
4*a*b*c^6*d*x^6 - 6*a*b*c^4*d*x^4 + a*b*d)*arcsin(c*x) + 6*(2*a*b*c^5*d*x^5
 - 2*a*b*c^3*d*x^3 - 3*a*b*c*d*x + (2*b^2*c^5*d*x^5 - 2*b^2*c^3*d*x^3 - 3*b
^2*c*d*x)*arcsin(c*x))*sqrt(-c^2*x^2 + 1))/c^4
```

giac [B] time = 0.56, size = 377, normalized size = 1.87

$$-\frac{1}{6}a^2c^2dx^6+\frac{1}{4}a^2dx^4-\frac{\left(c^2x^2-1\right)^2\sqrt{-c^2x^2+1}\,b^2dx\arcsin(cx)}{18\,c^3}-\frac{\left(c^2x^2-1\right)^3b^2d\arcsin(cx)^2}{6\,c^4}-\frac{\left(c^2x^2-1\right)^2\sqrt{-c^2x^2+}}{18\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] -1/6*a^2*c^2*d*x^6 + 1/4*a^2*d*x^4 - 1/18*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1
)*b^2*d*x*arcsin(c*x)/c^3 - 1/6*(c^2*x^2 - 1)^3*b^2*d*arcsin(c*x)^2/c^4 - 1
/18*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*a*b*d*x/c^3 + 1/18*(-c^2*x^2 + 1)^(3
/2)*b^2*d*x*arcsin(c*x)/c^3 - 1/3*(c^2*x^2 - 1)^3*a*b*d*arcsin(c*x)/c^4 - 1
/4*(c^2*x^2 - 1)^2*b^2*d*arcsin(c*x)^2/c^4 + 1/18*(-c^2*x^2 + 1)^(3/2)*a*b*
d*x/c^3 + 1/12*sqrt(-c^2*x^2 + 1)*b^2*d*x*arcsin(c*x)/c^3 + 1/108*(c^2*x^2
 - 1)^3*b^2*d/c^4 - 1/2*(c^2*x^2 - 1)^2*a*b*d*arcsin(c*x)/c^4 + 1/12*sqrt(-c
^2*x^2 + 1)*a*b*d*x/c^3 + 1/72*(c^2*x^2 - 1)^2*b^2*d/c^4 + 1/24*b^2*d*arcsi
n(c*x)^2/c^4 - 1/24*(c^2*x^2 - 1)*b^2*d/c^4 + 1/12*a*b*d*arcsin(c*x)/c^4 -
5/216*b^2*d/c^4
```

maple [A] time = 0.06, size = 306, normalized size = 1.51

$$\frac{-d\,a^2\left(\frac{1}{6}c^6x^6-\frac{1}{4}c^4x^4\right)-d\,b^2\left(-\frac{\arcsin(cx)^2c^4x^4}{4}+\frac{\arcsin(cx)\left(-2c^3x^3\sqrt{-c^2x^2+1}-3cx\sqrt{-c^2x^2+1}+3\arcsin(cx)\right)}{16}-\frac{\arcsin(cx)^2}{24}+\frac{c^4x^4}{72}+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/c^4*(-d*a^2*(1/6*c^6*x^6-1/4*c^4*x^4)-d*b^2*(-1/4*arcsin(c*x)^2*c^4*x^4+1
/16*arcsin(c*x)*(-2*c^3*x^3*(-c^2*x^2+1)^(1/2)-3*c*x*(-c^2*x^2+1)^(1/2)+3*a
rcsin(c*x))-1/24*arcsin(c*x)^2+1/72*c^4*x^4+1/24*c^2*x^2+1/6*arcsin(c*x)^2*
c^6*x^6-1/144*arcsin(c*x)*(-8*c^5*x^5*(-c^2*x^2+1)^(1/2)-10*c^3*x^3*(-c^2*x
^2+1)^(1/2)-15*c*x*(-c^2*x^2+1)^(1/2)+15*arcsin(c*x))-1/108*c^6*x^6)-2*d*a*
b*(1/6*arcsin(c*x)*c^6*x^6-1/4*c^4*x^4*arcsin(c*x)+1/36*c^5*x^5*(-c^2*x^2+1
)^(1/2)-1/36*c^3*x^3*(-c^2*x^2+1)^(1/2)-1/24*c*x*(-c^2*x^2+1)^(1/2)+1/24*ar
csin(c*x)))
```

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

$$-\frac{1}{6}a^2c^2dx^6+\frac{1}{4}a^2dx^4-\frac{1}{144}\left(48\,x^6\arcsin(cx)+\left(\frac{8\sqrt{-c^2x^2+1}\,x^5}{c^2}+\frac{10\sqrt{-c^2x^2+1}\,x^3}{c^4}+\frac{15\sqrt{-c^2x^2+1}\,x}{c^6}-\frac{15\,\text{ar}}{}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] -1/6*a^2*c^2*d*x^6 + 1/4*a^2*d*x^4 - 1/144*(48*x^6*arcsin(c*x) + (8*sqrt(-c
^2*x^2 + 1)*x^5/c^2 + 10*sqrt(-c^2*x^2 + 1)*x^3/c^4 + 15*sqrt(-c^2*x^2 + 1)
*x/c^6 - 15*arcsin(c*x)/c^7)*c)*a*b*c^2*d + 1/16*(8*x^4*arcsin(c*x) + (2*sq
rt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c*x)/c^5)*
c)*a*b*d - 1/12*(2*b^2*c^2*d*x^6 - 3*b^2*d*x^4)*arctan2(c*x, sqrt(c*x + 1)*
```

```
sqrt(-c*x + 1))^2 - integrate(1/6*(2*b^2*c^3*d*x^6 - 3*b^2*c*d*x^4)*sqrt(c*
x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^2*x^2 -
 1), x)
```

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

$$\int x^3\,(a+b\,\mathrm{asin}\,(c\,x))^2\,\left(d-c^2\,d\,x^2\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + b*asin(c*x))^2*(d - c^2*d*x^2),x)
```

```
[Out] int(x^3*(a + b*asin(c*x))^2*(d - c^2*d*x^2), x)
```

sympy [A] time = 7.44, size = 332, normalized size = 1.64

$$\begin{cases} -\frac{a^2c^2dx^6}{6}+\frac{a^2dx^4}{4}-\frac{abc^2dx^6\,\mathrm{asin}\,(cx)}{3}-\frac{abcdx^5\sqrt{-c^2x^2+1}}{18}+\frac{abdx^4\,\mathrm{asin}\,(cx)}{2}+\frac{abdx^3\sqrt{-c^2x^2+1}}{18c}+\frac{abdx\sqrt{-c^2x^2+1}}{12c^3}-\frac{abd\,\mathrm{asin}\,(cx)}{12c^4}- \\ \frac{a^2dx^4}{4} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(-c**2*d*x**2+d)*(a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((-a**2*c**2*d*x**6/6 + a**2*d*x**4/4 - a*b*c**2*d*x**6*asin(c*x)/
3 - a*b*c*d*x**5*sqrt(-c**2*x**2 + 1)/18 + a*b*d*x**4*asin(c*x)/2 + a*b*d*x
**3*sqrt(-c**2*x**2 + 1)/(18*c) + a*b*d*x*sqrt(-c**2*x**2 + 1)/(12*c**3) -
a*b*d*asin(c*x)/(12*c**4) - b**2*c**2*d*x**6*asin(c*x)**2/6 + b**2*c**2*d*x
**6/108 - b**2*c*d*x**5*sqrt(-c**2*x**2 + 1)*asin(c*x)/18 + b**2*d*x**4*asi
n(c*x)**2/4 - b**2*d*x**4/72 + b**2*d*x**3*sqrt(-c**2*x**2 + 1)*asin(c*x)/(
18*c) - b**2*d*x**2/(24*c**2) + b**2*d*x*sqrt(-c**2*x**2 + 1)*asin(c*x)/(12
*c**3) - b**2*d*asin(c*x)**2/(24*c**4), Ne(c, 0)), (a**2*d*x**4/4, True))
```

3.158 $\int x^2 \left(d-c^2 d x^2\right) \left(a+b \sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=211

$$\frac{4bdx^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{45c}+\frac{1}{5}dx^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2-\frac{2bd\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{25c^3}+\frac{2bd\left(1\right.}{}$$

```
[Out] -52/225*b^2*d*x/c^2-26/675*b^2*d*x^3+2/125*b^2*c^2*d*x^5+2/15*b*d*(-c^2*x^2
+1)^(3/2)*(a+b*arcsin(c*x))/c^3-2/25*b*d*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x
))/c^3+2/15*d*x^3*(a+b*arcsin(c*x))^2+1/5*d*x^3*(-c^2*x^2+1)*(a+b*arcsin(c*
x))^2+8/45*b*d*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3+4/45*b*d*x^2*(a+b*a
rcsin(c*x))*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.34, antiderivative size = 211, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {4699, 4627, 4707, 4677, 8, 30, 266, 43, 4689, 12}

$$\frac{1}{5}dx^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2+\frac{4bdx^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{45c}-\frac{2bd\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{25c^3}+\frac{2bd\left(1\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(d - c^2*d*x^2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (-52*b^2*d*x)/(225*c^2) - (26*b^2*d*x^3)/675 + (2*b^2*c^2*d*x^5)/125 + (8*b
*d*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(45*c^3) + (4*b*d*x^2*Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x]))/(45*c) + (2*b*d*(1 - c^2*x^2)^(3/2)*(a + b*ArcS
in[c*x]))/(15*c^3) - (2*b*d*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(25*c^
3) + (2*d*x^3*(a + b*ArcSin[c*x])^2)/15 + (d*x^3*(1 - c^2*x^2)*(a + b*ArcSi
n[c*x])^2)/5
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 12

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

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4689

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[d^p*(a + b*
ArcSin[c*x]), u, x] - Dist[b*c*d^p, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^
2], x], x], x]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && Intege
rQ[p - 1/2] && (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0]) && NeQ[p, -
2^(-1)] && GtQ[d, 0]
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int x^2\left(d-c^2dx^2\right)\left(a+b\sin^{-1}(cx)\right)^2\,dx=\frac{1}{5}dx^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2+\frac{1}{5}(2d)\int x^2\left(a+b\sin^{-1}(cx)\right)^2\,dx-$$

$$=\frac{2bd\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{15c^3}-\frac{2bd\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{25c^3}$$

$$=\frac{4bdx^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{45c}+\frac{2bd\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{15c^3}$$

$$=-\frac{4b^2dx}{75c^2}-\frac{26}{675}b^2dx^3+\frac{2}{125}b^2c^2dx^5+\frac{8bd\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{45c^3}+$$

$$=-\frac{52b^2dx}{225c^2}-\frac{26}{675}b^2dx^3+\frac{2}{125}b^2c^2dx^5+\frac{8bd\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{45c^3}$$

Mathematica [A] time = 0.28, size = 179, normalized size = 0.85

$$-\frac{d\left(225a^2c^3x^3\left(3c^2x^2-5\right)+30ab\sqrt{1-c^2x^2}\left(9c^4x^4-13c^2x^2-26\right)+30b\sin^{-1}(cx)\left(15ac^3x^3\left(3c^2x^2-5\right)+b\sqrt{1-\right.\right.}{3375c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(d - c^2*d*x^2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -1/3375*(d*(225*a^2*c^3*x^3*(-5 + 3*c^2*x^2) + 30*a*b*Sqrt[1 - c^2*x^2]*(-2
6 - 13*c^2*x^2 + 9*c^4*x^4) + b^2*(780*c*x + 130*c^3*x^3 - 54*c^5*x^5) + 30
*b*(15*a*c^3*x^3*(-5 + 3*c^2*x^2) + b*Sqrt[1 - c^2*x^2]*(-26 - 13*c^2*x^2 +
 9*c^4*x^4))*ArcSin[c*x] + 225*b^2*c^3*x^3*(-5 + 3*c^2*x^2)*ArcSin[c*x]^2))
/c^3
```

fricas [A] time = 0.66, size = 194, normalized size = 0.92

$$-\frac{27\left(25\,a^2-2\,b^2\right)c^5dx^5-5\left(225\,a^2-26\,b^2\right)c^3dx^3+780\,b^2cdx+225\left(3\,b^2c^5dx^5-5\,b^2c^3dx^3\right)\arcsin\left(cx\right)^2+450\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] -1/3375*(27*(25*a^2 - 2*b^2)*c^5*d*x^5 - 5*(225*a^2 - 26*b^2)*c^3*d*x^3 + 7
80*b^2*c*d*x + 225*(3*b^2*c^5*d*x^5 - 5*b^2*c^3*d*x^3)*arcsin(c*x)^2 + 450*
(3*a*b*c^5*d*x^5 - 5*a*b*c^3*d*x^3)*arcsin(c*x) + 30*(9*a*b*c^4*d*x^4 - 13*
a*b*c^2*d*x^2 - 26*a*b*d + (9*b^2*c^4*d*x^4 - 13*b^2*c^2*d*x^2 - 26*b^2*d)*
arcsin(c*x))*sqrt(-c^2*x^2 + 1))/c^3
```

giac [A] time = 0.39, size = 356, normalized size = 1.69

$$-\frac{1}{5}\,a^2c^2dx^5+\frac{1}{3}\,a^2dx^3-\frac{\left(c^2x^2-1\right)^2b^2dx\arcsin\left(cx\right)^2}{5\,c^2}-\frac{2\left(c^2x^2-1\right)^2abdx\arcsin\left(cx\right)}{5\,c^2}-\frac{\left(c^2x^2-1\right)b^2dx\arcsin\left(cx\right)^2}{15\,c^2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] -1/5*a^2*c^2*d*x^5 + 1/3*a^2*d*x^3 - 1/5*(c^2*x^2 - 1)^2*b^2*d*x*arcsin(c*x
)^2/c^2 - 2/5*(c^2*x^2 - 1)^2*a*b*d*x*arcsin(c*x)/c^2 - 1/15*(c^2*x^2 - 1)*
b^2*d*x*arcsin(c*x)^2/c^2 + 2/125*(c^2*x^2 - 1)^2*b^2*d*x/c^2 - 2/15*(c^2*x
^2 - 1)*a*b*d*x*arcsin(c*x)/c^2 + 2/15*b^2*d*x*arcsin(c*x)^2/c^2 - 2/25*(c^
```

```
2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b^2*d*arcsin(c*x)/c^3 - 22/3375*(c^2*x^2 -
1)*b^2*d*x/c^2 + 4/15*a*b*d*x*arcsin(c*x)/c^2 - 2/25*(c^2*x^2 - 1)^2*sqrt(-
c^2*x^2 + 1)*a*b*d/c^3 + 2/45*(-c^2*x^2 + 1)^(3/2)*b^2*d*arcsin(c*x)/c^3 -
856/3375*b^2*d*x/c^2 + 2/45*(-c^2*x^2 + 1)^(3/2)*a*b*d/c^3 + 4/15*sqrt(-c^2
*x^2 + 1)*b^2*d*arcsin(c*x)/c^3 + 4/15*sqrt(-c^2*x^2 + 1)*a*b*d/c^3
```

maple [A] time = 0.14, size = 280, normalized size = 1.33

$$-d\,a^2\left(\frac{1}{5}c^5x^5-\frac{1}{3}c^3x^3\right)-d\,b^2\left(\frac{\arcsin(cx)^2\left(c^2x^2-3\right)cx}{3}+\frac{4cx}{15}-\frac{4\arcsin(cx)\sqrt{-c^2x^2+1}}{15}+\frac{2\arcsin(cx)\left(c^2x^2-1\right)\sqrt{-c^2x^2+1}}{45}-\frac{2\left(c^2x^2-\cdots\right.}{135}\cdots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/c^3*(-d*a^2*(1/5*c^5*x^5-1/3*c^3*x^3)-d*b^2*(1/3*arcsin(c*x)^2*(c^2*x^2-3
)*c*x+4/15*c*x-4/15*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+2/45*arcsin(c*x)*(c^2*x^
2-1)*(-c^2*x^2+1)^(1/2)-2/135*(c^2*x^2-3)*c*x+1/15*arcsin(c*x)^2*(3*c^4*x^4
-10*c^2*x^2+15)*c*x+2/25*arcsin(c*x)*(c^2*x^2-1)^2*(-c^2*x^2+1)^(1/2)-2/375
*(3*c^4*x^4-10*c^2*x^2+15)*c*x)-2*d*a*b*(1/5*arcsin(c*x)*c^5*x^5-1/3*c^3*x^
3*arcsin(c*x)+1/25*c^4*x^4*(-c^2*x^2+1)^(1/2)-13/225*c^2*x^2*(-c^2*x^2+1)^(
1/2)-26/225*(-c^2*x^2+1)^(1/2)))
```

maxima [A] time = 0.45, size = 354, normalized size = 1.68

$$-\frac{1}{5}\,b^2c^2dx^5\arcsin(cx)^2-\frac{1}{5}\,a^2c^2dx^5+\frac{1}{3}\,b^2dx^3\arcsin(cx)^2-\frac{2}{75}\left(15\,x^5\arcsin(cx)+\left(\frac{3\sqrt{-c^2x^2+1}\,x^4}{c^2}+\frac{4\sqrt{-c^2\cdots}}{\cdots}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] -1/5*b^2*c^2*d*x^5*arcsin(c*x)^2 - 1/5*a^2*c^2*d*x^5 + 1/3*b^2*d*x^3*arcsin
(c*x)^2 - 2/75*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt
(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*a*b*c^2*d - 2/1125*(1
5*(3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^
2*x^2 + 1)/c^6)*c*arcsin(c*x) - (9*c^4*x^5 + 20*c^2*x^3 + 120*x)/c^4)*b^2*c
^2*d + 1/3*a^2*d*x^3 + 2/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c
^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*d + 2/27*(3*c*(sqrt(-c^2*x^2 + 1)*x^2/c
^2 + 2*sqrt(-c^2*x^2 + 1)/c^4)*arcsin(c*x) - (c^2*x^3 + 6*x)/c^2)*b^2*d
```

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

$$\int x^2\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,\left(d-c^2\,d\,x^2\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c*x))^2*(d - c^2*d*x^2),x)
```

```
[Out] int(x^2*(a + b*asin(c*x))^2*(d - c^2*d*x^2), x)
```

sympy [A] time = 4.01, size = 313, normalized size = 1.48

$$\begin{cases} -\frac{a^2c^2dx^5}{5}+\frac{a^2dx^3}{3}-\frac{2abc^2dx^5\operatorname{asin}(cx)}{5}-\frac{2abcdx^4\sqrt{-c^2x^2+1}}{25}+\frac{2abdx^3\operatorname{asin}(cx)}{3}+\frac{26abdx^2\sqrt{-c^2x^2+1}}{225c}+\frac{52abd\sqrt{-c^2x^2+1}}{225c^3}-\frac{b^2c^2dx^5\cdots}{5}\cdots \\ \frac{a^2dx^3}{3} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(-c**2*d*x**2+d)*(a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((-a**2*c**2*d*x**5/5 + a**2*d*x**3/3 - 2*a*b*c**2*d*x**5*asin(c*x
)/5 - 2*a*b*c*d*x**4*sqrt(-c**2*x**2 + 1)/25 + 2*a*b*d*x**3*asin(c*x)/3 + 2
6*a*b*d*x**2*sqrt(-c**2*x**2 + 1)/(225*c) + 52*a*b*d*sqrt(-c**2*x**2 + 1)/(
225*c**3) - b**2*c**2*d*x**5*asin(c*x)**2/5 + 2*b**2*c**2*d*x**5/125 - 2*b*
*2*c*d*x**4*sqrt(-c**2*x**2 + 1)*asin(c*x)/25 + b**2*d*x**3*asin(c*x)**2/3
- 26*b**2*d*x**3/675 + 26*b**2*d*x**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(225*c
) - 52*b**2*d*x/(225*c**2) + 52*b**2*d*sqrt(-c**2*x**2 + 1)*asin(c*x)/(225*
c**3), Ne(c, 0)), (a**2*d*x**3/3, True))
```

3.159 $\int x\left(d-c^2dx^2\right)\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=138

$$\frac{bdx\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{8c}+\frac{3bdx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{16c}-\frac{d\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{4c^2}+\frac{3d\left(a\right.}{}$$

```
[Out] -5/32*b^2*d*x^2+1/32*b^2*c^2*d*x^4+1/8*b*d*x*(-c^2*x^2+1)^(3/2)*(a+b*arcsin
(c*x))/c+3/32*d*(a+b*arcsin(c*x))^2/c^2-1/4*d*(-c^2*x^2+1)^2*(a+b*arcsin(c*
x))^2/c^2+3/16*b*d*x*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.13, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.261, Rules used = {4677, 4649, 4647, 4641, 30, 14}

$$\frac{bdx\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{8c}+\frac{3bdx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{16c}-\frac{d\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{4c^2}+\frac{3d\left(a\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[x*(d - c^2*d*x^2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (-5*b^2*d*x^2)/32 + (b^2*c^2*d*x^4)/32 + (3*b*d*x*Sqrt[1 - c^2*x^2]*(a + b*
ArcSin[c*x]))/(16*c) + (b*d*x*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(8*c
) + (3*d*(a + b*ArcSin[c*x])^2)/(32*c^2) - (d*(1 - c^2*x^2)^2*(a + b*ArcSin
[c*x])^2)/(4*c^2)
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
```

```
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int x\left(d-c^2dx^2\right)\left(a+b\sin^{-1}(cx)\right)^2\,dx=-\frac{d\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{4c^2}+\frac{(bd)\int\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{2c}$$

$$=\frac{bdx\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{8c}-\frac{d\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{4c^2}-\frac{1}{8}$$

$$=\frac{3bdx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{16c}+\frac{bdx\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{8c}-$$

$$=-\frac{5}{32}b^2dx^2+\frac{1}{32}b^2c^2dx^4+\frac{3bdx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{16c}+\frac{bdx\left(1-c\right.}{}$$

Mathematica [A] time = 0.32, size = 157, normalized size = 1.14

$$-\frac{d\left(cx\left(8a^2cx\left(c^2x^2-2\right)+2ab\sqrt{1-c^2x^2}\left(2c^2x^2-5\right)+b^2cx\left(5-c^2x^2\right)\right)+2b\sin^{-1}(cx)\left(a\left(8c^4x^4-16c^2x^2+5\right)+\right.\right.}{32c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d - c^2*d*x^2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -1/32*(d*(c*x*(b^2*c*x*(5 - c^2*x^2) + 8*a^2*c*x*(-2 + c^2*x^2) + 2*a*b*Sqr
t[1 - c^2*x^2]*(-5 + 2*c^2*x^2)) + 2*b*(b*c*x*Sqrt[1 - c^2*x^2]*(-5 + 2*c^2
*x^2) + a*(5 - 16*c^2*x^2 + 8*c^4*x^4))*ArcSin[c*x] + b^2*(5 - 16*c^2*x^2 +
 8*c^4*x^4)*ArcSin[c*x]^2))/c^2
```

fricas [A] time = 0.65, size = 176, normalized size = 1.28

$$-\frac{\left(8\,a^2-b^2\right)c^4dx^4-\left(16\,a^2-5\,b^2\right)c^2dx^2+\left(8\,b^2c^4dx^4-16\,b^2c^2dx^2+5\,b^2d\right)\arcsin\left(cx\right)^2+2\left(8\,abc^4dx^4-16\,abc^2d\right.}{32\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] -1/32*((8*a^2 - b^2)*c^4*d*x^4 - (16*a^2 - 5*b^2)*c^2*d*x^2 + (8*b^2*c^4*d*
x^4 - 16*b^2*c^2*d*x^2 + 5*b^2*d)*arcsin(c*x)^2 + 2*(8*a*b*c^4*d*x^4 - 16*a
*b*c^2*d*x^2 + 5*a*b*d)*arcsin(c*x) + 2*(2*a*b*c^3*d*x^3 - 5*a*b*c*d*x + (2
*b^2*c^3*d*x^3 - 5*b^2*c*d*x)*arcsin(c*x))*sqrt(-c^2*x^2 + 1))/c^2
```

giac [B] time = 0.41, size = 248, normalized size = 1.80

$$-\frac{1}{4}a^2c^2dx^4+\frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}b^2dx\arcsin\left(cx\right)}{8\,c}-\frac{\left(c^2x^2-1\right)^2b^2d\arcsin\left(cx\right)^2}{4\,c^2}+\frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}abdx}{8\,c}+\frac{3\,\sqrt{-c^2x^2+1}\,b^2dx\,a}{16\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] -1/4*a^2*c^2*d*x^4 + 1/8*(-c^2*x^2 + 1)^(3/2)*b^2*d*x*arcsin(c*x)/c - 1/4*(
c^2*x^2 - 1)^2*b^2*d*arcsin(c*x)^2/c^2 + 1/8*(-c^2*x^2 + 1)^(3/2)*a*b*d*x/c
 + 3/16*sqrt(-c^2*x^2 + 1)*b^2*d*x*arcsin(c*x)/c - 1/2*(c^2*x^2 - 1)^2*a*b*
d*arcsin(c*x)/c^2 + 3/16*sqrt(-c^2*x^2 + 1)*a*b*d*x/c + 1/32*(c^2*x^2 - 1)^
2*b^2*d/c^2 + 3/32*b^2*d*arcsin(c*x)^2/c^2 + 1/2*(c^2*x^2 - 1)*a^2*d/c^2 -
3/32*(c^2*x^2 - 1)*b^2*d/c^2 + 3/16*a*b*d*arcsin(c*x)/c^2 - 15/256*b^2*d/c^
2
```

maple [A] time = 0.14, size = 206, normalized size = 1.49

$$\frac{-d\,a^2\left(\frac{1}{4}c^4x^4-\frac{1}{2}c^2x^2\right)-d\,b^2\left(\frac{\arcsin(cx)^2\left(c^2x^2-1\right)^2}{4}-\frac{\arcsin(cx)\left(-2c^3x^3\sqrt{-c^2x^2+1}+5cx\sqrt{-c^2x^2+1}+3\arcsin(cx)\right)}{16}+\frac{3\arcsin(cx)^2}{32}-\right.}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/c^2*(-d*a^2*(1/4*c^4*x^4-1/2*c^2*x^2)-d*b^2*(1/4*arcsin(c*x)^2*(c^2*x^2-1
)^2-1/16*arcsin(c*x)*(-2*c^3*x^3*(-c^2*x^2+1)^(1/2)+5*c*x*(-c^2*x^2+1)^(1/2
)+3*arcsin(c*x))+3/32*arcsin(c*x)^2-1/32*(c^2*x^2-1)^2+3/32*c^2*x^2-3/32)-2
*d*a*b*(1/4*c^4*x^4*arcsin(c*x)-1/2*c^2*x^2*arcsin(c*x)+1/16*c^3*x^3*(-c^2*
x^2+1)^(1/2)-5/32*c*x*(-c^2*x^2+1)^(1/2)+5/32*arcsin(c*x)))
```

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

$$-\frac{1}{4}a^2c^2dx^4-\frac{1}{16}\left(8\,x^4\arcsin(cx)+\left(\frac{2\sqrt{-c^2x^2+1}\,x^3}{c^2}+\frac{3\sqrt{-c^2x^2+1}\,x}{c^4}-\frac{3\arcsin(cx)}{c^5}\right)c\right)abc^2d+\frac{1}{2}a^2dx^2+\frac{1}{2}\left(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] -1/4*a^2*c^2*d*x^4 - 1/16*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^
2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c*x)/c^5)*c)*a*b*c^2*d + 1/2*a^2*
d*x^2 + 1/2*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c*x)/
c^3))*a*b*d - 1/4*(b^2*c^2*d*x^4 - 2*b^2*d*x^2)*arctan2(c*x, sqrt(c*x + 1)*
sqrt(-c*x + 1))^2 - integrate(1/2*(b^2*c^3*d*x^4 - 2*b^2*c*d*x^2)*sqrt(c*x
+ 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^2*x^2 - 1
), x)
```

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

$$\int x\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,\left(d-c^2\,d\,x^2\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c*x))^2*(d - c^2*d*x^2),x)
```

```
[Out] int(x*(a + b*asin(c*x))^2*(d - c^2*d*x^2), x)
```

sympy [A] time = 2.56, size = 269, normalized size = 1.95

$$\begin{cases}-\frac{a^2c^2dx^4}{4}+\frac{a^2dx^2}{2}-\frac{abc^2dx^4\operatorname{asin}(cx)}{2}-\frac{abcdx^3\sqrt{-c^2x^2+1}}{8}+abdx^2\operatorname{asin}(cx)+\frac{5abdx\sqrt{-c^2x^2+1}}{16c}-\frac{5abd\operatorname{asin}(cx)}{16c^2}-\frac{b^2c^2dx^4\operatorname{asin}^2}{4} \\ \frac{a^2dx^2}{2}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c**2*d*x**2+d)*(a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((-a**2*c**2*d*x**4/4 + a**2*d*x**2/2 - a*b*c**2*d*x**4*asin(c*x)/
2 - a*b*c*d*x**3*sqrt(-c**2*x**2 + 1)/8 + a*b*d*x**2*asin(c*x) + 5*a*b*d*x*
sqrt(-c**2*x**2 + 1)/(16*c) - 5*a*b*d*asin(c*x)/(16*c**2) - b**2*c**2*d*x**
4*asin(c*x)**2/4 + b**2*c**2*d*x**4/32 - b**2*c*d*x**3*sqrt(-c**2*x**2 + 1)
*asin(c*x)/8 + b**2*d*x**2*asin(c*x)**2/2 - 5*b**2*d*x**2/32 + 5*b**2*d*x*s
qrt(-c**2*x**2 + 1)*asin(c*x)/(16*c) - 5*b**2*d*asin(c*x)**2/(32*c**2), Ne(
c, 0)), (a**2*d*x**2/2, True))
```

3.160 $\int \left(d-c^2 d x^2\right) \left(a+b \sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=128

$$\frac{1}{3} d x \left(1-c^2 x^2\right) \left(a+b \sin^{-1}(cx)\right)^2+\frac{2 b d \left(1-c^2 x^2\right)^{3/2} \left(a+b \sin^{-1}(cx)\right)}{9 c}+\frac{4 b d \sqrt{1-c^2 x^2} \left(a+b \sin^{-1}(cx)\right)}{3 c}+\frac{2}{3} d x \left(\right.$$

```
[Out] -14/9*b^2*d*x+2/27*b^2*c^2*d*x^3+2/9*b*d*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x
))/c+2/3*d*x*(a+b*arcsin(c*x))^2+1/3*d*x*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2+4
/3*b*d*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.14, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.182$, Rules used = {4649, 4619, 4677, 8}

$$\frac{1}{3} d x \left(1-c^2 x^2\right) \left(a+b \sin^{-1}(cx)\right)^2+\frac{2 b d \left(1-c^2 x^2\right)^{3/2} \left(a+b \sin^{-1}(cx)\right)}{9 c}+\frac{4 b d \sqrt{1-c^2 x^2} \left(a+b \sin^{-1}(cx)\right)}{3 c}+\frac{2}{3} d x \left(\right.$$

Antiderivative was successfully verified.

```
[In] Int[(d - c^2*d*x^2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (-14*b^2*d*x)/9 + (2*b^2*c^2*d*x^3)/27 + (4*b*d*Sqrt[1 - c^2*x^2]*(a + b*Ar
cSin[c*x]))/(3*c) + (2*b*d*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(9*c) +
 (2*d*x*(a + b*ArcSin[c*x])^2)/3 + (d*x*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2
)/3
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 4619

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

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \left(d-c^2dx^2\right)\left(a+b\sin^{-1}(cx)\right)^2\,dx=\frac{1}{3}dx\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2+\frac{1}{3}(2d)\int \left(a+b\sin^{-1}(cx)\right)^2\,dx-\frac{1}{3}(2b$$
$$=\frac{2bd\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{9c}+\frac{2}{3}dx\left(a+b\sin^{-1}(cx)\right)^2+\frac{1}{3}dx\left(1-c^2\right.$$
$$=-\frac{2}{9}b^2dx+\frac{2}{27}b^2c^2dx^3+\frac{4bd\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3c}+\frac{2bd\left(1-c^2x^2\right)^{3}}{}$$
$$=-\frac{14}{9}b^2dx+\frac{2}{27}b^2c^2dx^3+\frac{4bd\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3c}+\frac{2bd\left(1-c^2x^2\right)}{}$$

Mathematica [A] time = 0.22, size = 137, normalized size = 1.07

$$-\frac{d\left(9a^2cx\left(c^2x^2-3\right)+6ab\sqrt{1-c^2x^2}\left(c^2x^2-7\right)+6b\sin^{-1}(cx)\left(3acx\left(c^2x^2-3\right)+b\sqrt{1-c^2x^2}\left(c^2x^2-7\right)\right)-2b^2c\right.}{27c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d - c^2*d*x^2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -1/27*(d*(-2*b^2*c*x*(-21 + c^2*x^2) + 6*a*b*Sqrt[1 - c^2*x^2]*(-7 + c^2*x^
2) + 9*a^2*c*x*(-3 + c^2*x^2) + 6*b*(b*Sqrt[1 - c^2*x^2]*(-7 + c^2*x^2) + 3
*a*c*x*(-3 + c^2*x^2))*ArcSin[c*x] + 9*b^2*c*x*(-3 + c^2*x^2)*ArcSin[c*x]^2
))/c
```

fricas [A] time = 0.96, size = 146, normalized size = 1.14

$$-\frac{\left(9\,a^2-2\,b^2\right)c^3dx^3-3\left(9\,a^2-14\,b^2\right)cdx+9\left(b^2c^3dx^3-3\,b^2cdx\right)\arcsin\left(cx\right)^2+18\left(abc^3dx^3-3\,abcdx\right)\arcsin\left(cx\right.}{27\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] -1/27*((9*a^2 - 2*b^2)*c^3*d*x^3 - 3*(9*a^2 - 14*b^2)*c*d*x + 9*(b^2*c^3*d*
x^3 - 3*b^2*c*d*x)*arcsin(c*x)^2 + 18*(a*b*c^3*d*x^3 - 3*a*b*c*d*x)*arcsin(
c*x) + 6*(a*b*c^2*d*x^2 - 7*a*b*d + (b^2*c^2*d*x^2 - 7*b^2*d)*arcsin(c*x))*
sqrt(-c^2*x^2 + 1))/c
```

giac [A] time = 0.64, size = 196, normalized size = 1.53

$$-\frac{1}{3}\,a^2c^2dx^3-\frac{1}{3}\left(c^2x^2-1\right)b^2dx\arcsin\left(cx\right)^2-\frac{2}{3}\left(c^2x^2-1\right)abdx\arcsin\left(cx\right)+\frac{2}{3}\,b^2dx\arcsin\left(cx\right)^2+\frac{2}{27}\left(c^2x^2-1\right)b^2dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] -1/3*a^2*c^2*d*x^3 - 1/3*(c^2*x^2 - 1)*b^2*d*x*arcsin(c*x)^2 - 2/3*(c^2*x^2
 - 1)*a*b*d*x*arcsin(c*x) + 2/3*b^2*d*x*arcsin(c*x)^2 + 2/27*(c^2*x^2 - 1)*
b^2*d*x + 4/3*a*b*d*x*arcsin(c*x) + 2/9*(-c^2*x^2 + 1)^(3/2)*b^2*d*arcsin(c
*x)/c + a^2*d*x - 40/27*b^2*d*x + 2/9*(-c^2*x^2 + 1)^(3/2)*a*b*d/c + 4/3*sq
rt(-c^2*x^2 + 1)*b^2*d*arcsin(c*x)/c + 4/3*sqrt(-c^2*x^2 + 1)*a*b*d/c
```

maple [A] time = 0.06, size = 173, normalized size = 1.35

$$\frac{-d\,a^2\left(\frac{1}{3}c^3x^3-cx\right)-d\,b^2\left(\frac{\arcsin(cx)^2\left(c^2x^2-3\right)cx}{3}+\frac{4cx}{3}-\frac{4\arcsin(cx)\sqrt{-c^2x^2+1}}{3}+\frac{2\arcsin(cx)\left(c^2x^2-1\right)\sqrt{-c^2x^2+1}}{9}-\frac{2\left(c^2x^2-3\right)cx}{27}\right)-}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/c*(-d*a^2*(1/3*c^3*x^3-c*x)-d*b^2*(1/3*arcsin(c*x)^2*(c^2*x^2-3)*c*x+4/3*
c*x-4/3*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+2/9*arcsin(c*x)*(c^2*x^2-1)*(-c^2*x^
2+1)^(1/2)-2/27*(c^2*x^2-3)*c*x)-2*d*a*b*(1/3*c^3*x^3*arcsin(c*x)-c*x*arcsi
n(c*x)+1/9*c^2*x^2*(-c^2*x^2+1)^(1/2)-7/9*(-c^2*x^2+1)^(1/2)))
```

maxima [B] time = 0.43, size = 233, normalized size = 1.82

$$-\frac{1}{3}b^2c^2dx^3\arcsin(cx)^2-\frac{1}{3}a^2c^2dx^3-\frac{2}{9}\left(3x^3\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2}+\frac{2\sqrt{-c^2x^2+1}}{c^4}\right)\right)abc^2d-\frac{2}{27}\left(3c\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] -1/3*b^2*c^2*d*x^3*arcsin(c*x)^2 - 1/3*a^2*c^2*d*x^3 - 2/9*(3*x^3*arcsin(c*
x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*c^2*d -
 2/27*(3*c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4)*arcsin(c
*x) - (c^2*x^3 + 6*x)/c^2)*b^2*c^2*d + b^2*d*x*arcsin(c*x)^2 - 2*b^2*d*(x -
 sqrt(-c^2*x^2 + 1)*arcsin(c*x)/c) + a^2*d*x + 2*(c*x*arcsin(c*x) + sqrt(-c
^2*x^2 + 1))*a*b*d/c
```

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

$$\int (a+b\,\mathrm{asin}\,(c\,x))^2\,\left(d-c^2\,d\,x^2\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2*(d - c^2*d*x^2),x)
```

```
[Out] int((a + b*asin(c*x))^2*(d - c^2*d*x^2), x)
```

sympy [A] time = 1.28, size = 224, normalized size = 1.75

$$\begin{cases} -\frac{a^2c^2dx^3}{3}+a^2dx-\frac{2abc^2dx^3\,\mathrm{asin}\,(cx)}{3}-\frac{2abcdx^2\sqrt{-c^2x^2+1}}{9}+2abdx\,\mathrm{asin}\,(cx)+\frac{14abd\sqrt{-c^2x^2+1}}{9c}-\frac{b^2c^2dx^3\,\mathrm{asin}^2\,(cx)}{3}+\frac{2b^2c^2d}{27} \\ a^2dx \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)*(a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((-a**2*c**2*d*x**3/3 + a**2*d*x - 2*a*b*c**2*d*x**3*asin(c*x)/3 -
 2*a*b*c*d*x**2*sqrt(-c**2*x**2 + 1)/9 + 2*a*b*d*x*asin(c*x) + 14*a*b*d*sqr
t(-c**2*x**2 + 1)/(9*c) - b**2*c**2*d*x**3*asin(c*x)**2/3 + 2*b**2*c**2*d*x
**3/27 - 2*b**2*c*d*x**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/9 + b**2*d*x*asin(c
*x)**2 - 14*b**2*d*x/9 + 14*b**2*d*sqrt(-c**2*x**2 + 1)*asin(c*x)/(9*c), Ne
(c, 0)), (a**2*d*x, True))
```

3.161 $\int \frac{(d-c^2dx^2)(a+b\sin^{-1}(cx))^2}{x}\,dx$

Optimal. Leaf size=178

$$\frac{1}{2}d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2-\frac{1}{2}bcdx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)-ibd\text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)-\frac{id\left(a+\right.}{}$$

```
[Out] 1/4*b^2*c^2*d*x^2-1/4*d*(a+b*arcsin(c*x))^2+1/2*d*(-c^2*x^2+1)*(a+b*arcsin(
c*x))^2-1/3*I*d*(a+b*arcsin(c*x))^3/b+d*(a+b*arcsin(c*x))^2*ln(1-(I*c*x+(-c
^2*x^2+1)^(1/2))^2)-I*b*d*(a+b*arcsin(c*x))*polylog(2,(I*c*x+(-c^2*x^2+1)^(
1/2))^2)+1/2*b^2*d*polylog(3,(I*c*x+(-c^2*x^2+1)^(1/2))^2)-1/2*b*c*d*x*(a+b
*arcsin(c*x))*(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.24, antiderivative size = 178, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {4699, 4625, 3717, 2190, 2531, 2282, 6589, 4647, 4641, 30}

$$-ibd\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}b^2d\text{PolyLog}\left(3,e^{2i\sin^{-1}(cx)}\right)+\frac{1}{2}d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2-\frac{1}{2}l$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)*(a + b*ArcSin[c*x])^2)/x,x]
```

```
[Out] (b^2*c^2*d*x^2)/4 - (b*c*d*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/2 - (d*
(a + b*ArcSin[c*x])^2)/4 + (d*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/2 - ((I/
3)*d*(a + b*ArcSin[c*x])^3)/b + d*(a + b*ArcSin[c*x])^2*Log[1 - E^((2*I)*Ar
cSin[c*x])] - I*b*d*(a + b*ArcSin[c*x])*PolyLog[2, E^((2*I)*ArcSin[c*x])] +
 (b^2*d*PolyLog[3, E^((2*I)*ArcSin[c*x])])/2
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
```

```
, g, n}, x] && GtQ[m, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(d-c^2dx^2)(a+b\sin^{-1}(cx))^2}{x}dx = \frac{1}{2}d(1-c^2x^2)(a+b\sin^{-1}(cx))^2 + d\int \frac{(a+b\sin^{-1}(cx))^2}{x}dx - (bcd)\int \sqrt{1}$$
$$= -\frac{1}{2}bcdx\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx)) + \frac{1}{2}d(1-c^2x^2)(a+b\sin^{-1}(cx))^2 + d$$
$$= \frac{1}{4}b^2c^2dx^2 - \frac{1}{2}bcdx\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx)) - \frac{1}{4}d(a+b\sin^{-1}(cx))^2 + \frac{1}{2}$$
$$= \frac{1}{4}b^2c^2dx^2 - \frac{1}{2}bcdx\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx)) - \frac{1}{4}d(a+b\sin^{-1}(cx))^2 + \frac{1}{2}$$
$$= \frac{1}{4}b^2c^2dx^2 - \frac{1}{2}bcdx\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx)) - \frac{1}{4}d(a+b\sin^{-1}(cx))^2 + \frac{1}{2}$$
$$= \frac{1}{4}b^2c^2dx^2 - \frac{1}{2}bcdx\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx)) - \frac{1}{4}d(a+b\sin^{-1}(cx))^2 + \frac{1}{2}$$
$$= \frac{1}{4}b^2c^2dx^2 - \frac{1}{2}bcdx\sqrt{1-c^2x^2}\,(a+b\sin^{-1}(cx)) - \frac{1}{4}d(a+b\sin^{-1}(cx))^2 + \frac{1}{2}$$

Mathematica [A] time = 0.46, size = 236, normalized size = 1.33

$$\frac{1}{2}d\left(a^2(-c^2)x^2 + 2a^2\log(x) - 2abc^2x^2\sin^{-1}(cx) + ab\left(\sin^{-1}(cx) - cx\sqrt{1-c^2x^2}\right) - 2iab\left(\sin^{-1}(cx)^2 + \text{Li}_2\left(e^{2i\sin^{-}}\right.\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)*(a + b*ArcSin[c*x])^2)/x,x]
```

```
[Out] (d*(-(a^2*c^2*x^2) - 2*a*b*c^2*x^2*ArcSin[c*x] + a*b*(-(c*x*Sqrt[1 - c^2*x^
2]) + ArcSin[c*x]) + (b^2*(-1 + 2*ArcSin[c*x]^2)*Cos[2*ArcSin[c*x]])/4 + 4*
a*b*ArcSin[c*x]*Log[1 - E^((2*I)*ArcSin[c*x])] + 2*a^2*Log[x] - (2*I)*a*b*(
ArcSin[c*x]^2 + PolyLog[2, E^((2*I)*ArcSin[c*x])]) + (b^2*((-I)*Pi^3 + (8*I
)*ArcSin[c*x]^3 + 24*ArcSin[c*x]^2*Log[1 - E^((-2*I)*ArcSin[c*x])] + (24*I)
*ArcSin[c*x]*PolyLog[2, E^((-2*I)*ArcSin[c*x])] + 12*PolyLog[3, E^((-2*I)*A
rcSin[c*x])]))/12 - (b^2*ArcSin[c*x]*Sin[2*ArcSin[c*x]])/2))/2
```

fricas [F] time = 0.95, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{a^2c^2dx^2 - a^2d + (b^2c^2dx^2 - b^2d)\arcsin(cx)^2 + 2(abc^2dx^2 - abd)\arcsin(cx)}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2/x,x, algorithm="fricas")
```

```
[Out] integral(-(a^2*c^2*d*x^2 - a^2*d + (b^2*c^2*d*x^2 - b^2*d)*arcsin(c*x)^2 +
2*(a*b*c^2*d*x^2 - a*b*d)*arcsin(c*x))/x, x)
```

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

$$\int -\frac{(c^2dx^2 - d)(b\arcsin(cx) + a)^2}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2/x,x, algorithm="giac")
```

```
[Out] integrate(-(c^2*d*x^2 - d)*(b*arcsin(c*x) + a)^2/x, x)
```

maple [B] time = 0.35, size = 421, normalized size = 2.37

$$-\frac{d\,a^2c^2x^2}{2}+d\,a^2\ln(cx)-2idab\,\mathrm{polylog}\left(2,icx+\sqrt{-c^2x^2+1}\right)+d\,b^2\arcsin(cx)^2\ln\left(1+icx+\sqrt{-c^2x^2+1}\right)-2ia$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2/x,x)
```

```
[Out] -1/2*d*a^2*c^2*x^2+d*a^2*ln(c*x)-2*I*d*a*b*polylog(2,I*c*x+(-c^2*x^2+1)^(1/
2))+d*b^2*arcsin(c*x)^2*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-2*I*d*a*b*polylog(2,
-I*c*x-(-c^2*x^2+1)^(1/2))+2*d*b^2*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2))+d*b
^2*arcsin(c*x)^2*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))-2*I*d*b^2*arcsin(c*x)*polyl
og(2,I*c*x+(-c^2*x^2+1)^(1/2))+2*d*b^2*polylog(3,I*c*x+(-c^2*x^2+1)^(1/2))+
1/4*d*b^2*cos(2*arcsin(c*x))*arcsin(c*x)^2-1/8*d*b^2*cos(2*arcsin(c*x))-1/4
*d*b^2*arcsin(c*x)*sin(2*arcsin(c*x))-2*I*d*b^2*arcsin(c*x)*polylog(2,-I*c*
x-(-c^2*x^2+1)^(1/2))+2*d*a*b*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+2*
d*a*b*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))-1/3*I*d*b^2*arcsin(c*x)^3-
I*d*a*b*arcsin(c*x)^2+1/2*d*a*b*cos(2*arcsin(c*x))*arcsin(c*x)-1/4*d*a*b*si
n(2*arcsin(c*x))
```

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

$$-\frac{1}{2}\,a^2c^2dx^2+a^2d\log(x)-\int\frac{\left(b^2c^2dx^2-b^2d\right)\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)^2+2\left(abc^2dx^2-abd\right)\arctan\left(cx,\sqrt{\right.}\right.}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2/x,x, algorithm="maxima")
```

```
[Out] -1/2*a^2*c^2*d*x^2 + a^2*d*log(x) - integrate(((b^2*c^2*d*x^2 - b^2*d)*arct
an2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c^2*d*x^2 - a*b*d)*arctan
2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))/x, x)
```

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

$$\int\frac{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,\left(d-c^2\,d\,x^2\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2))/x,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2))/x, x)
```

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

$$-d\left(\int\left(-\frac{a^2}{x}\right)dx+\int a^2c^2x\,dx+\int\left(-\frac{b^2\,\mathrm{asin}^2\,(cx)}{x}\right)dx+\int\left(-\frac{2ab\,\mathrm{asin}\,(cx)}{x}\right)dx+\int b^2c^2x\,\mathrm{asin}^2\,(cx)\,dx+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)*(a+b*asin(c*x))**2/x,x)
```

```
[Out] -d*(Integral(-a**2/x, x) + Integral(a**2*c**2*x, x) + Integral(-b**2*asin(c
*x)**2/x, x) + Integral(-2*a*b*asin(c*x)/x, x) + Integral(b**2*c**2*x*asin(
c*x)**2, x) + Integral(2*a*b*c**2*x*asin(c*x), x))
```

3.162 $\int \frac{\left(d-c^2dx^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{x^2}\,dx$

Optimal. Leaf size=149

$$-2bcd\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)-\frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{x}-2c^2dx\left(a+b\sin^{-1}(cx)\right)^2-4bcd\tanh^{-1}\left(e^{i\sin^{-1}(\cdots}\right.$$

```
[Out] 2*b^2*c^2*d*x-2*c^2*d*x*(a+b*arcsin(c*x))^2-d*(-c^2*x^2+1)*(a+b*arcsin(c*x)
)^2/x-4*b*c*d*(a+b*arcsin(c*x))*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))+2*I*b^2*c
*d*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))-2*I*b^2*c*d*polylog(2,I*c*x+(-c^2*x
^2+1)^(1/2))-2*b*c*d*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.30, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.360, Rules used = {4695, 4619, 4677, 8, 4697, 4709, 4183, 2279, 2391}

$$2ib^2cd\text{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)-2ib^2cd\text{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)-2bcd\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)-\frac{d\left(1-c^2x^2\right)\left(a+\cdots\right.}{x}$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)*(a + b*ArcSin[c*x])^2)/x^2,x]
```

```
[Out] 2*b^2*c^2*d*x - 2*b*c*d*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) - 2*c^2*d*x*(
a + b*ArcSin[c*x])^2 - (d*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/x - 4*b*c*d*
(a + b*ArcSin[c*x])*ArcTanh[E^(I*ArcSin[c*x])] + (2*I)*b^2*c*d*PolyLog[2, -
E^(I*ArcSin[c*x])] - (2*I)*b^2*c*d*PolyLog[2, E^(I*ArcSin[c*x])]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4619

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

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4695

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m +
2)*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPar
t[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f
*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /;
 FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0
] && LtQ[m, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{x^2}\,dx = -\frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{x} + (2bcd)\int \frac{\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx\right.}{x}$$

$$= 2bcd\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right) - 2c^2dx\left(a+b\sin^{-1}(cx)\right)^2 - \frac{d\left(1-c^2\right.}{}$$

$$= -2b^2c^2dx - 2bcd\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right) - 2c^2dx\left(a+b\sin^{-1}(cx)\right)^2$$

$$= 2b^2c^2dx - 2bcd\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right) - 2c^2dx\left(a+b\sin^{-1}(cx)\right)^2 -$$

$$= 2b^2c^2dx - 2bcd\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right) - 2c^2dx\left(a+b\sin^{-1}(cx)\right)^2 -$$

$$= 2b^2c^2dx - 2bcd\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right) - 2c^2dx\left(a+b\sin^{-1}(cx)\right)^2 -$$

Mathematica [A] time = 0.42, size = 203, normalized size = 1.36

$$-\frac{d\left(a^2c^2x^2+a^2+2abcx\left(\sqrt{1-c^2x^2}+cx\sin^{-1}(cx)\right)+2ab\left(cx\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)+\sin^{-1}(cx)\right)+b^2cx\left(2\sqrt{1-c^2\right.\right.}}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)*(a + b*ArcSin[c*x])^2)/x^2,x]
```

```
[Out] -((d*(a^2 + a^2*c^2*x^2 + 2*a*b*c*x*(Sqrt[1 - c^2*x^2] + c*x*ArcSin[c*x]) +
 b^2*c*x*(2*Sqrt[1 - c^2*x^2]*ArcSin[c*x] + c*x*(-2 + ArcSin[c*x]^2)) + 2*a
*b*(ArcSin[c*x] + c*x*ArcTanh[Sqrt[1 - c^2*x^2]]) - I*b^2*(I*ArcSin[c*x]*(A
rcSin[c*x] + 2*c*x*(-Log[1 - E^(I*ArcSin[c*x])] + Log[1 + E^(I*ArcSin[c*x])
])) + 2*c*x*PolyLog[2, -E^(I*ArcSin[c*x])] - 2*c*x*PolyLog[2, E^(I*ArcSin[c
*x])])))/x)
```

fricas [F] time = 0.76, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{a^2c^2dx^2-a^2d+\left(b^2c^2dx^2-b^2d\right)\arcsin\left(cx\right)^2+2\left(abc^2dx^2-abd\right)\arcsin\left(cx\right)}{x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2/x^2,x, algorithm="fricas")
```

```
[Out] integral(-(a^2*c^2*d*x^2 - a^2*d + (b^2*c^2*d*x^2 - b^2*d)*arcsin(c*x)^2 +
2*(a*b*c^2*d*x^2 - a*b*d)*arcsin(c*x))/x^2, x)
```

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

$$\int -\frac{\left(c^2dx^2-d\right)\left(b\arcsin\left(cx\right)+a\right)^2}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2/x^2,x, algorithm="giac")
```

```
[Out] integrate(-(c^2*d*x^2 - d)*(b*arcsin(c*x) + a)^2/x^2, x)
```

maple [A] time = 0.40, size = 269, normalized size = 1.81

$$-d\,a^2c^2x-\frac{d\,a^2}{x}-2cd\,b^2\sqrt{-c^2x^2+1}\,\arcsin\left(cx\right)-d\,b^2\arcsin\left(cx\right)^2c^2x+2b^2c^2dx-\frac{d\,b^2\arcsin\left(cx\right)^2}{x}-2cd\,b^2\arcsin\left(cx\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2/x^2,x)
```

```
[Out] -d*a^2*c^2*x-d*a^2/x-2*c*d*b^2*(-c^2*x^2+1)^(1/2)*arcsin(c*x)-d*b^2*arcsin(
c*x)^2*c^2*x+2*b^2*c^2*d*x-d*b^2/x*arcsin(c*x)^2-2*c*d*b^2*arcsin(c*x)*ln(1
+I*c*x+(-c^2*x^2+1)^(1/2))+2*c*d*b^2*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1
/2))+2*I*b^2*c*d*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))-2*I*b^2*c*d*polylog(2
,I*c*x+(-c^2*x^2+1)^(1/2))-2*d*a*b*arcsin(c*x)*c^2*x-2*d*a*b*arcsin(c*x)/x-
2*c*d*a*b*(-c^2*x^2+1)^(1/2)-2*c*d*a*b*arctanh(1/(-c^2*x^2+1)^(1/2))
```

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

$$-b^2c^2dx\arcsin\left(cx\right)^2+2\,b^2c^2d\left(x-\frac{\sqrt{-c^2x^2+1}\,\arcsin\left(cx\right)}{c}\right)-a^2c^2dx-2\left(cx\arcsin\left(cx\right)+\sqrt{-c^2x^2+1}\right)abcd-2\left(c\,\mathrm{lo}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2/x^2,x, algorithm="maxima")
```

```
[Out] -b^2*c^2*d*x*arcsin(c*x)^2 + 2*b^2*c^2*d*(x - sqrt(-c^2*x^2 + 1)*arcsin(c*x
)/c) - a^2*c^2*d*x - 2*(c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*a*b*c*d - 2*(
c*log(2*sqrt(-c^2*x^2 + 1)/abs(x) + 2/abs(x)) + arcsin(c*x)/x)*a*b*d - (2*c
*x*integrate(sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-
c*x + 1))/(c^2*x^3 - x), x) + arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2)
*b^2*d/x - a^2*d/x
```

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

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))^2\,\left(d-c^2\,d\,x^2\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2))/x^2,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2))/x^2, x)
```

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

$$-d\left(\int a^2c^2\,dx + \int\left(-\frac{a^2}{x^2}\right)dx + \int b^2c^2\,\mathrm{asin}^2\,(cx)\,dx + \int\left(-\frac{b^2\,\mathrm{asin}^2\,(cx)}{x^2}\right)dx + \int 2abc^2\,\mathrm{asin}\,(cx)\,dx + \int\Big(-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)*(a+b*asin(c*x))**2/x**2,x)
```

```
[Out] -d*(Integral(a**2*c**2, x) + Integral(-a**2/x**2, x) + Integral(b**2*c**2*a
sin(c*x)**2, x) + Integral(-b**2*asin(c*x)**2/x**2, x) + Integral(2*a*b*c**
2*asin(c*x), x) + Integral(-2*a*b*asin(c*x)/x**2, x))
```

3.163 $\int \frac{(d-c^2dx^2)(a+b\sin^{-1}(cx))^2}{x^3}\,dx$

Optimal. Leaf size=193

$$ibc^2d\text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)-\frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{2x^2}-\frac{bcd\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{x}+\frac{ic^2d\left(a+\right.}{}$$

```
[Out] -1/2*c^2*d*(a+b*arcsin(c*x))^2-1/2*d*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2/x^2+1
/3*I*c^2*d*(a+b*arcsin(c*x))^3/b-c^2*d*(a+b*arcsin(c*x))^2*ln(1-(I*c*x+(-c^
2*x^2+1)^(1/2))^2)+b^2*c^2*d*ln(x)+I*b*c^2*d*(a+b*arcsin(c*x))*polylog(2,(I
*c*x+(-c^2*x^2+1)^(1/2))^2)-1/2*b^2*c^2*d*polylog(3,(I*c*x+(-c^2*x^2+1)^(1/
2))^2)-b*c*d*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/x
```

Rubi [A] time = 0.29, antiderivative size = 193, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {4695, 4625, 3717, 2190, 2531, 2282, 6589, 4693, 29, 4641}

$$ibc^2d\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)-\frac{1}{2}b^2c^2d\text{PolyLog}\left(3,e^{2i\sin^{-1}(cx)}\right)-\frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{2x^2}-\frac{b}{}$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)*(a + b*ArcSin[c*x])^2)/x^3,x]
```

```
[Out] -((b*c*d*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/x) - (c^2*d*(a + b*ArcSin[c
*x])^2)/2 - (d*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(2*x^2) + ((I/3)*c^2*d*
(a + b*ArcSin[c*x])^3)/b - c^2*d*(a + b*ArcSin[c*x])^2*Log[1 - E^((2*I)*Arc
Sin[c*x])] + b^2*c^2*d*Log[x] + I*b*c^2*d*(a + b*ArcSin[c*x])*PolyLog[2, E^
((2*I)*ArcSin[c*x])] - (b^2*c^2*d*PolyLog[3, E^((2*I)*ArcSin[c*x])])/2
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4693

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(b*c*n*Sqrt[d + e*x^2])/(f*(m + 1)*Sqr
t[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1), x], x] + Di
st[(c^2*Sqrt[d + e*x^2])/(f^2*(m + 1)*Sqrt[1 - c^2*x^2]), Int[((f*x)^(m + 2
)*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c, d, e
, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && LtQ[m, -1]
```

Rule 4695

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m +
2)*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPar
t[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f
*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /;
 FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0
] && LtQ[m, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{x^3}\,dx = -\frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{2x^2} + (bcd)\int \frac{\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{x^2}\,dx$$
$$= -\frac{bcd\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{x} - \frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{2x^2} - \left(c^2d\right)$$
$$= -\frac{bcd\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{x} - \frac{1}{2}c^2d\left(a+b\sin^{-1}(cx)\right)^2 - \frac{d\left(1-c^2x^2\right)}{}$$
$$= -\frac{bcd\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{x} - \frac{1}{2}c^2d\left(a+b\sin^{-1}(cx)\right)^2 - \frac{d\left(1-c^2x^2\right)}{}$$
$$= -\frac{bcd\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{x} - \frac{1}{2}c^2d\left(a+b\sin^{-1}(cx)\right)^2 - \frac{d\left(1-c^2x^2\right)}{}$$
$$= -\frac{bcd\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{x} - \frac{1}{2}c^2d\left(a+b\sin^{-1}(cx)\right)^2 - \frac{d\left(1-c^2x^2\right)}{}$$
$$= -\frac{bcd\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{x} - \frac{1}{2}c^2d\left(a+b\sin^{-1}(cx)\right)^2 - \frac{d\left(1-c^2x^2\right)}{}$$

Mathematica [A] time = 0.39, size = 236, normalized size = 1.22

$$\frac{1}{2}d\left(-2a^2c^2\log(x) - \frac{a^2}{x^2} + 2iabc^2\left(\text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right) + \sin^{-1}(cx)\left(\sin^{-1}(cx) + 2i\log\left(1-e^{2i\sin^{-1}(cx)}\right)\right)\right) - \frac{2ab\left(cx\sqrt{1-\right.}}{}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)*(a + b*ArcSin[c*x])^2)/x^3,x]
```

```
[Out] (d*(-(a^2/x^2) - (2*a*b*(c*x*Sqrt[1 - c^2*x^2] + ArcSin[c*x]))/x^2 - 2*a^2*
c^2*Log[x] - (b^2*(2*c*x*Sqrt[1 - c^2*x^2]*ArcSin[c*x] + ArcSin[c*x]^2 - 2*
c^2*x^2*Log[c*x]))/x^2 + (2*I)*a*b*c^2*(ArcSin[c*x]*(ArcSin[c*x] + (2*I)*Lo
g[1 - E^((2*I)*ArcSin[c*x])]) + PolyLog[2, E^((2*I)*ArcSin[c*x])]) + (I/12)
*b^2*c^2*(Pi^3 - 8*ArcSin[c*x]^3 + (24*I)*ArcSin[c*x]^2*Log[1 - E^((-2*I)*A
rcSin[c*x])] - 24*ArcSin[c*x]*PolyLog[2, E^((-2*I)*ArcSin[c*x])] + (12*I)*P
olyLog[3, E^((-2*I)*ArcSin[c*x])])))/2
```

fricas [F] time = 0.67, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{a^2c^2dx^2 - a^2d + \left(b^2c^2dx^2 - b^2d\right)\arcsin(cx)^2 + 2\left(abc^2dx^2 - abd\right)\arcsin(cx)}{x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2/x^3,x, algorithm="fricas")
```

```
[Out] integral(-(a^2*c^2*d*x^2 - a^2*d + (b^2*c^2*d*x^2 - b^2*d)*arcsin(c*x)^2 +
2*(a*b*c^2*d*x^2 - a*b*d)*arcsin(c*x))/x^3, x)
```

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

$$\int -\frac{\left(c^2dx^2 - d\right)(b\arcsin(cx) + a)^2}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2/x^3,x, algorithm="giac")
```

```
[Out] integrate(-(c^2*d*x^2 - d)*(b*arcsin(c*x) + a)^2/x^3, x)
```

maple [B] time = 0.59, size = 564, normalized size = 2.92

$$-c^2 d\, a^2 \ln(cx) - \frac{d\,a^2}{2x^2} + \frac{i c^2 d\, b^2 \arcsin(cx)^3}{3} + 2ic^2 d\, b^2 \arcsin(cx) \operatorname{polylog}\left(2, icx + \sqrt{-c^2x^2+1}\right) - \frac{cd\, b^2 \arcsin(cx)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2/x^3,x)
```

```
[Out] -c^2*d*a^2*ln(c*x)-1/2*d*a^2/x^2+1/3*I*c^2*d*b^2*arcsin(c*x)^3+I*c^2*d*a*b-
c*d*b^2*arcsin(c*x)/x*(-c^2*x^2+1)^(1/2)-1/2*d*b^2*arcsin(c*x)^2/x^2-c^2*d*
b^2*arcsin(c*x)^2*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+I*c^2*d*b^2*arcsin(c*x)-2*
c^2*d*b^2*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2))-c^2*d*b^2*arcsin(c*x)^2*ln(1
-I*c*x-(-c^2*x^2+1)^(1/2))+2*I*c^2*d*a*b*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2)
)-2*c^2*d*b^2*polylog(3,I*c*x+(-c^2*x^2+1)^(1/2))+c^2*d*b^2*ln(1+I*c*x+(-c^
2*x^2+1)^(1/2))-2*c^2*d*b^2*ln(I*c*x+(-c^2*x^2+1)^(1/2))+c^2*d*b^2*ln(I*c*x
+(-c^2*x^2+1)^(1/2)-1)+I*c^2*d*a*b*arcsin(c*x)^2+2*I*c^2*d*b^2*arcsin(c*x)*
polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))-c*d*a*b/x*(-c^2*x^2+1)^(1/2)-d*a*b*arc
sin(c*x)/x^2-2*c^2*d*a*b*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-2*c^2*d
*a*b*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))+2*I*c^2*d*b^2*arcsin(c*x)*p
olylog(2,I*c*x+(-c^2*x^2+1)^(1/2))+2*I*c^2*d*a*b*polylog(2,-I*c*x-(-c^2*x^2
+1)^(1/2))
```

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

$$-a^2c^2d\log(x) - abd\left(\frac{\sqrt{-c^2x^2+1}\,c}{x} + \frac{\arcsin(cx)}{x^2}\right) - \frac{a^2d}{2\,x^2} - \int \frac{2\,abc^2dx^2 \arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right) + \left(b^2c^2d\right.}{x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2/x^3,x, algorithm="maxima")
```

```
[Out] -a^2*c^2*d*log(x) - a*b*d*(sqrt(-c^2*x^2 + 1)*c/x + arcsin(c*x)/x^2) - 1/2*
a^2*d/x^2 - integrate((2*a*b*c^2*d*x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x
 + 1)) + (b^2*c^2*d*x^2 - b^2*d)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))
^2)/x^3, x)
```

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

$$\int \frac{(a + b\,\mathrm{asin}\,(c\,x))^2\,\left(d - c^2\,d\,x^2\right)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2))/x^3,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2))/x^3, x)
```

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

$$-d\left(\int \left(-\frac{a^2}{x^3}\right)dx + \int \frac{a^2c^2}{x}\,dx + \int \left(-\frac{b^2\operatorname{asin}^2(cx)}{x^3}\right)dx + \int \left(-\frac{2ab\operatorname{asin}(cx)}{x^3}\right)dx + \int \frac{b^2c^2\operatorname{asin}^2(cx)}{x}\,dx + \int$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)*(a+b*asin(c*x))**2/x**3,x)
```

```
[Out] -d*(Integral(-a**2/x**3, x) + Integral(a**2*c**2/x, x) + Integral(-b**2*asi
n(c*x)**2/x**3, x) + Integral(-2*a*b*asin(c*x)/x**3, x) + Integral(b**2*c**
2*asin(c*x)**2/x, x) + Integral(2*a*b*c**2*asin(c*x)/x, x))
```

3.164 $\int \frac{(d-c^2dx^2)\left(a+b\sin^{-1}(cx)\right)^2}{x^4}\,dx$

Optimal. Leaf size=176

$$\frac{10}{3}bc^3d\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)-\frac{bcd\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3x^2}-\frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{3x^3}+\frac{2c^2}{}$$

```
[Out] -1/3*b^2*c^2*d/x+2/3*c^2*d*(a+b*arcsin(c*x))^2/x-1/3*d*(-c^2*x^2+1)*(a+b*ar
csin(c*x))^2/x^3+10/3*b*c^3*d*(a+b*arcsin(c*x))*arctanh(I*c*x+(-c^2*x^2+1)^
(1/2))-5/3*I*b^2*c^3*d*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))+5/3*I*b^2*c^3*d
*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))-1/3*b*c*d*(a+b*arcsin(c*x))*(-c^2*x^2+
1)^(1/2)/x^2
```

Rubi [A] time = 0.38, antiderivative size = 176, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.320, Rules used = {4695, 4627, 4709, 4183, 2279, 2391, 4693, 30}

$$-\frac{5}{3}ib^2c^3d\text{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)+\frac{5}{3}ib^2c^3d\text{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)-\frac{bcd\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3x^2}-\frac{d\left(1-c^2x^2\right)\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)*(a + b*ArcSin[c*x])^2)/x^4,x]
```

```
[Out] -(b^2*c^2*d)/(3*x) - (b*c*d*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(3*x^2)
+ (2*c^2*d*(a + b*ArcSin[c*x])^2)/(3*x) - (d*(1 - c^2*x^2)*(a + b*ArcSin[c*
x])^2)/(3*x^3) + (10*b*c^3*d*(a + b*ArcSin[c*x])*ArcTanh[E^(I*ArcSin[c*x])]
)/3 - ((5*I)/3)*b^2*c^3*d*PolyLog[2, -E^(I*ArcSin[c*x])] + ((5*I)/3)*b^2*c^
3*d*PolyLog[2, E^(I*ArcSin[c*x])]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
```

```
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4693

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(b*c*n*Sqrt[d + e*x^2])/(f*(m + 1)*Sqr
t[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1), x], x] + Di
st[(c^2*Sqrt[d + e*x^2])/(f^2*(m + 1)*Sqrt[1 - c^2*x^2]), Int[((f*x)^(m + 2
)*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c, d, e
, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && LtQ[m, -1]
```

Rule 4695

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m +
2)*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPar
t[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f
*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /;
 FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0
] && LtQ[m, -1]
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\left(d-c^2dx^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{x^4}\,dx &= -\frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{3x^3}+\frac{1}{3}(2bcd)\int\frac{\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(c\right.}{x^3} \\
&= -\frac{bcd\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{3x^2}+\frac{2c^2d\left(a+b\sin^{-1}(cx)\right)^2}{3x}-\frac{d\left(1-c^2\right.}{} \\
&= -\frac{b^2c^2d}{3x}-\frac{bcd\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{3x^2}+\frac{2c^2d\left(a+b\sin^{-1}(cx)\right)^2}{3x}- \\
&= -\frac{b^2c^2d}{3x}-\frac{bcd\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{3x^2}+\frac{2c^2d\left(a+b\sin^{-1}(cx)\right)^2}{3x}- \\
&= -\frac{b^2c^2d}{3x}-\frac{bcd\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{3x^2}+\frac{2c^2d\left(a+b\sin^{-1}(cx)\right)^2}{3x}- \\
&= -\frac{b^2c^2d}{3x}-\frac{bcd\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{3x^2}+\frac{2c^2d\left(a+b\sin^{-1}(cx)\right)^2}{3x}-
\end{aligned}
$$

Mathematica [A] time = 0.77, size = 266, normalized size = 1.51

$$
\frac{d\left(3a^2c^2x^2-a^2-abcx\sqrt{1-c^2x^2}+6abc^2x^2\sin^{-1}(cx)+5abc^3x^3\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)-2ab\sin^{-1}(cx)-5ib^2c^3x\right.}{}
$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)*(a + b*ArcSin[c*x])^2)/x^4,x]
```

```
[Out] (d*(-a^2 + 3*a^2*c^2*x^2 - b^2*c^2*x^2 - a*b*c*x*Sqrt[1 - c^2*x^2] - 2*a*b*
ArcSin[c*x] + 6*a*b*c^2*x^2*ArcSin[c*x] - b^2*c*x*Sqrt[1 - c^2*x^2]*ArcSin[
c*x] - b^2*ArcSin[c*x]^2 + 3*b^2*c^2*x^2*ArcSin[c*x]^2 + 5*a*b*c^3*x^3*ArcT
anh[Sqrt[1 - c^2*x^2]] - 5*b^2*c^3*x^3*ArcSin[c*x]*Log[1 - E^(I*ArcSin[c*x]
)] + 5*b^2*c^3*x^3*ArcSin[c*x]*Log[1 + E^(I*ArcSin[c*x])] - (5*I)*b^2*c^3*x
^3*PolyLog[2, -E^(I*ArcSin[c*x])] + (5*I)*b^2*c^3*x^3*PolyLog[2, E^(I*ArcSi
n[c*x])]))/(3*x^3)
```

fricas [F] time = 2.21, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{a^2c^2dx^2 - a^2d + \left(b^2c^2dx^2 - b^2d\right)\arcsin\left(cx\right)^2 + 2\left(abc^2dx^2 - abd\right)\arcsin\left(cx\right)}{x^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2/x^4,x, algorithm="fricas")
```

```
[Out] integral(-(a^2*c^2*d*x^2 - a^2*d + (b^2*c^2*d*x^2 - b^2*d)*arcsin(c*x)^2 +
2*(a*b*c^2*d*x^2 - a*b*d)*arcsin(c*x))/x^4, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2/x^4,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.62, size = 291, normalized size = 1.65

$$-\frac{d\,a^2}{3x^3}+\frac{c^2d\,a^2}{x}+\frac{c^2d\,b^2\arcsin\left(cx\right)^2}{x}-\frac{cd\,b^2\sqrt{-c^2x^2+1}\,\arcsin\left(cx\right)}{3x^2}-\frac{d\,b^2\arcsin\left(cx\right)^2}{3x^3}-\frac{b^2c^2d}{3x}+\frac{5c^3d\,b^2\arcsin\left(cx\right)\ln}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2/x^4,x)
```

```
[Out] -1/3*d*a^2/x^3+c^2*d*a^2/x+c^2*d*b^2/x*arcsin(c*x)^2-1/3*c*d*b^2/x^2*(-c^2*
x^2+1)^(1/2)*arcsin(c*x)-1/3*d*b^2/x^3*arcsin(c*x)^2-1/3*b^2*c^2*d/x+5/3*c^
3*d*b^2*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-5/3*I*b^2*c^3*d*polylog(
2,-I*c*x-(-c^2*x^2+1)^(1/2))-5/3*c^3*d*b^2*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2
+1)^(1/2))+5/3*I*b^2*c^3*d*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))-2/3*d*a*b*ar
csin(c*x)/x^3+2*c^2*d*a*b*arcsin(c*x)/x+5/3*c^3*d*a*b*arctanh(1/(-c^2*x^2+1
)^(1/2))-1/3*c*d*a*b/x^2*(-c^2*x^2+1)^(1/2)
```

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

$$2\left(c\log\left(\frac{2\sqrt{-c^2x^2+1}}{|x|}+\frac{2}{|x|}\right)+\frac{\arcsin\left(cx\right)}{x}\right)abc^2d-\frac{1}{3}\left(\left(c^2\log\left(\frac{2\sqrt{-c^2x^2+1}}{|x|}+\frac{2}{|x|}\right)+\frac{\sqrt{-c^2x^2+1}}{x^2}\right)c+\frac{2\,\text{arcsi}}{x^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2/x^4,x, algorithm="maxima")
```

```
[Out] 2*(c*log(2*sqrt(-c^2*x^2 + 1)/abs(x) + 2/abs(x)) + arcsin(c*x)/x)*a*b*c^2*d
 - 1/3*((c^2*log(2*sqrt(-c^2*x^2 + 1)/abs(x) + 2/abs(x)) + sqrt(-c^2*x^2 +
1)/x^2)*c + 2*arcsin(c*x)/x^3)*a*b*d + a^2*c^2*d/x - 1/3*a^2*d/x^3 + 1/3*(3
```

```
*x^3*integrate(2/3*(3*b^2*c^3*d*x^2 - b^2*c*d)*sqrt(c*x + 1)*sqrt(-c*x + 1)
*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^2*x^5 - x^3), x) + (3*b^2*c^
2*d*x^2 - b^2*d)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2)/x^3
```

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

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))^2\,\left(d-c^2\,d\,x^2\right)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2))/x^4,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2))/x^4, x)
```

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

$$-d\left(\int\left(-\frac{a^2}{x^4}\right)dx+\int\frac{a^2c^2}{x^2}\,dx+\int\left(-\frac{b^2\,\mathrm{asin}^2\,(cx)}{x^4}\right)dx+\int\left(-\frac{2ab\,\mathrm{asin}\,(cx)}{x^4}\right)dx+\int\frac{b^2c^2\,\mathrm{asin}^2\,(cx)}{x^2}\,dx+\int$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)*(a+b*asin(c*x))**2/x**4,x)
```

```
[Out] -d*(Integral(-a**2/x**4, x) + Integral(a**2*c**2/x**2, x) + Integral(-b**2*
asin(c*x)**2/x**4, x) + Integral(-2*a*b*asin(c*x)/x**4, x) + Integral(b**2*
c**2*asin(c*x)**2/x**2, x) + Integral(2*a*b*c**2*asin(c*x)/x**2, x))
```

3.165 $\int x^4 \left(d-c^2dx^2\right)^2 \left(a+b\sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=395

$$\frac{1}{9}d^2x^5\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2+\frac{4}{63}d^2x^5\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2+\frac{16bd^2x^4\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{1575c}+$$

```
[Out] -4208/99225*b^2*d^2*x/c^4-2104/297675*b^2*d^2*x^3/c^2-526/165375*b^2*d^2*x^
5+212/27783*b^2*c^2*d^2*x^7-2/729*b^2*c^4*d^2*x^9+8/189*b*d^2*(-c^2*x^2+1)^
(3/2)*(a+b*arcsin(c*x))/c^5-2/315*b*d^2*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x)
)/c^5-20/441*b*d^2*(-c^2*x^2+1)^(7/2)*(a+b*arcsin(c*x))/c^5+2/81*b*d^2*(-c^
2*x^2+1)^(9/2)*(a+b*arcsin(c*x))/c^5+8/315*d^2*x^5*(a+b*arcsin(c*x))^2+4/63
*d^2*x^5*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2+1/9*d^2*x^5*(-c^2*x^2+1)^2*(a+b*a
rcsin(c*x))^2+128/4725*b*d^2*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^5+64/47
25*b*d^2*x^2*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3+16/1575*b*d^2*x^4*(a+
b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.72, antiderivative size = 395, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 11, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.407, Rules used = {4699, 4627, 4707, 4677, 8, 30, 266, 43, 4689, 12, 1153}

$$\frac{1}{9}d^2x^5\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2+\frac{4}{63}d^2x^5\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2+\frac{16bd^2x^4\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{1575c}+$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (-4208*b^2*d^2*x)/(99225*c^4) - (2104*b^2*d^2*x^3)/(297675*c^2) - (526*b^2*
d^2*x^5)/165375 + (212*b^2*c^2*d^2*x^7)/27783 - (2*b^2*c^4*d^2*x^9)/729 + (
128*b*d^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(4725*c^5) + (64*b*d^2*x^2
*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(4725*c^3) + (16*b*d^2*x^4*Sqrt[1 -
 c^2*x^2]*(a + b*ArcSin[c*x]))/(1575*c) + (8*b*d^2*(1 - c^2*x^2)^(3/2)*(a +
 b*ArcSin[c*x]))/(189*c^5) - (2*b*d^2*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x
]))/(315*c^5) - (20*b*d^2*(1 - c^2*x^2)^(7/2)*(a + b*ArcSin[c*x]))/(441*c^5
) + (2*b*d^2*(1 - c^2*x^2)^(9/2)*(a + b*ArcSin[c*x]))/(81*c^5) + (8*d^2*x^5
*(a + b*ArcSin[c*x])^2)/315 + (4*d^2*x^5*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^
2)/63 + (d^2*x^5*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x])^2)/9
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 12

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

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 1153

```
Int[((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.),
 x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^q*(a + b*x^2 + c*x^4)^p, x],
x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e
 + a*e^2, 0] && IGtQ[p, 0] && IGtQ[q, -2]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4689

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[d^p*(a + b*
ArcSin[c*x]), u, x] - Dist[b*c*d^p, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^
2], x], x], x]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && Intege
rQ[p - 1/2] && (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0]) && NeQ[p, -
2^(-1)] && GtQ[d, 0]
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int x^4 \left(d-c^2dx^2\right)^2 \left(a+b\sin^{-1}(cx)\right)^2\,dx = \frac{1}{9}d^2x^5\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2+\frac{1}{9}(4d)\int x^4\left(d-c^2dx^2\right)\left(a+b\,\mathrm{s}\right.$$

$$= \frac{2bd^2\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{45c^5}-\frac{4bd^2\left(1-c^2x^2\right)^{7/2}\left(a+b\sin^{-1}(c\right.}{63c^5}$$

$$= \frac{8bd^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{189c^5}-\frac{2bd^2\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(c\right.}{315c^5}$$

$$= \frac{16bd^2x^4\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{1575c}+\frac{8bd^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(\right.}{189c^5}$$

$$= -\frac{304b^2d^2x}{19845c^4}-\frac{152b^2d^2x^3}{59535c^2}-\frac{526b^2d^2x^5}{165375}+\frac{212b^2c^2d^2x^7}{27783}-\frac{2}{729}b^2c^4d^2x^9$$

$$= -\frac{304b^2d^2x}{19845c^4}-\frac{2104b^2d^2x^3}{297675c^2}-\frac{526b^2d^2x^5}{165375}+\frac{212b^2c^2d^2x^7}{27783}-\frac{2}{729}b^2c^4d^2x^9$$

$$= -\frac{4208b^2d^2x}{99225c^4}-\frac{2104b^2d^2x^3}{297675c^2}-\frac{526b^2d^2x^5}{165375}+\frac{212b^2c^2d^2x^7}{27783}-\frac{2}{729}b^2c^4d^2$$

Mathematica [A] time = 0.25, size = 253, normalized size = 0.64

$$\frac{d^2\left(99225a^2c^5x^5\left(35c^4x^4-90c^2x^2+63\right)+630ab\sqrt{1-c^2x^2}\left(1225c^8x^8-2650c^6x^6+789c^4x^4+1052c^2x^2+2104\right)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (d^2*(99225*a^2*c^5*x^5*(63 - 90*c^2*x^2 + 35*c^4*x^4) + 630*a*b*Sqrt[1 - c
^2*x^2]*(2104 + 1052*c^2*x^2 + 789*c^4*x^4 - 2650*c^6*x^6 + 1225*c^8*x^8) -
 2*b^2*c*x*(662760 + 110460*c^2*x^2 + 49707*c^4*x^4 - 119250*c^6*x^6 + 4287
5*c^8*x^8) + 630*b*(315*a*c^5*x^5*(63 - 90*c^2*x^2 + 35*c^4*x^4) + b*Sqrt[1
 - c^2*x^2]*(2104 + 1052*c^2*x^2 + 789*c^4*x^4 - 2650*c^6*x^6 + 1225*c^8*x^
8))*ArcSin[c*x] + 99225*b^2*c^5*x^5*(63 - 90*c^2*x^2 + 35*c^4*x^4)*ArcSin[c
*x]^2))/(31255875*c^5)
```

fricas [A] time = 0.59, size = 337, normalized size = 0.85

$$\frac{42875\left(81\,a^2-2\,b^2\right)c^9d^2x^9-2250\left(3969\,a^2-106\,b^2\right)c^7d^2x^7+189\left(33075\,a^2-526\,b^2\right)c^5d^2x^5-220920\,b^2c^3d^2x^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] 1/31255875*(42875*(81*a^2 - 2*b^2)*c^9*d^2*x^9 - 2250*(3969*a^2 - 106*b^2)*
c^7*d^2*x^7 + 189*(33075*a^2 - 526*b^2)*c^5*d^2*x^5 - 220920*b^2*c^3*d^2*x^
3 - 1325520*b^2*c*d^2*x + 99225*(35*b^2*c^9*d^2*x^9 - 90*b^2*c^7*d^2*x^7 +
63*b^2*c^5*d^2*x^5)*arcsin(c*x)^2 + 198450*(35*a*b*c^9*d^2*x^9 - 90*a*b*c^7
*d^2*x^7 + 63*a*b*c^5*d^2*x^5)*arcsin(c*x) + 630*(1225*a*b*c^8*d^2*x^8 - 26
50*a*b*c^6*d^2*x^6 + 789*a*b*c^4*d^2*x^4 + 1052*a*b*c^2*d^2*x^2 + 2104*a*b*
d^2 + (1225*b^2*c^8*d^2*x^8 - 2650*b^2*c^6*d^2*x^6 + 789*b^2*c^4*d^2*x^4 +
1052*b^2*c^2*d^2*x^2 + 2104*b^2*d^2)*arcsin(c*x))*sqrt(-c^2*x^2 + 1))/c^5
```

giac [B] time = 1.54, size = 702, normalized size = 1.78

$$\frac{1}{9}a^2c^4d^2x^9-\frac{2}{7}a^2c^2d^2x^7+\frac{1}{5}a^2d^2x^5+\frac{\left(c^2x^2-1\right)^4b^2d^2x\arcsin\left(cx\right)^2}{9c^4}+\frac{2\left(c^2x^2-1\right)^4abd^2x\arcsin\left(cx\right)}{9c^4}+\frac{10\left(c^2x^2-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] 1/9*a^2*c^4*d^2*x^9 - 2/7*a^2*c^2*d^2*x^7 + 1/5*a^2*d^2*x^5 + 1/9*(c^2*x^2
- 1)^4*b^2*d^2*x*arcsin(c*x)^2/c^4 + 2/9*(c^2*x^2 - 1)^4*a*b*d^2*x*arcsin(c
*x)/c^4 + 10/63*(c^2*x^2 - 1)^3*b^2*d^2*x*arcsin(c*x)^2/c^4 - 2/729*(c^2*x^
2 - 1)^4*b^2*d^2*x/c^4 + 20/63*(c^2*x^2 - 1)^3*a*b*d^2*x*arcsin(c*x)/c^4 +
1/105*(c^2*x^2 - 1)^2*b^2*d^2*x*arcsin(c*x)^2/c^4 + 2/81*(c^2*x^2 - 1)^4*sq
rt(-c^2*x^2 + 1)*b^2*d^2*arcsin(c*x)/c^5 - 836/250047*(c^2*x^2 - 1)^3*b^2*d
^2*x/c^4 + 2/105*(c^2*x^2 - 1)^2*a*b*d^2*x*arcsin(c*x)/c^4 - 4/315*(c^2*x^2
 - 1)*b^2*d^2*x*arcsin(c*x)^2/c^4 + 2/81*(c^2*x^2 - 1)^4*sqrt(-c^2*x^2 + 1)
*a*b*d^2/c^5 + 20/441*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*b^2*d^2*arcsin(c*x
)/c^5 + 33862/10418625*(c^2*x^2 - 1)^2*b^2*d^2*x/c^4 - 8/315*(c^2*x^2 - 1)*
a*b*d^2*x*arcsin(c*x)/c^4 + 8/315*b^2*d^2*x*arcsin(c*x)^2/c^4 + 20/441*(c^2
*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*a*b*d^2/c^5 + 2/525*(c^2*x^2 - 1)^2*sqrt(-c^
2*x^2 + 1)*b^2*d^2*arcsin(c*x)/c^5 - 47248/31255875*(c^2*x^2 - 1)*b^2*d^2*x
/c^4 + 16/315*a*b*d^2*x*arcsin(c*x)/c^4 + 2/525*(c^2*x^2 - 1)^2*sqrt(-c^2*x
^2 + 1)*a*b*d^2/c^5 + 8/945*(-c^2*x^2 + 1)^(3/2)*b^2*d^2*arcsin(c*x)/c^5 -
1493104/31255875*b^2*d^2*x/c^4 + 8/945*(-c^2*x^2 + 1)^(3/2)*a*b*d^2/c^5 + 1
6/315*sqrt(-c^2*x^2 + 1)*b^2*d^2*arcsin(c*x)/c^5 + 16/315*sqrt(-c^2*x^2 + 1
)*a*b*d^2/c^5
```

maple [A] time = 0.22, size = 531, normalized size = 1.34

$$\frac{d^2a^2\left(\frac{1}{9}c^9x^9-\frac{2}{7}c^7x^7+\frac{1}{5}c^5x^5\right)+d^2b^2\left(\frac{\arcsin(cx)^2\left(3c^4x^4-10c^2x^2+15\right)cx}{15}-\frac{16cx}{315}+\frac{16\arcsin(cx)\sqrt{-c^2x^2+1}}{315}+\frac{2\arcsin(cx)\left(c^2x^2-1\right.}{525}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/c^5*(d^2*a^2*(1/9*c^9*x^9-2/7*c^7*x^7+1/5*c^5*x^5)+d^2*b^2*(1/15*arcsin(c
*x)^2*(3*c^4*x^4-10*c^2*x^2+15)*c*x-16/315*c*x+16/315*arcsin(c*x)*(-c^2*x^2
+1)^(1/2)+2/525*arcsin(c*x)*(c^2*x^2-1)^2*(-c^2*x^2+1)^(1/2)-2/7875*(3*c^4*
x^4-10*c^2*x^2+15)*c*x-8/945*arcsin(c*x)*(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)+8/2
835*(c^2*x^2-3)*c*x+2/35*arcsin(c*x)^2*(5*c^6*x^6-21*c^4*x^4+35*c^2*x^2-35)
*c*x+20/441*arcsin(c*x)*(c^2*x^2-1)^3*(-c^2*x^2+1)^(1/2)-4/3087*(5*c^6*x^6-
21*c^4*x^4+35*c^2*x^2-35)*c*x+1/315*arcsin(c*x)^2*(35*c^8*x^8-180*c^6*x^6+3
78*c^4*x^4-420*c^2*x^2+315)*c*x+2/81*arcsin(c*x)*(c^2*x^2-1)^4*(-c^2*x^2+1)
^(1/2)-2/25515*(35*c^8*x^8-180*c^6*x^6+378*c^4*x^4-420*c^2*x^2+315)*c*x)+2*
d^2*a*b*(1/9*arcsin(c*x)*c^9*x^9-2/7*arcsin(c*x)*c^7*x^7+1/5*arcsin(c*x)*c^
5*x^5+1/81*c^8*x^8*(-c^2*x^2+1)^(1/2)-106/3969*c^6*x^6*(-c^2*x^2+1)^(1/2)+2
63/33075*c^4*x^4*(-c^2*x^2+1)^(1/2)+1052/99225*c^2*x^2*(-c^2*x^2+1)^(1/2)+2
104/99225*(-c^2*x^2+1)^(1/2)))
```

maxima [B] time = 0.77, size = 781, normalized size = 1.98

$$\frac{1}{9}b^2c^4d^2x^9\arcsin\left(cx\right)^2+\frac{1}{9}a^2c^4d^2x^9-\frac{2}{7}b^2c^2d^2x^7\arcsin\left(cx\right)^2-\frac{2}{7}a^2c^2d^2x^7+\frac{1}{5}b^2d^2x^5\arcsin\left(cx\right)^2+\frac{2}{2835}\left(315x\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] 1/9*b^2*c^4*d^2*x^9*arcsin(c*x)^2 + 1/9*a^2*c^4*d^2*x^9 - 2/7*b^2*c^2*d^2*x
^7*arcsin(c*x)^2 - 2/7*a^2*c^2*d^2*x^7 + 1/5*b^2*d^2*x^5*arcsin(c*x)^2 + 2/
2835*(315*x^9*arcsin(c*x) + (35*sqrt(-c^2*x^2 + 1)*x^8/c^2 + 40*sqrt(-c^2*x
^2 + 1)*x^6/c^4 + 48*sqrt(-c^2*x^2 + 1)*x^4/c^6 + 64*sqrt(-c^2*x^2 + 1)*x^2
/c^8 + 128*sqrt(-c^2*x^2 + 1)/c^10)*c)*a*b*c^4*d^2 + 2/893025*(315*(35*sqrt
(-c^2*x^2 + 1)*x^8/c^2 + 40*sqrt(-c^2*x^2 + 1)*x^6/c^4 + 48*sqrt(-c^2*x^2 +
 1)*x^4/c^6 + 64*sqrt(-c^2*x^2 + 1)*x^2/c^8 + 128*sqrt(-c^2*x^2 + 1)/c^10)*
c*arcsin(c*x) - (1225*c^8*x^9 + 1800*c^6*x^7 + 3024*c^4*x^5 + 6720*c^2*x^3
+ 40320*x)/c^8)*b^2*c^4*d^2 + 1/5*a^2*d^2*x^5 - 4/245*(35*x^7*arcsin(c*x) +
 (5*sqrt(-c^2*x^2 + 1)*x^6/c^2 + 6*sqrt(-c^2*x^2 + 1)*x^4/c^4 + 8*sqrt(-c^2
*x^2 + 1)*x^2/c^6 + 16*sqrt(-c^2*x^2 + 1)/c^8)*c)*a*b*c^2*d^2 - 4/25725*(10
5*(5*sqrt(-c^2*x^2 + 1)*x^6/c^2 + 6*sqrt(-c^2*x^2 + 1)*x^4/c^4 + 8*sqrt(-c^
2*x^2 + 1)*x^2/c^6 + 16*sqrt(-c^2*x^2 + 1)/c^8)*c*arcsin(c*x) - (75*c^6*x^7
 + 126*c^4*x^5 + 280*c^2*x^3 + 1680*x)/c^6)*b^2*c^2*d^2 + 2/75*(15*x^5*arcs
in(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*
sqrt(-c^2*x^2 + 1)/c^6)*c)*a*b*d^2 + 2/1125*(15*(3*sqrt(-c^2*x^2 + 1)*x^4/c
^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c*arcsin(c*x)
 - (9*c^4*x^5 + 20*c^2*x^3 + 120*x)/c^4)*b^2*d^2
```

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

$$\int x^4\,(a+b\,\mathrm{asin}\,(c\,x))^2\,\left(d-c^2\,d\,x^2\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^2,x)
```

```
[Out] int(x^4*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^2, x)
```

sympy [A] time = 28.80, size = 563, normalized size = 1.43

$$\begin{cases} \frac{a^2c^4d^2x^9}{9} - \frac{2a^2c^2d^2x^7}{7} + \frac{a^2d^2x^5}{5} + \frac{2abc^4d^2x^9\,\mathrm{asin}\,(cx)}{9} + \frac{2abc^3d^2x^8\sqrt{-c^2x^2+1}}{81} - \frac{4abc^2d^2x^7\,\mathrm{asin}\,(cx)}{7} - \frac{212abcd^2x^6\sqrt{-c^2x^2+1}}{3969} + \frac{2abd^2x^5\,\mathrm{a}\ldots}{5} \\ \frac{a^2d^2x^5}{5} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(-c**2*d*x**2+d)**2*(a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((a**2*c**4*d**2*x**9/9 - 2*a**2*c**2*d**2*x**7/7 + a**2*d**2*x**5
/5 + 2*a*b*c**4*d**2*x**9*asin(c*x)/9 + 2*a*b*c**3*d**2*x**8*sqrt(-c**2*x**
2 + 1)/81 - 4*a*b*c**2*d**2*x**7*asin(c*x)/7 - 212*a*b*c*d**2*x**6*sqrt(-c*
*2*x**2 + 1)/3969 + 2*a*b*d**2*x**5*asin(c*x)/5 + 526*a*b*d**2*x**4*sqrt(-c
**2*x**2 + 1)/(33075*c) + 2104*a*b*d**2*x**2*sqrt(-c**2*x**2 + 1)/(99225*c*
*3) + 4208*a*b*d**2*sqrt(-c**2*x**2 + 1)/(99225*c**5) + b**2*c**4*d**2*x**9
*asin(c*x)**2/9 - 2*b**2*c**4*d**2*x**9/729 + 2*b**2*c**3*d**2*x**8*sqrt(-c
**2*x**2 + 1)*asin(c*x)/81 - 2*b**2*c**2*d**2*x**7*asin(c*x)**2/7 + 212*b**
2*c**2*d**2*x**7/27783 - 212*b**2*c*d**2*x**6*sqrt(-c**2*x**2 + 1)*asin(c*x
)/3969 + b**2*d**2*x**5*asin(c*x)**2/5 - 526*b**2*d**2*x**5/165375 + 526*b*
*2*d**2*x**4*sqrt(-c**2*x**2 + 1)*asin(c*x)/(33075*c) - 2104*b**2*d**2*x**3
/(297675*c**2) + 2104*b**2*d**2*x**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(99225*
c**3) - 4208*b**2*d**2*x/(99225*c**4) + 4208*b**2*d**2*sqrt(-c**2*x**2 + 1)
*asin(c*x)/(99225*c**5), Ne(c, 0)), (a**2*d**2*x**5/5, True))
```

3.166 $\int x^3 \left(d-c^2dx^2\right)^2 \left(a+b\sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=302

$$-\frac{73d^2\left(a+b\sin^{-1}(cx)\right)^2}{3072c^4}-\frac{1}{32}bcd^2x^5\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)-\frac{25}{576}bcd^2x^5\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{8}$$

```
[Out] -73/3072*b^2*d^2*x^2/c^2-73/9216*b^2*d^2*x^4+43/3456*b^2*c^2*d^2*x^6-1/256*
b^2*c^4*d^2*x^8-1/32*b*c*d^2*x^5*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))-73/30
72*d^2*(a+b*arcsin(c*x))^2/c^4+1/24*d^2*x^4*(a+b*arcsin(c*x))^2+1/12*d^2*x^
4*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2+1/8*d^2*x^4*(-c^2*x^2+1)^2*(a+b*arcsin(c
*x))^2+73/1536*b*d^2*x*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3+73/2304*b*d
^2*x^3*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c-25/576*b*c*d^2*x^5*(a+b*arcsi
n(c*x))*(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 1.01, antiderivative size = 302, normalized size of antiderivative = 1.00, number of steps used = 25, number of rules used = 7, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.259$, Rules used = {4699, 4627, 4707, 4641, 30, 4697, 14}

$$-\frac{1}{32}bcd^2x^5\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)-\frac{25}{576}bcd^2x^5\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{8}d^2x^4\left(1-c^2x^2\right)^2\left(a+b\sin\right.$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (-73*b^2*d^2*x^2)/(3072*c^2) - (73*b^2*d^2*x^4)/9216 + (43*b^2*c^2*d^2*x^6)
/3456 - (b^2*c^4*d^2*x^8)/256 + (73*b*d^2*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin
[c*x]))/(1536*c^3) + (73*b*d^2*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(
2304*c) - (25*b*c*d^2*x^5*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/576 - (b*c
*d^2*x^5*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x]))/32 - (73*d^2*(a + b*ArcSi
n[c*x])^2)/(3072*c^4) + (d^2*x^4*(a + b*ArcSin[c*x])^2)/24 + (d^2*x^4*(1 -
c^2*x^2)*(a + b*ArcSin[c*x])^2)/12 + (d^2*x^4*(1 - c^2*x^2)^2*(a + b*ArcSin
[c*x])^2)/8
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int x^3\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2\,dx=\frac{1}{8}d^2x^4\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2+\frac{1}{2}d\int x^3\left(d-c^2dx^2\right)\left(a+b\sin^{-1}\right.$$

$$=-\frac{1}{32}bcd^2x^5\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{12}d^2x^4\left(1-c^2x^2\right)\left(a+b\,\mathrm{si}\right.$$

$$=-\frac{25}{576}bcd^2x^5\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)-\frac{1}{32}bcd^2x^5\left(1-c^2x^2\right)^{3/2}\left(a+\right.$$

$$=\frac{43b^2c^2d^2x^6}{3456}-\frac{1}{256}b^2c^4d^2x^8+\frac{73bd^2x^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2304c}-\frac{2}{5}$$

$$=-\frac{73b^2d^2x^4}{9216}+\frac{43b^2c^2d^2x^6}{3456}-\frac{1}{256}b^2c^4d^2x^8+\frac{73bd^2x\sqrt{1-c^2x^2}\left(a+b\,\mathrm{si}\right.}{1536c^3}$$

$$=-\frac{73b^2d^2x^2}{3072c^2}-\frac{73b^2d^2x^4}{9216}+\frac{43b^2c^2d^2x^6}{3456}-\frac{1}{256}b^2c^4d^2x^8+\frac{73bd^2x\sqrt{1-c}}{}$$

Mathematica [A] time = 0.25, size = 239, normalized size = 0.79

$$\frac{d^2\left(cx\left(1152a^2c^3x^3\left(3c^4x^4-8c^2x^2+6\right)+6ab\sqrt{1-c^2x^2}\left(144c^6x^6-344c^4x^4+146c^2x^2+219\right)-b^2cx\left(108c^6x^6-\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (d^2*(c*x*(1152*a^2*c^3*x^3*(6 - 8*c^2*x^2 + 3*c^4*x^4) - b^2*c*x*(657 + 21
9*c^2*x^2 - 344*c^4*x^4 + 108*c^6*x^6) + 6*a*b*Sqrt[1 - c^2*x^2]*(219 + 146
*c^2*x^2 - 344*c^4*x^4 + 144*c^6*x^6)) + 6*b*(b*c*x*Sqrt[1 - c^2*x^2]*(219
+ 146*c^2*x^2 - 344*c^4*x^4 + 144*c^6*x^6) + 3*a*(-73 + 768*c^4*x^4 - 1024*
c^6*x^6 + 384*c^8*x^8))*ArcSin[c*x] + 9*b^2*(-73 + 768*c^4*x^4 - 1024*c^6*x
^6 + 384*c^8*x^8)*ArcSin[c*x]^2))/(27648*c^4)
```

fricas [A] time = 0.67, size = 319, normalized size = 1.06

$$\frac{108\left(32\,a^2-b^2\right)c^8d^2x^8-8\left(1152\,a^2-43\,b^2\right)c^6d^2x^6+3\left(2304\,a^2-73\,b^2\right)c^4d^2x^4-657\,b^2c^2d^2x^2+9\left(384\,b^2c^8d^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] 1/27648*(108*(32*a^2 - b^2)*c^8*d^2*x^8 - 8*(1152*a^2 - 43*b^2)*c^6*d^2*x^6
 + 3*(2304*a^2 - 73*b^2)*c^4*d^2*x^4 - 657*b^2*c^2*d^2*x^2 + 9*(384*b^2*c^8
*d^2*x^8 - 1024*b^2*c^6*d^2*x^6 + 768*b^2*c^4*d^2*x^4 - 73*b^2*d^2)*arcsin(
c*x)^2 + 18*(384*a*b*c^8*d^2*x^8 - 1024*a*b*c^6*d^2*x^6 + 768*a*b*c^4*d^2*x
^4 - 73*a*b*d^2)*arcsin(c*x) + 6*(144*a*b*c^7*d^2*x^7 - 344*a*b*c^5*d^2*x^5
 + 146*a*b*c^3*d^2*x^3 + 219*a*b*c*d^2*x + (144*b^2*c^7*d^2*x^7 - 344*b^2*c
^5*d^2*x^5 + 146*b^2*c^3*d^2*x^3 + 219*b^2*c*d^2*x)*arcsin(c*x))*sqrt(-c^2*
x^2 + 1))/c^4
```

giac [A] time = 0.52, size = 522, normalized size = 1.73

$$\frac{1}{8}\,a^2c^4d^2x^8-\frac{1}{3}\,a^2c^2d^2x^6+\frac{1}{4}\,a^2d^2x^4+\frac{\left(c^2x^2-1\right)^3\sqrt{-c^2x^2+1}\,b^2d^2x\arcsin\left(cx\right)}{32\,c^3}+\frac{\left(c^2x^2-1\right)^4b^2d^2\arcsin\left(cx\right)^2}{8\,c^4}+\frac{(c}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] 1/8*a^2*c^4*d^2*x^8 - 1/3*a^2*c^2*d^2*x^6 + 1/4*a^2*d^2*x^4 + 1/32*(c^2*x^2
 - 1)^3*sqrt(-c^2*x^2 + 1)*b^2*d^2*x*arcsin(c*x)/c^3 + 1/8*(c^2*x^2 - 1)^4*
b^2*d^2*arcsin(c*x)^2/c^4 + 1/32*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*a*b*d^2
*x/c^3 + 11/576*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b^2*d^2*x*arcsin(c*x)/c^
3 + 1/4*(c^2*x^2 - 1)^4*a*b*d^2*arcsin(c*x)/c^4 + 1/6*(c^2*x^2 - 1)^3*b^2*d
^2*arcsin(c*x)^2/c^4 + 11/576*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*a*b*d^2*x/
c^3 + 55/2304*(-c^2*x^2 + 1)^(3/2)*b^2*d^2*x*arcsin(c*x)/c^3 - 1/256*(c^2*x
^2 - 1)^4*b^2*d^2/c^4 + 1/3*(c^2*x^2 - 1)^3*a*b*d^2*arcsin(c*x)/c^4 + 55/23
04*(-c^2*x^2 + 1)^(3/2)*a*b*d^2*x/c^3 + 55/1536*sqrt(-c^2*x^2 + 1)*b^2*d^2*
x*arcsin(c*x)/c^3 - 11/3456*(c^2*x^2 - 1)^3*b^2*d^2/c^4 + 55/1536*sqrt(-c^2
*x^2 + 1)*a*b*d^2*x/c^3 + 55/9216*(c^2*x^2 - 1)^2*b^2*d^2/c^4 + 55/3072*b^2
*d^2*arcsin(c*x)^2/c^4 - 55/3072*(c^2*x^2 - 1)*b^2*d^2/c^4 + 55/1536*a*b*d^
2*arcsin(c*x)/c^4 - 9835/884736*b^2*d^2/c^4
```

maple [A] time = 0.20, size = 424, normalized size = 1.40

$$d^2a^2\left(\frac{1}{8}c^8x^8-\frac{1}{3}c^6x^6+\frac{1}{4}c^4x^4\right)+d^2b^2\left(\frac{\arcsin(cx)^2\left(c^2x^2-1\right)^3}{6}+\frac{\arcsin(cx)\left(8c^5x^5\sqrt{-c^2x^2+1}-26c^3x^3\sqrt{-c^2x^2+1}+33cx\sqrt{-c^2x^2+1}+15\right.}{144}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/c^4*(d^2*a^2*(1/8*c^8*x^8-1/3*c^6*x^6+1/4*c^4*x^4)+d^2*b^2*(1/6*arcsin(c*
x)^2*(c^2*x^2-1)^3+1/144*arcsin(c*x)*(8*c^5*x^5*(-c^2*x^2+1)^(1/2)-26*c^3*x
^3*(-c^2*x^2+1)^(1/2)+33*c*x*(-c^2*x^2+1)^(1/2)+15*arcsin(c*x))-55/3072*arc
```

```
sin(c*x)^2-11/3456*(c^2*x^2-1)^3+55/9216*(c^2*x^2-1)^2-55/3072*c^2*x^2+55/3
072+1/8*arcsin(c*x)^2*(c^2*x^2-1)^4-1/1536*arcsin(c*x)*(-48*c^7*x^7*(-c^2*x
^2+1)^(1/2)+200*c^5*x^5*(-c^2*x^2+1)^(1/2)-326*c^3*x^3*(-c^2*x^2+1)^(1/2)+2
79*c*x*(-c^2*x^2+1)^(1/2)+105*arcsin(c*x))-1/256*(c^2*x^2-1)^4)+2*d^2*a*b*(
1/8*arcsin(c*x)*c^8*x^8-1/3*arcsin(c*x)*c^6*x^6+1/4*c^4*x^4*arcsin(c*x)+1/6
4*c^7*x^7*(-c^2*x^2+1)^(1/2)-43/1152*c^5*x^5*(-c^2*x^2+1)^(1/2)+73/4608*c^3
*x^3*(-c^2*x^2+1)^(1/2)+73/3072*c*x*(-c^2*x^2+1)^(1/2)-73/3072*arcsin(c*x))
)
```

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

$$\frac{1}{8}a^2c^4d^2x^8 - \frac{1}{3}a^2c^2d^2x^6 + \frac{1}{1536}\left(384\,x^8\arcsin(cx) + \left(\frac{48\sqrt{-c^2x^2+1}\,x^7}{c^2} + \frac{56\sqrt{-c^2x^2+1}\,x^5}{c^4} + \frac{70\sqrt{-c^2x^2+1}\,x^3}{c^6}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] 1/8*a^2*c^4*d^2*x^8 - 1/3*a^2*c^2*d^2*x^6 + 1/1536*(384*x^8*arcsin(c*x) + (
48*sqrt(-c^2*x^2 + 1)*x^7/c^2 + 56*sqrt(-c^2*x^2 + 1)*x^5/c^4 + 70*sqrt(-c^
2*x^2 + 1)*x^3/c^6 + 105*sqrt(-c^2*x^2 + 1)*x/c^8 - 105*arcsin(c*x)/c^9)*c)
*a*b*c^4*d^2 + 1/4*a^2*d^2*x^4 - 1/72*(48*x^6*arcsin(c*x) + (8*sqrt(-c^2*x^
2 + 1)*x^5/c^2 + 10*sqrt(-c^2*x^2 + 1)*x^3/c^4 + 15*sqrt(-c^2*x^2 + 1)*x/c^
6 - 15*arcsin(c*x)/c^7)*c)*a*b*c^2*d^2 + 1/16*(8*x^4*arcsin(c*x) + (2*sqrt(
-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c*x)/c^5)*c)*
a*b*d^2 + 1/24*(3*b^2*c^4*d^2*x^8 - 8*b^2*c^2*d^2*x^6 + 6*b^2*d^2*x^4)*arct
an2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + integrate(1/12*(3*b^2*c^5*d^2*x^
8 - 8*b^2*c^3*d^2*x^6 + 6*b^2*c*d^2*x^4)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arcta
n2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^2*x^2 - 1), x)
```

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

$$\int x^3\,(a+b\,\mathrm{asin}(c\,x))^2\,\left(d-c^2\,d\,x^2\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^2,x)
```

```
[Out] int(x^3*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^2, x)
```

sympy [A] time = 21.82, size = 515, normalized size = 1.71

$$\begin{cases} \frac{a^2c^4d^2x^8}{8} - \frac{a^2c^2d^2x^6}{3} + \frac{a^2d^2x^4}{4} + \frac{abc^4d^2x^8\,\mathrm{asin}(cx)}{4} + \frac{abc^3d^2x^7\sqrt{-c^2x^2+1}}{32} - \frac{2abc^2d^2x^6\,\mathrm{asin}(cx)}{3} - \frac{43abcd^2x^5\sqrt{-c^2x^2+1}}{576} + \frac{abd^2x^4\,\mathrm{asin}(cx}{2} \\ \frac{a^2d^2x^4}{4} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(-c**2*d*x**2+d)**2*(a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((a**2*c**4*d**2*x**8/8 - a**2*c**2*d**2*x**6/3 + a**2*d**2*x**4/4
 + a*b*c**4*d**2*x**8*asin(c*x)/4 + a*b*c**3*d**2*x**7*sqrt(-c**2*x**2 + 1)
/32 - 2*a*b*c**2*d**2*x**6*asin(c*x)/3 - 43*a*b*c*d**2*x**5*sqrt(-c**2*x**2
 + 1)/576 + a*b*d**2*x**4*asin(c*x)/2 + 73*a*b*d**2*x**3*sqrt(-c**2*x**2 +
1)/(2304*c) + 73*a*b*d**2*x*sqrt(-c**2*x**2 + 1)/(1536*c**3) - 73*a*b*d**2*
asin(c*x)/(1536*c**4) + b**2*c**4*d**2*x**8*asin(c*x)**2/8 - b**2*c**4*d**2
*x**8/256 + b**2*c**3*d**2*x**7*sqrt(-c**2*x**2 + 1)*asin(c*x)/32 - b**2*c*
*2*d**2*x**6*asin(c*x)**2/3 + 43*b**2*c**2*d**2*x**6/3456 - 43*b**2*c*d**2*
x**5*sqrt(-c**2*x**2 + 1)*asin(c*x)/576 + b**2*d**2*x**4*asin(c*x)**2/4 - 7
```

```
3*b**2*d**2*x**4/9216 + 73*b**2*d**2*x**3*sqrt(-c**2*x**2 + 1)*asin(c*x)/(2
304*c) - 73*b**2*d**2*x**2/(3072*c**2) + 73*b**2*d**2*x*sqrt(-c**2*x**2 + 1
)*asin(c*x)/(1536*c**3) - 73*b**2*d**2*asin(c*x)**2/(3072*c**4), Ne(c, 0)),
 (a**2*d**2*x**4/4, True))
```

3.167 $\int x^2 \left(d-c^2 d x^2\right)^2 \left(a+b \sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=310

$$\frac{16bd^2x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{315c}+\frac{1}{7}d^2x^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2+\frac{4}{35}d^2x^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2-$$

```
[Out] -1636/11025*b^2*d^2*x/c^2-818/33075*b^2*d^2*x^3+136/6125*b^2*c^2*d^2*x^5-2/
343*b^2*c^4*d^2*x^7+8/105*b*d^2*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))/c^3+2/
175*b*d^2*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))/c^3-2/49*b*d^2*(-c^2*x^2+1)^
(7/2)*(a+b*arcsin(c*x))/c^3+8/105*d^2*x^3*(a+b*arcsin(c*x))^2+4/35*d^2*x^3*
(-c^2*x^2+1)*(a+b*arcsin(c*x))^2+1/7*d^2*x^3*(-c^2*x^2+1)^2*(a+b*arcsin(c*x
))^2+32/315*b*d^2*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3+16/315*b*d^2*x^2
*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.57, antiderivative size = 310, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 11, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.407, Rules used = {4699, 4627, 4707, 4677, 8, 30, 266, 43, 4689, 12, 373}

$$\frac{1}{7}d^2x^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2+\frac{4}{35}d^2x^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2+\frac{16bd^2x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{315c}-$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (-1636*b^2*d^2*x)/(11025*c^2) - (818*b^2*d^2*x^3)/33075 + (136*b^2*c^2*d^2*
x^5)/6125 - (2*b^2*c^4*d^2*x^7)/343 + (32*b*d^2*Sqrt[1 - c^2*x^2]*(a + b*Ar
cSin[c*x]))/(315*c^3) + (16*b*d^2*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])
)/(315*c) + (8*b*d^2*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(105*c^3) + (
2*b*d^2*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(175*c^3) - (2*b*d^2*(1 -
c^2*x^2)^(7/2)*(a + b*ArcSin[c*x]))/(49*c^3) + (8*d^2*x^3*(a + b*ArcSin[c*x
])^2)/105 + (4*d^2*x^3*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/35 + (d^2*x^3*(
1 - c^2*x^2)^2*(a + b*ArcSin[c*x])^2)/7
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 12

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

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
```

```
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 373

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.), x_Symbol
] :> Int[ExpandIntegrand[(a + b*x^n)^p*(c + d*x^n)^q, x], x] /; FreeQ[{a, b
, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[p, 0] && IGtQ[q, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4689

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[d^p*(a + b*
ArcSin[c*x]), u, x] - Dist[b*c*d^p, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^
2], x], x], x]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && Intege
rQ[p - 1/2] && (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0]) && NeQ[p, -
2^(-1)] && GtQ[d, 0]
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int x^2 \left(d-c^2dx^2\right)^2 \left(a+b\sin^{-1}(cx)\right)^2 dx = \frac{1}{7}d^2x^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2+\frac{1}{7}(4d)\int x^2\left(d-c^2dx^2\right)\left(a+b\sin\right.$$

$$= \frac{2bd^2\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{35c^3}-\frac{2bd^2\left(1-c^2x^2\right)^{7/2}\left(a+b\sin^{-1}(c\right.}{49c^3}$$

$$= \frac{8bd^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{105c^3}+\frac{2bd^2\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(c\right.}{175c^3}$$

$$= \frac{16bd^2x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{315c}+\frac{8bd^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(c\right.}{105c^3}$$

$$= -\frac{172b^2d^2x}{3675c^2}-\frac{818b^2d^2x^3}{33075}+\frac{136b^2c^2d^2x^5}{6125}-\frac{2}{343}b^2c^4d^2x^7+\frac{32bd^2\sqrt{1-}}{}$$

$$= -\frac{1636b^2d^2x}{11025c^2}-\frac{818b^2d^2x^3}{33075}+\frac{136b^2c^2d^2x^5}{6125}-\frac{2}{343}b^2c^4d^2x^7+\frac{32bd^2\sqrt{1-}}{}$$

Mathematica [A] time = 0.21, size = 229, normalized size = 0.74

$$\frac{d^2\left(11025a^2c^3x^3\left(15c^4x^4-42c^2x^2+35\right)+210ab\sqrt{1-c^2x^2}\left(225c^6x^6-612c^4x^4+409c^2x^2+818\right)+210b\sin^{-1}(c\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (d^2*(11025*a^2*c^3*x^3*(35 - 42*c^2*x^2 + 15*c^4*x^4) + 210*a*b*Sqrt[1 - c
^2*x^2]*(818 + 409*c^2*x^2 - 612*c^4*x^4 + 225*c^6*x^6) - 2*b^2*c*x*(85890
+ 14315*c^2*x^2 - 12852*c^4*x^4 + 3375*c^6*x^6) + 210*b*(105*a*c^3*x^3*(35
- 42*c^2*x^2 + 15*c^4*x^4) + b*Sqrt[1 - c^2*x^2]*(818 + 409*c^2*x^2 - 612*c
^4*x^4 + 225*c^6*x^6))*ArcSin[c*x] + 11025*b^2*c^3*x^3*(35 - 42*c^2*x^2 + 1
5*c^4*x^4)*ArcSin[c*x]^2))/(1157625*c^3)
```

fricas [A] time = 0.78, size = 296, normalized size = 0.95

$$\frac{3375\left(49a^2-2b^2\right)c^7d^2x^7-378\left(1225a^2-68b^2\right)c^5d^2x^5+35\left(11025a^2-818b^2\right)c^3d^2x^3-171780b^2cd^2x+11025}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] 1/1157625*(3375*(49*a^2 - 2*b^2)*c^7*d^2*x^7 - 378*(1225*a^2 - 68*b^2)*c^5*
d^2*x^5 + 35*(11025*a^2 - 818*b^2)*c^3*d^2*x^3 - 171780*b^2*c*d^2*x + 11025
*(15*b^2*c^7*d^2*x^7 - 42*b^2*c^5*d^2*x^5 + 35*b^2*c^3*d^2*x^3)*arcsin(c*x)
^2 + 22050*(15*a*b*c^7*d^2*x^7 - 42*a*b*c^5*d^2*x^5 + 35*a*b*c^3*d^2*x^3)*a
rcsin(c*x) + 210*(225*a*b*c^6*d^2*x^6 - 612*a*b*c^4*d^2*x^4 + 409*a*b*c^2*d
^2*x^2 + 818*a*b*d^2 + (225*b^2*c^6*d^2*x^6 - 612*b^2*c^4*d^2*x^4 + 409*b^2
*c^2*d^2*x^2 + 818*b^2*d^2)*arcsin(c*x))*sqrt(-c^2*x^2 + 1))/c^3
```

giac [B] time = 0.50, size = 553, normalized size = 1.78

$$\frac{1}{7}a^2c^4d^2x^7-\frac{2}{5}a^2c^2d^2x^5+\frac{\left(c^2x^2-1\right)^3b^2d^2x\arcsin(cx)^2}{7c^2}+\frac{1}{3}a^2d^2x^3+\frac{2\left(c^2x^2-1\right)^3abd^2x\arcsin(cx)}{7c^2}+\frac{\left(c^2x^2-1\right)^2b^2c}{35}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] 1/7*a^2*c^4*d^2*x^7 - 2/5*a^2*c^2*d^2*x^5 + 1/7*(c^2*x^2 - 1)^3*b^2*d^2*x*a
rcsin(c*x)^2/c^2 + 1/3*a^2*d^2*x^3 + 2/7*(c^2*x^2 - 1)^3*a*b*d^2*x*arcsin(c
*x)/c^2 + 1/35*(c^2*x^2 - 1)^2*b^2*d^2*x*arcsin(c*x)^2/c^2 - 2/343*(c^2*x^2
 - 1)^3*b^2*d^2*x/c^2 + 2/35*(c^2*x^2 - 1)^2*a*b*d^2*x*arcsin(c*x)/c^2 - 4/
105*(c^2*x^2 - 1)*b^2*d^2*x*arcsin(c*x)^2/c^2 + 2/49*(c^2*x^2 - 1)^3*sqrt(-
c^2*x^2 + 1)*b^2*d^2*arcsin(c*x)/c^3 + 202/42875*(c^2*x^2 - 1)^2*b^2*d^2*x/
c^2 - 8/105*(c^2*x^2 - 1)*a*b*d^2*x*arcsin(c*x)/c^2 + 8/105*b^2*d^2*x*arcsi
n(c*x)^2/c^2 + 2/49*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*a*b*d^2/c^3 + 2/175*
(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b^2*d^2*arcsin(c*x)/c^3 + 2528/1157625*(
c^2*x^2 - 1)*b^2*d^2*x/c^2 + 16/105*a*b*d^2*x*arcsin(c*x)/c^2 + 2/175*(c^2*
x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*a*b*d^2/c^3 + 8/315*(-c^2*x^2 + 1)^(3/2)*b^2*
d^2*arcsin(c*x)/c^3 - 181456/1157625*b^2*d^2*x/c^2 + 8/315*(-c^2*x^2 + 1)^(
3/2)*a*b*d^2/c^3 + 16/105*sqrt(-c^2*x^2 + 1)*b^2*d^2*arcsin(c*x)/c^3 + 16/1
05*sqrt(-c^2*x^2 + 1)*a*b*d^2/c^3
```

maple [A] time = 0.05, size = 400, normalized size = 1.29

$$d^2a^2\left(\frac{1}{7}c^7x^7-\frac{2}{5}c^5x^5+\frac{1}{3}c^3x^3\right)+d^2b^2\left(\frac{\arcsin(cx)^2\left(3c^4x^4-10c^2x^2+15\right)cx}{15}-\frac{16cx}{105}+\frac{16\arcsin(cx)\sqrt{-c^2x^2+1}}{105}+\frac{2\arcsin(cx)\left(c^2x^2-1\right.}{175}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/c^3*(d^2*a^2*(1/7*c^7*x^7-2/5*c^5*x^5+1/3*c^3*x^3)+d^2*b^2*(1/15*arcsin(c
*x)^2*(3*c^4*x^4-10*c^2*x^2+15)*c*x-16/105*c*x+16/105*arcsin(c*x)*(-c^2*x^2
+1)^(1/2)+2/175*arcsin(c*x)*(c^2*x^2-1)^2*(-c^2*x^2+1)^(1/2)-2/2625*(3*c^4*
x^4-10*c^2*x^2+15)*c*x-8/315*arcsin(c*x)*(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)+8/9
45*(c^2*x^2-3)*c*x+1/35*arcsin(c*x)^2*(5*c^6*x^6-21*c^4*x^4+35*c^2*x^2-35)*
c*x+2/49*arcsin(c*x)*(c^2*x^2-1)^3*(-c^2*x^2+1)^(1/2)-2/1715*(5*c^6*x^6-21*
c^4*x^4+35*c^2*x^2-35)*c*x)+2*d^2*a*b*(1/7*arcsin(c*x)*c^7*x^7-2/5*arcsin(c
*x)*c^5*x^5+1/3*c^3*x^3*arcsin(c*x)+1/49*c^6*x^6*(-c^2*x^2+1)^(1/2)-68/1225
*c^4*x^4*(-c^2*x^2+1)^(1/2)+409/11025*c^2*x^2*(-c^2*x^2+1)^(1/2)+818/11025*
(-c^2*x^2+1)^(1/2)))
```

maxima [B] time = 0.76, size = 634, normalized size = 2.05

$$\frac{1}{7}b^2c^4d^2x^7\arcsin(cx)^2+\frac{1}{7}a^2c^4d^2x^7-\frac{2}{5}b^2c^2d^2x^5\arcsin(cx)^2-\frac{2}{5}a^2c^2d^2x^5+\frac{2}{245}\left(35x^7\arcsin(cx)+\left(\frac{5\sqrt{-c^2x^2}}{c^2}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] 1/7*b^2*c^4*d^2*x^7*arcsin(c*x)^2 + 1/7*a^2*c^4*d^2*x^7 - 2/5*b^2*c^2*d^2*x
^5*arcsin(c*x)^2 - 2/5*a^2*c^2*d^2*x^5 + 2/245*(35*x^7*arcsin(c*x) + (5*sqr
t(-c^2*x^2 + 1)*x^6/c^2 + 6*sqrt(-c^2*x^2 + 1)*x^4/c^4 + 8*sqrt(-c^2*x^2 +
1)*x^2/c^6 + 16*sqrt(-c^2*x^2 + 1)/c^8)*c)*a*b*c^4*d^2 + 2/25725*(105*(5*sq
rt(-c^2*x^2 + 1)*x^6/c^2 + 6*sqrt(-c^2*x^2 + 1)*x^4/c^4 + 8*sqrt(-c^2*x^2 +
 1)*x^2/c^6 + 16*sqrt(-c^2*x^2 + 1)/c^8)*c*arcsin(c*x) - (75*c^6*x^7 + 126*
c^4*x^5 + 280*c^2*x^3 + 1680*x)/c^6)*b^2*c^4*d^2 + 1/3*b^2*d^2*x^3*arcsin(c
*x)^2 - 4/75*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-
c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*a*b*c^2*d^2 - 4/1125*(1
5*(3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^
2*x^2 + 1)/c^6)*c*arcsin(c*x) - (9*c^4*x^5 + 20*c^2*x^3 + 120*x)/c^4)*b^2*c
^2*d^2 + 1/3*a^2*d^2*x^3 + 2/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x
^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*d^2 + 2/27*(3*c*x*(sqrt(-c^2*x^2 + 1)
*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4)*arcsin(c*x) - (c^2*x^3 + 6*x)/c^2)*b^2
*d^2
```

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

$$\int x^2\,(a+b\,\mathrm{asin}\,(c\,x))^2\,\left(d-c^2\,d\,x^2\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^2,x)
[Out] int(x^2*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^2, x)
```

sympy [A] time = 11.93, size = 483, normalized size = 1.56

$$\begin{cases} \frac{a^2c^4d^2x^7}{7} - \frac{2a^2c^2d^2x^5}{5} + \frac{a^2d^2x^3}{3} + \frac{2abc^4d^2x^7\,\mathrm{asin}\,(cx)}{7} + \frac{2abc^3d^2x^6\sqrt{-c^2x^2+1}}{49} - \frac{4abc^2d^2x^5\,\mathrm{asin}\,(cx)}{5} - \frac{136abcd^2x^4\sqrt{-c^2x^2+1}}{1225} + \frac{2abd^2x^3\,\mathrm{a}}{3} \\ \frac{a^2d^2x^3}{3} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(-c**2*d*x**2+d)**2*(a+b*asin(c*x))**2,x)
[Out] Piecewise((a**2*c**4*d**2*x**7/7 - 2*a**2*c**2*d**2*x**5/5 + a**2*d**2*x**3
/3 + 2*a*b*c**4*d**2*x**7*asin(c*x)/7 + 2*a*b*c**3*d**2*x**6*sqrt(-c**2*x**
2 + 1)/49 - 4*a*b*c**2*d**2*x**5*asin(c*x)/5 - 136*a*b*c*d**2*x**4*sqrt(-c*
*2*x**2 + 1)/1225 + 2*a*b*d**2*x**3*asin(c*x)/3 + 818*a*b*d**2*x**2*sqrt(-c
**2*x**2 + 1)/(11025*c) + 1636*a*b*d**2*sqrt(-c**2*x**2 + 1)/(11025*c**3) +
 b**2*c**4*d**2*x**7*asin(c*x)**2/7 - 2*b**2*c**4*d**2*x**7/343 + 2*b**2*c*
*3*d**2*x**6*sqrt(-c**2*x**2 + 1)*asin(c*x)/49 - 2*b**2*c**2*d**2*x**5*asin
(c*x)**2/5 + 136*b**2*c**2*d**2*x**5/6125 - 136*b**2*c*d**2*x**4*sqrt(-c**2
*x**2 + 1)*asin(c*x)/1225 + b**2*d**2*x**3*asin(c*x)**2/3 - 818*b**2*d**2*x
**3/33075 + 818*b**2*d**2*x**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(11025*c) - 1
636*b**2*d**2*x/(11025*c**2) + 1636*b**2*d**2*sqrt(-c**2*x**2 + 1)*asin(c*x
)/(11025*c**3), Ne(c, 0)), (a**2*d**2*x**3/3, True))
```

3.168 $\int x\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=209

$$\frac{bd^2x\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{18c}+\frac{5bd^2x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{72c}+\frac{5bd^2x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{48c}-$$

```
[Out] -25/288*b^2*d^2*x^2+5/288*b^2*c^2*d^2*x^4+1/108*b^2*d^2*(-c^2*x^2+1)^3/c^2+
5/72*b*d^2*x*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))/c+1/18*b*d^2*x*(-c^2*x^2+
1)^(5/2)*(a+b*arcsin(c*x))/c+5/96*d^2*(a+b*arcsin(c*x))^2/c^2-1/6*d^2*(-c^2
*x^2+1)^3*(a+b*arcsin(c*x))^2/c^2+5/48*b*d^2*x*(a+b*arcsin(c*x))*(-c^2*x^2+
1)^(1/2)/c
```

Rubi [A] time = 0.20, antiderivative size = 209, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.280, Rules used = {4677, 4649, 4647, 4641, 30, 14, 261}

$$\frac{bd^2x\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{18c}+\frac{5bd^2x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{72c}+\frac{5bd^2x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{48c}-$$

Antiderivative was successfully verified.

```
[In] Int[x*(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (-25*b^2*d^2*x^2)/288 + (5*b^2*c^2*d^2*x^4)/288 + (b^2*d^2*(1 - c^2*x^2)^3)
/(108*c^2) + (5*b*d^2*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(48*c) + (5*
b*d^2*x*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(72*c) + (b*d^2*x*(1 - c^2
*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(18*c) + (5*d^2*(a + b*ArcSin[c*x])^2)/(96
*c^2) - (d^2*(1 - c^2*x^2)^3*(a + b*ArcSin[c*x])^2)/(6*c^2)
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] && !LinearQ[u, x] && !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
```

```
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int x\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2\,dx=-\frac{d^2\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2}{6c^2}+\frac{\left(bd^2\right)\int\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(c\right.}{3c}$$

$$=\frac{bd^2x\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{18c}-\frac{d^2\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2}{6c^2}$$

$$=\frac{b^2d^2\left(1-c^2x^2\right)^3}{108c^2}+\frac{5bd^2x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{72c}+\frac{bd^2x\left(1-c^2\right.}{}$$

$$=\frac{b^2d^2\left(1-c^2x^2\right)^3}{108c^2}+\frac{5bd^2x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{48c}+\frac{5bd^2x\left(1-c^2x^2\right.}{}$$

$$=-\frac{25}{288}b^2d^2x^2+\frac{5}{288}b^2c^2d^2x^4+\frac{b^2d^2\left(1-c^2x^2\right)^3}{108c^2}+\frac{5bd^2x\sqrt{1-c^2x^2}\left(a+\right.}{48c}$$

Mathematica [A] time = 0.29, size = 209, normalized size = 1.00

$$\frac{d^2\left(cx\left(144a^2cx\left(c^4x^4-3c^2x^2+3\right)+6ab\sqrt{1-c^2x^2}\left(8c^4x^4-26c^2x^2+33\right)+b^2cx\left(-8c^4x^4+39c^2x^2-99\right)\right)+6b\,s\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (d^2*(c*x*(b^2*c*x*(-99 + 39*c^2*x^2 - 8*c^4*x^4) + 144*a^2*c*x*(3 - 3*c^2*
x^2 + c^4*x^4) + 6*a*b*Sqrt[1 - c^2*x^2]*(33 - 26*c^2*x^2 + 8*c^4*x^4)) + 6
*b*(b*c*x*Sqrt[1 - c^2*x^2]*(33 - 26*c^2*x^2 + 8*c^4*x^4) + 3*a*(-11 + 48*c
^2*x^2 - 48*c^4*x^4 + 16*c^6*x^6))*ArcSin[c*x] + 9*b^2*(-11 + 48*c^2*x^2 -
48*c^4*x^4 + 16*c^6*x^6)*ArcSin[c*x]^2))/(864*c^2)
```

fricas [A] time = 0.67, size = 278, normalized size = 1.33

$$\frac{8\left(18a^2-b^2\right)c^6d^2x^6-3\left(144a^2-13b^2\right)c^4d^2x^4+9\left(48a^2-11b^2\right)c^2d^2x^2+9\left(16b^2c^6d^2x^6-48b^2c^4d^2x^4+48b^2c^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] 1/864*(8*(18*a^2 - b^2)*c^6*d^2*x^6 - 3*(144*a^2 - 13*b^2)*c^4*d^2*x^4 + 9*
(48*a^2 - 11*b^2)*c^2*d^2*x^2 + 9*(16*b^2*c^6*d^2*x^6 - 48*b^2*c^4*d^2*x^4
+ 48*b^2*c^2*d^2*x^2 - 11*b^2*d^2)*arcsin(c*x)^2 + 18*(16*a*b*c^6*d^2*x^6 -
 48*a*b*c^4*d^2*x^4 + 48*a*b*c^2*d^2*x^2 - 11*a*b*d^2)*arcsin(c*x) + 6*(8*a
*b*c^5*d^2*x^5 - 26*a*b*c^3*d^2*x^3 + 33*a*b*c*d^2*x + (8*b^2*c^5*d^2*x^5 -
 26*b^2*c^3*d^2*x^3 + 33*b^2*c*d^2*x)*arcsin(c*x))*sqrt(-c^2*x^2 + 1))/c^2
```

giac [B] time = 0.58, size = 383, normalized size = 1.83

$$\frac{1}{6}a^2c^4d^2x^6-\frac{1}{2}a^2c^2d^2x^4+\frac{\left(c^2x^2-1\right)^2\sqrt{-c^2x^2+1}\,b^2d^2x\arcsin\left(cx\right)}{18\,c}+\frac{\left(c^2x^2-1\right)^3b^2d^2\arcsin\left(cx\right)^2}{6\,c^2}+\frac{\left(c^2x^2-1\right)^2\sqrt{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] 1/6*a^2*c^4*d^2*x^6 - 1/2*a^2*c^2*d^2*x^4 + 1/18*(c^2*x^2 - 1)^2*sqrt(-c^2*
x^2 + 1)*b^2*d^2*x*arcsin(c*x)/c + 1/6*(c^2*x^2 - 1)^3*b^2*d^2*arcsin(c*x)^
2/c^2 + 1/18*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*a*b*d^2*x/c + 5/72*(-c^2*x^
2 + 1)^(3/2)*b^2*d^2*x*arcsin(c*x)/c + 1/3*(c^2*x^2 - 1)^3*a*b*d^2*arcsin(c
*x)/c^2 + 5/72*(-c^2*x^2 + 1)^(3/2)*a*b*d^2*x/c + 5/48*sqrt(-c^2*x^2 + 1)*b
^2*d^2*x*arcsin(c*x)/c - 1/108*(c^2*x^2 - 1)^3*b^2*d^2/c^2 + 5/48*sqrt(-c^2
*x^2 + 1)*a*b*d^2*x/c + 5/288*(c^2*x^2 - 1)^2*b^2*d^2/c^2 + 5/96*b^2*d^2*ar
csin(c*x)^2/c^2 + 1/2*(c^2*x^2 - 1)*a^2*d^2/c^2 - 5/96*(c^2*x^2 - 1)*b^2*d^
2/c^2 + 5/48*a*b*d^2*arcsin(c*x)/c^2 - 245/6912*b^2*d^2/c^2
```

maple [A] time = 0.05, size = 283, normalized size = 1.35

$$d^2a^2\left(\frac{1}{6}c^6x^6-\frac{1}{2}c^4x^4+\frac{1}{2}c^2x^2\right)+d^2b^2\left(\frac{\arcsin(cx)^2\left(c^2x^2-1\right)^3}{6}+\frac{\arcsin(cx)\left(8c^5x^5\sqrt{-c^2x^2+1}-26c^3x^3\sqrt{-c^2x^2+1}+33cx\sqrt{-c^2x^2+1}+15\right.}{144}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/c^2*(d^2*a^2*(1/6*c^6*x^6-1/2*c^4*x^4+1/2*c^2*x^2)+d^2*b^2*(1/6*arcsin(c*
x)^2*(c^2*x^2-1)^3+1/144*arcsin(c*x)*(8*c^5*x^5*(-c^2*x^2+1)^(1/2)-26*c^3*x
^3*(-c^2*x^2+1)^(1/2)+33*c*x*(-c^2*x^2+1)^(1/2)+15*arcsin(c*x))-5/96*arcsin
(c*x)^2-1/108*(c^2*x^2-1)^3+5/288*(c^2*x^2-1)^2-5/96*c^2*x^2+5/96)+2*d^2*a*
b*(1/6*arcsin(c*x)*c^6*x^6-1/2*c^4*x^4*arcsin(c*x)+1/2*c^2*x^2*arcsin(c*x)+
1/36*c^5*x^5*(-c^2*x^2+1)^(1/2)-13/144*c^3*x^3*(-c^2*x^2+1)^(1/2)+11/96*c*x
*(-c^2*x^2+1)^(1/2)-11/96*arcsin(c*x)))
```

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

$$\frac{1}{6}a^2c^4d^2x^6-\frac{1}{2}a^2c^2d^2x^4+\frac{1}{144}\left(48\,x^6\arcsin\left(cx\right)+\left(\frac{8\sqrt{-c^2x^2+1}\,x^5}{c^2}+\frac{10\sqrt{-c^2x^2+1}\,x^3}{c^4}+\frac{15\sqrt{-c^2x^2+1}\,x}{c^6}-\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] 1/6*a^2*c^4*d^2*x^6 - 1/2*a^2*c^2*d^2*x^4 + 1/144*(48*x^6*arcsin(c*x) + (8*
sqrt(-c^2*x^2 + 1)*x^5/c^2 + 10*sqrt(-c^2*x^2 + 1)*x^3/c^4 + 15*sqrt(-c^2*x
^2 + 1)*x/c^6 - 15*arcsin(c*x)/c^7)*c)*a*b*c^4*d^2 - 1/8*(8*x^4*arcsin(c*x)
 + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c*
```

```
x)/c^5)*c)*a*b*c^2*d^2 + 1/2*a^2*d^2*x^2 + 1/2*(2*x^2*arcsin(c*x) + c*(sqrt
(-c^2*x^2 + 1)*x/c^2 - arcsin(c*x)/c^3))*a*b*d^2 + 1/6*(b^2*c^4*d^2*x^6 - 3
*b^2*c^2*d^2*x^4 + 3*b^2*d^2*x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)
)^2 + integrate(1/3*(b^2*c^5*d^2*x^6 - 3*b^2*c^3*d^2*x^4 + 3*b^2*c*d^2*x^2)
*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(c
^2*x^2 - 1), x)
```

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

$$\int x\,(a+b\,\mathrm{asin}\,(c\,x))^2\,\left(d-c^2\,d\,x^2\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^2,x)
```

```
[Out] int(x*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^2, x)
```

sympy [A] time = 8.23, size = 430, normalized size = 2.06

$$\begin{cases} \frac{a^2c^4d^2x^6}{6} - \frac{a^2c^2d^2x^4}{2} + \frac{a^2d^2x^2}{2} + \frac{abc^4d^2x^6\,\mathrm{asin}\,(cx)}{3} + \frac{abc^3d^2x^5\sqrt{-c^2x^2+1}}{18} - abc^2d^2x^4\,\mathrm{asin}\,(cx) - \frac{13abcd^2x^3\sqrt{-c^2x^2+1}}{72} + abd^2x^2\,a \\ \frac{a^2d^2x^2}{2} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c**2*d*x**2+d)**2*(a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((a**2*c**4*d**2*x**6/6 - a**2*c**2*d**2*x**4/2 + a**2*d**2*x**2/2
 + a*b*c**4*d**2*x**6*asin(c*x)/3 + a*b*c**3*d**2*x**5*sqrt(-c**2*x**2 + 1)
/18 - a*b*c**2*d**2*x**4*asin(c*x) - 13*a*b*c*d**2*x**3*sqrt(-c**2*x**2 + 1
)/72 + a*b*d**2*x**2*asin(c*x) + 11*a*b*d**2*x*sqrt(-c**2*x**2 + 1)/(48*c)
- 11*a*b*d**2*asin(c*x)/(48*c**2) + b**2*c**4*d**2*x**6*asin(c*x)**2/6 - b*
*2*c**4*d**2*x**6/108 + b**2*c**3*d**2*x**5*sqrt(-c**2*x**2 + 1)*asin(c*x)/
18 - b**2*c**2*d**2*x**4*asin(c*x)**2/2 + 13*b**2*c**2*d**2*x**4/288 - 13*b
**2*c*d**2*x**3*sqrt(-c**2*x**2 + 1)*asin(c*x)/72 + b**2*d**2*x**2*asin(c*x
)**2/2 - 11*b**2*d**2*x**2/96 + 11*b**2*d**2*x*sqrt(-c**2*x**2 + 1)*asin(c*
x)/(48*c) - 11*b**2*d**2*asin(c*x)**2/(96*c**2), Ne(c, 0)), (a**2*d**2*x**2
/2, True))
```

3.169 $\int \left(d-c^2dx^2\right)^2 \left(a+b\sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=219

$$\frac{1}{5}d^2x\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2+\frac{4}{15}d^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2+\frac{2bd^2\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{25c}+$$

```
[Out] -298/225*b^2*d^2*x+76/675*b^2*c^2*d^2*x^3-2/125*b^2*c^4*d^2*x^5+8/45*b*d^2*
(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))/c+2/25*b*d^2*(-c^2*x^2+1)^(5/2)*(a+b*a
rcsin(c*x))/c+8/15*d^2*x*(a+b*arcsin(c*x))^2+4/15*d^2*x*(-c^2*x^2+1)*(a+b*a
rcsin(c*x))^2+1/5*d^2*x*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))^2+16/15*b*d^2*(a+b
*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.26, antiderivative size = 219, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {4649, 4619, 4677, 8, 194}

$$\frac{1}{5}d^2x\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2+\frac{4}{15}d^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2+\frac{2bd^2\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{25c}+$$

Antiderivative was successfully verified.

```
[In] Int[(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (-298*b^2*d^2*x)/225 + (76*b^2*c^2*d^2*x^3)/675 - (2*b^2*c^4*d^2*x^5)/125 +
 (16*b*d^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(15*c) + (8*b*d^2*(1 - c^
2*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(45*c) + (2*b*d^2*(1 - c^2*x^2)^(5/2)*(a
+ b*ArcSin[c*x]))/(25*c) + (8*d^2*x*(a + b*ArcSin[c*x])^2)/15 + (4*d^2*x*(1
 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/15 + (d^2*x*(1 - c^2*x^2)^2*(a + b*ArcSi
n[c*x])^2)/5
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4619

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

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
```

```
1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2\,dx=\frac{1}{5}d^2x\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2+\frac{1}{5}(4d)\int\left(d-c^2dx^2\right)\left(a+b\sin^{-1}(c\right.$$

$$=\frac{2bd^2\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{25c}+\frac{4}{15}d^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2$$

$$=\frac{8bd^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{45c}+\frac{2bd^2\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{25c}$$

$$=-\frac{58}{225}b^2d^2x+\frac{76}{675}b^2c^2d^2x^3-\frac{2}{125}b^2c^4d^2x^5+\frac{16bd^2\sqrt{1-c^2x^2}\left(a+b\sin^{-}\right.}{15c}$$

$$=-\frac{298}{225}b^2d^2x+\frac{76}{675}b^2c^2d^2x^3-\frac{2}{125}b^2c^4d^2x^5+\frac{16bd^2\sqrt{1-c^2x^2}\left(a+b\sin^{-}\right.}{15c}$$

Mathematica [A] time = 0.25, size = 193, normalized size = 0.88

$$\frac{d^2\left(225a^2cx\left(3c^4x^4-10c^2x^2+15\right)+30ab\sqrt{1-c^2x^2}\left(9c^4x^4-38c^2x^2+149\right)+30b\sin^{-1}(cx)\left(15acx\left(3c^4x^4-10c\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (d^2*(225*a^2*c*x*(15 - 10*c^2*x^2 + 3*c^4*x^4) + 30*a*b*Sqrt[1 - c^2*x^2]*
(149 - 38*c^2*x^2 + 9*c^4*x^4) - 2*b^2*c*x*(2235 - 190*c^2*x^2 + 27*c^4*x^4
) + 30*b*(15*a*c*x*(15 - 10*c^2*x^2 + 3*c^4*x^4) + b*Sqrt[1 - c^2*x^2]*(149
 - 38*c^2*x^2 + 9*c^4*x^4))*ArcSin[c*x] + 225*b^2*c*x*(15 - 10*c^2*x^2 + 3*
c^4*x^4)*ArcSin[c*x]^2))/(3375*c)
```

fricas [A] time = 0.76, size = 247, normalized size = 1.13

$$\frac{27\left(25\,a^2-2\,b^2\right)c^5d^2x^5-10\left(225\,a^2-38\,b^2\right)c^3d^2x^3+15\left(225\,a^2-298\,b^2\right)cd^2x+225\left(3\,b^2c^5d^2x^5-10\,b^2c^3d^2x^3+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] 1/3375*(27*(25*a^2 - 2*b^2)*c^5*d^2*x^5 - 10*(225*a^2 - 38*b^2)*c^3*d^2*x^3
 + 15*(225*a^2 - 298*b^2)*c*d^2*x + 225*(3*b^2*c^5*d^2*x^5 - 10*b^2*c^3*d^2
*x^3 + 15*b^2*c*d^2*x)*arcsin(c*x)^2 + 450*(3*a*b*c^5*d^2*x^5 - 10*a*b*c^3*
d^2*x^3 + 15*a*b*c*d^2*x)*arcsin(c*x) + 30*(9*a*b*c^4*d^2*x^4 - 38*a*b*c^2*
d^2*x^2 + 149*a*b*d^2 + (9*b^2*c^4*d^2*x^4 - 38*b^2*c^2*d^2*x^2 + 149*b^2*d
^2)*arcsin(c*x))*sqrt(-c^2*x^2 + 1))/c
```

giac [A] time = 1.49, size = 374, normalized size = 1.71

$$\frac{1}{5}\,a^2c^4d^2x^5-\frac{2}{3}\,a^2c^2d^2x^3+\frac{1}{5}\left(c^2x^2-1\right)^2b^2d^2x\arcsin\left(cx\right)^2+\frac{2}{5}\left(c^2x^2-1\right)^2abd^2x\arcsin\left(cx\right)-\frac{4}{15}\left(c^2x^2-1\right)b^2d^2x\,\mathrm{arcs}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] 1/5*a^2*c^4*d^2*x^5 - 2/3*a^2*c^2*d^2*x^3 + 1/5*(c^2*x^2 - 1)^2*b^2*d^2*x*a
rcsin(c*x)^2 + 2/5*(c^2*x^2 - 1)^2*a*b*d^2*x*arcsin(c*x) - 4/15*(c^2*x^2 -
1)*b^2*d^2*x*arcsin(c*x)^2 - 2/125*(c^2*x^2 - 1)^2*b^2*d^2*x - 8/15*(c^2*x^
2 - 1)*a*b*d^2*x*arcsin(c*x) + 8/15*b^2*d^2*x*arcsin(c*x)^2 + 2/25*(c^2*x^2
 - 1)^2*sqrt(-c^2*x^2 + 1)*b^2*d^2*arcsin(c*x)/c + 272/3375*(c^2*x^2 - 1)*b
^2*d^2*x + 16/15*a*b*d^2*x*arcsin(c*x) + 2/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2
 + 1)*a*b*d^2/c + 8/45*(-c^2*x^2 + 1)^(3/2)*b^2*d^2*arcsin(c*x)/c + a^2*d^2
*x - 4144/3375*b^2*d^2*x + 8/45*(-c^2*x^2 + 1)^(3/2)*a*b*d^2/c + 16/15*sqrt
(-c^2*x^2 + 1)*b^2*d^2*arcsin(c*x)/c + 16/15*sqrt(-c^2*x^2 + 1)*a*b*d^2/c
```

maple [A] time = 0.06, size = 275, normalized size = 1.26

$$d^2a^2\left(\frac{1}{5}c^5x^5-\frac{2}{3}c^3x^3+cx\right)+d^2b^2\left(\frac{\arcsin(cx)^2\left(3c^4x^4-10c^2x^2+15\right)cx}{15}-\frac{16cx}{15}+\frac{16\arcsin(cx)\sqrt{-c^2x^2+1}}{15}+\frac{2\arcsin(cx)\left(c^2x^2-1\right)^2\sqrt{\cdot}}{25}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/c*(d^2*a^2*(1/5*c^5*x^5-2/3*c^3*x^3+c*x)+d^2*b^2*(1/15*arcsin(c*x)^2*(3*c
^4*x^4-10*c^2*x^2+15)*c*x-16/15*c*x+16/15*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+2/
25*arcsin(c*x)*(c^2*x^2-1)^2*(-c^2*x^2+1)^(1/2)-2/375*(3*c^4*x^4-10*c^2*x^2
+15)*c*x-8/45*arcsin(c*x)*(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)+8/135*(c^2*x^2-3)*
c*x)+2*d^2*a*b*(1/5*arcsin(c*x)*c^5*x^5-2/3*c^3*x^3*arcsin(c*x)+c*x*arcsin(
c*x)+1/25*c^4*x^4*(-c^2*x^2+1)^(1/2)-38/225*c^2*x^2*(-c^2*x^2+1)^(1/2)+149/
225*(-c^2*x^2+1)^(1/2)))
```

maxima [B] time = 0.69, size = 465, normalized size = 2.12

$$\frac{1}{5}b^2c^4d^2x^5\arcsin(cx)^2+\frac{1}{5}a^2c^4d^2x^5-\frac{2}{3}b^2c^2d^2x^3\arcsin(cx)^2+\frac{2}{75}\left(15x^5\arcsin(cx)+\left(\frac{3\sqrt{-c^2x^2+1}\,x^4}{c^2}+\frac{4\sqrt{\cdot}}{\cdot}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] 1/5*b^2*c^4*d^2*x^5*arcsin(c*x)^2 + 1/5*a^2*c^4*d^2*x^5 - 2/3*b^2*c^2*d^2*x
^3*arcsin(c*x)^2 + 2/75*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2
 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*a*b*c^4*d^2
+ 2/1125*(15*(3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 +
 8*sqrt(-c^2*x^2 + 1)/c^6)*c*arcsin(c*x) - (9*c^4*x^5 + 20*c^2*x^3 + 120*x)
/c^4)*b^2*c^4*d^2 - 2/3*a^2*c^2*d^2*x^3 - 4/9*(3*x^3*arcsin(c*x) + c*(sqrt(
-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*c^2*d^2 - 4/27*(3*c*
(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4)*arcsin(c*x) - (c^2*
x^3 + 6*x)/c^2)*b^2*c^2*d^2 + b^2*d^2*x*arcsin(c*x)^2 - 2*b^2*d^2*(x - sqrt
(-c^2*x^2 + 1)*arcsin(c*x)/c) + a^2*d^2*x + 2*(c*x*arcsin(c*x) + sqrt(-c^2*
x^2 + 1))*a*b*d^2/c
```

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

$$\int (a+b\,\mathrm{asin}(c\,x))^2\,\left(d-c^2\,d\,x^2\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2*(d - c^2*d*x^2)^2,x)
```

```
[Out] int((a + b*asin(c*x))^2*(d - c^2*d*x^2)^2, x)
```

sympy [A] time = 4.49, size = 389, normalized size = 1.78

$$\begin{cases} \frac{a^2c^4d^2x^5}{5} - \frac{2a^2c^2d^2x^3}{3} + a^2d^2x + \frac{2abc^4d^2x^5 \operatorname{asin}(cx)}{5} + \frac{2abc^3d^2x^4\sqrt{-c^2x^2+1}}{25} - \frac{4abc^2d^2x^3 \operatorname{asin}(cx)}{3} - \frac{76abcd^2x^2\sqrt{-c^2x^2+1}}{225} + 2abd^2x \operatorname{a} \\ a^2d^2x \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**2*(a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((a**2*c**4*d**2*x**5/5 - 2*a**2*c**2*d**2*x**3/3 + a**2*d**2*x +
2*a*b*c**4*d**2*x**5*asin(c*x)/5 + 2*a*b*c**3*d**2*x**4*sqrt(-c**2*x**2 + 1
)/25 - 4*a*b*c**2*d**2*x**3*asin(c*x)/3 - 76*a*b*c*d**2*x**2*sqrt(-c**2*x**
2 + 1)/225 + 2*a*b*d**2*x*asin(c*x) + 298*a*b*d**2*sqrt(-c**2*x**2 + 1)/(22
5*c) + b**2*c**4*d**2*x**5*asin(c*x)**2/5 - 2*b**2*c**4*d**2*x**5/125 + 2*b
**2*c**3*d**2*x**4*sqrt(-c**2*x**2 + 1)*asin(c*x)/25 - 2*b**2*c**2*d**2*x**
3*asin(c*x)**2/3 + 76*b**2*c**2*d**2*x**3/675 - 76*b**2*c*d**2*x**2*sqrt(-c
**2*x**2 + 1)*asin(c*x)/225 + b**2*d**2*x*asin(c*x)**2 - 298*b**2*d**2*x/22
5 + 298*b**2*d**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(225*c), Ne(c, 0)), (a**2*
d**2*x, True))
```

3.170 $\int \frac{\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{x}\,dx$

Optimal. Leaf size=271

$$-\frac{1}{8}bcd^2x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)-\frac{11}{16}bcd^2x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}d^2\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right.$$

```
[Out] 13/32*b^2*c^2*d^2*x^2-1/32*b^2*c^4*d^2*x^4-1/8*b*c*d^2*x*(-c^2*x^2+1)^(3/2)
*(a+b*arcsin(c*x))-11/32*d^2*(a+b*arcsin(c*x))^2+1/2*d^2*(-c^2*x^2+1)*(a+b*
arcsin(c*x))^2+1/4*d^2*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))^2-1/3*I*d^2*(a+b*ar
csin(c*x))^3/b+d^2*(a+b*arcsin(c*x))^2*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))^2)-I
*b*d^2*(a+b*arcsin(c*x))*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)+1/2*b^2*d^
2*polylog(3,(I*c*x+(-c^2*x^2+1)^(1/2))^2)-11/16*b*c*d^2*x*(a+b*arcsin(c*x))
*(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.41, antiderivative size = 271, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 12, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {4699, 4625, 3717, 2190, 2531, 2282, 6589, 4647, 4641, 30, 4649, 14}

$$-ibd^2\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}b^2d^2\text{PolyLog}\left(3,e^{2i\sin^{-1}(cx)}\right)-\frac{1}{8}bcd^2x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin\right.$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^2*(a + b*ArcSin[c*x])^2)/x,x]
```

```
[Out] (13*b^2*c^2*d^2*x^2)/32 - (b^2*c^4*d^2*x^4)/32 - (11*b*c*d^2*x*Sqrt[1 - c^2
*x^2]*(a + b*ArcSin[c*x]))/16 - (b*c*d^2*x*(1 - c^2*x^2)^(3/2)*(a + b*ArcSi
n[c*x]))/8 - (11*d^2*(a + b*ArcSin[c*x])^2)/32 + (d^2*(1 - c^2*x^2)*(a + b*
ArcSin[c*x])^2)/2 + (d^2*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x])^2)/4 - ((I/3)*
d^2*(a + b*ArcSin[c*x])^3)/b + d^2*(a + b*ArcSin[c*x])^2*Log[1 - E^((2*I)*A
rcSin[c*x])] - I*b*d^2*(a + b*ArcSin[c*x])*PolyLog[2, E^((2*I)*ArcSin[c*x])
] + (b^2*d^2*PolyLog[3, E^((2*I)*ArcSin[c*x])])/2
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
```

```
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{x}\,dx = \frac{1}{4}d^2\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2 + d\int \frac{\left(d-c^2dx^2\right)\left(a+b\sin^{-1}(cx)\right)}{x}$$

$$= -\frac{1}{8}bcd^2x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right) + \frac{1}{2}d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(c\right.$$

$$= -\frac{11}{16}bcd^2x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{1}{8}bcd^2x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin\right.$$

$$= \frac{13}{32}b^2c^2d^2x^2 - \frac{1}{32}b^2c^4d^2x^4 - \frac{11}{16}bcd^2x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{1}{8}b$$

$$= \frac{13}{32}b^2c^2d^2x^2 - \frac{1}{32}b^2c^4d^2x^4 - \frac{11}{16}bcd^2x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{1}{8}b$$

$$= \frac{13}{32}b^2c^2d^2x^2 - \frac{1}{32}b^2c^4d^2x^4 - \frac{11}{16}bcd^2x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{1}{8}b$$

$$= \frac{13}{32}b^2c^2d^2x^2 - \frac{1}{32}b^2c^4d^2x^4 - \frac{11}{16}bcd^2x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{1}{8}b$$

$$= \frac{13}{32}b^2c^2d^2x^2 - \frac{1}{32}b^2c^4d^2x^4 - \frac{11}{16}bcd^2x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{1}{8}b$$

Mathematica [A] time = 0.47, size = 353, normalized size = 1.30

$$\frac{1}{768}d^2\left(192a^2c^4x^4 - 768a^2c^2x^2 + 768a^2\log(cx) + 384abc^4x^4\sin^{-1}(cx) - 624abcx\sqrt{1-c^2x^2} - 1536abc^2x^2\sin\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^2*(a + b*ArcSin[c*x])^2)/x,x]
```

```
[Out] (d^2*((-32*I)*b^2*Pi^3 - 768*a^2*c^2*x^2 + 192*a^2*c^4*x^4 - 624*a*b*c*x*Sq
rt[1 - c^2*x^2] + 96*a*b*c^3*x^3*Sqrt[1 - c^2*x^2] + 624*a*b*ArcSin[c*x] -
1536*a*b*c^2*x^2*ArcSin[c*x] + 384*a*b*c^4*x^4*ArcSin[c*x] - (768*I)*a*b*Ar
cSin[c*x]^2 + (256*I)*b^2*ArcSin[c*x]^3 - 144*b^2*Cos[2*ArcSin[c*x]] + 288*
b^2*ArcSin[c*x]^2*Cos[2*ArcSin[c*x]] - 3*b^2*Cos[4*ArcSin[c*x]] + 24*b^2*Ar
cSin[c*x]^2*Cos[4*ArcSin[c*x]] + 768*b^2*ArcSin[c*x]^2*Log[1 - E^((-2*I)*Ar
cSin[c*x])] + 1536*a*b*ArcSin[c*x]*Log[1 - E^((2*I)*ArcSin[c*x])] + 768*a^2
*Log[c*x] + (768*I)*b^2*ArcSin[c*x]*PolyLog[2, E^((-2*I)*ArcSin[c*x])] - (7
68*I)*a*b*PolyLog[2, E^((2*I)*ArcSin[c*x])] + 384*b^2*PolyLog[3, E^((-2*I)*
ArcSin[c*x])] - 288*b^2*ArcSin[c*x]*Sin[2*ArcSin[c*x]] - 12*b^2*ArcSin[c*x]
*Sin[4*ArcSin[c*x]]))/768
```

fricas [F] time = 2.02, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{a^2c^4d^2x^4 - 2\,a^2c^2d^2x^2 + a^2d^2 + \left(b^2c^4d^2x^4 - 2\,b^2c^2d^2x^2 + b^2d^2\right)\arcsin(cx)^2 + 2\left(abc^4d^2x^4 - 2\,abc^2d\right.}{x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2/x,x, algorithm="fricas")
```

```
[Out] integral((a^2*c^4*d^2*x^4 - 2*a^2*c^2*d^2*x^2 + a^2*d^2 + (b^2*c^4*d^2*x^4
- 2*b^2*c^2*d^2*x^2 + b^2*d^2)*arcsin(c*x)^2 + 2*(a*b*c^4*d^2*x^4 - 2*a*b*c
^2*d^2*x^2 + a*b*d^2)*arcsin(c*x))/x, x)
```

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

$$\int \frac{\left(c^2dx^2-d\right)^2(b\arcsin(cx)+a)^2}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2/x,x, algorithm="giac")
```

```
[Out] integrate((c^2*d*x^2 - d)^2*(b*arcsin(c*x) + a)^2/x, x)
```

maple [B] time = 0.43, size = 560, normalized size = 2.07

$$d^2a^2\ln(cx)-\frac{d^2b^2\cos(4\arcsin(cx))}{256}-\frac{3d^2b^2\cos(2\arcsin(cx))}{16}+2d^2ab\arcsin(cx)\ln\left(1+icx+\sqrt{-c^2x^2+1}\right)+2d^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2/x,x)
```

```
[Out] 2*d^2*a*b*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+2*d^2*a*b*arcsin(c*x)*
ln(1-I*c*x-(-c^2*x^2+1)^(1/2))+2*d^2*b^2*polylog(3,I*c*x+(-c^2*x^2+1)^(1/2)
)+d^2*a^2*ln(c*x)-1/256*d^2*b^2*cos(4*arcsin(c*x))-3/16*d^2*b^2*cos(2*arcsi
n(c*x))+2*d^2*b^2*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2))-3/8*d^2*b^2*arcsin(c
*x)*sin(2*arcsin(c*x))-1/3*I*d^2*b^2*arcsin(c*x)^3+1/4*d^2*a^2*c^4*x^4-d^2*
a^2*c^2*x^2-1/64*d^2*a*b*sin(4*arcsin(c*x))-3/8*d^2*a*b*sin(2*arcsin(c*x))+
d^2*b^2*arcsin(c*x)^2*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+d^2*b^2*arcsin(c*x)^2*
ln(1-I*c*x-(-c^2*x^2+1)^(1/2))+1/32*d^2*b^2*cos(4*arcsin(c*x))*arcsin(c*x)^
2-1/64*d^2*b^2*arcsin(c*x)*sin(4*arcsin(c*x))+3/8*d^2*b^2*cos(2*arcsin(c*x)
)*arcsin(c*x)^2-I*d^2*a*b*arcsin(c*x)^2-2*I*d^2*a*b*polylog(2,-I*c*x-(-c^2*
x^2+1)^(1/2))-2*I*d^2*a*b*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))-2*I*d^2*b^2*a
rcsin(c*x)*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))-2*I*d^2*b^2*arcsin(c*x)*pol
ylog(2,I*c*x+(-c^2*x^2+1)^(1/2))+1/16*d^2*a*b*arcsin(c*x)*cos(4*arcsin(c*x)
)+3/4*d^2*a*b*cos(2*arcsin(c*x))*arcsin(c*x)
```

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

$$\frac{1}{4}a^2c^4d^2x^4-a^2c^2d^2x^2+a^2d^2\log(x)+\int\frac{\left(b^2c^4d^2x^4-2\,b^2c^2d^2x^2+b^2d^2\right)\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)^2+2\left(abc^4d\right.}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2/x,x, algorithm="maxima")
```

```
[Out] 1/4*a^2*c^4*d^2*x^4 - a^2*c^2*d^2*x^2 + a^2*d^2*log(x) + integrate(((b^2*c^
4*d^2*x^4 - 2*b^2*c^2*d^2*x^2 + b^2*d^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c
*x + 1))^2 + 2*(a*b*c^4*d^2*x^4 - 2*a*b*c^2*d^2*x^2 + a*b*d^2)*arctan2(c*x,
 sqrt(c*x + 1)*sqrt(-c*x + 1)))/x, x)
```

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

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))^2\,\left(d-c^2\,d\,x^2\right)^2}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^2)/x,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^2)/x, x)
```

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

$$d^2 \left(\int \frac{a^2}{x}\, dx + \int \left(-2a^2c^2x\right) dx + \int a^2c^4x^3\, dx + \int \frac{b^2 \operatorname{asin}^2(cx)}{x}\, dx + \int \frac{2ab \operatorname{asin}(cx)}{x}\, dx + \int \left(-2b^2c^2x \operatorname{asin}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**2*(a+b*asin(c*x))**2/x,x)
```

```
[Out] d**2*(Integral(a**2/x, x) + Integral(-2*a**2*c**2*x, x) + Integral(a**2*c**
4*x**3, x) + Integral(b**2*asin(c*x)**2/x, x) + Integral(2*a*b*asin(c*x)/x,
 x) + Integral(-2*b**2*c**2*x*asin(c*x)**2, x) + Integral(b**2*c**4*x**3*as
in(c*x)**2, x) + Integral(-4*a*b*c**2*x*asin(c*x), x) + Integral(2*a*b*c**4
*x**3*asin(c*x), x))
```

3.171 $\int \frac{(d-c^2dx^2)^2(a+b\sin^{-1}(cx))^2}{x^2}\,dx$

Optimal. Leaf size=249

$$-\frac{4}{3}c^2d^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2-\frac{2}{9}bcd^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)-\frac{10}{3}bcd^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)-$$

```
[Out] 32/9*b^2*c^2*d^2*x-2/27*b^2*c^4*d^2*x^3-2/9*b*c*d^2*(-c^2*x^2+1)^(3/2)*(a+b
*arcsin(c*x))-8/3*c^2*d^2*x*(a+b*arcsin(c*x))^2-4/3*c^2*d^2*x*(-c^2*x^2+1)*
(a+b*arcsin(c*x))^2-d^2*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))^2/x-4*b*c*d^2*(a+b
*arcsin(c*x))*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))+2*I*b^2*c*d^2*polylog(2,-I*
c*x-(-c^2*x^2+1)^(1/2))-2*I*b^2*c*d^2*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))-1
0/3*b*c*d^2*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.49, antiderivative size = 249, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 11, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.407, Rules used = {4695, 4649, 4619, 4677, 8, 4699, 4697, 4709, 4183, 2279, 2391}

$$2ib^2cd^2\text{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)-2ib^2cd^2\text{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)-\frac{4}{3}c^2d^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2-\frac{2}{9}bcd^2\left(1-\right.$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^2*(a + b*ArcSin[c*x])^2)/x^2,x]
```

```
[Out] (32*b^2*c^2*d^2*x)/9 - (2*b^2*c^4*d^2*x^3)/27 - (10*b*c*d^2*Sqrt[1 - c^2*x^
2]*(a + b*ArcSin[c*x]))/3 - (2*b*c*d^2*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*
x]))/9 - (8*c^2*d^2*x*(a + b*ArcSin[c*x])^2)/3 - (4*c^2*d^2*x*(1 - c^2*x^2)
*(a + b*ArcSin[c*x])^2)/3 - (d^2*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x])^2)/x -
 4*b*c*d^2*(a + b*ArcSin[c*x])*ArcTanh[E^(I*ArcSin[c*x])] + (2*I)*b^2*c*d^2
*PolyLog[2, -E^(I*ArcSin[c*x])] - (2*I)*b^2*c*d^2*PolyLog[2, E^(I*ArcSin[c*
x])]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4619

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

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4695

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m +
2)*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPar
t[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f
*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /;
 FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0
] && LtQ[m, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
```

```
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{x^2}\,dx = -\frac{d^2\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{x} - \left(4c^2d\right)\int\left(d-c^2dx^2\right)\left(a+b\sin^{-1}(cx\right.$$

$$= \frac{2}{3}bcd^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right) - \frac{4}{3}c^2d^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right.$$

$$= -\frac{2}{3}b^2c^2d^2x + \frac{2}{9}b^2c^4d^2x^3 + 2bcd^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{2}{9}bcd^2\left(1-\right.$$

$$= -\frac{16}{9}b^2c^2d^2x - \frac{2}{27}b^2c^4d^2x^3 - \frac{10}{3}bcd^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{2}{9}bcd^2$$

$$= \frac{32}{9}b^2c^2d^2x - \frac{2}{27}b^2c^4d^2x^3 - \frac{10}{3}bcd^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{2}{9}bcd^2\left(\right.$$

$$= \frac{32}{9}b^2c^2d^2x - \frac{2}{27}b^2c^4d^2x^3 - \frac{10}{3}bcd^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{2}{9}bcd^2\left(\right.$$

$$= \frac{32}{9}b^2c^2d^2x - \frac{2}{27}b^2c^4d^2x^3 - \frac{10}{3}bcd^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{2}{9}bcd^2\left(\right.$$

Mathematica [A] time = 0.97, size = 322, normalized size = 1.29

$$\frac{1}{54}d^2\left(18a^2c^4x^3 - 108a^2c^2x - \frac{54a^2}{x} + 36abc^4x^3\sin^{-1}(cx) + 12abc\sqrt{1-c^2x^2}\left(c^2x^2+2\right) - 216abc\left(\sqrt{1-c^2x^2}+cx\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^2*(a + b*ArcSin[c*x])^2)/x^2,x]
```

```
[Out] (d^2*((-54*a^2)/x - 108*a^2*c^2*x + 18*a^2*c^4*x^3 + 12*a*b*c*Sqrt[1 - c^2*
x^2]*(2 + c^2*x^2) + 36*a*b*c^4*x^3*ArcSin[c*x] - 189*b^2*c*Sqrt[1 - c^2*x^
2]*ArcSin[c*x] - 216*a*b*c*(Sqrt[1 - c^2*x^2] + c*x*ArcSin[c*x]) - 108*b^2*
c^2*x*(-2 + ArcSin[c*x]^2) + 2*b^2*c^2*x*(-2*(6 + c^2*x^2) + 9*c^2*x^2*ArcS
in[c*x]^2) - (108*a*b*(ArcSin[c*x] + c*x*ArcTanh[Sqrt[1 - c^2*x^2]]))/x - 3
*b^2*c*ArcSin[c*x]*Cos[3*ArcSin[c*x]] - (54*b^2*ArcSin[c*x]*(ArcSin[c*x] +
2*c*x*(-Log[1 - E^(I*ArcSin[c*x])] + Log[1 + E^(I*ArcSin[c*x])])))/x + (108
*I)*b^2*c*PolyLog[2, -E^(I*ArcSin[c*x])] - (108*I)*b^2*c*PolyLog[2, E^(I*Ar
cSin[c*x])]))/54
```

fricas [F] time = 2.55, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{a^2c^4d^2x^4 - 2\,a^2c^2d^2x^2 + a^2d^2 + \left(b^2c^4d^2x^4 - 2\,b^2c^2d^2x^2 + b^2d^2\right)\arcsin(cx)^2 + 2\left(abc^4d^2x^4 - 2\,abc^2d^2x^2\right.}{x^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2/x^2,x, algorithm="fricas")
```

```
[Out] integral((a^2*c^4*d^2*x^4 - 2*a^2*c^2*d^2*x^2 + a^2*d^2 + (b^2*c^4*d^2*x^4
- 2*b^2*c^2*d^2*x^2 + b^2*d^2)*arcsin(c*x)^2 + 2*(a*b*c^4*d^2*x^4 - 2*a*b*c
^2*d^2*x^2 + a*b*d^2)*arcsin(c*x))/x^2, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2/x^2,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.43, size = 411, normalized size = 1.65

$$\frac{d^2a^2c^4x^3}{3}-2d^2a^2c^2x-\frac{d^2a^2}{x}-\frac{7c\,d^2b^2\arcsin(cx)\sqrt{-c^2x^2+1}}{2}-\frac{7d^2b^2\arcsin(cx)^2c^2x}{4}+\frac{7b^2c^2d^2x}{2}-\frac{d^2b^2\arcsin(c$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2/x^2,x)
```

```
[Out] 1/3*d^2*a^2*c^4*x^3-2*d^2*a^2*c^2*x-d^2*a^2/x-7/2*c*d^2*b^2*arcsin(c*x)*(-c
^2*x^2+1)^(1/2)-7/4*d^2*b^2*arcsin(c*x)^2*c^2*x+7/2*b^2*c^2*d^2*x-d^2*b^2/x
*arcsin(c*x)^2-2*c*d^2*b^2*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+2*c*d
^2*b^2*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))-2*I*b^2*c*d^2*polylog(2,I
*c*x+(-c^2*x^2+1)^(1/2))+2*I*b^2*c*d^2*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))
-1/18*c*d^2*b^2*arcsin(c*x)*cos(3*arcsin(c*x))-1/12*c*d^2*b^2*sin(3*arcsin(
c*x))*arcsin(c*x)^2+1/54*c*d^2*b^2*sin(3*arcsin(c*x))+2/3*d^2*a*b*arcsin(c*
x)*c^4*x^3-4*d^2*a*b*arcsin(c*x)*c^2*x-2*d^2*a*b*arcsin(c*x)/x+2/9*d^2*a*b*
c^3*x^2*(-c^2*x^2+1)^(1/2)-32/9*c*d^2*a*b*(-c^2*x^2+1)^(1/2)-2*c*d^2*a*b*ar
ctanh(1/(-c^2*x^2+1)^(1/2))
```

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

$$\frac{1}{3}a^2c^4d^2x^3+\frac{2}{9}\left(3x^3\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2}+\frac{2\sqrt{-c^2x^2+1}}{c^4}\right)\right)abc^4d^2-2\,b^2c^2d^2x\arcsin(cx)^2+4\,b^2c^2d^2\Big($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2/x^2,x, algorithm="maxima")
```

```
[Out] 1/3*a^2*c^4*d^2*x^3 + 2/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^
2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*c^4*d^2 - 2*b^2*c^2*d^2*x*arcsin(c*x)^2
+ 4*b^2*c^2*d^2*(x - sqrt(-c^2*x^2 + 1)*arcsin(c*x)/c) - 2*a^2*c^2*d^2*x -
4*(c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*a*b*c*d^2 - 2*(c*log(2*sqrt(-c^2*x
^2 + 1)/abs(x) + 2/abs(x)) + arcsin(c*x)/x)*a*b*d^2 - a^2*d^2/x + 1/3*((b^2
*c^4*d^2*x^4 - 3*b^2*d^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 3*
x*integrate(2/3*(b^2*c^5*d^2*x^4 - 3*b^2*c*d^2)*sqrt(c*x + 1)*sqrt(-c*x + 1
)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^2*x^3 - x), x))/x
```

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

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))^2\,\left(d-c^2\,d\,x^2\right)^2}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^2)/x^2,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^2)/x^2, x)
```

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

$$d^2\left(\int\left(-2a^2c^2\right)dx+\int\frac{a^2}{x^2}\,dx+\int a^2c^4x^2\,dx+\int\left(-2b^2c^2\operatorname{asin}^2(cx)\right)dx+\int\frac{b^2\operatorname{asin}^2(cx)}{x^2}\,dx+\int\Big(-4abc^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**2*(a+b*asin(c*x))**2/x**2,x)
```

```
[Out] d**2*(Integral(-2*a**2*c**2, x) + Integral(a**2/x**2, x) + Integral(a**2*c*
*4*x**2, x) + Integral(-2*b**2*c**2*asin(c*x)**2, x) + Integral(b**2*asin(c
*x)**2/x**2, x) + Integral(-4*a*b*c**2*asin(c*x), x) + Integral(2*a*b*asin(
c*x)/x**2, x) + Integral(b**2*c**4*x**2*asin(c*x)**2, x) + Integral(2*a*b*c
**4*x**2*asin(c*x), x))
```

3.172 $\int \frac{\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{x^3}\,dx$

Optimal. Leaf size=287

$$2ibc^2d^2\text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)-c^2d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2-\frac{bcd^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{x}$$

```
[Out] -1/4*b^2*c^4*d^2*x^2-b*c*d^2*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))/x-1/4*c^2
*d^2*(a+b*arcsin(c*x))^2-c^2*d^2*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2-1/2*d^2*(
-c^2*x^2+1)^2*(a+b*arcsin(c*x))^2/x^2+2/3*I*c^2*d^2*(a+b*arcsin(c*x))^3/b-2
*c^2*d^2*(a+b*arcsin(c*x))^2*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))^2)+b^2*c^2*d^2
*ln(x)+2*I*b*c^2*d^2*(a+b*arcsin(c*x))*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))
^2)-b^2*c^2*d^2*polylog(3,(I*c*x+(-c^2*x^2+1)^(1/2))^2)-1/2*b*c^3*d^2*x*(a+
b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.47, antiderivative size = 287, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 12, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {4695, 4699, 4625, 3717, 2190, 2531, 2282, 6589, 4647, 4641, 30, 14}

$$2ibc^2d^2\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)-b^2c^2d^2\text{PolyLog}\left(3,e^{2i\sin^{-1}(cx)}\right)-\frac{1}{2}bc^3d^2x\sqrt{1-c^2x^2}\left(a+b\sin\right.$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^2*(a + b*ArcSin[c*x])^2)/x^3,x]
```

```
[Out] -(b^2*c^4*d^2*x^2)/4 - (b*c^3*d^2*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/
2 - (b*c*d^2*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x]))/x - (c^2*d^2*(a + b*A
rcSin[c*x])^2)/4 - c^2*d^2*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2 - (d^2*(1 -
c^2*x^2)^2*(a + b*ArcSin[c*x])^2)/(2*x^2) + (((2*I)/3)*c^2*d^2*(a + b*ArcSi
n[c*x])^3)/b - 2*c^2*d^2*(a + b*ArcSin[c*x])^2*Log[1 - E^((2*I)*ArcSin[c*x]
)] + b^2*c^2*d^2*Log[x] + (2*I)*b*c^2*d^2*(a + b*ArcSin[c*x])*PolyLog[2, E^
((2*I)*ArcSin[c*x])] - b^2*c^2*d^2*PolyLog[3, E^((2*I)*ArcSin[c*x])]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
```

```
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4695

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m +
2)*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPar
t[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f
*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /;
 FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0
] && LtQ[m, -1]
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
```

```
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{x^3}\,dx = -\frac{d^2\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{2x^2} - \left(2c^2d\right)\int \frac{\left(d-c^2dx^2\right)\left(a+b\sin^{-1}\right.}{x}$$

$$= -\frac{bcd^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{x} - c^2d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx\right.$$

$$= -\frac{1}{2}bc^3d^2x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{bcd^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}\right.}{x}$$

$$= -\frac{1}{4}b^2c^4d^2x^2 - \frac{1}{2}bc^3d^2x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{bcd^2\left(1-c^2x^2\right)^{3/}}{}$$

$$= -\frac{1}{4}b^2c^4d^2x^2 - \frac{1}{2}bc^3d^2x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{bcd^2\left(1-c^2x^2\right)^{3/}}{}$$

$$= -\frac{1}{4}b^2c^4d^2x^2 - \frac{1}{2}bc^3d^2x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{bcd^2\left(1-c^2x^2\right)^{3/}}{}$$

$$= -\frac{1}{4}b^2c^4d^2x^2 - \frac{1}{2}bc^3d^2x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{bcd^2\left(1-c^2x^2\right)^{3/}}{}$$

$$= -\frac{1}{4}b^2c^4d^2x^2 - \frac{1}{2}bc^3d^2x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{bcd^2\left(1-c^2x^2\right)^{3/}}{}$$

Mathematica [A] time = 0.86, size = 343, normalized size = 1.20

$$\frac{1}{2}d^2\left(a^2c^4x^2 - 4a^2c^2\log(x) - \frac{a^2}{x^2} + 2abc^4x^2\sin^{-1}(cx) + 4iabc^2\left(\sin^{-1}(cx)^2 + \text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right)\right) + abc^2\left(cx\sqrt{1-c\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^2*(a + b*ArcSin[c*x])^2)/x^3,x]
```

```
[Out] (d^2*(-(a^2/x^2) + a^2*c^4*x^2 + a*b*c^2*(c*x*Sqrt[1 - c^2*x^2] - ArcSin[c*
x]) + 2*a*b*c^4*x^2*ArcSin[c*x] - (2*a*b*(c*x*Sqrt[1 - c^2*x^2] + ArcSin[c*
x]))/x^2 - (b^2*c^2*(-1 + 2*ArcSin[c*x]^2)*Cos[2*ArcSin[c*x]])/4 - 8*a*b*c^
2*ArcSin[c*x]*Log[1 - E^((2*I)*ArcSin[c*x])] - 4*a^2*c^2*Log[x] - (b^2*(2*c
*x*Sqrt[1 - c^2*x^2]*ArcSin[c*x] + ArcSin[c*x]^2 - 2*c^2*x^2*Log[c*x]))/x^2
 + (4*I)*a*b*c^2*(ArcSin[c*x]^2 + PolyLog[2, E^((2*I)*ArcSin[c*x])]) + (I/6
)*b^2*c^2*(Pi^3 - 8*ArcSin[c*x]^3 + (24*I)*ArcSin[c*x]^2*Log[1 - E^((-2*I)*
ArcSin[c*x])] - 24*ArcSin[c*x]*PolyLog[2, E^((-2*I)*ArcSin[c*x])] + (12*I)*
PolyLog[3, E^((-2*I)*ArcSin[c*x])]) + (b^2*c^2*ArcSin[c*x]*Sin[2*ArcSin[c*x
]])/2))/2
```

fricas [F] time = 0.86, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{a^2c^4d^2x^4 - 2\,a^2c^2d^2x^2 + a^2d^2 + \left(b^2c^4d^2x^4 - 2\,b^2c^2d^2x^2 + b^2d^2\right)\arcsin\left(cx\right)^2 + 2\left(abc^4d^2x^4 - 2\,abc^2d\right.}{x^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2/x^3,x, algorithm="fricas")
```

```
[Out] integral((a^2*c^4*d^2*x^4 - 2*a^2*c^2*d^2*x^2 + a^2*d^2 + (b^2*c^4*d^2*x^4
- 2*b^2*c^2*d^2*x^2 + b^2*d^2)*arcsin(c*x)^2 + 2*(a*b*c^4*d^2*x^4 - 2*a*b*c
^2*d^2*x^2 + a*b*d^2)*arcsin(c*x))/x^3, x)
```

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

$$\int \frac{\left(c^2dx^2 - d\right)^2 (b \arcsin(cx) + a)^2}{x^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2/x^3,x, algorithm="giac")
```

```
[Out] integrate((c^2*d*x^2 - d)^2*(b*arcsin(c*x) + a)^2/x^3, x)
```

maple [B] time = 0.84, size = 767, normalized size = 2.67

$$4ic^2d^2b^2 \arcsin(cx) \operatorname{polylog}\left(2, icx + \sqrt{-c^2x^2+1}\right) + 4ic^2d^2b^2 \arcsin(cx) \operatorname{polylog}\left(2, -icx - \sqrt{-c^2x^2+1}\right) + 4ic^2d^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2/x^3,x)
```

```
[Out] 1/2*c^3*d^2*a*b*(-c^2*x^2+1)^(1/2)*x+4*I*c^2*d^2*b^2*arcsin(c*x)*polylog(2,
I*c*x+(-c^2*x^2+1)^(1/2))+4*I*c^2*d^2*b^2*arcsin(c*x)*polylog(2,-I*c*x-(-c^
2*x^2+1)^(1/2))+2*I*c^2*d^2*a*b*arcsin(c*x)^2+4*I*c^2*d^2*a*b*polylog(2,-I*
c*x-(-c^2*x^2+1)^(1/2))+4*I*c^2*d^2*a*b*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))
+c^4*d^2*a*b*arcsin(c*x)*x^2-c*d^2*a*b/x*(-c^2*x^2+1)^(1/2)-c*d^2*b^2*arcsi
n(c*x)/x*(-c^2*x^2+1)^(1/2)+1/2*c^3*d^2*b^2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*
x-4*c^2*d^2*a*b*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-4*c^2*d^2*a*b*ar
csin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))+I*c^2*d^2*b^2*arcsin(c*x)-2*c^2*d^
2*b^2*arcsin(c*x)^2*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-2*c^2*d^2*b^2*arcsin(c*x
)^2*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))-1/2*c^2*d^2*a*b*arcsin(c*x)+1/2*c^4*d^2*
b^2*arcsin(c*x)^2*x^2+2/3*I*c^2*d^2*b^2*arcsin(c*x)^3-1/2*d^2*a^2/x^2+1/8*d
^2*b^2*c^2-1/4*b^2*c^4*d^2*x^2-d^2*a*b*arcsin(c*x)/x^2+1/2*c^4*d^2*a^2*x^2-
4*c^2*d^2*b^2*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2))-4*c^2*d^2*b^2*polylog(3,
I*c*x+(-c^2*x^2+1)^(1/2))-2*c^2*d^2*a^2*ln(c*x)+c^2*d^2*b^2*ln(I*c*x+(-c^2*
x^2+1)^(1/2)-1)-1/4*c^2*d^2*b^2*arcsin(c*x)^2+c^2*d^2*b^2*ln(1+I*c*x+(-c^2*
x^2+1)^(1/2))-2*c^2*d^2*b^2*ln(I*c*x+(-c^2*x^2+1)^(1/2))-1/2*d^2*b^2*arcsin
(c*x)^2/x^2+I*c^2*d^2*a*b
```

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

$$\frac{1}{2}a^2c^4d^2x^2 - 2a^2c^2d^2\log(x) - abd^2\left(\frac{\sqrt{-c^2x^2+1}\,c}{x} + \frac{\arcsin(cx)}{x^2}\right) - \frac{a^2d^2}{2x^2} + \int \frac{\left(b^2c^4d^2x^4 - 2b^2c^2d^2x^2 + b^2d^2\right)\arctan}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2/x^3,x, algorithm="maxima")
```

```
[Out] 1/2*a^2*c^4*d^2*x^2 - 2*a^2*c^2*d^2*log(x) - a*b*d^2*(sqrt(-c^2*x^2 + 1)*c/
x + arcsin(c*x)/x^2) - 1/2*a^2*d^2/x^2 + integrate(((b^2*c^4*d^2*x^4 - 2*b^
2*c^2*d^2*x^2 + b^2*d^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(
a*b*c^4*d^2*x^4 - 2*a*b*c^2*d^2*x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x +
 1)))/x^3, x)
```

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

$$\int \frac{(a + b \operatorname{asin}(c\,x))^2 \left(d - c^2\,d\,x^2\right)^2}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^2)/x^3,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^2)/x^3, x)
```

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

$$d^2 \left(\int \frac{a^2}{x^3}\,dx + \int \left(-\frac{2a^2c^2}{x}\right) dx + \int a^2c^4x\,dx + \int \frac{b^2 \operatorname{asin}^2(cx)}{x^3}\,dx + \int \frac{2ab \operatorname{asin}(cx)}{x^3}\,dx + \int \left(-\frac{2b^2c^2 \operatorname{asin}^2(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**2*(a+b*asin(c*x))**2/x**3,x)
```

```
[Out] d**2*(Integral(a**2/x**3, x) + Integral(-2*a**2*c**2/x, x) + Integral(a**2*
c**4*x, x) + Integral(b**2*asin(c*x)**2/x**3, x) + Integral(2*a*b*asin(c*x)
/x**3, x) + Integral(-2*b**2*c**2*asin(c*x)**2/x, x) + Integral(b**2*c**4*x
*asin(c*x)**2, x) + Integral(-4*a*b*c**2*asin(c*x)/x, x) + Integral(2*a*b*c
**4*x*asin(c*x), x))
```

3.173 $\int \frac{\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{x^4}\,dx$

Optimal. Leaf size=268

$$\frac{8}{3}c^4d^2x\left(a+b\sin^{-1}(cx)\right)^2+\frac{22}{3}bc^3d^2\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)+\frac{4c^2d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{3x}-\frac{bcd}{}$$

```
[Out] -1/3*b^2*c^2*d^2/x-2*b^2*c^4*d^2*x-1/3*b*c*d^2*(-c^2*x^2+1)^(3/2)*(a+b*arcs
in(c*x))/x^2+8/3*c^4*d^2*x*(a+b*arcsin(c*x))^2+4/3*c^2*d^2*(-c^2*x^2+1)*(a+
b*arcsin(c*x))^2/x-1/3*d^2*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))^2/x^3+22/3*b*c^
3*d^2*(a+b*arcsin(c*x))*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))-11/3*I*b^2*c^3*d^
2*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))+11/3*I*b^2*c^3*d^2*polylog(2,I*c*x+(
-c^2*x^2+1)^(1/2))+5/3*b*c^3*d^2*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.68, antiderivative size = 268, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 10, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.370$, Rules used = {4695, 4619, 4677, 8, 4697, 4709, 4183, 2279, 2391, 14}

$$-\frac{11}{3}ib^2c^3d^2\text{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)+\frac{11}{3}ib^2c^3d^2\text{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)+\frac{5}{3}bc^3d^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)+\frac{4c^2d^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^2*(a + b*ArcSin[c*x])^2)/x^4,x]
```

```
[Out] -(b^2*c^2*d^2)/(3*x) - 2*b^2*c^4*d^2*x + (5*b*c^3*d^2*Sqrt[1 - c^2*x^2]*(a
+ b*ArcSin[c*x]))/3 - (b*c*d^2*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(3*
x^2) + (8*c^4*d^2*x*(a + b*ArcSin[c*x])^2)/3 + (4*c^2*d^2*(1 - c^2*x^2)*(a
+ b*ArcSin[c*x])^2)/(3*x) - (d^2*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x])^2)/(3*
x^3) + (22*b*c^3*d^2*(a + b*ArcSin[c*x])*ArcTanh[E^(I*ArcSin[c*x])])/3 - ((
11*I)/3)*b^2*c^3*d^2*PolyLog[2, -E^(I*ArcSin[c*x])] + ((11*I)/3)*b^2*c^3*d^
2*PolyLog[2, E^(I*ArcSin[c*x])]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] && !LinearQ[u, x] && !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
```

```
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4619

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

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4695

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m +
2)*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPar
t[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f
*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /;
 FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0
] && LtQ[m, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{x^4}dx = -\frac{d^2\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{3x^3} - \frac{1}{3}\left(4c^2d\right)\int \frac{\left(d-c^2dx^2\right)\left(a+b\sin^{-1}\right.}{x^2}$$

$$= -\frac{bcd^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3x^2} + \frac{4c^2d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3x}$$

$$= -\frac{11}{3}bc^3d^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{bcd^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx\right.}{3x^2}$$

$$= -\frac{b^2c^2d^2}{3x} + \frac{10}{3}b^2c^4d^2x + \frac{5}{3}bc^3d^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{bcd^2\left(1-c\right.}{}$$

$$= -\frac{b^2c^2d^2}{3x} - 2b^2c^4d^2x + \frac{5}{3}bc^3d^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{bcd^2\left(1-c^2x\right.}{}$$

$$= -\frac{b^2c^2d^2}{3x} - 2b^2c^4d^2x + \frac{5}{3}bc^3d^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{bcd^2\left(1-c^2x\right.}{}$$

$$= -\frac{b^2c^2d^2}{3x} - 2b^2c^4d^2x + \frac{5}{3}bc^3d^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{bcd^2\left(1-c^2x\right.}{}$$

Mathematica [A] time = 0.84, size = 374, normalized size = 1.40

$$\frac{d^2\left(3a^2c^4x^4+6a^2c^2x^2-a^2+6abc^4x^4\sin^{-1}(cx)-abcx\sqrt{1-c^2x^2}+12abc^2x^2\sin^{-1}(cx)+6abc^3x^3\sqrt{1-c^2x^2}+11a\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^2*(a + b*ArcSin[c*x])^2)/x^4,x]
```

```
[Out] (d^2*(-a^2 + 6*a^2*c^2*x^2 - b^2*c^2*x^2 + 3*a^2*c^4*x^4 - 6*b^2*c^4*x^4 -
a*b*c*x*Sqrt[1 - c^2*x^2] + 6*a*b*c^3*x^3*Sqrt[1 - c^2*x^2] - 2*a*b*ArcSin[
c*x] + 12*a*b*c^2*x^2*ArcSin[c*x] + 6*a*b*c^4*x^4*ArcSin[c*x] - b^2*c*x*Sqr
t[1 - c^2*x^2]*ArcSin[c*x] + 6*b^2*c^3*x^3*Sqrt[1 - c^2*x^2]*ArcSin[c*x] -
b^2*ArcSin[c*x]^2 + 6*b^2*c^2*x^2*ArcSin[c*x]^2 + 3*b^2*c^4*x^4*ArcSin[c*x]
^2 + 11*a*b*c^3*x^3*ArcTanh[Sqrt[1 - c^2*x^2]] - 11*b^2*c^3*x^3*ArcSin[c*x]
*Log[1 - E^(I*ArcSin[c*x])] + 11*b^2*c^3*x^3*ArcSin[c*x]*Log[1 + E^(I*ArcSi
n[c*x])] - (11*I)*b^2*c^3*x^3*PolyLog[2, -E^(I*ArcSin[c*x])] + (11*I)*b^2*c
^3*x^3*PolyLog[2, E^(I*ArcSin[c*x])]))/(3*x^3)
```

fricas [F] time = 1.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{a^2c^4d^2x^4 - 2\,a^2c^2d^2x^2 + a^2d^2 + \left(b^2c^4d^2x^4 - 2\,b^2c^2d^2x^2 + b^2d^2\right)\arcsin\left(cx\right)^2 + 2\left(abc^4d^2x^4 - 2\,abc^2d^2x^2\right.}{x^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2/x^4,x, algorithm="fricas")
```

```
[Out] integral((a^2*c^4*d^2*x^4 - 2*a^2*c^2*d^2*x^2 + a^2*d^2 + (b^2*c^4*d^2*x^4
- 2*b^2*c^2*d^2*x^2 + b^2*d^2)*arcsin(c*x)^2 + 2*(a*b*c^4*d^2*x^4 - 2*a*b*c
^2*d^2*x^2 + a*b*d^2)*arcsin(c*x))/x^4, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2/x^4,x, algorithm="giac")

[Out] Timed out

maple [A] time = 0.73, size = 425, normalized size = 1.59

$$c^4d^2a^2x-\frac{d^2a^2}{3x^3}+\frac{2c^2d^2a^2}{x}+2c^3d^2b^2\arcsin(cx)\sqrt{-c^2x^2+1}+c^4d^2b^2\arcsin(cx)^2x-2b^2c^4d^2x+\frac{2c^2d^2b^2\arcsin(cx}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2/x^4,x)

[Out] c^4*d^2*a^2*x-1/3*d^2*a^2/x^3+2*c^2*d^2*a^2/x+2*c^3*d^2*b^2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+c^4*d^2*b^2*arcsin(c*x)^2*x-2*b^2*c^4*d^2*x+2*c^2*d^2*b^2/x*arcsin(c*x)^2-1/3*c*d^2*b^2/x^2*(-c^2*x^2+1)^(1/2)*arcsin(c*x)-1/3*d^2*b^2/x^3*arcsin(c*x)^2-1/3*b^2*c^2*d^2/x+11/3*c^3*d^2*b^2*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-11/3*I*b^2*c^3*d^2*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))-11/3*c^3*d^2*b^2*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))+11/3*I*b^2*c^3*d^2*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))+2*c^4*d^2*a*b*arcsin(c*x)*x-2/3*d^2*a*b*arcsin(c*x)/x^3+4*c^2*d^2*a*b*arcsin(c*x)/x+2*c^3*d^2*a*b*(-c^2*x^2+1)^(1/2)-1/3*c*d^2*a*b/x^2*(-c^2*x^2+1)^(1/2)+11/3*c^3*d^2*a*b*arctanh(1/(-c^2*x^2+1)^(1/2))

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

$$b^2c^4d^2x\arcsin(cx)^2-2\,b^2c^4d^2\left(x-\frac{\sqrt{-c^2x^2+1}\,\arcsin(cx)}{c}\right)+a^2c^4d^2x+2\left(cx\arcsin(cx)+\sqrt{-c^2x^2+1}\right)abc^3d^2$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2/x^4,x, algorithm="maxima")

[Out] b^2*c^4*d^2*x*arcsin(c*x)^2 - 2*b^2*c^4*d^2*(x - sqrt(-c^2*x^2 + 1)*arcsin(c*x)/c) + a^2*c^4*d^2*x + 2*(c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*a*b*c^3*d^2 + 4*(c*log(2*sqrt(-c^2*x^2 + 1)/abs(x) + 2/abs(x)) + arcsin(c*x)/x)*a*b*c^2*d^2 - 1/3*((c^2*log(2*sqrt(-c^2*x^2 + 1)/abs(x) + 2/abs(x)) + sqrt(-c^2*x^2 + 1)/x^2)*c + 2*arcsin(c*x)/x^3)*a*b*d^2 + 2*a^2*c^2*d^2/x - 1/3*a^2*d^2/x^3 + 1/3*(3*x^3*integrate(2/3*(6*b^2*c^3*d^2*x^2 - b^2*c*d^2)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^2*x^5 - x^3), x) + (6*b^2*c^2*d^2*x^2 - b^2*d^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2)/x^3

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

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))^2\,\left(d-c^2\,d\,x^2\right)^2}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^2)/x^4,x)

[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^2)/x^4, x)

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

$$d^2\left(\int a^2c^4\,dx+\int\frac{a^2}{x^4}\,dx+\int\left(-\frac{2a^2c^2}{x^2}\right)dx+\int b^2c^4\,\mathrm{asin}^2(cx)\,dx+\int\frac{b^2\,\mathrm{asin}^2(cx)}{x^4}\,dx+\int 2abc^4\,\mathrm{asin}(cx)\,d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**2*(a+b*asin(c*x))**2/x**4,x)
```

```
[Out] d**2*(Integral(a**2*c**4, x) + Integral(a**2/x**4, x) + Integral(-2*a**2*c*
*2/x**2, x) + Integral(b**2*c**4*asin(c*x)**2, x) + Integral(b**2*asin(c*x)
**2/x**4, x) + Integral(2*a*b*c**4*asin(c*x), x) + Integral(2*a*b*asin(c*x)
/x**4, x) + Integral(-2*b**2*c**2*asin(c*x)**2/x**2, x) + Integral(-4*a*b*c
**2*asin(c*x)/x**2, x))
```

3.174 $\int x^4 \left(d-c^2 d x^2\right)^3 \left(a+b \sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=476

$$\frac{1}{11} d^3 x^5 \left(1-c^2x^2\right)^3 \left(a+b\sin^{-1}(cx)\right)^2+\frac{2}{33} d^3 x^5 \left(1-c^2x^2\right)^2 \left(a+b\sin^{-1}(cx)\right)^2+\frac{8}{231} d^3 x^5 \left(1-c^2x^2\right) \left(a+b\sin^{-1}(\right.$$

```
[Out] -100976/4002075*b^2*d^3*x/c^4-50488/12006225*b^2*d^3*x^3/c^2-12622/6670125*
b^2*d^3*x^5+9410/1120581*b^2*c^2*d^3*x^7-182/29403*b^2*c^4*d^3*x^9+2/1331*b
^2*c^6*d^3*x^11+16/693*b*d^3*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))/c^5-4/115
5*b*d^3*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))/c^5+2/1617*b*d^3*(-c^2*x^2+1)^
(7/2)*(a+b*arcsin(c*x))/c^5-8/297*b*d^3*(-c^2*x^2+1)^(9/2)*(a+b*arcsin(c*x)
)/c^5+2/121*b*d^3*(-c^2*x^2+1)^(11/2)*(a+b*arcsin(c*x))/c^5+16/1155*d^3*x^5
*(a+b*arcsin(c*x))^2+8/231*d^3*x^5*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2+2/33*d^
3*x^5*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))^2+1/11*d^3*x^5*(-c^2*x^2+1)^3*(a+b*a
rcsin(c*x))^2+256/17325*b*d^3*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^5+128/
17325*b*d^3*x^2*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3+32/5775*b*d^3*x^4*
(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 1.02, antiderivative size = 476, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 11, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.407$, Rules used = {4699, 4627, 4707, 4677, 8, 30, 266, 43, 4689, 12, 1153}

$$\frac{1}{11} d^3 x^5 \left(1-c^2x^2\right)^3 \left(a+b\sin^{-1}(cx)\right)^2+\frac{2}{33} d^3 x^5 \left(1-c^2x^2\right)^2 \left(a+b\sin^{-1}(cx)\right)^2+\frac{8}{231} d^3 x^5 \left(1-c^2x^2\right) \left(a+b\sin^{-1}(\right.$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (-100976*b^2*d^3*x)/(4002075*c^4) - (50488*b^2*d^3*x^3)/(12006225*c^2) - (1
2622*b^2*d^3*x^5)/6670125 + (9410*b^2*c^2*d^3*x^7)/1120581 - (182*b^2*c^4*d
^3*x^9)/29403 + (2*b^2*c^6*d^3*x^11)/1331 + (256*b*d^3*Sqrt[1 - c^2*x^2]*(a
 + b*ArcSin[c*x]))/(17325*c^5) + (128*b*d^3*x^2*Sqrt[1 - c^2*x^2]*(a + b*Ar
cSin[c*x]))/(17325*c^3) + (32*b*d^3*x^4*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x
]))/(5775*c) + (16*b*d^3*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(693*c^5)
 - (4*b*d^3*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(1155*c^5) + (2*b*d^3*
(1 - c^2*x^2)^(7/2)*(a + b*ArcSin[c*x]))/(1617*c^5) - (8*b*d^3*(1 - c^2*x^2
)^(9/2)*(a + b*ArcSin[c*x]))/(297*c^5) + (2*b*d^3*(1 - c^2*x^2)^(11/2)*(a +
 b*ArcSin[c*x]))/(121*c^5) + (16*d^3*x^5*(a + b*ArcSin[c*x])^2)/1155 + (8*d
^3*x^5*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/231 + (2*d^3*x^5*(1 - c^2*x^2)^
2*(a + b*ArcSin[c*x])^2)/33 + (d^3*x^5*(1 - c^2*x^2)^3*(a + b*ArcSin[c*x])^
2)/11
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 12

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

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 1153

```
Int[((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.),
 x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^q*(a + b*x^2 + c*x^4)^p, x],
x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e
 + a*e^2, 0] && IGtQ[p, 0] && IGtQ[q, -2]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4689

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[d^p*(a + b*
ArcSin[c*x]), u, x] - Dist[b*c*d^p, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^
2], x], x], x]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && Intege
rQ[p - 1/2] && (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0]) && NeQ[p, -
2^(-1)] && GtQ[d, 0]
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
```

```
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int x^4\left(d-c^2dx^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2\,dx=\frac{1}{11}d^3x^5\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2+\frac{1}{11}(6d)\int x^4\left(d-c^2dx^2\right)^2\left(a\right.$$

$$=\frac{2bd^3\left(1-c^2x^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{77c^5}-\frac{4bd^3\left(1-c^2x^2\right)^{9/2}\left(a+b\sin^{-1}\right.}{99c^5}$$

$$=\frac{4bd^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{165c^5}-\frac{2bd^3\left(1-c^2x^2\right)^{7/2}\left(a+b\sin^{-1}\right.}{231c^5}$$

$$=\frac{16bd^3\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{693c^5}-\frac{4bd^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin\right.}{1155c^5}$$

$$=-\frac{16b^2d^3x}{7623c^4}-\frac{8b^2d^3x^3}{22869c^2}-\frac{2b^2d^3x^5}{12705}+\frac{226b^2c^2d^3x^7}{53361}-\frac{46b^2c^4d^3x^9}{9801}+\frac{2b}{}$$

$$=-\frac{8368b^2d^3x}{800415c^4}-\frac{4184b^2d^3x^3}{2401245c^2}-\frac{12622b^2d^3x^5}{6670125}+\frac{9410b^2c^2d^3x^7}{1120581}-\frac{182b}{2}$$

$$=-\frac{8368b^2d^3x}{800415c^4}-\frac{50488b^2d^3x^3}{12006225c^2}-\frac{12622b^2d^3x^5}{6670125}+\frac{9410b^2c^2d^3x^7}{1120581}-\frac{182}{}$$

$$=-\frac{100976b^2d^3x}{4002075c^4}-\frac{50488b^2d^3x^3}{12006225c^2}-\frac{12622b^2d^3x^5}{6670125}+\frac{9410b^2c^2d^3x^7}{1120581}-\frac{1}{}$$

Mathematica [A] time = 0.43, size = 301, normalized size = 0.63

$$-\frac{d^3\left(12006225a^2c^5x^5\left(105c^6x^6-385c^4x^4+495c^2x^2-231\right)+6930ab\sqrt{1-c^2x^2}\left(33075c^{10}x^{10}-111475c^8x^8+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -1/13867189875*(d^3*(12006225*a^2*c^5*x^5*(-231 + 495*c^2*x^2 - 385*c^4*x^4
 + 105*c^6*x^6) + 6930*a*b*Sqrt[1 - c^2*x^2]*(-50488 - 25244*c^2*x^2 - 1893
3*c^4*x^4 + 117625*c^6*x^6 - 111475*c^8*x^8 + 33075*c^10*x^10) + b^2*(34988
1840*c*x + 58313640*c^3*x^3 + 26241138*c^5*x^5 - 116448750*c^7*x^7 + 858357
50*c^9*x^9 - 20837250*c^11*x^11) + 6930*b*(3465*a*c^5*x^5*(-231 + 495*c^2*x
^2 - 385*c^4*x^4 + 105*c^6*x^6) + b*Sqrt[1 - c^2*x^2]*(-50488 - 25244*c^2*x
^2 - 18933*c^4*x^4 + 117625*c^6*x^6 - 111475*c^8*x^8 + 33075*c^10*x^10))*Ar
cSin[c*x] + 12006225*b^2*c^5*x^5*(-231 + 495*c^2*x^2 - 385*c^4*x^4 + 105*c^
6*x^6)*ArcSin[c*x]^2))/c^5
```

fricas [A] time = 1.95, size = 413, normalized size = 0.87

$$-\frac{10418625\left(121\,a^2-2\,b^2\right)c^{11}d^3x^{11}-471625\left(9801\,a^2-182\,b^2\right)c^9d^3x^9+12375\left(480249\,a^2-9410\,b^2\right)c^7d^3x^7-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] -1/13867189875*(10418625*(121*a^2 - 2*b^2)*c^11*d^3*x^11 - 471625*(9801*a^2
 - 182*b^2)*c^9*d^3*x^9 + 12375*(480249*a^2 - 9410*b^2)*c^7*d^3*x^7 - 2079*
(1334025*a^2 - 12622*b^2)*c^5*d^3*x^5 + 58313640*b^2*c^3*d^3*x^3 + 34988184
0*b^2*c*d^3*x + 12006225*(105*b^2*c^11*d^3*x^11 - 385*b^2*c^9*d^3*x^9 + 495
*b^2*c^7*d^3*x^7 - 231*b^2*c^5*d^3*x^5)*arcsin(c*x)^2 + 24012450*(105*a*b*c
^11*d^3*x^11 - 385*a*b*c^9*d^3*x^9 + 495*a*b*c^7*d^3*x^7 - 231*a*b*c^5*d^3*
x^5)*arcsin(c*x) + 6930*(33075*a*b*c^10*d^3*x^10 - 111475*a*b*c^8*d^3*x^8 +
 117625*a*b*c^6*d^3*x^6 - 18933*a*b*c^4*d^3*x^4 - 25244*a*b*c^2*d^3*x^2 - 5
0488*a*b*d^3 + (33075*b^2*c^10*d^3*x^10 - 111475*b^2*c^8*d^3*x^8 + 117625*b
^2*c^6*d^3*x^6 - 18933*b^2*c^4*d^3*x^4 - 25244*b^2*c^2*d^3*x^2 - 50488*b^2*
d^3)*arcsin(c*x))*sqrt(-c^2*x^2 + 1))/c^5
```

giac [B] time = 1.03, size = 865, normalized size = 1.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] -1/11*a^2*c^6*d^3*x^11 + 1/3*a^2*c^4*d^3*x^9 - 3/7*a^2*c^2*d^3*x^7 + 1/5*a^
2*d^3*x^5 - 1/11*(c^2*x^2 - 1)^5*b^2*d^3*x*arcsin(c*x)^2/c^4 - 2/11*(c^2*x^
2 - 1)^5*a*b*d^3*x*arcsin(c*x)/c^4 - 4/33*(c^2*x^2 - 1)^4*b^2*d^3*x*arcsin(
c*x)^2/c^4 + 2/1331*(c^2*x^2 - 1)^5*b^2*d^3*x/c^4 - 8/33*(c^2*x^2 - 1)^4*a*
b*d^3*x*arcsin(c*x)/c^4 - 1/231*(c^2*x^2 - 1)^3*b^2*d^3*x*arcsin(c*x)^2/c^4
 - 2/121*(c^2*x^2 - 1)^5*sqrt(-c^2*x^2 + 1)*b^2*d^3*arcsin(c*x)/c^5 + 428/3
23433*(c^2*x^2 - 1)^4*b^2*d^3*x/c^4 - 2/231*(c^2*x^2 - 1)^3*a*b*d^3*x*arcsi
n(c*x)/c^4 + 2/385*(c^2*x^2 - 1)^2*b^2*d^3*x*arcsin(c*x)^2/c^4 - 2/121*(c^2
*x^2 - 1)^5*sqrt(-c^2*x^2 + 1)*a*b*d^3/c^5 - 8/297*(c^2*x^2 - 1)^4*sqrt(-c^
2*x^2 + 1)*b^2*d^3*arcsin(c*x)/c^5 - 148174/110937519*(c^2*x^2 - 1)^3*b^2*d
^3*x/c^4 + 4/385*(c^2*x^2 - 1)^2*a*b*d^3*x*arcsin(c*x)/c^4 - 8/1155*(c^2*x^
2 - 1)*b^2*d^3*x*arcsin(c*x)^2/c^4 - 8/297*(c^2*x^2 - 1)^4*sqrt(-c^2*x^2 +
1)*a*b*d^3/c^5 - 2/1617*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*b^2*d^3*arcsin(c
*x)/c^5 + 5487704/4622396625*(c^2*x^2 - 1)^2*b^2*d^3*x/c^4 - 16/1155*(c^2*x
^2 - 1)*a*b*d^3*x*arcsin(c*x)/c^4 + 16/1155*b^2*d^3*x*arcsin(c*x)^2/c^4 - 2
/1617*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*a*b*d^3/c^5 + 4/1925*(c^2*x^2 - 1)
^2*sqrt(-c^2*x^2 + 1)*b^2*d^3*arcsin(c*x)/c^5 - 606416/13867189875*(c^2*x^2
 - 1)*b^2*d^3*x/c^4 + 32/1155*a*b*d^3*x*arcsin(c*x)/c^4 + 4/1925*(c^2*x^2 -
 1)^2*sqrt(-c^2*x^2 + 1)*a*b*d^3/c^5 + 16/3465*(-c^2*x^2 + 1)^(3/2)*b^2*d^3
*arcsin(c*x)/c^5 - 382986368/13867189875*b^2*d^3*x/c^4 + 16/3465*(-c^2*x^2
+ 1)^(3/2)*a*b*d^3/c^5 + 32/1155*sqrt(-c^2*x^2 + 1)*b^2*d^3*arcsin(c*x)/c^5
 + 32/1155*sqrt(-c^2*x^2 + 1)*a*b*d^3/c^5
```

maple [A] time = 0.18, size = 672, normalized size = 1.41

$$-d^3a^2\left(\frac{1}{11}x^{11}c^{11}-\frac{1}{3}c^9x^9+\frac{3}{7}c^7x^7-\frac{1}{5}c^5x^5\right)-d^3b^2\left(\frac{2\arcsin(cx)\left(c^2x^2-1\right)^5\sqrt{-c^2x^2+1}}{121}-\frac{4\arcsin(cx)\left(c^2x^2-1\right)^2\sqrt{-c^2x^2+1}}{1925}+\frac{2\arcsin}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/c^5*(-d^3*a^2*(1/11*x^11*c^11-1/3*c^9*x^9+3/7*c^7*x^7-1/5*c^5*x^5)-d^3*b^
2*(2/121*arcsin(c*x)*(c^2*x^2-1)^5*(-c^2*x^2+1)^(1/2)-4/1925*arcsin(c*x)*(c
^2*x^2-1)^2*(-c^2*x^2+1)^(1/2)+2/1617*arcsin(c*x)*(c^2*x^2-1)^3*(-c^2*x^2+1
)^(1/2)-2/83853*(63*c^10*x^10-385*c^8*x^8+990*c^6*x^6-1386*c^4*x^4+1155*c^2
*x^2-693)*c*x+4/28875*(3*c^4*x^4-10*c^2*x^2+15)*c*x-2/56595*(5*c^6*x^6-21*c
^4*x^4+35*c^2*x^2-35)*c*x+16/3465*arcsin(c*x)*(c^2*x^2-1)*(-c^2*x^2+1)^(1/2
)+32/1155*c*x-32/1155*arcsin(c*x)*(-c^2*x^2+1)^(1/2)-16/10395*(c^2*x^2-3)*c
*x-8/93555*(35*c^8*x^8-180*c^6*x^6+378*c^4*x^4-420*c^2*x^2+315)*c*x+8/297*a
```

```
rcsin(c*x)*(c^2*x^2-1)^4*(-c^2*x^2+1)^(1/2)+1/35*arcsin(c*x)^2*(5*c^6*x^6-2
1*c^4*x^4+35*c^2*x^2-35)*c*x+1/693*arcsin(c*x)^2*(63*c^10*x^10-385*c^8*x^8+
990*c^6*x^6-1386*c^4*x^4+1155*c^2*x^2-693)*c*x+2/315*arcsin(c*x)^2*(35*c^8*
x^8-180*c^6*x^6+378*c^4*x^4-420*c^2*x^2+315)*c*x)-2*d^3*a*b*(1/11*arcsin(c*
x)*c^11*x^11-1/3*arcsin(c*x)*c^9*x^9+3/7*arcsin(c*x)*c^7*x^7-1/5*arcsin(c*x
)*c^5*x^5+1/121*c^10*x^10*(-c^2*x^2+1)^(1/2)-91/3267*c^8*x^8*(-c^2*x^2+1)^(
1/2)+4705/160083*c^6*x^6*(-c^2*x^2+1)^(1/2)-6311/1334025*c^4*x^4*(-c^2*x^2+
1)^(1/2)-25244/4002075*c^2*x^2*(-c^2*x^2+1)^(1/2)-50488/4002075*(-c^2*x^2+1
)^(1/2)))
```

maxima [B] time = 0.72, size = 1141, normalized size = 2.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] -1/11*b^2*c^6*d^3*x^11*arcsin(c*x)^2 - 1/11*a^2*c^6*d^3*x^11 + 1/3*b^2*c^4*
d^3*x^9*arcsin(c*x)^2 + 1/3*a^2*c^4*d^3*x^9 - 3/7*b^2*c^2*d^3*x^7*arcsin(c*
x)^2 - 3/7*a^2*c^2*d^3*x^7 - 2/7623*(693*x^11*arcsin(c*x) + (63*sqrt(-c^2*x
^2 + 1)*x^10/c^2 + 70*sqrt(-c^2*x^2 + 1)*x^8/c^4 + 80*sqrt(-c^2*x^2 + 1)*x^
6/c^6 + 96*sqrt(-c^2*x^2 + 1)*x^4/c^8 + 128*sqrt(-c^2*x^2 + 1)*x^2/c^10 + 2
56*sqrt(-c^2*x^2 + 1)/c^12)*c)*a*b*c^6*d^3 - 2/26413695*(3465*(63*sqrt(-c^2
*x^2 + 1)*x^10/c^2 + 70*sqrt(-c^2*x^2 + 1)*x^8/c^4 + 80*sqrt(-c^2*x^2 + 1)*
x^6/c^6 + 96*sqrt(-c^2*x^2 + 1)*x^4/c^8 + 128*sqrt(-c^2*x^2 + 1)*x^2/c^10 +
 256*sqrt(-c^2*x^2 + 1)/c^12)*c*arcsin(c*x) - (19845*c^10*x^11 + 26950*c^8*
x^9 + 39600*c^6*x^7 + 66528*c^4*x^5 + 147840*c^2*x^3 + 887040*x)/c^10)*b^2*
c^6*d^3 + 1/5*b^2*d^3*x^5*arcsin(c*x)^2 + 2/945*(315*x^9*arcsin(c*x) + (35*
sqrt(-c^2*x^2 + 1)*x^8/c^2 + 40*sqrt(-c^2*x^2 + 1)*x^6/c^4 + 48*sqrt(-c^2*x
^2 + 1)*x^4/c^6 + 64*sqrt(-c^2*x^2 + 1)*x^2/c^8 + 128*sqrt(-c^2*x^2 + 1)/c^
10)*c)*a*b*c^4*d^3 + 2/297675*(315*(35*sqrt(-c^2*x^2 + 1)*x^8/c^2 + 40*sqrt
(-c^2*x^2 + 1)*x^6/c^4 + 48*sqrt(-c^2*x^2 + 1)*x^4/c^6 + 64*sqrt(-c^2*x^2 +
 1)*x^2/c^8 + 128*sqrt(-c^2*x^2 + 1)/c^10)*c*arcsin(c*x) - (1225*c^8*x^9 +
1800*c^6*x^7 + 3024*c^4*x^5 + 6720*c^2*x^3 + 40320*x)/c^8)*b^2*c^4*d^3 + 1/
5*a^2*d^3*x^5 - 6/245*(35*x^7*arcsin(c*x) + (5*sqrt(-c^2*x^2 + 1)*x^6/c^2 +
 6*sqrt(-c^2*x^2 + 1)*x^4/c^4 + 8*sqrt(-c^2*x^2 + 1)*x^2/c^6 + 16*sqrt(-c^2
*x^2 + 1)/c^8)*c)*a*b*c^2*d^3 - 2/8575*(105*(5*sqrt(-c^2*x^2 + 1)*x^6/c^2 +
 6*sqrt(-c^2*x^2 + 1)*x^4/c^4 + 8*sqrt(-c^2*x^2 + 1)*x^2/c^6 + 16*sqrt(-c^2
*x^2 + 1)/c^8)*c*arcsin(c*x) - (75*c^6*x^7 + 126*c^4*x^5 + 280*c^2*x^3 + 16
80*x)/c^6)*b^2*c^2*d^3 + 2/75*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x
^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*a*b*d^
3 + 2/1125*(15*(3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4
 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c*arcsin(c*x) - (9*c^4*x^5 + 20*c^2*x^3 + 120*
x)/c^4)*b^2*d^3
```

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

$$\int x^4\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(d-c^2\,d\,x^2\right)}^3 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^3,x)
```

```
[Out] int(x^4*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^3, x)
```

sympy [A] time = 67.48, size = 702, normalized size = 1.47

$$\begin{cases} -\frac{a^2c^6d^3x^{11}}{11} + \frac{a^2c^4d^3x^9}{3} - \frac{3a^2c^2d^3x^7}{7} + \frac{a^2d^3x^5}{5} - \frac{2abc^6d^3x^{11}\operatorname{asin}(cx)}{11} - \frac{2abc^5d^3x^{10}\sqrt{-c^2x^2+1}}{121} + \frac{2abc^4d^3x^9\operatorname{asin}(cx)}{3} + \frac{182abc^3d^3x^8\sqrt{}}{3267} \\ \frac{a^2d^3x^5}{5} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(-c**2*d*x**2+d)**3*(a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((-a**2*c**6*d**3*x**11/11 + a**2*c**4*d**3*x**9/3 - 3*a**2*c**2*d
**3*x**7/7 + a**2*d**3*x**5/5 - 2*a*b*c**6*d**3*x**11*asin(c*x)/11 - 2*a*b*
c**5*d**3*x**10*sqrt(-c**2*x**2 + 1)/121 + 2*a*b*c**4*d**3*x**9*asin(c*x)/3
 + 182*a*b*c**3*d**3*x**8*sqrt(-c**2*x**2 + 1)/3267 - 6*a*b*c**2*d**3*x**7*
asin(c*x)/7 - 9410*a*b*c*d**3*x**6*sqrt(-c**2*x**2 + 1)/160083 + 2*a*b*d**3
*x**5*asin(c*x)/5 + 12622*a*b*d**3*x**4*sqrt(-c**2*x**2 + 1)/(1334025*c) +
50488*a*b*d**3*x**2*sqrt(-c**2*x**2 + 1)/(4002075*c**3) + 100976*a*b*d**3*s
qrt(-c**2*x**2 + 1)/(4002075*c**5) - b**2*c**6*d**3*x**11*asin(c*x)**2/11 +
 2*b**2*c**6*d**3*x**11/1331 - 2*b**2*c**5*d**3*x**10*sqrt(-c**2*x**2 + 1)*
asin(c*x)/121 + b**2*c**4*d**3*x**9*asin(c*x)**2/3 - 182*b**2*c**4*d**3*x**
9/29403 + 182*b**2*c**3*d**3*x**8*sqrt(-c**2*x**2 + 1)*asin(c*x)/3267 - 3*b
**2*c**2*d**3*x**7*asin(c*x)**2/7 + 9410*b**2*c**2*d**3*x**7/1120581 - 9410
*b**2*c*d**3*x**6*sqrt(-c**2*x**2 + 1)*asin(c*x)/160083 + b**2*d**3*x**5*as
in(c*x)**2/5 - 12622*b**2*d**3*x**5/6670125 + 12622*b**2*d**3*x**4*sqrt(-c*
*2*x**2 + 1)*asin(c*x)/(1334025*c) - 50488*b**2*d**3*x**3/(12006225*c**2) +
 50488*b**2*d**3*x**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(4002075*c**3) - 10097
6*b**2*d**3*x/(4002075*c**4) + 100976*b**2*d**3*sqrt(-c**2*x**2 + 1)*asin(c
*x)/(4002075*c**5), Ne(c, 0)), (a**2*d**3*x**5/5, True))
```

3.175 $\int x^3 \left(d-c^2dx^2\right)^3 \left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=384

$$-\frac{79d^3\left(a+b\sin^{-1}(cx)\right)^2}{5120c^4}-\frac{1}{50}bcd^3x^5\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)-\frac{1}{32}bcd^3x^5\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)-$$

```
[Out] -79/5120*b^2*d^3*x^2/c^2-79/15360*b^2*d^3*x^4+401/28800*b^2*c^2*d^3*x^6-57/
6400*b^2*c^4*d^3*x^8+1/500*b^2*c^6*d^3*x^10-1/32*b*c*d^3*x^5*(-c^2*x^2+1)^(
3/2)*(a+b*arcsin(c*x))-1/50*b*c*d^3*x^5*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x)
)-79/5120*d^3*(a+b*arcsin(c*x))^2/c^4+1/40*d^3*x^4*(a+b*arcsin(c*x))^2+1/20
*d^3*x^4*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2+3/40*d^3*x^4*(-c^2*x^2+1)^2*(a+b*
arcsin(c*x))^2+1/10*d^3*x^4*(-c^2*x^2+1)^3*(a+b*arcsin(c*x))^2+79/2560*b*d^
3*x*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3+79/3840*b*d^3*x^3*(a+b*arcsin(
c*x))*(-c^2*x^2+1)^(1/2)/c-31/960*b*c*d^3*x^5*(a+b*arcsin(c*x))*(-c^2*x^2+1
)^(1/2)
```

Rubi [A] time = 1.59, antiderivative size = 384, normalized size of antiderivative = 1.00, number of steps used = 40, number of rules used = 9, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4699, 4627, 4707, 4641, 30, 4697, 14, 266, 43}

$$-\frac{1}{50}bcd^3x^5\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)-\frac{1}{32}bcd^3x^5\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)-\frac{31}{960}bcd^3x^5\sqrt{1-c^2x^2}\left(a+\right.$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (-79*b^2*d^3*x^2)/(5120*c^2) - (79*b^2*d^3*x^4)/15360 + (401*b^2*c^2*d^3*x^
6)/28800 - (57*b^2*c^4*d^3*x^8)/6400 + (b^2*c^6*d^3*x^10)/500 + (79*b*d^3*x
*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(2560*c^3) + (79*b*d^3*x^3*Sqrt[1 -
 c^2*x^2]*(a + b*ArcSin[c*x]))/(3840*c) - (31*b*c*d^3*x^5*Sqrt[1 - c^2*x^2]
*(a + b*ArcSin[c*x]))/960 - (b*c*d^3*x^5*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[
c*x]))/32 - (b*c*d^3*x^5*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x]))/50 - (79*
d^3*(a + b*ArcSin[c*x])^2)/(5120*c^4) + (d^3*x^4*(a + b*ArcSin[c*x])^2)/40
+ (d^3*x^4*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/20 + (3*d^3*x^4*(1 - c^2*x^
2)^2*(a + b*ArcSin[c*x])^2)/40 + (d^3*x^4*(1 - c^2*x^2)^3*(a + b*ArcSin[c*x
])^2)/10
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int x^3\left(d-c^2dx^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2\,dx=\frac{1}{10}d^3x^4\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2+\frac{1}{5}(3d)\int x^3\left(d-c^2dx^2\right)^2\left(a\right.$$

$$=-\frac{1}{50}bcd^3x^5\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)+\frac{3}{40}d^3x^4\left(1-c^2x^2\right)^2\left(a+\right.$$

$$=-\frac{1}{32}bcd^3x^5\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)-\frac{1}{50}bcd^3x^5\left(1-c^2x^2\right)^{5/2}\left(\right.$$

$$=-\frac{31}{960}bcd^3x^5\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)-\frac{1}{32}bcd^3x^5\left(1-c^2x^2\right)^{3/2}\left(a\right.$$

$$=\frac{401b^2c^2d^3x^6}{28800}-\frac{57b^2c^4d^3x^8}{6400}+\frac{1}{500}b^2c^6d^3x^{10}+\frac{79bd^3x^3\sqrt{1-c^2x^2}\left(a\right.}{3840c}$$

$$=-\frac{79b^2d^3x^4}{15360}+\frac{401b^2c^2d^3x^6}{28800}-\frac{57b^2c^4d^3x^8}{6400}+\frac{1}{500}b^2c^6d^3x^{10}+\frac{79bd^3x}{}$$

$$=-\frac{79b^2d^3x^2}{5120c^2}-\frac{79b^2d^3x^4}{15360}+\frac{401b^2c^2d^3x^6}{28800}-\frac{57b^2c^4d^3x^8}{6400}+\frac{1}{500}b^2c^6d^3$$

Mathematica [A] time = 0.45, size = 287, normalized size = 0.75

$$-\frac{d^3\left(cx\left(28800a^2c^3x^3\left(4c^6x^6-15c^4x^4+20c^2x^2-10\right)+30ab\sqrt{1-c^2x^2}\left(768c^8x^8-2736c^6x^6+3208c^4x^4-79\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -1/1152000*(d^3*(c*x*(28800*a^2*c^3*x^3*(-10 + 20*c^2*x^2 - 15*c^4*x^4 + 4*
c^6*x^6) + 30*a*b*Sqrt[1 - c^2*x^2]*(-1185 - 790*c^2*x^2 + 3208*c^4*x^4 - 2
736*c^6*x^6 + 768*c^8*x^8) + b^2*(17775*c*x + 5925*c^3*x^3 - 16040*c^5*x^5
+ 10260*c^7*x^7 - 2304*c^9*x^9)) + 30*b*(b*c*x*Sqrt[1 - c^2*x^2]*(-1185 - 7
90*c^2*x^2 + 3208*c^4*x^4 - 2736*c^6*x^6 + 768*c^8*x^8) + 15*a*(79 - 1280*c
^4*x^4 + 2560*c^6*x^6 - 1920*c^8*x^8 + 512*c^10*x^10))*ArcSin[c*x] + 225*b^
2*(79 - 1280*c^4*x^4 + 2560*c^6*x^6 - 1920*c^8*x^8 + 512*c^10*x^10)*ArcSin[
c*x]^2))/c^4
```

fricas [A] time = 0.74, size = 395, normalized size = 1.03

$$-\frac{2304\left(50\,a^2-b^2\right)c^{10}d^3x^{10}-540\left(800\,a^2-19\,b^2\right)c^8d^3x^8+40\left(14400\,a^2-401\,b^2\right)c^6d^3x^6-75\left(3840\,a^2-79\,b^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] -1/1152000*(2304*(50*a^2 - b^2)*c^10*d^3*x^10 - 540*(800*a^2 - 19*b^2)*c^8*
d^3*x^8 + 40*(14400*a^2 - 401*b^2)*c^6*d^3*x^6 - 75*(3840*a^2 - 79*b^2)*c^4
*d^3*x^4 + 17775*b^2*c^2*d^3*x^2 + 225*(512*b^2*c^10*d^3*x^10 - 1920*b^2*c^
8*d^3*x^8 + 2560*b^2*c^6*d^3*x^6 - 1280*b^2*c^4*d^3*x^4 + 79*b^2*d^3)*arcsi
n(c*x)^2 + 450*(512*a*b*c^10*d^3*x^10 - 1920*a*b*c^8*d^3*x^8 + 2560*a*b*c^6
*d^3*x^6 - 1280*a*b*c^4*d^3*x^4 + 79*a*b*d^3)*arcsin(c*x) + 30*(768*a*b*c^9
*d^3*x^9 - 2736*a*b*c^7*d^3*x^7 + 3208*a*b*c^5*d^3*x^5 - 790*a*b*c^3*d^3*x^
3 - 1185*a*b*c*d^3*x + (768*b^2*c^9*d^3*x^9 - 2736*b^2*c^7*d^3*x^7 + 3208*b
^2*c^5*d^3*x^5 - 790*b^2*c^3*d^3*x^3 - 1185*b^2*c*d^3*x)*arcsin(c*x))*sqrt(
-c^2*x^2 + 1))/c^4
```

giac [A] time = 0.61, size = 631, normalized size = 1.64

$$-\frac{1}{10}a^2c^6d^3x^{10}+\frac{3}{8}a^2c^4d^3x^8-\frac{1}{2}a^2c^2d^3x^6+\frac{1}{4}a^2d^3x^4-\frac{\left(c^2x^2-1\right)^4\sqrt{-c^2x^2+1}\,b^2d^3x\arcsin\left(cx\right)}{50\,c^3}-\frac{\left(c^2x^2-1\right)^5b^2d^3\,\mathrm{arc}}{10\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] -1/10*a^2*c^6*d^3*x^10 + 3/8*a^2*c^4*d^3*x^8 - 1/2*a^2*c^2*d^3*x^6 + 1/4*a^
2*d^3*x^4 - 1/50*(c^2*x^2 - 1)^4*sqrt(-c^2*x^2 + 1)*b^2*d^3*x*arcsin(c*x)/c
^3 - 1/10*(c^2*x^2 - 1)^5*b^2*d^3*arcsin(c*x)^2/c^4 - 1/50*(c^2*x^2 - 1)^4*
sqrt(-c^2*x^2 + 1)*a*b*d^3*x/c^3 - 7/800*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)
*b^2*d^3*x*arcsin(c*x)/c^3 - 1/5*(c^2*x^2 - 1)^5*a*b*d^3*arcsin(c*x)/c^4 -
1/8*(c^2*x^2 - 1)^4*b^2*d^3*arcsin(c*x)^2/c^4 - 7/800*(c^2*x^2 - 1)^3*sqrt(
-c^2*x^2 + 1)*a*b*d^3*x/c^3 + 49/4800*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b^
2*d^3*x*arcsin(c*x)/c^3 + 1/500*(c^2*x^2 - 1)^5*b^2*d^3/c^4 - 1/4*(c^2*x^2
- 1)^4*a*b*d^3*arcsin(c*x)/c^4 + 49/4800*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)
*a*b*d^3*x/c^3 + 49/3840*(-c^2*x^2 + 1)^(3/2)*b^2*d^3*x*arcsin(c*x)/c^3 + 7
/6400*(c^2*x^2 - 1)^4*b^2*d^3/c^4 + 49/3840*(-c^2*x^2 + 1)^(3/2)*a*b*d^3*x/
c^3 + 49/2560*sqrt(-c^2*x^2 + 1)*b^2*d^3*x*arcsin(c*x)/c^3 - 49/28800*(c^2*
x^2 - 1)^3*b^2*d^3/c^4 + 49/2560*sqrt(-c^2*x^2 + 1)*a*b*d^3*x/c^3 + 49/1536
0*(c^2*x^2 - 1)^2*b^2*d^3/c^4 + 49/5120*b^2*d^3*arcsin(c*x)^2/c^4 - 49/5120
*(c^2*x^2 - 1)*b^2*d^3/c^4 + 49/2560*a*b*d^3*arcsin(c*x)/c^4 - 232981/36864
000*b^2*d^3/c^4
```

maple [A] time = 0.17, size = 519, normalized size = 1.35

$$\frac{-d^3a^2\left(\frac{1}{10}c^{10}x^{10}-\frac{3}{8}c^8x^8+\frac{1}{2}c^6x^6-\frac{1}{4}c^4x^4\right)-d^3b^2\left(\frac{\arcsin(cx)^2\left(c^2x^2-1\right)^4}{8}-\frac{\arcsin(cx)\left(-48c^7x^7\sqrt{-c^2x^2+1}+200c^5x^5\sqrt{-c^2x^2+1}-326\cdots\right.}{1536}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/c^4*(-d^3*a^2*(1/10*c^10*x^10-3/8*c^8*x^8+1/2*c^6*x^6-1/4*c^4*x^4)-d^3*b^
2*(1/8*arcsin(c*x)^2*(c^2*x^2-1)^4-1/1536*arcsin(c*x)*(-48*c^7*x^7*(-c^2*x^
2+1)^(1/2)+200*c^5*x^5*(-c^2*x^2+1)^(1/2)-326*c^3*x^3*(-c^2*x^2+1)^(1/2)+27
9*c*x*(-c^2*x^2+1)^(1/2)+105*arcsin(c*x))+49/5120*arcsin(c*x)^2-7/6400*(c^2
*x^2-1)^4+49/28800*(c^2*x^2-1)^3-49/15360*(c^2*x^2-1)^2+49/5120*c^2*x^2-49/
5120+1/10*arcsin(c*x)^2*(c^2*x^2-1)^5+1/6400*arcsin(c*x)*(128*c^9*x^9*(-c^2
*x^2+1)^(1/2)-656*c^7*x^7*(-c^2*x^2+1)^(1/2)+1368*c^5*x^5*(-c^2*x^2+1)^(1/2
)-1490*c^3*x^3*(-c^2*x^2+1)^(1/2)+965*c*x*(-c^2*x^2+1)^(1/2)+315*arcsin(c*x
))-1/500*(c^2*x^2-1)^5)-2*d^3*a*b*(1/10*arcsin(c*x)*c^10*x^10-3/8*arcsin(c*
x)*c^8*x^8+1/2*arcsin(c*x)*c^6*x^6-1/4*c^4*x^4*arcsin(c*x)+1/100*c^9*x^9*(-
c^2*x^2+1)^(1/2)-57/1600*c^7*x^7*(-c^2*x^2+1)^(1/2)+401/9600*c^5*x^5*(-c^2*
x^2+1)^(1/2)-79/7680*c^3*x^3*(-c^2*x^2+1)^(1/2)-79/5120*c*x*(-c^2*x^2+1)^(1
/2)+79/5120*arcsin(c*x)))
```

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

$$-\frac{1}{10}a^2c^6d^3x^{10}+\frac{3}{8}a^2c^4d^3x^8-\frac{1}{2}a^2c^2d^3x^6-\frac{1}{6400}\left(1280\,x^{10}\arcsin\left(cx\right)+\left(\frac{128\sqrt{-c^2x^2+1}\,x^9}{c^2}+\frac{144\sqrt{-c^2x^2+1}\,x^7}{c^4}\cdots\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] -1/10*a^2*c^6*d^3*x^10 + 3/8*a^2*c^4*d^3*x^8 - 1/2*a^2*c^2*d^3*x^6 - 1/6400
*(1280*x^10*arcsin(c*x) + (128*sqrt(-c^2*x^2 + 1)*x^9/c^2 + 144*sqrt(-c^2*x
^2 + 1)*x^7/c^4 + 168*sqrt(-c^2*x^2 + 1)*x^5/c^6 + 210*sqrt(-c^2*x^2 + 1)*x
^3/c^8 + 315*sqrt(-c^2*x^2 + 1)*x/c^10 - 315*arcsin(c*x)/c^11)*c)*a*b*c^6*d
^3 + 1/512*(384*x^8*arcsin(c*x) + (48*sqrt(-c^2*x^2 + 1)*x^7/c^2 + 56*sqrt(
-c^2*x^2 + 1)*x^5/c^4 + 70*sqrt(-c^2*x^2 + 1)*x^3/c^6 + 105*sqrt(-c^2*x^2 +
 1)*x/c^8 - 105*arcsin(c*x)/c^9)*c)*a*b*c^4*d^3 + 1/4*a^2*d^3*x^4 - 1/48*(4
8*x^6*arcsin(c*x) + (8*sqrt(-c^2*x^2 + 1)*x^5/c^2 + 10*sqrt(-c^2*x^2 + 1)*x
^3/c^4 + 15*sqrt(-c^2*x^2 + 1)*x/c^6 - 15*arcsin(c*x)/c^7)*c)*a*b*c^2*d^3 +
 1/16*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2
+ 1)*x/c^4 - 3*arcsin(c*x)/c^5)*c)*a*b*d^3 - 1/40*(4*b^2*c^6*d^3*x^10 - 15*
b^2*c^4*d^3*x^8 + 20*b^2*c^2*d^3*x^6 - 10*b^2*d^3*x^4)*arctan2(c*x, sqrt(c*
x + 1)*sqrt(-c*x + 1))^2 - integrate(1/20*(4*b^2*c^7*d^3*x^10 - 15*b^2*c^5*
d^3*x^8 + 20*b^2*c^3*d^3*x^6 - 10*b^2*c*d^3*x^4)*sqrt(c*x + 1)*sqrt(-c*x +
1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^2*x^2 - 1), x)
```

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

$$\int x^3\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(d-c^2\,d\,x^2\right)}^3 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^3,x)
```

```
[Out] int(x^3*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^3, x)
```

sympy [A] time = 52.75, size = 654, normalized size = 1.70

$$\begin{cases} -\frac{a^2c^6d^3x^{10}}{10} + \frac{3a^2c^4d^3x^8}{8} - \frac{a^2c^2d^3x^6}{2} + \frac{a^2d^3x^4}{4} - \frac{abc^6d^3x^{10}\operatorname{asin}(cx)}{5} - \frac{abc^5d^3x^9\sqrt{-c^2x^2+1}}{50} + \frac{3abc^4d^3x^8\operatorname{asin}(cx)}{4} + \frac{57abc^3d^3x^7\sqrt{-c^2x \\ \frac{a^2d^3x^4}{4} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(-c**2*d*x**2+d)**3*(a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((-a**2*c**6*d**3*x**10/10 + 3*a**2*c**4*d**3*x**8/8 - a**2*c**2*d
**3*x**6/2 + a**2*d**3*x**4/4 - a*b*c**6*d**3*x**10*asin(c*x)/5 - a*b*c**5*
d**3*x**9*sqrt(-c**2*x**2 + 1)/50 + 3*a*b*c**4*d**3*x**8*asin(c*x)/4 + 57*a
*b*c**3*d**3*x**7*sqrt(-c**2*x**2 + 1)/800 - a*b*c**2*d**3*x**6*asin(c*x) -
 401*a*b*c*d**3*x**5*sqrt(-c**2*x**2 + 1)/4800 + a*b*d**3*x**4*asin(c*x)/2
+ 79*a*b*d**3*x**3*sqrt(-c**2*x**2 + 1)/(3840*c) + 79*a*b*d**3*x*sqrt(-c**2
*x**2 + 1)/(2560*c**3) - 79*a*b*d**3*asin(c*x)/(2560*c**4) - b**2*c**6*d**3
*x**10*asin(c*x)**2/10 + b**2*c**6*d**3*x**10/500 - b**2*c**5*d**3*x**9*sqr
t(-c**2*x**2 + 1)*asin(c*x)/50 + 3*b**2*c**4*d**3*x**8*asin(c*x)**2/8 - 57*
b**2*c**4*d**3*x**8/6400 + 57*b**2*c**3*d**3*x**7*sqrt(-c**2*x**2 + 1)*asin
(c*x)/800 - b**2*c**2*d**3*x**6*asin(c*x)**2/2 + 401*b**2*c**2*d**3*x**6/28
800 - 401*b**2*c*d**3*x**5*sqrt(-c**2*x**2 + 1)*asin(c*x)/4800 + b**2*d**3*
x**4*asin(c*x)**2/4 - 79*b**2*d**3*x**4/15360 + 79*b**2*d**3*x**3*sqrt(-c**
2*x**2 + 1)*asin(c*x)/(3840*c) - 79*b**2*d**3*x**2/(5120*c**2) + 79*b**2*d*
*3*x*sqrt(-c**2*x**2 + 1)*asin(c*x)/(2560*c**3) - 79*b**2*d**3*asin(c*x)**2
/(5120*c**4), Ne(c, 0)), (a**2*d**3*x**4/4, True))
```

3.176 $\int x^2 \left(d-c^2dx^2\right)^3 \left(a+b\sin^{-1}(cx)\right)^2 dx$

Optimal. Leaf size=391

$$\frac{32bd^3x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{945c}+\frac{1}{9}d^3x^3\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2+\frac{2}{21}d^3x^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2$$

```
[Out] -10516/99225*b^2*d^3*x/c^2-5258/297675*b^2*d^3*x^3+4198/165375*b^2*c^2*d^3*
x^5-374/27783*b^2*c^4*d^3*x^7+2/729*b^2*c^6*d^3*x^9+16/315*b*d^3*(-c^2*x^2+
1)^(3/2)*(a+b*arcsin(c*x))/c^3+4/525*b*d^3*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c
*x))/c^3+2/441*b*d^3*(-c^2*x^2+1)^(7/2)*(a+b*arcsin(c*x))/c^3-2/81*b*d^3*(-
c^2*x^2+1)^(9/2)*(a+b*arcsin(c*x))/c^3+16/315*d^3*x^3*(a+b*arcsin(c*x))^2+8
/105*d^3*x^3*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2+2/21*d^3*x^3*(-c^2*x^2+1)^2*(
a+b*arcsin(c*x))^2+1/9*d^3*x^3*(-c^2*x^2+1)^3*(a+b*arcsin(c*x))^2+64/945*b*
d^3*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3+32/945*b*d^3*x^2*(a+b*arcsin(c
*x))*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.82, antiderivative size = 391, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 11, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.407, Rules used = {4699, 4627, 4707, 4677, 8, 30, 266, 43, 4689, 12, 373}

$$\frac{1}{9}d^3x^3\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2+\frac{2}{21}d^3x^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2+\frac{8}{105}d^3x^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (-10516*b^2*d^3*x)/(99225*c^2) - (5258*b^2*d^3*x^3)/297675 + (4198*b^2*c^2*
d^3*x^5)/165375 - (374*b^2*c^4*d^3*x^7)/27783 + (2*b^2*c^6*d^3*x^9)/729 + (
64*b*d^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(945*c^3) + (32*b*d^3*x^2*S
qrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(945*c) + (16*b*d^3*(1 - c^2*x^2)^(3/
2)*(a + b*ArcSin[c*x]))/(315*c^3) + (4*b*d^3*(1 - c^2*x^2)^(5/2)*(a + b*Arc
Sin[c*x]))/(525*c^3) + (2*b*d^3*(1 - c^2*x^2)^(7/2)*(a + b*ArcSin[c*x]))/(4
41*c^3) - (2*b*d^3*(1 - c^2*x^2)^(9/2)*(a + b*ArcSin[c*x]))/(81*c^3) + (16*
d^3*x^3*(a + b*ArcSin[c*x])^2)/315 + (8*d^3*x^3*(1 - c^2*x^2)*(a + b*ArcSin
[c*x])^2)/105 + (2*d^3*x^3*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x])^2)/21 + (d^3
*x^3*(1 - c^2*x^2)^3*(a + b*ArcSin[c*x])^2)/9
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 12

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

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 373

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.), x_Symbol
] :> Int[ExpandIntegrand[(a + b*x^n)^p*(c + d*x^n)^q, x], x] /; FreeQ[{a, b
, c, d, n}, x] && NeQ[b*c - a*d, 0] && IGtQ[p, 0] && IGtQ[q, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4689

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[d^p*(a + b*
ArcSin[c*x]), u, x] - Dist[b*c*d^p, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^
2], x], x], x]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && Intege
rQ[p - 1/2] && (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0]) && NeQ[p, -
2^(-1)] && GtQ[d, 0]
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int x^2 \left(d-c^2dx^2\right)^3 \left(a+b\sin^{-1}(cx)\right)^2 dx = \frac{1}{9}d^3x^3\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2 + \frac{1}{3}(2d)\int x^2\left(d-c^2dx^2\right)^2\left(a+b\right.$$

$$= \frac{2bd^3\left(1-c^2x^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{63c^3} - \frac{2bd^3\left(1-c^2x^2\right)^{9/2}\left(a+b\sin^{-1}(c\right.}{81c^3}$$

$$= \frac{4bd^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{105c^3} + \frac{2bd^3\left(1-c^2x^2\right)^{7/2}\left(a+b\sin^{-1}(c\right.}{441c^3}$$

$$= \frac{16bd^3\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{315c^3} + \frac{4bd^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(\right.}{525c^3}$$

$$= -\frac{4b^2d^3x}{567c^2} - \frac{2b^2d^3x^3}{1701} + \frac{2}{189}b^2c^2d^3x^5 - \frac{38b^2c^4d^3x^7}{3969} + \frac{2}{729}b^2c^6d^3x^9 + \frac{3}{}$$

$$= -\frac{3796b^2d^3x}{99225c^2} - \frac{5258b^2d^3x^3}{297675} + \frac{4198b^2c^2d^3x^5}{165375} - \frac{374b^2c^4d^3x^7}{27783} + \frac{2}{729}b^2c$$

$$= -\frac{10516b^2d^3x}{99225c^2} - \frac{5258b^2d^3x^3}{297675} + \frac{4198b^2c^2d^3x^5}{165375} - \frac{374b^2c^4d^3x^7}{27783} + \frac{2}{729}b^2$$

Mathematica [A] time = 0.38, size = 277, normalized size = 0.71

$$-\frac{d^3\left(99225a^2c^3x^3\left(35c^6x^6-135c^4x^4+189c^2x^2-105\right)+630ab\sqrt{1-c^2x^2}\left(1225c^8x^8-4675c^6x^6+6297c^4x^4-26\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -1/31255875*(d^3*(99225*a^2*c^3*x^3*(-105 + 189*c^2*x^2 - 135*c^4*x^4 + 35*
c^6*x^6) + 630*a*b*Sqrt[1 - c^2*x^2]*(-5258 - 2629*c^2*x^2 + 6297*c^4*x^4 -
 4675*c^6*x^6 + 1225*c^8*x^8) + b^2*(3312540*c*x + 552090*c^3*x^3 - 793422*
c^5*x^5 + 420750*c^7*x^7 - 85750*c^9*x^9) + 630*b*(315*a*c^3*x^3*(-105 + 18
9*c^2*x^2 - 135*c^4*x^4 + 35*c^6*x^6) + b*Sqrt[1 - c^2*x^2]*(-5258 - 2629*c
^2*x^2 + 6297*c^4*x^4 - 4675*c^6*x^6 + 1225*c^8*x^8))*ArcSin[c*x] + 99225*b
^2*c^3*x^3*(-105 + 189*c^2*x^2 - 135*c^4*x^4 + 35*c^6*x^6)*ArcSin[c*x]^2))/
c^3
```

fricas [A] time = 0.64, size = 372, normalized size = 0.95

$$-\frac{42875\left(81\,a^2-2\,b^2\right)c^9d^3x^9-1125\left(11907\,a^2-374\,b^2\right)c^7d^3x^7+189\left(99225\,a^2-4198\,b^2\right)c^5d^3x^5-105\left(99225\,a^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] -1/31255875*(42875*(81*a^2 - 2*b^2)*c^9*d^3*x^9 - 1125*(11907*a^2 - 374*b^2
)*c^7*d^3*x^7 + 189*(99225*a^2 - 4198*b^2)*c^5*d^3*x^5 - 105*(99225*a^2 - 5
258*b^2)*c^3*d^3*x^3 + 3312540*b^2*c*d^3*x + 99225*(35*b^2*c^9*d^3*x^9 - 13
5*b^2*c^7*d^3*x^7 + 189*b^2*c^5*d^3*x^5 - 105*b^2*c^3*d^3*x^3)*arcsin(c*x)^
2 + 198450*(35*a*b*c^9*d^3*x^9 - 135*a*b*c^7*d^3*x^7 + 189*a*b*c^5*d^3*x^5
- 105*a*b*c^3*d^3*x^3)*arcsin(c*x) + 630*(1225*a*b*c^8*d^3*x^8 - 4675*a*b*c
^6*d^3*x^6 + 6297*a*b*c^4*d^3*x^4 - 2629*a*b*c^2*d^3*x^2 - 5258*a*b*d^3 + (
1225*b^2*c^8*d^3*x^8 - 4675*b^2*c^6*d^3*x^6 + 6297*b^2*c^4*d^3*x^4 - 2629*b
^2*c^2*d^3*x^2 - 5258*b^2*d^3)*arcsin(c*x))*sqrt(-c^2*x^2 + 1))/c^3
```

giac [B] time = 0.53, size = 716, normalized size = 1.83

$$-\frac{1}{9}\,a^2c^6d^3x^9+\frac{3}{7}\,a^2c^4d^3x^7-\frac{3}{5}\,a^2c^2d^3x^5-\frac{\left(c^2x^2-1\right)^4b^2d^3x\arcsin\left(cx\right)^2}{9\,c^2}-\frac{2\left(c^2x^2-1\right)^4abd^3x\arcsin\left(cx\right)}{9\,c^2}-\frac{\left(c^2x^2-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] -1/9*a^2*c^6*d^3*x^9 + 3/7*a^2*c^4*d^3*x^7 - 3/5*a^2*c^2*d^3*x^5 - 1/9*(c^2
*x^2 - 1)^4*b^2*d^3*x*arcsin(c*x)^2/c^2 - 2/9*(c^2*x^2 - 1)^4*a*b*d^3*x*arc
sin(c*x)/c^2 - 1/63*(c^2*x^2 - 1)^3*b^2*d^3*x*arcsin(c*x)^2/c^2 + 2/729*(c^
2*x^2 - 1)^4*b^2*d^3*x/c^2 + 1/3*a^2*d^3*x^3 - 2/63*(c^2*x^2 - 1)^3*a*b*d^3
*x*arcsin(c*x)/c^2 + 2/105*(c^2*x^2 - 1)^2*b^2*d^3*x*arcsin(c*x)^2/c^2 - 2/
81*(c^2*x^2 - 1)^4*sqrt(-c^2*x^2 + 1)*b^2*d^3*arcsin(c*x)/c^3 - 622/250047*
(c^2*x^2 - 1)^3*b^2*d^3*x/c^2 + 4/105*(c^2*x^2 - 1)^2*a*b*d^3*x*arcsin(c*x)
/c^2 - 8/315*(c^2*x^2 - 1)*b^2*d^3*x*arcsin(c*x)^2/c^2 - 2/81*(c^2*x^2 - 1)
^4*sqrt(-c^2*x^2 + 1)*a*b*d^3/c^3 - 2/441*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1
)*b^2*d^3*arcsin(c*x)/c^3 + 15224/10418625*(c^2*x^2 - 1)^2*b^2*d^3*x/c^2 -
16/315*(c^2*x^2 - 1)*a*b*d^3*x*arcsin(c*x)/c^2 + 16/315*b^2*d^3*x*arcsin(c*
x)^2/c^2 - 2/441*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*a*b*d^3/c^3 + 4/525*(c^
2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b^2*d^3*arcsin(c*x)/c^3 + 115504/31255875*(
c^2*x^2 - 1)*b^2*d^3*x/c^2 + 32/315*a*b*d^3*x*arcsin(c*x)/c^2 + 4/525*(c^2*
x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*a*b*d^3/c^3 + 16/945*(-c^2*x^2 + 1)^(3/2)*b^2
*d^3*arcsin(c*x)/c^3 - 3406208/31255875*b^2*d^3*x/c^2 + 16/945*(-c^2*x^2 +
1)^(3/2)*a*b*d^3/c^3 + 32/315*sqrt(-c^2*x^2 + 1)*b^2*d^3*arcsin(c*x)/c^3 +
32/315*sqrt(-c^2*x^2 + 1)*a*b*d^3/c^3
```

maple [A] time = 0.06, size = 525, normalized size = 1.34

$$\frac{-d^3a^2\left(\frac{1}{9}c^9x^9-\frac{3}{7}c^7x^7+\frac{3}{5}c^5x^5-\frac{1}{3}c^3x^3\right)-d^3b^2\left(\frac{\arcsin(cx)^2\left(5c^6x^6-21c^4x^4+35c^2x^2-35\right)cx}{35}+\frac{32cx}{315}-\frac{32\arcsin(cx)\sqrt{-c^2x^2+1}}{315}+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/c^3*(-d^3*a^2*(1/9*c^9*x^9-3/7*c^7*x^7+3/5*c^5*x^5-1/3*c^3*x^3)-d^3*b^2*(
1/35*arcsin(c*x)^2*(5*c^6*x^6-21*c^4*x^4+35*c^2*x^2-35)*c*x+32/315*c*x-32/3
15*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+2/441*arcsin(c*x)*(c^2*x^2-1)^3*(-c^2*x^2
+1)^(1/2)-2/15435*(5*c^6*x^6-21*c^4*x^4+35*c^2*x^2-35)*c*x-4/525*arcsin(c*x
)*(c^2*x^2-1)^2*(-c^2*x^2+1)^(1/2)+4/7875*(3*c^4*x^4-10*c^2*x^2+15)*c*x+16/
945*arcsin(c*x)*(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)-16/2835*(c^2*x^2-3)*c*x+1/31
5*arcsin(c*x)^2*(35*c^8*x^8-180*c^6*x^6+378*c^4*x^4-420*c^2*x^2+315)*c*x+2/
81*arcsin(c*x)*(c^2*x^2-1)^4*(-c^2*x^2+1)^(1/2)-2/25515*(35*c^8*x^8-180*c^6
*x^6+378*c^4*x^4-420*c^2*x^2+315)*c*x)-2*d^3*a*b*(1/9*arcsin(c*x)*c^9*x^9-3
/7*arcsin(c*x)*c^7*x^7+3/5*arcsin(c*x)*c^5*x^5-1/3*c^3*x^3*arcsin(c*x)+1/81
*c^8*x^8*(-c^2*x^2+1)^(1/2)-187/3969*c^6*x^6*(-c^2*x^2+1)^(1/2)+2099/33075*
c^4*x^4*(-c^2*x^2+1)^(1/2)-2629/99225*c^2*x^2*(-c^2*x^2+1)^(1/2)-5258/99225
*(-c^2*x^2+1)^(1/2)))
```

maxima [B] time = 0.94, size = 946, normalized size = 2.42

$$-\frac{1}{9}\,b^2c^6d^3x^9\arcsin\left(cx\right)^2-\frac{1}{9}\,a^2c^6d^3x^9+\frac{3}{7}\,b^2c^4d^3x^7\arcsin\left(cx\right)^2+\frac{3}{7}\,a^2c^4d^3x^7-\frac{3}{5}\,b^2c^2d^3x^5\arcsin\left(cx\right)^2-\frac{2}{2835}\left(31\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] -1/9*b^2*c^6*d^3*x^9*arcsin(c*x)^2 - 1/9*a^2*c^6*d^3*x^9 + 3/7*b^2*c^4*d^3*
x^7*arcsin(c*x)^2 + 3/7*a^2*c^4*d^3*x^7 - 3/5*b^2*c^2*d^3*x^5*arcsin(c*x)^2
 - 2/2835*(315*x^9*arcsin(c*x) + (35*sqrt(-c^2*x^2 + 1)*x^8/c^2 + 40*sqrt(-
c^2*x^2 + 1)*x^6/c^4 + 48*sqrt(-c^2*x^2 + 1)*x^4/c^6 + 64*sqrt(-c^2*x^2 + 1
)*x^2/c^8 + 128*sqrt(-c^2*x^2 + 1)/c^10)*c)*a*b*c^6*d^3 - 2/893025*(315*(35
*sqrt(-c^2*x^2 + 1)*x^8/c^2 + 40*sqrt(-c^2*x^2 + 1)*x^6/c^4 + 48*sqrt(-c^2*
x^2 + 1)*x^4/c^6 + 64*sqrt(-c^2*x^2 + 1)*x^2/c^8 + 128*sqrt(-c^2*x^2 + 1)/c
^10)*c*arcsin(c*x) - (1225*c^8*x^9 + 1800*c^6*x^7 + 3024*c^4*x^5 + 6720*c^2
*x^3 + 40320*x)/c^8)*b^2*c^6*d^3 - 3/5*a^2*c^2*d^3*x^5 + 6/245*(35*x^7*arcs
in(c*x) + (5*sqrt(-c^2*x^2 + 1)*x^6/c^2 + 6*sqrt(-c^2*x^2 + 1)*x^4/c^4 + 8*
sqrt(-c^2*x^2 + 1)*x^2/c^6 + 16*sqrt(-c^2*x^2 + 1)/c^8)*c)*a*b*c^4*d^3 + 2/
8575*(105*(5*sqrt(-c^2*x^2 + 1)*x^6/c^2 + 6*sqrt(-c^2*x^2 + 1)*x^4/c^4 + 8*
sqrt(-c^2*x^2 + 1)*x^2/c^6 + 16*sqrt(-c^2*x^2 + 1)/c^8)*c*arcsin(c*x) - (75
*c^6*x^7 + 126*c^4*x^5 + 280*c^2*x^3 + 1680*x)/c^6)*b^2*c^4*d^3 + 1/3*b^2*d
^3*x^3*arcsin(c*x)^2 - 2/25*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4
/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*a*b*c^2*
d^3 - 2/375*(15*(3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^
4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c*arcsin(c*x) - (9*c^4*x^5 + 20*c^2*x^3 + 120
*x)/c^4)*b^2*c^2*d^3 + 1/3*a^2*d^3*x^3 + 2/9*(3*x^3*arcsin(c*x) + c*(sqrt(-
c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*d^3 + 2/27*(3*c*(sqrt
(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4)*arcsin(c*x) - (c^2*x^3 +
 6*x)/c^2)*b^2*d^3
```

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

$$\int x^2 \left(a + b \operatorname{asin}\left(c x\right)\right)^2 \left(d - c^2 d x^2\right)^3 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^3,x)
```

```
[Out] int(x^2*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^3, x)
```

sympy [A] time = 30.10, size = 626, normalized size = 1.60

$$\begin{cases} -\frac{a^2c^6d^3x^9}{9} + \frac{3a^2c^4d^3x^7}{7} - \frac{3a^2c^2d^3x^5}{5} + \frac{a^2d^3x^3}{3} - \frac{2abc^6d^3x^9 \operatorname{asin}(cx)}{9} - \frac{2abc^5d^3x^8\sqrt{-c^2x^2+1}}{81} + \frac{6abc^4d^3x^7 \operatorname{asin}(cx)}{7} + \frac{374abc^3d^3x^6\sqrt{-c^2x^2}}{3969} \\ \frac{a^2d^3x^3}{3} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(-c**2*d*x**2+d)**3*(a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((-a**2*c**6*d**3*x**9/9 + 3*a**2*c**4*d**3*x**7/7 - 3*a**2*c**2*d
**3*x**5/5 + a**2*d**3*x**3/3 - 2*a*b*c**6*d**3*x**9*asin(c*x)/9 - 2*a*b*c*
*5*d**3*x**8*sqrt(-c**2*x**2 + 1)/81 + 6*a*b*c**4*d**3*x**7*asin(c*x)/7 + 3
74*a*b*c**3*d**3*x**6*sqrt(-c**2*x**2 + 1)/3969 - 6*a*b*c**2*d**3*x**5*asin
(c*x)/5 - 4198*a*b*c*d**3*x**4*sqrt(-c**2*x**2 + 1)/33075 + 2*a*b*d**3*x**3
*asin(c*x)/3 + 5258*a*b*d**3*x**2*sqrt(-c**2*x**2 + 1)/(99225*c) + 10516*a*
b*d**3*sqrt(-c**2*x**2 + 1)/(99225*c**3) - b**2*c**6*d**3*x**9*asin(c*x)**2
/9 + 2*b**2*c**6*d**3*x**9/729 - 2*b**2*c**5*d**3*x**8*sqrt(-c**2*x**2 + 1)
*asin(c*x)/81 + 3*b**2*c**4*d**3*x**7*asin(c*x)**2/7 - 374*b**2*c**4*d**3*x
**7/27783 + 374*b**2*c**3*d**3*x**6*sqrt(-c**2*x**2 + 1)*asin(c*x)/3969 - 3
*b**2*c**2*d**3*x**5*asin(c*x)**2/5 + 4198*b**2*c**2*d**3*x**5/165375 - 419
8*b**2*c*d**3*x**4*sqrt(-c**2*x**2 + 1)*asin(c*x)/33075 + b**2*d**3*x**3*as
in(c*x)**2/3 - 5258*b**2*d**3*x**3/297675 + 5258*b**2*d**3*x**2*sqrt(-c**2*
x**2 + 1)*asin(c*x)/(99225*c) - 10516*b**2*d**3*x/(99225*c**2) + 10516*b**2
*d**3*sqrt(-c**2*x**2 + 1)*asin(c*x)/(99225*c**3), Ne(c, 0)), (a**2*d**3*x*
*3/3, True))
```

3.177 $\int x\left(d-c^2dx^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=268

$$\frac{bd^3x\left(1-c^2x^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{32c}+\frac{7bd^3x\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{192c}+\frac{35bd^3x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(c\right.}{768c}$$

```
[Out] -175/3072*b^2*d^3*x^2+35/3072*b^2*c^2*d^3*x^4+7/1152*b^2*d^3*(-c^2*x^2+1)^3
/c^2+1/256*b^2*d^3*(-c^2*x^2+1)^4/c^2+35/768*b*d^3*x*(-c^2*x^2+1)^(3/2)*(a+
b*arcsin(c*x))/c+7/192*b*d^3*x*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))/c+1/32*
b*d^3*x*(-c^2*x^2+1)^(7/2)*(a+b*arcsin(c*x))/c+35/1024*d^3*(a+b*arcsin(c*x)
)^2/c^2-1/8*d^3*(-c^2*x^2+1)^4*(a+b*arcsin(c*x))^2/c^2+35/512*b*d^3*x*(a+b*
arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.25, antiderivative size = 268, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.280, Rules used = {4677, 4649, 4647, 4641, 30, 14, 261}

$$\frac{bd^3x\left(1-c^2x^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{32c}+\frac{7bd^3x\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{192c}+\frac{35bd^3x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(c\right.}{768c}$$

Antiderivative was successfully verified.

```
[In] Int[x*(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (-175*b^2*d^3*x^2)/3072 + (35*b^2*c^2*d^3*x^4)/3072 + (7*b^2*d^3*(1 - c^2*x
^2)^3)/(1152*c^2) + (b^2*d^3*(1 - c^2*x^2)^4)/(256*c^2) + (35*b*d^3*x*Sqrt[
1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(512*c) + (35*b*d^3*x*(1 - c^2*x^2)^(3/2)
*(a + b*ArcSin[c*x]))/(768*c) + (7*b*d^3*x*(1 - c^2*x^2)^(5/2)*(a + b*ArcSi
n[c*x]))/(192*c) + (b*d^3*x*(1 - c^2*x^2)^(7/2)*(a + b*ArcSin[c*x]))/(32*c)
 + (35*d^3*(a + b*ArcSin[c*x])^2)/(1024*c^2) - (d^3*(1 - c^2*x^2)^4*(a + b*
ArcSin[c*x])^2)/(8*c^2)
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
```

```
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int x\left(d-c^2dx^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2\,dx = -\frac{d^3\left(1-c^2x^2\right)^4\left(a+b\sin^{-1}(cx)\right)^2}{8c^2}+\frac{\left(bd^3\right)\int\left(1-c^2x^2\right)^{7/2}\left(a+b\sin^{-1}(c\ldots\right.}{4c}\ldots$$

$$=\frac{bd^3x\left(1-c^2x^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{32c}-\frac{d^3\left(1-c^2x^2\right)^4\left(a+b\sin^{-1}(cx)\right)^2}{8c^2}\ldots$$

$$=\frac{b^2d^3\left(1-c^2x^2\right)^4}{256c^2}+\frac{7bd^3x\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{192c}+\frac{bd^3x\left(1-c^2x\ldots\right.}{\ldots}$$

$$=\frac{7b^2d^3\left(1-c^2x^2\right)^3}{1152c^2}+\frac{b^2d^3\left(1-c^2x^2\right)^4}{256c^2}+\frac{35bd^3x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-\ldots}\right.}{768c}\ldots$$

$$=\frac{7b^2d^3\left(1-c^2x^2\right)^3}{1152c^2}+\frac{b^2d^3\left(1-c^2x^2\right)^4}{256c^2}+\frac{35bd^3x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(c\ldots\right.}{512c}\ldots$$

$$=-\frac{175b^2d^3x^2}{3072}+\frac{35b^2c^2d^3x^4}{3072}+\frac{7b^2d^3\left(1-c^2x^2\right)^3}{1152c^2}+\frac{b^2d^3\left(1-c^2x^2\right)^4}{256c^2}+\ldots$$

Mathematica [A] time = 0.34, size = 257, normalized size = 0.96

$$-\frac{d^3\left(cx\left(1152a^2cx\left(c^6x^6-4c^4x^4+6c^2x^2-4\right)+6ab\sqrt{1-c^2x^2}\left(48c^6x^6-200c^4x^4+326c^2x^2-279\right)+b^2cx\left(-36c\ldots\right.\right.\right.}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -1/9216*(d^3*(c*x*(b^2*c*x*(837 - 489*c^2*x^2 + 200*c^4*x^4 - 36*c^6*x^6) +
 1152*a^2*c*x*(-4 + 6*c^2*x^2 - 4*c^4*x^4 + c^6*x^6) + 6*a*b*Sqrt[1 - c^2*x
^2]*(-279 + 326*c^2*x^2 - 200*c^4*x^4 + 48*c^6*x^6)) + 6*b*(b*c*x*Sqrt[1 -
c^2*x^2]*(-279 + 326*c^2*x^2 - 200*c^4*x^4 + 48*c^6*x^6) + 3*a*(93 - 512*c^
```

```
2*x^2 + 768*c^4*x^4 - 512*c^6*x^6 + 128*c^8*x^8))*ArcSin[c*x] + 9*b^2*(93 -
 512*c^2*x^2 + 768*c^4*x^4 - 512*c^6*x^6 + 128*c^8*x^8)*ArcSin[c*x]^2))/c^2
```

fricas [A] time = 0.64, size = 354, normalized size = 1.32

$$-\frac{36\left(32a^2-b^2\right)c^8d^3x^8-8\left(576a^2-25b^2\right)c^6d^3x^6+3\left(2304a^2-163b^2\right)c^4d^3x^4-9\left(512a^2-93b^2\right)c^2d^3x^2+9}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] -1/9216*(36*(32*a^2 - b^2)*c^8*d^3*x^8 - 8*(576*a^2 - 25*b^2)*c^6*d^3*x^6 +
 3*(2304*a^2 - 163*b^2)*c^4*d^3*x^4 - 9*(512*a^2 - 93*b^2)*c^2*d^3*x^2 + 9*
(128*b^2*c^8*d^3*x^8 - 512*b^2*c^6*d^3*x^6 + 768*b^2*c^4*d^3*x^4 - 512*b^2*
c^2*d^3*x^2 + 93*b^2*d^3)*arcsin(c*x)^2 + 18*(128*a*b*c^8*d^3*x^8 - 512*a*b
*c^6*d^3*x^6 + 768*a*b*c^4*d^3*x^4 - 512*a*b*c^2*d^3*x^2 + 93*a*b*d^3)*arcs
in(c*x) + 6*(48*a*b*c^7*d^3*x^7 - 200*a*b*c^5*d^3*x^5 + 326*a*b*c^3*d^3*x^3
 - 279*a*b*c*d^3*x + (48*b^2*c^7*d^3*x^7 - 200*b^2*c^5*d^3*x^5 + 326*b^2*c^
3*d^3*x^3 - 279*b^2*c*d^3*x)*arcsin(c*x))*sqrt(-c^2*x^2 + 1))/c^2
```

giac [B] time = 1.48, size = 492, normalized size = 1.84

$$-\frac{1}{8}a^2c^6d^3x^8+\frac{1}{2}a^2c^4d^3x^6-\frac{3}{4}a^2c^2d^3x^4-\frac{\left(c^2x^2-1\right)^3\sqrt{-c^2x^2+1}\,b^2d^3x\arcsin\left(cx\right)}{32\,c}-\frac{\left(c^2x^2-1\right)^4b^2d^3\arcsin\left(cx\right)^2}{8\,c^2}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] -1/8*a^2*c^6*d^3*x^8 + 1/2*a^2*c^4*d^3*x^6 - 3/4*a^2*c^2*d^3*x^4 - 1/32*(c^
2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*b^2*d^3*x*arcsin(c*x)/c - 1/8*(c^2*x^2 - 1)
^4*b^2*d^3*arcsin(c*x)^2/c^2 - 1/32*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*a*b*
d^3*x/c + 7/192*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b^2*d^3*x*arcsin(c*x)/c
 - 1/4*(c^2*x^2 - 1)^4*a*b*d^3*arcsin(c*x)/c^2 + 7/192*(c^2*x^2 - 1)^2*sqrt(
-c^2*x^2 + 1)*a*b*d^3*x/c + 35/768*(-c^2*x^2 + 1)^(3/2)*b^2*d^3*x*arcsin(c*
x)/c + 1/256*(c^2*x^2 - 1)^4*b^2*d^3/c^2 + 35/768*(-c^2*x^2 + 1)^(3/2)*a*b*
d^3*x/c + 35/512*sqrt(-c^2*x^2 + 1)*b^2*d^3*x*arcsin(c*x)/c - 7/1152*(c^2*x
^2 - 1)^3*b^2*d^3/c^2 + 35/512*sqrt(-c^2*x^2 + 1)*a*b*d^3*x/c + 35/3072*(c^
2*x^2 - 1)^2*b^2*d^3/c^2 + 35/1024*b^2*d^3*arcsin(c*x)^2/c^2 + 1/2*(c^2*x^2
 - 1)*a^2*d^3/c^2 - 35/1024*(c^2*x^2 - 1)*b^2*d^3/c^2 + 35/512*a*b*d^3*arcs
in(c*x)/c^2 - 7175/294912*b^2*d^3/c^2
```

maple [A] time = 0.07, size = 358, normalized size = 1.34

$$\frac{-d^3a^2\left(\frac{1}{8}c^8x^8-\frac{1}{2}c^6x^6+\frac{3}{4}c^4x^4-\frac{1}{2}c^2x^2\right)-d^3b^2\left(\frac{\arcsin(cx)^2\left(c^2x^2-1\right)^4}{8}-\frac{\arcsin(cx)\left(-48c^7x^7\sqrt{-c^2x^2+1}+200c^5x^5\sqrt{-c^2x^2+1}-326\right.}{1536}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/c^2*(-d^3*a^2*(1/8*c^8*x^8-1/2*c^6*x^6+3/4*c^4*x^4-1/2*c^2*x^2)-d^3*b^2*(
1/8*arcsin(c*x)^2*(c^2*x^2-1)^4-1/1536*arcsin(c*x)*(-48*c^7*x^7*(-c^2*x^2+1
)^(1/2)+200*c^5*x^5*(-c^2*x^2+1)^(1/2)-326*c^3*x^3*(-c^2*x^2+1)^(1/2)+279*c
*x*(-c^2*x^2+1)^(1/2)+105*arcsin(c*x))+35/1024*arcsin(c*x)^2-1/256*(c^2*x^2
-1)^4+7/1152*(c^2*x^2-1)^3-35/3072*(c^2*x^2-1)^2+35/1024*c^2*x^2-35/1024)-2
*d^3*a*b*(1/8*arcsin(c*x)*c^8*x^8-1/2*arcsin(c*x)*c^6*x^6+3/4*c^4*x^4*arcsi
n(c*x)-1/2*c^2*x^2*arcsin(c*x)+1/64*c^7*x^7*(-c^2*x^2+1)^(1/2)-25/384*c^5*x
```

```
^5*(-c^2*x^2+1)^(1/2)+163/1536*c^3*x^3*(-c^2*x^2+1)^(1/2)-93/1024*c*x*(-c^2
*x^2+1)^(1/2)+93/1024*arcsin(c*x)))
```

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

$$-\frac{1}{8}a^2c^6d^3x^8+\frac{1}{2}a^2c^4d^3x^6-\frac{1}{1536}\left(384\,x^8\arcsin(cx)+\left(\frac{48\,\sqrt{-c^2x^2+1}\,x^7}{c^2}+\frac{56\,\sqrt{-c^2x^2+1}\,x^5}{c^4}+\frac{70\,\sqrt{-c^2x^2+1}\,x^3}{c^6}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] -1/8*a^2*c^6*d^3*x^8 + 1/2*a^2*c^4*d^3*x^6 - 1/1536*(384*x^8*arcsin(c*x) +
(48*sqrt(-c^2*x^2 + 1)*x^7/c^2 + 56*sqrt(-c^2*x^2 + 1)*x^5/c^4 + 70*sqrt(-c
^2*x^2 + 1)*x^3/c^6 + 105*sqrt(-c^2*x^2 + 1)*x/c^8 - 105*arcsin(c*x)/c^9)*c
)*a*b*c^6*d^3 - 3/4*a^2*c^2*d^3*x^4 + 1/48*(48*x^6*arcsin(c*x) + (8*sqrt(-c
^2*x^2 + 1)*x^5/c^2 + 10*sqrt(-c^2*x^2 + 1)*x^3/c^4 + 15*sqrt(-c^2*x^2 + 1)
*x/c^6 - 15*arcsin(c*x)/c^7)*c)*a*b*c^4*d^3 - 3/16*(8*x^4*arcsin(c*x) + (2*
sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c*x)/c^5
)*c)*a*b*c^2*d^3 + 1/2*a^2*d^3*x^2 + 1/2*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*
x^2 + 1)*x/c^2 - arcsin(c*x)/c^3))*a*b*d^3 - 1/8*(b^2*c^6*d^3*x^8 - 4*b^2*c
^4*d^3*x^6 + 6*b^2*c^2*d^3*x^4 - 4*b^2*d^3*x^2)*arctan2(c*x, sqrt(c*x + 1)*
sqrt(-c*x + 1))^2 - integrate(1/4*(b^2*c^7*d^3*x^8 - 4*b^2*c^5*d^3*x^6 + 6*
b^2*c^3*d^3*x^4 - 4*b^2*c*d^3*x^2)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x
, sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^2*x^2 - 1), x)
```

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

$$\int x\,(a+b\,\mathrm{asin}\,(c\,x))^2\,\left(d-c^2\,d\,x^2\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^3,x)
```

```
[Out] int(x*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^3, x)
```

sympy [A] time = 22.71, size = 573, normalized size = 2.14

$$\begin{cases} -\frac{a^2c^6d^3x^8}{8}+\frac{a^2c^4d^3x^6}{2}-\frac{3a^2c^2d^3x^4}{4}+\frac{a^2d^3x^2}{2}-\frac{abc^6d^3x^8\,\mathrm{asin}\,(cx)}{4}-\frac{abc^5d^3x^7\sqrt{-c^2x^2+1}}{32}+abc^4d^3x^6\,\mathrm{asin}\,(cx)+\frac{25abc^3d^3x^5\sqrt{-c^2x^2+1}}{192} \\ \frac{a^2d^3x^2}{2} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c**2*d*x**2+d)**3*(a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((-a**2*c**6*d**3*x**8/8 + a**2*c**4*d**3*x**6/2 - 3*a**2*c**2*d**
3*x**4/4 + a**2*d**3*x**2/2 - a*b*c**6*d**3*x**8*asin(c*x)/4 - a*b*c**5*d**
3*x**7*sqrt(-c**2*x**2 + 1)/32 + a*b*c**4*d**3*x**6*asin(c*x) + 25*a*b*c**3
*d**3*x**5*sqrt(-c**2*x**2 + 1)/192 - 3*a*b*c**2*d**3*x**4*asin(c*x)/2 - 16
3*a*b*c*d**3*x**3*sqrt(-c**2*x**2 + 1)/768 + a*b*d**3*x**2*asin(c*x) + 93*a
*b*d**3*x*sqrt(-c**2*x**2 + 1)/(512*c) - 93*a*b*d**3*asin(c*x)/(512*c**2) -
 b**2*c**6*d**3*x**8*asin(c*x)**2/8 + b**2*c**6*d**3*x**8/256 - b**2*c**5*d
**3*x**7*sqrt(-c**2*x**2 + 1)*asin(c*x)/32 + b**2*c**4*d**3*x**6*asin(c*x)*
*2/2 - 25*b**2*c**4*d**3*x**6/1152 + 25*b**2*c**3*d**3*x**5*sqrt(-c**2*x**2
 + 1)*asin(c*x)/192 - 3*b**2*c**2*d**3*x**4*asin(c*x)**2/4 + 163*b**2*c**2*
d**3*x**4/3072 - 163*b**2*c*d**3*x**3*sqrt(-c**2*x**2 + 1)*asin(c*x)/768 +
b**2*d**3*x**2*asin(c*x)**2/2 - 93*b**2*d**3*x**2/1024 + 93*b**2*d**3*x*sqr
t(-c**2*x**2 + 1)*asin(c*x)/(512*c) - 93*b**2*d**3*asin(c*x)**2/(1024*c**2)
, Ne(c, 0)), (a**2*d**3*x**2/2, True))
```

3.178 $\int \left(d-c^2dx^2\right)^3 \left(a+b\sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=298

$$\frac{1}{7}d^3x\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2+\frac{6}{35}d^3x\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2+\frac{8}{35}d^3x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2$$

```
[Out] -4322/3675*b^2*d^3*x+1514/11025*b^2*c^2*d^3*x^3-234/6125*b^2*c^4*d^3*x^5+2/
343*b^2*c^6*d^3*x^7+16/105*b*d^3*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))/c+12/
175*b*d^3*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))/c+2/49*b*d^3*(-c^2*x^2+1)^(7
/2)*(a+b*arcsin(c*x))/c+16/35*d^3*x*(a+b*arcsin(c*x))^2+8/35*d^3*x*(-c^2*x^
2+1)*(a+b*arcsin(c*x))^2+6/35*d^3*x*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))^2+1/7*
d^3*x*(-c^2*x^2+1)^3*(a+b*arcsin(c*x))^2+32/35*b*d^3*(a+b*arcsin(c*x))*(-c^
2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.37, antiderivative size = 298, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {4649, 4619, 4677, 8, 194}

$$\frac{1}{7}d^3x\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2+\frac{6}{35}d^3x\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2+\frac{8}{35}d^3x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2$$

Antiderivative was successfully verified.

```
[In] Int[(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (-4322*b^2*d^3*x)/3675 + (1514*b^2*c^2*d^3*x^3)/11025 - (234*b^2*c^4*d^3*x^
5)/6125 + (2*b^2*c^6*d^3*x^7)/343 + (32*b*d^3*Sqrt[1 - c^2*x^2]*(a + b*ArcS
in[c*x]))/(35*c) + (16*b*d^3*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(105*
c) + (12*b*d^3*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x]))/(175*c) + (2*b*d^3*
(1 - c^2*x^2)^(7/2)*(a + b*ArcSin[c*x]))/(49*c) + (16*d^3*x*(a + b*ArcSin[c
*x])^2)/35 + (8*d^3*x*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/35 + (6*d^3*x*(1
 - c^2*x^2)^2*(a + b*ArcSin[c*x])^2)/35 + (d^3*x*(1 - c^2*x^2)^3*(a + b*Arc
Sin[c*x])^2)/7
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4619

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

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \left(d-c^2dx^2\right)^3 \left(a+b\sin^{-1}(cx)\right)^2 \, dx = \frac{1}{7}d^3x\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2+\frac{1}{7}(6d)\int \left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(c$$

$$=\frac{2bd^3\left(1-c^2x^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{49c}+\frac{6}{35}d^3x\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)$$

$$=\frac{12bd^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{175c}+\frac{2bd^3\left(1-c^2x^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)}{49c}$$

$$=-\frac{2}{49}b^2d^3x+\frac{2}{49}b^2c^2d^3x^3-\frac{6}{245}b^2c^4d^3x^5+\frac{2}{343}b^2c^6d^3x^7+\frac{16bd^3\left(1-c^2x\right.}{}$$

$$=-\frac{962b^2d^3x}{3675}+\frac{1514b^2c^2d^3x^3}{11025}-\frac{234b^2c^4d^3x^5}{6125}+\frac{2}{343}b^2c^6d^3x^7+\frac{32bd^3\sqrt{1-}}{}$$

$$=-\frac{4322b^2d^3x}{3675}+\frac{1514b^2c^2d^3x^3}{11025}-\frac{234b^2c^4d^3x^5}{6125}+\frac{2}{343}b^2c^6d^3x^7+\frac{32bd^3\sqrt{1}}{}$$

Mathematica [A] time = 0.45, size = 241, normalized size = 0.81

$$-\frac{d^3\left(11025a^2cx\left(5c^6x^6-21c^4x^4+35c^2x^2-35\right)+210ab\sqrt{1-c^2x^2}\left(75c^6x^6-351c^4x^4+757c^2x^2-2161\right)+210b\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -1/385875*(d^3*(2*b^2*c*x*(226905 - 26495*c^2*x^2 + 7371*c^4*x^4 - 1125*c^6
*x^6) + 11025*a^2*c*x*(-35 + 35*c^2*x^2 - 21*c^4*x^4 + 5*c^6*x^6) + 210*a*b
*Sqrt[1 - c^2*x^2]*(-2161 + 757*c^2*x^2 - 351*c^4*x^4 + 75*c^6*x^6) + 210*b
*(105*a*c*x*(-35 + 35*c^2*x^2 - 21*c^4*x^4 + 5*c^6*x^6) + b*Sqrt[1 - c^2*x^
2]*(-2161 + 757*c^2*x^2 - 351*c^4*x^4 + 75*c^6*x^6))*ArcSin[c*x] + 11025*b^
2*c*x*(-35 + 35*c^2*x^2 - 21*c^4*x^4 + 5*c^6*x^6)*ArcSin[c*x]^2))/c
```

fricas [A] time = 0.54, size = 323, normalized size = 1.08

$$-\frac{1125\left(49a^2-2b^2\right)c^7d^3x^7-189\left(1225a^2-78b^2\right)c^5d^3x^5+35\left(11025a^2-1514b^2\right)c^3d^3x^3-105\left(3675a^2-4322\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] -1/385875*(1125*(49*a^2 - 2*b^2)*c^7*d^3*x^7 - 189*(1225*a^2 - 78*b^2)*c^5*
d^3*x^5 + 35*(11025*a^2 - 1514*b^2)*c^3*d^3*x^3 - 105*(3675*a^2 - 4322*b^2)
*c*d^3*x + 11025*(5*b^2*c^7*d^3*x^7 - 21*b^2*c^5*d^3*x^5 + 35*b^2*c^3*d^3*x
^3 - 35*b^2*c*d^3*x)*arcsin(c*x)^2 + 22050*(5*a*b*c^7*d^3*x^7 - 21*a*b*c^5*
d^3*x^5 + 35*a*b*c^3*d^3*x^3 - 35*a*b*c*d^3*x)*arcsin(c*x) + 210*(75*a*b*c^
```

```
6*d^3*x^6 - 351*a*b*c^4*d^3*x^4 + 757*a*b*c^2*d^3*x^2 - 2161*a*b*d^3 + (75*
b^2*c^6*d^3*x^6 - 351*b^2*c^4*d^3*x^4 + 757*b^2*c^2*d^3*x^2 - 2161*b^2*d^3)
*arcsin(c*x))*sqrt(-c^2*x^2 + 1))/c
```

giac [B] time = 0.61, size = 528, normalized size = 1.77

$$-\frac{1}{7}a^2c^6d^3x^7+\frac{3}{5}a^2c^4d^3x^5-\frac{1}{7}\left(c^2x^2-1\right)^3b^2d^3x\arcsin\left(cx\right)^2-a^2c^2d^3x^3-\frac{2}{7}\left(c^2x^2-1\right)^3abd^3x\arcsin\left(cx\right)+\frac{6}{35}\left(c^2x^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] -1/7*a^2*c^6*d^3*x^7 + 3/5*a^2*c^4*d^3*x^5 - 1/7*(c^2*x^2 - 1)^3*b^2*d^3*x*
arcsin(c*x)^2 - a^2*c^2*d^3*x^3 - 2/7*(c^2*x^2 - 1)^3*a*b*d^3*x*arcsin(c*x)
 + 6/35*(c^2*x^2 - 1)^2*b^2*d^3*x*arcsin(c*x)^2 + 2/343*(c^2*x^2 - 1)^3*b^2
*d^3*x + 12/35*(c^2*x^2 - 1)^2*a*b*d^3*x*arcsin(c*x) - 8/35*(c^2*x^2 - 1)*b
^2*d^3*x*arcsin(c*x)^2 - 2/49*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*b^2*d^3*ar
csin(c*x)/c - 888/42875*(c^2*x^2 - 1)^2*b^2*d^3*x - 16/35*(c^2*x^2 - 1)*a*b
*d^3*x*arcsin(c*x) + 16/35*b^2*d^3*x*arcsin(c*x)^2 - 2/49*(c^2*x^2 - 1)^3*s
qrt(-c^2*x^2 + 1)*a*b*d^3/c + 12/175*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b^2
*d^3*arcsin(c*x)/c + 30256/385875*(c^2*x^2 - 1)*b^2*d^3*x + 32/35*a*b*d^3*x
*arcsin(c*x) + 12/175*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*a*b*d^3/c + 16/105
*(-c^2*x^2 + 1)^(3/2)*b^2*d^3*arcsin(c*x)/c + a^2*d^3*x - 413312/385875*b^2
*d^3*x + 16/105*(-c^2*x^2 + 1)^(3/2)*a*b*d^3/c + 32/35*sqrt(-c^2*x^2 + 1)*b
^2*d^3*arcsin(c*x)/c + 32/35*sqrt(-c^2*x^2 + 1)*a*b*d^3/c
```

maple [A] time = 0.06, size = 384, normalized size = 1.29

$$-d^3a^2\left(\frac{1}{7}c^7x^7-\frac{3}{5}c^5x^5+c^3x^3-cx\right)-d^3b^2\left(\frac{\arcsin(cx)^2\left(5c^6x^6-21c^4x^4+35c^2x^2-35\right)cx}{35}+\frac{32cx}{35}-\frac{32\arcsin(cx)\sqrt{-c^2x^2+1}}{35}+\frac{2\arcsin\ldots}{\ldots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/c*(-d^3*a^2*(1/7*c^7*x^7-3/5*c^5*x^5+c^3*x^3-c*x)-d^3*b^2*(1/35*arcsin(c*
x)^2*(5*c^6*x^6-21*c^4*x^4+35*c^2*x^2-35)*c*x+32/35*c*x-32/35*arcsin(c*x)*(
-c^2*x^2+1)^(1/2)+2/49*arcsin(c*x)*(c^2*x^2-1)^3*(-c^2*x^2+1)^(1/2)-2/1715*
(5*c^6*x^6-21*c^4*x^4+35*c^2*x^2-35)*c*x-12/175*arcsin(c*x)*(c^2*x^2-1)^2*(
-c^2*x^2+1)^(1/2)+4/875*(3*c^4*x^4-10*c^2*x^2+15)*c*x+16/105*arcsin(c*x)*(c
^2*x^2-1)*(-c^2*x^2+1)^(1/2)-16/315*(c^2*x^2-3)*c*x)-2*d^3*a*b*(1/7*arcsin(
c*x)*c^7*x^7-3/5*arcsin(c*x)*c^5*x^5+c^3*x^3*arcsin(c*x)-c*x*arcsin(c*x)+1/
49*c^6*x^6*(-c^2*x^2+1)^(1/2)-117/1225*c^4*x^4*(-c^2*x^2+1)^(1/2)+757/3675*
c^2*x^2*(-c^2*x^2+1)^(1/2)-2161/3675*(-c^2*x^2+1)^(1/2)))
```

maxima [B] time = 0.72, size = 729, normalized size = 2.45

$$-\frac{1}{7}b^2c^6d^3x^7\arcsin\left(cx\right)^2-\frac{1}{7}a^2c^6d^3x^7+\frac{3}{5}b^2c^4d^3x^5\arcsin\left(cx\right)^2+\frac{3}{5}a^2c^4d^3x^5-\frac{2}{245}\left(35\,x^7\arcsin\left(cx\right)+\left(\frac{5\sqrt{-c^2\ldots}}{c\ldots}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] -1/7*b^2*c^6*d^3*x^7*arcsin(c*x)^2 - 1/7*a^2*c^6*d^3*x^7 + 3/5*b^2*c^4*d^3*
x^5*arcsin(c*x)^2 + 3/5*a^2*c^4*d^3*x^5 - 2/245*(35*x^7*arcsin(c*x) + (5*sq
rt(-c^2*x^2 + 1)*x^6/c^2 + 6*sqrt(-c^2*x^2 + 1)*x^4/c^4 + 8*sqrt(-c^2*x^2 +
 1)*x^2/c^6 + 16*sqrt(-c^2*x^2 + 1)/c^8)*c)*a*b*c^6*d^3 - 2/25725*(105*(5*s
```

```
qrt(-c^2*x^2 + 1)*x^6/c^2 + 6*sqrt(-c^2*x^2 + 1)*x^4/c^4 + 8*sqrt(-c^2*x^2
+ 1)*x^2/c^6 + 16*sqrt(-c^2*x^2 + 1)/c^8)*c*arcsin(c*x) - (75*c^6*x^7 + 126
*c^4*x^5 + 280*c^2*x^3 + 1680*x)/c^6)*b^2*c^6*d^3 - b^2*c^2*d^3*x^3*arcsin(
c*x)^2 + 2/25*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(
-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*a*b*c^4*d^3 + 2/375*(1
5*(3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^
2*x^2 + 1)/c^6)*c*arcsin(c*x) - (9*c^4*x^5 + 20*c^2*x^3 + 120*x)/c^4)*b^2*c
^4*d^3 - a^2*c^2*d^3*x^3 - 2/3*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x
^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*c^2*d^3 - 2/9*(3*c*(sqrt(-c^2*x^2 +
 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4)*arcsin(c*x) - (c^2*x^3 + 6*x)/c^2)*
b^2*c^2*d^3 + b^2*d^3*x*arcsin(c*x)^2 - 2*b^2*d^3*(x - sqrt(-c^2*x^2 + 1)*a
rcsin(c*x)/c) + a^2*d^3*x + 2*(c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*a*b*d^
3/c
```

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

$$\int (a + b\operatorname{asin}(c\,x))^2\left(d - c^2\,d\,x^2\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2*(d - c^2*d*x^2)^3,x)
```

```
[Out] int((a + b*asin(c*x))^2*(d - c^2*d*x^2)^3, x)
```

sympy [A] time = 12.52, size = 524, normalized size = 1.76

$$\begin{cases} -\frac{a^2c^6d^3x^7}{7} + \frac{3a^2c^4d^3x^5}{5} - a^2c^2d^3x^3 + a^2d^3x - \frac{2abc^6d^3x^7\operatorname{asin}(cx)}{7} - \frac{2abc^5d^3x^6\sqrt{-c^2x^2+1}}{49} + \frac{6abc^4d^3x^5\operatorname{asin}(cx)}{5} + \frac{234abc^3d^3x^4\sqrt{-c^2x}}{1225} \\ a^2d^3x \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**3*(a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((-a**2*c**6*d**3*x**7/7 + 3*a**2*c**4*d**3*x**5/5 - a**2*c**2*d**
3*x**3 + a**2*d**3*x - 2*a*b*c**6*d**3*x**7*asin(c*x)/7 - 2*a*b*c**5*d**3*x
**6*sqrt(-c**2*x**2 + 1)/49 + 6*a*b*c**4*d**3*x**5*asin(c*x)/5 + 234*a*b*c*
*3*d**3*x**4*sqrt(-c**2*x**2 + 1)/1225 - 2*a*b*c**2*d**3*x**3*asin(c*x) - 1
514*a*b*c*d**3*x**2*sqrt(-c**2*x**2 + 1)/3675 + 2*a*b*d**3*x*asin(c*x) + 43
22*a*b*d**3*sqrt(-c**2*x**2 + 1)/(3675*c) - b**2*c**6*d**3*x**7*asin(c*x)**
2/7 + 2*b**2*c**6*d**3*x**7/343 - 2*b**2*c**5*d**3*x**6*sqrt(-c**2*x**2 + 1
)*asin(c*x)/49 + 3*b**2*c**4*d**3*x**5*asin(c*x)**2/5 - 234*b**2*c**4*d**3*
x**5/6125 + 234*b**2*c**3*d**3*x**4*sqrt(-c**2*x**2 + 1)*asin(c*x)/1225 - b
**2*c**2*d**3*x**3*asin(c*x)**2 + 1514*b**2*c**2*d**3*x**3/11025 - 1514*b**
2*c*d**3*x**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/3675 + b**2*d**3*x*asin(c*x)**
2 - 4322*b**2*d**3*x/3675 + 4322*b**2*d**3*sqrt(-c**2*x**2 + 1)*asin(c*x)/(
3675*c), Ne(c, 0)), (a**2*d**3*x, True))
```

3.179 $\int \frac{\left(d-c^2dx^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2}{x}\,dx$

Optimal. Leaf size=354

$$-\frac{1}{18}bcd^3x\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)-\frac{7}{36}bcd^3x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)-\frac{19}{24}bcd^3x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)$$

```
[Out] 71/144*b^2*c^2*d^3*x^2-7/144*b^2*c^4*d^3*x^4-1/108*b^2*d^3*(-c^2*x^2+1)^3-7
/36*b*c*d^3*x*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))-1/18*b*c*d^3*x*(-c^2*x^2
+1)^(5/2)*(a+b*arcsin(c*x))-19/48*d^3*(a+b*arcsin(c*x))^2+1/2*d^3*(-c^2*x^2
+1)*(a+b*arcsin(c*x))^2+1/4*d^3*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))^2+1/6*d^3*
(-c^2*x^2+1)^3*(a+b*arcsin(c*x))^2-1/3*I*d^3*(a+b*arcsin(c*x))^3/b+d^3*(a+b
*arcsin(c*x))^2*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))^2)-I*b*d^3*(a+b*arcsin(c*x)
)*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)+1/2*b^2*d^3*polylog(3,(I*c*x+(-c^
2*x^2+1)^(1/2))^2)-19/24*b*c*d^3*x*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.66, antiderivative size = 354, normalized size of antiderivative = 1.00, number of steps used = 26, number of rules used = 13, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.482, Rules used = {4699, 4625, 3717, 2190, 2531, 2282, 6589, 4647, 4641, 30, 4649, 14, 261}

$$-ibd^3\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}b^2d^3\text{PolyLog}\left(3,e^{2i\sin^{-1}(cx)}\right)-\frac{1}{18}bcd^3x\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^3*(a + b*ArcSin[c*x])^2)/x,x]
```

```
[Out] (71*b^2*c^2*d^3*x^2)/144 - (7*b^2*c^4*d^3*x^4)/144 - (b^2*d^3*(1 - c^2*x^2)
^3)/108 - (19*b*c*d^3*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/24 - (7*b*c*
d^3*x*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x]))/36 - (b*c*d^3*x*(1 - c^2*x^2
)^(5/2)*(a + b*ArcSin[c*x]))/18 - (19*d^3*(a + b*ArcSin[c*x])^2)/48 + (d^3*
(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/2 + (d^3*(1 - c^2*x^2)^2*(a + b*ArcSin
[c*x])^2)/4 + (d^3*(1 - c^2*x^2)^3*(a + b*ArcSin[c*x])^2)/6 - ((I/3)*d^3*(a
 + b*ArcSin[c*x])^3)/b + d^3*(a + b*ArcSin[c*x])^2*Log[1 - E^((2*I)*ArcSin[
c*x])] - I*b*d^3*(a + b*ArcSin[c*x])*PolyLog[2, E^((2*I)*ArcSin[c*x])] + (b
^2*d^3*PolyLog[3, E^((2*I)*ArcSin[c*x])])/2
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2}{x}\,dx = \frac{1}{6}d^3\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2+d\int \frac{\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(cx)\right.}{x}$$

$$= -\frac{1}{18}bcd^3x\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}d^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}\right.$$

$$= -\frac{1}{108}b^2d^3\left(1-c^2x^2\right)^3-\frac{7}{36}bcd^3x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)-\frac{1}{18}b$$

$$= -\frac{1}{108}b^2d^3\left(1-c^2x^2\right)^3-\frac{19}{24}bcd^3x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)-\frac{7}{36}bcd^3$$

$$= \frac{71}{144}b^2c^2d^3x^2-\frac{7}{144}b^2c^4d^3x^4-\frac{1}{108}b^2d^3\left(1-c^2x^2\right)^3-\frac{19}{24}bcd^3x\sqrt{1-c^2}$$

$$= \frac{71}{144}b^2c^2d^3x^2-\frac{7}{144}b^2c^4d^3x^4-\frac{1}{108}b^2d^3\left(1-c^2x^2\right)^3-\frac{19}{24}bcd^3x\sqrt{1-c^2}$$

$$= \frac{71}{144}b^2c^2d^3x^2-\frac{7}{144}b^2c^4d^3x^4-\frac{1}{108}b^2d^3\left(1-c^2x^2\right)^3-\frac{19}{24}bcd^3x\sqrt{1-c^2}$$

$$= \frac{71}{144}b^2c^2d^3x^2-\frac{7}{144}b^2c^4d^3x^4-\frac{1}{108}b^2d^3\left(1-c^2x^2\right)^3-\frac{19}{24}bcd^3x\sqrt{1-c^2}$$

$$= \frac{71}{144}b^2c^2d^3x^2-\frac{7}{144}b^2c^4d^3x^4-\frac{1}{108}b^2d^3\left(1-c^2x^2\right)^3-\frac{19}{24}bcd^3x\sqrt{1-c^2}$$

Mathematica [A] time = 0.81, size = 448, normalized size = 1.27

$$d^3\left(-576a^2c^6x^6+2592a^2c^4x^4-5184a^2c^2x^2+3456a^2\log(cx)-1152abc^6x^6\sin^{-1}(cx)+5184abc^4x^4\sin^{-1}(cx)\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^3*(a + b*ArcSin[c*x])^2)/x,x]
```

```
[Out] (d^3*((-144*I)*b^2*Pi^3 - 5184*a^2*c^2*x^2 + 2592*a^2*c^4*x^4 - 576*a^2*c^6
*x^6 - 3600*a*b*c*x*Sqrt[1 - c^2*x^2] + 1056*a*b*c^3*x^3*Sqrt[1 - c^2*x^2]
- 192*a*b*c^5*x^5*Sqrt[1 - c^2*x^2] + 3600*a*b*ArcSin[c*x] - 10368*a*b*c^2*
x^2*ArcSin[c*x] + 5184*a*b*c^4*x^4*ArcSin[c*x] - 1152*a*b*c^6*x^6*ArcSin[c*
x] - (3456*I)*a*b*ArcSin[c*x]^2 + (1152*I)*b^2*ArcSin[c*x]^3 - 783*b^2*Cos[
```

```
2*ArcSin[c*x]] + 1566*b^2*ArcSin[c*x]^2*Cos[2*ArcSin[c*x]] - 27*b^2*Cos[4*A
rcSin[c*x]] + 216*b^2*ArcSin[c*x]^2*Cos[4*ArcSin[c*x]] - b^2*Cos[6*ArcSin[c
*x]] + 18*b^2*ArcSin[c*x]^2*Cos[6*ArcSin[c*x]] + 3456*b^2*ArcSin[c*x]^2*Log
[1 - E^((-2*I)*ArcSin[c*x])] + 6912*a*b*ArcSin[c*x]*Log[1 - E^((2*I)*ArcSin
[c*x])] + 3456*a^2*Log[c*x] + (3456*I)*b^2*ArcSin[c*x]*PolyLog[2, E^((-2*I)
*ArcSin[c*x])] - (3456*I)*a*b*PolyLog[2, E^((2*I)*ArcSin[c*x])] + 1728*b^2*
PolyLog[3, E^((-2*I)*ArcSin[c*x])] - 1566*b^2*ArcSin[c*x]*Sin[2*ArcSin[c*x]
] - 108*b^2*ArcSin[c*x]*Sin[4*ArcSin[c*x]] - 6*b^2*ArcSin[c*x]*Sin[6*ArcSin
[c*x]]))/3456
```

fricas [F] time = 0.74, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{a^2c^6d^3x^6 - 3\,a^2c^4d^3x^4 + 3\,a^2c^2d^3x^2 - a^2d^3 + \left(b^2c^6d^3x^6 - 3\,b^2c^4d^3x^4 + 3\,b^2c^2d^3x^2 - b^2d^3\right)\arcsin\left(cx\right)^2}{x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2/x,x, algorithm="fricas")
```

```
[Out] integral(-(a^2*c^6*d^3*x^6 - 3*a^2*c^4*d^3*x^4 + 3*a^2*c^2*d^3*x^2 - a^2*d^
3 + (b^2*c^6*d^3*x^6 - 3*b^2*c^4*d^3*x^4 + 3*b^2*c^2*d^3*x^2 - b^2*d^3)*arc
sin(c*x)^2 + 2*(a*b*c^6*d^3*x^6 - 3*a*b*c^4*d^3*x^4 + 3*a*b*c^2*d^3*x^2 - a
*b*d^3)*arcsin(c*x))/x, x)
```

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

$$\int -\frac{\left(c^2dx^2 - d\right)^3 \left(b\arcsin\left(cx\right) + a\right)^2}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2/x,x, algorithm="giac")
```

```
[Out] integrate(-(c^2*d*x^2 - d)^3*(b*arcsin(c*x) + a)^2/x, x)
```

maple [A] time = 0.58, size = 661, normalized size = 1.87

$$\frac{d^3ab\arcsin\left(cx\right)\cos\left(6\arcsin\left(cx\right)\right)}{96}+\frac{d^3ab\arcsin\left(cx\right)\cos\left(4\arcsin\left(cx\right)\right)}{8}+\frac{29d^3ab\cos\left(2\arcsin\left(cx\right)\right)\arcsin\left(cx\right)}{32}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2/x,x)
```

```
[Out] -2*I*d^3*b^2*arcsin(c*x)*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))+2*d^3*a*b*arcs
in(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+2*d^3*a*b*arcsin(c*x)*ln(1-I*c*x-(-c
^2*x^2+1)^(1/2))+1/96*d^3*a*b*arcsin(c*x)*cos(6*arcsin(c*x))+1/8*d^3*a*b*ar
csin(c*x)*cos(4*arcsin(c*x))+29/32*d^3*a*b*cos(2*arcsin(c*x))*arcsin(c*x)-I
*d^3*a*b*arcsin(c*x)^2-2*I*d^3*a*b*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))-2*I
*d^3*a*b*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))-2*I*d^3*b^2*arcsin(c*x)*polylo
g(2,-I*c*x-(-c^2*x^2+1)^(1/2))-1/576*d^3*a*b*sin(6*arcsin(c*x))-1/32*d^3*a*
b*sin(4*arcsin(c*x))-29/64*d^3*a*b*sin(2*arcsin(c*x))+d^3*b^2*arcsin(c*x)^2
*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+d^3*b^2*arcsin(c*x)^2*ln(1-I*c*x-(-c^2*x^2+
1)^(1/2))+1/192*d^3*b^2*cos(6*arcsin(c*x))*arcsin(c*x)^2-1/576*d^3*b^2*arcs
in(c*x)*sin(6*arcsin(c*x))+1/16*d^3*b^2*cos(4*arcsin(c*x))*arcsin(c*x)^2-1/
32*d^3*b^2*arcsin(c*x)*sin(4*arcsin(c*x))+29/64*d^3*b^2*arcsin(c*x)^2*cos(2
*arcsin(c*x))-29/64*d^3*b^2*arcsin(c*x)*sin(2*arcsin(c*x))-1/3*I*d^3*b^2*ar
csin(c*x)^3-3/2*d^3*a^2*c^2*x^2+3/4*d^3*a^2*c^4*x^4-1/6*d^3*a^2*c^6*x^6+d^3
*a^2*ln(c*x)+2*d^3*b^2*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2))+2*d^3*b^2*polyl
og(3,I*c*x+(-c^2*x^2+1)^(1/2))-1/3456*d^3*b^2*cos(6*arcsin(c*x))-1/128*d^3*
b^2*cos(4*arcsin(c*x))-29/128*d^3*b^2*cos(2*arcsin(c*x))
```

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

$$-\frac{1}{6}a^2c^6d^3x^6+\frac{3}{4}a^2c^4d^3x^4-\frac{3}{2}a^2c^2d^3x^2+a^2d^3\log(x)-\int\frac{\left(b^2c^6d^3x^6-3\,b^2c^4d^3x^4+3\,b^2c^2d^3x^2-b^2d^3\right)\arctan\left(cx\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2/x,x, algorithm="maxima")
```

```
[Out] -1/6*a^2*c^6*d^3*x^6 + 3/4*a^2*c^4*d^3*x^4 - 3/2*a^2*c^2*d^3*x^2 + a^2*d^3*
log(x) - integrate(((b^2*c^6*d^3*x^6 - 3*b^2*c^4*d^3*x^4 + 3*b^2*c^2*d^3*x^
2 - b^2*d^3)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c^6*d^3*
x^6 - 3*a*b*c^4*d^3*x^4 + 3*a*b*c^2*d^3*x^2 - a*b*d^3)*arctan2(c*x, sqrt(c*
x + 1)*sqrt(-c*x + 1)))/x, x)
```

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

$$\int\frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^2\,{\left(d-c^2\,d\,x^2\right)}^3}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^3)/x,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^3)/x, x)
```

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

$$-d^3\left(\int\left(-\frac{a^2}{x}\right)dx+\int 3a^2c^2x\,dx+\int\left(-3a^2c^4x^3\right)dx+\int a^2c^6x^5\,dx+\int\left(-\frac{b^2\operatorname{asin}^2(cx)}{x}\right)dx+\int\left(-\frac{2ab\operatorname{asi}}{x}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**3*(a+b*asin(c*x))**2/x,x)
```

```
[Out] -d**3*(Integral(-a**2/x, x) + Integral(3*a**2*c**2*x, x) + Integral(-3*a**2
*c**4*x**3, x) + Integral(a**2*c**6*x**5, x) + Integral(-b**2*asin(c*x)**2/
x, x) + Integral(-2*a*b*asin(c*x)/x, x) + Integral(3*b**2*c**2*x*asin(c*x)*
*2, x) + Integral(-3*b**2*c**4*x**3*asin(c*x)**2, x) + Integral(b**2*c**6*x
**5*asin(c*x)**2, x) + Integral(6*a*b*c**2*x*asin(c*x), x) + Integral(-6*a*
b*c**4*x**3*asin(c*x), x) + Integral(2*a*b*c**6*x**5*asin(c*x), x))
```

3.180 $\int \frac{\left(d-c^2 d x^2\right)^3 \left(a+b \sin^{-1}(cx)\right)^2}{x^2} \, dx$

Optimal. Leaf size=329

$$-\frac{6}{5} c^2 d^3 x \left(1-c^2 x^2\right)^2 \left(a+b \sin^{-1}(cx)\right)^2-\frac{8}{5} c^2 d^3 x \left(1-c^2 x^2\right) \left(a+b \sin^{-1}(cx)\right)^2-\frac{2}{25} b c d^3 \left(1-c^2 x^2\right)^{5/2} \left(a+b \sin^{-1}(cx\right.$$

```
[Out] 122/25*b^2*c^2*d^3*x-14/75*b^2*c^4*d^3*x^3+2/125*b^2*c^6*d^3*x^5-2/5*b*c*d^
3*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))-2/25*b*c*d^3*(-c^2*x^2+1)^(5/2)*(a+b
*arcsin(c*x))-16/5*c^2*d^3*x*(a+b*arcsin(c*x))^2-8/5*c^2*d^3*x*(-c^2*x^2+1)
*(a+b*arcsin(c*x))^2-6/5*c^2*d^3*x*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))^2-d^3*(
-c^2*x^2+1)^3*(a+b*arcsin(c*x))^2/x-4*b*c*d^3*(a+b*arcsin(c*x))*arctanh(I*c
*x+(-c^2*x^2+1)^(1/2))+2*I*b^2*c*d^3*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))-2
*I*b^2*c*d^3*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))-22/5*b*c*d^3*(a+b*arcsin(c
*x))*(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.71, antiderivative size = 329, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 12, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {4695, 4649, 4619, 4677, 8, 194, 4699, 4697, 4709, 4183, 2279, 2391}

$$2 i b^2 c d^3 \text{PolyLog}\left(2,-e^{i \sin^{-1}(cx)}\right)-2 i b^2 c d^3 \text{PolyLog}\left(2,e^{i \sin^{-1}(cx)}\right)-\frac{6}{5} c^2 d^3 x \left(1-c^2 x^2\right)^2 \left(a+b \sin^{-1}(cx)\right)^2-\frac{8}{5} c^2 d^3 x \left(1\right.$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^3*(a + b*ArcSin[c*x])^2)/x^2,x]
```

```
[Out] (122*b^2*c^2*d^3*x)/25 - (14*b^2*c^4*d^3*x^3)/75 + (2*b^2*c^6*d^3*x^5)/125
- (22*b*c*d^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/5 - (2*b*c*d^3*(1 - c^
2*x^2)^(3/2)*(a + b*ArcSin[c*x]))/5 - (2*b*c*d^3*(1 - c^2*x^2)^(5/2)*(a + b
*ArcSin[c*x]))/25 - (16*c^2*d^3*x*(a + b*ArcSin[c*x])^2)/5 - (8*c^2*d^3*x*(
1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/5 - (6*c^2*d^3*x*(1 - c^2*x^2)^2*(a + b
*ArcSin[c*x])^2)/5 - (d^3*(1 - c^2*x^2)^3*(a + b*ArcSin[c*x])^2)/x - 4*b*c*
d^3*(a + b*ArcSin[c*x])*ArcTanh[E^(I*ArcSin[c*x])] + (2*I)*b^2*c*d^3*PolyLo
g[2, -E^(I*ArcSin[c*x])] - (2*I)*b^2*c*d^3*PolyLog[2, E^(I*ArcSin[c*x])]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4619

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

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4695

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m +
2)*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPar
t[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f
*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /;
 FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0
] && LtQ[m, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
```

```
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2}{x^2}dx = -\frac{d^3\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2}{x} - \left(6c^2d\right)\int \left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(c$$

$$= \frac{2}{5}bcd^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right) - \frac{6}{5}c^2d^3x\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx$$

$$= \frac{2}{3}bcd^3\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right) - \frac{2}{25}bcd^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(c$$

$$= -\frac{16}{15}b^2c^2d^3x + \frac{22}{45}b^2c^4d^3x^3 - \frac{2}{25}b^2c^6d^3x^5 + 2bcd^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(\right.$$

$$= -\frac{38}{25}b^2c^2d^3x - \frac{14}{75}b^2c^4d^3x^3 + \frac{2}{125}b^2c^6d^3x^5 - \frac{22}{5}bcd^3\sqrt{1-c^2x^2}\left(a+b\sin\right.$$

$$= \frac{122}{25}b^2c^2d^3x - \frac{14}{75}b^2c^4d^3x^3 + \frac{2}{125}b^2c^6d^3x^5 - \frac{22}{5}bcd^3\sqrt{1-c^2x^2}\left(a+b\sin\right.$$

$$= \frac{122}{25}b^2c^2d^3x - \frac{14}{75}b^2c^4d^3x^3 + \frac{2}{125}b^2c^6d^3x^5 - \frac{22}{5}bcd^3\sqrt{1-c^2x^2}\left(a+b\sin\right.$$

$$= \frac{122}{25}b^2c^2d^3x - \frac{14}{75}b^2c^4d^3x^3 + \frac{2}{125}b^2c^6d^3x^5 - \frac{22}{5}bcd^3\sqrt{1-c^2x^2}\left(a+b\sin\right.$$

Mathematica [A] time = 1.28, size = 483, normalized size = 1.47

$$\frac{1}{720}d^3\left(-144a^2c^6x^5 + 720a^2c^4x^3 - 2160a^2c^2x - \frac{720a^2}{x} - 288abc^6x^5\sin^{-1}(cx) + 1440abc^4x^3\sin^{-1}(cx) - \frac{17568}{5}ab\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^3*(a + b*ArcSin[c*x])^2)/x^2,x]
```

```
[Out] (d^3*((-720*a^2)/x - 2160*a^2*c^2*x + 3460*b^2*c^2*x + 720*a^2*c^4*x^3 - 14
4*a^2*c^6*x^5 - (17568*a*b*c*Sqrt[1 - c^2*x^2])/5 + (2016*a*b*c^3*x^2*Sqrt[
1 - c^2*x^2])/5 - (288*a*b*c^5*x^4*Sqrt[1 - c^2*x^2])/5 - (1440*a*b*ArcSin[
c*x])/x - 4320*a*b*c^2*x*ArcSin[c*x] + 1440*a*b*c^4*x^3*ArcSin[c*x] - 288*a
*b*c^6*x^5*ArcSin[c*x] - 3420*b^2*c*Sqrt[1 - c^2*x^2]*ArcSin[c*x] - (720*b^
2*ArcSin[c*x]^2)/x - 1890*b^2*c^2*x*ArcSin[c*x]^2 - 1440*a*b*c*ArcTanh[Sqrt
[1 - c^2*x^2]] + 80*b^2*c^2*x*Cos[2*ArcSin[c*x]] - 360*b^2*c^2*x*ArcSin[c*x
]^2*Cos[2*ArcSin[c*x]] - 90*b^2*c*ArcSin[c*x]*Cos[3*ArcSin[c*x]] - (18*b^2*
c*ArcSin[c*x]*Cos[5*ArcSin[c*x]])/5 + 1440*b^2*c*ArcSin[c*x]*Log[1 - E^(I*A
rcSin[c*x])] - 1440*b^2*c*ArcSin[c*x]*Log[1 + E^(I*ArcSin[c*x])] + (1440*I)
*b^2*c*PolyLog[2, -E^(I*ArcSin[c*x])] - (1440*I)*b^2*c*PolyLog[2, E^(I*ArcS
in[c*x])] - 10*b^2*c*Sin[3*ArcSin[c*x]] + 45*b^2*c*ArcSin[c*x]^2*Sin[3*ArcS
```

```
in[c*x]] + (18*b^2*c*Sin[5*ArcSin[c*x]])/25 - 9*b^2*c*ArcSin[c*x]^2*Sin[5*A
rcSin[c*x]]))/720
```

fricas [F] time = 1.02, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{a^2c^6d^3x^6 - 3\,a^2c^4d^3x^4 + 3\,a^2c^2d^3x^2 - a^2d^3 + \left(b^2c^6d^3x^6 - 3\,b^2c^4d^3x^4 + 3\,b^2c^2d^3x^2 - b^2d^3\right)\arcsin\left(c\right.}{x^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2/x^2,x, algorithm="fricas")
```

```
[Out] integral(-(a^2*c^6*d^3*x^6 - 3*a^2*c^4*d^3*x^4 + 3*a^2*c^2*d^3*x^2 - a^2*d^
3 + (b^2*c^6*d^3*x^6 - 3*b^2*c^4*d^3*x^4 + 3*b^2*c^2*d^3*x^2 - b^2*d^3)*arc
sin(c*x)^2 + 2*(a*b*c^6*d^3*x^6 - 3*a*b*c^4*d^3*x^4 + 3*a*b*c^2*d^3*x^2 - a
*b*d^3)*arcsin(c*x))/x^2, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2/x^2,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.56, size = 524, normalized size = 1.59

$$-\frac{2d^3ab\arcsin(cx)\,c^6x^5}{5}+2d^3ab\arcsin(cx)\,c^4x^3-6d^3ab\arcsin(cx)\,c^2x-\frac{2d^3ab\,c^5x^4\sqrt{-c^2x^2+1}}{25}+\frac{14d^3ab\,c^3x^2\sqrt{}}{25}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2/x^2,x)
```

```
[Out] -2/5*d^3*a*b*arcsin(c*x)*c^6*x^5+2*d^3*a*b*arcsin(c*x)*c^4*x^3-6*d^3*a*b*ar
csin(c*x)*c^2*x-2/25*d^3*a*b*c^5*x^4*(-c^2*x^2+1)^(1/2)+14/25*d^3*a*b*c^3*x
^2*(-c^2*x^2+1)^(1/2)+2*I*b^2*c*d^3*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))-2*
I*b^2*c*d^3*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))+19/4*b^2*c^2*d^3*x-d^3*a^2/
x-2*d^3*a*b*arcsin(c*x)/x-19/8*d^3*b^2*arcsin(c*x)^2*c^2*x-122/25*c*d^3*a*b
*(-c^2*x^2+1)^(1/2)-2*c*d^3*a*b*arctanh(1/(-c^2*x^2+1)^(1/2))-19/4*c*d^3*b^
2*(-c^2*x^2+1)^(1/2)*arcsin(c*x)-2*c*d^3*b^2*arcsin(c*x)*ln(1+I*c*x+(-c^2*x
^2+1)^(1/2))+2*c*d^3*b^2*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))-1/200*c
*d^3*b^2*arcsin(c*x)*cos(5*arcsin(c*x))-1/80*c*d^3*b^2*sin(5*arcsin(c*x))*a
rcsin(c*x)^2-1/8*c*d^3*b^2*arcsin(c*x)*cos(3*arcsin(c*x))-3/16*c*d^3*b^2*ar
csin(c*x)^2*sin(3*arcsin(c*x))-1/5*d^3*a^2*c^6*x^5+d^3*a^2*c^4*x^3-3*d^3*a^
2*c^2*x-d^3*b^2/x*arcsin(c*x)^2+1/1000*c*d^3*b^2*sin(5*arcsin(c*x))+1/24*c*
d^3*b^2*sin(3*arcsin(c*x))
```

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

$$-\frac{1}{5}\,a^2c^6d^3x^5-\frac{2}{75}\left(15\,x^5\arcsin(cx)+\left(\frac{3\,\sqrt{-c^2x^2+1}\,x^4}{c^2}+\frac{4\,\sqrt{-c^2x^2+1}\,x^2}{c^4}+\frac{8\,\sqrt{-c^2x^2+1}}{c^6}\right)c\right)abc^6d^3+a^2c^4d^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2/x^2,x, algorithm="maxima")
```

```
[Out] -1/5*a^2*c^6*d^3*x^5 - 2/75*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4
/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*a*b*c^6*
```

```
d^3 + a^2*c^4*d^3*x^3 + 2/3*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/
c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*c^4*d^3 - 3*b^2*c^2*d^3*x*arcsin(c*x)^
2 + 6*b^2*c^2*d^3*(x - sqrt(-c^2*x^2 + 1)*arcsin(c*x)/c) - 3*a^2*c^2*d^3*x
- 6*(c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*a*b*c*d^3 - 2*(c*log(2*sqrt(-c^2
*x^2 + 1)/abs(x) + 2/abs(x)) + arcsin(c*x)/x)*a*b*d^3 - a^2*d^3/x - 1/5*((b
^2*c^6*d^3*x^6 - 5*b^2*c^4*d^3*x^4 + 5*b^2*d^3)*arctan2(c*x, sqrt(c*x + 1)*
sqrt(-c*x + 1))^2 + 5*x*integrate(2/5*(b^2*c^7*d^3*x^6 - 5*b^2*c^5*d^3*x^4
+ 5*b^2*c*d^3)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt
(-c*x + 1))/(c^2*x^3 - x), x))/x
```

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

$$\int \frac{(a + b\,\mathrm{asin}\,(c\,x))^2\,\left(d - c^2\,d\,x^2\right)^3}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^3)/x^2,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^3)/x^2, x)
```

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

$$-d^3\left(\int 3a^2c^2\,dx + \int\left(-\frac{a^2}{x^2}\right)dx + \int\left(-3a^2c^4x^2\right)dx + \int a^2c^6x^4\,dx + \int 3b^2c^2\,\mathrm{asin}^2\,(cx)\,dx + \int\left(-\frac{b^2\,\mathrm{asin}^2\,(cx)}{x^2}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**3*(a+b*asin(c*x))**2/x**2,x)
```

```
[Out] -d**3*(Integral(3*a**2*c**2, x) + Integral(-a**2/x**2, x) + Integral(-3*a**
2*c**4*x**2, x) + Integral(a**2*c**6*x**4, x) + Integral(3*b**2*c**2*asin(c
*x)**2, x) + Integral(-b**2*asin(c*x)**2/x**2, x) + Integral(6*a*b*c**2*asi
n(c*x), x) + Integral(-2*a*b*asin(c*x)/x**2, x) + Integral(-3*b**2*c**4*x**
2*asin(c*x)**2, x) + Integral(b**2*c**6*x**4*asin(c*x)**2, x) + Integral(-6
*a*b*c**4*x**2*asin(c*x), x) + Integral(2*a*b*c**6*x**4*asin(c*x), x))
```

3.181 $\int \frac{(d-c^2dx^2)^3(a+b\sin^{-1}(cx))^2}{x^3}\,dx$

Optimal. Leaf size=371

$$3ibc^2d^3\text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)-\frac{3}{4}c^2d^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2-\frac{3}{2}c^2d^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(c$$

```
[Out] -21/32*b^2*c^4*d^3*x^2+1/32*b^2*c^6*d^3*x^4-7/8*b*c^3*d^3*x*(-c^2*x^2+1)^(3
/2)*(a+b*arcsin(c*x))-b*c*d^3*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))/x+3/32*c
^2*d^3*(a+b*arcsin(c*x))^2-3/2*c^2*d^3*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2-3/4
*c^2*d^3*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))^2-1/2*d^3*(-c^2*x^2+1)^3*(a+b*arc
sin(c*x))^2/x^2+I*c^2*d^3*(a+b*arcsin(c*x))^3/b-3*c^2*d^3*(a+b*arcsin(c*x))
^2*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))^2)+b^2*c^2*d^3*ln(x)+3*I*b*c^2*d^3*(a+b*
arcsin(c*x))*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)-3/2*b^2*c^2*d^3*polylo
g(3,(I*c*x+(-c^2*x^2+1)^(1/2))^2)+3/16*b*c^3*d^3*x*(a+b*arcsin(c*x))*(-c^2*
x^2+1)^(1/2)
```

Rubi [A] time = 0.72, antiderivative size = 371, normalized size of antiderivative = 1.00, number of steps used = 28, number of rules used = 15, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.556, Rules used = {4695, 4699, 4625, 3717, 2190, 2531, 2282, 6589, 4647, 4641, 30, 4649, 14, 266, 43}

$$3ibc^2d^3\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)-\frac{3}{2}b^2c^2d^3\text{PolyLog}\left(3,e^{2i\sin^{-1}(cx)}\right)-\frac{7}{8}bc^3d^3x\left(1-c^2x^2\right)^{3/2}\left(a+\right.$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^3*(a + b*ArcSin[c*x])^2)/x^3,x]
```

```
[Out] (-21*b^2*c^4*d^3*x^2)/32 + (b^2*c^6*d^3*x^4)/32 + (3*b*c^3*d^3*x*Sqrt[1 - c
^2*x^2]*(a + b*ArcSin[c*x]))/16 - (7*b*c^3*d^3*x*(1 - c^2*x^2)^(3/2)*(a + b
*ArcSin[c*x]))/8 - (b*c*d^3*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x]))/x + (3
*c^2*d^3*(a + b*ArcSin[c*x])^2)/32 - (3*c^2*d^3*(1 - c^2*x^2)*(a + b*ArcSin
[c*x])^2)/2 - (3*c^2*d^3*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x])^2)/4 - (d^3*(1
 - c^2*x^2)^3*(a + b*ArcSin[c*x])^2)/(2*x^2) + (I*c^2*d^3*(a + b*ArcSin[c*x
])^3)/b - 3*c^2*d^3*(a + b*ArcSin[c*x])^2*Log[1 - E^((2*I)*ArcSin[c*x])] +
b^2*c^2*d^3*Log[x] + (3*I)*b*c^2*d^3*(a + b*ArcSin[c*x])*PolyLog[2, E^((2*I
)*ArcSin[c*x])] - (3*b^2*c^2*d^3*PolyLog[3, E^((2*I)*ArcSin[c*x])])/2
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
```

```
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4695

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m +
2)*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPar
t[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f
*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /;
 FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0
] && LtQ[m, -1]
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2}{x^3}\,dx = -\frac{d^3\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2}{2x^2} - \left(3c^2d\right)\int \frac{\left(d-c^2dx^2\right)^2\left(a+b\sin^{-1}(c\right.}{x}$$

$$= -\frac{bcd^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{x} - \frac{3}{4}c^2d^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right.$$

$$= -\frac{7}{8}bc^3d^3x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right) - \frac{bcd^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}\right.}{x}$$

$$= \frac{3}{16}bc^3d^3x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{7}{8}bc^3d^3x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}\right.$$

$$= -\frac{21}{32}b^2c^4d^3x^2 + \frac{1}{32}b^2c^6d^3x^4 + \frac{3}{16}bc^3d^3x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{7}{8}b$$

$$= -\frac{21}{32}b^2c^4d^3x^2 + \frac{1}{32}b^2c^6d^3x^4 + \frac{3}{16}bc^3d^3x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{7}{8}b$$

$$= -\frac{21}{32}b^2c^4d^3x^2 + \frac{1}{32}b^2c^6d^3x^4 + \frac{3}{16}bc^3d^3x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{7}{8}b$$

$$= -\frac{21}{32}b^2c^4d^3x^2 + \frac{1}{32}b^2c^6d^3x^4 + \frac{3}{16}bc^3d^3x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{7}{8}b$$

$$= -\frac{21}{32}b^2c^4d^3x^2 + \frac{1}{32}b^2c^6d^3x^4 + \frac{3}{16}bc^3d^3x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right) - \frac{7}{8}b$$

Mathematica [A] time = 1.32, size = 494, normalized size = 1.33

$$\frac{1}{256}d^3\left(-64a^2c^6x^4 + 384a^2c^4x^2 - 768a^2c^2\log(x) - \frac{128a^2}{x^2} - 128abc^6x^4\sin^{-1}(cx) + 768abc^4x^2\sin^{-1}(cx) + 768iab\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^3*(a + b*ArcSin[c*x])^2)/x^3,x]
```

```
[Out] (d^3*((32*I)*b^2*c^2*Pi^3 - (128*a^2)/x^2 + 384*a^2*c^4*x^2 - 64*a^2*c^6*x^
4 - (256*a*b*c*Sqrt[1 - c^2*x^2])/x + 336*a*b*c^3*x*Sqrt[1 - c^2*x^2] - 32*
a*b*c^5*x^3*Sqrt[1 - c^2*x^2] - 336*a*b*c^2*ArcSin[c*x] - (256*a*b*ArcSin[c
*x])/x^2 + 768*a*b*c^4*x^2*ArcSin[c*x] - 128*a*b*c^6*x^4*ArcSin[c*x] - (256
*b^2*c*Sqrt[1 - c^2*x^2]*ArcSin[c*x])/x + (768*I)*a*b*c^2*ArcSin[c*x]^2 - (
128*b^2*ArcSin[c*x]^2)/x^2 - (256*I)*b^2*c^2*ArcSin[c*x]^3 + 80*b^2*c^2*Cos
[2*ArcSin[c*x]] - 160*b^2*c^2*ArcSin[c*x]^2*Cos[2*ArcSin[c*x]] + b^2*c^2*Co
s[4*ArcSin[c*x]] - 8*b^2*c^2*ArcSin[c*x]^2*Cos[4*ArcSin[c*x]] - 768*b^2*c^2
*ArcSin[c*x]^2*Log[1 - E^((-2*I)*ArcSin[c*x])] - 1536*a*b*c^2*ArcSin[c*x]*L
og[1 - E^((2*I)*ArcSin[c*x])] - 768*a^2*c^2*Log[x] + 256*b^2*c^2*Log[c*x] -
 (768*I)*b^2*c^2*ArcSin[c*x]*PolyLog[2, E^((-2*I)*ArcSin[c*x])] + (768*I)*a
*b*c^2*PolyLog[2, E^((2*I)*ArcSin[c*x])] - 384*b^2*c^2*PolyLog[3, E^((-2*I)
*ArcSin[c*x])] + 160*b^2*c^2*ArcSin[c*x]*Sin[2*ArcSin[c*x]] + 4*b^2*c^2*Arc
Sin[c*x]*Sin[4*ArcSin[c*x]]))/256
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{a^2c^6d^3x^6 - 3\,a^2c^4d^3x^4 + 3\,a^2c^2d^3x^2 - a^2d^3 + \left(b^2c^6d^3x^6 - 3\,b^2c^4d^3x^4 + 3\,b^2c^2d^3x^2 - b^2d^3\right)\arcsin\left(cx\right)^2}{x^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2/x^3,x, algorithm="fricas")
```

```
[Out] integral(-(a^2*c^6*d^3*x^6 - 3*a^2*c^4*d^3*x^4 + 3*a^2*c^2*d^3*x^2 - a^2*d^
3 + (b^2*c^6*d^3*x^6 - 3*b^2*c^4*d^3*x^4 + 3*b^2*c^2*d^3*x^2 - b^2*d^3)*arc
sin(c*x)^2 + 2*(a*b*c^6*d^3*x^6 - 3*a*b*c^4*d^3*x^4 + 3*a*b*c^2*d^3*x^2 - a
*b*d^3)*arcsin(c*x))/x^3, x)
```

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

$$\int -\frac{\left(c^2dx^2-d\right)^3 (b\arcsin(cx)+a)^2}{x^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2/x^3,x, algorithm="giac")
```

```
[Out] integrate(-(c^2*d*x^2 - d)^3*(b*arcsin(c*x) + a)^2/x^3, x)
```

maple [B] time = 1.02, size = 884, normalized size = 2.38

$$-6c^2d^3ab\arcsin(cx)\ln\left(1+icx+\sqrt{-c^2x^2+1}\right)+3ic^2d^3ab\arcsin(cx)^2+6ic^2d^3b^2\arcsin(cx)\,\mathrm{polylog}\left(2, icx+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2/x^3,x)
```

```
[Out] I*c^2*d^3*a*b-1/2*d^3*a^2/x^2-6*c^2*d^3*b^2*polylog(3,I*c*x+(-c^2*x^2+1)^(1
/2))+1/256*c^2*d^3*b^2*cos(4*arcsin(c*x))+3/2*c^4*d^3*a^2*x^2-1/4*c^6*d^3*a
^2*x^4-1/2*d^3*b^2*arcsin(c*x)^2/x^2-6*c^2*d^3*b^2*polylog(3,-I*c*x-(-c^2*x
^2+1)^(1/2))+c^2*d^3*b^2*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-2*c^2*d^3*b^2*ln(I*
c*x+(-c^2*x^2+1)^(1/2))+c^2*d^3*b^2*ln(I*c*x+(-c^2*x^2+1)^(1/2)-1)-5/8*c^2*
d^3*b^2*arcsin(c*x)^2-3*c^2*d^3*a^2*ln(c*x)-5/8*b^2*c^4*d^3*x^2+1/64*c^2*d^
3*a*b*sin(4*arcsin(c*x))+I*c^2*d^3*b^2*arcsin(c*x)^3+I*c^2*d^3*b^2*arcsin(c
*x)-5/4*c^2*d^3*a*b*arcsin(c*x)-3*c^2*d^3*b^2*arcsin(c*x)^2*ln(1+I*c*x+(-c^
2*x^2+1)^(1/2))-3*c^2*d^3*b^2*arcsin(c*x)^2*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))-
1/32*c^2*d^3*b^2*cos(4*arcsin(c*x))*arcsin(c*x)^2+1/64*c^2*d^3*b^2*arcsin(c
*x)*sin(4*arcsin(c*x))-d^3*a*b*arcsin(c*x)/x^2+5/4*c^4*d^3*b^2*arcsin(c*x)^
2*x^2+5/16*d^3*b^2*c^2-1/16*c^2*d^3*a*b*arcsin(c*x)*cos(4*arcsin(c*x))-6*c^
2*d^3*a*b*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))-6*c^2*d^3*a*b*arcsin(c
*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+5/4*c^3*d^3*b^2*(-c^2*x^2+1)^(1/2)*arcsi
n(c*x)*x-c*d^3*b^2*arcsin(c*x)/x*(-c^2*x^2+1)^(1/2)+5/4*c^3*d^3*a*b*(-c^2*x
^2+1)^(1/2)*x+5/2*c^4*d^3*a*b*arcsin(c*x)*x^2-c*d^3*a*b/x*(-c^2*x^2+1)^(1/2
)+6*I*c^2*d^3*b^2*arcsin(c*x)*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))+6*I*c^2*d
^3*b^2*arcsin(c*x)*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))+3*I*c^2*d^3*a*b*arc
sin(c*x)^2+6*I*c^2*d^3*a*b*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))+6*I*c^2*d^3
*a*b*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))
```

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

$$-\frac{1}{4}a^2c^6d^3x^4+\frac{3}{2}a^2c^4d^3x^2-3a^2c^2d^3\log(x)-abd^3\left(\frac{\sqrt{-c^2x^2+1}\,c}{x}+\frac{\arcsin(cx)}{x^2}\right)-\frac{a^2d^3}{2x^2}-\int\frac{\left(b^2c^6d^3x^6-3b^2c^4d^3x\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2/x^3,x, algorithm="maxima")
```

```
[Out] -1/4*a^2*c^6*d^3*x^4 + 3/2*a^2*c^4*d^3*x^2 - 3*a^2*c^2*d^3*log(x) - a*b*d^3
*(sqrt(-c^2*x^2 + 1)*c/x + arcsin(c*x)/x^2) - 1/2*a^2*d^3/x^2 - integrate((
(b^2*c^6*d^3*x^6 - 3*b^2*c^4*d^3*x^4 + 3*b^2*c^2*d^3*x^2 - b^2*d^3)*arctan2
(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c^6*d^3*x^6 - 3*a*b*c^4*d^3*
```

```
x^4 + 3*a*b*c^2*d^3*x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))/x^3, x
)
```

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

$$\int \frac{(a + b\,\mathrm{asin}\,(c\,x))^2\,\left(d - c^2\,d\,x^2\right)^3}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^3)/x^3,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^3)/x^3, x)
```

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

$$-d^3\left(\int \left(-\frac{a^2}{x^3}\right)dx + \int \frac{3a^2c^2}{x}\,dx + \int \left(-3a^2c^4x\right)dx + \int a^2c^6x^3\,dx + \int \left(-\frac{b^2\,\mathrm{asin}^2\,(cx)}{x^3}\right)dx + \int \left(-\frac{2ab\,\mathrm{asin}\,(cx}{x^3}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**3*(a+b*asin(c*x))**2/x**3,x)
```

```
[Out] -d**3*(Integral(-a**2/x**3, x) + Integral(3*a**2*c**2/x, x) + Integral(-3*a
**2*c**4*x, x) + Integral(a**2*c**6*x**3, x) + Integral(-b**2*asin(c*x)**2/
x**3, x) + Integral(-2*a*b*asin(c*x)/x**3, x) + Integral(3*b**2*c**2*asin(c
*x)**2/x, x) + Integral(-3*b**2*c**4*x*asin(c*x)**2, x) + Integral(b**2*c**
6*x**3*asin(c*x)**2, x) + Integral(6*a*b*c**2*asin(c*x)/x, x) + Integral(-6
*a*b*c**4*x*asin(c*x), x) + Integral(2*a*b*c**6*x**3*asin(c*x), x))
```

3.182 $\int \frac{\left(d-c^2dx^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2}{x^4}\,dx$

Optimal. Leaf size=348

$$\frac{16}{3}c^4d^3x\left(a+b\sin^{-1}(cx)\right)^2+\frac{34}{3}bc^3d^3\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)+\frac{2c^2d^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{x}$$

```
[Out] -1/3*b^2*c^2*d^3/x-50/9*b^2*c^4*d^3*x+2/27*b^2*c^6*d^3*x^3-1/9*b*c^3*d^3*(-
c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))-1/3*b*c*d^3*(-c^2*x^2+1)^(5/2)*(a+b*arcs
in(c*x))/x^2+16/3*c^4*d^3*x*(a+b*arcsin(c*x))^2+8/3*c^4*d^3*x*(-c^2*x^2+1)*
(a+b*arcsin(c*x))^2+2*c^2*d^3*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))^2/x-1/3*d^3*
(-c^2*x^2+1)^3*(a+b*arcsin(c*x))^2/x^3+34/3*b*c^3*d^3*(a+b*arcsin(c*x))*arc
tanh(I*c*x+(-c^2*x^2+1)^(1/2))-17/3*I*b^2*c^3*d^3*polylog(2,-I*c*x-(-c^2*x^
2+1)^(1/2))+17/3*I*b^2*c^3*d^3*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))+5*b*c^3*
d^3*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.98, antiderivative size = 348, normalized size of antiderivative = 1.00, number of steps used = 31, number of rules used = 12, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {4695, 4649, 4619, 4677, 8, 4699, 4697, 4709, 4183, 2279, 2391, 270}

$$-\frac{17}{3}ib^2c^3d^3\text{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)+\frac{17}{3}ib^2c^3d^3\text{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)+\frac{8}{3}c^4d^3x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2-\frac{1}{9}$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^3*(a + b*ArcSin[c*x])^2)/x^4,x]
```

```
[Out] -(b^2*c^2*d^3)/(3*x) - (50*b^2*c^4*d^3*x)/9 + (2*b^2*c^6*d^3*x^3)/27 + 5*b*
c^3*d^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]) - (b*c^3*d^3*(1 - c^2*x^2)^(3
/2)*(a + b*ArcSin[c*x]))/9 - (b*c*d^3*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x
]))/(3*x^2) + (16*c^4*d^3*x*(a + b*ArcSin[c*x])^2)/3 + (8*c^4*d^3*x*(1 - c^
2*x^2)*(a + b*ArcSin[c*x])^2)/3 + (2*c^2*d^3*(1 - c^2*x^2)^2*(a + b*ArcSin[
c*x])^2)/x - (d^3*(1 - c^2*x^2)^3*(a + b*ArcSin[c*x])^2)/(3*x^3) + (34*b*c^
3*d^3*(a + b*ArcSin[c*x])*ArcTanh[E^(I*ArcSin[c*x])])/3 - ((17*I)/3)*b^2*c^
3*d^3*PolyLog[2, -E^(I*ArcSin[c*x])] + ((17*I)/3)*b^2*c^3*d^3*PolyLog[2, E^
(I*ArcSin[c*x])]
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4619

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

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4695

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m +
2)*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPar
t[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f
*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /;
 FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0
] && LtQ[m, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
```

```
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2}{x^4}\,dx = -\frac{d^3\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2}{3x^3} - \left(2c^2d\right)\int \frac{\left(d-c^2dx^2\right)^2\left(a+b\sin\right.}{x^2}$$

$$= -\frac{bcd^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{3x^2} + \frac{2c^2d^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(\right.}{x}$$

$$= -\frac{17}{9}bc^3d^3\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right) - \frac{bcd^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin\right.}{3x^2}$$

$$= -\frac{b^2c^2d^3}{3x} + \frac{11}{9}b^2c^4d^3x - \frac{14}{27}b^2c^6d^3x^3 - \frac{17}{3}bc^3d^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}\right.$$

$$= -\frac{b^2c^2d^3}{3x} + \frac{46}{9}b^2c^4d^3x + \frac{2}{27}b^2c^6d^3x^3 + 5bc^3d^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(\right.$$

$$= -\frac{b^2c^2d^3}{3x} - \frac{50}{9}b^2c^4d^3x + \frac{2}{27}b^2c^6d^3x^3 + 5bc^3d^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(\right.$$

$$= -\frac{b^2c^2d^3}{3x} - \frac{50}{9}b^2c^4d^3x + \frac{2}{27}b^2c^6d^3x^3 + 5bc^3d^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(\right.$$

$$= -\frac{b^2c^2d^3}{3x} - \frac{50}{9}b^2c^4d^3x + \frac{2}{27}b^2c^6d^3x^3 + 5bc^3d^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(\right.$$

Mathematica [A] time = 1.04, size = 480, normalized size = 1.38

$$-\frac{d^3\left(9a^2c^6x^6 - 81a^2c^4x^4 - 81a^2c^2x^2 + 9a^2 + 18abc^6x^6\sin^{-1}(cx) - 162abc^4x^4\sin^{-1}(cx) + 9abcx\sqrt{1-c^2x^2} - 16\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^3*(a + b*ArcSin[c*x])^2)/x^4,x]
```

```
[Out] -1/27*(d^3*(9*a^2 - 81*a^2*c^2*x^2 + 9*b^2*c^2*x^2 - 81*a^2*c^4*x^4 + 150*b
^2*c^4*x^4 + 9*a^2*c^6*x^6 - 2*b^2*c^6*x^6 + 9*a*b*c*x*Sqrt[1 - c^2*x^2] -
150*a*b*c^3*x^3*Sqrt[1 - c^2*x^2] + 6*a*b*c^5*x^5*Sqrt[1 - c^2*x^2] + 18*a*
b*ArcSin[c*x] - 162*a*b*c^2*x^2*ArcSin[c*x] - 162*a*b*c^4*x^4*ArcSin[c*x] +
 18*a*b*c^6*x^6*ArcSin[c*x] + 9*b^2*c*x*Sqrt[1 - c^2*x^2]*ArcSin[c*x] - 150
*b^2*c^3*x^3*Sqrt[1 - c^2*x^2]*ArcSin[c*x] + 6*b^2*c^5*x^5*Sqrt[1 - c^2*x^2
]*ArcSin[c*x] + 9*b^2*ArcSin[c*x]^2 - 81*b^2*c^2*x^2*ArcSin[c*x]^2 - 81*b^2
*c^4*x^4*ArcSin[c*x]^2 + 9*b^2*c^6*x^6*ArcSin[c*x]^2 - 153*a*b*c^3*x^3*ArcT
anh[Sqrt[1 - c^2*x^2]] + 153*b^2*c^3*x^3*ArcSin[c*x]*Log[1 - E^(I*ArcSin[c*
x])] - 153*b^2*c^3*x^3*ArcSin[c*x]*Log[1 + E^(I*ArcSin[c*x])] + (153*I)*b^2
```

```
*c^3*x^3*PolyLog[2, -E^(I*ArcSin[c*x])] - (153*I)*b^2*c^3*x^3*PolyLog[2, E^
(I*ArcSin[c*x])]))/x^3
```

fricas [F] time = 0.73, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{a^2c^6d^3x^6 - 3\,a^2c^4d^3x^4 + 3\,a^2c^2d^3x^2 - a^2d^3 + \left(b^2c^6d^3x^6 - 3\,b^2c^4d^3x^4 + 3\,b^2c^2d^3x^2 - b^2d^3\right)\arcsin\left(cx\right)^2}{x^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2/x^4,x, algorithm="fricas")
```

```
[Out] integral(-(a^2*c^6*d^3*x^6 - 3*a^2*c^4*d^3*x^4 + 3*a^2*c^2*d^3*x^2 - a^2*d^
3 + (b^2*c^6*d^3*x^6 - 3*b^2*c^4*d^3*x^4 + 3*b^2*c^2*d^3*x^2 - b^2*d^3)*arc
sin(c*x)^2 + 2*(a*b*c^6*d^3*x^6 - 3*a*b*c^4*d^3*x^4 + 3*a*b*c^2*d^3*x^2 - a
*b*d^3)*arcsin(c*x))/x^4, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2/x^4,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.89, size = 547, normalized size = 1.57

$$\frac{3c^2d^3b^2\arcsin\left(cx\right)^2}{x}-\frac{c^6d^3b^2\arcsin\left(cx\right)^2x^3}{3}+\frac{50c^3d^3ab\sqrt{-c^2x^2+1}}{9}+\frac{50c^3d^3b^2\sqrt{-c^2x^2+1}\,\arcsin\left(cx\right)}{9}+3c^4d^3b^2\,\mathrm{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2/x^4,x)
```

```
[Out] 3*c^2*d^3*b^2/x*arcsin(c*x)^2-1/3*c^6*d^3*b^2*arcsin(c*x)^2*x^3+50/9*c^3*d^
3*a*b*(-c^2*x^2+1)^(1/2)+17/3*c^3*d^3*a*b*arctanh(1/(-c^2*x^2+1)^(1/2))+50/
9*c^3*d^3*b^2*(-c^2*x^2+1)^(1/2)*arcsin(c*x)+3*c^4*d^3*b^2*arcsin(c*x)^2*x-
17/3*I*b^2*c^3*d^3*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))+17/3*I*b^2*c^3*d^3*
polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))-1/3*c^6*d^3*a^2*x^3+3*c^4*d^3*a^2*x+3*c
^2*d^3*a^2/x-1/3*d^3*b^2/x^3*arcsin(c*x)^2-1/3*b^2*c^2*d^3/x-50/9*b^2*c^4*d
^3*x+2/27*b^2*c^6*d^3*x^3-1/3*d^3*a^2/x^3+17/3*c^3*d^3*b^2*arcsin(c*x)*ln(1
+I*c*x+(-c^2*x^2+1)^(1/2))-17/3*c^3*d^3*b^2*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^
2+1)^(1/2))-2/3*d^3*a*b*arcsin(c*x)/x^3-2/9*c^5*d^3*b^2*arcsin(c*x)*(-c^2*x
^2+1)^(1/2)*x^2-2/3*c^6*d^3*a*b*arcsin(c*x)*x^3+6*c^4*d^3*a*b*arcsin(c*x)*x
+6*c^2*d^3*a*b*arcsin(c*x)/x-2/9*c^5*d^3*a*b*x^2*(-c^2*x^2+1)^(1/2)-1/3*c*d
^3*a*b/x^2*(-c^2*x^2+1)^(1/2)-1/3*c*d^3*b^2/x^2*(-c^2*x^2+1)^(1/2)*arcsin(c
*x)
```

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

$$-\frac{1}{3}a^2c^6d^3x^3-\frac{2}{9}\left(3\,x^3\arcsin\left(cx\right)+c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2}+\frac{2\sqrt{-c^2x^2+1}}{c^4}\right)\right)abc^6d^3+3\,b^2c^4d^3x\arcsin\left(cx\right)^2-6\,b^2c^4d^3\left(x\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2/x^4,x, algorithm="maxima")
```

```
[Out] -1/3*a^2*c^6*d^3*x^3 - 2/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c
^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*c^6*d^3 + 3*b^2*c^4*d^3*x*arcsin(c*x)^2
```

```
 - 6*b^2*c^4*d^3*(x - sqrt(-c^2*x^2 + 1)*arcsin(c*x)/c) + 3*a^2*c^4*d^3*x +
 6*(c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*a*b*c^3*d^3 + 6*(c*log(2*sqrt(-c^
2*x^2 + 1)/abs(x) + 2/abs(x)) + arcsin(c*x)/x)*a*b*c^2*d^3 - 1/3*((c^2*log(
2*sqrt(-c^2*x^2 + 1)/abs(x) + 2/abs(x)) + sqrt(-c^2*x^2 + 1)/x^2)*c + 2*arc
sin(c*x)/x^3)*a*b*d^3 + 3*a^2*c^2*d^3/x - 1/3*a^2*d^3/x^3 - 1/3*(3*x^3*inte
grate(2/3*(b^2*c^7*d^3*x^6 - 9*b^2*c^3*d^3*x^2 + b^2*c*d^3)*sqrt(c*x + 1)*s
qrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^2*x^5 - x^3), x
) + (b^2*c^6*d^3*x^6 - 9*b^2*c^2*d^3*x^2 + b^2*d^3)*arctan2(c*x, sqrt(c*x +
 1)*sqrt(-c*x + 1))^2)/x^3
```

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

$$\int \frac{(a + b\,\mathrm{asin}\,(c\,x))^2 \left(d - c^2\,d\,x^2\right)^3}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^3)/x^4,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^3)/x^4, x)
```

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

$$-d^3 \left(\int \left(-3a^2c^4\right)\,dx + \int \left(-\frac{a^2}{x^4}\right)\,dx + \int \frac{3a^2c^2}{x^2}\,dx + \int a^2c^6x^2\,dx + \int \left(-3b^2c^4\,\mathrm{asin}^2\,(cx)\right)\,dx + \int \left(-\frac{b^2\,\mathrm{asin}^2}{x^4}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**3*(a+b*asin(c*x))**2/x**4,x)
```

```
[Out] -d**3*(Integral(-3*a**2*c**4, x) + Integral(-a**2/x**4, x) + Integral(3*a**
2*c**2/x**2, x) + Integral(a**2*c**6*x**2, x) + Integral(-3*b**2*c**4*asin(
c*x)**2, x) + Integral(-b**2*asin(c*x)**2/x**4, x) + Integral(-6*a*b*c**4*a
sin(c*x), x) + Integral(-2*a*b*asin(c*x)/x**4, x) + Integral(3*b**2*c**2*as
in(c*x)**2/x**2, x) + Integral(b**2*c**6*x**2*asin(c*x)**2, x) + Integral(6
*a*b*c**2*asin(c*x)/x**2, x) + Integral(2*a*b*c**6*x**2*asin(c*x), x))
```

3.183 $\int \frac{x^4(a+b\sin^{-1}(cx))^2}{d-c^2dx^2}\,dx$

Optimal. Leaf size=297

$$\frac{2ib\mathrm{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^5d}-\frac{2ib\mathrm{Li}_2\left(ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^5d}-\frac{2i\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^5d}$$

```
[Out] 22/9*b^2*x/c^4/d+2/27*b^2*x^3/c^2/d-x*(a+b*arcsin(c*x))^2/c^4/d-1/3*x^3*(a+
b*arcsin(c*x))^2/c^2/d-2*I*(a+b*arcsin(c*x))^2*arctan(I*c*x+(-c^2*x^2+1)^(1
/2))/c^5/d+2*I*b*(a+b*arcsin(c*x))*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))
/c^5/d-2*I*b*(a+b*arcsin(c*x))*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c^5/
d-2*b^2*polylog(3,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c^5/d+2*b^2*polylog(3,I*(I
*c*x+(-c^2*x^2+1)^(1/2)))/c^5/d-22/9*b*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)
/c^5/d-2/9*b*x^2*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3/d
```

Rubi [A] time = 0.55, antiderivative size = 297, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 10, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.370$, Rules used = {4715, 4657, 4181, 2531, 2282, 6589, 4677, 8, 4707, 30}

$$\frac{2ib\,\mathrm{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^5d}-\frac{2ib\,\mathrm{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^5d}-\frac{2b^2\mathrm{PolyLog}\left(3,-ie^{i}\right.}{c^5d}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2),x]
```

```
[Out] (22*b^2*x)/(9*c^4*d) + (2*b^2*x^3)/(27*c^2*d) - (22*b*Sqrt[1 - c^2*x^2]*(a
+ b*ArcSin[c*x]))/(9*c^5*d) - (2*b*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]
))/(9*c^3*d) - (x*(a + b*ArcSin[c*x])^2)/(c^4*d) - (x^3*(a + b*ArcSin[c*x])
^2)/(3*c^2*d) - ((2*I)*(a + b*ArcSin[c*x])^2*ArcTan[E^(I*ArcSin[c*x])])/(c^
5*d) + ((2*I)*b*(a + b*ArcSin[c*x])*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(c^
5*d) - ((2*I)*b*(a + b*ArcSin[c*x])*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c^5*d
) - (2*b^2*PolyLog[3, (-I)*E^(I*ArcSin[c*x])])/(c^5*d) + (2*b^2*PolyLog[3,
I*E^(I*ArcSin[c*x])])/(c^5*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
```

```
, g, n}, x] && GtQ[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(e*(m + 2*p + 1)), x] + (Dist[(f^2*(m - 1))/(c^2*(m + 2*
p + 1)), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(c*(m + 2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c
*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e,
0] && GtQ[n, 0] && GtQ[m, 1] && NeQ[m + 2*p + 1, 0] && IntegerQ[m]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^4 \left(a+b\sin^{-1}(cx)\right)^2}{d-c^2dx^2}\,dx = -\frac{x^3 \left(a+b\sin^{-1}(cx)\right)^2}{3c^2d} + \frac{\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{d-c^2dx^2}\,dx}{c^2} + \frac{(2b)\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx}{3cd}$$

$$= -\frac{2bx^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{9c^3d} - \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{c^4d} - \frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d} +$$

$$= \frac{2b^2x^3}{27c^2d} - \frac{22b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{9c^5d} - \frac{2bx^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{9c^3d} - \frac{x\left(a\right.}{}$$

$$= \frac{22b^2x}{9c^4d} + \frac{2b^2x^3}{27c^2d} - \frac{22b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{9c^5d} - \frac{2bx^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx\right.}{9c^3d}$$

$$= \frac{22b^2x}{9c^4d} + \frac{2b^2x^3}{27c^2d} - \frac{22b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{9c^5d} - \frac{2bx^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx\right.}{9c^3d}$$

$$= \frac{22b^2x}{9c^4d} + \frac{2b^2x^3}{27c^2d} - \frac{22b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{9c^5d} - \frac{2bx^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx\right.}{9c^3d}$$

$$= \frac{22b^2x}{9c^4d} + \frac{2b^2x^3}{27c^2d} - \frac{22b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{9c^5d} - \frac{2bx^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx\right.}{9c^3d}$$

Mathematica [A] time = 0.85, size = 508, normalized size = 1.71

$$-\frac{36a^2c^3x^3+108a^2cx+54a^2\log(1-cx)-54a^2\log(cx+1)+72abc^3x^3\sin^{-1}(cx)+24abc^2x^2\sqrt{1-c^2x^2}+264ab}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^4*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2),x]
```

```
[Out] -1/108*(108*a^2*c*x - 270*b^2*c*x + 36*a^2*c^3*x^3 + 264*a*b*Sqrt[1 - c^2*x
^2] + 24*a*b*c^2*x^2*Sqrt[1 - c^2*x^2] + (108*I)*a*b*Pi*ArcSin[c*x] + 216*a
*b*c*x*ArcSin[c*x] + 72*a*b*c^3*x^3*ArcSin[c*x] + 270*b^2*Sqrt[1 - c^2*x^2]
*ArcSin[c*x] + 135*b^2*c*x*ArcSin[c*x]^2 - 6*b^2*ArcSin[c*x]*Cos[3*ArcSin[c
*x]] - 108*a*b*Pi*Log[1 - I*E^(I*ArcSin[c*x])] - 216*a*b*ArcSin[c*x]*Log[1
- I*E^(I*ArcSin[c*x])] - 108*b^2*ArcSin[c*x]^2*Log[1 - I*E^(I*ArcSin[c*x])]
 - 108*a*b*Pi*Log[1 + I*E^(I*ArcSin[c*x])] + 216*a*b*ArcSin[c*x]*Log[1 + I*
E^(I*ArcSin[c*x])] + 108*b^2*ArcSin[c*x]^2*Log[1 + I*E^(I*ArcSin[c*x])] + 5
4*a^2*Log[1 - c*x] - 54*a^2*Log[1 + c*x] + 108*a*b*Pi*Log[-Cos[(Pi + 2*ArcS
in[c*x])/4]] + 108*a*b*Pi*Log[Sin[(Pi + 2*ArcSin[c*x])/4]] - (216*I)*b*(a +
 b*ArcSin[c*x])*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] + (216*I)*b*(a + b*ArcSi
n[c*x])*PolyLog[2, I*E^(I*ArcSin[c*x])] + 216*b^2*PolyLog[3, (-I)*E^(I*ArcS
in[c*x])] - 216*b^2*PolyLog[3, I*E^(I*ArcSin[c*x])] + 2*b^2*Sin[3*ArcSin[c*
x]] - 9*b^2*ArcSin[c*x]^2*Sin[3*ArcSin[c*x]])/(c^5*d)
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{b^2x^4\arcsin(cx)^2+2\,abx^4\arcsin(cx)+a^2x^4}{c^2dx^2-d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x, algorithm="fricas")
```

```
[Out] integral(-(b^2*x^4*arcsin(c*x)^2 + 2*a*b*x^4*arcsin(c*x) + a^2*x^4)/(c^2*d*
x^2 - d), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x, algorithm="giac")
[Out] Timed out
```

maple [F] time = 0.58, size = 0, normalized size = 0.00

$$\int \frac{x^{4} \left(a +b \arcsin \left(c x \right)\right)^{2}}{-c^{2} d \,x^{2}+d}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x)
[Out] int(x^4*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x)
```

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

$$-\frac{1}{6} a^{2} \left(\frac{2 \left(c^{2} x^{3}+3 x\right)}{c^{4} d}-\frac{3 \log \left(c x+1\right)}{c^{5} d}+\frac{3 \log \left(c x-1\right)}{c^{5} d}\right)+\frac{-2 c^{5} d \int \frac{6 abc^{4} x^{4} \arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)-\left(3 b^{2} \arctan\left(cx, \sqrt{c}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x, algorithm="maxima")
[Out] -1/6*a^2*(2*(c^2*x^3 + 3*x)/(c^4*d) - 3*log(c*x + 1)/(c^5*d) + 3*log(c*x -
1)/(c^5*d)) + 1/6*(6*c^5*d*integrate(-1/3*(6*a*b*c^4*x^4*arctan2(c*x, sqrt(
c*x + 1)*sqrt(-c*x + 1)) - (3*b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)
)*log(c*x + 1) - 3*b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(-c*x
+ 1) - 2*(b^2*c^3*x^3 + 3*b^2*c*x)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1
)))*sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^6*d*x^2 - c^4*d), x) + 3*b^2*arctan2(c
*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2*log(c*x + 1) - 3*b^2*arctan2(c*x, sqrt(
c*x + 1)*sqrt(-c*x + 1))^2*log(-c*x + 1) - 2*(b^2*c^3*x^3 + 3*b^2*c*x)*arct
an2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2)/(c^5*d)
```

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

$$\int \frac{x^4\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{d-c^2\,d\,x^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(a + b*asin(c*x))^2)/(d - c^2*d*x^2),x)
[Out] int((x^4*(a + b*asin(c*x))^2)/(d - c^2*d*x^2), x)
```

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

$$-\frac{\int \frac{a^{2} x^{4}}{c^{2} x^{2} - 1}\, dx + \int \frac{b^{2} x^{4} \operatorname{asin}^{2}{\left(c x \right)}}{c^{2} x^{2} - 1}\, dx + \int \frac{2 a b x^{4} \operatorname{asin}{\left(c x \right)}}{c^{2} x^{2} - 1}\, dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*asin(c*x))**2/(-c**2*d*x**2+d),x)
[Out] -(Integral(a**2*x**4/(c**2*x**2 - 1), x) + Integral(b**2*x**4*asin(c*x)**2/
(c**2*x**2 - 1), x) + Integral(2*a*b*x**4*asin(c*x)/(c**2*x**2 - 1), x))/d
```

3.184 $\int \frac{x^3 (a+b\sin^{-1}(cx))^2}{d-c^2dx^2}\,dx$

Optimal. Leaf size=210

$$\frac{ib\text{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^4d}+\frac{i\left(a+b\sin^{-1}(cx)\right)^3}{3bc^4d}+\frac{\left(a+b\sin^{-1}(cx)\right)^2}{4c^4d}-\frac{\log\left(1+e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(c\right.}{c^4d}$$

```
[Out] 1/4*b^2*x^2/c^2/d+1/4*(a+b*arcsin(c*x))^2/c^4/d-1/2*x^2*(a+b*arcsin(c*x))^2
/c^2/d+1/3*I*(a+b*arcsin(c*x))^3/b/c^4/d-(a+b*arcsin(c*x))^2*ln(1+(I*c*x+(-
c^2*x^2+1)^(1/2))^2)/c^4/d+I*b*(a+b*arcsin(c*x))*polylog(2,-(I*c*x+(-c^2*x^
2+1)^(1/2))^2)/c^4/d-1/2*b^2*polylog(3,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c^4/d
-1/2*b*x*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3/d
```

Rubi [A] time = 0.38, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 10, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.370, Rules used = {4715, 4675, 3719, 2190, 2531, 2282, 6589, 4707, 4641, 30}

$$\frac{ib\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^4d}-\frac{b^2\text{PolyLog}\left(3,-e^{2i\sin^{-1}(cx)}\right)}{2c^4d}-\frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d}-\frac{bx\sqrt{1-c^2x^2}\left(a\right.}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2),x]
```

```
[Out] (b^2*x^2)/(4*c^2*d) - (b*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(2*c^3*d)
 + (a + b*ArcSin[c*x])^2/(4*c^4*d) - (x^2*(a + b*ArcSin[c*x])^2)/(2*c^2*d)
+ ((I/3)*(a + b*ArcSin[c*x])^3)/(b*c^4*d) - ((a + b*ArcSin[c*x])^2*Log[1 +
E^((2*I)*ArcSin[c*x])])/(c^4*d) + (I*b*(a + b*ArcSin[c*x])*PolyLog[2, -E^((
2*I)*ArcSin[c*x])])/(c^4*d) - (b^2*PolyLog[3, -E^((2*I)*ArcSin[c*x])])/(2*c
^4*d)
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
```

```
, g, n}, x] && GtQ[m, 0]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(e*(m + 2*p + 1)), x] + (Dist[(f^2*(m - 1))/(c^2*(m + 2*
p + 1)), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(c*(m + 2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c
*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e,
0] && GtQ[n, 0] && GtQ[m, 1] && NeQ[m + 2*p + 1, 0] && IntegerQ[m]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{d-c^2dx^2}\,dx = -\frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d} + \frac{\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{d-c^2dx^2}dx}{c^2} + \frac{b\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}dx}{cd}$$

$$= -\frac{bx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c^3d} - \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d} + \frac{\text{Subst}\left(\int (a+bx)^2\tan(x\right.}{c^4d}$$

$$= \frac{b^2x^2}{4c^2d} - \frac{bx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c^3d} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{4c^4d} - \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d}$$

$$= \frac{b^2x^2}{4c^2d} - \frac{bx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c^3d} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{4c^4d} - \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d}$$

$$= \frac{b^2x^2}{4c^2d} - \frac{bx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c^3d} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{4c^4d} - \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d}$$

$$= \frac{b^2x^2}{4c^2d} - \frac{bx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c^3d} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{4c^4d} - \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d}$$

$$= \frac{b^2x^2}{4c^2d} - \frac{bx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c^3d} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{4c^4d} - \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d}$$

Mathematica [B] time = 0.40, size = 441, normalized size = 2.10

$$-\frac{12a^2c^2x^2 + 12a^2\log\left(1-c^2x^2\right) + 12abcx\sqrt{1-c^2x^2} + 24abc^2x^2\sin^{-1}(cx) - 48iab\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right) - 48iab\text{Li}_2\left(ie\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^3*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2),x]
```

```
[Out] -1/24*(12*a^2*c^2*x^2 + 12*a*b*c*x*Sqrt[1 - c^2*x^2] - 12*a*b*ArcSin[c*x] +
 (48*I)*a*b*Pi*ArcSin[c*x] + 24*a*b*c^2*x^2*ArcSin[c*x] - (24*I)*a*b*ArcSin
[c*x]^2 - (8*I)*b^2*ArcSin[c*x]^3 + 3*b^2*Cos[2*ArcSin[c*x]] - 6*b^2*ArcSin
[c*x]^2*Cos[2*ArcSin[c*x]] + 96*a*b*Pi*Log[1 + E^((-I)*ArcSin[c*x])] + 24*a
*b*Pi*Log[1 - I*E^(I*ArcSin[c*x])] + 48*a*b*ArcSin[c*x]*Log[1 - I*E^(I*ArcS
in[c*x])] - 24*a*b*Pi*Log[1 + I*E^(I*ArcSin[c*x])] + 48*a*b*ArcSin[c*x]*Log
[1 + I*E^(I*ArcSin[c*x])] + 24*b^2*ArcSin[c*x]^2*Log[1 + E^((2*I)*ArcSin[c*
x])] + 12*a^2*Log[1 - c^2*x^2] - 96*a*b*Pi*Log[Cos[ArcSin[c*x]/2]] + 24*a*b
*Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] - 24*a*b*Pi*Log[Sin[(Pi + 2*ArcSin[c*
x])/4]] - (48*I)*a*b*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] - (48*I)*a*b*PolyLo
g[2, I*E^(I*ArcSin[c*x])] - (24*I)*b^2*ArcSin[c*x]*PolyLog[2, -E^((2*I)*Arc
Sin[c*x])] + 12*b^2*PolyLog[3, -E^((2*I)*ArcSin[c*x])] + 6*b^2*ArcSin[c*x]*
Sin[2*ArcSin[c*x]])/(c^4*d)
```

fricas [F] time = 1.15, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{b^2x^3\arcsin(cx)^2 + 2\,abx^3\arcsin(cx) + a^2x^3}{c^2dx^2-d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x, algorithm="fricas")
```

```
[Out] integral(-(b^2*x^3*arcsin(c*x)^2 + 2*a*b*x^3*arcsin(c*x) + a^2*x^3)/(c^2*d*
x^2 - d), x)
```

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

$$\int -\frac{(b\arcsin(cx)+a)^2x^3}{c^2dx^2-d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)^2*x^3/(c^2*d*x^2 - d), x)
```

maple [A] time = 0.26, size = 416, normalized size = 1.98

$$-\frac{a^2x^2}{2c^2d}-\frac{a^2\ln(cx-1)}{2c^4d}-\frac{a^2\ln(cx+1)}{2c^4d}+\frac{iab\arcsin(cx)^2}{c^4d}-\frac{b^2\sqrt{-c^2x^2+1}\,\arcsin(cx)\,x}{2c^3d}-\frac{b^2\arcsin(cx)^2x^2}{2c^2d}+\frac{b^2\text{ar}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x)
```

```
[Out] -1/2/c^2*a^2/d*x^2-1/2/c^4*a^2/d*ln(c*x-1)-1/2/c^4*a^2/d*ln(c*x+1)+I/c^4*a*
b/d*arcsin(c*x)^2-1/2/c^3*b^2/d*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x-1/2/c^2*b^
2/d*arcsin(c*x)^2*x^2+1/4/c^4*b^2/d*arcsin(c*x)^2+1/4*b^2*x^2/c^2/d-1/8/c^4
*b^2/d-1/c^4*b^2/d*arcsin(c*x)^2*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)+I/c^4*a
*b/d*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)-1/2*b^2*polylog(3,-(I*c*x+(-c
^2*x^2+1)^(1/2))^2)/c^4/d+1/3*I/c^4*b^2/d*arcsin(c*x)^3-1/2/c^3*a*b/d*(-c^2
*x^2+1)^(1/2)*x-1/c^2*a*b/d*arcsin(c*x)*x^2+1/2/c^4*a*b/d*arcsin(c*x)-2/c^4
*a*b/d*arcsin(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)+I/c^4*b^2/d*arcsin(c*
x)*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{x^3\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{d-c^2\,d\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*asin(c*x))^2)/(d - c^2*d*x^2),x)
```

```
[Out] int((x^3*(a + b*asin(c*x))^2)/(d - c^2*d*x^2), x)
```

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

$$-\frac{\int \frac{a^2x^3}{c^2x^2-1}\,dx+\int \frac{b^2x^3\operatorname{asin}^2(cx)}{c^2x^2-1}\,dx+\int \frac{2abx^3\operatorname{asin}(cx)}{c^2x^2-1}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*asin(c*x))**2/(-c**2*d*x**2+d),x)
```

```
[Out] -(Integral(a**2*x**3/(c**2*x**2 - 1), x) + Integral(b**2*x**3*asin(c*x)**2/
(c**2*x**2 - 1), x) + Integral(2*a*b*x**3*asin(c*x)/(c**2*x**2 - 1), x))/d
```

3.185 $\int \frac{x^2\left(a+b \sin^{-1}(cx)\right)^2}{d-c^2dx^2}\,dx$

Optimal. Leaf size=218

$$\frac{2ib\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^3d}-\frac{2ib\text{Li}_2\left(ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^3d}-\frac{2i\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^3d}$$

```
[Out] 2*b^2*x/c^2/d-x*(a+b*arcsin(c*x))^2/c^2/d-2*I*(a+b*arcsin(c*x))^2*arctan(I*
c*x+(-c^2*x^2+1)^(1/2))/c^3/d+2*I*b*(a+b*arcsin(c*x))*polylog(2,-I*(I*c*x+(
-c^2*x^2+1)^(1/2)))/c^3/d-2*I*b*(a+b*arcsin(c*x))*polylog(2,I*(I*c*x+(-c^2*
x^2+1)^(1/2)))/c^3/d-2*b^2*polylog(3,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c^3/d+2
*b^2*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c^3/d-2*b*(a+b*arcsin(c*x))*(-
c^2*x^2+1)^(1/2)/c^3/d
```

Rubi [A] time = 0.29, antiderivative size = 218, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.296, Rules used = {4715, 4657, 4181, 2531, 2282, 6589, 4677, 8}

$$\frac{2ib\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^3d}-\frac{2ib\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^3d}-\frac{2b^2\text{PolyLog}\left(3,-ie^{i}\right.}{c^3d}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2),x]
```

```
[Out] (2*b^2*x)/(c^2*d) - (2*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(c^3*d) - (
x*(a + b*ArcSin[c*x])^2)/(c^2*d) - ((2*I)*(a + b*ArcSin[c*x])^2*ArcTan[E^(I
*ArcSin[c*x])])/(c^3*d) + ((2*I)*b*(a + b*ArcSin[c*x])*PolyLog[2, (-I)*E^(I
*ArcSin[c*x])])/(c^3*d) - ((2*I)*b*(a + b*ArcSin[c*x])*PolyLog[2, I*E^(I*Ar
cSin[c*x])])/(c^3*d) - (2*b^2*PolyLog[3, (-I)*E^(I*ArcSin[c*x])])/(c^3*d) +
 (2*b^2*PolyLog[3, I*E^(I*ArcSin[c*x])])/(c^3*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
```

```
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(e*(m + 2*p + 1)), x] + (Dist[(f^2*(m - 1))/(c^2*(m + 2*
p + 1)), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(c*(m + 2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c
*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e,
0] && GtQ[n, 0] && GtQ[m, 1] && NeQ[m + 2*p + 1, 0] && IntegerQ[m]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{d-c^2dx^2}\,dx &= -\frac{x\left(a+b\sin^{-1}(cx)\right)^2}{c^2d}+\frac{\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d-c^2dx^2}\,dx}{c^2}+\frac{(2b)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx}{cd}\\
&= -\frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c^3d}-\frac{x\left(a+b\sin^{-1}(cx)\right)^2}{c^2d}+\frac{\text{Subst}\left(\int (a+bx)^2\sec(\ldots\right.}{c^3d}\\
&= \frac{2b^2x}{c^2d}-\frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c^3d}-\frac{x\left(a+b\sin^{-1}(cx)\right)^2}{c^2d}-\frac{2i\left(a+b\sin^{-1}(c\ldots\right.}{\ldots}\\
&= \frac{2b^2x}{c^2d}-\frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c^3d}-\frac{x\left(a+b\sin^{-1}(cx)\right)^2}{c^2d}-\frac{2i\left(a+b\sin^{-1}(c\ldots\right.}{\ldots}\\
&= \frac{2b^2x}{c^2d}-\frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c^3d}-\frac{x\left(a+b\sin^{-1}(cx)\right)^2}{c^2d}-\frac{2i\left(a+b\sin^{-1}(c\ldots\right.}{\ldots}\\
&= \frac{2b^2x}{c^2d}-\frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c^3d}-\frac{x\left(a+b\sin^{-1}(cx)\right)^2}{c^2d}-\frac{2i\left(a+b\sin^{-1}(c\ldots\right.}{\ldots}
\end{aligned}
$$

Mathematica [A] time = 0.31, size = 317, normalized size = 1.45

$$
-\frac{2a^2cx+a^2\log(1-cx)-a^2\log(cx+1)+4ab\sqrt{1-c^2x^2}-4ib\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)+4ib\text{Li}_2\left(ie^{i\ldots}\right.}{\ldots}
$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^2*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2),x]
```

```
[Out] -1/2*(2*a^2*c*x - 4*b^2*c*x + 4*a*b*Sqrt[1 - c^2*x^2] + 4*a*b*c*x*ArcSin[c*
x] + 4*b^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x] + 2*b^2*c*x*ArcSin[c*x]^2 - 4*a*b*
ArcSin[c*x]*Log[1 - I*E^(I*ArcSin[c*x])] - 2*b^2*ArcSin[c*x]^2*Log[1 - I*E^
(I*ArcSin[c*x])] + 4*a*b*ArcSin[c*x]*Log[1 + I*E^(I*ArcSin[c*x])] + 2*b^2*A
rcSin[c*x]^2*Log[1 + I*E^(I*ArcSin[c*x])] + a^2*Log[1 - c*x] - a^2*Log[1 +
c*x] - (4*I)*b*(a + b*ArcSin[c*x])*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] + (4*
I)*b*(a + b*ArcSin[c*x])*PolyLog[2, I*E^(I*ArcSin[c*x])] + 4*b^2*PolyLog[3,
 (-I)*E^(I*ArcSin[c*x])] - 4*b^2*PolyLog[3, I*E^(I*ArcSin[c*x])])/(c^3*d)
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{b^2x^2\arcsin(cx)^2 + 2\,abx^2\arcsin(cx) + a^2x^2}{c^2dx^2 - d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x, algorithm="fricas")
```

```
[Out] integral(-(b^2*x^2*arcsin(c*x)^2 + 2*a*b*x^2*arcsin(c*x) + a^2*x^2)/(c^2*d*
x^2 - d), x)
```

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

$$\int -\frac{(b\arcsin(cx) + a)^2x^2}{c^2dx^2 - d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)^2*x^2/(c^2*d*x^2 - d), x)
```

maple [F] time = 0.30, size = 0, normalized size = 0.00

$$\int \frac{x^2\,(a + b\arcsin(cx))^2}{-c^2d\,x^2 + d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x)
```

```
[Out] int(x^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x)
```

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

$$-\frac{1}{2}a^2\left(\frac{2x}{c^2d} - \frac{\log(cx+1)}{c^3d} + \frac{\log(cx-1)}{c^3d}\right) - \frac{2\,b^2cx\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)^2 + 2\,c^3d\int \frac{2\,abc^2x^2\arctan\left(cx, \sqrt{cx+1}\right.}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x, algorithm="maxima")
```

```
[Out] -1/2*a^2*(2*x/(c^2*d) - log(c*x + 1)/(c^3*d) + log(c*x - 1)/(c^3*d)) - 1/2*
(2*b^2*c*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 - 2*c^3*d*integrate
(-(2*a*b*c^2*x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + (2*b^2*c*x*ar
ctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) - b^2*arctan2(c*x, sqrt(c*x + 1)*s
qrt(-c*x + 1))*log(c*x + 1) + b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)
)*log(-c*x + 1))*sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^4*d*x^2 - c^2*d), x) - b^
```

```
2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2*log(c*x + 1) + b^2*arctan2(c
*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2*log(-c*x + 1))/(c^3*d)
```

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

$$\int \frac{x^2\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{d-c^2\,d\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*asin(c*x))^2)/(d - c^2*d*x^2),x)
```

```
[Out] int((x^2*(a + b*asin(c*x))^2)/(d - c^2*d*x^2), x)
```

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

$$-\frac{\int \frac{a^2x^2}{c^2x^2-1}\,dx + \int \frac{b^2x^2\,\mathrm{asin}^2\,(cx)}{c^2x^2-1}\,dx + \int \frac{2abx^2\,\mathrm{asin}\,(cx)}{c^2x^2-1}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(c*x))**2/(-c**2*d*x**2+d),x)
```

```
[Out] -(Integral(a**2*x**2/(c**2*x**2 - 1), x) + Integral(b**2*x**2*asin(c*x)**2/
(c**2*x**2 - 1), x) + Integral(2*a*b*x**2*asin(c*x)/(c**2*x**2 - 1), x))/d
```

3.186 $\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{d-c^2dx^2}\,dx$

Optimal. Leaf size=117

$$\frac{ib\mathrm{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^2d}+\frac{i\left(a+b\sin^{-1}(cx)\right)^3}{3bc^2d}-\frac{\log\left(1+e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)^2}{c^2d}-\frac{b^2\mathrm{Li}_3\left(-e^{2i\sin^{-1}(cx)}\right)}{2c^2d}$$

```
[Out] 1/3*I*(a+b*arcsin(c*x))^3/b/c^2/d-(a+b*arcsin(c*x))^2*ln(1+(I*c*x+(-c^2*x^2
+1)^(1/2))^2)/c^2/d+I*b*(a+b*arcsin(c*x))*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1
/2))^2)/c^2/d-1/2*b^2*polylog(3,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c^2/d
```

Rubi [A] time = 0.17, antiderivative size = 117, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {4675, 3719, 2190, 2531, 2282, 6589}

$$\frac{ib\,\mathrm{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^2d}-\frac{b^2\,\mathrm{PolyLog}\left(3,-e^{2i\sin^{-1}(cx)}\right)}{2c^2d}+\frac{i\left(a+b\sin^{-1}(cx)\right)^3}{3bc^2d}-\frac{\log\left(1+e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)^2}{c^2d}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2),x]
```

```
[Out] ((I/3)*(a + b*ArcSin[c*x])^3)/(b*c^2*d) - ((a + b*ArcSin[c*x])^2*Log[1 + E^
((2*I)*ArcSin[c*x])])/(c^2*d) + (I*b*(a + b*ArcSin[c*x])*PolyLog[2, -E^((2*
I)*ArcSin[c*x])])/(c^2*d) - (b^2*PolyLog[3, -E^((2*I)*ArcSin[c*x])])/(2*c^2
*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{d-c^2dx^2}\,dx = \frac{\text{Subst}\left(\int (a+bx)^2\tan(x)\,dx, x, \sin^{-1}(cx)\right)}{c^2d}$$

$$= \frac{i\left(a+b\sin^{-1}(cx)\right)^3}{3bc^2d} - \frac{(2i)\,\text{Subst}\left(\int \frac{e^{2ix}(a+bx)^2}{1+e^{2ix}}\,dx, x, \sin^{-1}(cx)\right)}{c^2d}$$

$$= \frac{i\left(a+b\sin^{-1}(cx)\right)^3}{3bc^2d} - \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(1+e^{2i\sin^{-1}(cx)}\right)}{c^2d} + \frac{(2b)\,\text{Subst}\left(\int (a+\right.}{}$$

$$= \frac{i\left(a+b\sin^{-1}(cx)\right)^3}{3bc^2d} - \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(1+e^{2i\sin^{-1}(cx)}\right)}{c^2d} + \frac{ib\left(a+b\sin^{-1}(cx\right.}{c}$$

$$= \frac{i\left(a+b\sin^{-1}(cx)\right)^3}{3bc^2d} - \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(1+e^{2i\sin^{-1}(cx)}\right)}{c^2d} + \frac{ib\left(a+b\sin^{-1}(cx\right.}{c}$$

$$= \frac{i\left(a+b\sin^{-1}(cx)\right)^3}{3bc^2d} - \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(1+e^{2i\sin^{-1}(cx)}\right)}{c^2d} + \frac{ib\left(a+b\sin^{-1}(cx\right.}{c}$$

Mathematica [A] time = 0.08, size = 143, normalized size = 1.22

$$\frac{-3a^2\log\left(1-c^2x^2\right)+6ib\text{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)+6iab\sin^{-1}(cx)^2-12ab\sin^{-1}(cx)\log\left(1+e^{2i\sin^{-1}\right.}{6c^2d}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2),x]
```

```
[Out] ((6*I)*a*b*ArcSin[c*x]^2 + (2*I)*b^2*ArcSin[c*x]^3 - 12*a*b*ArcSin[c*x]*Log
[1 + E^((2*I)*ArcSin[c*x])] - 6*b^2*ArcSin[c*x]^2*Log[1 + E^((2*I)*ArcSin[c
*x])] - 3*a^2*Log[1 - c^2*x^2] + (6*I)*b*(a + b*ArcSin[c*x])*PolyLog[2, -E^
((2*I)*ArcSin[c*x])] - 3*b^2*PolyLog[3, -E^((2*I)*ArcSin[c*x])])/(6*c^2*d)
```

fricas [F] time = 0.68, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{b^2x\arcsin(cx)^2+2\,abx\arcsin(cx)+a^2x}{c^2dx^2-d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x, algorithm="fricas")
```

```
[Out] integral(-(b^2*x*arcsin(c*x)^2 + 2*a*b*x*arcsin(c*x) + a^2*x)/(c^2*d*x^2 -
d), x)
```

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

$$\int -\frac{(b\arcsin(cx)+a)^2x}{c^2dx^2-d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)^2*x/(c^2*d*x^2 - d), x)
```

maple [A] time = 0.08, size = 258, normalized size = 2.21

$$-\frac{a^2\ln(cx-1)}{2c^2d}-\frac{a^2\ln(cx+1)}{2c^2d}+\frac{ib^2\arcsin(cx)^3}{3c^2d}-\frac{b^2\arcsin(cx)^2\ln\left(1+\left(icx+\sqrt{-c^2x^2+1}\right)^2\right)}{c^2d}+\frac{ib^2\arcsin(cx)\,\mathrm{po}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x)
```

```
[Out] -1/2/c^2*a^2/d*ln(c*x-1)-1/2/c^2*a^2/d*ln(c*x+1)+1/3*I/c^2*b^2/d*arcsin(c*x
)^3-1/c^2*b^2/d*arcsin(c*x)^2*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)+I/c^2*b^2/
d*arcsin(c*x)*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)-1/2*b^2*polylog(3,-(
I*c*x+(-c^2*x^2+1)^(1/2))^2)/c^2/d+I/c^2*a*b/d*arcsin(c*x)^2-2/c^2*a*b/d*ar
csin(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)+I/c^2*a*b/d*polylog(2,-(I*c*x+
(-c^2*x^2+1)^(1/2))^2)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{x\,(a+b\,\mathrm{asin}(c\,x))^2}{d-c^2\,d\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*asin(c*x))^2)/(d - c^2*d*x^2),x)
```

```
[Out] int((x*(a + b*asin(c*x))^2)/(d - c^2*d*x^2), x)
```

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

$$-\frac{\int \frac{a^2x}{c^2x^2-1}\,dx+\int \frac{b^2x\,\mathrm{asin}^2(cx)}{c^2x^2-1}\,dx+\int \frac{2abx\,\mathrm{asin}(cx)}{c^2x^2-1}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(c*x))**2/(-c**2*d*x**2+d),x)
```

```
[Out] -(Integral(a**2*x/(c**2*x**2 - 1), x) + Integral(b**2*x*asin(c*x)**2/(c**2*
x**2 - 1), x) + Integral(2*a*b*x*asin(c*x)/(c**2*x**2 - 1), x))/d
```

3.187 $\int \frac{(a+b\sin^{-1}(cx))^2}{d-c^2dx^2}\,dx$

Optimal. Leaf size=156

$$\frac{2ib\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{cd}-\frac{2ib\text{Li}_2\left(ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{cd}-\frac{2i\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(c\right.}{cd}$$

```
[Out] -2*I*(a+b*arcsin(c*x))^2*arctan(I*c*x+(-c^2*x^2+1)^(1/2))/c/d+2*I*b*(a+b*ar
csin(c*x))*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/d-2*I*b*(a+b*arcsin(c
*x))*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/d-2*b^2*polylog(3,-I*(I*c*x+
(-c^2*x^2+1)^(1/2)))/c/d+2*b^2*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/d
```

Rubi [A] time = 0.13, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {4657, 4181, 2531, 2282, 6589}

$$\frac{2ib\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{cd}-\frac{2ib\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{cd}-\frac{2b^2\text{PolyLog}\left(3,-\right.}{cd}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(d - c^2*d*x^2),x]
```

```
[Out] ((-2*I)*(a + b*ArcSin[c*x])^2*ArcTan[E^(I*ArcSin[c*x])])/(c*d) + ((2*I)*b*(
a + b*ArcSin[c*x])*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(c*d) - ((2*I)*b*(a
+ b*ArcSin[c*x])*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c*d) - (2*b^2*PolyLog[3,
 (-I)*E^(I*ArcSin[c*x])])/(c*d) + (2*b^2*PolyLog[3, I*E^(I*ArcSin[c*x])])/(
c*d)
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d-c^2dx^2}\,dx = \frac{\text{Subst}\left(\int (a+bx)^2\sec(x)\,dx, x, \sin^{-1}(cx)\right)}{cd}$$
$$= -\frac{2i\left(a+b\sin^{-1}(cx)\right)^2\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{cd} - \frac{(2b)\,\text{Subst}\left(\int (a+bx)\log\left(1-ie^{ix}\right)dx, x, \text{si}\right.}{cd}$$
$$= -\frac{2i\left(a+b\sin^{-1}(cx)\right)^2\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{cd} + \frac{2ib\left(a+b\sin^{-1}(cx)\right)\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)}{cd} - \frac{2ib}{}$$
$$= -\frac{2i\left(a+b\sin^{-1}(cx)\right)^2\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{cd} + \frac{2ib\left(a+b\sin^{-1}(cx)\right)\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)}{cd} - \frac{2ib}{}$$
$$= -\frac{2i\left(a+b\sin^{-1}(cx)\right)^2\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{cd} + \frac{2ib\left(a+b\sin^{-1}(cx)\right)\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)}{cd} - \frac{2ib}{}$$

Mathematica [A] time = 0.50, size = 207, normalized size = 1.33

$$\frac{a^2(-\log(1-cx)) + a^2\log(cx+1) + 4ib\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right) - 4ib\text{Li}_2\left(ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right) \cdot}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(d - c^2*d*x^2),x]
```

```
[Out] ((-4*I)*b^2*ArcSin[c*x]^2*ArcTan[E^(I*ArcSin[c*x])] + 4*a*b*ArcSin[c*x]*Log
[1 - I*E^(I*ArcSin[c*x])] - 4*a*b*ArcSin[c*x]*Log[1 + I*E^(I*ArcSin[c*x])]
- a^2*Log[1 - c*x] + a^2*Log[1 + c*x] + (4*I)*b*(a + b*ArcSin[c*x])*PolyLog
[2, (-I)*E^(I*ArcSin[c*x])] - (4*I)*b*(a + b*ArcSin[c*x])*PolyLog[2, I*E^(I
*ArcSin[c*x])] - 4*b^2*PolyLog[3, (-I)*E^(I*ArcSin[c*x])] + 4*b^2*PolyLog[3
, I*E^(I*ArcSin[c*x])])/(2*c*d)
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{b^2\arcsin(cx)^2 + 2\,ab\arcsin(cx) + a^2}{c^2dx^2 - d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x, algorithm="fricas")
```

```
[Out] integral(-(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)/(c^2*d*x^2 - d), x)
```

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

$$\int -\frac{(b\arcsin(cx) + a)^2}{c^2dx^2 - d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)^2/(c^2*d*x^2 - d), x)
```

maple [B] time = 0.15, size = 404, normalized size = 2.59

$$\frac{b^2 \arcsin(cx)^2 \ln\left(1 - i\left(icx + \sqrt{-c^2x^2+1}\right)\right)}{cd} - \frac{2ib^2 \arcsin(cx) \operatorname{polylog}\left(2, i\left(icx + \sqrt{-c^2x^2+1}\right)\right)}{cd} + \frac{2b^2 \operatorname{polylo}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x)
```

```
[Out] 1/c/d*b^2*arcsin(c*x)^2*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-2*I/c/d*b^2*arcs
in(c*x)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))+2*b^2*polylog(3,I*(I*c*x+(-
c^2*x^2+1)^(1/2)))/d/c-1/c/d*b^2*arcsin(c*x)^2*ln(1+I*(I*c*x+(-c^2*x^2+1)^(
1/2)))+2*I/c/d*b^2*arcsin(c*x)*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-2*b
^2*polylog(3,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d/c+2/c*a*b/d*arcsin(c*x)*ln(1-
I*(I*c*x+(-c^2*x^2+1)^(1/2)))-2*I/c/d*a*b*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(
1/2)))-2/c*a*b/d*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+2*I/c/d*a*b
*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-2*I/c/d*a^2*arctan(I*c*x+(-c^2*x^
2+1)^(1/2))
```

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

$$\frac{1}{2}a^2\left(\frac{\log(cx+1)}{cd} - \frac{\log(cx-1)}{cd}\right) + \frac{b^2 \arctan\left(cx, \sqrt{cx+1}\sqrt{-cx+1}\right)^2 \log(cx+1) - b^2 \arctan\left(cx, \sqrt{cx+1}\sqrt{-}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x, algorithm="maxima")
```

```
[Out] 1/2*a^2*(log(c*x + 1)/(c*d) - log(c*x - 1)/(c*d)) + 1/2*(b^2*arctan2(c*x, s
qrt(c*x + 1)*sqrt(-c*x + 1))^2*log(c*x + 1) - b^2*arctan2(c*x, sqrt(c*x + 1
)*sqrt(-c*x + 1))^2*log(-c*x + 1) + 2*c*d*integrate(-(2*a*b*arctan2(c*x, sq
rt(c*x + 1)*sqrt(-c*x + 1)) - (b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1
))*log(c*x + 1) - b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(-c*x +
 1))*sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^2*d*x^2 - d), x))/(c*d)
```

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

$$\int \frac{(a + b \operatorname{asin}(c\,x))^2}{d - c^2\,d\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(d - c^2*d*x^2),x)
```

```
[Out] int((a + b*asin(c*x))^2/(d - c^2*d*x^2), x)
```

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

$$-\frac{\int \frac{a^2}{c^2x^2-1}\,dx + \int \frac{b^2 \operatorname{asin}^2(cx)}{c^2x^2-1}\,dx + \int \frac{2ab \operatorname{asin}(cx)}{c^2x^2-1}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(-c**2*d*x**2+d),x)
```

```
[Out] -(Integral(a**2/(c**2*x**2 - 1), x) + Integral(b**2*asin(c*x)**2/(c**2*x**2
 - 1), x) + Integral(2*a*b*asin(c*x)/(c**2*x**2 - 1), x))/d
```

3.188 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\left(d-c^2dx^2\right)}\,dx$

Optimal. Leaf size=131

$$\frac{ib\text{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d}-\frac{ib\text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d}-\frac{2\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d}$$

```
[Out] -2*(a+b*arcsin(c*x))^2*arctanh((I*c*x+(-c^2*x^2+1)^(1/2))^2)/d+I*b*(a+b*arc
sin(c*x))*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d-I*b*(a+b*arcsin(c*x))*
polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d-1/2*b^2*polylog(3,-(I*c*x+(-c^2*x
^2+1)^(1/2))^2)/d+1/2*b^2*polylog(3,(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d
```

Rubi [A] time = 0.20, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {4679, 4419, 4183, 2531, 2282, 6589}

$$\frac{ib\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d}-\frac{ib\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d}-\frac{b^2\text{PolyLog}\left(3,-e^{2i\sin^{-1}(cx)}\right)}{2d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x*(d - c^2*d*x^2)),x]
```

```
[Out] (-2*(a + b*ArcSin[c*x])^2*ArcTanh[E^((2*I)*ArcSin[c*x])])/d + (I*b*(a + b*A
rcSin[c*x])*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/d - (I*b*(a + b*ArcSin[c*x]
)*PolyLog[2, E^((2*I)*ArcSin[c*x])])/d - (b^2*PolyLog[3, -E^((2*I)*ArcSin[c
*x])])/(2*d) + (b^2*PolyLog[3, E^((2*I)*ArcSin[c*x])])/(2*d)
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4419

```
Int[Csc[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csc[2*a + 2*b*x]^n,
 x], x] /; FreeQ[{a, b, c, d, m}, x] && IntegerQ[n] && RationalQ[m]
```

Rule 4679

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((x_)*((d_) + (e_.)*(x_)^2)),
x_Symbol] :> Dist[1/d, Subst[Int[(a + b*x)^n/(Cos[x]*Sin[x]), x], x, ArcSin
[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\left(d-c^2dx^2\right)}\,dx = \frac{\text{Subst}\left(\int (a+bx)^2\csc(x)\sec(x)\,dx, x, \sin^{-1}(cx)\right)}{d}$$

$$= \frac{2\,\text{Subst}\left(\int (a+bx)^2\csc(2x)\,dx, x, \sin^{-1}(cx)\right)}{d}$$

$$= -\frac{2\left(a+b\sin^{-1}(cx)\right)^2\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)}{d} - \frac{(2b)\,\text{Subst}\left(\int (a+bx)\log\left(1-e^{2ix}\right)\,dx\right.}{d}$$

$$= -\frac{2\left(a+b\sin^{-1}(cx)\right)^2\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)}{d} + \frac{ib\left(a+b\sin^{-1}(cx)\right)\text{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right)}{d} -$$

$$= -\frac{2\left(a+b\sin^{-1}(cx)\right)^2\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)}{d} + \frac{ib\left(a+b\sin^{-1}(cx)\right)\text{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right)}{d} -$$

$$= -\frac{2\left(a+b\sin^{-1}(cx)\right)^2\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)}{d} + \frac{ib\left(a+b\sin^{-1}(cx)\right)\text{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right)}{d} -$$

Mathematica [A] time = 0.19, size = 254, normalized size = 1.94

$$-12a^2\log\left(1-c^2x^2\right)+24a^2\log(cx)+24ib\text{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)-24iab\text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right)+48ab\,\text{s}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x*(d - c^2*d*x^2)),x]
```

```
[Out] ((-I)*b^2*Pi^3 + (16*I)*b^2*ArcSin[c*x]^3 + 24*b^2*ArcSin[c*x]^2*Log[1 - E^
((-2*I)*ArcSin[c*x])] + 48*a*b*ArcSin[c*x]*Log[1 - E^((2*I)*ArcSin[c*x])] -
 48*a*b*ArcSin[c*x]*Log[1 + E^((2*I)*ArcSin[c*x])] - 24*b^2*ArcSin[c*x]^2*L
og[1 + E^((2*I)*ArcSin[c*x])] + 24*a^2*Log[c*x] - 12*a^2*Log[1 - c^2*x^2] +
 (24*I)*b^2*ArcSin[c*x]*PolyLog[2, E^((-2*I)*ArcSin[c*x])] + (24*I)*b*(a +
b*ArcSin[c*x])*PolyLog[2, -E^((2*I)*ArcSin[c*x])] - (24*I)*a*b*PolyLog[2, E
^((2*I)*ArcSin[c*x])] + 12*b^2*PolyLog[3, E^((-2*I)*ArcSin[c*x])] - 12*b^2*
PolyLog[3, -E^((2*I)*ArcSin[c*x])])/(24*d)
```

fricas [F] time = 0.75, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2}{c^2dx^3-dx}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x/(-c^2*d*x^2+d),x, algorithm="fricas")
```

```
[Out] integral(-(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)/(c^2*d*x^3 - d*x),
x)
```

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

$$\int -\frac{(b\arcsin(cx)+a)^2}{(c^2dx^2-d)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x/(-c^2*d*x^2+d),x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)^2/((c^2*d*x^2 - d)*x), x)
```

maple [B] time = 0.16, size = 475, normalized size = 3.63

$$-\frac{a^2\ln(cx+1)}{2d}+\frac{a^2\ln(cx)}{d}-\frac{a^2\ln(cx-1)}{2d}-\frac{b^2\arcsin(cx)^2\ln\left(1+\left(icx+\sqrt{-c^2x^2+1}\right)^2\right)}{d}+\frac{ib^2\arcsin(cx)\operatorname{polylog}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x/(-c^2*d*x^2+d),x)
```

```
[Out] -1/2*a^2/d*ln(c*x+1)+a^2/d*ln(c*x)-1/2*a^2/d*ln(c*x-1)-b^2/d*arcsin(c*x)^2*
ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)+I*b^2/d*arcsin(c*x)*polylog(2,-(I*c*x+(-
c^2*x^2+1)^(1/2))^2)-1/2*b^2*polylog(3,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d+b^2
/d*arcsin(c*x)^2*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))-2*I*b^2/d*arcsin(c*x)*polyl
og(2,I*c*x+(-c^2*x^2+1)^(1/2))+2*b^2/d*polylog(3,I*c*x+(-c^2*x^2+1)^(1/2))+
b^2/d*arcsin(c*x)^2*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-2*I*b^2/d*arcsin(c*x)*po
lylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))+2*b^2/d*polylog(3,-I*c*x-(-c^2*x^2+1)^(1
/2))+2*a*b/d*arcsin(c*x)*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))^2)-2*a*b/d*arcsin(
c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)-I*a*b/d*dilog(1-(I*c*x+(-c^2*x^2+1)
^(1/2))^2)+I*a*b/d*dilog(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)
```

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

$$-\frac{1}{2}a^2\left(\frac{\log(cx+1)}{d}+\frac{\log(cx-1)}{d}-\frac{2\log(x)}{d}\right)-\int\frac{b^2\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)^2+2ab\arctan\left(cx,\sqrt{cx+1}\right.}{c^2dx^3-dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x/(-c^2*d*x^2+d),x, algorithm="maxima")
```

```
[Out] -1/2*a^2*(log(c*x + 1)/d + log(c*x - 1)/d - 2*log(x)/d) - integrate((b^2*ar
ctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a*b*arctan2(c*x, sqrt(c*x +
1)*sqrt(-c*x + 1)))/(c^2*d*x^3 - d*x), x)
```

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

$$\int\frac{(a+b\operatorname{asin}(c\,x))^2}{x\,\left(d-c^2\,d\,x^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x*(d - c^2*d*x^2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/(x*(d - c^2*d*x^2)), x)
```

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

$$-\frac{\int\frac{a^2}{c^2x^3-x}\,dx+\int\frac{b^2\operatorname{asin}^2(cx)}{c^2x^3-x}\,dx+\int\frac{2ab\operatorname{asin}(cx)}{c^2x^3-x}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x/(-c**2*d*x**2+d),x)
```

```
[Out] -(Integral(a**2/(c**2*x**3 - x), x) + Integral(b**2*asin(c*x)**2/(c**2*x**3
 - x), x) + Integral(2*a*b*asin(c*x)/(c**2*x**3 - x), x))/d
```

3.189 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^2\left(d-c^2dx^2\right)}\,dx$

Optimal. Leaf size=238

$$\frac{2ibc\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d}-\frac{2ibc\text{Li}_2\left(ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{dx}-\frac{2ic\tan^{-1}\left(e^{i\sin\ldots}\right.}{}$$

```
[Out] -(a+b*arcsin(c*x))^2/d/x-2*I*c*(a+b*arcsin(c*x))^2*arctan(I*c*x+(-c^2*x^2+1
)^(1/2))/d-4*b*c*(a+b*arcsin(c*x))*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))/d+2*I*
b^2*c*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))/d+2*I*b*c*(a+b*arcsin(c*x))*poly
log(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d-2*I*b*c*(a+b*arcsin(c*x))*polylog(2,
I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d-2*I*b^2*c*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2
))/d-2*b^2*c*polylog(3,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d+2*b^2*c*polylog(3,I
*(I*c*x+(-c^2*x^2+1)^(1/2)))/d
```

Rubi [A] time = 0.35, antiderivative size = 238, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 10, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.370, Rules used = {4701, 4657, 4181, 2531, 2282, 6589, 4709, 4183, 2279, 2391}

$$\frac{2ibc\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d}-\frac{2ibc\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d}+\frac{2ib^2c\text{PolyLog}\left(2,\ldots\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x^2*(d - c^2*d*x^2)),x]
```

```
[Out] -((a + b*ArcSin[c*x])^2/(d*x)) - ((2*I)*c*(a + b*ArcSin[c*x])^2*ArcTan[E^(I
*ArcSin[c*x])])/d - (4*b*c*(a + b*ArcSin[c*x])*ArcTanh[E^(I*ArcSin[c*x])])/
d + ((2*I)*b^2*c*PolyLog[2, -E^(I*ArcSin[c*x])])/d + ((2*I)*b*c*(a + b*ArcS
in[c*x])*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/d - ((2*I)*b*c*(a + b*ArcSin[c
*x])*PolyLog[2, I*E^(I*ArcSin[c*x])])/d - ((2*I)*b^2*c*PolyLog[2, E^(I*ArcS
in[c*x])])/d - (2*b^2*c*PolyLog[3, (-I)*E^(I*ArcSin[c*x])])/d + (2*b^2*c*Po
lyLog[3, I*E^(I*ArcSin[c*x])])/d
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

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

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
```

```
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^2\left(d-c^2dx^2\right)}dx = -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{dx} + c^2\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d-c^2dx^2}dx + \frac{(2bc)\int \frac{a+b\sin^{-1}(cx)}{x\sqrt{1-c^2x^2}}dx}{d}$$

$$= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{dx} + \frac{c\,\text{Subst}\left(\int (a+bx)^2\sec(x)\,dx, x, \sin^{-1}(cx)\right)}{d} + \frac{(2bc)\,\text{Subst}\left(\int (a\right.}{}$$

$$= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{dx} - \frac{2ic\left(a+b\sin^{-1}(cx)\right)^2\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{d} - \frac{4bc\left(a+b\sin^{-1}(cx)\right)}{d}$$

$$= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{dx} - \frac{2ic\left(a+b\sin^{-1}(cx)\right)^2\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{d} - \frac{4bc\left(a+b\sin^{-1}(cx)\right)}{d}$$

$$= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{dx} - \frac{2ic\left(a+b\sin^{-1}(cx)\right)^2\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{d} - \frac{4bc\left(a+b\sin^{-1}(cx)\right)}{d}$$

$$= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{dx} - \frac{2ic\left(a+b\sin^{-1}(cx)\right)^2\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{d} - \frac{4bc\left(a+b\sin^{-1}(cx)\right)}{d}$$

Mathematica [A] time = 0.68, size = 391, normalized size = 1.64

$$-\frac{a^2c\log(1-cx) - a^2c\log(cx+1) + \frac{2a^2}{x} + 4abc\left(-i\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right) + i\text{Li}_2\left(ie^{i\sin^{-1}(cx)}\right) + \frac{\sin^{-1}(cx)}{cx} + \sin^{-1}(cx)\left(-1\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x^2*(d - c^2*d*x^2)),x]
```

```
[Out] -1/2*((2*a^2)/x + a^2*c*Log[1 - c*x] - a^2*c*Log[1 + c*x] + 4*a*b*c*(ArcSin
[c*x]/(c*x) - ArcSin[c*x]*Log[1 - I*E^(I*ArcSin[c*x])] + ArcSin[c*x]*Log[1
+ I*E^(I*ArcSin[c*x])] + Log[Cos[ArcSin[c*x]/2]] - Log[Sin[ArcSin[c*x]/2]]
- I*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] + I*PolyLog[2, I*E^(I*ArcSin[c*x])])
 + 2*b^2*c*(ArcSin[c*x]^2/(c*x) - 2*ArcSin[c*x]*Log[1 - E^(I*ArcSin[c*x])]
- ArcSin[c*x]^2*Log[1 - I*E^(I*ArcSin[c*x])] + ArcSin[c*x]^2*Log[1 + I*E^(I
*ArcSin[c*x])] + 2*ArcSin[c*x]*Log[1 + E^(I*ArcSin[c*x])] - (2*I)*PolyLog[2
, -E^(I*ArcSin[c*x])] - (2*I)*ArcSin[c*x]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])
] + (2*I)*ArcSin[c*x]*PolyLog[2, I*E^(I*ArcSin[c*x])] + (2*I)*PolyLog[2, E^
(I*ArcSin[c*x])] + 2*PolyLog[3, (-I)*E^(I*ArcSin[c*x])] - 2*PolyLog[3, I*E^
(I*ArcSin[c*x])]))/d
```

fricas [F] time = 1.07, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{b^2\arcsin(cx)^2 + 2\,ab\arcsin(cx) + a^2}{c^2dx^4 - dx^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^2/(-c^2*d*x^2+d),x, algorithm="fricas")
```

```
[Out] integral(-(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)/(c^2*d*x^4 - d*x^2)
, x)
```

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

$$\int -\frac{(b\arcsin(cx) + a)^2}{\left(c^2dx^2 - d\right)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^2/(-c^2*d*x^2+d),x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)^2/((c^2*d*x^2 - d)*x^2), x)
```

maple [A] time = 0.30, size = 575, normalized size = 2.42

$$\frac{c\,a^2\ln(cx+1)}{2d}-\frac{a^2}{dx}-\frac{c\,a^2\ln(cx-1)}{2d}-\frac{b^2\arcsin(cx)^2}{dx}-\frac{2c\,b^2\arcsin(cx)\ln\left(1+icx+\sqrt{-c^2x^2+1}\right)}{d}+\frac{2icab\,\mathrm{dilog}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x^2/(-c^2*d*x^2+d),x)
```

```
[Out] 1/2*c*a^2/d*ln(c*x+1)-a^2/d/x-1/2*c*a^2/d*ln(c*x-1)-b^2/d/x*arcsin(c*x)^2-2
*c*b^2/d*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+2*I*c*b^2/d*dilog(1+I*c
*x+(-c^2*x^2+1)^(1/2))+2*I*c*b^2/d*dilog(I*c*x+(-c^2*x^2+1)^(1/2))+c/d*b^2*
arcsin(c*x)^2*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+2*I*c*a*b/d*dilog(1+I*(I*c
*x+(-c^2*x^2+1)^(1/2)))+2*b^2*c*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d-c
/d*b^2*arcsin(c*x)^2*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-2*I*c/d*b^2*arcsin(
c*x)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))-2*b^2*c*polylog(3,-I*(I*c*x+(-
c^2*x^2+1)^(1/2)))/d-2*a*b/d*arcsin(c*x)/x+2*c*a*b/d*arcsin(c*x)*ln(1-I*(I*
c*x+(-c^2*x^2+1)^(1/2)))-2*c*a*b/d*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(
1/2)))-2*c*a*b/d*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+2*c*a*b/d*ln(I*c*x+(-c^2*x^
2+1)^(1/2)-1)+2*I*c/d*b^2*arcsin(c*x)*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2
)))-2*I*c*a*b/d*dilog(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))
```

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

$$\frac{1}{2}a^2\left(\frac{c\log(cx+1)}{d}-\frac{c\log(cx-1)}{d}-\frac{2}{dx}\right)+\frac{b^2cx\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)^2\log(cx+1)-b^2cx\arctan\left(c\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^2/(-c^2*d*x^2+d),x, algorithm="maxima")
```

```
[Out] 1/2*a^2*(c*log(c*x + 1)/d - c*log(c*x - 1)/d - 2/(d*x)) + 1/2*(b^2*c*x*arct
an2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2*log(c*x + 1) - b^2*c*x*arctan2(c*x
, sqrt(c*x + 1)*sqrt(-c*x + 1))^2*log(-c*x + 1) - 2*b^2*arctan2(c*x, sqrt(c
*x + 1)*sqrt(-c*x + 1))^2 + 2*d*x*integrate(-(2*a*b*arctan2(c*x, sqrt(c*x +
 1)*sqrt(-c*x + 1)) - (b^2*c^2*x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1
))*log(c*x + 1) - b^2*c^2*x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*lo
g(-c*x + 1) - 2*b^2*c*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*
x + 1)*sqrt(-c*x + 1))/(c^2*d*x^4 - d*x^2), x))/(d*x)
```

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

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))^2}{x^2\,\left(d-c^2\,d\,x^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x^2*(d - c^2*d*x^2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/(x^2*(d - c^2*d*x^2)), x)
```

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

$$-\frac{\int \frac{a^2}{c^2x^4-x^2}\,dx+\int \frac{b^2\operatorname{asin}^2(cx)}{c^2x^4-x^2}\,dx+\int \frac{2ab\operatorname{asin}(cx)}{c^2x^4-x^2}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x**2/(-c**2*d*x**2+d),x)
```

```
[Out] -(Integral(a**2/(c**2*x**4 - x**2), x) + Integral(b**2*asin(c*x)**2/(c**2*x
**4 - x**2), x) + Integral(2*a*b*asin(c*x)/(c**2*x**4 - x**2), x))/d
```

3.190 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^3\left(d-c^2dx^2\right)}\,dx$

Optimal. Leaf size=210

$$\frac{ibc^2\text{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d}-\frac{ibc^2\text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d}-\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{dx}-$$

```
[Out] -1/2*(a+b*arcsin(c*x))^2/d/x^2-2*c^2*(a+b*arcsin(c*x))^2*arctanh((I*c*x+(-c
^2*x^2+1)^(1/2))^2)/d+b^2*c^2*ln(x)/d+I*b*c^2*(a+b*arcsin(c*x))*polylog(2,-
(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d-I*b*c^2*(a+b*arcsin(c*x))*polylog(2,(I*c*x+
(-c^2*x^2+1)^(1/2))^2)/d-1/2*b^2*c^2*polylog(3,-(I*c*x+(-c^2*x^2+1)^(1/2))^
2)/d+1/2*b^2*c^2*polylog(3,(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d-b*c*(a+b*arcsin(
c*x))*(-c^2*x^2+1)^(1/2)/d/x
```

Rubi [A] time = 0.38, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4701, 4679, 4419, 4183, 2531, 2282, 6589, 4681, 29}

$$\frac{ibc^2\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d}-\frac{ibc^2\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d}-\frac{b^2c^2\text{PolyLog}(\ldots}{2\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x^3*(d - c^2*d*x^2)),x]
```

```
[Out] -((b*c*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(d*x)) - (a + b*ArcSin[c*x])^
2/(2*d*x^2) - (2*c^2*(a + b*ArcSin[c*x])^2*ArcTanh[E^((2*I)*ArcSin[c*x])])/
d + (b^2*c^2*Log[x])/d + (I*b*c^2*(a + b*ArcSin[c*x])*PolyLog[2, -E^((2*I)*
ArcSin[c*x])])/d - (I*b*c^2*(a + b*ArcSin[c*x])*PolyLog[2, E^((2*I)*ArcSin[
c*x])])/d - (b^2*c^2*PolyLog[3, -E^((2*I)*ArcSin[c*x])])/(2*d) + (b^2*c^2*P
olyLog[3, E^((2*I)*ArcSin[c*x])])/(2*d)
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
```

```
[m, 0]
```

Rule 4419

```
Int[Csc[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csc[2*a + 2*b*x]^n,
 x], x] /; FreeQ[{a, b, c, d, m}, x] && IntegerQ[n] && RationalQ[m]
```

Rule 4679

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((x_)*((d_) + (e_.)*(x_)^2)),
x_Symbol] :> Dist[1/d, Subst[Int[(a + b*x)^n/(Cos[x]*Sin[x]), x], x, ArcSin
[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4681

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^F
racPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c
^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d,
 e, f, m, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] &
& NeQ[m, -1]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^3\left(d-c^2dx^2\right)}\,dx = -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{2dx^2} + c^2\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\left(d-c^2dx^2\right)}\,dx + \frac{(bc)\int \frac{a+b\sin^{-1}(cx)}{x^2\sqrt{1-c^2x^2}}\,dx}{d}$$

$$= -\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{dx} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2dx^2} + \frac{c^2\,\text{Subst}\left(\int (a+bx)^2\csc(x\right.}{d}$$

$$= -\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{dx} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2dx^2} + \frac{b^2c^2\log(x)}{d} + \frac{\left(2c^2\right)\text{Subst}\left(\right.}{}$$

$$= -\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{dx} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2dx^2} - \frac{2c^2\left(a+b\sin^{-1}(cx)\right)^2\tanh}{d}$$

$$= -\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{dx} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2dx^2} - \frac{2c^2\left(a+b\sin^{-1}(cx)\right)^2\tanh}{d}$$

$$= -\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{dx} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2dx^2} - \frac{2c^2\left(a+b\sin^{-1}(cx)\right)^2\tanh}{d}$$

$$= -\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{dx} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2dx^2} - \frac{2c^2\left(a+b\sin^{-1}(cx)\right)^2\tanh}{d}$$

Mathematica [A] time = 1.19, size = 353, normalized size = 1.68

$$-\frac{a^2c^2\log\left(1-c^2x^2\right) - 2a^2c^2\log(x) + \frac{a^2}{x^2} + 2abc^2\left(\frac{\sqrt{1-c^2x^2}}{cx} + \frac{\sin^{-1}(cx)}{c^2x^2} - i\text{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right) + i\text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right) - \right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x^3*(d - c^2*d*x^2)),x]
```

```
[Out] -1/2*(a^2/x^2 - 2*a^2*c^2*Log[x] + a^2*c^2*Log[1 - c^2*x^2] + 2*a*b*c^2*(Sq
rt[1 - c^2*x^2]/(c*x) + ArcSin[c*x]/(c^2*x^2) - 2*ArcSin[c*x]*Log[1 - E^((2
*I)*ArcSin[c*x])] + 2*ArcSin[c*x]*Log[1 + E^((2*I)*ArcSin[c*x])] - I*PolyLo
g[2, -E^((2*I)*ArcSin[c*x])] + I*PolyLog[2, E^((2*I)*ArcSin[c*x])]) + 2*b^2
*c^2*((I/24)*Pi^3 + (Sqrt[1 - c^2*x^2]*ArcSin[c*x])/(c*x) + ArcSin[c*x]^2/(
2*c^2*x^2) - ((2*I)/3)*ArcSin[c*x]^3 - ArcSin[c*x]^2*Log[1 - E^((-2*I)*ArcS
in[c*x])] + ArcSin[c*x]^2*Log[1 + E^((2*I)*ArcSin[c*x])] - Log[c*x] - I*Arc
Sin[c*x]*PolyLog[2, E^((-2*I)*ArcSin[c*x])] - I*ArcSin[c*x]*PolyLog[2, -E^(
(2*I)*ArcSin[c*x])] - PolyLog[3, E^((-2*I)*ArcSin[c*x])]/2 + PolyLog[3, -E^
((2*I)*ArcSin[c*x])]/2))/d
```

fricas [F] time = 0.71, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{b^2\arcsin(cx)^2 + 2\,ab\arcsin(cx) + a^2}{c^2dx^5 - dx^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^3/(-c^2*d*x^2+d),x, algorithm="fricas")
```

```
[Out] integral(-(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)/(c^2*d*x^5 - d*x^3)
, x)
```

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

$$\int -\frac{(b\arcsin(cx) + a)^2}{\left(c^2dx^2 - d\right)x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^3/(-c^2*d*x^2+d),x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)^2/((c^2*d*x^2 - d)*x^3), x)
```

maple [B] time = 0.53, size = 793, normalized size = 3.78

$$\frac{ic^2ab}{d}+\frac{c^2b^2\arcsin(cx)^2\ln\left(1-icx-\sqrt{-c^2x^2+1}\right)}{d}+\frac{c^2b^2\arcsin(cx)^2\ln\left(1+icx+\sqrt{-c^2x^2+1}\right)}{d}+\frac{ic^2b^2\arcsin(cx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x^3/(-c^2*d*x^2+d),x)
```

```
[Out] -2*I*c^2*b^2/d*arcsin(c*x)*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))-2*I*c^2*b^2
/d*arcsin(c*x)*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))+I*c^2*a*b/d*polylog(2,-(
I*c*x+(-c^2*x^2+1)^(1/2))^2)+2*c^2*a*b/d*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1
)^(1/2))+2*c^2*a*b/d*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-1/2*b^2*c^2
*polylog(3,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d+I*c^2*a*b/d+c^2*b^2/d*arcsin(c*
x)^2*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))+c^2*b^2/d*arcsin(c*x)^2*ln(1+I*c*x+(-c^
2*x^2+1)^(1/2))+I*c^2*b^2/d*arcsin(c*x)-a*b/d*arcsin(c*x)/x^2-1/2*a^2/d/x^2
+c^2*b^2/d*ln(I*c*x+(-c^2*x^2+1)^(1/2)-1)+c^2*a^2/d*ln(c*x)-1/2*b^2/d*arcsi
n(c*x)^2/x^2+2*c^2*b^2/d*polylog(3,I*c*x+(-c^2*x^2+1)^(1/2))+2*c^2*b^2/d*po
lylog(3,-I*c*x-(-c^2*x^2+1)^(1/2))-1/2*c^2*a^2/d*ln(c*x+1)-1/2*c^2*a^2/d*ln
(c*x-1)+c^2*b^2/d*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-2*c^2*b^2/d*ln(I*c*x+(-c^2
*x^2+1)^(1/2))-c*b^2/d*arcsin(c*x)/x*(-c^2*x^2+1)^(1/2)-c*a*b/d/x*(-c^2*x^2
+1)^(1/2)-2*c^2*a*b/d*arcsin(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)+I*c^2*
b^2/d*arcsin(c*x)*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)-2*I*c^2*a*b/d*po
lylog(2,I*c*x+(-c^2*x^2+1)^(1/2))-2*I*c^2*a*b/d*polylog(2,-I*c*x-(-c^2*x^2+
1)^(1/2))-c^2*b^2/d*arcsin(c*x)^2*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)
```

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

$$-\frac{1}{2}\left(\frac{c^2\log(cx+1)}{d}+\frac{c^2\log(cx-1)}{d}-\frac{2c^2\log(x)}{d}+\frac{1}{dx^2}\right)a^2-\int\frac{b^2\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)^2+2ab\arctan}{c^2dx^5-dx^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^3/(-c^2*d*x^2+d),x, algorithm="maxima")
```

```
[Out] -1/2*(c^2*log(c*x + 1)/d + c^2*log(c*x - 1)/d - 2*c^2*log(x)/d + 1/(d*x^2))
*a^2 - integrate((b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a*b*
arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))/(c^2*d*x^5 - d*x^3), x)
```

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

$$\int\frac{(a+b\operatorname{asin}(c\,x))^2}{x^3\left(d-c^2\,d\,x^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x^3*(d - c^2*d*x^2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/(x^3*(d - c^2*d*x^2)), x)
```

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

$$-\frac{\int\frac{a^2}{c^2x^5-x^3}\,dx+\int\frac{b^2\operatorname{asin}^2(cx)}{c^2x^5-x^3}\,dx+\int\frac{2ab\operatorname{asin}(cx)}{c^2x^5-x^3}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x**3/(-c**2*d*x**2+d),x)
```

```
[Out] -(Integral(a**2/(c**2*x**5 - x**3), x) + Integral(b**2*asin(c*x)**2/(c**2*x
**5 - x**3), x) + Integral(2*a*b*asin(c*x)/(c**2*x**5 - x**3), x))/d
```

3.191 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^4\left(d-c^2dx^2\right)}\,dx$

Optimal. Leaf size=333

$$\frac{2ibc^3\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d}-\frac{2ibc^3\text{Li}_2\left(ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d}-\frac{2ic^3\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right.}{d}$$

```
[Out] -1/3*b^2*c^2/d/x-1/3*(a+b*arcsin(c*x))^2/d/x^3-c^2*(a+b*arcsin(c*x))^2/d/x-
2*I*c^3*(a+b*arcsin(c*x))^2*arctan(I*c*x+(-c^2*x^2+1)^(1/2))/d-14/3*b*c^3*(
a+b*arcsin(c*x))*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))/d+7/3*I*b^2*c^3*polylog(
2,-I*c*x-(-c^2*x^2+1)^(1/2))/d+2*I*b*c^3*(a+b*arcsin(c*x))*polylog(2,-I*(I*
c*x+(-c^2*x^2+1)^(1/2)))/d-2*I*b*c^3*(a+b*arcsin(c*x))*polylog(2,I*(I*c*x+(
-c^2*x^2+1)^(1/2)))/d-7/3*I*b^2*c^3*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))/d-2
*b^2*c^3*polylog(3,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d+2*b^2*c^3*polylog(3,I*(
I*c*x+(-c^2*x^2+1)^(1/2)))/d-1/3*b*c*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/d
/x^2
```

Rubi [A] time = 0.65, antiderivative size = 333, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 11, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.407, Rules used = {4701, 4657, 4181, 2531, 2282, 6589, 4709, 4183, 2279, 2391, 30}

$$\frac{2ibc^3\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d}-\frac{2ibc^3\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d}+\frac{7ib^2c^3\text{PolyLog}}{3d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x^4*(d - c^2*d*x^2)),x]
```

```
[Out] -(b^2*c^2)/(3*d*x) - (b*c*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(3*d*x^2)
- (a + b*ArcSin[c*x])^2/(3*d*x^3) - (c^2*(a + b*ArcSin[c*x])^2)/(d*x) - ((2
*I)*c^3*(a + b*ArcSin[c*x])^2*ArcTan[E^(I*ArcSin[c*x])])/d - (14*b*c^3*(a +
 b*ArcSin[c*x])*ArcTanh[E^(I*ArcSin[c*x])])/(3*d) + (((7*I)/3)*b^2*c^3*Poly
Log[2, -E^(I*ArcSin[c*x])])/d + ((2*I)*b*c^3*(a + b*ArcSin[c*x])*PolyLog[2,
 (-I)*E^(I*ArcSin[c*x])])/d - ((2*I)*b*c^3*(a + b*ArcSin[c*x])*PolyLog[2, I
*E^(I*ArcSin[c*x])])/d - (((7*I)/3)*b^2*c^3*PolyLog[2, E^(I*ArcSin[c*x])])/
d - (2*b^2*c^3*PolyLog[3, (-I)*E^(I*ArcSin[c*x])])/d + (2*b^2*c^3*PolyLog[3
, I*E^(I*ArcSin[c*x])])/d
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

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

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^4\left(d-c^2dx^2\right)}\,dx=-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{3dx^3}+c^2\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^2\left(d-c^2dx^2\right)}\,dx+\frac{(2bc)\int \frac{a+b\sin^{-1}(cx)}{x^3\sqrt{1-c^2x^2}}\,dx}{3d}$$

$$=-\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3dx^2}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{3dx^3}-\frac{c^2\left(a+b\sin^{-1}(cx)\right)^2}{dx}+c^4\int$$

$$=-\frac{b^2c^2}{3dx}-\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3dx^2}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{3dx^3}-\frac{c^2\left(a+b\sin^{-1}(cx)\right)^2}{dx}+$$

$$=-\frac{b^2c^2}{3dx}-\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3dx^2}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{3dx^3}-\frac{c^2\left(a+b\sin^{-1}(cx)\right)^2}{dx}-$$

$$=-\frac{b^2c^2}{3dx}-\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3dx^2}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{3dx^3}-\frac{c^2\left(a+b\sin^{-1}(cx)\right)^2}{dx}-$$

$$=-\frac{b^2c^2}{3dx}-\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3dx^2}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{3dx^3}-\frac{c^2\left(a+b\sin^{-1}(cx)\right)^2}{dx}-$$

$$=-\frac{b^2c^2}{3dx}-\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3dx^2}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{3dx^3}-\frac{c^2\left(a+b\sin^{-1}(cx)\right)^2}{dx}-$$

Mathematica [B] time = 7.84, size = 849, normalized size = 2.55

$$-\frac{a^2\log(1-cx)c^3}{2d}+\frac{a^2\log(cx+1)c^3}{2d}-\frac{b^2\left(\frac{1}{2}cx\sin^{-1}(cx)^2\csc^4\left(\frac{1}{2}\sin^{-1}(cx)\right)+2\sin^{-1}(cx)\csc^2\left(\frac{1}{2}\sin^{-1}(cx)\right)+\frac{8\sin}{}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x^4*(d - c^2*d*x^2)),x]
```

```
[Out] -1/3*a^2/(d*x^3) - (a^2*c^2)/(d*x) - (a^2*c^3*Log[1 - c*x])/(2*d) + (a^2*c^
3*Log[1 + c*x])/(2*d) - (2*a*b*(-(c^2*(-(ArcSin[c*x]/x) - c*ArcTanh[Sqrt[1
- c^2*x^2]])) + (c*x*Sqrt[1 - c^2*x^2] + 2*ArcSin[c*x] + c^3*x^3*ArcTanh[Sq
rt[1 - c^2*x^2]])/(6*x^3) + (c^4*((((3*I)/2)*Pi*ArcSin[c*x])/c - ((I/2)*Arc
Sin[c*x]^2)/c + (2*Pi*Log[1 + E^((-I)*ArcSin[c*x])])/c - (Pi*Log[1 + I*E^(I
*ArcSin[c*x])])/c + (2*ArcSin[c*x]*Log[1 + I*E^(I*ArcSin[c*x])])/c - (2*Pi*
Log[Cos[ArcSin[c*x]/2]])/c + (Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]])/c - ((2
*I)*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/c))/2 - (c^4*(((I/2)*Pi*ArcSin[c*x]
)/c - ((I/2)*ArcSin[c*x]^2)/c + (2*Pi*Log[1 + E^((-I)*ArcSin[c*x])])/c + (P
i*Log[1 - I*E^(I*ArcSin[c*x])])/c + (2*ArcSin[c*x]*Log[1 - I*E^(I*ArcSin[c*
x])])/c - (2*Pi*Log[Cos[ArcSin[c*x]/2]])/c - (Pi*Log[Sin[(Pi + 2*ArcSin[c*x
])/4]])/c - ((2*I)*PolyLog[2, I*E^(I*ArcSin[c*x])])/c))/2))/d - (b^2*c^3*(4
*Cot[ArcSin[c*x]/2] + 14*ArcSin[c*x]^2*Cot[ArcSin[c*x]/2] + 2*ArcSin[c*x]*C
sc[ArcSin[c*x]/2]^2 + (c*x*ArcSin[c*x]^2*Csc[ArcSin[c*x]/2]^4)/2 - 56*ArcSi
n[c*x]*Log[1 - E^(I*ArcSin[c*x])] - 24*ArcSin[c*x]^2*Log[1 - I*E^(I*ArcSin[
c*x])] + 24*ArcSin[c*x]^2*Log[1 + I*E^(I*ArcSin[c*x])] + 56*ArcSin[c*x]*Log
[1 + E^(I*ArcSin[c*x])] - (56*I)*PolyLog[2, -E^(I*ArcSin[c*x])] - (48*I)*Ar
cSin[c*x]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] + (48*I)*ArcSin[c*x]*PolyLog[2
, I*E^(I*ArcSin[c*x])] + (56*I)*PolyLog[2, E^(I*ArcSin[c*x])] + 48*PolyLog[
3, (-I)*E^(I*ArcSin[c*x])] - 48*PolyLog[3, I*E^(I*ArcSin[c*x])] - 2*ArcSin[
c*x]*Sec[ArcSin[c*x]/2]^2 + (8*ArcSin[c*x]^2*Sin[ArcSin[c*x]/2]^4)/(c^3*x^3
) + 4*Tan[ArcSin[c*x]/2] + 14*ArcSin[c*x]^2*Tan[ArcSin[c*x]/2]))/(24*d)
```

fricas [F] time = 2.96, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{b^2\arcsin(cx)^2 + 2\,ab\arcsin(cx) + a^2}{c^2dx^6 - dx^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^4/(-c^2*d*x^2+d),x, algorithm="fricas")
```

```
[Out] integral(-(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)/(c^2*d*x^6 - d*x^4)
, x)
```

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

$$\int -\frac{(b\arcsin(cx) + a)^2}{(c^2dx^2 - d)x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^4/(-c^2*d*x^2+d),x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)^2/((c^2*d*x^2 - d)*x^4), x)
```

maple [A] time = 0.45, size = 725, normalized size = 2.18

$$-\frac{c\,b^2\sqrt{-c^2x^2+1}\,\arcsin(cx)}{3d\,x^2} - \frac{cab\sqrt{-c^2x^2+1}}{3d\,x^2} - \frac{2c^2ab\arcsin(cx)}{dx} + \frac{2c^3ab\arcsin(cx)\ln\left(1 - i\left(icx + \sqrt{-c^2x^2 +\right.\right.}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x^4/(-c^2*d*x^2+d),x)
```

```
[Out] -1/3*c*b^2/d/x^2*(-c^2*x^2+1)^(1/2)*arcsin(c*x)-1/3*c*a*b/d/x^2*(-c^2*x^2+1
)^(1/2)-2*c^2*a*b/d*arcsin(c*x)/x+2*c^3*a*b/d*arcsin(c*x)*ln(1-I*(I*c*x+(-c
^2*x^2+1)^(1/2)))-2*c^3*a*b/d*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2))
)-2*I*c^3/d*b^2*arcsin(c*x)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))+2*I*c^3
*a*b/d*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-2*I*c^3*a*b/d*dilog(1-I*(I*c*x
+(-c^2*x^2+1)^(1/2)))+2*I*c^3/d*b^2*arcsin(c*x)*polylog(2,-I*(I*c*x+(-c^2*x
^2+1)^(1/2)))-7/3*c^3*a*b/d*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+7/3*c^3*a*b/d*ln
(I*c*x+(-c^2*x^2+1)^(1/2)-1)+c^3/d*b^2*arcsin(c*x)^2*ln(1-I*(I*c*x+(-c^2*x^
2+1)^(1/2)))-c^3/d*b^2*arcsin(c*x)^2*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-7/3
*c^3*b^2/d*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-2/3*a*b/d*arcsin(c*x)
/x^3+7/3*I*c^3*b^2/d*dilog(1+I*c*x+(-c^2*x^2+1)^(1/2))+7/3*I*c^3*b^2/d*dilo
g(I*c*x+(-c^2*x^2+1)^(1/2))-c^2*a^2/d/x-1/3*b^2/d/x^3*arcsin(c*x)^2-1/2*c^3
*a^2/d*ln(c*x-1)+1/2*c^3*a^2/d*ln(c*x+1)-c^2*b^2/d/x*arcsin(c*x)^2-2*b^2*c^
3*polylog(3,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d+2*b^2*c^3*polylog(3,I*(I*c*x+(
-c^2*x^2+1)^(1/2)))/d-1/3*b^2*c^2/d/x-1/3*a^2/d/x^3
```

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

$$\frac{1}{6}\left(\frac{3\,c^3\log(cx+1)}{d} - \frac{3\,c^3\log(cx-1)}{d} - \frac{2\left(3\,c^2x^2+1\right)}{dx^3}\right)a^2 + \frac{3\,b^2c^3x^3\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)^2\log(cx +}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^4/(-c^2*d*x^2+d),x, algorithm="maxima")
```

```
[Out] 1/6*(3*c^3*log(c*x + 1)/d - 3*c^3*log(c*x - 1)/d - 2*(3*c^2*x^2 + 1)/(d*x^3
))*a^2 + 1/6*(3*b^2*c^3*x^3*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2*lo
g(c*x + 1) - 3*b^2*c^3*x^3*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2*log
```

```
(-c*x + 1) + 6*d*x^3*integrate(-1/3*(6*a*b*arctan2(c*x, sqrt(c*x + 1)*sqrt(
-c*x + 1)) - (3*b^2*c^4*x^4*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(
c*x + 1) - 3*b^2*c^4*x^4*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(-c*
x + 1) - 2*(3*b^2*c^3*x^3 + b^2*c*x)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x +
 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^2*d*x^6 - d*x^4), x) - 2*(3*b^2*c^2*
x^2 + b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2)/(d*x^3)
```

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

$$\int \frac{(a + b \operatorname{asin}(c x))^2}{x^4 \left(d - c^2 d x^2\right)} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x^4*(d - c^2*d*x^2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/(x^4*(d - c^2*d*x^2)), x)
```

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

$$-\frac{\int \frac{a^2}{c^2x^6-x^4}\, dx + \int \frac{b^2 \operatorname{asin}^2(cx)}{c^2x^6-x^4}\, dx + \int \frac{2ab \operatorname{asin}(cx)}{c^2x^6-x^4}\, dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x**4/(-c**2*d*x**2+d),x)
```

```
[Out] -(Integral(a**2/(c**2*x**6 - x**4), x) + Integral(b**2*asin(c*x)**2/(c**2*x
**6 - x**4), x) + Integral(2*a*b*asin(c*x)/(c**2*x**6 - x**4), x))/d
```

3.192 $\int \frac{x^4(a+b\sin^{-1}(cx))^2}{(d-c^2dx^2)^2}\,dx$

Optimal. Leaf size=300

$$-\frac{3ib\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^5d^2}+\frac{3ib\text{Li}_2\left(ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^5d^2}+\frac{3i\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}\right.}{c^5d^2}$$

```
[Out] -2*b^2*x/c^4/d^2+3/2*x*(a+b*arcsin(c*x))^2/c^4/d^2+1/2*x^3*(a+b*arcsin(c*x)
)^2/c^2/d^2/(-c^2*x^2+1)+3*I*(a+b*arcsin(c*x))^2*arctan(I*c*x+(-c^2*x^2+1)^
(1/2))/c^5/d^2+b^2*arctanh(c*x)/c^5/d^2-3*I*b*(a+b*arcsin(c*x))*polylog(2,-
I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c^5/d^2+3*I*b*(a+b*arcsin(c*x))*polylog(2,I*(
I*c*x+(-c^2*x^2+1)^(1/2)))/c^5/d^2+3*b^2*polylog(3,-I*(I*c*x+(-c^2*x^2+1)^(
1/2)))/c^5/d^2-3*b^2*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c^5/d^2-b*(a+b
*arcsin(c*x))/c^5/d^2/(-c^2*x^2+1)^(1/2)+2*b*(a+b*arcsin(c*x))*(-c^2*x^2+1)
^(1/2)/c^5/d^2
```

Rubi [A] time = 0.53, antiderivative size = 300, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 14, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.518, Rules used = {4703, 4715, 4657, 4181, 2531, 2282, 6589, 4677, 8, 266, 43, 4689, 388, 208}

$$-\frac{3ib\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^5d^2}+\frac{3ib\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^5d^2}+\frac{3b^2\text{PolyLog}\left(3\right.}{c^5d}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^2,x]
```

```
[Out] (-2*b^2*x)/(c^4*d^2) - (b*(a + b*ArcSin[c*x]))/(c^5*d^2*Sqrt[1 - c^2*x^2])
+ (2*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(c^5*d^2) + (3*x*(a + b*ArcSi
n[c*x])^2)/(2*c^4*d^2) + (x^3*(a + b*ArcSin[c*x])^2)/(2*c^2*d^2*(1 - c^2*x^
2)) + ((3*I)*(a + b*ArcSin[c*x])^2*ArcTan[E^(I*ArcSin[c*x])])/(c^5*d^2) + (
b^2*ArcTanh[c*x])/(c^5*d^2) - ((3*I)*b*(a + b*ArcSin[c*x])*PolyLog[2, (-I)*
E^(I*ArcSin[c*x])])/(c^5*d^2) + ((3*I)*b*(a + b*ArcSin[c*x])*PolyLog[2, I*E
^(I*ArcSin[c*x])])/(c^5*d^2) + (3*b^2*PolyLog[3, (-I)*E^(I*ArcSin[c*x])])/(
c^5*d^2) - (3*b^2*PolyLog[3, I*E^(I*ArcSin[c*x])])/(c^5*d^2)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 43

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

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
```

```
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 388

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_)), x_Symbol] :> Si
mp[(d*x*(a + b*x^n)^(p + 1))/(b*(n*(p + 1) + 1)), x] - Dist[(a*d - b*c*(n*(
p + 1) + 1))/(b*(n*(p + 1) + 1)), Int[(a + b*x^n)^p, x], x] /; FreeQ[{a, b,
 c, d, n}, x] && NeQ[b*c - a*d, 0] && NeQ[n*(p + 1) + 1, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4689

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[d^p*(a + b*
ArcSin[c*x]), u, x] - Dist[b*c*d^p, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^
2], x], x], x]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && Intege
rQ[p - 1/2] && (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0]) && NeQ[p, -
2^(-1)] && GtQ[d, 0]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(e*(m + 2*p + 1)), x] + (Dist[(f^2*(m - 1))/(c^2*(m + 2*
p + 1)), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(c*(m + 2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c
*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e,
0] && GtQ[n, 0] && GtQ[m, 1] && NeQ[m + 2*p + 1, 0] && IntegerQ[m]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^2}\,dx = \frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d^2\left(1-c^2x^2\right)} - \frac{b\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}\,dx}{cd^2} - \frac{3\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{d-c^2dx^2}\,dx}{2c^2d}$$

$$= -\frac{b\left(a+b\sin^{-1}(cx)\right)}{c^5d^2\sqrt{1-c^2x^2}} - \frac{b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c^5d^2} + \frac{3x\left(a+b\sin^{-1}(cx)\right)^2}{2c^4d^2} + \cdots$$

$$= \frac{b^2x}{c^4d^2} - \frac{b\left(a+b\sin^{-1}(cx)\right)}{c^5d^2\sqrt{1-c^2x^2}} + \frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c^5d^2} + \frac{3x\left(a+b\sin^{-1}(cx\right.}{2c^4d^2}$$

$$= -\frac{2b^2x}{c^4d^2} - \frac{b\left(a+b\sin^{-1}(cx)\right)}{c^5d^2\sqrt{1-c^2x^2}} + \frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c^5d^2} + \frac{3x\left(a+b\sin^{-1}(\right.}{2c^4d^2}$$

$$= -\frac{2b^2x}{c^4d^2} - \frac{b\left(a+b\sin^{-1}(cx)\right)}{c^5d^2\sqrt{1-c^2x^2}} + \frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c^5d^2} + \frac{3x\left(a+b\sin^{-1}(\right.}{2c^4d^2}$$

$$= -\frac{2b^2x}{c^4d^2} - \frac{b\left(a+b\sin^{-1}(cx)\right)}{c^5d^2\sqrt{1-c^2x^2}} + \frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c^5d^2} + \frac{3x\left(a+b\sin^{-1}(\right.}{2c^4d^2}$$

$$= -\frac{2b^2x}{c^4d^2} - \frac{b\left(a+b\sin^{-1}(cx)\right)}{c^5d^2\sqrt{1-c^2x^2}} + \frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c^5d^2} + \frac{3x\left(a+b\sin^{-1}(\right.}{2c^4d^2}$$

Mathematica [B] time = 3.14, size = 614, normalized size = 2.05

$$-\frac{2a^2cx}{c^2x^2-1} + 4a^2cx + 3a^2\log(1-cx) - 3a^2\log(cx+1) + 8ab\sqrt{1-c^2x^2} + \frac{2ab\sqrt{1-c^2x^2}}{cx-1} - \frac{2ab\sqrt{1-c^2x^2}}{cx+1} - 12ib\mathrm{Li}_2\left(-ie^{i\cdots}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^4*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^2,x]
```

```
[Out] (4*a^2*c*x + (8*b^2*c^3*x^3)/(1 - c^2*x^2) + 8*a*b*Sqrt[1 - c^2*x^2] + (2*a
*b*Sqrt[1 - c^2*x^2])/(-1 + c*x) - (2*a*b*Sqrt[1 - c^2*x^2])/(1 + c*x) - (2
*a^2*c*x)/(-1 + c^2*x^2) + (8*b^2*c*x)/(-1 + c^2*x^2) + (6*I)*a*b*Pi*ArcSin
[c*x] + 8*a*b*c*x*ArcSin[c*x] - (2*a*b*ArcSin[c*x])/(-1 + c*x) - (2*a*b*Arc
Sin[c*x])/(1 + c*x) + (2*b^2*ArcSin[c*x])/Sqrt[1 - c^2*x^2] - (6*b^2*c^2*x^
2*ArcSin[c*x])/Sqrt[1 - c^2*x^2] + 2*b^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x] + (6
*b^2*c*x*ArcSin[c*x]^2)/(1 - c^2*x^2) + (4*b^2*c^3*x^3*ArcSin[c*x]^2)/(-1 +
 c^2*x^2) + (12*I)*b^2*ArcSin[c*x]^2*ArcTan[E^(I*ArcSin[c*x])] + 4*b^2*ArcT
anh[c*x] - 6*a*b*Pi*Log[1 - I*E^(I*ArcSin[c*x])] - 12*a*b*ArcSin[c*x]*Log[1
 - I*E^(I*ArcSin[c*x])] - 6*a*b*Pi*Log[1 + I*E^(I*ArcSin[c*x])] + 12*a*b*Ar
cSin[c*x]*Log[1 + I*E^(I*ArcSin[c*x])] + 3*a^2*Log[1 - c*x] - 3*a^2*Log[1 +
 c*x] + 6*a*b*Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] + 6*a*b*Pi*Log[Sin[(Pi +
 2*ArcSin[c*x])/4]] - (12*I)*b*(a + b*ArcSin[c*x])*PolyLog[2, (-I)*E^(I*Arc
Sin[c*x])] + (12*I)*b*(a + b*ArcSin[c*x])*PolyLog[2, I*E^(I*ArcSin[c*x])] +
 12*b^2*PolyLog[3, (-I)*E^(I*ArcSin[c*x])] - 12*b^2*PolyLog[3, I*E^(I*ArcSi
n[c*x])])/(4*c^5*d^2)
```

fricas [F] time = 0.70, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{b^2x^4\arcsin(cx)^2 + 2\,abx^4\arcsin(cx) + a^2x^4}{c^4d^2x^4 - 2\,c^2d^2x^2 + d^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*x^4*arcsin(c*x)^2 + 2*a*b*x^4*arcsin(c*x) + a^2*x^4)/(c^4*d^2
*x^4 - 2*c^2*d^2*x^2 + d^2), x)
```

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

$$\int \frac{(b\arcsin(cx) + a)^2x^4}{\left(c^2dx^2 - d\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2*x^4/(c^2*d*x^2 - d)^2, x)
```

maple [B] time = 0.62, size = 705, normalized size = 2.35

$$\frac{3iab\,\mathrm{dilog}\left(1 - i\left(icx + \sqrt{-c^2x^2+1}\right)\right)}{c^5d^2} + \frac{ab\sqrt{-c^2x^2+1}}{c^5d^2\left(c^2x^2-1\right)} + \frac{b^2\arcsin(cx)\sqrt{-c^2x^2+1}}{c^5d^2\left(c^2x^2-1\right)} + \frac{2ab\arcsin(cx)\,x}{c^4d^2} - \frac{b^2\arcsin}{2c^4d^2\left(c^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^2,x)
```

```
[Out] 3*I/c^5*b^2/d^2*arcsin(c*x)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))-3*I/c^5
*b^2/d^2*arcsin(c*x)*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-3*I/c^5*a*b/d
^2*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+3*I/c^5*a*b/d^2*dilog(1-I*(I*c*x+(
-c^2*x^2+1)^(1/2)))+1/c^5*a*b/d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)+3/c^5*a*b/
d^2*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-3/c^5*a*b/d^2*arcsin(c*x
)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+1/c^5*b^2/d^2/(c^2*x^2-1)*arcsin(c*x)*
(-c^2*x^2+1)^(1/2)+2/c^4*a*b/d^2*arcsin(c*x)*x-1/2/c^4*b^2/d^2/(c^2*x^2-1)*
```

```
arcsin(c*x)^2*x-1/c^4*a*b/d^2/(c^2*x^2-1)*arcsin(c*x)*x+2/c^5*a*b/d^2*(-c^2
*x^2+1)^(1/2)+1/c^4*b^2/d^2*arcsin(c*x)^2*x+2/c^5*b^2/d^2*(-c^2*x^2+1)^(1/2
)*arcsin(c*x)-3/2/c^5*b^2/d^2*arcsin(c*x)^2*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2
)))+3/2/c^5*b^2/d^2*arcsin(c*x)^2*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-2*I/c^
5*b^2/d^2*arctan(I*c*x+(-c^2*x^2+1)^(1/2))+3*b^2*polylog(3,-I*(I*c*x+(-c^2*
x^2+1)^(1/2)))/c^5/d^2-3*b^2*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c^5/d^
2-2*b^2*x/c^4/d^2-1/4/c^5*a^2/d^2/(c*x+1)-1/4/c^5*a^2/d^2/(c*x-1)+1/c^4*a^2
/d^2*x+3/4/c^5*a^2/d^2*ln(c*x-1)-3/4/c^5*a^2/d^2*ln(c*x+1)
```

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

$$-\frac{1}{4}\,a^{2}\left(\frac{2\,x}{c^{6}d^{2}x^{2}-c^{4}d^{2}}-\frac{4\,x}{c^{4}d^{2}}+\frac{3\,\log\left(cx+1\right)}{c^{5}d^{2}}-\frac{3\,\log\left(cx-1\right)}{c^{5}d^{2}}\right)-\frac{3\left(b^{2}c^{2}x^{2}-b^{2}\right)\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^2,x, algorithm="maxima")
```

```
[Out] -1/4*a^2*(2*x/(c^6*d^2*x^2 - c^4*d^2) - 4*x/(c^4*d^2) + 3*log(c*x + 1)/(c^5
*d^2) - 3*log(c*x - 1)/(c^5*d^2)) - 1/4*(3*(b^2*c^2*x^2 - b^2)*arctan2(c*x,
 sqrt(c*x + 1)*sqrt(-c*x + 1))^2*log(c*x + 1) - 3*(b^2*c^2*x^2 - b^2)*arcta
n2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2*log(-c*x + 1) - 2*(2*b^2*c^3*x^3 -
3*b^2*c*x)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 4*(c^7*d^2*x^2 -
c^5*d^2)*integrate(-1/2*(4*a*b*c^4*x^4*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x
 + 1)) - (3*(b^2*c^2*x^2 - b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*
log(c*x + 1) - 3*(b^2*c^2*x^2 - b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x +
 1))*log(-c*x + 1) - 2*(2*b^2*c^3*x^3 - 3*b^2*c*x)*arctan2(c*x, sqrt(c*x +
1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^8*d^2*x^4 - 2*c^6*d^2*
x^2 + c^4*d^2), x))/(c^7*d^2*x^2 - c^5*d^2)
```

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

$$\int \frac{x^4\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{{\left(d-c^2\,d\,x^2\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^2,x)
```

```
[Out] int((x^4*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^2, x)
```

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

$$\frac{\int \frac{a^{2}x^{4}}{c^{4}x^{4}-2c^{2}x^{2}+1}\,dx+\int \frac{b^{2}x^{4}\operatorname{asin}^{2}{\left(cx\right)}}{c^{4}x^{4}-2c^{2}x^{2}+1}\,dx+\int \frac{2abx^{4}\operatorname{asin}{\left(cx\right)}}{c^{4}x^{4}-2c^{2}x^{2}+1}\,dx}{d^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**2,x)
```

```
[Out] (Integral(a**2*x**4/(c**4*x**4 - 2*c**2*x**2 + 1), x) + Integral(b**2*x**4*
asin(c*x)**2/(c**4*x**4 - 2*c**2*x**2 + 1), x) + Integral(2*a*b*x**4*asin(c
*x)/(c**4*x**4 - 2*c**2*x**2 + 1), x))/d**2
```

3.193 $\int \frac{x^3(a+b\sin^{-1}(cx))^2}{(d-c^2dx^2)^2}\,dx$

Optimal. Leaf size=227

$$-\frac{ib\text{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^4d^2}-\frac{i\left(a+b\sin^{-1}(cx)\right)^3}{3bc^4d^2}+\frac{\left(a+b\sin^{-1}(cx)\right)^2}{2c^4d^2}+\frac{\log\left(1+e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}\right.}{c^4d^2}$$

```
[Out] 1/2*(a+b*arcsin(c*x))^2/c^4/d^2+1/2*x^2*(a+b*arcsin(c*x))^2/c^2/d^2/(-c^2*x
^2+1)-1/3*I*(a+b*arcsin(c*x))^3/b/c^4/d^2+(a+b*arcsin(c*x))^2*ln(1+(I*c*x+(
-c^2*x^2+1)^(1/2))^2)/c^4/d^2-1/2*b^2*ln(-c^2*x^2+1)/c^4/d^2-I*b*(a+b*arcsi
n(c*x))*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c^4/d^2+1/2*b^2*polylog(3,
-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c^4/d^2-b*x*(a+b*arcsin(c*x))/c^3/d^2/(-c^2*
x^2+1)^(1/2)
```

Rubi [A] time = 0.39, antiderivative size = 227, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 9, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4703, 4675, 3719, 2190, 2531, 2282, 6589, 4641, 260}

$$-\frac{ib\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^4d^2}+\frac{b^2\text{PolyLog}\left(3,-e^{2i\sin^{-1}(cx)}\right)}{2c^4d^2}+\frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d^2\left(1-c^2x^2\right)}-\frac{bx\left(a+b\sin\right.}{c^3d^2\sqrt{1-c}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^2,x]
```

```
[Out] -((b*x*(a + b*ArcSin[c*x]))/(c^3*d^2*Sqrt[1 - c^2*x^2])) + (a + b*ArcSin[c*
x])^2/(2*c^4*d^2) + (x^2*(a + b*ArcSin[c*x])^2)/(2*c^2*d^2*(1 - c^2*x^2)) -
 ((I/3)*(a + b*ArcSin[c*x])^3)/(b*c^4*d^2) + ((a + b*ArcSin[c*x])^2*Log[1 +
 E^((2*I)*ArcSin[c*x])])/(c^4*d^2) - (b^2*Log[1 - c^2*x^2])/(2*c^4*d^2) - (
I*b*(a + b*ArcSin[c*x])*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(c^4*d^2) + (b^
2*PolyLog[3, -E^((2*I)*ArcSin[c*x])])/(2*c^4*d^2)
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
```

```
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^3 \left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^2}\,dx = \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d^2\left(1-c^2x^2\right)} - \frac{b\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}dx}{cd^2} - \frac{\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{d-c^2dx^2}dx}{c^2d}$$

$$= -\frac{bx\left(a+b\sin^{-1}(cx)\right)}{c^3d^2\sqrt{1-c^2x^2}} + \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d^2\left(1-c^2x^2\right)} - \frac{\text{Subst}\left(\int (a+bx)^2\tan(x)\,dx, x, \sin\right.}{c^4d^2}$$

$$= -\frac{bx\left(a+b\sin^{-1}(cx)\right)}{c^3d^2\sqrt{1-c^2x^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2c^4d^2} + \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d^2\left(1-c^2x^2\right)} - \frac{i\left(a+b\sin^{-1}\right.}{3bc^4d^2}$$

$$= -\frac{bx\left(a+b\sin^{-1}(cx)\right)}{c^3d^2\sqrt{1-c^2x^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2c^4d^2} + \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d^2\left(1-c^2x^2\right)} - \frac{i\left(a+b\sin^{-1}\right.}{3bc^4d^2}$$

$$= -\frac{bx\left(a+b\sin^{-1}(cx)\right)}{c^3d^2\sqrt{1-c^2x^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2c^4d^2} + \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d^2\left(1-c^2x^2\right)} - \frac{i\left(a+b\sin^{-1}\right.}{3bc^4d^2}$$

$$= -\frac{bx\left(a+b\sin^{-1}(cx)\right)}{c^3d^2\sqrt{1-c^2x^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2c^4d^2} + \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d^2\left(1-c^2x^2\right)} - \frac{i\left(a+b\sin^{-1}\right.}{3bc^4d^2}$$

$$= -\frac{bx\left(a+b\sin^{-1}(cx)\right)}{c^3d^2\sqrt{1-c^2x^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2c^4d^2} + \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d^2\left(1-c^2x^2\right)} - \frac{i\left(a+b\sin^{-1}\right.}{3bc^4d^2}$$

Mathematica [B] time = 1.07, size = 502, normalized size = 2.21

$$-\frac{3a^2}{c^2x^2-1} + 3a^2\log\left(1-c^2x^2\right) + \frac{3ab\sqrt{1-c^2x^2}}{cx-1} + \frac{3ab\sqrt{1-c^2x^2}}{cx+1} - 12iab\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right) - 12iab\text{Li}_2\left(ie^{i\sin^{-1}(cx)}\right) - 6iab\sin$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^3*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^2,x]
```

```
[Out] ((3*a*b*Sqrt[1 - c^2*x^2])/(-1 + c*x) + (3*a*b*Sqrt[1 - c^2*x^2])/(1 + c*x)
 - (3*a^2)/(-1 + c^2*x^2) + (12*I)*a*b*Pi*ArcSin[c*x] - (3*a*b*ArcSin[c*x])
/(-1 + c*x) + (3*a*b*ArcSin[c*x])/(1 + c*x) - (6*b^2*c*x*ArcSin[c*x])/Sqrt[
1 - c^2*x^2] - (6*I)*a*b*ArcSin[c*x]^2 + (3*b^2*ArcSin[c*x]^2)/(1 - c^2*x^2
) - (2*I)*b^2*ArcSin[c*x]^3 + 24*a*b*Pi*Log[1 + E^((-I)*ArcSin[c*x])] + 6*a
*b*Pi*Log[1 - I*E^(I*ArcSin[c*x])] + 12*a*b*ArcSin[c*x]*Log[1 - I*E^(I*ArcS
in[c*x])] - 6*a*b*Pi*Log[1 + I*E^(I*ArcSin[c*x])] + 12*a*b*ArcSin[c*x]*Log[
1 + I*E^(I*ArcSin[c*x])] + 6*b^2*ArcSin[c*x]^2*Log[1 + E^((2*I)*ArcSin[c*x]
)] + 3*a^2*Log[1 - c^2*x^2] - 3*b^2*Log[1 - c^2*x^2] - 24*a*b*Pi*Log[Cos[Ar
cSin[c*x]/2]] + 6*a*b*Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] - 6*a*b*Pi*Log[S
in[(Pi + 2*ArcSin[c*x])/4]] - (12*I)*a*b*PolyLog[2, (-I)*E^(I*ArcSin[c*x])]
 - (12*I)*a*b*PolyLog[2, I*E^(I*ArcSin[c*x])] - (6*I)*b^2*ArcSin[c*x]*PolyL
og[2, -E^((2*I)*ArcSin[c*x])] + 3*b^2*PolyLog[3, -E^((2*I)*ArcSin[c*x])])/(
6*c^4*d^2)
```

fricas [F] time = 0.69, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2x^3\arcsin(cx)^2 + 2\,abx^3\arcsin(cx) + a^2x^3}{c^4d^2x^4 - 2\,c^2d^2x^2 + d^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*x^3*arcsin(c*x)^2 + 2*a*b*x^3*arcsin(c*x) + a^2*x^3)/(c^4*d^2
*x^4 - 2*c^2*d^2*x^2 + d^2), x)
```

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

$$\int \frac{(b \arcsin(cx) + a)^2 x^3}{(c^2 dx^2 - d)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2*x^3/(c^2*d*x^2 - d)^2, x)
```

maple [B] time = 0.66, size = 585, normalized size = 2.58

$$\frac{a^2}{4c^4d^2(cx+1)} + \frac{a^2 \ln(cx+1)}{2c^4d^2} - \frac{a^2}{4c^4d^2(cx-1)} + \frac{a^2 \ln(cx-1)}{2c^4d^2} - \frac{iab \operatorname{polylog}\left(2, -\left(icx + \sqrt{-c^2x^2+1}\right)^2\right)}{c^4d^2} - \frac{ia}{c^2d^2(c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^2,x)
```

```
[Out] 1/4/c^4*a^2/d^2/(c*x+1)+1/2/c^4*a^2/d^2*ln(c*x+1)-1/4/c^4*a^2/d^2/(c*x-1)+1
/2/c^4*a^2/d^2*ln(c*x-1)-I/c^2*a*b/d^2/(c^2*x^2-1)*x^2+I/c^4*a*b/d^2/(c^2*x
^2-1)+1/c^3*b^2/d^2*arcsin(c*x)/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+I/c^4*b^2/
d^2*arcsin(c*x)/(c^2*x^2-1)-1/2/c^4*b^2/d^2*arcsin(c*x)^2/(c^2*x^2-1)+1/c^4
*b^2/d^2*arcsin(c*x)^2*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)-1/3*I/c^4*b^2/d^2
*arcsin(c*x)^3+1/2*b^2*polylog(3,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c^4/d^2+2/c
^4*b^2/d^2*ln(I*c*x+(-c^2*x^2+1)^(1/2))-1/c^4*b^2/d^2*ln(1+(I*c*x+(-c^2*x^2
+1)^(1/2))^2)-I/c^4*a*b/d^2*arcsin(c*x)^2-I/c^4*b^2/d^2*arcsin(c*x)*polylog
(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)+1/c^3*a*b/d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1
/2)*x-I/c^2*b^2/d^2*arcsin(c*x)/(c^2*x^2-1)*x^2-1/c^4*a*b/d^2*arcsin(c*x)/(
c^2*x^2-1)+2/c^4*a*b/d^2*arcsin(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)-I/c
^4*a*b/d^2*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{x^3 (a + b \operatorname{asin}(c x))^2}{(d - c^2 d x^2)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^2,x)
```

```
[Out] int((x^3*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^2, x)
```

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

$$\frac{\int \frac{a^2x^3}{c^4x^4-2c^2x^2+1} \, dx + \int \frac{b^2x^3 \operatorname{asin}^2(cx)}{c^4x^4-2c^2x^2+1} \, dx + \int \frac{2abx^3 \operatorname{asin}(cx)}{c^4x^4-2c^2x^2+1} \, dx}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**2,x)
```

```
[Out] (Integral(a**2*x**3/(c**4*x**4 - 2*c**2*x**2 + 1), x) + Integral(b**2*x**3*
asin(c*x)**2/(c**4*x**4 - 2*c**2*x**2 + 1), x) + Integral(2*a*b*x**3*asin(c
*x)/(c**4*x**4 - 2*c**2*x**2 + 1), x))/d**2
```

3.194 $\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^2}\,dx$

Optimal. Leaf size=233

$$-\frac{ib\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^3d^2}+\frac{ib\text{Li}_2\left(ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^3d^2}+\frac{i\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx\right.}{c^3d^2}$$

```
[Out] 1/2*x*(a+b*arcsin(c*x))^2/c^2/d^2/(-c^2*x^2+1)+I*(a+b*arcsin(c*x))^2*arctan
(I*c*x+(-c^2*x^2+1)^(1/2))/c^3/d^2+b^2*arctanh(c*x)/c^3/d^2-I*b*(a+b*arcsin
(c*x))*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c^3/d^2+I*b*(a+b*arcsin(c*x
))*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c^3/d^2+b^2*polylog(3,-I*(I*c*x+
(-c^2*x^2+1)^(1/2)))/c^3/d^2-b^2*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c^
3/d^2-b*(a+b*arcsin(c*x))/c^3/d^2/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.30, antiderivative size = 233, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.296, Rules used = {4703, 4657, 4181, 2531, 2282, 6589, 4677, 206}

$$-\frac{ib\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^3d^2}+\frac{ib\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^3d^2}+\frac{b^2\text{PolyLog}\left(3,-i\right.}{c^3d^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^2,x]
```

```
[Out] -((b*(a + b*ArcSin[c*x]))/(c^3*d^2*Sqrt[1 - c^2*x^2])) + (x*(a + b*ArcSin[c
*x])^2)/(2*c^2*d^2*(1 - c^2*x^2)) + (I*(a + b*ArcSin[c*x])^2*ArcTan[E^(I*Ar
cSin[c*x])])/(c^3*d^2) + (b^2*ArcTanh[c*x])/(c^3*d^2) - (I*b*(a + b*ArcSin[
c*x])*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(c^3*d^2) + (I*b*(a + b*ArcSin[c*
x])*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c^3*d^2) + (b^2*PolyLog[3, (-I)*E^(I*
ArcSin[c*x])])/(c^3*d^2) - (b^2*PolyLog[3, I*E^(I*ArcSin[c*x])])/(c^3*d^2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^2 \left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^2}\,dx = \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d^2\left(1-c^2x^2\right)} - \frac{b\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}\,dx}{cd^2} - \frac{\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d-c^2dx^2}\,dx}{2c^2d}$$

$$= -\frac{b\left(a+b\sin^{-1}(cx)\right)}{c^3d^2\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d^2\left(1-c^2x^2\right)} - \frac{\text{Subst}\left(\int (a+bx)^2\sec(x)\,dx, x, \sin\right.}{2c^3d^2}$$

$$= -\frac{b\left(a+b\sin^{-1}(cx)\right)}{c^3d^2\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d^2\left(1-c^2x^2\right)} + \frac{i\left(a+b\sin^{-1}(cx)\right)^2\tan^{-1}\left(e^{i\sin^{-1}(c}\right.}{c^3d^2}$$

$$= -\frac{b\left(a+b\sin^{-1}(cx)\right)}{c^3d^2\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d^2\left(1-c^2x^2\right)} + \frac{i\left(a+b\sin^{-1}(cx)\right)^2\tan^{-1}\left(e^{i\sin^{-1}(c}\right.}{c^3d^2}$$

$$= -\frac{b\left(a+b\sin^{-1}(cx)\right)}{c^3d^2\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d^2\left(1-c^2x^2\right)} + \frac{i\left(a+b\sin^{-1}(cx)\right)^2\tan^{-1}\left(e^{i\sin^{-1}(c}\right.}{c^3d^2}$$

$$= -\frac{b\left(a+b\sin^{-1}(cx)\right)}{c^3d^2\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d^2\left(1-c^2x^2\right)} + \frac{i\left(a+b\sin^{-1}(cx)\right)^2\tan^{-1}\left(e^{i\sin^{-1}(c}\right.}{c^3d^2}$$

Mathematica [A] time = 2.64, size = 383, normalized size = 1.64

$$-\frac{\frac{2a^2cx}{c^2x^2-1} + a^2(-\log(1-cx)) + a^2\log(cx+1) + \frac{2ab\left(-2\sqrt{1-c^2x^2}+\cos\left(2\sin^{-1}(cx)\right)+\sin^{-1}(cx)\left(2cx-\log\left(1-ie^{i\sin^{-1}(cx)}\right)+\log\left(1+ie^{i\sin}\right.\right.\right.}{c^2x^2-1}}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^2*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^2,x]
```

```
[Out] -1/4*((2*a^2*c*x)/(-1 + c^2*x^2) + (2*b^2*ArcSin[c*x]*(-2*Sqrt[1 - c^2*x^2]
 + c*x*ArcSin[c*x]))/(-1 + c^2*x^2) + (2*a*b*(1 - 2*Sqrt[1 - c^2*x^2] + Cos
[2*ArcSin[c*x]] + ArcSin[c*x]*(2*c*x - Log[1 - I*E^(I*ArcSin[c*x])] + Log[1
 + I*E^(I*ArcSin[c*x])] + Cos[2*ArcSin[c*x]]*(-Log[1 - I*E^(I*ArcSin[c*x])]
 + Log[1 + I*E^(I*ArcSin[c*x])]))))/(-1 + c^2*x^2) - a^2*Log[1 - c*x] + a^2
*Log[1 + c*x] + (4*I)*a*b*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] - (4*I)*a*b*Po
lyLog[2, I*E^(I*ArcSin[c*x])] - 4*b^2*(I*ArcSin[c*x]^2*ArcTan[E^(I*ArcSin[c
*x])] + ArcTanh[c*x] - I*ArcSin[c*x]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] + I
*ArcSin[c*x]*PolyLog[2, I*E^(I*ArcSin[c*x])] + PolyLog[3, (-I)*E^(I*ArcSin[
c*x])] - PolyLog[3, I*E^(I*ArcSin[c*x])]))/(c^3*d^2)
```

fricas [F] time = 1.20, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2x^2\arcsin(cx)^2 + 2\,abx^2\arcsin(cx) + a^2x^2}{c^4d^2x^4 - 2\,c^2d^2x^2 + d^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*x^2*arcsin(c*x)^2 + 2*a*b*x^2*arcsin(c*x) + a^2*x^2)/(c^4*d^2
*x^4 - 2*c^2*d^2*x^2 + d^2), x)
```

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

$$\int \frac{(b\arcsin(cx)+a)^2x^2}{\left(c^2dx^2-d\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2*x^2/(c^2*d*x^2 - d)^2, x)
```

maple [B] time = 0.40, size = 599, normalized size = 2.57

$$-\frac{a^2}{4c^3d^2(cx+1)}-\frac{a^2\ln(cx+1)}{4c^3d^2}-\frac{a^2}{4c^3d^2(cx-1)}+\frac{a^2\ln(cx-1)}{4c^3d^2}-\frac{b^2\arcsin(cx)^2x}{2c^2d^2(c^2x^2-1)}+\frac{b^2\arcsin(cx)\sqrt{-c^2x^2+1}}{c^3d^2(c^2x^2-1)}-\frac{b^2 a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^2,x)
```

```
[Out] -1/4/c^3*a^2/d^2/(c*x+1)-1/4/c^3*a^2/d^2*ln(c*x+1)-1/4/c^3*a^2/d^2/(c*x-1)+
1/4/c^3*a^2/d^2*ln(c*x-1)-1/2/c^2*b^2/d^2/(c^2*x^2-1)*arcsin(c*x)^2*x+1/c^3
*b^2/d^2/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)-1/2/c^3*b^2/d^2*arcsin(
c*x)^2*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-2*I/c^3*b^2/d^2*arctan(I*c*x+(-c^
2*x^2+1)^(1/2))-b^2*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c^3/d^2+1/2/c^3
*b^2/d^2*arcsin(c*x)^2*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-I/c^3*a*b/d^2*dil
og(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+b^2*polylog(3,-I*(I*c*x+(-c^2*x^2+1)^(1/
2)))/c^3/d^2+I/c^3*a*b/d^2*dilog(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-1/c^2*a*b/
d^2/(c^2*x^2-1)*arcsin(c*x)*x+1/c^3*a*b/d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)+
1/c^3*a*b/d^2*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-1/c^3*a*b/d^2*
arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+I/c^3*b^2/d^2*arcsin(c*x)*po
lylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))-I/c^3*b^2/d^2*arcsin(c*x)*polylog(2,-
I*(I*c*x+(-c^2*x^2+1)^(1/2)))
```

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

$$-\frac{1}{4}a^2\left(\frac{2x}{c^4d^2x^2-c^2d^2}+\frac{\log(cx+1)}{c^3d^2}-\frac{\log(cx-1)}{c^3d^2}\right)-\frac{2b^2cx\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)^2+\left(b^2c^2x^2-b^2\right)\mathrm{arcta}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^2,x, algorithm="maxima")
```

```
[Out] -1/4*a^2*(2*x/(c^4*d^2*x^2 - c^2*d^2) + log(c*x + 1)/(c^3*d^2) - log(c*x -
1)/(c^3*d^2)) - 1/4*(2*b^2*c*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2
 + (b^2*c^2*x^2 - b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2*log(c*x
 + 1) - (b^2*c^2*x^2 - b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2*lo
g(-c*x + 1) + 4*(c^5*d^2*x^2 - c^3*d^2)*integrate(-1/2*(4*a*b*c^2*x^2*arcta
n2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) - (2*b^2*c*x*arctan2(c*x, sqrt(c*x +
1)*sqrt(-c*x + 1)) + (b^2*c^2*x^2 - b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c
*x + 1))*log(c*x + 1) - (b^2*c^2*x^2 - b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt
(-c*x + 1))*log(-c*x + 1))*sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^6*d^2*x^4 - 2*c
^4*d^2*x^2 + c^2*d^2), x))/(c^5*d^2*x^2 - c^3*d^2)
```

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

$$\int \frac{x^2\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{{\left(d-c^2\,d\,x^2\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^2,x)
```

```
[Out] int((x^2*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^2, x)
```

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

$$\frac{\int \frac{a^2x^2}{c^4x^4-2c^2x^2+1}\,dx + \int \frac{b^2x^2\operatorname{asin}^2(cx)}{c^4x^4-2c^2x^2+1}\,dx + \int \frac{2abx^2\operatorname{asin}(cx)}{c^4x^4-2c^2x^2+1}\,dx}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**2,x)
```

```
[Out] (Integral(a**2*x**2/(c**4*x**4 - 2*c**2*x**2 + 1), x) + Integral(b**2*x**2*
asin(c*x)**2/(c**4*x**4 - 2*c**2*x**2 + 1), x) + Integral(2*a*b*x**2*asin(c
*x)/(c**4*x**4 - 2*c**2*x**2 + 1), x))/d**2
```

3.195 $\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^2}\,dx$

Optimal. Leaf size=89

$$-\frac{bx\left(a+b\sin^{-1}(cx)\right)}{cd^2\sqrt{1-c^2x^2}}+\frac{\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d^2\left(1-c^2x^2\right)}-\frac{b^2\log\left(1-c^2x^2\right)}{2c^2d^2}$$

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

Rubi [A] time = 0.10, antiderivative size = 89, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {4677, 4651, 260}

$$-\frac{bx\left(a+b\sin^{-1}(cx)\right)}{cd^2\sqrt{1-c^2x^2}}+\frac{\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d^2\left(1-c^2x^2\right)}-\frac{b^2\log\left(1-c^2x^2\right)}{2c^2d^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^2,x]
```

```
[Out] -((b*x*(a + b*ArcSin[c*x]))/(c*d^2*Sqrt[1 - c^2*x^2])) + (a + b*ArcSin[c*x]
)^2/(2*c^2*d^2*(1 - c^2*x^2)) - (b^2*Log[1 - c^2*x^2])/(2*c^2*d^2)
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^2}dx = \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d^2\left(1-c^2x^2\right)} - \frac{b\int \frac{a+b\sin^{-1}(cx)}{\left(1-c^2x^2\right)^{3/2}}dx}{cd^2}$$
$$= -\frac{bx\left(a+b\sin^{-1}(cx)\right)}{cd^2\sqrt{1-c^2x^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d^2\left(1-c^2x^2\right)} + \frac{b^2\int \frac{x}{1-c^2x^2}dx}{d^2}$$
$$= -\frac{bx\left(a+b\sin^{-1}(cx)\right)}{cd^2\sqrt{1-c^2x^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d^2\left(1-c^2x^2\right)} - \frac{b^2\log\left(1-c^2x^2\right)}{2c^2d^2}$$

Mathematica [A] time = 0.19, size = 75, normalized size = 0.84

$$-\frac{\frac{2bcx\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{c^2x^2-1} + b^2\log\left(1-c^2x^2\right)}{2c^2d^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^2,x]
```

```
[Out] -1/2*((2*b*c*x*(a + b*ArcSin[c*x]))/Sqrt[1 - c^2*x^2] + (a + b*ArcSin[c*x])
^2/(-1 + c^2*x^2) + b^2*Log[1 - c^2*x^2])/(c^2*d^2)
```

fricas [A] time = 0.60, size = 102, normalized size = 1.15

$$-\frac{b^2\arcsin(cx)^2 + 2\,ab\arcsin(cx) + a^2 + \left(b^2c^2x^2-b^2\right)\log\left(c^2x^2-1\right) - 2\left(b^2cx\arcsin(cx) + abcx\right)\sqrt{-c^2x^2+1}}{2\left(c^4d^2x^2-c^2d^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2 + (b^2*c^2*x^2 - b^2)*log
(c^2*x^2 - 1) - 2*(b^2*c*x*arcsin(c*x) + a*b*c*x)*sqrt(-c^2*x^2 + 1))/(c^4*
d^2*x^2 - c^2*d^2)
```

giac [B] time = 0.73, size = 204, normalized size = 2.29

$$-\frac{b^2x^2\arcsin(cx)^2}{2\left(c^2x^2-1\right)d^2} - \frac{abx^2\arcsin(cx)}{\left(c^2x^2-1\right)d^2} - \frac{a^2x^2}{2\left(c^2x^2-1\right)d^2} - \frac{b^2x\arcsin(cx)}{\sqrt{-c^2x^2+1}\,cd^2} + \frac{b^2\arcsin(cx)^2}{2\,c^2d^2} - \frac{abx}{\sqrt{-c^2x^2+1}\,cd^2} + \frac{ab\,a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^2,x, algorithm="giac")
```

```
[Out] -1/2*b^2*x^2*arcsin(c*x)^2/((c^2*x^2 - 1)*d^2) - a*b*x^2*arcsin(c*x)/((c^2*
x^2 - 1)*d^2) - 1/2*a^2*x^2/((c^2*x^2 - 1)*d^2) - b^2*x*arcsin(c*x)/(sqrt(-
c^2*x^2 + 1)*c*d^2) + 1/2*b^2*arcsin(c*x)^2/(c^2*d^2) - a*b*x/(sqrt(-c^2*x^
2 + 1)*c*d^2) + a*b*arcsin(c*x)/(c^2*d^2) - b^2*log(2)/(c^2*d^2) - 1/2*b^2*
log(abs(-c^2*x^2 + 1))/(c^2*d^2) + 1/2*a^2/(c^2*d^2)
```

maple [B] time = 0.05, size = 205, normalized size = 2.30

$$-\frac{a^2}{2c^2d^2\left(c^2x^2-1\right)} - \frac{b^2\arcsin(cx)^2}{2c^2d^2\left(c^2x^2-1\right)} + \frac{b^2\arcsin(cx)\sqrt{-c^2x^2+1}\;x}{c\,d^2\left(c^2x^2-1\right)} - \frac{b^2\ln\left(-c^2x^2+1\right)}{2c^2d^2} - \frac{ab\arcsin(cx)}{c^2d^2\left(c^2x^2-1\right)} + \frac{ab\sqrt{-}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^2,x)
```

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

maxima [B] time = 0.93, size = 293, normalized size = 3.29

$$\frac{1}{2}\left(\left(\frac{\sqrt{-c^2x^2+1}\,c^2d^2}{c^7d^4x+c^6d^4}+\frac{\sqrt{-c^2x^2+1}\,c^2d^2}{c^7d^4x-c^6d^4}\right)c^2-\frac{2\arcsin(cx)}{c^4d^2x^2-c^2d^2}\right)ab-\frac{1}{2}\left(c^3\left(\frac{\log(cx+1)}{c^5d^2}+\frac{\log(cx-1)}{c^5d^2}\right)-\left(\frac{\sqrt{-c^2x^2+}}{c^7d^4x+}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^2,x, algorithm="maxima")
```

```
[Out] 1/2*((sqrt(-c^2*x^2 + 1)*c^2*d^2/(c^7*d^4*x + c^6*d^4) + sqrt(-c^2*x^2 + 1)
*c^2*d^2/(c^7*d^4*x - c^6*d^4))*c^2 - 2*arcsin(c*x)/(c^4*d^2*x^2 - c^2*d^2)
)*a*b - 1/2*(c^3*(log(c*x + 1)/(c^5*d^2) + log(c*x - 1)/(c^5*d^2)) - (sqrt(
-c^2*x^2 + 1)*c^2*d^2/(c^7*d^4*x + c^6*d^4) + sqrt(-c^2*x^2 + 1)*c^2*d^2/(c
^7*d^4*x - c^6*d^4))*c^2*arcsin(c*x))*b^2 - 1/2*b^2*arcsin(c*x)^2/(c^4*d^2*
x^2 - c^2*d^2) - 1/2*a^2/(c^4*d^2*x^2 - c^2*d^2)
```

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

$$\int \frac{x\,(a+b\,\mathrm{asin}(c\,x))^2}{\left(d-c^2\,d\,x^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^2,x)
```

```
[Out] int((x*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^2, x)
```

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

$$\frac{\int \frac{a^2x}{c^4x^4-2c^2x^2+1}\,dx+\int \frac{b^2x\,\mathrm{asin}^2(cx)}{c^4x^4-2c^2x^2+1}\,dx+\int \frac{2abx\,\mathrm{asin}(cx)}{c^4x^4-2c^2x^2+1}\,dx}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**2,x)
```

```
[Out] (Integral(a**2*x/(c**4*x**4 - 2*c**2*x**2 + 1), x) + Integral(b**2*x*asin(c
*x)**2/(c**4*x**4 - 2*c**2*x**2 + 1), x) + Integral(2*a*b*x*asin(c*x)/(c**4
*x**4 - 2*c**2*x**2 + 1), x))/d**2
```

3.196 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^2}\,dx$

Optimal. Leaf size=230

$$-\frac{b\left(a+b\sin^{-1}(cx)\right)}{cd^2\sqrt{1-c^2x^2}}+\frac{x\left(a+b\sin^{-1}(cx)\right)^2}{2d^2\left(1-c^2x^2\right)}+\frac{ib\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{cd^2}-\frac{ib\text{Li}_2\left(ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}\right.}{cd^2}$$

```
[Out] 1/2*x*(a+b*arcsin(c*x))^2/d^2/(-c^2*x^2+1)-I*(a+b*arcsin(c*x))^2*arctan(I*c
*x+(-c^2*x^2+1)^(1/2))/c/d^2+b^2*arctanh(c*x)/c/d^2+I*b*(a+b*arcsin(c*x))*p
olylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/d^2-I*b*(a+b*arcsin(c*x))*polylog
(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/d^2-b^2*polylog(3,-I*(I*c*x+(-c^2*x^2+1)
^(1/2)))/c/d^2+b^2*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/d^2-b*(a+b*arc
sin(c*x))/c/d^2/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.24, antiderivative size = 230, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4655, 4657, 4181, 2531, 2282, 6589, 4677, 206}

$$\frac{ib\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{cd^2}-\frac{ib\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{cd^2}-\frac{b^2\text{PolyLog}\left(3,-ie^{i\,\mathrm{s}}\right.}{cd^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(d - c^2*d*x^2)^2,x]
```

```
[Out] -((b*(a + b*ArcSin[c*x]))/(c*d^2*Sqrt[1 - c^2*x^2])) + (x*(a + b*ArcSin[c*x
])^2)/(2*d^2*(1 - c^2*x^2)) - (I*(a + b*ArcSin[c*x])^2*ArcTan[E^(I*ArcSin[c
*x])])/(c*d^2) + (b^2*ArcTanh[c*x])/(c*d^2) + (I*b*(a + b*ArcSin[c*x])*Poly
Log[2, (-I)*E^(I*ArcSin[c*x])])/(c*d^2) - (I*b*(a + b*ArcSin[c*x])*PolyLog[
2, I*E^(I*ArcSin[c*x])])/(c*d^2) - (b^2*PolyLog[3, (-I)*E^(I*ArcSin[c*x])])
/(c*d^2) + (b^2*PolyLog[3, I*E^(I*ArcSin[c*x])])/(c*d^2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^2}\,dx = \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{2d^2\left(1-c^2x^2\right)} - \frac{(bc)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}\,dx}{d^2} + \frac{\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d-c^2dx^2}\,dx}{2d}$$

$$= -\frac{b\left(a+b\sin^{-1}(cx)\right)}{cd^2\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{2d^2\left(1-c^2x^2\right)} + \frac{b^2\int \frac{1}{1-c^2x^2}\,dx}{d^2} + \frac{\text{Subst}\left(\int (a+bx)^2\,\text{s}\right.}{2}$$

$$= -\frac{b\left(a+b\sin^{-1}(cx)\right)}{cd^2\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{2d^2\left(1-c^2x^2\right)} - \frac{i\left(a+b\sin^{-1}(cx)\right)^2\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{cd^2}$$

$$= -\frac{b\left(a+b\sin^{-1}(cx)\right)}{cd^2\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{2d^2\left(1-c^2x^2\right)} - \frac{i\left(a+b\sin^{-1}(cx)\right)^2\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{cd^2}$$

$$= -\frac{b\left(a+b\sin^{-1}(cx)\right)}{cd^2\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{2d^2\left(1-c^2x^2\right)} - \frac{i\left(a+b\sin^{-1}(cx)\right)^2\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{cd^2}$$

$$= -\frac{b\left(a+b\sin^{-1}(cx)\right)}{cd^2\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{2d^2\left(1-c^2x^2\right)} - \frac{i\left(a+b\sin^{-1}(cx)\right)^2\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{cd^2}$$

Mathematica [A] time = 2.62, size = 359, normalized size = 1.56

$$\frac{-\frac{2a^2x}{c^2x^2-1} - \frac{a^2\log(1-cx)}{c} + \frac{a^2\log(cx+1)}{c} + \frac{2ab\left(\frac{2\left(c^2x^2+\sqrt{1-c^2x^2}+\sin^{-1}(cx)\left(\left(c^2x^2-1\right)\log\left(1-ie^{i\sin^{-1}(cx)}\right)+\left(1-c^2x^2\right)\log\left(1+ie^{i\sin^{-1}(cx)}\right)-cx\right)-1\right)}{c^2x^2-1}+2i\text{Li}_2\left(-\right.\right.}{c}}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(d - c^2*d*x^2)^2,x]
```

```
[Out] ((-2*a^2*x)/(-1 + c^2*x^2) - (a^2*Log[1 - c*x])/c + (a^2*Log[1 + c*x])/c +
(2*a*b*((2*(-1 + c^2*x^2 + Sqrt[1 - c^2*x^2] + ArcSin[c*x]*(-(c*x) + (-1 +
c^2*x^2)*Log[1 - I*E^(I*ArcSin[c*x])] + (1 - c^2*x^2)*Log[1 + I*E^(I*ArcSin
[c*x])])))/(-1 + c^2*x^2) + (2*I)*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] - (2*I
)*PolyLog[2, I*E^(I*ArcSin[c*x])]))/c + (4*b^2*(-(ArcSin[c*x]/Sqrt[1 - c^2*
x^2]) + (c*x*ArcSin[c*x]^2)/(2 - 2*c^2*x^2) - I*ArcSin[c*x]^2*ArcTan[E^(I*A
rcSin[c*x])] + ArcTanh[c*x] + I*ArcSin[c*x]*PolyLog[2, (-I)*E^(I*ArcSin[c*x
])] - I*ArcSin[c*x]*PolyLog[2, I*E^(I*ArcSin[c*x])] - PolyLog[3, (-I)*E^(I*
ArcSin[c*x])] + PolyLog[3, I*E^(I*ArcSin[c*x])]))/c)/(4*d^2)
```

fricas [F] time = 0.75, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2\arcsin(cx)^2 + 2\,ab\arcsin(cx) + a^2}{c^4d^2x^4 - 2\,c^2d^2x^2 + d^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)/(c^4*d^2*x^4 - 2*c^2
*d^2*x^2 + d^2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^2,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.18, size = 593, normalized size = 2.58

$$-\frac{a^2}{4c\,d^2\,(cx+1)}+\frac{a^2\ln(cx+1)}{4c\,d^2}-\frac{a^2}{4c\,d^2\,(cx-1)}-\frac{a^2\ln(cx-1)}{4c\,d^2}-\frac{b^2\arcsin(cx)^2\,x}{2d^2\left(c^2x^2-1\right)}+\frac{b^2\arcsin(cx)\sqrt{-c^2x^2+1}}{c\,d^2\left(c^2x^2-1\right)}+\frac{b^2\,\mathrm{ar}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^2,x)
```

```
[Out] -1/4/c*a^2/d^2/(c*x+1)+1/4/c*a^2/d^2*ln(c*x+1)-1/4/c*a^2/d^2/(c*x-1)-1/4/c*
a^2/d^2*ln(c*x-1)-1/2*b^2/d^2/(c^2*x^2-1)*arcsin(c*x)^2*x+1/c*b^2/d^2/(c^2*
x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+1/2/c*b^2/d^2*arcsin(c*x)^2*ln(1-I*(I
*c*x+(-c^2*x^2+1)^(1/2)))-I/c*b^2/d^2*arcsin(c*x)*polylog(2,I*(I*c*x+(-c^2*
x^2+1)^(1/2)))+b^2*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/d^2-1/2/c*b^2/
d^2*arcsin(c*x)^2*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-I/c*a*b/d^2*dilog(1-I*
(I*c*x+(-c^2*x^2+1)^(1/2)))-b^2*polylog(3,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/
d^2-2*I/c*b^2/d^2*arctan(I*c*x+(-c^2*x^2+1)^(1/2))-a*b/d^2/(c^2*x^2-1)*arcs
in(c*x)*x+1/c*a*b/d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)-1/c*a*b/d^2*arcsin(c*x
)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+1/c*a*b/d^2*arcsin(c*x)*ln(1-I*(I*c*x+
(-c^2*x^2+1)^(1/2)))+I/c*b^2/d^2*arcsin(c*x)*polylog(2,-I*(I*c*x+(-c^2*x^2+
1)^(1/2)))+I/c*a*b/d^2*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))
```

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

$$-\frac{1}{4}a^2\left(\frac{2x}{c^2d^2x^2-d^2}-\frac{\log(cx+1)}{cd^2}+\frac{\log(cx-1)}{cd^2}\right)-\frac{2\,b^2cx\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)^2-\left(b^2c^2x^2-b^2\right)\arctan}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^2,x, algorithm="maxima")
```

```
[Out] -1/4*a^2*(2*x/(c^2*d^2*x^2 - d^2) - log(c*x + 1)/(c*d^2) + log(c*x - 1)/(c*
d^2)) - 1/4*(2*b^2*c*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 - (b^2*
c^2*x^2 - b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2*log(c*x + 1) +
(b^2*c^2*x^2 - b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2*log(-c*x +
 1) - 4*(c^3*d^2*x^2 - c*d^2)*integrate(1/2*(4*a*b*arctan2(c*x, sqrt(c*x +
1)*sqrt(-c*x + 1)) - (2*b^2*c*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))
- (b^2*c^2*x^2 - b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(c*x +
1) + (b^2*c^2*x^2 - b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(-c*
x + 1))*sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2),
x))/(c^3*d^2*x^2 - c*d^2)
```

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

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))^2}{\left(d-c^2\,d\,x^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(d - c^2*d*x^2)^2,x)
```

```
[Out] int((a + b*asin(c*x))^2/(d - c^2*d*x^2)^2, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(-c**2*d*x**2+d)**2,x)
```

```
[Out] Timed out
```

3.197 $\int \frac{(a+b\sin^{-1}(cx))^2}{x(d-c^2dx^2)^2}\,dx$

Optimal. Leaf size=211

$$-\frac{bcx\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{1-c^2x^2}}+\frac{\left(a+b\sin^{-1}(cx)\right)^2}{2d^2\left(1-c^2x^2\right)}+\frac{ib\text{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2}-\frac{ib\text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(\right.}{d^2}$$

```
[Out] 1/2*(a+b*arcsin(c*x))^2/d^2/(-c^2*x^2+1)-2*(a+b*arcsin(c*x))^2*arctanh((I*c
*x+(-c^2*x^2+1)^(1/2))^2)/d^2-1/2*b^2*ln(-c^2*x^2+1)/d^2+I*b*(a+b*arcsin(c*
x))*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^2-I*b*(a+b*arcsin(c*x))*poly
log(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^2-1/2*b^2*polylog(3,-(I*c*x+(-c^2*x^2
+1)^(1/2))^2)/d^2+1/2*b^2*polylog(3,(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^2-b*c*x
*(a+b*arcsin(c*x))/d^2/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.37, antiderivative size = 211, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4705, 4679, 4419, 4183, 2531, 2282, 6589, 4651, 260}

$$\frac{ib\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2}-\frac{ib\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2}-\frac{b^2\text{PolyLog}\left(3,-e^{2i\sin^{-1}}\right.}{2d^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x*(d - c^2*d*x^2)^2),x]
```

```
[Out] -((b*c*x*(a + b*ArcSin[c*x]))/(d^2*Sqrt[1 - c^2*x^2])) + (a + b*ArcSin[c*x]
)^2/(2*d^2*(1 - c^2*x^2)) - (2*(a + b*ArcSin[c*x])^2*ArcTanh[E^((2*I)*ArcSi
n[c*x])])/d^2 - (b^2*Log[1 - c^2*x^2])/(2*d^2) + (I*b*(a + b*ArcSin[c*x])*P
olyLog[2, -E^((2*I)*ArcSin[c*x])])/d^2 - (I*b*(a + b*ArcSin[c*x])*PolyLog[2
, E^((2*I)*ArcSin[c*x])])/d^2 - (b^2*PolyLog[3, -E^((2*I)*ArcSin[c*x])])/(2
*d^2) + (b^2*PolyLog[3, E^((2*I)*ArcSin[c*x])])/(2*d^2)
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
```

```
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4419

```
Int[Csc[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csc[2*a + 2*b*x]^n,
 x], x] /; FreeQ[{a, b, c, d, m}, x] && IntegerQ[n] && RationalQ[m]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4679

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((x_)*((d_) + (e_.)*(x_)^2)),
x_Symbol] :> Dist[1/d, Subst[Int[(a + b*x)^n/(Cos[x]*Sin[x]), x], x, ArcSin
[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4705

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> -Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a +
b*ArcSin[c*x])^n)/(2*d*f*(p + 1)), x] + (Dist[(m + 2*p + 3)/(2*d*(p + 1)),
Int[(f*x)^m*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[(b*c*n
*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*f*(p + 1)*(1 - c^2*x^2)^FracPart[
p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
0] && LtQ[p, -1] &&  !GtQ[m, 1] && (IntegerQ[m] || IntegerQ[p] || EqQ[n, 1]
)
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\left(d-c^2dx^2\right)^2}\,dx = \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2d^2\left(1-c^2x^2\right)} - \frac{(bc)\int \frac{a+b\sin^{-1}(cx)}{\left(1-c^2x^2\right)^{3/2}}\,dx}{d^2} + \frac{\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\left(d-c^2dx^2\right)}\,dx}{d}$$

$$= -\frac{bcx\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{1-c^2x^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2d^2\left(1-c^2x^2\right)} + \frac{\text{Subst}\left(\int (a+bx)^2\csc(x)\sec(x)\,dx, x, \text{s}\right.}{d^2}$$

$$= -\frac{bcx\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{1-c^2x^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2d^2\left(1-c^2x^2\right)} - \frac{b^2\log\left(1-c^2x^2\right)}{2d^2} + \frac{2\,\text{Subst}\left(\int (a+bx)^2\right.}{}$$

$$= -\frac{bcx\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{1-c^2x^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2d^2\left(1-c^2x^2\right)} - \frac{2\left(a+b\sin^{-1}(cx)\right)^2\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)}{d^2}$$

$$= -\frac{bcx\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{1-c^2x^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2d^2\left(1-c^2x^2\right)} - \frac{2\left(a+b\sin^{-1}(cx)\right)^2\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)}{d^2}$$

$$= -\frac{bcx\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{1-c^2x^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2d^2\left(1-c^2x^2\right)} - \frac{2\left(a+b\sin^{-1}(cx)\right)^2\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)}{d^2}$$

$$= -\frac{bcx\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{1-c^2x^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2d^2\left(1-c^2x^2\right)} - \frac{2\left(a+b\sin^{-1}(cx)\right)^2\tanh^{-1}\left(e^{2i\sin^{-1}(cx)}\right)}{d^2}$$

Mathematica [A] time = 1.32, size = 365, normalized size = 1.73

$$\frac{\frac{a^2}{1-c^2x^2} - a^2\log\left(1-c^2x^2\right) + 2a^2\log(cx) + 2ab\left(-\frac{cx}{\sqrt{1-c^2x^2}} + \frac{\sin^{-1}(cx)}{1-c^2x^2} + i\text{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right) - i\text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right) + 2\sin\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x*(d - c^2*d*x^2)^2),x]
```

```
[Out] (a^2/(1 - c^2*x^2) + 2*a^2*Log[c*x] - a^2*Log[1 - c^2*x^2] + 2*a*b*(-((c*x)
/Sqrt[1 - c^2*x^2]) + ArcSin[c*x]/(1 - c^2*x^2) + 2*ArcSin[c*x]*Log[1 - E^(
(2*I)*ArcSin[c*x])] - 2*ArcSin[c*x]*Log[1 + E^((2*I)*ArcSin[c*x])] + I*Poly
Log[2, -E^((2*I)*ArcSin[c*x])] - I*PolyLog[2, E^((2*I)*ArcSin[c*x])]) + 2*b
^2*((-1/24*I)*Pi^3 - (c*x*ArcSin[c*x])/Sqrt[1 - c^2*x^2] + ArcSin[c*x]^2/(2
 - 2*c^2*x^2) + ((2*I)/3)*ArcSin[c*x]^3 + ArcSin[c*x]^2*Log[1 - E^((-2*I)*A
rcSin[c*x])] - ArcSin[c*x]^2*Log[1 + E^((2*I)*ArcSin[c*x])] - Log[1 - c^2*x
^2]/2 + I*ArcSin[c*x]*PolyLog[2, E^((-2*I)*ArcSin[c*x])] + I*ArcSin[c*x]*Po
lyLog[2, -E^((2*I)*ArcSin[c*x])] + PolyLog[3, E^((-2*I)*ArcSin[c*x])]/2 - P
olyLog[3, -E^((2*I)*ArcSin[c*x])]/2))/(2*d^2)
```

fricas [F] time = 1.01, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2\arcsin(cx)^2 + 2\,ab\arcsin(cx) + a^2}{c^4d^2x^5 - 2\,c^2d^2x^3 + d^2x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x/(-c^2*d*x^2+d)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)/(c^4*d^2*x^5 - 2*c^2
*d^2*x^3 + d^2*x), x)
```

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

$$\int \frac{(b \arcsin(cx) + a)^2}{(c^2dx^2 - d)^2 x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x/(-c^2*d*x^2+d)^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/((c^2*d*x^2 - d)^2*x), x)
```

maple [B] time = 0.44, size = 829, normalized size = 3.93

$$-\frac{2iab\,\mathrm{polylog}\left(2, icx + \sqrt{-c^2x^2+1}\right)}{d^2} - \frac{2iab\,\mathrm{polylog}\left(2, -icx - \sqrt{-c^2x^2+1}\right)}{d^2} + \frac{ib^2 \arcsin(cx)}{d^2\left(c^2x^2-1\right)} + \frac{iab}{d^2\left(c^2x^2-1\right)} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x/(-c^2*d*x^2+d)^2,x)
```

```
[Out] -1/2*b^2*polylog(3,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^2+b^2/d^2*arcsin(c*x)/(
c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c*x-I*b^2/d^2*arcsin(c*x)/(c^2*x^2-1)*c^2*x^2
+a*b/d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c*x-I*a*b/d^2/(c^2*x^2-1)*c^2*x^2-a
*b/d^2*arcsin(c*x)/(c^2*x^2-1)-2*a*b/d^2*arcsin(c*x)*ln(1+(I*c*x+(-c^2*x^2+
1)^(1/2))^2)+2*a*b/d^2*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))+I*b^2/d^2
*arcsin(c*x)*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)-2*I*b^2/d^2*arcsin(c*
x)*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))-2*I*b^2/d^2*arcsin(c*x)*polylog(2,-I
*c*x-(-c^2*x^2+1)^(1/2))+I*a*b/d^2*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)
+2*a*b/d^2*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-2*I*a*b/d^2*polylog(2
,I*c*x+(-c^2*x^2+1)^(1/2))-2*I*a*b/d^2*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))
+I*b^2/d^2*arcsin(c*x)/(c^2*x^2-1)+I*a*b/d^2/(c^2*x^2-1)+b^2/d^2*arcsin(c*x
)^2*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))+b^2/d^2*arcsin(c*x)^2*ln(1+I*c*x+(-c^2*x
^2+1)^(1/2))-1/2*b^2/d^2*arcsin(c*x)^2/(c^2*x^2-1)-b^2/d^2*arcsin(c*x)^2*ln
(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)+1/4*a^2/d^2/(c*x+1)-1/4*a^2/d^2/(c*x-1)+2*
b^2/d^2*ln(I*c*x+(-c^2*x^2+1)^(1/2))-b^2/d^2*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2)
)^2)-1/2*a^2/d^2*ln(c*x+1)+a^2/d^2*ln(c*x)+2*b^2/d^2*polylog(3,I*c*x+(-c^2*
x^2+1)^(1/2))+2*b^2/d^2*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2))-1/2*a^2/d^2*ln
(c*x-1)
```

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

$$-\frac{1}{2}a^2\left(\frac{1}{c^2d^2x^2 - d^2} + \frac{\log(cx+1)}{d^2} + \frac{\log(cx-1)}{d^2} - \frac{2\log(x)}{d^2}\right) + \int \frac{b^2 \arctan\left(cx, \sqrt{cx+1}\sqrt{-cx+1}\right)^2 + 2\,ab\,\mathrm{ar}}{c^4d^2x^5 - 2\,c^2d^2x^3 +}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x/(-c^2*d*x^2+d)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a^2*(1/(c^2*d^2*x^2 - d^2) + log(c*x + 1)/d^2 + log(c*x - 1)/d^2 - 2*l
og(x)/d^2) + integrate((b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 +
2*a*b*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))/(c^4*d^2*x^5 - 2*c^2*d^2*
x^3 + d^2*x), x)
```

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

$$\int \frac{(a + b\,\mathrm{asin}(c\,x))^2}{x\left(d - c^2\,d\,x^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x*(d - c^2*d*x^2)^2),x)
```

```
[Out] int((a + b*asin(c*x))^2/(x*(d - c^2*d*x^2)^2), x)
```

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

$$\frac{\int \frac{a^2}{c^4x^5-2c^2x^3+x}\,dx + \int \frac{b^2\operatorname{asin}^2(cx)}{c^4x^5-2c^2x^3+x}\,dx + \int \frac{2ab\operatorname{asin}(cx)}{c^4x^5-2c^2x^3+x}\,dx}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x/(-c**2*d*x**2+d)**2,x)
```

```
[Out] (Integral(a**2/(c**4*x**5 - 2*c**2*x**3 + x), x) + Integral(b**2*asin(c*x)*
*2/(c**4*x**5 - 2*c**2*x**3 + x), x) + Integral(2*a*b*asin(c*x)/(c**4*x**5
- 2*c**2*x**3 + x), x))/d**2
```

3.198 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^2\left(d-c^2dx^2\right)^2}\,dx$

Optimal. Leaf size=324

$$-\frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{1-c^2x^2}}+\frac{3c^2x\left(a+b\sin^{-1}(cx)\right)^2}{2d^2\left(1-c^2x^2\right)}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{d^2x\left(1-c^2x^2\right)}+\frac{3ibc\mathrm{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2}-\frac{3i}{}$$

```
[Out] -(a+b*arcsin(c*x))^2/d^2/x/(-c^2*x^2+1)+3/2*c^2*x*(a+b*arcsin(c*x))^2/d^2/(
-c^2*x^2+1)-3*I*c*(a+b*arcsin(c*x))^2*arctan(I*c*x+(-c^2*x^2+1)^(1/2))/d^2-
4*b*c*(a+b*arcsin(c*x))*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))/d^2+b^2*c*arctanh
(c*x)/d^2+2*I*b^2*c*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))/d^2+3*I*b*c*(a+b*a
rcsin(c*x))*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d^2-3*I*b*c*(a+b*arcsi
n(c*x))*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d^2-2*I*b^2*c*polylog(2,I*c
*x+(-c^2*x^2+1)^(1/2))/d^2-3*b^2*c*polylog(3,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))
/d^2+3*b^2*c*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d^2-b*c*(a+b*arcsin(c*
x))/d^2/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.56, antiderivative size = 324, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 14, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.518, Rules used = {4701, 4655, 4657, 4181, 2531, 2282, 6589, 4677, 206, 4705, 4709, 4183, 2279, 2391}

$$\frac{3ibc\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2}-\frac{3ibc\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2}+\frac{2ib^2c\text{PolyLog}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x^2*(d - c^2*d*x^2)^2),x]
```

```
[Out] -((b*c*(a + b*ArcSin[c*x]))/(d^2*Sqrt[1 - c^2*x^2])) - (a + b*ArcSin[c*x])^
2/(d^2*x*(1 - c^2*x^2)) + (3*c^2*x*(a + b*ArcSin[c*x])^2)/(2*d^2*(1 - c^2*x
^2)) - ((3*I)*c*(a + b*ArcSin[c*x])^2*ArcTan[E^(I*ArcSin[c*x])])/d^2 - (4*b
*c*(a + b*ArcSin[c*x])*ArcTanh[E^(I*ArcSin[c*x])])/d^2 + (b^2*c*ArcTanh[c*x
])/d^2 + ((2*I)*b^2*c*PolyLog[2, -E^(I*ArcSin[c*x])])/d^2 + ((3*I)*b*c*(a +
 b*ArcSin[c*x])*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/d^2 - ((3*I)*b*c*(a + b
*ArcSin[c*x])*PolyLog[2, I*E^(I*ArcSin[c*x])])/d^2 - ((2*I)*b^2*c*PolyLog[2
, E^(I*ArcSin[c*x])])/d^2 - (3*b^2*c*PolyLog[3, (-I)*E^(I*ArcSin[c*x])])/d^
2 + (3*b^2*c*PolyLog[3, I*E^(I*ArcSin[c*x])])/d^2
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
```

```
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

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

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
```

```
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4705

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> -Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a +
b*ArcSin[c*x])^n)/(2*d*f*(p + 1)), x] + (Dist[(m + 2*p + 3)/(2*d*(p + 1)),
Int[(f*x)^m*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[(b*c*n
*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*f*(p + 1)*(1 - c^2*x^2)^FracPart[
p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
0] && LtQ[p, -1] &&  !GtQ[m, 1] && (IntegerQ[m] || IntegerQ[p] || EqQ[n, 1]
)
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^2\left(d-c^2dx^2\right)^2}\,dx = -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{d^2x\left(1-c^2x^2\right)} + \left(3c^2\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^2}\,dx + \frac{(2bc)\int \frac{a+b\sin^{-1}(cx)}{x\left(1-c^2x^2\right)^{3/2}}\,dx}{d^2}$$

$$= \frac{2bc\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{1-c^2x^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d^2x\left(1-c^2x^2\right)} + \frac{3c^2x\left(a+b\sin^{-1}(cx)\right)^2}{2d^2\left(1-c^2x^2\right)} + \frac{(2bc)\int \frac{a+b\sin^{-}}{x\sqrt{1-c^{2}}}}{d^2}$$

$$= -\frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{1-c^2x^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d^2x\left(1-c^2x^2\right)} + \frac{3c^2x\left(a+b\sin^{-1}(cx)\right)^2}{2d^2\left(1-c^2x^2\right)} - \frac{2b^2c\tanh^{-1}(cx}{d^2}$$

$$= -\frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{1-c^2x^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d^2x\left(1-c^2x^2\right)} + \frac{3c^2x\left(a+b\sin^{-1}(cx)\right)^2}{2d^2\left(1-c^2x^2\right)} - \frac{3ic\left(a+b\sin^{-}\right.}{}$$

$$= -\frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{1-c^2x^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d^2x\left(1-c^2x^2\right)} + \frac{3c^2x\left(a+b\sin^{-1}(cx)\right)^2}{2d^2\left(1-c^2x^2\right)} - \frac{3ic\left(a+b\sin^{-}\right.}{}$$

$$= -\frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{1-c^2x^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d^2x\left(1-c^2x^2\right)} + \frac{3c^2x\left(a+b\sin^{-1}(cx)\right)^2}{2d^2\left(1-c^2x^2\right)} - \frac{3ic\left(a+b\sin^{-}\right.}{}$$

$$= -\frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{1-c^2x^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d^2x\left(1-c^2x^2\right)} + \frac{3c^2x\left(a+b\sin^{-1}(cx)\right)^2}{2d^2\left(1-c^2x^2\right)} - \frac{3ic\left(a+b\sin^{-}\right.}{}$$

Mathematica [B] time = 9.77, size = 1059, normalized size = 3.27

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x^2*(d - c^2*d*x^2)^2),x]
```

```
[Out] -(a^2/(d^2*x)) - (a^2*c^2*x)/(2*d^2*(-1 + c^2*x^2)) - (3*a^2*c*Log[1 - c*x]
)/(4*d^2) + (3*a^2*c*Log[1 + c*x])/(4*d^2) + (a*b*c*(-2*ArcSin[c*x]*Cot[Arc
Sin[c*x]/2] + 6*ArcSin[c*x]*Log[1 - I*E^(I*ArcSin[c*x])] - 6*ArcSin[c*x]*Lo
g[1 + I*E^(I*ArcSin[c*x])] - 4*Log[Cos[ArcSin[c*x]/2]] + 4*Log[Sin[ArcSin[c
*x]/2]] + (6*I)*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] - (6*I)*PolyLog[2, I*E^(
I*ArcSin[c*x])] + ArcSin[c*x]/(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^2 -
 (2*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]) - ArcSin[
c*x]/(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^2 + (2*Sin[ArcSin[c*x]/2])/(
Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]) - 2*ArcSin[c*x]*Tan[ArcSin[c*x]/2]
))/(2*d^2) + (b^2*c*(-4*ArcSin[c*x] - 2*ArcSin[c*x]^2*Cot[ArcSin[c*x]/2] +
8*ArcSin[c*x]*Log[1 - E^(I*ArcSin[c*x])] + 6*ArcSin[c*x]^2*Log[1 - I*E^(I*A
rcSin[c*x])] + 6*Pi*ArcSin[c*x]*Log[((-1)^(1/4)*(1 - I*E^(I*ArcSin[c*x])))/
(2*E^((I/2)*ArcSin[c*x]))] - 6*ArcSin[c*x]^2*Log[1 + I*E^(I*ArcSin[c*x])] -
 6*ArcSin[c*x]^2*Log[((1/2 + I/2)*(-I + E^(I*ArcSin[c*x])))/E^((I/2)*ArcSin
[c*x])] + 6*Pi*ArcSin[c*x]*Log[-1/2*((-1)^(1/4)*(-I + E^(I*ArcSin[c*x])))/E
^((I/2)*ArcSin[c*x])] - 8*ArcSin[c*x]*Log[1 + E^(I*ArcSin[c*x])] + 6*ArcSin
[c*x]^2*Log[((1 + I) + (1 - I)*E^(I*ArcSin[c*x]))/(2*E^((I/2)*ArcSin[c*x]))
] - 6*Pi*ArcSin[c*x]*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] - 4*Log[Cos[ArcSin[c
*x]/2] - Sin[ArcSin[c*x]/2]] + 6*ArcSin[c*x]^2*Log[Cos[ArcSin[c*x]/2] - Sin
[ArcSin[c*x]/2]] + 4*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]] - 6*ArcSi
n[c*x]^2*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]] - 6*Pi*ArcSin[c*x]*Lo
g[Sin[(Pi + 2*ArcSin[c*x])/4]] + (8*I)*PolyLog[2, -E^(I*ArcSin[c*x])] + (12
*I)*ArcSin[c*x]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] - (12*I)*ArcSin[c*x]*Pol
yLog[2, I*E^(I*ArcSin[c*x])] - (8*I)*PolyLog[2, E^(I*ArcSin[c*x])] - 12*Pol
```

```
yLog[3, (-I)*E^(I*ArcSin[c*x])] + 12*PolyLog[3, I*E^(I*ArcSin[c*x])] + ArcS
in[c*x]^2/(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^2 - (4*ArcSin[c*x]*Sin[
ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]) - ArcSin[c*x]^2/(
Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^2 + (4*ArcSin[c*x]*Sin[ArcSin[c*x]
/2])/(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]) - 2*ArcSin[c*x]^2*Tan[ArcSin
[c*x]/2]))/(4*d^2)
```

fricas [F] time = 1.02, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2 \arcsin(cx)^2 + 2\,ab \arcsin(cx) + a^2}{c^4d^2x^6 - 2\,c^2d^2x^4 + d^2x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^2/(-c^2*d*x^2+d)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)/(c^4*d^2*x^6 - 2*c^2
*d^2*x^4 + d^2*x^2), x)
```

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

$$\int \frac{(b \arcsin(cx) + a)^2}{\left(c^2dx^2 - d\right)^2 x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^2/(-c^2*d*x^2+d)^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/((c^2*d*x^2 - d)^2*x^2), x)
```

maple [B] time = 0.44, size = 778, normalized size = 2.40

$$-\frac{a^2}{d^2x} - \frac{3icab \operatorname{dilog}\left(1 - i\left(icx + \sqrt{-c^2x^2+1}\right)\right)}{d^2} + \frac{3ic\,b^2 \arcsin(cx) \operatorname{polylog}\left(2, -i\left(icx + \sqrt{-c^2x^2+1}\right)\right)}{d^2} + \frac{b^2 \operatorname{arcs}}{d^2\left(c^2x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x^2/(-c^2*d*x^2+d)^2,x)
```

```
[Out] -a^2/d^2/x-3/2*c*b^2/d^2*arcsin(c*x)^2*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-2
*c*a*b/d^2*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+2*c*a*b/d^2*ln(I*c*x+(-c^2*x^2+1)
^(1/2)-1)-2*I*c*b^2/d^2*arctan(I*c*x+(-c^2*x^2+1)^(1/2))+2*I*c*b^2/d^2*dilo
g(1+I*c*x+(-c^2*x^2+1)^(1/2))+2*I*c*b^2/d^2*dilog(I*c*x+(-c^2*x^2+1)^(1/2))
+b^2/d^2*arcsin(c*x)^2/(c^2*x^2-1)/x-2*c*b^2/d^2*arcsin(c*x)*ln(1+I*c*x+(-c
^2*x^2+1)^(1/2))-1/4*c*a^2/d^2/(c*x+1)-1/4*c*a^2/d^2/(c*x-1)+3/4*c*a^2/d^2*
ln(c*x+1)-3/4*c*a^2/d^2*ln(c*x-1)+3*c*a*b/d^2*arcsin(c*x)*ln(1-I*(I*c*x+(-c
^2*x^2+1)^(1/2)))+c*b^2/d^2/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+3/2*
c*b^2/d^2*arcsin(c*x)^2*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+3*I*c*b^2/d^2*ar
csin(c*x)*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-3/2*b^2/d^2/(c^2*x^2-1)*
arcsin(c*x)^2*c^2*x+2*a*b/d^2*arcsin(c*x)/(c^2*x^2-1)/x-3*c*a*b/d^2*arcsin(
c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-3*I*c*b^2/d^2*arcsin(c*x)*polylog(2
,I*(I*c*x+(-c^2*x^2+1)^(1/2)))-3*a*b/d^2/(c^2*x^2-1)*arcsin(c*x)*c^2*x-3*b^
2*c*polylog(3,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d^2+3*b^2*c*polylog(3,I*(I*c*x
+(-c^2*x^2+1)^(1/2)))/d^2+3*I*c*a*b/d^2*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)
))+c*a*b/d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)-3*I*c*a*b/d^2*dilog(1-I*(I*c*x+
(-c^2*x^2+1)^(1/2)))
```

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

$$-\frac{1}{4}\,a^2\left(\frac{2\left(3\,c^2x^2 - 2\right)}{c^2d^2x^3 - d^2x} - \frac{3\,c \log(cx+1)}{d^2} + \frac{3\,c \log(cx-1)}{d^2}\right) + \frac{3\left(b^2c^3x^3 - b^2cx\right) \arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^2/(-c^2*d*x^2+d)^2,x, algorithm="maxima")
```

```
[Out] -1/4*a^2*(2*(3*c^2*x^2 - 2)/(c^2*d^2*x^3 - d^2*x) - 3*c*log(c*x + 1)/d^2 +
3*c*log(c*x - 1)/d^2) + 1/4*(3*(b^2*c^3*x^3 - b^2*c*x)*arctan2(c*x, sqrt(c*
x + 1)*sqrt(-c*x + 1))^2*log(c*x + 1) - 3*(b^2*c^3*x^3 - b^2*c*x)*arctan2(c
*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2*log(-c*x + 1) - 2*(3*b^2*c^2*x^2 - 2*b^
2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 4*(c^2*d^2*x^3 - d^2*x)*i
ntegrate(1/2*(4*a*b*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + (3*(b^2*c^
4*x^4 - b^2*c^2*x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(c*x + 1
) - 3*(b^2*c^4*x^4 - b^2*c^2*x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)
)*log(-c*x + 1) - 2*(3*b^2*c^3*x^3 - 2*b^2*c*x)*arctan2(c*x, sqrt(c*x + 1)*
sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^4*d^2*x^6 - 2*c^2*d^2*x^4
 + d^2*x^2), x))/(c^2*d^2*x^3 - d^2*x)
```

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

$$\int \frac{(a + b\,\mathrm{asin}\,(c\,x))^2}{x^2\,\left(d - c^2\,d\,x^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x^2*(d - c^2*d*x^2)^2),x)
```

```
[Out] int((a + b*asin(c*x))^2/(x^2*(d - c^2*d*x^2)^2), x)
```

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

$$\frac{\int \frac{a^2}{c^4x^6-2c^2x^4+x^2}\,dx + \int \frac{b^2\,\mathrm{asin}^2\,(cx)}{c^4x^6-2c^2x^4+x^2}\,dx + \int \frac{2ab\,\mathrm{asin}\,(cx)}{c^4x^6-2c^2x^4+x^2}\,dx}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x**2/(-c**2*d*x**2+d)**2,x)
```

```
[Out] (Integral(a**2/(c**4*x**6 - 2*c**2*x**4 + x**2), x) + Integral(b**2*asin(c*
x)**2/(c**4*x**6 - 2*c**2*x**4 + x**2), x) + Integral(2*a*b*asin(c*x)/(c**4
*x**6 - 2*c**2*x**4 + x**2), x))/d**2
```

3.199 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^3\left(d-c^2dx^2\right)^2}\,dx$

Optimal. Leaf size=270

$$\frac{2ibc^2\text{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2}-\frac{2ibc^2\text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2}+\frac{c^2\left(a+b\sin^{-1}(cx)\right)^2}{d^2\left(1-c^2x^2\right)}-\frac{bc\left(a+\right.}{d^2x}$$

```
[Out] c^2*(a+b*arcsin(c*x))^2/d^2/(-c^2*x^2+1)-1/2*(a+b*arcsin(c*x))^2/d^2/x^2/(-
c^2*x^2+1)-4*c^2*(a+b*arcsin(c*x))^2*arctanh((I*c*x+(-c^2*x^2+1)^(1/2))^2)/
d^2+b^2*c^2*ln(x)/d^2-1/2*b^2*c^2*ln(-c^2*x^2+1)/d^2+2*I*b*c^2*(a+b*arcsin(
c*x))*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^2-2*I*b*c^2*(a+b*arcsin(c*
x))*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^2-b^2*c^2*polylog(3,-(I*c*x+(
-c^2*x^2+1)^(1/2))^2)/d^2+b^2*c^2*polylog(3,(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d
^2-b*c*(a+b*arcsin(c*x))/d^2/x/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.55, antiderivative size = 270, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 15, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.556, Rules used = {4701, 4705, 4679, 4419, 4183, 2531, 2282, 6589, 4651, 260, 271, 191, 4689, 446, 72}

$$\frac{2ibc^2\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2}-\frac{2ibc^2\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2}-\frac{b^2c^2\text{PolyLog}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x^3*(d - c^2*d*x^2)^2),x]
```

```
[Out] -((b*c*(a + b*ArcSin[c*x]))/(d^2*x*Sqrt[1 - c^2*x^2])) + (c^2*(a + b*ArcSin
[c*x])^2)/(d^2*(1 - c^2*x^2)) - (a + b*ArcSin[c*x])^2/(2*d^2*x^2*(1 - c^2*x
^2)) - (4*c^2*(a + b*ArcSin[c*x])^2*ArcTanh[E^((2*I)*ArcSin[c*x])])/d^2 + (
b^2*c^2*Log[x])/d^2 - (b^2*c^2*Log[1 - c^2*x^2])/(2*d^2) + ((2*I)*b*c^2*(a
+ b*ArcSin[c*x])*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/d^2 - ((2*I)*b*c^2*(a
+ b*ArcSin[c*x])*PolyLog[2, E^((2*I)*ArcSin[c*x])])/d^2 - (b^2*c^2*PolyLog[
3, -E^((2*I)*ArcSin[c*x])])/d^2 + (b^2*c^2*PolyLog[3, E^((2*I)*ArcSin[c*x])
])/d^2
```

Rule 72

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

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 271

```
Int[(x_)^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x^(m + 1)*(
a + b*x^n)^(p + 1))/(a*(m + 1)), x] - Dist[(b*(m + n*(p + 1) + 1))/(a*(m +
1)), Int[x^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, m, n, p}, x] && IL
```

```
tQ[Simplify[(m + 1)/n + p + 1], 0] && NeQ[m, -1]
```

Rule 446

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p
*(c + d*x)^q, x], x, x^n], x] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[
b*c - a*d, 0] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4419

```
Int[Csc[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csc[2*a + 2*b*x]^n,
 x], x] /; FreeQ[{a, b, c, d, m}, x] && IntegerQ[n] && RationalQ[m]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4679

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((x_)*((d_) + (e_.)*(x_)^2)),
x_Symbol] :> Dist[1/d, Subst[Int[(a + b*x)^n/(Cos[x]*Sin[x]), x], x, ArcSin
[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4689

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[d^p*(a + b*
ArcSin[c*x]), u, x] - Dist[b*c*d^p, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^
2], x], x], x]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && Intege
rQ[p - 1/2] && (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0]) && NeQ[p, -
```

```
2^(-1)] && GtQ[d, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4705

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> -Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a +
b*ArcSin[c*x])^n)/(2*d*f*(p + 1)), x] + (Dist[(m + 2*p + 3)/(2*d*(p + 1)),
Int[(f*x)^m*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[(b*c*n
*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*f*(p + 1)*(1 - c^2*x^2)^FracPart[
p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
0] && LtQ[p, -1] &&  !GtQ[m, 1] && (IntegerQ[m] || IntegerQ[p] || EqQ[n, 1]
)
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^3\left(d-c^2dx^2\right)^2}\,dx = -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{2d^2x^2\left(1-c^2x^2\right)} + \left(2c^2\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\left(d-c^2dx^2\right)^2}\,dx + \frac{(bc)\int \frac{a+b\sin^{-1}(cx)}{x^2\left(1-c^2x^2\right)^{3/2}}\,dx}{d^2}$$

$$= -\frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^2x\sqrt{1-c^2x^2}} + \frac{2bc^3x\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{1-c^2x^2}} + \frac{c^2\left(a+b\sin^{-1}(cx)\right)^2}{d^2\left(1-c^2x^2\right)} - \frac{\left(a+b\sin^{-1}\right.}{2d^2x^2\left(1-\right.}$$

$$= -\frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^2x\sqrt{1-c^2x^2}} + \frac{c^2\left(a+b\sin^{-1}(cx)\right)^2}{d^2\left(1-c^2x^2\right)} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2d^2x^2\left(1-c^2x^2\right)} + \frac{\left(2c^2\right)\mathrm{Subst}\left(\int(a\right.}{}$$

$$= -\frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^2x\sqrt{1-c^2x^2}} + \frac{c^2\left(a+b\sin^{-1}(cx)\right)^2}{d^2\left(1-c^2x^2\right)} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2d^2x^2\left(1-c^2x^2\right)} - \frac{b^2c^2\log\left(1-c^2x^2\right.}{d^2}$$

$$= -\frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^2x\sqrt{1-c^2x^2}} + \frac{c^2\left(a+b\sin^{-1}(cx)\right)^2}{d^2\left(1-c^2x^2\right)} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2d^2x^2\left(1-c^2x^2\right)} - \frac{4c^2\left(a+b\sin^{-1}(c\right.}{}$$

$$= -\frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^2x\sqrt{1-c^2x^2}} + \frac{c^2\left(a+b\sin^{-1}(cx)\right)^2}{d^2\left(1-c^2x^2\right)} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2d^2x^2\left(1-c^2x^2\right)} - \frac{4c^2\left(a+b\sin^{-1}(c\right.}{}$$

$$= -\frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^2x\sqrt{1-c^2x^2}} + \frac{c^2\left(a+b\sin^{-1}(cx)\right)^2}{d^2\left(1-c^2x^2\right)} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2d^2x^2\left(1-c^2x^2\right)} - \frac{4c^2\left(a+b\sin^{-1}(c\right.}{}$$

$$= -\frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^2x\sqrt{1-c^2x^2}} + \frac{c^2\left(a+b\sin^{-1}(cx)\right)^2}{d^2\left(1-c^2x^2\right)} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2d^2x^2\left(1-c^2x^2\right)} - \frac{4c^2\left(a+b\sin^{-1}(c\right.}{}$$

Mathematica [A] time = 1.62, size = 430, normalized size = 1.59

$$\frac{\frac{a^2c^2}{1-c^2x^2} - 2a^2c^2\log\left(1-c^2x^2\right) + 4a^2c^2\log(x) - \frac{a^2}{x^2} + 2ab\left(2c^2\left(i\left(\mathrm{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right) - \mathrm{Li}_2\left(e^{2i\sin^{-1}(cx)}\right)\right) + 2\sin^{-1}(cx)\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x^3*(d - c^2*d*x^2)^2),x]
```

```
[Out] (-(a^2/x^2) + (a^2*c^2)/(1 - c^2*x^2) + 4*a^2*c^2*Log[x] - 2*a^2*c^2*Log[1
- c^2*x^2] + 2*a*b*(-((c^3*x)/Sqrt[1 - c^2*x^2]) - (c*Sqrt[1 - c^2*x^2])/x
- ArcSin[c*x]/x^2 + (c^2*ArcSin[c*x])/(1 - c^2*x^2) + 2*c^2*(2*ArcSin[c*x]*
(Log[1 - E^((2*I)*ArcSin[c*x])] - Log[1 + E^((2*I)*ArcSin[c*x])]) + I*(Poly
Log[2, -E^((2*I)*ArcSin[c*x])] - PolyLog[2, E^((2*I)*ArcSin[c*x])]))) + b^2
*c^2*((-2*c*x*ArcSin[c*x])/Sqrt[1 - c^2*x^2] - (2*Sqrt[1 - c^2*x^2]*ArcSin[
c*x])/(c*x) - ArcSin[c*x]^2/(c^2*x^2) + ArcSin[c*x]^2/(1 - c^2*x^2) + 4*Arc
Sin[c*x]^2*(Log[1 - E^((2*I)*ArcSin[c*x])] - Log[1 + E^((2*I)*ArcSin[c*x])]
) + 2*Log[(c*x)/Sqrt[1 - c^2*x^2]] + (4*I)*ArcSin[c*x]*(PolyLog[2, -E^((2*I
)*ArcSin[c*x])] - PolyLog[2, E^((2*I)*ArcSin[c*x])]) + 2*(-PolyLog[3, -E^((
2*I)*ArcSin[c*x])] + PolyLog[3, E^((2*I)*ArcSin[c*x])])))/(2*d^2)
```

fricas [F] time = 0.83, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{b^2\arcsin(cx)^2 + 2\,ab\arcsin(cx) + a^2}{c^4d^2x^7 - 2\,c^2d^2x^5 + d^2x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^3/(-c^2*d*x^2+d)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)/(c^4*d^2*x^7 - 2*c^2
*d^2*x^5 + d^2*x^3), x)
```

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

$$\int \frac{(b\arcsin(cx)+a)^2}{\left(c^2dx^2-d\right)^2x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^3/(-c^2*d*x^2+d)^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/((c^2*d*x^2 - d)^2*x^3), x)
```

maple [B] time = 0.37, size = 903, normalized size = 3.34

$$\frac{ab\arcsin(cx)}{d^2x^2\left(c^2x^2-1\right)}-\frac{2c^2ab\arcsin(cx)}{d^2\left(c^2x^2-1\right)}-\frac{4ic^2ab\operatorname{polylog}\left(2,-icx-\sqrt{-c^2x^2+1}\right)}{d^2}-\frac{c^2a^2\ln(cx+1)}{d^2}+\frac{2c^2a^2\ln(cx)}{d^2}-c$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x^3/(-c^2*d*x^2+d)^2,x)
```

```
[Out] 4*c^2*a*b/d^2*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))+4*c^2*a*b/d^2*arcs
in(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+a*b/d^2/x^2/(c^2*x^2-1)*arcsin(c*x)+
2*I*c^2*a*b/d^2*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)+2*I*c^2*b^2/d^2*ar
csin(c*x)*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)-4*I*c^2*b^2/d^2*arcsin(c
*x)*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))-4*I*c^2*b^2/d^2*arcsin(c*x)*polylog
(2,-I*c*x-(-c^2*x^2+1)^(1/2))-4*I*c^2*a*b/d^2*polylog(2,I*c*x+(-c^2*x^2+1)^
(1/2))-4*I*c^2*a*b/d^2*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))-2*c^2*a*b/d^2*a
rcsin(c*x)/(c^2*x^2-1)-4*c^2*a*b/d^2*arcsin(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(
1/2))^2)-c^2*a^2/d^2*ln(c*x+1)+c^2*b^2/d^2*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+c
^2*b^2/d^2*ln(I*c*x+(-c^2*x^2+1)^(1/2)-1)+2*c^2*a^2/d^2*ln(c*x)+4*c^2*b^2/d
^2*polylog(3,I*c*x+(-c^2*x^2+1)^(1/2))+4*c^2*b^2/d^2*polylog(3,-I*c*x-(-c^2
*x^2+1)^(1/2))-c^2*a^2/d^2*ln(c*x-1)+1/4*c^2*a^2/d^2/(c*x+1)-1/4*c^2*a^2/d^
2/(c*x-1)-c^2*b^2/d^2*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)-2*c^2*b^2/d^2*arcs
in(c*x)^2*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)+1/2*b^2/d^2/x^2/(c^2*x^2-1)*ar
csin(c*x)^2+2*c^2*b^2/d^2*arcsin(c*x)^2*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))+2*c^
2*b^2/d^2*arcsin(c*x)^2*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-c^2*b^2/d^2*arcsin(c
*x)^2/(c^2*x^2-1)+c*a*b/d^2/x/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)+c*b^2/d^2/x/(c
^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)-1/2*a^2/d^2/x^2-b^2*c^2*polylog(3,
-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^2
```

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

$$-\frac{1}{2}a^2\left(\frac{2c^2\log(cx+1)}{d^2}+\frac{2c^2\log(cx-1)}{d^2}-\frac{4c^2\log(x)}{d^2}+\frac{2c^2x^2-1}{c^2d^2x^4-d^2x^2}\right)+\int\frac{b^2\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+}\right.}{c^4d^2x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^3/(-c^2*d*x^2+d)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a^2*(2*c^2*log(c*x + 1)/d^2 + 2*c^2*log(c*x - 1)/d^2 - 4*c^2*log(x)/d^
2 + (2*c^2*x^2 - 1)/(c^2*d^2*x^4 - d^2*x^2)) + integrate((b^2*arctan2(c*x,
sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a*b*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*
x + 1)))/(c^4*d^2*x^7 - 2*c^2*d^2*x^5 + d^2*x^3), x)
```

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

$$\int \frac{(a + b\,\mathrm{asin}\,(c\,x))^2}{x^3\,\left(d - c^2\,d\,x^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x^3*(d - c^2*d*x^2)^2),x)
```

```
[Out] int((a + b*asin(c*x))^2/(x^3*(d - c^2*d*x^2)^2), x)
```

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

$$\frac{\int \frac{a^2}{c^4x^7-2c^2x^5+x^3}\,dx + \int \frac{b^2\,\mathrm{asin}^2\,(cx)}{c^4x^7-2c^2x^5+x^3}\,dx + \int \frac{2ab\,\mathrm{asin}\,(cx)}{c^4x^7-2c^2x^5+x^3}\,dx}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x**3/(-c**2*d*x**2+d)**2,x)
```

```
[Out] (Integral(a**2/(c**4*x**7 - 2*c**2*x**5 + x**3), x) + Integral(b**2*asin(c*
x)**2/(c**4*x**7 - 2*c**2*x**5 + x**3), x) + Integral(2*a*b*asin(c*x)/(c**4
*x**7 - 2*c**2*x**5 + x**3), x))/d**2
```

3.200 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^4\left(d-c^2dx^2\right)^2}\,dx$

Optimal. Leaf size=439

$$\frac{5ibc^3\mathrm{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2}-\frac{5ibc^3\mathrm{Li}_2\left(ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2}-\frac{5ic^3\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\,\mathrm{s}\right.}{d^2}$$

```
[Out] -1/3*b^2*c^2/d^2/x-1/3*(a+b*arcsin(c*x))^2/d^2/x^3/(-c^2*x^2+1)-5/3*c^2*(a+
b*arcsin(c*x))^2/d^2/x/(-c^2*x^2+1)+5/2*c^4*x*(a+b*arcsin(c*x))^2/d^2/(-c^2
*x^2+1)-5*I*c^3*(a+b*arcsin(c*x))^2*arctan(I*c*x+(-c^2*x^2+1)^(1/2))/d^2-26
/3*b*c^3*(a+b*arcsin(c*x))*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))/d^2+b^2*c^3*ar
ctanh(c*x)/d^2+13/3*I*b^2*c^3*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))/d^2+5*I*
b*c^3*(a+b*arcsin(c*x))*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d^2-5*I*b*
c^3*(a+b*arcsin(c*x))*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d^2-13/3*I*b^
2*c^3*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))/d^2-5*b^2*c^3*polylog(3,-I*(I*c*x
+(-c^2*x^2+1)^(1/2)))/d^2+5*b^2*c^3*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2)))
/d^2-2/3*b*c^3*(a+b*arcsin(c*x))/d^2/(-c^2*x^2+1)^(1/2)-1/3*b*c*(a+b*arcsin
(c*x))/d^2/x^2/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.95, antiderivative size = 439, normalized size of antiderivative = 1.00, number of steps used = 32, number of rules used = 15, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.556, Rules used = {4701, 4655, 4657, 4181, 2531, 2282, 6589, 4677, 206, 4705, 4709, 4183, 2279, 2391, 325}

$$\frac{5ibc^3\mathrm{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2}-\frac{5ibc^3\mathrm{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2}+\frac{13ib^2c^3\mathrm{PolyI}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x^4*(d - c^2*d*x^2)^2),x]
```

```
[Out] -(b^2*c^2)/(3*d^2*x) - (2*b*c^3*(a + b*ArcSin[c*x]))/(3*d^2*Sqrt[1 - c^2*x^
2]) - (b*c*(a + b*ArcSin[c*x]))/(3*d^2*x^2*Sqrt[1 - c^2*x^2]) - (a + b*ArcS
in[c*x])^2/(3*d^2*x^3*(1 - c^2*x^2)) - (5*c^2*(a + b*ArcSin[c*x])^2)/(3*d^2
*x*(1 - c^2*x^2)) + (5*c^4*x*(a + b*ArcSin[c*x])^2)/(2*d^2*(1 - c^2*x^2)) -
 ((5*I)*c^3*(a + b*ArcSin[c*x])^2*ArcTan[E^(I*ArcSin[c*x])])/d^2 - (26*b*c^
3*(a + b*ArcSin[c*x])*ArcTanh[E^(I*ArcSin[c*x])])/(3*d^2) + (b^2*c^3*ArcTan
h[c*x])/d^2 + (((13*I)/3)*b^2*c^3*PolyLog[2, -E^(I*ArcSin[c*x])])/d^2 + ((5
*I)*b*c^3*(a + b*ArcSin[c*x])*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/d^2 - ((5
*I)*b*c^3*(a + b*ArcSin[c*x])*PolyLog[2, I*E^(I*ArcSin[c*x])])/d^2 - (((13*
I)/3)*b^2*c^3*PolyLog[2, E^(I*ArcSin[c*x])])/d^2 - (5*b^2*c^3*PolyLog[3, (-
I)*E^(I*ArcSin[c*x])])/d^2 + (5*b^2*c^3*PolyLog[3, I*E^(I*ArcSin[c*x])])/d^
2
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 325

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

```
x]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

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

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
```

```
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4705

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> -Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a +
b*ArcSin[c*x])^n)/(2*d*f*(p + 1)), x] + (Dist[(m + 2*p + 3)/(2*d*(p + 1)),
Int[(f*x)^m*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[(b*c*n
*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*f*(p + 1)*(1 - c^2*x^2)^FracPart[
p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
0] && LtQ[p, -1] &&  !GtQ[m, 1] && (IntegerQ[m] || IntegerQ[p] || EqQ[n, 1]
)
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^4\left(d-c^2dx^2\right)^2}\,dx = -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{3d^2x^3\left(1-c^2x^2\right)} + \frac{1}{3}\left(5c^2\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^2\left(d-c^2dx^2\right)^2}\,dx + \frac{(2bc)\int \frac{a+b\sin^{-1}(cx)}{x^3\left(1-c^2x^2\right)^{3/2}}\,dx}{3d^2}$$

$$= -\frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^2x^2\sqrt{1-c^2x^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{3d^2x^3\left(1-c^2x^2\right)} - \frac{5c^2\left(a+b\sin^{-1}(cx)\right)^2}{3d^2x\left(1-c^2x^2\right)} + \left(5c^4\right)\int \frac{\left(a+b\,\mathrm{s}\right.}{\left(d-\right.}$$

$$= -\frac{b^2c^2}{3d^2x} + \frac{13bc^3\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^2x^2\sqrt{1-c^2x^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{3d^2x^3\left(1-c^2x^2\right)} - \frac{5c^2\left(a\right.}{3d^2}$$

$$= -\frac{b^2c^2}{3d^2x} - \frac{2bc^3\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^2x^2\sqrt{1-c^2x^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{3d^2x^3\left(1-c^2x^2\right)} - \frac{5c^2\left(a+\right.}{3d^2x}$$

$$= -\frac{b^2c^2}{3d^2x} - \frac{2bc^3\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^2x^2\sqrt{1-c^2x^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{3d^2x^3\left(1-c^2x^2\right)} - \frac{5c^2\left(a+\right.}{3d^2x}$$

$$= -\frac{b^2c^2}{3d^2x} - \frac{2bc^3\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^2x^2\sqrt{1-c^2x^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{3d^2x^3\left(1-c^2x^2\right)} - \frac{5c^2\left(a+\right.}{3d^2x}$$

$$= -\frac{b^2c^2}{3d^2x} - \frac{2bc^3\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^2x^2\sqrt{1-c^2x^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{3d^2x^3\left(1-c^2x^2\right)} - \frac{5c^2\left(a+\right.}{3d^2x}$$

$$= -\frac{b^2c^2}{3d^2x} - \frac{2bc^3\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^2x^2\sqrt{1-c^2x^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{3d^2x^3\left(1-c^2x^2\right)} - \frac{5c^2\left(a+\right.}{3d^2x}$$

Mathematica [B] time = 12.95, size = 1514, normalized size = 3.45

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x^4*(d - c^2*d*x^2)^2),x]
```

```
[Out] -1/3*a^2/(d^2*x^3) - (2*a^2*c^2)/(d^2*x) - (a^2*c^4*x)/(2*d^2*(-1 + c^2*x^2
)) - (5*a^2*c^3*Log[1 - c*x])/(4*d^2) + (5*a^2*c^3*Log[1 + c*x])/(4*d^2) +
(2*a*b*((c^3*(Sqrt[1 - c^2*x^2] - ArcSin[c*x]))/(4*(-1 + c*x)) - (c^4*(Sqrt
[1 - c^2*x^2] + ArcSin[c*x]))/(4*(c + c^2*x)) + 2*c^2*(-(ArcSin[c*x]/x) - c
*ArcTanh[Sqrt[1 - c^2*x^2]]) - (c*x*Sqrt[1 - c^2*x^2] + 2*ArcSin[c*x] + c^3
*x^3*ArcTanh[Sqrt[1 - c^2*x^2]])/(6*x^3) - (5*c^4*((((3*I)/2)*Pi*ArcSin[c*x
])/c - ((I/2)*ArcSin[c*x]^2)/c + (2*Pi*Log[1 + E^((-I)*ArcSin[c*x])])/c - (
Pi*Log[1 + I*E^(I*ArcSin[c*x])])/c + (2*ArcSin[c*x]*Log[1 + I*E^(I*ArcSin[c
*x])])/c - (2*Pi*Log[Cos[ArcSin[c*x]/2]])/c + (Pi*Log[-Cos[(Pi + 2*ArcSin[c
*x])/4]])/c - ((2*I)*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/c))/4 + (5*c^4*(((
I/2)*Pi*ArcSin[c*x])/c - ((I/2)*ArcSin[c*x]^2)/c + (2*Pi*Log[1 + E^((-I)*Ar
cSin[c*x])])/c + (Pi*Log[1 - I*E^(I*ArcSin[c*x])])/c + (2*ArcSin[c*x]*Log[1
 - I*E^(I*ArcSin[c*x])])/c - (2*Pi*Log[Cos[ArcSin[c*x]/2]])/c - (Pi*Log[Sin
[(Pi + 2*ArcSin[c*x])/4]])/c - ((2*I)*PolyLog[2, I*E^(I*ArcSin[c*x])])/c))/
4))/d^2 + (b^2*c^3*((5*ArcSin[c*x]^3)/6 + ((-2*Cos[ArcSin[c*x]/2] - 13*ArcS
in[c*x]^2*Cos[ArcSin[c*x]/2])*Csc[ArcSin[c*x]/2])/12 - (ArcSin[c*x]*Csc[Arc
Sin[c*x]/2]^2)/12 - (ArcSin[c*x]^2*Cot[ArcSin[c*x]/2]*Csc[ArcSin[c*x]/2]^2)
/24 + (26*((I/8)*ArcSin[c*x]^2 - (ArcSin[c*x]*Log[1 + E^(I*ArcSin[c*x])])/2
 + (I/2)*PolyLog[2, -E^(I*ArcSin[c*x])]))/3 + (26*((ArcSin[c*x]*Log[1 - E^(
I*ArcSin[c*x])])/2 - (I/2)*(ArcSin[c*x]^2/4 + PolyLog[2, E^(I*ArcSin[c*x])]
```

```
)))/3 + (-6*ArcSin[c*x] - 5*ArcSin[c*x]^3 + 15*ArcSin[c*x]^2*Log[1 - I*E^(I
*ArcSin[c*x])] + 15*Pi*ArcSin[c*x]*Log[((-1)^(1/4)*(1 - I*E^(I*ArcSin[c*x])
))/(2*E^((I/2)*ArcSin[c*x]))] - 15*ArcSin[c*x]^2*Log[1 + I*E^(I*ArcSin[c*x]
)] - 15*ArcSin[c*x]^2*Log[((1/2 + I/2)*(-I + E^(I*ArcSin[c*x])))/E^((I/2)*A
rcSin[c*x])] + 15*Pi*ArcSin[c*x]*Log[-1/2*((-1)^(1/4)*(-I + E^(I*ArcSin[c*x
])))/E^((I/2)*ArcSin[c*x])] + 15*ArcSin[c*x]^2*Log[((1 + I) + (1 - I)*E^(I*
ArcSin[c*x]))/(2*E^((I/2)*ArcSin[c*x]))] - 15*Pi*ArcSin[c*x]*Log[-Cos[(Pi +
 2*ArcSin[c*x])/4]] - 6*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] + 15*A
rcSin[c*x]^2*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] + 6*Log[Cos[ArcSi
n[c*x]/2] + Sin[ArcSin[c*x]/2]] - 15*ArcSin[c*x]^2*Log[Cos[ArcSin[c*x]/2] +
 Sin[ArcSin[c*x]/2]] - 15*Pi*ArcSin[c*x]*Log[Sin[(Pi + 2*ArcSin[c*x])/4]] +
 (30*I)*ArcSin[c*x]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] - (30*I)*ArcSin[c*x]
*PolyLog[2, I*E^(I*ArcSin[c*x])] - 30*PolyLog[3, (-I)*E^(I*ArcSin[c*x])] +
30*PolyLog[3, I*E^(I*ArcSin[c*x])])/6 + (ArcSin[c*x]*Sec[ArcSin[c*x]/2]^2)/
12 + ArcSin[c*x]^2/(4*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^2) - (ArcSi
n[c*x]*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]) - ArcS
in[c*x]^2/(4*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^2) + (ArcSin[c*x]*Si
n[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]) + (Sec[ArcSin[c
*x]/2]*(-2*Sin[ArcSin[c*x]/2] - 13*ArcSin[c*x]^2*Sin[ArcSin[c*x]/2]))/12 -
(ArcSin[c*x]^2*Sec[ArcSin[c*x]/2]^2*Tan[ArcSin[c*x]/2])/24))/d^2
```

fricas [F] time = 0.69, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2 \arcsin(cx)^2 + 2\,ab\arcsin(cx) + a^2}{c^4d^2x^8 - 2\,c^2d^2x^6 + d^2x^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^4/(-c^2*d*x^2+d)^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)/(c^4*d^2*x^8 - 2*c^2
*d^2*x^6 + d^2*x^4), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^4/(-c^2*d*x^2+d)^2,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.54, size = 1019, normalized size = 2.32

$$-\frac{a^2}{3d^2x^3} - \frac{5c^4ab\arcsin(cx)\,x}{d^2\left(c^2x^2-1\right)} - \frac{c^4b^2x}{3d^2\left(c^2x^2-1\right)} + \frac{cab\sqrt{-c^2x^2+1}}{3d^2x^2\left(c^2x^2-1\right)} + \frac{c\,b^2\sqrt{-c^2x^2+1}\,\arcsin(cx)}{3d^2x^2\left(c^2x^2-1\right)} + \frac{10c^2ab\arcsin(c}{3d^2\left(c^2x^2-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x^4/(-c^2*d*x^2+d)^2,x)
```

```
[Out] -1/3*a^2/d^2/x^3-5*c^4*a*b/d^2/(c^2*x^2-1)*arcsin(c*x)*x-1/3*c^4*b^2/d^2*x/
(c^2*x^2-1)+1/3*c*a*b/d^2/x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)+1/3*c*b^2/d^2/
x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)+10/3*c^2*a*b/d^2*arcsin(c*x)
/(c^2*x^2-1)/x+5/4*c^3*a^2/d^2*ln(c*x+1)-5/4*c^3*a^2/d^2*ln(c*x-1)-1/4*c^3*
a^2/d^2/(c*x+1)-1/4*c^3*a^2/d^2/(c*x-1)-2*c^2*a^2/d^2/x+1/3*c^2*b^2/d^2/(c^
2*x^2-1)/x+1/3*b^2/d^2/x^3/(c^2*x^2-1)*arcsin(c*x)^2-5/2*c^3*b^2/d^2*arcsin
(c*x)^2*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-13/3*c^3*b^2/d^2*arcsin(c*x)*ln(
1+I*c*x+(-c^2*x^2+1)^(1/2))+5/2*c^3*b^2/d^2*arcsin(c*x)^2*ln(1-I*(I*c*x+(-c
^2*x^2+1)^(1/2)))+13/3*c^3*a*b/d^2*ln(I*c*x+(-c^2*x^2+1)^(1/2)-1)-13/3*c^3*
```

```
a*b/d^2*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-2*I*c^3*b^2/d^2*arctan(I*c*x+(-c^2*x
^2+1)^(1/2))+13/3*I*c^3*b^2/d^2*dilog(1+I*c*x+(-c^2*x^2+1)^(1/2))+13/3*I*c^
3*b^2/d^2*dilog(I*c*x+(-c^2*x^2+1)^(1/2))-5*b^2*c^3*polylog(3,-I*(I*c*x+(-c
^2*x^2+1)^(1/2)))/d^2+5*b^2*c^3*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d^2
+5/3*c^2*b^2/d^2*arcsin(c*x)^2/(c^2*x^2-1)/x-5/2*c^4*b^2/d^2/(c^2*x^2-1)*ar
csin(c*x)^2*x+2/3*c^3*a*b/d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)-5*c^3*a*b/d^2*
arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+2/3*a*b/d^2/x^3/(c^2*x^2-1)*
arcsin(c*x)+5*c^3*a*b/d^2*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+2/
3*c^3*b^2/d^2/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+5*I*c^3*a*b/d^2*di
log(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-5*I*c^3*a*b/d^2*dilog(1-I*(I*c*x+(-c^2*
x^2+1)^(1/2)))-5*I*c^3*b^2/d^2*arcsin(c*x)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^
(1/2)))+5*I*c^3*b^2/d^2*arcsin(c*x)*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2))
)
```

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

$$\frac{1}{12}\left(\frac{15\,c^3\log\left(cx+1\right)}{d^2}-\frac{15\,c^3\log\left(cx-1\right)}{d^2}-\frac{2\left(15\,c^4x^4-10\,c^2x^2-2\right)}{c^2d^2x^5-d^2x^3}\right)a^2+\frac{15\left(b^2c^5x^5-b^2c^3x^3\right)\arctan\left(cx,\sqrt{cx+}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^4/(-c^2*d*x^2+d)^2,x, algorithm="maxima")
```

```
[Out] 1/12*(15*c^3*log(c*x + 1)/d^2 - 15*c^3*log(c*x - 1)/d^2 - 2*(15*c^4*x^4 - 1
0*c^2*x^2 - 2)/(c^2*d^2*x^5 - d^2*x^3))*a^2 + 1/12*(15*(b^2*c^5*x^5 - b^2*c
^3*x^3)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2*log(c*x + 1) - 15*(b^2
*c^5*x^5 - b^2*c^3*x^3)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2*log(-c
*x + 1) - 2*(15*b^2*c^4*x^4 - 10*b^2*c^2*x^2 - 2*b^2)*arctan2(c*x, sqrt(c*x
 + 1)*sqrt(-c*x + 1))^2 + 12*(c^2*d^2*x^5 - d^2*x^3)*integrate(1/6*(12*a*b*
arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + (15*(b^2*c^6*x^6 - b^2*c^4*x^4
)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(c*x + 1) - 15*(b^2*c^6*x^6
 - b^2*c^4*x^4)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(-c*x + 1) -
2*(15*b^2*c^5*x^5 - 10*b^2*c^3*x^3 - 2*b^2*c*x)*arctan2(c*x, sqrt(c*x + 1)*
sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^4*d^2*x^8 - 2*c^2*d^2*x^6
 + d^2*x^4), x))/(c^2*d^2*x^5 - d^2*x^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^2}{x^4\,\left(d-c^2\,d\,x^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x^4*(d - c^2*d*x^2)^2),x)
```

```
[Out] int((a + b*asin(c*x))^2/(x^4*(d - c^2*d*x^2)^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a^2}{c^4x^8-2c^2x^6+x^4}\,dx+\int \frac{b^2\,\mathrm{asin}^2\left(cx\right)}{c^4x^8-2c^2x^6+x^4}\,dx+\int \frac{2ab\,\mathrm{asin}\left(cx\right)}{c^4x^8-2c^2x^6+x^4}\,dx}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x**4/(-c**2*d*x**2+d)**2,x)
```

```
[Out] (Integral(a**2/(c**4*x**8 - 2*c**2*x**6 + x**4), x) + Integral(b**2*asin(c*
x)**2/(c**4*x**8 - 2*c**2*x**6 + x**4), x) + Integral(2*a*b*asin(c*x)/(c**4
*x**8 - 2*c**2*x**6 + x**4), x))/d**2
```

3.201 $\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^3}\,dx$

Optimal. Leaf size=343

$$\frac{3ib\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{4c^5d^3}-\frac{3ib\text{Li}_2\left(ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{4c^5d^3}-\frac{3i\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(c\right.}{4c^5d^3}$$

```
[Out] 1/12*b^2*x/c^4/d^3/(-c^2*x^2+1)-1/6*b*(a+b*arcsin(c*x))/c^5/d^3/(-c^2*x^2+1
)^(3/2)+1/4*x^3*(a+b*arcsin(c*x))^2/c^2/d^3/(-c^2*x^2+1)^2-3/8*x*(a+b*arcsi
n(c*x))^2/c^4/d^3/(-c^2*x^2+1)-3/4*I*(a+b*arcsin(c*x))^2*arctan(I*c*x+(-c^2
*x^2+1)^(1/2))/c^5/d^3-7/6*b^2*arctanh(c*x)/c^5/d^3+3/4*I*b*(a+b*arcsin(c*x
))*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c^5/d^3-3/4*I*b*(a+b*arcsin(c*x
))*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c^5/d^3-3/4*b^2*polylog(3,-I*(I*
c*x+(-c^2*x^2+1)^(1/2)))/c^5/d^3+3/4*b^2*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1
/2)))/c^5/d^3+5/4*b*(a+b*arcsin(c*x))/c^5/d^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.54, antiderivative size = 343, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 13, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.482, Rules used = {4703, 4657, 4181, 2531, 2282, 6589, 4677, 206, 266, 43, 4689, 12, 385}

$$\frac{3ib\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{4c^5d^3}-\frac{3ib\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{4c^5d^3}-\frac{3b^2\text{PolyLog}\left(3,-\right.}{4c^5d^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^3,x]
```

```
[Out] (b^2*x)/(12*c^4*d^3*(1 - c^2*x^2)) - (b*(a + b*ArcSin[c*x]))/(6*c^5*d^3*(1
 - c^2*x^2)^(3/2)) + (5*b*(a + b*ArcSin[c*x]))/(4*c^5*d^3*Sqrt[1 - c^2*x^2])
 + (x^3*(a + b*ArcSin[c*x])^2)/(4*c^2*d^3*(1 - c^2*x^2)^2) - (3*x*(a + b*Ar
cSin[c*x])^2)/(8*c^4*d^3*(1 - c^2*x^2)) - (((3*I)/4)*(a + b*ArcSin[c*x])^2*
ArcTan[E^(I*ArcSin[c*x])])/(c^5*d^3) - (7*b^2*ArcTanh[c*x])/(6*c^5*d^3) + (
((3*I)/4)*b*(a + b*ArcSin[c*x])*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(c^5*d^
3) - (((3*I)/4)*b*(a + b*ArcSin[c*x])*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c^5
*d^3) - (3*b^2*PolyLog[3, (-I)*E^(I*ArcSin[c*x])])/(4*c^5*d^3) + (3*b^2*Pol
yLog[3, I*E^(I*ArcSin[c*x])])/(4*c^5*d^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 385

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_)), x_Symbol] :> -S
imp[((b*c - a*d)*x*(a + b*x^n)^(p + 1))/(a*b*n*(p + 1)), x] - Dist[(a*d - b
*c*(n*(p + 1) + 1))/(a*b*n*(p + 1)), Int[(a + b*x^n)^(p + 1), x], x] /; Fre
eQ[{a, b, c, d, n, p}, x] && NeQ[b*c - a*d, 0] && (LtQ[p, -1] || ILtQ[1/n +
 p, 0])
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4689

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[d^p*(a + b*
ArcSin[c*x]), u, x] - Dist[b*c*d^p, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^
2], x], x], x]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && Intege
rQ[p - 1/2] && (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0]) && NeQ[p, -
```

```
2^(-1)] && GtQ[d, 0]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^3}dx = \frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{4c^2d^3\left(1-c^2x^2\right)^2} - \frac{b\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{5/2}}dx}{2cd^3} - \frac{3\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^2}dx}{4c^2d}$$

$$= -\frac{b\left(a+b\sin^{-1}(cx)\right)}{6c^5d^3\left(1-c^2x^2\right)^{3/2}} + \frac{b\left(a+b\sin^{-1}(cx)\right)}{2c^5d^3\sqrt{1-c^2x^2}} + \frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{4c^2d^3\left(1-c^2x^2\right)^2} - \frac{3x\left(a+b\sin\right.}{8c^4d^3\left(1\right.}$$

$$= -\frac{b\left(a+b\sin^{-1}(cx)\right)}{6c^5d^3\left(1-c^2x^2\right)^{3/2}} + \frac{5b\left(a+b\sin^{-1}(cx)\right)}{4c^5d^3\sqrt{1-c^2x^2}} + \frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{4c^2d^3\left(1-c^2x^2\right)^2} - \frac{3x\left(a+b\,s\right.}{8c^4d^3\left(1\right.}$$

$$= \frac{b^2x}{12c^4d^3\left(1-c^2x^2\right)} - \frac{b\left(a+b\sin^{-1}(cx)\right)}{6c^5d^3\left(1-c^2x^2\right)^{3/2}} + \frac{5b\left(a+b\sin^{-1}(cx)\right)}{4c^5d^3\sqrt{1-c^2x^2}} + \frac{x^3\left(a+b\sin^{-1}\right.}{4c^2d^3\left(1-c^2\right.}$$

$$= \frac{b^2x}{12c^4d^3\left(1-c^2x^2\right)} - \frac{b\left(a+b\sin^{-1}(cx)\right)}{6c^5d^3\left(1-c^2x^2\right)^{3/2}} + \frac{5b\left(a+b\sin^{-1}(cx)\right)}{4c^5d^3\sqrt{1-c^2x^2}} + \frac{x^3\left(a+b\sin^{-1}\right.}{4c^2d^3\left(1-c^2\right.}$$

$$= \frac{b^2x}{12c^4d^3\left(1-c^2x^2\right)} - \frac{b\left(a+b\sin^{-1}(cx)\right)}{6c^5d^3\left(1-c^2x^2\right)^{3/2}} + \frac{5b\left(a+b\sin^{-1}(cx)\right)}{4c^5d^3\sqrt{1-c^2x^2}} + \frac{x^3\left(a+b\sin^{-1}\right.}{4c^2d^3\left(1-c^2\right.}$$

$$= \frac{b^2x}{12c^4d^3\left(1-c^2x^2\right)} - \frac{b\left(a+b\sin^{-1}(cx)\right)}{6c^5d^3\left(1-c^2x^2\right)^{3/2}} + \frac{5b\left(a+b\sin^{-1}(cx)\right)}{4c^5d^3\sqrt{1-c^2x^2}} + \frac{x^3\left(a+b\sin^{-1}\right.}{4c^2d^3\left(1-c^2\right.}$$

Mathematica [A] time = 6.59, size = 667, normalized size = 1.94

$$\frac{60a^2cx}{c^2x^2-1} + \frac{24a^2cx}{\left(c^2x^2-1\right)^2} - 18a^2\log(1-cx) + 18a^2\log(cx+1) - \frac{60ab\left(\sqrt{1-c^2x^2}-\sin^{-1}(cx)\right)}{cx-1} + \frac{60ab\left(\sqrt{1-c^2x^2}+\sin^{-1}(cx)\right)}{cx+1} + \frac{4ab\left(\sqrt{\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^4*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^3,x]
```

```
[Out] ((24*a^2*c*x)/(-1 + c^2*x^2)^2 + (60*a^2*c*x)/(-1 + c^2*x^2) - (60*a*b*(Sqr
t[1 - c^2*x^2] - ArcSin[c*x]))/(-1 + c*x) + (60*a*b*(Sqrt[1 - c^2*x^2] + Ar
cSin[c*x]))/(1 + c*x) + (4*a*b*((-2 + c*x)*Sqrt[1 - c^2*x^2] + 3*ArcSin[c*x
]))/(-1 + c*x)^2 - (4*a*b*((2 + c*x)*Sqrt[1 - c^2*x^2] + 3*ArcSin[c*x]))/(1
 + c*x)^2 - 18*a^2*Log[1 - c*x] + 18*a^2*Log[1 + c*x] + 18*a*b*(I*ArcSin[c*
x]^2 + ArcSin[c*x]*((-3*I)*Pi - 4*Log[1 + I*E^(I*ArcSin[c*x])]) + 2*Pi*(-2*
Log[1 + E^((-I)*ArcSin[c*x])] + Log[1 + I*E^(I*ArcSin[c*x])] + 2*Log[Cos[Ar
cSin[c*x]/2]] - Log[-Cos[(Pi + 2*ArcSin[c*x])/4]]) + (4*I)*PolyLog[2, (-I)*
E^(I*ArcSin[c*x])]) + 18*a*b*((-I)*ArcSin[c*x]^2 + ArcSin[c*x]*(I*Pi + 4*Lo
g[1 - I*E^(I*ArcSin[c*x])]) + 2*Pi*(2*Log[1 + E^((-I)*ArcSin[c*x])] + Log[1
 - I*E^(I*ArcSin[c*x])] - 2*Log[Cos[ArcSin[c*x]/2]] - Log[Sin[(Pi + 2*ArcSi
n[c*x])/4]]) - (4*I)*PolyLog[2, I*E^(I*ArcSin[c*x])]) + 8*b^2*((-9*I)*ArcSi
n[c*x]^2*ArcTan[E^(I*ArcSin[c*x])] - 14*ArcTanh[c*x] + (9*I)*ArcSin[c*x]*Po
lyLog[2, (-I)*E^(I*ArcSin[c*x])] - (9*I)*ArcSin[c*x]*PolyLog[2, I*E^(I*ArcS
in[c*x])] - 9*PolyLog[3, (-I)*E^(I*ArcSin[c*x])] + 9*PolyLog[3, I*E^(I*ArcS
in[c*x])]) + (b^2*(ArcSin[c*x]*(74*Sqrt[1 - c^2*x^2] + 30*Cos[3*ArcSin[c*x]
]) + 3*ArcSin[c*x]^2*(3*c*x - 5*Sin[3*ArcSin[c*x]]) + 2*(c*x + Sin[3*ArcSin
[c*x]])))/(-1 + c^2*x^2)^2)/(96*c^5*d^3)
```

fricas [F] time = 0.58, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{b^2x^4 \arcsin(cx)^2 + 2\,abx^4 \arcsin(cx) + a^2x^4}{c^6d^3x^6 - 3\,c^4d^3x^4 + 3\,c^2d^3x^2 - d^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^3,x, algorithm="fricas")
```

```
[Out] integral(-(b^2*x^4*arcsin(c*x)^2 + 2*a*b*x^4*arcsin(c*x) + a^2*x^4)/(c^6*d^
3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^3,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.83, size = 903, normalized size = 2.63

$$\frac{3a^2\ln(cx+1)}{16c^5d^3} - \frac{3a^2\ln(cx-1)}{16c^5d^3} + \frac{5a^2}{16c^5d^3(cx-1)} - \frac{a^2}{16c^5d^3(cx+1)^2} + \frac{5a^2}{16c^5d^3(cx+1)} + \frac{a^2}{16c^5d^3(cx-1)^2} - \frac{3b^2\,\text{polylo}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^3,x)
```

```
[Out] 3/16/c^5*a^2/d^3*ln(c*x+1)-3/16/c^5*a^2/d^3*ln(c*x-1)+5/16/c^5*a^2/d^3/(c*x
-1)-1/16/c^5*a^2/d^3/(c*x+1)^2+5/16/c^5*a^2/d^3/(c*x+1)+1/16/c^5*a^2/d^3/(c
*x-1)^2-3/4/c^4*a*b/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)*x-5/4/c^3*b^2/d^3
/(c^4*x^4-2*c^2*x^2+1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^2+5/4/c^2*a*b/d^3/(
c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)*x^3-5/4/c^3*a*b/d^3/(c^4*x^4-2*c^2*x^2+1)*
x^2*(-c^2*x^2+1)^(1/2)+1/12/c^4*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*x+3/8/c^5*b^2
/d^3*arcsin(c*x)^2*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-3/8/c^5*b^2/d^3*arcsi
n(c*x)^2*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+7/3*I/c^5*b^2/d^3*arctan(I*c*x+
(-c^2*x^2+1)^(1/2))-1/12/c^2*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*x^3-3/4*b^2*poly
```

```
log(3,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c^5/d^3+3/4*b^2*polylog(3,I*(I*c*x+(-c
^2*x^2+1)^(1/2)))/c^5/d^3+3/4/c^5*a*b/d^3*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x
^2+1)^(1/2)))+13/12/c^5*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*(-c^2*x^2+1)^(1/2)*ar
csin(c*x)+13/12/c^5*a*b/d^3/(c^4*x^4-2*c^2*x^2+1)*(-c^2*x^2+1)^(1/2)-3/4/c^
5*a*b/d^3*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+5/8/c^2*b^2/d^3/(c
^4*x^4-2*c^2*x^2+1)*arcsin(c*x)^2*x^3-3/8/c^4*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)
*arcsin(c*x)^2*x-3/4*I/c^5*b^2/d^3*arcsin(c*x)*polylog(2,I*(I*c*x+(-c^2*x^2
+1)^(1/2)))+3/4*I/c^5*b^2/d^3*arcsin(c*x)*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^
(1/2)))+3/4*I/c^5*a*b/d^3*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-3/4*I/c^5*a
*b/d^3*dilog(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{16}a^2\left(\frac{2\left(5c^2x^3-3x\right)}{c^8d^3x^4-2c^6d^3x^2+c^4d^3}+\frac{3\log(cx+1)}{c^5d^3}-\frac{3\log(cx-1)}{c^5d^3}\right)+\frac{3\left(b^2c^4x^4-2b^2c^2x^2+b^2\right)\arctan\left(cx,\sqrt{cx}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] 1/16*a^2*(2*(5*c^2*x^3 - 3*x)/(c^8*d^3*x^4 - 2*c^6*d^3*x^2 + c^4*d^3) + 3*l
og(c*x + 1)/(c^5*d^3) - 3*log(c*x - 1)/(c^5*d^3)) + 1/16*(3*(b^2*c^4*x^4 -
2*b^2*c^2*x^2 + b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2*log(c*x +
 1) - 3*(b^2*c^4*x^4 - 2*b^2*c^2*x^2 + b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt
(-c*x + 1))^2*log(-c*x + 1) + 2*(5*b^2*c^3*x^3 - 3*b^2*c*x)*arctan2(c*x, sq
rt(c*x + 1)*sqrt(-c*x + 1))^2 + 16*(c^9*d^3*x^4 - 2*c^7*d^3*x^2 + c^5*d^3)*
integrate(-1/8*(16*a*b*c^4*x^4*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) -
 (3*(b^2*c^4*x^4 - 2*b^2*c^2*x^2 + b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*
x + 1))*log(c*x + 1) - 3*(b^2*c^4*x^4 - 2*b^2*c^2*x^2 + b^2)*arctan2(c*x, s
qrt(c*x + 1)*sqrt(-c*x + 1))*log(-c*x + 1) + 2*(5*b^2*c^3*x^3 - 3*b^2*c*x)*
arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1))/(
c^10*d^3*x^6 - 3*c^8*d^3*x^4 + 3*c^6*d^3*x^2 - c^4*d^3), x))/(c^9*d^3*x^4 -
 2*c^7*d^3*x^2 + c^5*d^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^4\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{{\left(d-c^2\,d\,x^2\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^3,x)
```

```
[Out] int((x^4*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\int \frac{a^2x^4}{c^6x^6-3c^4x^4+3c^2x^2-1}\,dx+\int \frac{b^2x^4\operatorname{asin}^2(cx)}{c^6x^6-3c^4x^4+3c^2x^2-1}\,dx+\int \frac{2abx^4\operatorname{asin}(cx)}{c^6x^6-3c^4x^4+3c^2x^2-1}\,dx}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**3,x)
```

```
[Out] -(Integral(a**2*x**4/(c**6*x**6 - 3*c**4*x**4 + 3*c**2*x**2 - 1), x) + Inte
gral(b**2*x**4*asin(c*x)**2/(c**6*x**6 - 3*c**4*x**4 + 3*c**2*x**2 - 1), x)
 + Integral(2*a*b*x**4*asin(c*x)/(c**6*x**6 - 3*c**4*x**4 + 3*c**2*x**2 - 1
), x))/d**3
```

3.202 $\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^3}\,dx$

Optimal. Leaf size=172

$$-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{4c^4d^3}+\frac{x^4\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2}-\frac{bx^3\left(a+b\sin^{-1}(cx)\right)}{6cd^3\left(1-c^2x^2\right)^{3/2}}+\frac{bx\left(a+b\sin^{-1}(cx)\right)}{2c^3d^3\sqrt{1-c^2x^2}}+\frac{b^2}{12c^4d^3\left(1-c^2x^2\right)}+\frac{b^2\log}{}$$

```
[Out] 1/12*b^2/c^4/d^3/(-c^2*x^2+1)-1/6*b*x^3*(a+b*arcsin(c*x))/c/d^3/(-c^2*x^2+1
)^(3/2)-1/4*(a+b*arcsin(c*x))^2/c^4/d^3+1/4*x^4*(a+b*arcsin(c*x))^2/d^3/(-c
^2*x^2+1)^2+1/3*b^2*ln(-c^2*x^2+1)/c^4/d^3+1/2*b*x*(a+b*arcsin(c*x))/c^3/d^
3/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.33, antiderivative size = 172, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {4681, 4703, 4641, 260, 266, 43}

$$\frac{x^4\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2}-\frac{bx^3\left(a+b\sin^{-1}(cx)\right)}{6cd^3\left(1-c^2x^2\right)^{3/2}}+\frac{bx\left(a+b\sin^{-1}(cx)\right)}{2c^3d^3\sqrt{1-c^2x^2}}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{4c^4d^3}+\frac{b^2}{12c^4d^3\left(1-c^2x^2\right)}+\frac{b^2\log}{3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^3,x]
```

```
[Out] b^2/(12*c^4*d^3*(1 - c^2*x^2)) - (b*x^3*(a + b*ArcSin[c*x]))/(6*c*d^3*(1 -
c^2*x^2)^(3/2)) + (b*x*(a + b*ArcSin[c*x]))/(2*c^3*d^3*Sqrt[1 - c^2*x^2]) -
 (a + b*ArcSin[c*x])^2/(4*c^4*d^3) + (x^4*(a + b*ArcSin[c*x])^2)/(4*d^3*(1
- c^2*x^2)^2) + (b^2*Log[1 - c^2*x^2])/(3*c^4*d^3)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4681

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
```

```
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^F
racPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c
^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d,
 e, f, m, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] &
& NeQ[m, -1]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rubi steps

$$\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^3}\,dx=\frac{x^4\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2}-\frac{(bc)\int\frac{x^4\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{5/2}}\,dx}{2d^3}$$

$$=-\frac{bx^3\left(a+b\sin^{-1}(cx)\right)}{6cd^3\left(1-c^2x^2\right)^{3/2}}+\frac{x^4\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2}+\frac{b^2\int\frac{x^3}{\left(1-c^2x^2\right)^2}\,dx}{6d^3}+\frac{b\int\frac{x^2\left(a+b\sin\right.}{\left(1-c^2x\right.}}{2cd}$$

$$=-\frac{bx^3\left(a+b\sin^{-1}(cx)\right)}{6cd^3\left(1-c^2x^2\right)^{3/2}}+\frac{bx\left(a+b\sin^{-1}(cx)\right)}{2c^3d^3\sqrt{1-c^2x^2}}+\frac{x^4\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2}+\frac{b^2\,\mathrm{Subs}}{}$$

$$=-\frac{bx^3\left(a+b\sin^{-1}(cx)\right)}{6cd^3\left(1-c^2x^2\right)^{3/2}}+\frac{bx\left(a+b\sin^{-1}(cx)\right)}{2c^3d^3\sqrt{1-c^2x^2}}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{4c^4d^3}+\frac{x^4\left(a+b\,\mathrm{s}\right.}{4d^3\left(1-\right.}$$

$$=\frac{b^2}{12c^4d^3\left(1-c^2x^2\right)}-\frac{bx^3\left(a+b\sin^{-1}(cx)\right)}{6cd^3\left(1-c^2x^2\right)^{3/2}}+\frac{bx\left(a+b\sin^{-1}(cx)\right)}{2c^3d^3\sqrt{1-c^2x^2}}-\frac{\left(a+b\sin^{-1}(\right.}{4c^4d^3}$$

Mathematica [A] time = 0.19, size = 192, normalized size = 1.12

$$\frac{6a^2c^2x^2-3a^2+6abcx\sqrt{1-c^2x^2}+2b\sin^{-1}(cx)\left(a\left(6c^2x^2-3\right)+bcx\sqrt{1-c^2x^2}\left(3-4c^2x^2\right)\right)-8abc^3x^3\sqrt{1-c^2}}{12c^4d^3\left(c^2x^2-1\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^3,x]
```

```
[Out] (-3*a^2 + b^2 + 6*a^2*c^2*x^2 - b^2*c^2*x^2 + 6*a*b*c*x*Sqrt[1 - c^2*x^2] -
 8*a*b*c^3*x^3*Sqrt[1 - c^2*x^2] + 2*b*(b*c*x*(3 - 4*c^2*x^2)*Sqrt[1 - c^2*
x^2] + a*(-3 + 6*c^2*x^2))*ArcSin[c*x] + 3*b^2*(-1 + 2*c^2*x^2)*ArcSin[c*x]
^2 + 4*b^2*(-1 + c^2*x^2)^2*Log[1 - c^2*x^2])/(12*c^4*d^3*(-1 + c^2*x^2)^2)
```

fricas [A] time = 0.80, size = 198, normalized size = 1.15

$$\frac{\left(6\,a^2-b^2\right)c^2x^2+3\left(2\,b^2c^2x^2-b^2\right)\arcsin\left(cx\right)^2-3\,a^2+b^2+6\left(2\,abc^2x^2-ab\right)\arcsin\left(cx\right)+4\left(b^2c^4x^4-2\,b^2c^2x^2\right.}{12\left(c^8d^3x^4-2\,c^6d^3x^2+c^4d\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^3,x, algorithm="fricas")
```

```
[Out] 1/12*((6*a^2 - b^2)*c^2*x^2 + 3*(2*b^2*c^2*x^2 - b^2)*arcsin(c*x)^2 - 3*a^2
 + b^2 + 6*(2*a*b*c^2*x^2 - a*b)*arcsin(c*x) + 4*(b^2*c^4*x^4 - 2*b^2*c^2*x
^2 + b^2)*log(c^2*x^2 - 1) - 2*(4*a*b*c^3*x^3 - 3*a*b*c*x + (4*b^2*c^3*x^3
- 3*b^2*c*x)*arcsin(c*x))*sqrt(-c^2*x^2 + 1))/(c^8*d^3*x^4 - 2*c^6*d^3*x^2
+ c^4*d^3)
```

giac [B] time = 1.03, size = 318, normalized size = 1.85

$$\frac{b^2x^4\arcsin\left(cx\right)^2}{4\left(c^2x^2-1\right)^2d^3}+\frac{abx^4\arcsin\left(cx\right)}{2\left(c^2x^2-1\right)^2d^3}+\frac{a^2x^4}{4\left(c^2x^2-1\right)^2d^3}+\frac{b^2x^3\arcsin\left(cx\right)}{6\left(c^2x^2-1\right)\sqrt{-c^2x^2+1}\,cd^3}+\frac{abx^3}{6\left(c^2x^2-1\right)\sqrt{-c^2x^2+1}\,cd^3}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^3,x, algorithm="giac")
```

```
[Out] 1/4*b^2*x^4*arcsin(c*x)^2/((c^2*x^2 - 1)^2*d^3) + 1/2*a*b*x^4*arcsin(c*x)/(
(c^2*x^2 - 1)^2*d^3) + 1/4*a^2*x^4/((c^2*x^2 - 1)^2*d^3) + 1/6*b^2*x^3*arcs
in(c*x)/((c^2*x^2 - 1)*sqrt(-c^2*x^2 + 1)*c*d^3) + 1/6*a*b*x^3/((c^2*x^2 -
1)*sqrt(-c^2*x^2 + 1)*c*d^3) - 1/12*b^2*x^2/((c^2*x^2 - 1)*c^2*d^3) + 1/2*b
^2*x*arcsin(c*x)/(sqrt(-c^2*x^2 + 1)*c^3*d^3) - 1/4*b^2*arcsin(c*x)^2/(c^4*
d^3) + 1/2*a*b*x/(sqrt(-c^2*x^2 + 1)*c^3*d^3) - 1/2*a*b*arcsin(c*x)/(c^4*d^
3) + 2/3*b^2*log(2)/(c^4*d^3) + 1/3*b^2*log(abs(-c^2*x^2 + 1))/(c^4*d^3) -
1/4*a^2/(c^4*d^3) + 1/12*b^2/(c^4*d^3)
```

maple [B] time = 0.66, size = 472, normalized size = 2.74

$$\frac{a^2}{16c^4d^3\left(cx+1\right)^2}-\frac{3a^2}{16c^4d^3\left(cx+1\right)}+\frac{a^2}{16c^4d^3\left(cx-1\right)^2}+\frac{3a^2}{16c^4d^3\left(cx-1\right)}+\frac{b^2\arcsin\left(cx\right)^2}{4c^4d^3\left(c^2x^2-1\right)^2}-\frac{b^2\arcsin\left(cx\right)x\sqrt{-c^2x^2}}{6c^3d^3\left(c^2x^2-1\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^3,x)
```

```
[Out] 1/16/c^4*a^2/d^3/(c*x+1)^2-3/16/c^4*a^2/d^3/(c*x+1)+1/16/c^4*a^2/d^3/(c*x-1
)^2+3/16/c^4*a^2/d^3/(c*x-1)+1/4/c^4*b^2/d^3*arcsin(c*x)^2/(c^2*x^2-1)^2-1/
6/c^3*b^2/d^3*arcsin(c*x)*x*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)^2-1/12/c^4*b^2/d
^3/(c^2*x^2-1)-2/3/c^3*b^2/d^3*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*arcsin(c*x)*x
+1/3*b^2*ln(-c^2*x^2+1)/c^4/d^3+1/2/c^4*b^2/d^3*arcsin(c*x)^2/(c^2*x^2-1)+1
/8/c^4*a*b/d^3*arcsin(c*x)/(c*x+1)^2-3/8/c^4*a*b/d^3*arcsin(c*x)/(c*x+1)+1/
8/c^4*a*b/d^3*arcsin(c*x)/(c*x-1)^2+3/8/c^4*a*b/d^3*arcsin(c*x)/(c*x-1)-1/3
/c^4*a*b/d^3/(c*x+1)*(-(c*x+1)^2+2*c*x+2)^(1/2)-1/24/c^4*a*b/d^3/(c*x-1)^2*
(-(c*x-1)^2-2*c*x+2)^(1/2)-1/3/c^4*a*b/d^3/(c*x-1)*(-(c*x-1)^2-2*c*x+2)^(1/
2)+1/24/c^4*a*b/d^3/(c*x+1)^2*(-(c*x+1)^2+2*c*x+2)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\left(2\,c^2x^2-1\right)a^2}{4\left(c^8d^3x^4-2\,c^6d^3x^2+c^4d^3\right)}+\frac{\left(2\,b^2c^2x^2-b^2\right)\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)^2-2\left(c^8d^3x^4-2\,c^6d^3x^2+c^4d^3\right)\int\frac{4}{}}{4\left(c^8d^3x^4-2\,c^6d^3\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] 1/4*(2*c^2*x^2 - 1)*a^2/(c^8*d^3*x^4 - 2*c^6*d^3*x^2 + c^4*d^3) + 1/4*((2*b
^2*c^2*x^2 - b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 4*(c^8*d^3
*x^4 - 2*c^6*d^3*x^2 + c^4*d^3)*integrate(-1/2*(4*a*b*c^3*x^3*arctan2(c*x,
sqrt(c*x + 1)*sqrt(-c*x + 1)) - (2*b^2*c^2*x^2 - b^2)*sqrt(c*x + 1)*sqrt(-c
*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))/(c^9*d^3*x^6 - 3*c^7*d^
3*x^4 + 3*c^5*d^3*x^2 - c^3*d^3), x))/(c^8*d^3*x^4 - 2*c^6*d^3*x^2 + c^4*d^
3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^3\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{{\left(d-c^2\,d\,x^2\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^3,x)
```

```
[Out] int((x^3*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\int \frac{a^2x^3}{c^6x^6-3c^4x^4+3c^2x^2-1}\,dx + \int \frac{b^2x^3\,\mathrm{asin}^2\,(cx)}{c^6x^6-3c^4x^4+3c^2x^2-1}\,dx + \int \frac{2abx^3\,\mathrm{asin}\,(cx)}{c^6x^6-3c^4x^4+3c^2x^2-1}\,dx}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**3,x)
```

```
[Out] -(Integral(a**2*x**3/(c**6*x**6 - 3*c**4*x**4 + 3*c**2*x**2 - 1), x) + Inte
gral(b**2*x**3*asin(c*x)**2/(c**6*x**6 - 3*c**4*x**4 + 3*c**2*x**2 - 1), x)
 + Integral(2*a*b*x**3*asin(c*x)/(c**6*x**6 - 3*c**4*x**4 + 3*c**2*x**2 - 1
), x))/d**3
```

3.203 $\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^3}\,dx$

Optimal. Leaf size=341

$$-\frac{ib\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{4c^3d^3}+\frac{ib\text{Li}_2\left(ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{4c^3d^3}+\frac{i\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)^2}{4c^3d^3}$$

```
[Out] 1/12*b^2*x/c^2/d^3/(-c^2*x^2+1)-1/6*b*(a+b*arcsin(c*x))/c^3/d^3/(-c^2*x^2+1
)^(3/2)+1/4*x*(a+b*arcsin(c*x))^2/c^2/d^3/(-c^2*x^2+1)^2-1/8*x*(a+b*arcsin(
c*x))^2/c^2/d^3/(-c^2*x^2+1)+1/4*I*(a+b*arcsin(c*x))^2*arctan(I*c*x+(-c^2*x
^2+1)^(1/2))/c^3/d^3-1/6*b^2*arctanh(c*x)/c^3/d^3-1/4*I*b*(a+b*arcsin(c*x))
*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c^3/d^3+1/4*I*b*(a+b*arcsin(c*x))
*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c^3/d^3+1/4*b^2*polylog(3,-I*(I*c*
x+(-c^2*x^2+1)^(1/2)))/c^3/d^3-1/4*b^2*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2
)))/c^3/d^3+1/4*b*(a+b*arcsin(c*x))/c^3/d^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.42, antiderivative size = 341, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 10, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.370, Rules used = {4703, 4655, 4657, 4181, 2531, 2282, 6589, 4677, 206, 199}

$$-\frac{ib\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{4c^3d^3}+\frac{ib\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{4c^3d^3}+\frac{b^2\text{PolyLog}\left(3,-ie^{i\sin^{-1}(cx)}\right)}{4c^3d^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^3,x]
```

```
[Out] (b^2*x)/(12*c^2*d^3*(1 - c^2*x^2)) - (b*(a + b*ArcSin[c*x]))/(6*c^3*d^3*(1
 - c^2*x^2)^(3/2)) + (b*(a + b*ArcSin[c*x]))/(4*c^3*d^3*Sqrt[1 - c^2*x^2]) +
 (x*(a + b*ArcSin[c*x])^2)/(4*c^2*d^3*(1 - c^2*x^2)^2) - (x*(a + b*ArcSin[c
*x])^2)/(8*c^2*d^3*(1 - c^2*x^2)) + ((I/4)*(a + b*ArcSin[c*x])^2*ArcTan[E^(
I*ArcSin[c*x])])/(c^3*d^3) - (b^2*ArcTanh[c*x])/(6*c^3*d^3) - ((I/4)*b*(a +
 b*ArcSin[c*x])*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(c^3*d^3) + ((I/4)*b*(a
 + b*ArcSin[c*x])*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c^3*d^3) + (b^2*PolyLog
[3, (-I)*E^(I*ArcSin[c*x])])/(4*c^3*d^3) - (b^2*PolyLog[3, I*E^(I*ArcSin[c*
x])])/(4*c^3*d^3)
```

Rule 199

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && LtQ[p, -1] && (Integer
Q[2*p] || (n == 2 && IntegerQ[4*p]) || (n == 2 && IntegerQ[3*p]) || Denomin
ator[p + 1/n] < Denominator[p])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
```

```
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
```

```
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^2 \left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^3}\,dx = \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{4c^2d^3\left(1-c^2x^2\right)^2} - \frac{b\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{5/2}}\,dx}{2cd^3} - \frac{\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^2}\,dx}{4c^2d}$$

$$= -\frac{b\left(a+b\sin^{-1}(cx)\right)}{6c^3d^3\left(1-c^2x^2\right)^{3/2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{4c^2d^3\left(1-c^2x^2\right)^2} - \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{8c^2d^3\left(1-c^2x^2\right)} + \frac{b^2\int \frac{1}{\left(1-c^2x^2\right)^2}\,d}{6c^2d^3}$$

$$= \frac{b^2x}{12c^2d^3\left(1-c^2x^2\right)} - \frac{b\left(a+b\sin^{-1}(cx)\right)}{6c^3d^3\left(1-c^2x^2\right)^{3/2}} + \frac{b\left(a+b\sin^{-1}(cx)\right)}{4c^3d^3\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{4c^2d^3\left(1-c^2x^2\right)^2}$$

$$= \frac{b^2x}{12c^2d^3\left(1-c^2x^2\right)} - \frac{b\left(a+b\sin^{-1}(cx)\right)}{6c^3d^3\left(1-c^2x^2\right)^{3/2}} + \frac{b\left(a+b\sin^{-1}(cx)\right)}{4c^3d^3\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{4c^2d^3\left(1-c^2x^2\right)^2}$$

$$= \frac{b^2x}{12c^2d^3\left(1-c^2x^2\right)} - \frac{b\left(a+b\sin^{-1}(cx)\right)}{6c^3d^3\left(1-c^2x^2\right)^{3/2}} + \frac{b\left(a+b\sin^{-1}(cx)\right)}{4c^3d^3\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{4c^2d^3\left(1-c^2x^2\right)^2}$$

$$= \frac{b^2x}{12c^2d^3\left(1-c^2x^2\right)} - \frac{b\left(a+b\sin^{-1}(cx)\right)}{6c^3d^3\left(1-c^2x^2\right)^{3/2}} + \frac{b\left(a+b\sin^{-1}(cx)\right)}{4c^3d^3\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{4c^2d^3\left(1-c^2x^2\right)^2}$$

$$= \frac{b^2x}{12c^2d^3\left(1-c^2x^2\right)} - \frac{b\left(a+b\sin^{-1}(cx)\right)}{6c^3d^3\left(1-c^2x^2\right)^{3/2}} + \frac{b\left(a+b\sin^{-1}(cx)\right)}{4c^3d^3\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{4c^2d^3\left(1-c^2x^2\right)^2}$$

Mathematica [A] time = 4.65, size = 446, normalized size = 1.31

$$\frac{6a^2cx}{c^2x^2-1} + \frac{12a^2cx}{\left(c^2x^2-1\right)^2} + 3a^2\log(1-cx) - 3a^2\log(cx+1) + \frac{ab\left(\sqrt{1-c^2x^2}+12\sin^{-1}(cx)\left(c^3x^3-\left(c^2x^2-1\right)^2\log\left(1-ie^{i\sin^{-1}(cx)}\right)+\left(c^2x^2-1\right)^2 \mathrm{lc}\right.\right.}{(c}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^2*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^3,x]
```

```
[Out] ((12*a^2*c*x)/(-1 + c^2*x^2)^2 + (6*a^2*c*x)/(-1 + c^2*x^2) + (a*b*(-3 + Sq
rt[1 - c^2*x^2] - 4*Cos[2*ArcSin[c*x]] + 3*Cos[3*ArcSin[c*x]] - Cos[4*ArcSi
n[c*x]] + 12*ArcSin[c*x]*(c*x + c^3*x^3 - (-1 + c^2*x^2)^2*Log[1 - I*E^(I*A
rcSin[c*x])] + (-1 + c^2*x^2)^2*Log[1 + I*E^(I*ArcSin[c*x])])))/(-1 + c^2*x
^2)^2 + 3*a^2*Log[1 - c*x] - 3*a^2*Log[1 + c*x] - (12*I)*a*b*PolyLog[2, (-I
)*E^(I*ArcSin[c*x])] + (12*I)*a*b*PolyLog[2, I*E^(I*ArcSin[c*x])] + 4*b^2*(
(3*I)*ArcSin[c*x]^2*ArcTan[E^(I*ArcSin[c*x])] - 2*ArcTanh[c*x] - (3*I)*ArcS
in[c*x]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] + (3*I)*ArcSin[c*x]*PolyLog[2, I
*E^(I*ArcSin[c*x])] + 3*PolyLog[3, (-I)*E^(I*ArcSin[c*x])] - 3*PolyLog[3, I
*E^(I*ArcSin[c*x])]) + (b^2*(2*ArcSin[c*x]*(Sqrt[1 - c^2*x^2] + 3*Cos[3*Arc
Sin[c*x]]) - 3*ArcSin[c*x]^2*(-7*c*x + Sin[3*ArcSin[c*x]]) + 2*(c*x + Sin[3
*ArcSin[c*x]])))/(2*(-1 + c^2*x^2)^2))/(48*c^3*d^3)
```

fricas [F] time = 1.48, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{b^2x^2\arcsin(cx)^2 + 2\,abx^2\arcsin(cx) + a^2x^2}{c^6d^3x^6 - 3\,c^4d^3x^4 + 3\,c^2d^3x^2 - d^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^3,x, algorithm="fricas")
```

```
[Out] integral(-(b^2*x^2*arcsin(c*x)^2 + 2*a*b*x^2*arcsin(c*x) + a^2*x^2)/(c^6*d^
3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^3,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.62, size = 894, normalized size = 2.62

$$\frac{ib^2 \arcsin(cx)\operatorname{polylog}\left(2, i\left(icx+\sqrt{-c^2x^2+1}\right)\right)}{4c^3d^3} - \frac{ib^2 \arcsin(cx)\operatorname{polylog}\left(2, -i\left(icx+\sqrt{-c^2x^2+1}\right)\right)}{4c^3d^3} - \frac{ab \operatorname{arcs}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^3,x)
```

```
[Out] -1/4/c^3*a*b/d^3*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+1/4*a*b/d^3
/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)*x^3-1/4*I/c^3*a*b/d^3*dilog(1+I*(I*c*x+(
-c^2*x^2+1)^(1/2)))+1/4*I/c^3*a*b/d^3*dilog(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))
+1/4*I/c^3*b^2/d^3*arcsin(c*x)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))-1/4*
I/c^3*b^2/d^3*arcsin(c*x)*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+1/8/c^2*
b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)^2*x+1/12/c^3*b^2/d^3/(c^4*x^4-2*c
^2*x^2+1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)+1/12/c^3*a*b/d^3/(c^4*x^4-2*c^2*x^
2+1)*(-c^2*x^2+1)^(1/2)+1/4/c^3*a*b/d^3*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2
+1)^(1/2)))+1/16/c^3*a^2/d^3/(c*x-1)-1/16/c^3*a^2/d^3/(c*x+1)^2+1/16/c^3*a^
2/d^3/(c*x+1)+1/16/c^3*a^2/d^3/(c*x-1)^2-1/16/c^3*a^2/d^3*ln(c*x+1)+1/16/c^
3*a^2/d^3*ln(c*x-1)-1/12*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*x^3+1/12/c^2*b^2/d^3
/(c^4*x^4-2*c^2*x^2+1)*x+1/8*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)^2*x^
3-1/8/c^3*b^2/d^3*arcsin(c*x)^2*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+1/8/c^3*
b^2/d^3*arcsin(c*x)^2*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+1/3*I/c^3*b^2/d^3*
arctan(I*c*x+(-c^2*x^2+1)^(1/2))+1/4*b^2*polylog(3,-I*(I*c*x+(-c^2*x^2+1)^(
1/2)))/c^3/d^3-1/4*b^2*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c^3/d^3-1/4/
c*a*b/d^3/(c^4*x^4-2*c^2*x^2+1)*x^2*(-c^2*x^2+1)^(1/2)+1/4/c^2*a*b/d^3/(c^4
*x^4-2*c^2*x^2+1)*arcsin(c*x)*x-1/4/c*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*(-c^2*x
^2+1)^(1/2)*arcsin(c*x)*x^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{16}a^2\left(\frac{2\left(c^2x^3+x\right)}{c^6d^3x^4-2c^4d^3x^2+c^2d^3} - \frac{\log(cx+1)}{c^3d^3} + \frac{\log(cx-1)}{c^3d^3}\right) - \frac{\left(b^2c^4x^4-2b^2c^2x^2+b^2\right)\arctan\left(cx, \sqrt{cx+1}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] 1/16*a^2*(2*(c^2*x^3 + x)/(c^6*d^3*x^4 - 2*c^4*d^3*x^2 + c^2*d^3) - log(c*x
 + 1)/(c^3*d^3) + log(c*x - 1)/(c^3*d^3)) - 1/16*((b^2*c^4*x^4 - 2*b^2*c^2*
x^2 + b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2*log(c*x + 1) - (b^2
*c^4*x^4 - 2*b^2*c^2*x^2 + b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^
2*log(-c*x + 1) - 2*(b^2*c^3*x^3 + b^2*c*x)*arctan2(c*x, sqrt(c*x + 1)*sqrt
```

```
(-c*x + 1))^2 + 16*(c^7*d^3*x^4 - 2*c^5*d^3*x^2 + c^3*d^3)*integrate(1/8*(1
6*a*b*c^2*x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + ((b^2*c^4*x^4 -
2*b^2*c^2*x^2 + b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(c*x + 1
) - (b^2*c^4*x^4 - 2*b^2*c^2*x^2 + b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*
x + 1))*log(-c*x + 1) - 2*(b^2*c^3*x^3 + b^2*c*x)*arctan2(c*x, sqrt(c*x + 1
)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^8*d^3*x^6 - 3*c^6*d^3*x
^4 + 3*c^4*d^3*x^2 - c^2*d^3), x))/(c^7*d^3*x^4 - 2*c^5*d^3*x^2 + c^3*d^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2\,(a+b\,\mathrm{asin}\,(c\,x))^2}{\left(d-c^2\,d\,x^2\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^3,x)
```

```
[Out] int((x^2*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\int \frac{a^2x^2}{c^6x^6-3c^4x^4+3c^2x^2-1}\,dx+\int \frac{b^2x^2\,\mathrm{asin}^2\,(cx)}{c^6x^6-3c^4x^4+3c^2x^2-1}\,dx+\int \frac{2abx^2\,\mathrm{asin}\,(cx)}{c^6x^6-3c^4x^4+3c^2x^2-1}\,dx}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**3,x)
```

```
[Out] -(Integral(a**2*x**2/(c**6*x**6 - 3*c**4*x**4 + 3*c**2*x**2 - 1), x) + Inte
gral(b**2*x**2*asin(c*x)**2/(c**6*x**6 - 3*c**4*x**4 + 3*c**2*x**2 - 1), x)
 + Integral(2*a*b*x**2*asin(c*x)/(c**6*x**6 - 3*c**4*x**4 + 3*c**2*x**2 - 1
), x))/d**3
```

3.204 $\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^3}\,dx$

Optimal. Leaf size=150

$$-\frac{bx\left(a+b\sin^{-1}(cx)\right)}{3cd^3\sqrt{1-c^2x^2}}-\frac{bx\left(a+b\sin^{-1}(cx)\right)}{6cd^3\left(1-c^2x^2\right)^{3/2}}+\frac{\left(a+b\sin^{-1}(cx)\right)^2}{4c^2d^3\left(1-c^2x^2\right)^2}+\frac{b^2}{12c^2d^3\left(1-c^2x^2\right)}-\frac{b^2\log\left(1-c^2x^2\right)}{6c^2d^3}$$

```
[Out] 1/12*b^2/c^2/d^3/(-c^2*x^2+1)-1/6*b*x*(a+b*arcsin(c*x))/c/d^3/(-c^2*x^2+1)^
(3/2)+1/4*(a+b*arcsin(c*x))^2/c^2/d^3/(-c^2*x^2+1)^2-1/6*b^2*ln(-c^2*x^2+1)
/c^2/d^3-1/3*b*x*(a+b*arcsin(c*x))/c/d^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 150, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {4677, 4655, 4651, 260, 261}

$$-\frac{bx\left(a+b\sin^{-1}(cx)\right)}{3cd^3\sqrt{1-c^2x^2}}-\frac{bx\left(a+b\sin^{-1}(cx)\right)}{6cd^3\left(1-c^2x^2\right)^{3/2}}+\frac{\left(a+b\sin^{-1}(cx)\right)^2}{4c^2d^3\left(1-c^2x^2\right)^2}+\frac{b^2}{12c^2d^3\left(1-c^2x^2\right)}-\frac{b^2\log\left(1-c^2x^2\right)}{6c^2d^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^3,x]
```

```
[Out] b^2/(12*c^2*d^3*(1 - c^2*x^2)) - (b*x*(a + b*ArcSin[c*x]))/(6*c*d^3*(1 - c^
2*x^2)^(3/2)) - (b*x*(a + b*ArcSin[c*x]))/(3*c*d^3*Sqrt[1 - c^2*x^2]) + (a
+ b*ArcSin[c*x])^2/(4*c^2*d^3*(1 - c^2*x^2)^2) - (b^2*Log[1 - c^2*x^2])/(6*
c^2*d^3)
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^3}\,dx = \frac{\left(a+b\sin^{-1}(cx)\right)^2}{4c^2d^3\left(1-c^2x^2\right)^2}-\frac{b\int \frac{a+b\sin^{-1}(cx)}{\left(1-c^2x^2\right)^{5/2}}\,dx}{2cd^3}$$

$$= -\frac{bx\left(a+b\sin^{-1}(cx)\right)}{6cd^3\left(1-c^2x^2\right)^{3/2}}+\frac{\left(a+b\sin^{-1}(cx)\right)^2}{4c^2d^3\left(1-c^2x^2\right)^2}+\frac{b^2\int \frac{x}{\left(1-c^2x^2\right)^2}\,dx}{6d^3}-\frac{b\int \frac{a+b\sin^{-1}(cx)}{\left(1-c^2x^2\right)^{3/2}}\,dx}{3cd^3}$$

$$= \frac{b^2}{12c^2d^3\left(1-c^2x^2\right)}-\frac{bx\left(a+b\sin^{-1}(cx)\right)}{6cd^3\left(1-c^2x^2\right)^{3/2}}-\frac{bx\left(a+b\sin^{-1}(cx)\right)}{3cd^3\sqrt{1-c^2x^2}}+\frac{\left(a+b\sin^{-1}(cx)\right)^2}{4c^2d^3\left(1-c^2x^2\right)^2}$$

$$= \frac{b^2}{12c^2d^3\left(1-c^2x^2\right)}-\frac{bx\left(a+b\sin^{-1}(cx)\right)}{6cd^3\left(1-c^2x^2\right)^{3/2}}-\frac{bx\left(a+b\sin^{-1}(cx)\right)}{3cd^3\sqrt{1-c^2x^2}}+\frac{\left(a+b\sin^{-1}(cx)\right)^2}{4c^2d^3\left(1-c^2x^2\right)^2}$$

Mathematica [A] time = 0.21, size = 162, normalized size = 1.08

$$\frac{3a^2-6abcx\sqrt{1-c^2x^2}+2b\sin^{-1}(cx)\left(3a+bcx\sqrt{1-c^2x^2}\left(2c^2x^2-3\right)\right)+4abc^3x^3\sqrt{1-c^2x^2}-b^2c^2x^2-2b^2\left(c^2x^2\right.}{12c^2d^3\left(c^2x^2-1\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^3,x]
```

```
[Out] (3*a^2 + b^2 - b^2*c^2*x^2 - 6*a*b*c*x*Sqrt[1 - c^2*x^2] + 4*a*b*c^3*x^3*Sq
rt[1 - c^2*x^2] + 2*b*(3*a + b*c*x*Sqrt[1 - c^2*x^2]*(-3 + 2*c^2*x^2))*ArcS
in[c*x] + 3*b^2*ArcSin[c*x]^2 - 2*b^2*(-1 + c^2*x^2)^2*Log[1 - c^2*x^2])/(1
2*c^2*d^3*(-1 + c^2*x^2)^2)
```

fricas [A] time = 3.23, size = 165, normalized size = 1.10

$$-\frac{b^2c^2x^2-3\,b^2\arcsin(cx)^2-6\,ab\arcsin(cx)-3\,a^2-b^2+2\left(b^2c^4x^4-2\,b^2c^2x^2+b^2\right)\log\left(c^2x^2-1\right)-2\left(2\,abc^3x^3\right.}{12\left(c^6d^3x^4-2\,c^4d^3x^2+c^2d^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^3,x, algorithm="fricas")
```

```
[Out] -1/12*(b^2*c^2*x^2 - 3*b^2*arcsin(c*x)^2 - 6*a*b*arcsin(c*x) - 3*a^2 - b^2
+ 2*(b^2*c^4*x^4 - 2*b^2*c^2*x^2 + b^2)*log(c^2*x^2 - 1) - 2*(2*a*b*c^3*x^3
 - 3*a*b*c*x + (2*b^2*c^3*x^3 - 3*b^2*c*x)*arcsin(c*x))*sqrt(-c^2*x^2 + 1))
/(c^6*d^3*x^4 - 2*c^4*d^3*x^2 + c^2*d^3)
```

giac [B] time = 1.26, size = 395, normalized size = 2.63

$$\frac{b^2c^2x^4\arcsin(cx)^2}{4\left(c^2x^2-1\right)^2d^3}+\frac{abc^2x^4\arcsin(cx)}{2\left(c^2x^2-1\right)^2d^3}+\frac{a^2c^2x^4}{4\left(c^2x^2-1\right)^2d^3}+\frac{b^2cx^3\arcsin(cx)}{6\left(c^2x^2-1\right)\sqrt{-c^2x^2+1}\,d^3}-\frac{b^2x^2\arcsin(cx)^2}{2\left(c^2x^2-1\right)d^3}+\frac{}{6\left(c^2x^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^3,x, algorithm="giac")
```

```
[Out] 1/4*b^2*c^2*x^4*arcsin(c*x)^2/((c^2*x^2 - 1)^2*d^3) + 1/2*a*b*c^2*x^4*arcsi
n(c*x)/((c^2*x^2 - 1)^2*d^3) + 1/4*a^2*c^2*x^4/((c^2*x^2 - 1)^2*d^3) + 1/6*
b^2*c*x^3*arcsin(c*x)/((c^2*x^2 - 1)*sqrt(-c^2*x^2 + 1)*d^3) - 1/2*b^2*x^2*
arcsin(c*x)^2/((c^2*x^2 - 1)*d^3) + 1/6*a*b*c*x^3/((c^2*x^2 - 1)*sqrt(-c^2*
x^2 + 1)*d^3) - a*b*x^2*arcsin(c*x)/((c^2*x^2 - 1)*d^3) - 1/2*a^2*x^2/((c^2
*x^2 - 1)*d^3) - 1/12*b^2*x^2/((c^2*x^2 - 1)*d^3) - 1/2*b^2*x*arcsin(c*x)/(
sqrt(-c^2*x^2 + 1)*c*d^3) + 1/4*b^2*arcsin(c*x)^2/(c^2*d^3) - 1/2*a*b*x/(sq
rt(-c^2*x^2 + 1)*c*d^3) + 1/2*a*b*arcsin(c*x)/(c^2*d^3) - 1/3*b^2*log(2)/(c
^2*d^3) - 1/6*b^2*log(abs(-c^2*x^2 + 1))/(c^2*d^3) + 1/4*a^2/(c^2*d^3) + 1/
12*b^2/(c^2*d^3)
```

maple [B] time = 0.05, size = 335, normalized size = 2.23

$$\frac{a^2}{4c^2d^3\left(c^2x^2-1\right)^2}+\frac{b^2\arcsin\left(cx\right)^2}{4c^2d^3\left(c^2x^2-1\right)^2}-\frac{b^2\arcsin\left(cx\right)x\sqrt{-c^2x^2+1}}{6c\,d^3\left(c^2x^2-1\right)^2}-\frac{b^2}{12c^2d^3\left(c^2x^2-1\right)}+\frac{b^2\sqrt{-c^2x^2+1}\ \arcsin\left(\right.}{3c\,d^3\left(c^2x^2-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^3,x)
```

```
[Out] 1/4/c^2*a^2/d^3/(c^2*x^2-1)^2+1/4/c^2*b^2/d^3*arcsin(c*x)^2/(c^2*x^2-1)^2-1
/6/c*b^2/d^3*arcsin(c*x)*x*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)^2-1/12/c^2*b^2/d^
3/(c^2*x^2-1)+1/3/c*b^2/d^3*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*arcsin(c*x)*x-1/
6*b^2*ln(-c^2*x^2+1)/c^2/d^3+1/2/c^2*a*b/d^3/(c^2*x^2-1)^2*arcsin(c*x)+1/6/
c^2*a*b/d^3/(c*x+1)*(-(c*x+1)^2+2*c*x+2)^(1/2)-1/24/c^2*a*b/d^3/(c*x-1)^2*(
-(c*x-1)^2-2*c*x+2)^(1/2)+1/6/c^2*a*b/d^3/(c*x-1)*(-(c*x-1)^2-2*c*x+2)^(1/2
)+1/24/c^2*a*b/d^3/(c*x+1)^2*(-(c*x+1)^2+2*c*x+2)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{a^2}{4\left(c^6d^3x^4-2\,c^4d^3x^2+c^2d^3\right)}+\frac{b^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)^2-2\left(c^6d^3x^4-2\,c^4d^3x^2+c^2d^3\right)\int\frac{4\,abcx\arctan(}{}}{4\left(c^6d^3x^4-2\,c^4d^3x^2+c^2d^3\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] 1/4*a^2/(c^6*d^3*x^4 - 2*c^4*d^3*x^2 + c^2*d^3) + 1/4*(b^2*arctan2(c*x, sqr
t(c*x + 1)*sqrt(-c*x + 1))^2 + 4*(c^6*d^3*x^4 - 2*c^4*d^3*x^2 + c^2*d^3)*in
tegrate(-1/2*(4*a*b*c*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) - sqrt(c
*x + 1)*sqrt(-c*x + 1)*b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))/(c^7
*d^3*x^6 - 3*c^5*d^3*x^4 + 3*c^3*d^3*x^2 - c*d^3), x))/(c^6*d^3*x^4 - 2*c^4
*d^3*x^2 + c^2*d^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{{\left(d-c^2\,d\,x^2\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^3,x)
```

```
[Out] int((x*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\int \frac{a^2x}{c^6x^6-3c^4x^4+3c^2x^2-1}\,dx+\int \frac{b^2x\,\mathrm{asin}^2\,(cx)}{c^6x^6-3c^4x^4+3c^2x^2-1}\,dx+\int \frac{2abx\,\mathrm{asin}\,(cx)}{c^6x^6-3c^4x^4+3c^2x^2-1}\,dx}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**3,x)
```

```
[Out] -(Integral(a**2*x/(c**6*x**6 - 3*c**4*x**4 + 3*c**2*x**2 - 1), x) + Integra
l(b**2*x*asin(c*x)**2/(c**6*x**6 - 3*c**4*x**4 + 3*c**2*x**2 - 1), x) + Int
egral(2*a*b*x*asin(c*x)/(c**6*x**6 - 3*c**4*x**4 + 3*c**2*x**2 - 1), x))/d*
*3
```

3.205 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^3}\,dx$

Optimal. Leaf size=332

$$-\frac{3b\left(a+b\sin^{-1}(cx)\right)}{4cd^3\sqrt{1-c^2x^2}}-\frac{b\left(a+b\sin^{-1}(cx)\right)}{6cd^3\left(1-c^2x^2\right)^{3/2}}+\frac{3x\left(a+b\sin^{-1}(cx)\right)^2}{8d^3\left(1-c^2x^2\right)}+\frac{x\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2}+\frac{3ib\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)\left(\right.}{4cd^3}$$

```
[Out] 1/12*b^2*x/d^3/(-c^2*x^2+1)-1/6*b*(a+b*arcsin(c*x))/c/d^3/(-c^2*x^2+1)^(3/2
)+1/4*x*(a+b*arcsin(c*x))^2/d^3/(-c^2*x^2+1)^2+3/8*x*(a+b*arcsin(c*x))^2/d^
3/(-c^2*x^2+1)-3/4*I*(a+b*arcsin(c*x))^2*arctan(I*c*x+(-c^2*x^2+1)^(1/2))/c
/d^3+5/6*b^2*arctanh(c*x)/c/d^3+3/4*I*b*(a+b*arcsin(c*x))*polylog(2,-I*(I*c
*x+(-c^2*x^2+1)^(1/2)))/c/d^3-3/4*I*b*(a+b*arcsin(c*x))*polylog(2,I*(I*c*x+
(-c^2*x^2+1)^(1/2)))/c/d^3-3/4*b^2*polylog(3,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))
/c/d^3+3/4*b^2*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/d^3-3/4*b*(a+b*arc
sin(c*x))/c/d^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.35, antiderivative size = 332, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 9, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {4655, 4657, 4181, 2531, 2282, 6589, 4677, 206, 199}

$$\frac{3ib\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{4cd^3}-\frac{3ib\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{4cd^3}-\frac{3b^2\text{PolyLog}\left(3,-\right.}{4cd^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(d - c^2*d*x^2)^3,x]
```

```
[Out] (b^2*x)/(12*d^3*(1 - c^2*x^2)) - (b*(a + b*ArcSin[c*x]))/(6*c*d^3*(1 - c^2*
x^2)^(3/2)) - (3*b*(a + b*ArcSin[c*x]))/(4*c*d^3*Sqrt[1 - c^2*x^2]) + (x*(a
 + b*ArcSin[c*x])^2)/(4*d^3*(1 - c^2*x^2)^2) + (3*x*(a + b*ArcSin[c*x])^2)/
(8*d^3*(1 - c^2*x^2)) - (((3*I)/4)*(a + b*ArcSin[c*x])^2*ArcTan[E^(I*ArcSin
[c*x])])/(c*d^3) + (5*b^2*ArcTanh[c*x])/(6*c*d^3) + (((3*I)/4)*b*(a + b*Arc
Sin[c*x])*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(c*d^3) - (((3*I)/4)*b*(a + b
*ArcSin[c*x])*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c*d^3) - (3*b^2*PolyLog[3,
(-I)*E^(I*ArcSin[c*x])])/(4*c*d^3) + (3*b^2*PolyLog[3, I*E^(I*ArcSin[c*x])]
)/(4*c*d^3)
```

Rule 199

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && LtQ[p, -1] && (Integer
Q[2*p] || (n == 2 && IntegerQ[4*p]) || (n == 2 && IntegerQ[3*p]) || Denomin
ator[p + 1/n] < Denominator[p])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] && !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
```

```
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^3}dx = \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2} - \frac{(bc)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{5/2}}dx}{2d^3} + \frac{3\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^2}dx}{4d}$$

$$= -\frac{b\left(a+b\sin^{-1}(cx)\right)}{6cd^3\left(1-c^2x^2\right)^{3/2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2} + \frac{3x\left(a+b\sin^{-1}(cx)\right)^2}{8d^3\left(1-c^2x^2\right)} + \frac{b^2\int \frac{1}{\left(1-c^2x^2\right)^2}}{6d^3}$$

$$= \frac{b^2x}{12d^3\left(1-c^2x^2\right)} - \frac{b\left(a+b\sin^{-1}(cx)\right)}{6cd^3\left(1-c^2x^2\right)^{3/2}} - \frac{3b\left(a+b\sin^{-1}(cx)\right)}{4cd^3\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2}$$

$$= \frac{b^2x}{12d^3\left(1-c^2x^2\right)} - \frac{b\left(a+b\sin^{-1}(cx)\right)}{6cd^3\left(1-c^2x^2\right)^{3/2}} - \frac{3b\left(a+b\sin^{-1}(cx)\right)}{4cd^3\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2}$$

$$= \frac{b^2x}{12d^3\left(1-c^2x^2\right)} - \frac{b\left(a+b\sin^{-1}(cx)\right)}{6cd^3\left(1-c^2x^2\right)^{3/2}} - \frac{3b\left(a+b\sin^{-1}(cx)\right)}{4cd^3\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2}$$

$$= \frac{b^2x}{12d^3\left(1-c^2x^2\right)} - \frac{b\left(a+b\sin^{-1}(cx)\right)}{6cd^3\left(1-c^2x^2\right)^{3/2}} - \frac{3b\left(a+b\sin^{-1}(cx)\right)}{4cd^3\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2}$$

$$= \frac{b^2x}{12d^3\left(1-c^2x^2\right)} - \frac{b\left(a+b\sin^{-1}(cx)\right)}{6cd^3\left(1-c^2x^2\right)^{3/2}} - \frac{3b\left(a+b\sin^{-1}(cx)\right)}{4cd^3\sqrt{1-c^2x^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2}$$

Mathematica [A] time = 6.02, size = 556, normalized size = 1.67

$$\frac{-\frac{36a^2x}{c^2x^2-1} + \frac{24a^2x}{\left(c^2x^2-1\right)^2} - \frac{18a^2\log(1-cx)}{c} + \frac{18a^2\log(cx+1)}{c} + \frac{ab\left(-72i\left(c^2x^2-1\right)^2\text{Li}_2\left(ie^{i\sin^{-1}(cx)}\right)-70\sqrt{1-c^2x^2}+40\cos\left(2\sin^{-1}(cx)\right)-18\cos\left(3\sin\cdots\right.\right.}{\cdots}}{\cdots}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(d - c^2*d*x^2)^3,x]
```

```
[Out] ((24*a^2*x)/(-1 + c^2*x^2)^2 - (36*a^2*x)/(-1 + c^2*x^2) - (18*a^2*Log[1 -
c*x])/c + (18*a^2*Log[1 + c*x])/c + ((72*I)*a*b*PolyLog[2, (-I)*E^(I*ArcSin
[c*x])])/c - (4*b^2*((2*c*x)/(-1 + c^2*x^2) + (4*ArcSin[c*x])/(1 - c^2*x^2)
^(3/2) + (18*ArcSin[c*x])/Sqrt[1 - c^2*x^2] - (6*c*x*ArcSin[c*x]^2)/(-1 + c
^2*x^2)^2 + (9*c*x*ArcSin[c*x]^2)/(-1 + c^2*x^2) + (18*I)*ArcSin[c*x]^2*Arc
Tan[E^(I*ArcSin[c*x])] - 20*ArcTanh[c*x] - (18*I)*ArcSin[c*x]*PolyLog[2, (-
I)*E^(I*ArcSin[c*x])] + (18*I)*ArcSin[c*x]*PolyLog[2, I*E^(I*ArcSin[c*x])]
+ 18*PolyLog[3, (-I)*E^(I*ArcSin[c*x])] - 18*PolyLog[3, I*E^(I*ArcSin[c*x])
]))/c + (a*b*(30 - 70*Sqrt[1 - c^2*x^2] + 40*Cos[2*ArcSin[c*x]] - 18*Cos[3*
ArcSin[c*x]] + 10*Cos[4*ArcSin[c*x]] - (72*I)*(-1 + c^2*x^2)^2*PolyLog[2, I
*E^(I*ArcSin[c*x])] + 3*ArcSin[c*x]*(22*c*x + 9*Log[1 - I*E^(I*ArcSin[c*x])
] + 12*Cos[2*ArcSin[c*x]]*(Log[1 - I*E^(I*ArcSin[c*x])] - Log[1 + I*E^(I*Ar
cSin[c*x])]) + 3*Cos[4*ArcSin[c*x]]*(Log[1 - I*E^(I*ArcSin[c*x])] - Log[1 +
 I*E^(I*ArcSin[c*x])]) - 9*Log[1 + I*E^(I*ArcSin[c*x])] + 6*Sin[3*ArcSin[c*
x]])))/(c*(-1 + c^2*x^2)^2))/(96*d^3)
```

fricas [F] time = 3.71, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{b^2\arcsin(cx)^2 + 2ab\arcsin(cx) + a^2}{c^6d^3x^6 - 3c^4d^3x^4 + 3c^2d^3x^2 - d^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^3,x, algorithm="fricas")
```

```
[Out] integral(-(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)/(c^6*d^3*x^6 - 3*c^
4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(b\arcsin(cx)+a)^2}{\left(c^2dx^2-d\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^3,x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)^2/(c^2*d*x^2 - d)^3, x)
```

maple [B] time = 0.28, size = 890, normalized size = 2.68

$$\frac{3b^2\arcsin(cx)^2\ln\left(1-i\left(icx+\sqrt{-c^2x^2+1}\right)\right)}{8c\,d^3}-\frac{3b^2\arcsin(cx)^2\ln\left(1+i\left(icx+\sqrt{-c^2x^2+1}\right)\right)}{8c\,d^3}-\frac{5ib^2\arctan\left(icx+\right.}{3c\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^3,x)
```

```
[Out] 3/8/c*b^2/d^3*arcsin(c*x)^2*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-3/8/c*b^2/d^
3*arcsin(c*x)^2*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+5/8*b^2/d^3/(c^4*x^4-2*c
^2*x^2+1)*arcsin(c*x)^2*x-5/3*I/c*b^2/d^3*arctan(I*c*x+(-c^2*x^2+1)^(1/2))-
1/12*c^2*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*x^3-3/4*c^2*a*b/d^3/(c^4*x^4-2*c^2*x
^2+1)*arcsin(c*x)*x^3+3/4*c*a*b/d^3/(c^4*x^4-2*c^2*x^2+1)*x^2*(-c^2*x^2+1)^
(1/2)+3/4*c*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^
2+1/12*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*x+3/16/c*a^2/d^3*ln(c*x+1)-3/16/c*a^2/
d^3*ln(c*x-1)-3/16/c*a^2/d^3/(c*x-1)-1/16/c*a^2/d^3/(c*x+1)^2-3/16/c*a^2/d^
3/(c*x+1)+1/16/c*a^2/d^3/(c*x-1)^2-3/4*b^2*polylog(3,-I*(I*c*x+(-c^2*x^2+1)
^(1/2)))/c/d^3+3/4*b^2*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/d^3+5/4*a*
b/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)*x-11/12/c*a*b/d^3/(c^4*x^4-2*c^2*x^
2+1)*(-c^2*x^2+1)^(1/2)-3/4/c*a*b/d^3*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1
)^(1/2)))+3/4/c*a*b/d^3*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-11/1
2/c*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)-3/8*c^2*b^
2/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)^2*x^3-3/4*I/c*b^2/d^3*arcsin(c*x)*p
olylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))+3/4*I/c*b^2/d^3*arcsin(c*x)*polylog(
2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+3/4*I/c*a*b/d^3*dilog(1+I*(I*c*x+(-c^2*x^2
+1)^(1/2)))-3/4*I/c*a*b/d^3*dilog(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{16}a^2\left(\frac{2\left(3c^2x^3-5x\right)}{c^4d^3x^4-2c^2d^3x^2+d^3}-\frac{3\log(cx+1)}{cd^3}+\frac{3\log(cx-1)}{cd^3}\right)+\frac{3\left(b^2c^4x^4-2b^2c^2x^2+b^2\right)\arctan\left(cx,\sqrt{cx+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] -1/16*a^2*(2*(3*c^2*x^3 - 5*x)/(c^4*d^3*x^4 - 2*c^2*d^3*x^2 + d^3) - 3*log(
c*x + 1)/(c*d^3) + 3*log(c*x - 1)/(c*d^3)) + 1/16*(3*(b^2*c^4*x^4 - 2*b^2*c
^2*x^2 + b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2*log(c*x + 1) - 3
*(b^2*c^4*x^4 - 2*b^2*c^2*x^2 + b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x +
 1))^2*log(-c*x + 1) - 2*(3*b^2*c^3*x^3 - 5*b^2*c*x)*arctan2(c*x, sqrt(c*x
```

```
+ 1)*sqrt(-c*x + 1))^2 + 16*(c^5*d^3*x^4 - 2*c^3*d^3*x^2 + c*d^3)*integrate
(-1/8*(16*a*b*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) - (3*(b^2*c^4*x^4
- 2*b^2*c^2*x^2 + b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(c*x +
 1) - 3*(b^2*c^4*x^4 - 2*b^2*c^2*x^2 + b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt
(-c*x + 1))*log(-c*x + 1) - 2*(3*b^2*c^3*x^3 - 5*b^2*c*x)*arctan2(c*x, sqrt
(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^6*d^3*x^6 - 3*c
^4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3), x))/(c^5*d^3*x^4 - 2*c^3*d^3*x^2 + c*d^3
)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))^2}{\left(d-c^2\,d\,x^2\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(d - c^2*d*x^2)^3,x)
```

```
[Out] int((a + b*asin(c*x))^2/(d - c^2*d*x^2)^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(-c**2*d*x**2+d)**3,x)
```

```
[Out] Timed out
```

3.206 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\left(d-c^2dx^2\right)^3}\,dx$

Optimal. Leaf size=296

$$-\frac{4bcx\left(a+b\sin^{-1}(cx)\right)}{3d^3\sqrt{1-c^2x^2}}-\frac{bcx\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}}+\frac{\left(a+b\sin^{-1}(cx)\right)^2}{2d^3\left(1-c^2x^2\right)}+\frac{\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2}+\frac{ib\mathrm{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right)\left(a+\right.}{d^3}$$

```
[Out] 1/12*b^2/d^3/(-c^2*x^2+1)-1/6*b*c*x*(a+b*arcsin(c*x))/d^3/(-c^2*x^2+1)^(3/2
)+1/4*(a+b*arcsin(c*x))^2/d^3/(-c^2*x^2+1)^2+1/2*(a+b*arcsin(c*x))^2/d^3/(-
c^2*x^2+1)-2*(a+b*arcsin(c*x))^2*arctanh((I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^3-
2/3*b^2*ln(-c^2*x^2+1)/d^3+I*b*(a+b*arcsin(c*x))*polylog(2,-(I*c*x+(-c^2*x^
2+1)^(1/2))^2)/d^3-I*b*(a+b*arcsin(c*x))*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2
))^2)/d^3-1/2*b^2*polylog(3,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^3+1/2*b^2*poly
log(3,(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^3-4/3*b*c*x*(a+b*arcsin(c*x))/d^3/(-c
^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.49, antiderivative size = 296, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 11, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.407, Rules used = {4705, 4679, 4419, 4183, 2531, 2282, 6589, 4651, 260, 4655, 261}

$$\frac{ib\,\mathrm{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^3}-\frac{ib\,\mathrm{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^3}-\frac{b^2\mathrm{PolyLog}\left(3,-e^{2i\sin^{-1}}\right.}{2d^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x*(d - c^2*d*x^2)^3),x]
```

```
[Out] b^2/(12*d^3*(1 - c^2*x^2)) - (b*c*x*(a + b*ArcSin[c*x]))/(6*d^3*(1 - c^2*x^
2)^(3/2)) - (4*b*c*x*(a + b*ArcSin[c*x]))/(3*d^3*Sqrt[1 - c^2*x^2]) + (a +
b*ArcSin[c*x])^2/(4*d^3*(1 - c^2*x^2)^2) + (a + b*ArcSin[c*x])^2/(2*d^3*(1
- c^2*x^2)) - (2*(a + b*ArcSin[c*x])^2*ArcTanh[E^((2*I)*ArcSin[c*x])])/d^3
- (2*b^2*Log[1 - c^2*x^2])/(3*d^3) + (I*b*(a + b*ArcSin[c*x])*PolyLog[2, -E
^((2*I)*ArcSin[c*x])])/d^3 - (I*b*(a + b*ArcSin[c*x])*PolyLog[2, E^((2*I)*A
rcSin[c*x])])/d^3 - (b^2*PolyLog[3, -E^((2*I)*ArcSin[c*x])])/(2*d^3) + (b^2
*PolyLog[3, E^((2*I)*ArcSin[c*x])])/(2*d^3)
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4419

```
Int[Csc[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csc[2*a + 2*b*x]^n,
 x], x] /; FreeQ[{a, b, c, d, m}, x] && IntegerQ[n] && RationalQ[m]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4679

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((x_)*((d_) + (e_.)*(x_)^2)),
x_Symbol] :> Dist[1/d, Subst[Int[(a + b*x)^n/(Cos[x]*Sin[x]), x], x, ArcSin
[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4705

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> -Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a +
b*ArcSin[c*x])^n)/(2*d*f*(p + 1)), x] + (Dist[(m + 2*p + 3)/(2*d*(p + 1)),
Int[(f*x)^m*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[(b*c*n
*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*f*(p + 1)*(1 - c^2*x^2)^FracPart[
p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
0] && LtQ[p, -1] &&  !GtQ[m, 1] && (IntegerQ[m] || IntegerQ[p] || EqQ[n, 1]
)
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\left(d-c^2dx^2\right)^3}\,dx = \frac{\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2} - \frac{(bc)\int \frac{a+b\sin^{-1}(cx)}{\left(1-c^2x^2\right)^{5/2}}\,dx}{2d^3} + \frac{\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\left(d-c^2dx^2\right)^2}\,dx}{d}$$

$$= -\frac{bcx\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2d^3\left(1-c^2x^2\right)} - \frac{(bc)\int \frac{a+b\sin^{-1}(cx)}{\left(1-c^2x^2\right)^{3/2}}}{3d^3}$$

$$= \frac{b^2}{12d^3\left(1-c^2x^2\right)} - \frac{bcx\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}} - \frac{4bcx\left(a+b\sin^{-1}(cx)\right)}{3d^3\sqrt{1-c^2x^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2}$$

$$= \frac{b^2}{12d^3\left(1-c^2x^2\right)} - \frac{bcx\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}} - \frac{4bcx\left(a+b\sin^{-1}(cx)\right)}{3d^3\sqrt{1-c^2x^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2}$$

$$= \frac{b^2}{12d^3\left(1-c^2x^2\right)} - \frac{bcx\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}} - \frac{4bcx\left(a+b\sin^{-1}(cx)\right)}{3d^3\sqrt{1-c^2x^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2}$$

$$= \frac{b^2}{12d^3\left(1-c^2x^2\right)} - \frac{bcx\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}} - \frac{4bcx\left(a+b\sin^{-1}(cx)\right)}{3d^3\sqrt{1-c^2x^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2}$$

$$= \frac{b^2}{12d^3\left(1-c^2x^2\right)} - \frac{bcx\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}} - \frac{4bcx\left(a+b\sin^{-1}(cx)\right)}{3d^3\sqrt{1-c^2x^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2}$$

$$= \frac{b^2}{12d^3\left(1-c^2x^2\right)} - \frac{bcx\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}} - \frac{4bcx\left(a+b\sin^{-1}(cx)\right)}{3d^3\sqrt{1-c^2x^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2}$$

Mathematica [A] time = 3.81, size = 459, normalized size = 1.55

$$-\frac{\frac{12a^2}{c^2x^2-1} - \frac{6a^2}{\left(c^2x^2-1\right)^2} + 12a^2\log\left(1-c^2x^2\right) - 24a^2\log(cx) + 4ab\left(\frac{8cx}{\sqrt{1-c^2x^2}} + \frac{cx}{\left(1-c^2x^2\right)^{3/2}} + \frac{6\sin^{-1}(cx)}{c^2x^2-1} - \frac{3\sin^{-1}(cx)}{\left(c^2x^2-1\right)^2} - 6i\mathrm{Li}_2\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x*(d - c^2*d*x^2)^3),x]
```

```
[Out] -1/24*((-6*a^2)/(-1 + c^2*x^2)^2 + (12*a^2)/(-1 + c^2*x^2) - 24*a^2*Log[c*x
] + 12*a^2*Log[1 - c^2*x^2] + 4*a*b*((c*x)/(1 - c^2*x^2)^(3/2) + (8*c*x)/Sq
rt[1 - c^2*x^2] - (3*ArcSin[c*x])/(-1 + c^2*x^2)^2 + (6*ArcSin[c*x])/(-1 +
c^2*x^2) - 12*ArcSin[c*x]*Log[1 - E^((2*I)*ArcSin[c*x])] + 12*ArcSin[c*x]*L
og[1 + E^((2*I)*ArcSin[c*x])] - (6*I)*PolyLog[2, -E^((2*I)*ArcSin[c*x])] +
(6*I)*PolyLog[2, E^((2*I)*ArcSin[c*x])]) + b^2*(I*Pi^3 + 2/(-1 + c^2*x^2) +
 (4*c*x*ArcSin[c*x])/(1 - c^2*x^2)^(3/2) + (32*c*x*ArcSin[c*x])/Sqrt[1 - c^
2*x^2] - (6*ArcSin[c*x]^2)/(-1 + c^2*x^2)^2 + (12*ArcSin[c*x]^2)/(-1 + c^2*
x^2) - (16*I)*ArcSin[c*x]^3 - 24*ArcSin[c*x]^2*Log[1 - E^((-2*I)*ArcSin[c*x
])] + 24*ArcSin[c*x]^2*Log[1 + E^((2*I)*ArcSin[c*x])] + 16*Log[1 - c^2*x^2]
 - (24*I)*ArcSin[c*x]*PolyLog[2, E^((-2*I)*ArcSin[c*x])] - (24*I)*ArcSin[c*
```

```
x]*PolyLog[2, -E^((2*I)*ArcSin[c*x])] - 12*PolyLog[3, E^((-2*I)*ArcSin[c*x]
)] + 12*PolyLog[3, -E^((2*I)*ArcSin[c*x])]))/d^3
```

fricas [F] time = 1.35, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{b^2 \arcsin(cx)^2 + 2\,ab\arcsin(cx) + a^2}{c^6 d^3 x^7 - 3\,c^4 d^3 x^5 + 3\,c^2 d^3 x^3 - d^3 x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x/(-c^2*d*x^2+d)^3,x, algorithm="fricas")
```

```
[Out] integral(-(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)/(c^6*d^3*x^7 - 3*c^
4*d^3*x^5 + 3*c^2*d^3*x^3 - d^3*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(b\arcsin(cx) + a)^2}{\left(c^2 dx^2 - d\right)^3 x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x/(-c^2*d*x^2+d)^3,x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)^2/((c^2*d*x^2 - d)^3*x), x)
```

maple [B] time = 0.46, size = 1224, normalized size = 4.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x/(-c^2*d*x^2+d)^3,x)
```

```
[Out] -1/2*b^2*polylog(3,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^3+3/4*b^2/d^3/(c^4*x^4-
2*c^2*x^2+1)*arcsin(c*x)^2-b^2/d^3*arcsin(c*x)^2*ln(1+(I*c*x+(-c^2*x^2+1)^(
1/2))^2)+b^2/d^3*arcsin(c*x)^2*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))+b^2/d^3*arcsi
n(c*x)^2*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-1/2*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*a
rcsin(c*x)^2*c^2*x^2-2*I*b^2/d^3*arcsin(c*x)*polylog(2,I*c*x+(-c^2*x^2+1)^(
1/2))-2*I*b^2/d^3*arcsin(c*x)*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))+3/2*a*b/
d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)+2*a*b/d^3*arcsin(c*x)*ln(1-I*c*x-(-c^
2*x^2+1)^(1/2))-2*a*b/d^3*arcsin(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)+I*
a*b/d^3*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)+2*a*b/d^3*arcsin(c*x)*ln(1
+I*c*x+(-c^2*x^2+1)^(1/2))-4/3*I*a*b/d^3/(c^4*x^4-2*c^2*x^2+1)-2*I*a*b/d^3*
polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))-2*I*a*b/d^3*polylog(2,-I*c*x-(-c^2*x^2+
1)^(1/2))-1/12*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*c^2*x^2+I*b^2/d^3*arcsin(c*x)*
polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)-4/3*I*b^2/d^3/(c^4*x^4-2*c^2*x^2+1
)*arcsin(c*x)+4/3*a*b/d^3/(c^4*x^4-2*c^2*x^2+1)*c^3*x^3*(-c^2*x^2+1)^(1/2)-
a*b/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)*c^2*x^2-3/2*a*b/d^3/(c^4*x^4-2*c^
2*x^2+1)*c*x*(-c^2*x^2+1)^(1/2)-4/3*I*a*b/d^3/(c^4*x^4-2*c^2*x^2+1)*c^4*x^4
+8/3*I*a*b/d^3/(c^4*x^4-2*c^2*x^2+1)*c^2*x^2+4/3*b^2/d^3/(c^4*x^4-2*c^2*x^2
+1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^3*x^3+a^2/d^3*ln(c*x)+1/12*b^2/d^3/(c^
4*x^4-2*c^2*x^2+1)+8/3*b^2/d^3*ln(I*c*x+(-c^2*x^2+1)^(1/2))-4/3*b^2/d^3*ln(
1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)+2*b^2/d^3*polylog(3,I*c*x+(-c^2*x^2+1)^(1/2
))+2*b^2/d^3*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2))-5/16*a^2/d^3/(c*x-1)-1/2*
a^2/d^3*ln(c*x+1)-1/2*a^2/d^3*ln(c*x-1)+1/16*a^2/d^3/(c*x+1)^2+5/16*a^2/d^3
/(c*x+1)+1/16*a^2/d^3/(c*x-1)^2-3/2*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*(-c^2*x^2
+1)^(1/2)*arcsin(c*x)*c*x-4/3*I*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)*c
^4*x^4+8/3*I*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)*c^2*x^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{4}a^2\left(\frac{2c^2x^2-3}{c^4d^3x^4-2c^2d^3x^2+d^3}+\frac{2\log(cx+1)}{d^3}+\frac{2\log(cx-1)}{d^3}-\frac{4\log(x)}{d^3}\right)-\int\frac{b^2\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right.}{c^6d^3x^7-3c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x/(-c^2*d*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] -1/4*a^2*((2*c^2*x^2 - 3)/(c^4*d^3*x^4 - 2*c^2*d^3*x^2 + d^3) + 2*log(c*x +
 1)/d^3 + 2*log(c*x - 1)/d^3 - 4*log(x)/d^3) - integrate((b^2*arctan2(c*x,
sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a*b*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*
x + 1)))/(c^6*d^3*x^7 - 3*c^4*d^3*x^5 + 3*c^2*d^3*x^3 - d^3*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{(a+b\operatorname{asin}(c\,x))^2}{x\left(d-c^2\,d\,x^2\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x*(d - c^2*d*x^2)^3),x)
```

```
[Out] int((a + b*asin(c*x))^2/(x*(d - c^2*d*x^2)^3), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x/(-c**2*d*x**2+d)**3,x)
```

```
[Out] Timed out
```

3.207 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^2\left(d-c^2dx^2\right)^3}\,dx$

Optimal. Leaf size=429

$$-\frac{7bc\left(a+b\sin^{-1}(cx)\right)}{4d^3\sqrt{1-c^2x^2}}-\frac{bc\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}}+\frac{15c^2x\left(a+b\sin^{-1}(cx)\right)^2}{8d^3\left(1-c^2x^2\right)}+\frac{5c^2x\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2}-\frac{\left(a+b\sin^{-1}(c\right.}{d^3x\left(1-c^2x\right.}$$

```
[Out] 1/12*b^2*c^2*x/d^3/(-c^2*x^2+1)-1/6*b*c*(a+b*arcsin(c*x))/d^3/(-c^2*x^2+1)^
(3/2)-(a+b*arcsin(c*x))^2/d^3/x/(-c^2*x^2+1)^2+5/4*c^2*x*(a+b*arcsin(c*x))^
2/d^3/(-c^2*x^2+1)^2+15/8*c^2*x*(a+b*arcsin(c*x))^2/d^3/(-c^2*x^2+1)-15/4*I
*c*(a+b*arcsin(c*x))^2*arctan(I*c*x+(-c^2*x^2+1)^(1/2))/d^3-4*b*c*(a+b*arcs
in(c*x))*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))/d^3+11/6*b^2*c*arctanh(c*x)/d^3+
2*I*b^2*c*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))/d^3+15/4*I*b*c*(a+b*arcsin(c
*x))*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d^3-15/4*I*b*c*(a+b*arcsin(c*
x))*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d^3-2*I*b^2*c*polylog(2,I*c*x+(
-c^2*x^2+1)^(1/2))/d^3-15/4*b^2*c*polylog(3,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/
d^3+15/4*b^2*c*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d^3-7/4*b*c*(a+b*arc
sin(c*x))/d^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.76, antiderivative size = 429, normalized size of antiderivative = 1.00, number of steps used = 27, number of rules used = 15, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.556, Rules used = {4701, 4655, 4657, 4181, 2531, 2282, 6589, 4677, 206, 199, 4705, 4709, 4183, 2279, 2391}

$$\frac{15ibc\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{4d^3}-\frac{15ibc\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{4d^3}+\frac{2ib^2c\text{PolyLo}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x^2*(d - c^2*d*x^2)^3),x]
```

```
[Out] (b^2*c^2*x)/(12*d^3*(1 - c^2*x^2)) - (b*c*(a + b*ArcSin[c*x]))/(6*d^3*(1 -
c^2*x^2)^(3/2)) - (7*b*c*(a + b*ArcSin[c*x]))/(4*d^3*Sqrt[1 - c^2*x^2]) - (
a + b*ArcSin[c*x])^2/(d^3*x*(1 - c^2*x^2)^2) + (5*c^2*x*(a + b*ArcSin[c*x])
^2)/(4*d^3*(1 - c^2*x^2)^2) + (15*c^2*x*(a + b*ArcSin[c*x])^2)/(8*d^3*(1 -
c^2*x^2)) - (((15*I)/4)*c*(a + b*ArcSin[c*x])^2*ArcTan[E^(I*ArcSin[c*x])])/
d^3 - (4*b*c*(a + b*ArcSin[c*x])*ArcTanh[E^(I*ArcSin[c*x])])/d^3 + (11*b^2*
c*ArcTanh[c*x])/(6*d^3) + ((2*I)*b^2*c*PolyLog[2, -E^(I*ArcSin[c*x])])/d^3
+ (((15*I)/4)*b*c*(a + b*ArcSin[c*x])*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/d
^3 - (((15*I)/4)*b*c*(a + b*ArcSin[c*x])*PolyLog[2, I*E^(I*ArcSin[c*x])])/d
^3 - ((2*I)*b^2*c*PolyLog[2, E^(I*ArcSin[c*x])])/d^3 - (15*b^2*c*PolyLog[3,
 (-I)*E^(I*ArcSin[c*x])])/(4*d^3) + (15*b^2*c*PolyLog[3, I*E^(I*ArcSin[c*x]
)])/(4*d^3)
```

Rule 199

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && LtQ[p, -1] && (Integer
Q[2*p] || (n == 2 && IntegerQ[4*p]) || (n == 2 && IntegerQ[3*p]) || Denomin
ator[p + 1/n] < Denominator[p])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
```

```
Q[a, 0] || LtQ[b, 0])
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
```

```
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4705

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> -Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a +
b*ArcSin[c*x])^n)/(2*d*f*(p + 1)), x] + (Dist[(m + 2*p + 3)/(2*d*(p + 1)),
Int[(f*x)^m*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[(b*c*n
*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*f*(p + 1)*(1 - c^2*x^2)^FracPart[
p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
0] && LtQ[p, -1] &&  !GtQ[m, 1] && (IntegerQ[m] || IntegerQ[p] || EqQ[n, 1]
)
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^2\left(d-c^2dx^2\right)^3}\,dx = -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{d^3x\left(1-c^2x^2\right)^2} + \left(5c^2\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^3}\,dx + \frac{(2bc)\int \frac{a+b\sin^{-1}(cx)}{x\left(1-c^2x^2\right)^{5/2}}\,dx}{d^3}$$

$$= \frac{2bc\left(a+b\sin^{-1}(cx)\right)}{3d^3\left(1-c^2x^2\right)^{3/2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d^3x\left(1-c^2x^2\right)^2} + \frac{5c^2x\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2} + \frac{(2bc)\int \frac{a+b\sin^{-1}}{x\left(1-c^2x^2\right.}}{d^3}$$

$$= -\frac{b^2c^2x}{3d^3\left(1-c^2x^2\right)} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}} + \frac{2bc\left(a+b\sin^{-1}(cx)\right)}{d^3\sqrt{1-c^2x^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d^3x\left(1-c^2x^2\right)^2} +$$

$$= \frac{b^2c^2x}{12d^3\left(1-c^2x^2\right)} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}} - \frac{7bc\left(a+b\sin^{-1}(cx)\right)}{4d^3\sqrt{1-c^2x^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d^3x\left(1-c^2x^2\right)^2} +$$

$$= \frac{b^2c^2x}{12d^3\left(1-c^2x^2\right)} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}} - \frac{7bc\left(a+b\sin^{-1}(cx)\right)}{4d^3\sqrt{1-c^2x^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d^3x\left(1-c^2x^2\right)^2} +$$

$$= \frac{b^2c^2x}{12d^3\left(1-c^2x^2\right)} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}} - \frac{7bc\left(a+b\sin^{-1}(cx)\right)}{4d^3\sqrt{1-c^2x^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d^3x\left(1-c^2x^2\right)^2} +$$

$$= \frac{b^2c^2x}{12d^3\left(1-c^2x^2\right)} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}} - \frac{7bc\left(a+b\sin^{-1}(cx)\right)}{4d^3\sqrt{1-c^2x^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d^3x\left(1-c^2x^2\right)^2} +$$

$$= \frac{b^2c^2x}{12d^3\left(1-c^2x^2\right)} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}} - \frac{7bc\left(a+b\sin^{-1}(cx)\right)}{4d^3\sqrt{1-c^2x^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d^3x\left(1-c^2x^2\right)^2} +$$

Mathematica [B] time = 12.04, size = 1351, normalized size = 3.15

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x^2*(d - c^2*d*x^2)^3),x]
```

```
[Out] -(a^2/(d^3*x)) + (a^2*c^2*x)/(4*d^3*(-1 + c^2*x^2)^2) - (7*a^2*c^2*x)/(8*d^
3*(-1 + c^2*x^2)) - (15*a^2*c*Log[1 - c*x])/(16*d^3) + (15*a^2*c*Log[1 + c*
x])/(16*d^3) - (b^2*c*((-2*I)*PolyLog[2, -E^(I*ArcSin[c*x])] + (44*ArcSin[c
*x] + 15*ArcSin[c*x]^3 - 45*ArcSin[c*x]^2*Log[1 - I*E^(I*ArcSin[c*x])] - 45
*Pi*ArcSin[c*x]*Log[((-1)^(1/4)*(1 - I*E^(I*ArcSin[c*x])))/(2*E^((I/2)*ArcS
in[c*x]))] + 45*ArcSin[c*x]^2*Log[1 + I*E^(I*ArcSin[c*x])] + 45*ArcSin[c*x]
^2*Log[((1/2 + I/2)*(-I + E^(I*ArcSin[c*x])))/E^((I/2)*ArcSin[c*x])] - 45*P
i*ArcSin[c*x]*Log[-1/2*((-1)^(1/4)*(-I + E^(I*ArcSin[c*x])))/E^((I/2)*ArcSi
n[c*x])] - 45*ArcSin[c*x]^2*Log[((1 + I) + (1 - I)*E^(I*ArcSin[c*x]))/(2*E^
((I/2)*ArcSin[c*x]))] + 45*Pi*ArcSin[c*x]*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]]
 + 44*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] - 45*ArcSin[c*x]^2*Log[C
os[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] - 44*Log[Cos[ArcSin[c*x]/2] + Sin[A
rcSin[c*x]/2]] + 45*ArcSin[c*x]^2*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/
2]] + 45*Pi*ArcSin[c*x]*Log[Sin[(Pi + 2*ArcSin[c*x])/4]] - (90*I)*ArcSin[c*
x]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] + (90*I)*ArcSin[c*x]*PolyLog[2, I*E^(
I*ArcSin[c*x])] + 90*PolyLog[3, (-I)*E^(I*ArcSin[c*x])] - 90*PolyLog[3, I*E
^(I*ArcSin[c*x])])/24 - (4 + 88*c*x*ArcSin[c*x] - 54*ArcSin[c*x]^2 + 30*c*x
*ArcSin[c*x]^3 - 240*ArcSin[c*x]^2*Cos[2*ArcSin[c*x]] - 4*Cos[4*ArcSin[c*x]
```

```
] - 90*ArcSin[c*x]^2*Cos[4*ArcSin[c*x]] + 96*c*x*ArcSin[c*x]*Log[1 - E^(I*A
rcSin[c*x])] - 96*c*x*ArcSin[c*x]*Log[1 + E^(I*ArcSin[c*x])] - (768*I)*c*x*
(1 - c^2*x^2)^2*PolyLog[2, E^(I*ArcSin[c*x])] - 200*ArcSin[c*x]*Sin[2*ArcSi
n[c*x]] + 132*ArcSin[c*x]*Sin[3*ArcSin[c*x]] + 45*ArcSin[c*x]^3*Sin[3*ArcSi
n[c*x]] + 144*ArcSin[c*x]*Log[1 - E^(I*ArcSin[c*x])]*Sin[3*ArcSin[c*x]] - 1
44*ArcSin[c*x]*Log[1 + E^(I*ArcSin[c*x])]*Sin[3*ArcSin[c*x]] - 84*ArcSin[c*
x]*Sin[4*ArcSin[c*x]] + 44*ArcSin[c*x]*Sin[5*ArcSin[c*x]] + 15*ArcSin[c*x]^
3*Sin[5*ArcSin[c*x]] + 48*ArcSin[c*x]*Log[1 - E^(I*ArcSin[c*x])]*Sin[5*ArcS
in[c*x]] - 48*ArcSin[c*x]*Log[1 + E^(I*ArcSin[c*x])]*Sin[5*ArcSin[c*x]])/(3
84*c*x*(1 - c^2*x^2)^2)))/d^3 - (a*b*c*(24*ArcSin[c*x]*Cot[ArcSin[c*x]/2] -
 90*ArcSin[c*x]*(Log[1 - I*E^(I*ArcSin[c*x])] - Log[1 + I*E^(I*ArcSin[c*x])
]) + 48*Log[Cos[ArcSin[c*x]/2]] - 48*Log[Sin[ArcSin[c*x]/2]] - (90*I)*(Poly
Log[2, (-I)*E^(I*ArcSin[c*x])] - PolyLog[2, I*E^(I*ArcSin[c*x])]) - (3*ArcS
in[c*x])/(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^4 - (-1 + 21*ArcSin[c*x]
)/(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^2 + (2*Sin[ArcSin[c*x]/2])/(Cos
[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^3 + (44*Sin[ArcSin[c*x]/2])/(Cos[ArcS
in[c*x]/2] - Sin[ArcSin[c*x]/2]) + (3*ArcSin[c*x])/(Cos[ArcSin[c*x]/2] + Si
n[ArcSin[c*x]/2])^4 - (2*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] + Sin[ArcS
in[c*x]/2])^3 + (1 + 21*ArcSin[c*x])/(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/
2])^2 - (44*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]) +
 24*ArcSin[c*x]*Tan[ArcSin[c*x]/2]))/(24*d^3)
```

fricas [F] time = 1.49, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{b^2 \arcsin(cx)^2 + 2\,ab \arcsin(cx) + a^2}{c^6 d^3 x^8 - 3\,c^4 d^3 x^6 + 3\,c^2 d^3 x^4 - d^3 x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^2/(-c^2*d*x^2+d)^3,x, algorithm="fricas")
```

```
[Out] integral(-(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)/(c^6*d^3*x^8 - 3*c^
4*d^3*x^6 + 3*c^2*d^3*x^4 - d^3*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(b \arcsin(cx) + a)^2}{\left(c^2 d x^2 - d\right)^3 x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^2/(-c^2*d*x^2+d)^3,x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)^2/((c^2*d*x^2 - d)^3*x^2), x)
```

maple [B] time = 0.54, size = 1093, normalized size = 2.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x^2/(-c^2*d*x^2+d)^3,x)
```

```
[Out] -15/8*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)^2*c^4*x^3+25/8*b^2/d^3/(c^4
*x^4-2*c^2*x^2+1)*arcsin(c*x)^2*c^2*x-23/12*c*a*b/d^3/(c^4*x^4-2*c^2*x^2+1)
*(-c^2*x^2+1)^(1/2)-15/4*c*a*b/d^3*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(
1/2)))+15/4*c*a*b/d^3*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-23/12*
c*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)-2*a*b/d^3/(c
^4*x^4-2*c^2*x^2+1)/x*arcsin(c*x)-15/4*I*c*a*b/d^3*dilog(1-I*(I*c*x+(-c^2*x
^2+1)^(1/2)))+15/4*I*c*a*b/d^3*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-15/4*I
*c*b^2/d^3*arcsin(c*x)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))+15/4*I*c*b^2
```

```
/d^3*arcsin(c*x)*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-1/12*b^2/d^3/(c^4
*x^4-2*c^2*x^2+1)*c^4*x^3+1/12*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*c^2*x-b^2/d^3/
(c^4*x^4-2*c^2*x^2+1)/x*arcsin(c*x)^2-2*c*b^2/d^3*arcsin(c*x)*ln(1+I*c*x+(-
c^2*x^2+1)^(1/2))+15/8*c*b^2/d^3*arcsin(c*x)^2*ln(1-I*(I*c*x+(-c^2*x^2+1)^(
1/2)))-15/8*c*b^2/d^3*arcsin(c*x)^2*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-2*c*
a*b/d^3*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+2*c*a*b/d^3*ln(I*c*x+(-c^2*x^2+1)^(1
/2)-1)+2*I*c*b^2/d^3*dilog(I*c*x+(-c^2*x^2+1)^(1/2))+2*I*c*b^2/d^3*dilog(1+
I*c*x+(-c^2*x^2+1)^(1/2))+7/4*a*b/d^3/(c^4*x^4-2*c^2*x^2+1)*c^3*x^2*(-c^2*x
^2+1)^(1/2)+25/4*a*b/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)*c^2*x+7/4*b^2/d^
3/(c^4*x^4-2*c^2*x^2+1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^3*x^2-15/4*a*b/d^3
/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)*c^4*x^3-11/3*I*c*b^2/d^3*arctan(I*c*x+(-
c^2*x^2+1)^(1/2))-7/16*c*a^2/d^3/(c*x-1)-1/16*c*a^2/d^3/(c*x+1)^2-7/16*c*a^
2/d^3/(c*x+1)+1/16*c*a^2/d^3/(c*x-1)^2+15/16*c*a^2/d^3*ln(c*x+1)-15/16*c*a^
2/d^3*ln(c*x-1)-a^2/d^3/x-15/4*b^2*c*polylog(3,-I*(I*c*x+(-c^2*x^2+1)^(1/2)
))/d^3+15/4*b^2*c*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{16}a^2\left(\frac{2\left(15c^4x^4-25c^2x^2+8\right)}{c^4d^3x^5-2c^2d^3x^3+d^3x}-\frac{15c\log(cx+1)}{d^3}+\frac{15c\log(cx-1)}{d^3}\right)+\frac{15\left(b^2c^5x^5-2b^2c^3x^3+b^2cx\right)\arctan\left(c\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^2/(-c^2*d*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] -1/16*a^2*(2*(15*c^4*x^4 - 25*c^2*x^2 + 8)/(c^4*d^3*x^5 - 2*c^2*d^3*x^3 + d
^3*x) - 15*c*log(c*x + 1)/d^3 + 15*c*log(c*x - 1)/d^3) + 1/16*(15*(b^2*c^5*
x^5 - 2*b^2*c^3*x^3 + b^2*c*x)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2
*log(c*x + 1) - 15*(b^2*c^5*x^5 - 2*b^2*c^3*x^3 + b^2*c*x)*arctan2(c*x, sqr
t(c*x + 1)*sqrt(-c*x + 1))^2*log(-c*x + 1) - 2*(15*b^2*c^4*x^4 - 25*b^2*c^2
*x^2 + 8*b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 16*(c^4*d^3*x^
5 - 2*c^2*d^3*x^3 + d^3*x)*integrate(-1/8*(16*a*b*arctan2(c*x, sqrt(c*x + 1
)*sqrt(-c*x + 1)) - (15*(b^2*c^6*x^6 - 2*b^2*c^4*x^4 + b^2*c^2*x^2)*arctan2
(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(c*x + 1) - 15*(b^2*c^6*x^6 - 2*b^2*
c^4*x^4 + b^2*c^2*x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(-c*x
+ 1) - 2*(15*b^2*c^5*x^5 - 25*b^2*c^3*x^3 + 8*b^2*c*x)*arctan2(c*x, sqrt(c*
x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^6*d^3*x^8 - 3*c^4*
d^3*x^6 + 3*c^2*d^3*x^4 - d^3*x^2), x))/(c^4*d^3*x^5 - 2*c^2*d^3*x^3 + d^3*
x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))^2}{x^2\left(d-c^2\,d\,x^2\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x^2*(d - c^2*d*x^2)^3),x)
```

```
[Out] int((a + b*asin(c*x))^2/(x^2*(d - c^2*d*x^2)^3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\int \frac{a^2}{c^6x^8-3c^4x^6+3c^2x^4-x^2}\,dx+\int \frac{b^2\,\mathrm{asin}^2\,(cx)}{c^6x^8-3c^4x^6+3c^2x^4-x^2}\,dx+\int \frac{2ab\,\mathrm{asin}\,(cx)}{c^6x^8-3c^4x^6+3c^2x^4-x^2}\,dx}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x**2/(-c**2*d*x**2+d)**3,x)
```

```
[Out] -(Integral(a**2/(c**6*x**8 - 3*c**4*x**6 + 3*c**2*x**4 - x**2), x) + Integr
al(b**2*asin(c*x)**2/(c**6*x**8 - 3*c**4*x**6 + 3*c**2*x**4 - x**2), x) + I
ntegral(2*a*b*asin(c*x)/(c**6*x**8 - 3*c**4*x**6 + 3*c**2*x**4 - x**2), x))
/d**3
```

3.208 $\int \frac{(a+b\sin^{-1}(cx))^2}{x^3(d-c^2dx^2)^3}\,dx$

Optimal. Leaf size=403

$$\frac{3ibc^2\text{Li}_2\left(-e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^3}-\frac{3ibc^2\text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^3}+\frac{3c^2\left(a+b\sin^{-1}(cx)\right)^2}{2d^3\left(1-c^2x^2\right)}+\frac{3c^2\left(a+\right.}{4d^3\left(\right.}$$

[Out] 1/12*b^2*c^2/d^3/(-c^2*x^2+1)-b*c*(a+b*arcsin(c*x))/d^3/x/(-c^2*x^2+1)^(3/2)+5/6*b*c^3*x*(a+b*arcsin(c*x))/d^3/(-c^2*x^2+1)^(3/2)+3/4*c^2*(a+b*arcsin(c*x))^2/d^3/(-c^2*x^2+1)^2-1/2*(a+b*arcsin(c*x))^2/d^3/x^2/(-c^2*x^2+1)^2+3/2*c^2*(a+b*arcsin(c*x))^2/d^3/(-c^2*x^2+1)-6*c^2*(a+b*arcsin(c*x))^2*arctanh((I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^3+b^2*c^2*ln(x)/d^3-7/6*b^2*c^2*ln(-c^2*x^2+1)/d^3+3*I*b*c^2*(a+b*arcsin(c*x))*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^3-3*I*b*c^2*(a+b*arcsin(c*x))*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^3-3/2*b^2*c^2*polylog(3,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^3+3/2*b^2*c^2*polylog(3,(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^3-4/3*b*c^3*x*(a+b*arcsin(c*x))/d^3/(-c^2*x^2+1)^(1/2)

Rubi [A] time = 0.78, antiderivative size = 403, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 19, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.704, Rules used = {4701, 4705, 4679, 4419, 4183, 2531, 2282, 6589, 4651, 260, 4655, 261, 271, 192, 191, 4689, 12, 1251, 893}

$$\frac{3ibc^2\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^3}-\frac{3ibc^2\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^3}-\frac{3b^2c^2\text{PolyLog}\left(\right.}{2d}$$

Antiderivative was successfully verified.

[In] Int[(a + b*ArcSin[c*x])^2/(x^3*(d - c^2*d*x^2)^3),x]

[Out] (b^2*c^2)/(12*d^3*(1 - c^2*x^2)) - (b*c*(a + b*ArcSin[c*x]))/(d^3*x*(1 - c^2*x^2)^(3/2)) + (5*b*c^3*x*(a + b*ArcSin[c*x]))/(6*d^3*(1 - c^2*x^2)^(3/2)) - (4*b*c^3*x*(a + b*ArcSin[c*x]))/(3*d^3*Sqrt[1 - c^2*x^2]) + (3*c^2*(a + b*ArcSin[c*x])^2)/(4*d^3*(1 - c^2*x^2)^2) - (a + b*ArcSin[c*x])^2/(2*d^3*x^2*(1 - c^2*x^2)^2) + (3*c^2*(a + b*ArcSin[c*x])^2)/(2*d^3*(1 - c^2*x^2)) - (6*c^2*(a + b*ArcSin[c*x])^2*ArcTanh[E^((2*I)*ArcSin[c*x])])/d^3 + (b^2*c^2*Log[x])/d^3 - (7*b^2*c^2*Log[1 - c^2*x^2])/(6*d^3) + ((3*I)*b*c^2*(a + b*ArcSin[c*x])*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/d^3 - ((3*I)*b*c^2*(a + b*ArcSin[c*x])*PolyLog[2, E^((2*I)*ArcSin[c*x])])/d^3 - (3*b^2*c^2*PolyLog[3, -E^((2*I)*ArcSin[c*x])])/(2*d^3) + (3*b^2*c^2*PolyLog[3, E^((2*I)*ArcSin[c*x])])/(2*d^3)

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !MatchQ[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1))/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 192

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
```

```
(p + 1), x], x] /; FreeQ[{a, b, n, p}, x] && ILtQ[Simplify[1/n + p + 1], 0]
 && NeQ[p, -1]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 271

```
Int[(x_)^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x^(m + 1)*(
a + b*x^n)^(p + 1))/(a*(m + 1)), x] - Dist[(b*(m + n*(p + 1) + 1))/(a*(m +
1)), Int[x^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, m, n, p}, x] && IL
tQ[Simplify[(m + 1)/n + p + 1], 0] && NeQ[m, -1]
```

Rule 893

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_.) + (b_.)*(x_)
 + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g
*x)^n*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ
[e*f - d*g, 0] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && I
ntegerQ[p] && ((EqQ[p, 1] && IntegersQ[m, n]) || (ILtQ[m, 0] && ILtQ[n, 0])
)
```

Rule 1251

```
Int[(x_)^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_
)^4)^(p_.), x_Symbol] :> Dist[1/2, Subst[Int[x^((m - 1)/2)*(d + e*x)^q*(a +
 b*x + c*x^2)^p, x], x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x] && Inte
gerQ[(m - 1)/2]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
```

```
[m, 0]
```

Rule 4419

```
Int[Csc[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csc[2*a + 2*b*x]^n,
 x], x] /; FreeQ[{a, b, c, d, m}, x] && IntegerQ[n] && RationalQ[m]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4679

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((x_)*((d_) + (e_.)*(x_)^2)),
x_Symbol] :> Dist[1/d, Subst[Int[(a + b*x)^n/(Cos[x]*Sin[x]), x], x, ArcSin
[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4689

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)^(m_)*((d_) + (e_.)*(x_)^2)^(p_)
, x_Symbol] :> With[{u = IntHide[x^m*(1 - c^2*x^2)^p, x]}, Dist[d^p*(a + b*
ArcSin[c*x]), u, x] - Dist[b*c*d^p, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^
2], x], x], x]] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && Intege
rQ[p - 1/2] && (IGtQ[(m + 1)/2, 0] || ILtQ[(m + 2*p + 3)/2, 0]) && NeQ[p, -
2^(-1)] && GtQ[d, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4705

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> -Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a +
b*ArcSin[c*x])^n)/(2*d*f*(p + 1)), x] + (Dist[(m + 2*p + 3)/(2*d*(p + 1)),
Int[(f*x)^m*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[(b*c*n
*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*f*(p + 1)*(1 - c^2*x^2)^FracPart[
p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1),
```

```
x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
0] && LtQ[p, -1] && !GtQ[m, 1] && (IntegerQ[m] || IntegerQ[p] || EqQ[n, 1]
)
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^3\left(d-c^2dx^2\right)^3}\,dx = -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{2d^3x^2\left(1-c^2x^2\right)^2} + \left(3c^2\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\left(d-c^2dx^2\right)^3}\,dx + \frac{(bc)\int \frac{a+b\sin^{-1}(cx)}{x^2\left(1-c^2x^2\right)^{5/2}}\,dx}{d^3}$$

$$= -\frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^3x\left(1-c^2x^2\right)^{3/2}} + \frac{4bc^3x\left(a+b\sin^{-1}(cx)\right)}{3d^3\left(1-c^2x^2\right)^{3/2}} + \frac{8bc^3x\left(a+b\sin^{-1}(cx)\right)}{3d^3\sqrt{1-c^2x^2}} + \frac{3c^2\left(a\right.}{4d}$$

$$= -\frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^3x\left(1-c^2x^2\right)^{3/2}} + \frac{5bc^3x\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}} + \frac{8bc^3x\left(a+b\sin^{-1}(cx)\right)}{3d^3\sqrt{1-c^2x^2}} + \frac{3c^2\left(a\right.}{4d}$$

$$= \frac{b^2c^2}{4d^3\left(1-c^2x^2\right)} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^3x\left(1-c^2x^2\right)^{3/2}} + \frac{5bc^3x\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}} - \frac{4bc^3x\left(a+b\sin^{-1}\right.}{3d^3\sqrt{1-c^2x}}$$

$$= \frac{b^2c^2}{4d^3\left(1-c^2x^2\right)} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^3x\left(1-c^2x^2\right)^{3/2}} + \frac{5bc^3x\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}} - \frac{4bc^3x\left(a+b\sin^{-1}\right.}{3d^3\sqrt{1-c^2x}}$$

$$= \frac{b^2c^2}{12d^3\left(1-c^2x^2\right)} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^3x\left(1-c^2x^2\right)^{3/2}} + \frac{5bc^3x\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}} - \frac{4bc^3x\left(a+b\sin\right.}{3d^3\sqrt{1-c^2}}$$

$$= \frac{b^2c^2}{12d^3\left(1-c^2x^2\right)} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^3x\left(1-c^2x^2\right)^{3/2}} + \frac{5bc^3x\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}} - \frac{4bc^3x\left(a+b\sin\right.}{3d^3\sqrt{1-c^2}}$$

$$= \frac{b^2c^2}{12d^3\left(1-c^2x^2\right)} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^3x\left(1-c^2x^2\right)^{3/2}} + \frac{5bc^3x\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}} - \frac{4bc^3x\left(a+b\sin\right.}{3d^3\sqrt{1-c^2}}$$

$$= \frac{b^2c^2}{12d^3\left(1-c^2x^2\right)} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^3x\left(1-c^2x^2\right)^{3/2}} + \frac{5bc^3x\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}} - \frac{4bc^3x\left(a+b\sin\right.}{3d^3\sqrt{1-c^2}}$$

Mathematica [A] time = 7.91, size = 569, normalized size = 1.41

$$-\frac{\frac{12a^2c^2}{c^2x^2-1} - \frac{3a^2c^2}{\left(c^2x^2-1\right)^2} + 18a^2c^2\log\left(1-c^2x^2\right) - 36a^2c^2\log(x) + \frac{6a^2}{x^2} + 2abc^2\left(\frac{14cx}{\sqrt{1-c^2x^2}} + \frac{cx}{\left(1-c^2x^2\right)^{3/2}} + \frac{6\sqrt{1-c^2x^2}}{cx} + 12\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x^3*(d - c^2*d*x^2)^3),x]
```

```
[Out] -1/12*((6*a^2)/x^2 - (3*a^2*c^2)/(-1 + c^2*x^2)^2 + (12*a^2*c^2)/(-1 + c^2*
x^2) - 36*a^2*c^2*Log[x] + 18*a^2*c^2*Log[1 - c^2*x^2] + 2*a*b*c^2*((c*x)/(
1 - c^2*x^2)^(3/2) + (14*c*x)/Sqrt[1 - c^2*x^2] + (6*Sqrt[1 - c^2*x^2])/(c*
x) + (6*ArcSin[c*x])/(c^2*x^2) - (3*ArcSin[c*x])/(-1 + c^2*x^2)^2 + (12*Arc
Sin[c*x])/(-1 + c^2*x^2) - 36*ArcSin[c*x]*Log[1 - E^((2*I)*ArcSin[c*x])] +
36*ArcSin[c*x]*Log[1 + E^((2*I)*ArcSin[c*x])] - (18*I)*PolyLog[2, -E^((2*I)
*ArcSin[c*x])] + (18*I)*PolyLog[2, E^((2*I)*ArcSin[c*x])]) + 12*b^2*c^2*((-
3*I)*ArcSin[c*x]*PolyLog[2, E^((-2*I)*ArcSin[c*x])] - (3*I)*ArcSin[c*x]*Pol
yLog[2, -E^((2*I)*ArcSin[c*x])] + ((3*I)*Pi^3 + 2/(-1 + c^2*x^2) + (4*c*x*A
rcSin[c*x])/(1 - c^2*x^2)^(3/2) + (56*c*x*ArcSin[c*x])/Sqrt[1 - c^2*x^2] +
(24*Sqrt[1 - c^2*x^2]*ArcSin[c*x])/(c*x) + (12*ArcSin[c*x]^2)/(c^2*x^2) - (
6*ArcSin[c*x]^2)/(-1 + c^2*x^2)^2 + (24*ArcSin[c*x]^2)/(-1 + c^2*x^2) - (48
*I)*ArcSin[c*x]^3 - 72*ArcSin[c*x]^2*Log[1 - E^((-2*I)*ArcSin[c*x])] + 72*A
rcSin[c*x]^2*Log[1 + E^((2*I)*ArcSin[c*x])] - 24*Log[c*x] + 28*Log[1 - c^2*
x^2] - 36*PolyLog[3, E^((-2*I)*ArcSin[c*x])] + 36*PolyLog[3, -E^((2*I)*ArcS
in[c*x])])/24))/d^3
```

fricas [F] time = 0.58, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{b^2 \arcsin(cx)^2 + 2\,ab \arcsin(cx) + a^2}{c^6 d^3 x^9 - 3\,c^4 d^3 x^7 + 3\,c^2 d^3 x^5 - d^3 x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^3/(-c^2*d*x^2+d)^3,x, algorithm="fricas")
```

```
[Out] integral(-(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)/(c^6*d^3*x^9 - 3*c^
4*d^3*x^7 + 3*c^2*d^3*x^5 - d^3*x^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(b \arcsin(cx) + a)^2}{\left(c^2 d x^2 - d\right)^3 x^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^3/(-c^2*d*x^2+d)^3,x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)^2/((c^2*d*x^2 - d)^3*x^3), x)
```

maple [B] time = 0.59, size = 1547, normalized size = 3.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x^3/(-c^2*d*x^2+d)^3,x)
```

```
[Out] 9/2*c^2*a*b/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)-3/2*c^4*b^2/d^3/(c^4*x^4-
2*c^2*x^2+1)*arcsin(c*x)^2*x^2+6*c^2*a*b/d^3*arcsin(c*x)*ln(1-I*c*x-(-c^2*x
^2+1)^(1/2))-6*c^2*a*b/d^3*arcsin(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)+6
*c^2*a*b/d^3*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-a*b/d^3/(c^4*x^4-2*
c^2*x^2+1)/x^2*arcsin(c*x)-4/3*I*c^2*a*b/d^3/(c^4*x^4-2*c^2*x^2+1)-6*I*c^2*
a*b/d^3*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))+3*I*c^2*a*b/d^3*polylog(2,-(I*c
*x+(-c^2*x^2+1)^(1/2))^2)-6*I*c^2*a*b/d^3*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/
2))-4/3*I*c^2*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)+3*I*c^2*b^2/d^3*arc
sin(c*x)*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)-6*I*c^2*b^2/d^3*arcsin(c*
x)*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))-6*I*c^2*b^2/d^3*arcsin(c*x)*polylog(
2,-I*c*x-(-c^2*x^2+1)^(1/2))-1/2*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)/x^2*arcsin(c
*x)^2+9/4*c^2*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)^2-3*c^2*b^2/d^3*arc
sin(c*x)^2*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)+3*c^2*b^2/d^3*arcsin(c*x)^2*l
```

```
n(1-I*c*x-(-c^2*x^2+1)^(1/2))+3*c^2*b^2/d^3*arcsin(c*x)^2*ln(1+I*c*x+(-c^2*
x^2+1)^(1/2))+6*c^2*b^2/d^3*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2))+c^2*b^2/d^
3*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+c^2*b^2/d^3*ln(I*c*x+(-c^2*x^2+1)^(1/2)-1)
-3/2*c^2*a^2/d^3*ln(c*x+1)-3/2*c^2*a^2/d^3*ln(c*x-1)+3*c^2*a^2/d^3*ln(c*x)+
8/3*c^2*b^2/d^3*ln(I*c*x+(-c^2*x^2+1)^(1/2))-7/3*c^2*b^2/d^3*ln(1+(I*c*x+(-
c^2*x^2+1)^(1/2))^2)+6*c^2*b^2/d^3*polylog(3,I*c*x+(-c^2*x^2+1)^(1/2))+1/12
*c^2*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)-9/16*c^2*a^2/d^3/(c*x-1)+1/16*c^2*a^2/d^
3/(c*x+1)^2+9/16*c^2*a^2/d^3/(c*x+1)+1/16*c^2*a^2/d^3/(c*x-1)^2-3/2*b^2*c^2
*polylog(3,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^3-c*b^2/d^3/(c^4*x^4-2*c^2*x^2+
1)/x*(-c^2*x^2+1)^(1/2)*arcsin(c*x)-c*a*b/d^3/(c^4*x^4-2*c^2*x^2+1)/x*(-c^2
*x^2+1)^(1/2)+4/3*c^5*a*b/d^3/(c^4*x^4-2*c^2*x^2+1)*x^3*(-c^2*x^2+1)^(1/2)-
3*c^4*a*b/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)*x^2-1/2*c^3*a*b/d^3/(c^4*x^
4-2*c^2*x^2+1)*x*(-c^2*x^2+1)^(1/2)+4/3*c^5*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*(
-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^3-1/2*c^3*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*(-c
^2*x^2+1)^(1/2)*arcsin(c*x)*x-4/3*I*c^6*a*b/d^3/(c^4*x^4-2*c^2*x^2+1)*x^4+8
/3*I*c^4*a*b/d^3/(c^4*x^4-2*c^2*x^2+1)*x^2-4/3*I*c^6*b^2/d^3/(c^4*x^4-2*c^2
*x^2+1)*arcsin(c*x)*x^4+8/3*I*c^4*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)
*x^2-1/2*a^2/d^3/x^2-1/12*c^4*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*x^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{4}\,a^2\left(\frac{6\,c^4x^4-9\,c^2x^2+2}{c^4d^3x^6-2\,c^2d^3x^4+d^3x^2}+\frac{6\,c^2\log\left(cx+1\right)}{d^3}+\frac{6\,c^2\log\left(cx-1\right)}{d^3}-\frac{12\,c^2\log(x)}{d^3}\right)-\int\frac{b^2\arctan\left(cx,\sqrt{cx\cdots}\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^3/(-c^2*d*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] -1/4*a^2*((6*c^4*x^4 - 9*c^2*x^2 + 2)/(c^4*d^3*x^6 - 2*c^2*d^3*x^4 + d^3*x^
2) + 6*c^2*log(c*x + 1)/d^3 + 6*c^2*log(c*x - 1)/d^3 - 12*c^2*log(x)/d^3) -
 integrate((b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a*b*arctan
2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))/(c^6*d^3*x^9 - 3*c^4*d^3*x^7 + 3*c^2*
d^3*x^5 - d^3*x^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{x^3\,{\left(d-c^2\,d\,x^2\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x^3*(d - c^2*d*x^2)^3),x)
```

```
[Out] int((a + b*asin(c*x))^2/(x^3*(d - c^2*d*x^2)^3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\int\frac{a^2}{c^6x^9-3c^4x^7+3c^2x^5-x^3}\,dx+\int\frac{b^2\,\mathrm{asin}^2\,(cx)}{c^6x^9-3c^4x^7+3c^2x^5-x^3}\,dx+\int\frac{2ab\,\mathrm{asin}\,(cx)}{c^6x^9-3c^4x^7+3c^2x^5-x^3}\,dx}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x**3/(-c**2*d*x**2+d)**3,x)
```

```
[Out] -(Integral(a**2/(c**6*x**9 - 3*c**4*x**7 + 3*c**2*x**5 - x**3), x) + Integr
al(b**2*asin(c*x)**2/(c**6*x**9 - 3*c**4*x**7 + 3*c**2*x**5 - x**3), x) + I
ntegral(2*a*b*asin(c*x)/(c**6*x**9 - 3*c**4*x**7 + 3*c**2*x**5 - x**3), x))
/d**3
```

3.209 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^4\left(d-c^2dx^2\right)^3}\,dx$

Optimal. Leaf size=572

$$\frac{35ibc^3\text{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{4d^3}-\frac{35ibc^3\text{Li}_2\left(ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{4d^3}-\frac{35ic^3\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\right.}{4d^3}$$

```
[Out] -1/2*b^2*c^2/d^3/x+1/6*b^2*c^2/d^3/x/(-c^2*x^2+1)-1/12*b^2*c^4*x/d^3/(-c^2*
x^2+1)+1/6*b*c^3*(a+b*arcsin(c*x))/d^3/(-c^2*x^2+1)^(3/2)-1/3*b*c*(a+b*arcs
in(c*x))/d^3/x^2/(-c^2*x^2+1)^(3/2)-1/3*(a+b*arcsin(c*x))^2/d^3/x^3/(-c^2*x
^2+1)^2-7/3*c^2*(a+b*arcsin(c*x))^2/d^3/x/(-c^2*x^2+1)^2+35/12*c^4*x*(a+b*a
rcsin(c*x))^2/d^3/(-c^2*x^2+1)^2+35/8*c^4*x*(a+b*arcsin(c*x))^2/d^3/(-c^2*x
^2+1)-35/4*I*b*c^3*(a+b*arcsin(c*x))*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2))
)/d^3-38/3*b*c^3*(a+b*arcsin(c*x))*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))/d^3+17
/6*b^2*c^3*arctanh(c*x)/d^3+19/3*I*b^2*c^3*polylog(2,-I*c*x-(-c^2*x^2+1)^(1
/2))/d^3-19/3*I*b^2*c^3*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))/d^3+35/4*I*b*c^
3*(a+b*arcsin(c*x))*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d^3-35/4*I*c^3
*(a+b*arcsin(c*x))^2*arctan(I*c*x+(-c^2*x^2+1)^(1/2))/d^3-35/4*b^2*c^3*poly
log(3,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/d^3+35/4*b^2*c^3*polylog(3,I*(I*c*x+(-
c^2*x^2+1)^(1/2)))/d^3-29/12*b*c^3*(a+b*arcsin(c*x))/d^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 1.32, antiderivative size = 572, normalized size of antiderivative = 1.00, number of steps used = 43, number of rules used = 17, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.630, Rules used = {4701, 4655, 4657, 4181, 2531, 2282, 6589, 4677, 206, 199, 4705, 4709, 4183, 2279, 2391, 290, 325}

$$\frac{35ibc^3\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{4d^3}-\frac{35ibc^3\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{4d^3}+\frac{19ib^2c^3\text{PolyL}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x^4*(d - c^2*d*x^2)^3),x]
```

```
[Out] -(b^2*c^2)/(2*d^3*x) + (b^2*c^2)/(6*d^3*x*(1 - c^2*x^2)) - (b^2*c^4*x)/(12*
d^3*(1 - c^2*x^2)) + (b*c^3*(a + b*ArcSin[c*x]))/(6*d^3*(1 - c^2*x^2)^(3/2)
) - (b*c*(a + b*ArcSin[c*x]))/(3*d^3*x^2*(1 - c^2*x^2)^(3/2)) - (29*b*c^3*(
a + b*ArcSin[c*x]))/(12*d^3*Sqrt[1 - c^2*x^2]) - (a + b*ArcSin[c*x])^2/(3*d
^3*x^3*(1 - c^2*x^2)^2) - (7*c^2*(a + b*ArcSin[c*x])^2)/(3*d^3*x*(1 - c^2*x
^2)^2) + (35*c^4*x*(a + b*ArcSin[c*x])^2)/(12*d^3*(1 - c^2*x^2)^2) + (35*c^
4*x*(a + b*ArcSin[c*x])^2)/(8*d^3*(1 - c^2*x^2)) - (((35*I)/4)*c^3*(a + b*A
rcSin[c*x])^2*ArcTan[E^(I*ArcSin[c*x])])/d^3 - (38*b*c^3*(a + b*ArcSin[c*x]
)*ArcTanh[E^(I*ArcSin[c*x])])/(3*d^3) + (17*b^2*c^3*ArcTanh[c*x])/(6*d^3) +
 (((19*I)/3)*b^2*c^3*PolyLog[2, -E^(I*ArcSin[c*x])])/d^3 + (((35*I)/4)*b*c^
3*(a + b*ArcSin[c*x])*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/d^3 - (((35*I)/4)
*b*c^3*(a + b*ArcSin[c*x])*PolyLog[2, I*E^(I*ArcSin[c*x])])/d^3 - (((19*I)/
3)*b^2*c^3*PolyLog[2, E^(I*ArcSin[c*x])])/d^3 - (35*b^2*c^3*PolyLog[3, (-I)
*E^(I*ArcSin[c*x])])/(4*d^3) + (35*b^2*c^3*PolyLog[3, I*E^(I*ArcSin[c*x])])
/(4*d^3)
```

Rule 199

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && LtQ[p, -1] && (Integer
Q[2*p] || (n == 2 && IntegerQ[4*p]) || (n == 2 && IntegerQ[3*p]) || Denomin
ator[p + 1/n] < Denominator[p])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 290

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[((
c*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*n*(p + 1)), x] + Dist[(m + n*(p + 1)
 + 1)/(a*n*(p + 1)), Int[(c*x)^m*(a + b*x^n)^(p + 1), x], x] /; FreeQ[{a, b
, c, m}, x] && IGtQ[n, 0] && LtQ[p, -1] && IntBinomialQ[a, b, c, n, m, p, x
]
```

Rule 325

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c*
x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] - Dist[(b*(m + n*(p + 1)
+ 1))/(a*c^n*(m + 1)), Int[(c*x)^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a,
 b, c, p}, x] && IGtQ[n, 0] && LtQ[m, -1] && IntBinomialQ[a, b, c, n, m, p,
 x]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4705

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> -Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a +
b*ArcSin[c*x])^n)/(2*d*f*(p + 1)), x] + (Dist[(m + 2*p + 3)/(2*d*(p + 1)),
Int[(f*x)^m*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[(b*c*n
*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*f*(p + 1)*(1 - c^2*x^2)^FracPart[
p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
0] && LtQ[p, -1] &&  !GtQ[m, 1] && (IntegerQ[m] || IntegerQ[p] || EqQ[n, 1]
)
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
```

```
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^4\left(d-c^2dx^2\right)^3}\,dx = -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{3d^3x^3\left(1-c^2x^2\right)^2}+\frac{1}{3}\left(7c^2\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^2\left(d-c^2dx^2\right)^3}\,dx+\frac{(2bc)\int \frac{a+b\sin^{-1}(cx)}{x^3\left(1-c^2x^2\right)^{5/2}}\,dx}{3d^3}$$

$$= -\frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^3x^2\left(1-c^2x^2\right)^{3/2}}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{3d^3x^3\left(1-c^2x^2\right)^2}-\frac{7c^2\left(a+b\sin^{-1}(cx)\right)^2}{3d^3x\left(1-c^2x^2\right)^2}+\frac{1}{3}\left(35c^4\right)\int$$

$$= \frac{b^2c^2}{6d^3x\left(1-c^2x^2\right)}+\frac{19bc^3\left(a+b\sin^{-1}(cx)\right)}{9d^3\left(1-c^2x^2\right)^{3/2}}-\frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^3x^2\left(1-c^2x^2\right)^{3/2}}-\frac{\left(a+b\sin^{-1}(cx)\right.}{3d^3x^3\left(1-c^2x^2\right.}$$

$$= -\frac{b^2c^2}{2d^3x}+\frac{b^2c^2}{6d^3x\left(1-c^2x^2\right)}-\frac{19b^2c^4x}{18d^3\left(1-c^2x^2\right)}+\frac{bc^3\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}}-\frac{bc\left(a+b\sin\right.}{3d^3x^2\left(1-c\right.}$$

$$= -\frac{b^2c^2}{2d^3x}+\frac{b^2c^2}{6d^3x\left(1-c^2x^2\right)}-\frac{b^2c^4x}{12d^3\left(1-c^2x^2\right)}+\frac{bc^3\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}}-\frac{bc\left(a+b\sin\right.}{3d^3x^2\left(1-c\right.}$$

$$= -\frac{b^2c^2}{2d^3x}+\frac{b^2c^2}{6d^3x\left(1-c^2x^2\right)}-\frac{b^2c^4x}{12d^3\left(1-c^2x^2\right)}+\frac{bc^3\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}}-\frac{bc\left(a+b\sin\right.}{3d^3x^2\left(1-c\right.}$$

$$= -\frac{b^2c^2}{2d^3x}+\frac{b^2c^2}{6d^3x\left(1-c^2x^2\right)}-\frac{b^2c^4x}{12d^3\left(1-c^2x^2\right)}+\frac{bc^3\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}}-\frac{bc\left(a+b\sin\right.}{3d^3x^2\left(1-c\right.}$$

$$= -\frac{b^2c^2}{2d^3x}+\frac{b^2c^2}{6d^3x\left(1-c^2x^2\right)}-\frac{b^2c^4x}{12d^3\left(1-c^2x^2\right)}+\frac{bc^3\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}}-\frac{bc\left(a+b\sin\right.}{3d^3x^2\left(1-c\right.}$$

$$= -\frac{b^2c^2}{2d^3x}+\frac{b^2c^2}{6d^3x\left(1-c^2x^2\right)}-\frac{b^2c^4x}{12d^3\left(1-c^2x^2\right)}+\frac{bc^3\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}}-\frac{bc\left(a+b\sin\right.}{3d^3x^2\left(1-c\right.}$$

Mathematica [B] time = 13.03, size = 1657, normalized size = 2.90

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x^4*(d - c^2*d*x^2)^3),x]
```

```
[Out] -1/3*a^2/(d^3*x^3) - (3*a^2*c^2)/(d^3*x) + (a^2*c^4*x)/(4*d^3*(-1 + c^2*x^2
)^2) - (11*a^2*c^4*x)/(8*d^3*(-1 + c^2*x^2)) - (35*a^2*c^3*Log[1 - c*x])/(1
6*d^3) + (35*a^2*c^3*Log[1 + c*x])/(16*d^3) - (2*a*b*((c^3*((2 - c*x)*Sqrt[
1 - c^2*x^2] - 3*ArcSin[c*x]))/(48*(-1 + c*x)^2) - (11*c^3*(Sqrt[1 - c^2*x^
```

```
2] - ArcSin[c*x]))/(16*(-1 + c*x)) + (11*c^4*(Sqrt[1 - c^2*x^2] + ArcSin[c*
x]))/(16*(c + c^2*x)) + (c^3*((2 + c*x)*Sqrt[1 - c^2*x^2] + 3*ArcSin[c*x]))
/(48*(1 + c*x)^2) - 3*c^2*(-(ArcSin[c*x]/x) - c*ArcTanh[Sqrt[1 - c^2*x^2]])
 + (c*x*Sqrt[1 - c^2*x^2] + 2*ArcSin[c*x] + c^3*x^3*ArcTanh[Sqrt[1 - c^2*x^
2]])/(6*x^3) + (35*c^4*((((3*I)/2)*Pi*ArcSin[c*x])/c - ((I/2)*ArcSin[c*x]^2
)/c + (2*Pi*Log[1 + E^((-I)*ArcSin[c*x])])/c - (Pi*Log[1 + I*E^(I*ArcSin[c*
x])])/c + (2*ArcSin[c*x]*Log[1 + I*E^(I*ArcSin[c*x])])/c - (2*Pi*Log[Cos[Ar
cSin[c*x]/2]])/c + (Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]])/c - ((2*I)*PolyLo
g[2, (-I)*E^(I*ArcSin[c*x])])/c))/16 - (35*c^4*(((I/2)*Pi*ArcSin[c*x])/c -
((I/2)*ArcSin[c*x]^2)/c + (2*Pi*Log[1 + E^((-I)*ArcSin[c*x])])/c + (Pi*Log[
1 - I*E^(I*ArcSin[c*x])])/c + (2*ArcSin[c*x]*Log[1 - I*E^(I*ArcSin[c*x])])/
c - (2*Pi*Log[Cos[ArcSin[c*x]/2]])/c - (Pi*Log[Sin[(Pi + 2*ArcSin[c*x])/4]]
)/c - ((2*I)*PolyLog[2, I*E^(I*ArcSin[c*x])])/c))/16))/d^3 - (b^2*c^3*(((-1
9*I)/3)*PolyLog[2, -E^(I*ArcSin[c*x])] + ((19*I)/3)*PolyLog[2, E^(I*ArcSin[
c*x])] + (68*ArcSin[c*x] + 35*ArcSin[c*x]^3 - 105*ArcSin[c*x]^2*Log[1 - I*E
^(I*ArcSin[c*x])] - 105*Pi*ArcSin[c*x]*Log[((-1)^(1/4)*(1 - I*E^(I*ArcSin[c
*x])))/(2*E^((I/2)*ArcSin[c*x]))] + 105*ArcSin[c*x]^2*Log[1 + I*E^(I*ArcSin
[c*x])] + 105*ArcSin[c*x]^2*Log[((1/2 + I/2)*(-I + E^(I*ArcSin[c*x])))/E^((
I/2)*ArcSin[c*x])] - 105*Pi*ArcSin[c*x]*Log[-1/2*((-1)^(1/4)*(-I + E^(I*Arc
Sin[c*x])))/E^((I/2)*ArcSin[c*x])] - 105*ArcSin[c*x]^2*Log[((1 + I) + (1 -
I)*E^(I*ArcSin[c*x]))/(2*E^((I/2)*ArcSin[c*x]))] + 105*Pi*ArcSin[c*x]*Log[-
Cos[(Pi + 2*ArcSin[c*x])/4]] + 68*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/
2]] - 105*ArcSin[c*x]^2*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] - 68*L
og[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]] + 105*ArcSin[c*x]^2*Log[Cos[Arc
Sin[c*x]/2] + Sin[ArcSin[c*x]/2]] + 105*Pi*ArcSin[c*x]*Log[Sin[(Pi + 2*ArcS
in[c*x])/4]] - (210*I)*ArcSin[c*x]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] + (21
0*I)*ArcSin[c*x]*PolyLog[2, I*E^(I*ArcSin[c*x])] + 210*PolyLog[3, (-I)*E^(I
*ArcSin[c*x])] - 210*PolyLog[3, I*E^(I*ArcSin[c*x])])/24 + (24 - 204*c*x*Ar
cSin[c*x] + 204*ArcSin[c*x]^2 - 105*c*x*ArcSin[c*x]^3 + (20 + 658*ArcSin[c*
x]^2)*Cos[2*ArcSin[c*x]] - 4*(6 + 35*ArcSin[c*x]^2)*Cos[4*ArcSin[c*x]] - 20
*Cos[6*ArcSin[c*x]] - 210*ArcSin[c*x]^2*Cos[6*ArcSin[c*x]] - 456*c*x*ArcSin
[c*x]*Log[1 - E^(I*ArcSin[c*x])] + 456*c*x*ArcSin[c*x]*Log[1 + E^(I*ArcSin[
c*x])] + 540*ArcSin[c*x]*Sin[2*ArcSin[c*x]] - 204*ArcSin[c*x]*Sin[3*ArcSin[
c*x]] - 105*ArcSin[c*x]^3*Sin[3*ArcSin[c*x]] - 456*ArcSin[c*x]*Log[1 - E^(I
*ArcSin[c*x])]*Sin[3*ArcSin[c*x]] + 456*ArcSin[c*x]*Log[1 + E^(I*ArcSin[c*x
])]*Sin[3*ArcSin[c*x]] + 32*ArcSin[c*x]*Sin[4*ArcSin[c*x]] + 68*ArcSin[c*x]
*Sin[5*ArcSin[c*x]] + 35*ArcSin[c*x]^3*Sin[5*ArcSin[c*x]] + 152*ArcSin[c*x]
*Log[1 - E^(I*ArcSin[c*x])]*Sin[5*ArcSin[c*x]] - 152*ArcSin[c*x]*Log[1 + E^
(I*ArcSin[c*x])]*Sin[5*ArcSin[c*x]] - 116*ArcSin[c*x]*Sin[6*ArcSin[c*x]] +
68*ArcSin[c*x]*Sin[7*ArcSin[c*x]] + 35*ArcSin[c*x]^3*Sin[7*ArcSin[c*x]] + 1
52*ArcSin[c*x]*Log[1 - E^(I*ArcSin[c*x])]*Sin[7*ArcSin[c*x]] - 152*ArcSin[c
*x]*Log[1 + E^(I*ArcSin[c*x])]*Sin[7*ArcSin[c*x]])/(1536*c^3*x^3*(1 - c^2*x
^2)^2)))/d^3
```

fricas [F] time = 1.00, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{b^2 \arcsin(cx)^2 + 2\,ab \arcsin(cx) + a^2}{c^6d^3x^{10} - 3\,c^4d^3x^8 + 3\,c^2d^3x^6 - d^3x^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^4/(-c^2*d*x^2+d)^3,x, algorithm="fricas")
```

```
[Out] integral(-(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)/(c^6*d^3*x^10 - 3*c
^4*d^3*x^8 + 3*c^2*d^3*x^6 - d^3*x^4), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^4/(-c^2*d*x^2+d)^3,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.68, size = 1352, normalized size = 2.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x^4/(-c^2*d*x^2+d)^3,x)
```

```
[Out] -1/3*a^2/d^3/x^3-2/3*a*b/d^3/(c^4*x^4-2*c^2*x^2+1)/x^3*arcsin(c*x)+35/4*I*c
^3*a*b/d^3*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-35/4*I*c^3*a*b/d^3*dilog(1
-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-35/4*I*c^3*b^2/d^3*arcsin(c*x)*polylog(2,I*(
I*c*x+(-c^2*x^2+1)^(1/2)))+35/4*I*c^3*b^2/d^3*arcsin(c*x)*polylog(2,-I*(I*c
*x+(-c^2*x^2+1)^(1/2)))-7/3*c^2*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)/x*arcsin(c*x)
^2-35/8*c^6*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)^2*x^3+175/24*c^4*b^2/
d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)^2*x-9/4*c^3*b^2/d^3/(c^4*x^4-2*c^2*x^
2+1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)-9/4*c^3*a*b/d^3/(c^4*x^4-2*c^2*x^2+1)*(
-c^2*x^2+1)^(1/2)-35/4*c^3*a*b/d^3*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(
1/2)))+35/4*c^3*a*b/d^3*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+35/1
6*c^3*a^2/d^3*ln(c*x+1)-35/16*c^3*a^2/d^3*ln(c*x-1)-3*c^2*a^2/d^3/x-11/16*c
^3*a^2/d^3/(c*x-1)-1/16*c^3*a^2/d^3/(c*x+1)^2-11/16*c^3*a^2/d^3/(c*x+1)+1/1
6*c^3*a^2/d^3/(c*x-1)^2+29/12*c^5*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*(-c^2*x^2+1
)^(1/2)*arcsin(c*x)*x^2-1/3*c^2*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)/x-5/12*c^6*b^
2/d^3/(c^4*x^4-2*c^2*x^2+1)*x^3+3/4*c^4*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)*x-1/3
*b^2/d^3/(c^4*x^4-2*c^2*x^2+1)/x^3*arcsin(c*x)^2-19/3*c^3*a*b/d^3*ln(1+I*c*
x+(-c^2*x^2+1)^(1/2))+19/3*c^3*a*b/d^3*ln(I*c*x+(-c^2*x^2+1)^(1/2)-1)-19/3*
c^3*b^2/d^3*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+35/8*c^3*b^2/d^3*arc
sin(c*x)^2*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-35/8*c^3*b^2/d^3*arcsin(c*x)^
2*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-17/3*I*c^3*b^2/d^3*arctan(I*c*x+(-c^2*
x^2+1)^(1/2))+19/3*I*c^3*b^2/d^3*dilog(I*c*x+(-c^2*x^2+1)^(1/2))+19/3*I*c^3
*b^2/d^3*dilog(1+I*c*x+(-c^2*x^2+1)^(1/2))-35/4*b^2*c^3*polylog(3,-I*(I*c*x
+(-c^2*x^2+1)^(1/2)))/d^3+35/4*b^2*c^3*polylog(3,I*(I*c*x+(-c^2*x^2+1)^(1/2
)))/d^3-14/3*c^2*a*b/d^3/(c^4*x^4-2*c^2*x^2+1)/x*arcsin(c*x)-1/3*c*b^2/d^3/
(c^4*x^4-2*c^2*x^2+1)/x^2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)-1/3*c*a*b/d^3/(c^4
*x^4-2*c^2*x^2+1)/x^2*(-c^2*x^2+1)^(1/2)-35/4*c^6*a*b/d^3/(c^4*x^4-2*c^2*x^
2+1)*arcsin(c*x)*x^3+29/12*c^5*a*b/d^3/(c^4*x^4-2*c^2*x^2+1)*x^2*(-c^2*x^2+
1)^(1/2)+175/12*c^4*a*b/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)*x
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{48}\,a^2\left(\frac{105\,c^3\log\left(cx+1\right)}{d^3}-\frac{105\,c^3\log\left(cx-1\right)}{d^3}-\frac{2\left(105\,c^6x^6-175\,c^4x^4+56\,c^2x^2+8\right)}{c^4d^3x^7-2\,c^2d^3x^5+d^3x^3}\right)+\frac{105\left(b^2c^7x^7-2\,b^2c^5\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^4/(-c^2*d*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] 1/48*a^2*(105*c^3*log(c*x + 1)/d^3 - 105*c^3*log(c*x - 1)/d^3 - 2*(105*c^6*
x^6 - 175*c^4*x^4 + 56*c^2*x^2 + 8)/(c^4*d^3*x^7 - 2*c^2*d^3*x^5 + d^3*x^3)
) + 1/48*(105*(b^2*c^7*x^7 - 2*b^2*c^5*x^5 + b^2*c^3*x^3)*arctan2(c*x, sqrt
(c*x + 1)*sqrt(-c*x + 1))^2*log(c*x + 1) - 105*(b^2*c^7*x^7 - 2*b^2*c^5*x^5
 + b^2*c^3*x^3)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2*log(-c*x + 1)
- 2*(105*b^2*c^6*x^6 - 175*b^2*c^4*x^4 + 56*b^2*c^2*x^2 + 8*b^2)*arctan2(c*
x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 48*(c^4*d^3*x^7 - 2*c^2*d^3*x^5 + d^3*
x^3)*integrate(-1/24*(48*a*b*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) - (
105*(b^2*c^8*x^8 - 2*b^2*c^6*x^6 + b^2*c^4*x^4)*arctan2(c*x, sqrt(c*x + 1)*
sqrt(-c*x + 1))*log(c*x + 1) - 105*(b^2*c^8*x^8 - 2*b^2*c^6*x^6 + b^2*c^4*x
^4)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))*log(-c*x + 1) - 2*(105*b^2*c
```

```
^7*x^7 - 175*b^2*c^5*x^5 + 56*b^2*c^3*x^3 + 8*b^2*c*x)*arctan2(c*x, sqrt(c*
x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^6*d^3*x^10 - 3*c^4
*d^3*x^8 + 3*c^2*d^3*x^6 - d^3*x^4), x))/(c^4*d^3*x^7 - 2*c^2*d^3*x^5 + d^3
*x^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))^2}{x^4\,\left(d-c^2\,d\,x^2\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x^4*(d - c^2*d*x^2)^3),x)
```

```
[Out] int((a + b*asin(c*x))^2/(x^4*(d - c^2*d*x^2)^3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\int \frac{a^2}{c^6x^{10}-3c^4x^8+3c^2x^6-x^4}\,dx+\int \frac{b^2\,\mathrm{asin}^2\,(cx)}{c^6x^{10}-3c^4x^8+3c^2x^6-x^4}\,dx+\int \frac{2ab\,\mathrm{asin}\,(cx)}{c^6x^{10}-3c^4x^8+3c^2x^6-x^4}\,dx}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x**4/(-c**2*d*x**2+d)**3,x)
```

```
[Out] -(Integral(a**2/(c**6*x**10 - 3*c**4*x**8 + 3*c**2*x**6 - x**4), x) + Integ
ral(b**2*asin(c*x)**2/(c**6*x**10 - 3*c**4*x**8 + 3*c**2*x**6 - x**4), x) +
 Integral(2*a*b*asin(c*x)/(c**6*x**10 - 3*c**4*x**8 + 3*c**2*x**6 - x**4),
x))/d**3
```

3.210 $\int x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=374

$$-\frac{x^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{15c^2}-\frac{2bcx^5\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{25\sqrt{1-c^2x^2}}+\frac{1}{5}x^4\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2+$$

```
[Out] 52/225*b^2*(-c^2*d*x^2+d)^(1/2)/c^4+26/675*b^2*(-c^2*x^2+1)*(-c^2*d*x^2+d)^
(1/2)/c^4-2/125*b^2*(-c^2*x^2+1)^2*(-c^2*d*x^2+d)^(1/2)/c^4-2/15*(a+b*arcsi
n(c*x))^2*(-c^2*d*x^2+d)^(1/2)/c^4-1/15*x^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2
+d)^(1/2)/c^2+1/5*x^4*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)+4/15*a*b*x*(
-c^2*d*x^2+d)^(1/2)/c^3/(-c^2*x^2+1)^(1/2)+4/15*b^2*x*arcsin(c*x)*(-c^2*d*x
^2+d)^(1/2)/c^3/(-c^2*x^2+1)^(1/2)+2/45*b*x^3*(a+b*arcsin(c*x))*(-c^2*d*x^2
+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-2/25*b*c*x^5*(a+b*arcsin(c*x))*(-c^2*d*x^2+d
)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.47, antiderivative size = 374, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.276, Rules used = {4697, 4707, 4677, 4619, 261, 4627, 266, 43}

$$\frac{4abx\sqrt{d-c^2dx^2}}{15c^3\sqrt{1-c^2x^2}}-\frac{2bcx^5\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{25\sqrt{1-c^2x^2}}+\frac{1}{5}x^4\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2+\frac{2bx^3\sqrt{d-c^2dx^2}\left(a\right.}{45c\sqrt{1-\right.}}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (52*b^2*Sqrt[d - c^2*d*x^2])/(225*c^4) + (4*a*b*x*Sqrt[d - c^2*d*x^2])/(15*
c^3*Sqrt[1 - c^2*x^2]) + (26*b^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/(675*c^
4) - (2*b^2*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2])/(125*c^4) + (4*b^2*x*Sqrt[
d - c^2*d*x^2]*ArcSin[c*x])/(15*c^3*Sqrt[1 - c^2*x^2]) + (2*b*x^3*Sqrt[d -
c^2*d*x^2]*(a + b*ArcSin[c*x]))/(45*c*Sqrt[1 - c^2*x^2]) - (2*b*c*x^5*Sqrt[
d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(25*Sqrt[1 - c^2*x^2]) - (2*Sqrt[d - c^
2*d*x^2]*(a + b*ArcSin[c*x])^2)/(15*c^4) - (x^2*Sqrt[d - c^2*d*x^2]*(a + b*
ArcSin[c*x])^2)/(15*c^2) + (x^4*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/
5
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2dx=\frac{1}{5}x^4\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2+\frac{\sqrt{d-c^2dx^2}\int\frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}dx}{5\sqrt{1-c^2x^2}}$$

$$=-\frac{2bcx^5\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{25\sqrt{1-c^2x^2}}-\frac{x^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right.}{15c^2}$$

$$=\frac{2bx^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{45c\sqrt{1-c^2x^2}}-\frac{2bcx^5\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(c\right.}{25\sqrt{1-c^2x^2}}$$

$$=\frac{4abx\sqrt{d-c^2dx^2}}{15c^3\sqrt{1-c^2x^2}}+\frac{2bx^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{45c\sqrt{1-c^2x^2}}-\frac{2bcx^5\sqrt{d-}}{2}$$

$$=-\frac{2b^2\sqrt{d-c^2dx^2}}{25c^4}+\frac{4abx\sqrt{d-c^2dx^2}}{15c^3\sqrt{1-c^2x^2}}+\frac{4b^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}{75c^4}-$$

$$=\frac{52b^2\sqrt{d-c^2dx^2}}{225c^4}+\frac{4abx\sqrt{d-c^2dx^2}}{15c^3\sqrt{1-c^2x^2}}+\frac{26b^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}{675c^4}-$$

Mathematica [A] time = 0.30, size = 242, normalized size = 0.65

$$\frac{\sqrt{d-c^2dx^2}\left(225a^2\sqrt{1-c^2x^2}\left(3c^4x^4-c^2x^2-2\right)-30abcx\left(9c^4x^4-5c^2x^2-30\right)-30b\sin^{-1}(cx)\left(15a\sqrt{1-c^2x^2}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(225*a^2*Sqrt[1 - c^2*x^2]*(-2 - c^2*x^2 + 3*c^4*x^4)
- 30*a*b*c*x*(-30 - 5*c^2*x^2 + 9*c^4*x^4) - 2*b^2*Sqrt[1 - c^2*x^2]*(-428
+ 11*c^2*x^2 + 27*c^4*x^4) - 30*b*(15*a*Sqrt[1 - c^2*x^2]*(2 + c^2*x^2 - 3*
c^4*x^4) + b*c*x*(-30 - 5*c^2*x^2 + 9*c^4*x^4))*ArcSin[c*x] + 225*b^2*Sqrt[
1 - c^2*x^2]*(-2 - c^2*x^2 + 3*c^4*x^4)*ArcSin[c*x]^2))/(3375*c^4*Sqrt[1 -
c^2*x^2])
```

fricas [A] time = 0.85, size = 277, normalized size = 0.74

$$\frac{30\left(9\,abc^5x^5-5\,abc^3x^3-30\,abcx+\left(9\,b^2c^5x^5-5\,b^2c^3x^3-30\,b^2cx\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+1}\,+\left(2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x, algorithm="fricas
")
```

```
[Out] 1/3375*(30*(9*a*b*c^5*x^5 - 5*a*b*c^3*x^3 - 30*a*b*c*x + (9*b^2*c^5*x^5 - 5
*b^2*c^3*x^3 - 30*b^2*c*x)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2
+ 1) + (27*(25*a^2 - 2*b^2)*c^6*x^6 - 4*(225*a^2 - 8*b^2)*c^4*x^4 - (225*a^
2 - 878*b^2)*c^2*x^2 + 225*(3*b^2*c^6*x^6 - 4*b^2*c^4*x^4 - b^2*c^2*x^2 + 2
*b^2)*arcsin(c*x)^2 + 450*a^2 - 856*b^2 + 450*(3*a*b*c^6*x^6 - 4*a*b*c^4*x^
4 - a*b*c^2*x^2 + 2*a*b)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d))/(c^6*x^2 - c^4)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.58, size = 1165, normalized size = 3.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] a^2*(-1/5*x^2*(-c^2*d*x^2+d)^(3/2)/c^2/d-2/15/d/c^4*(-c^2*d*x^2+d)^(3/2))+b
^2*(1/4000*(-d*(c^2*x^2-1))^(1/2)*(16*c^6*x^6-28*c^4*x^4-16*I*(-c^2*x^2+1)^
(1/2)*x^5*c^5+13*c^2*x^2+20*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-5*I*(-c^2*x^2+1)^(
1/2)*x*c-1)*(10*I*arcsin(c*x)+25*arcsin(c*x)^2-2)/c^4/(c^2*x^2-1)+1/864*(-d
*(c^2*x^2-1))^(1/2)*(4*c^4*x^4-5*c^2*x^2-4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+3*I
*(-c^2*x^2+1)^(1/2)*x*c+1)*(6*I*arcsin(c*x)+9*arcsin(c*x)^2-2)/c^4/(c^2*x^2
-1)-1/16*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*(arcsi
n(c*x)^2-2+2*I*arcsin(c*x))/c^4/(c^2*x^2-1)-1/16*(-d*(c^2*x^2-1))^(1/2)*(I*
(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(arcsin(c*x)^2-2-2*I*arcsin(c*x))/c^4/(c^
2*x^2-1)+1/864*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^4
*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*(-6*I*arcsin(c*x)+9*arcsin(c*x
)^2-2)/c^4/(c^2*x^2-1)+1/4000*(-d*(c^2*x^2-1))^(1/2)*(16*I*(-c^2*x^2+1)^(1/
2)*x^5*c^5+16*c^6*x^6-20*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-28*c^4*x^4+5*I*(-c^2*
x^2+1)^(1/2)*x*c+13*c^2*x^2-1)*(-10*I*arcsin(c*x)+25*arcsin(c*x)^2-2)/c^4/(
c^2*x^2-1))+2*a*b*(1/800*(-d*(c^2*x^2-1))^(1/2)*(16*c^6*x^6-28*c^4*x^4-16*I
*(-c^2*x^2+1)^(1/2)*x^5*c^5+13*c^2*x^2+20*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-5*I*
(-c^2*x^2+1)^(1/2)*x*c-1)*(I+5*arcsin(c*x))/c^4/(c^2*x^2-1)-1/16*(-d*(c^2*x
^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*(I+arcsin(c*x))/c^4/(c^2*
x^2-1)-1/16*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(ar
csin(c*x)-I)/c^4/(c^2*x^2-1)+1/288*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)
^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*(-I+3*arcs
in(c*x))/c^4/(c^2*x^2-1)-1/3600*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2
)*x*c+c^2*x^2-1)*(17*I+15*arcsin(c*x))*cos(4*arcsin(c*x))/c^4/(c^2*x^2-1)-1
/900*(-d*(c^2*x^2-1))^(1/2)*(I*c^2*x^2-c*x*(-c^2*x^2+1)^(1/2)-I)*(2*I+15*ar
csin(c*x))*sin(4*arcsin(c*x))/c^4/(c^2*x^2-1))
```

maxima [A] time = 1.06, size = 311, normalized size = 0.83

$$-\frac{1}{15}b^2\left(\frac{3\left(-c^2dx^2+d\right)^{\frac{3}{2}}x^2}{c^2d}+\frac{2\left(-c^2dx^2+d\right)^{\frac{3}{2}}}{c^4d}\right)\arcsin\left(cx\right)^2-\frac{2}{15}ab\left(\frac{3\left(-c^2dx^2+d\right)^{\frac{3}{2}}x^2}{c^2d}+\frac{2\left(-c^2dx^2+d\right)^{\frac{3}{2}}}{c^4d}\right)\arcsi$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x, algorithm="maxima
")
```

```
[Out] -1/15*b^2*(3*(-c^2*d*x^2 + d)^(3/2)*x^2/(c^2*d) + 2*(-c^2*d*x^2 + d)^(3/2)/
(c^4*d))*arcsin(c*x)^2 - 2/15*a*b*(3*(-c^2*d*x^2 + d)^(3/2)*x^2/(c^2*d) + 2
*(-c^2*d*x^2 + d)^(3/2)/(c^4*d))*arcsin(c*x) - 1/15*a^2*(3*(-c^2*d*x^2 + d)
^(3/2)*x^2/(c^2*d) + 2*(-c^2*d*x^2 + d)^(3/2)/(c^4*d)) - 2/3375*b^2*((27*sq
rt(-c^2*x^2 + 1)*c^2*sqrt(d)*x^4 + 11*sqrt(-c^2*x^2 + 1)*sqrt(d)*x^2 - 428*
sqrt(-c^2*x^2 + 1)*sqrt(d)/c^2)/c^2 + 15*(9*c^4*sqrt(d)*x^5 - 5*c^2*sqrt(d)
*x^3 - 30*sqrt(d)*x)*arcsin(c*x)/c^3) - 2/225*(9*c^4*sqrt(d)*x^5 - 5*c^2*sq
rt(d)*x^3 - 30*sqrt(d)*x)*a*b/c^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^3 \left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^2\,\sqrt{d-c^2\,d\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2),x)
[Out] int(x^3*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{3} \sqrt{-d \left(cx - 1\right) \left(cx + 1\right)} \left(a + b \operatorname{asin}{\left(cx \right)}\right)^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x))**2,x)
[Out] Integral(x**3*sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**2, x)
```

3.211 $\int x^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=303

$$\frac{bx^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{8c\sqrt{1-c^2x^2}}-\frac{x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{8c^2}-\frac{bcx^4\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{8\sqrt{1-c^2x^2}}+\frac{1}{4}x^3\sqrt{d-}$$

```
[Out] 1/64*b^2*x*(-c^2*d*x^2+d)^(1/2)/c^2-1/32*b^2*x^3*(-c^2*d*x^2+d)^(1/2)-1/8*x
*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/c^2+1/4*x^3*(-c^2*d*x^2+d)^(1/2)*
(a+b*arcsin(c*x))^2-1/64*b^2*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/c^3/(-c^2*x^2
+1)^(1/2)+1/8*b*x^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(
1/2)-1/8*b*c*x^4*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+
1/24*(a+b*arcsin(c*x))^3*(-c^2*d*x^2+d)^(1/2)/b/c^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.38, antiderivative size = 303, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = {4697, 4707, 4641, 4627, 321, 216}

$$-\frac{bcx^4\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{8\sqrt{1-c^2x^2}}+\frac{1}{4}x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2+\frac{bx^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{8c\sqrt{1-c^2x^2}}-\frac{x\sqrt{d-}}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (b^2*x*Sqrt[d - c^2*d*x^2])/(64*c^2) - (b^2*x^3*Sqrt[d - c^2*d*x^2])/32 - (
b^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(64*c^3*Sqrt[1 - c^2*x^2]) + (b*x^2*Sq
rt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*c*Sqrt[1 - c^2*x^2]) - (b*c*x^4*S
qrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*Sqrt[1 - c^2*x^2]) - (x*Sqrt[d -
 c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(8*c^2) + (x^3*Sqrt[d - c^2*d*x^2]*(a +
b*ArcSin[c*x])^2)/4 + (Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(24*b*c^3
*Sqrt[1 - c^2*x^2])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int x^2\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2\,dx=\frac{1}{4}x^3\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2+\frac{\sqrt{d-c^2dx^2}\,\int\frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{4\sqrt{1-c^2x^2}}$$

$$=-\frac{bcx^4\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)}{8\sqrt{1-c^2x^2}}-\frac{x\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)}{8c^2}$$

$$=-\frac{1}{32}b^2x^3\sqrt{d-c^2dx^2}+\frac{bx^2\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)}{8c\sqrt{1-c^2x^2}}-\frac{bcx^4\sqrt{d-}}{}$$

$$=\frac{b^2x\sqrt{d-c^2dx^2}}{64c^2}-\frac{1}{32}b^2x^3\sqrt{d-c^2dx^2}+\frac{bx^2\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(\right.}{8c\sqrt{1-c^2x^2}}$$

$$=\frac{b^2x\sqrt{d-c^2dx^2}}{64c^2}-\frac{1}{32}b^2x^3\sqrt{d-c^2dx^2}-\frac{b^2\sqrt{d-c^2dx^2}\,\sin^{-1}(cx)}{64c^3\sqrt{1-c^2x^2}}+\frac{b}{}$$

Mathematica [A] time = 0.36, size = 246, normalized size = 0.81

$$\frac{\sqrt{d-c^2dx^2}\,\left(8a^3-3b\sin^{-1}(cx)\left(-8a^2+16abcx\left(1-2c^2x^2\right)\sqrt{1-c^2x^2}+b^2\left(8c^4x^4-8c^2x^2+1\right)\right)+24a^2bcx\sqrt{1}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(8*a^3 + 3*b^3*c*x*(1 - 2*c^2*x^2)*Sqrt[1 - c^2*x^2] -
 24*a*b^2*c^2*x^2*(-1 + c^2*x^2) + 24*a^2*b*c*x*Sqrt[1 - c^2*x^2]*(-1 + 2*c
^2*x^2) - 3*b*(-8*a^2 + 16*a*b*c*x*(1 - 2*c^2*x^2)*Sqrt[1 - c^2*x^2] + b^2*
(1 - 8*c^2*x^2 + 8*c^4*x^4))*ArcSin[c*x] + 24*b^2*(a + b*c*x*Sqrt[1 - c^2*x
^2]*(-1 + 2*c^2*x^2))*ArcSin[c*x]^2 + 8*b^3*ArcSin[c*x]^3))/(192*b*c^3*Sqrt
[1 - c^2*x^2])
```

fricas [F] time = 0.92, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b^2x^2\arcsin(cx)^2+2\,abx^2\arcsin(cx)+a^2x^2\right)\sqrt{-c^2dx^2+d}\,,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x, algorithm="fricas
")
```

```
[Out] integral((b^2*x^2*arcsin(c*x)^2 + 2*a*b*x^2*arcsin(c*x) + a^2*x^2)*sqrt(-c^
2*d*x^2 + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)^2x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] integrate(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)^2*x^2, x)
```

maple [B] time = 0.51, size = 812, normalized size = 2.68

$$-\frac{a^2x\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}}{4c^2d}+\frac{a^2x\sqrt{-c^2d\,x^2+d}}{8c^2}+\frac{a^2d\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2d\,x^2+d}}\right)}{8c^2\sqrt{c^2d}}+\frac{b^2\sqrt{-d\left(c^2x^2-1\right)}\,c^2\arcsin(cx)^2x^5}{4c^2x^2-4}-\frac{3b^2\sqrt{-c}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] -1/4*a^2*x*(-c^2*d*x^2+d)^(3/2)/c^2/d+1/8*a^2/c^2*x*(-c^2*d*x^2+d)^(1/2)+1/
8*a^2/c^2*d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+1/4*
b^2*(-d*(c^2*x^2-1))^(1/2)*c^2/(c^2*x^2-1)*arcsin(c*x)^2*x^5-3/8*b^2*(-d*(c
^2*x^2-1))^(1/2)/(c^2*x^2-1)*arcsin(c*x)^2*x^3+1/8*b^2*(-d*(c^2*x^2-1))^(1/
2)/c^2/(c^2*x^2-1)*arcsin(c*x)^2*x-1/24*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^
2+1)^(1/2)/c^3/(c^2*x^2-1)*arcsin(c*x)^3+1/64*b^2*(-d*(c^2*x^2-1))^(1/2)/c^
3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)+1/8*b^2*(-d*(c^2*x^2-1))^(1/2)
*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^4-1/8*b^2*(-d*(c^2*x^2-1))^
(1/2)/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^2-1/32*b^2*(-d*(c^2*x^
2-1))^(1/2)*c^2/(c^2*x^2-1)*x^5+3/64*b^2*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)
*x^3-1/64*b^2*(-d*(c^2*x^2-1))^(1/2)/c^2/(c^2*x^2-1)*x+1/8*a*b*(-d*(c^2*x^2
-1))^(1/2)*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4-1/8*a*b*(-d*(c^2*x^2-1))^(1
/2)/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2-1/8*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c
^2*x^2+1)^(1/2)/c^3/(c^2*x^2-1)*arcsin(c*x)^2+1/2*a*b*(-d*(c^2*x^2-1))^(1/2
)*c^2/(c^2*x^2-1)*arcsin(c*x)*x^5-3/4*a*b*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1
)*arcsin(c*x)*x^3+1/64*a*b*(-d*(c^2*x^2-1))^(1/2)/c^3/(c^2*x^2-1)*(-c^2*x^2
+1)^(1/2)+1/4*a*b*(-d*(c^2*x^2-1))^(1/2)/c^2/(c^2*x^2-1)*arcsin(c*x)*x
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{8}a^2\left(\frac{\sqrt{-c^2dx^2+d}\,x}{c^2}-\frac{2\left(-c^2dx^2+d\right)^{\frac{3}{2}}x}{c^2d}+\frac{\sqrt{d}\,\arcsin(cx)}{c^3}\right)+\sqrt{d}\int\left(b^2x^2\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)^2+2\,a\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x, algorithm="maxima
")
```

```
[Out] 1/8*a^2*(sqrt(-c^2*d*x^2 + d)*x/c^2 - 2*(-c^2*d*x^2 + d)^(3/2)*x/(c^2*d) +
sqrt(d)*arcsin(c*x)/c^3) + sqrt(d)*integrate((b^2*x^2*arctan2(c*x, sqrt(c*x
 + 1)*sqrt(-c*x + 1))^2 + 2*a*b*x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x +
1)))*sqrt(c*x + 1)*sqrt(-c*x + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2 (a + b \operatorname{asin}(c x))^2 \sqrt{d - c^2 d x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int(x^2*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2 \sqrt{-d (cx - 1) (cx + 1)}\, (a + b \operatorname{asin}(cx))^2\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(x**2*sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**2, x)
```

3.212 $\int x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=188

$$\frac{2bx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3c\sqrt{1-c^2x^2}}-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d}-\frac{2bcx^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{9\sqrt{1-c^2x^2}}+\frac{2b^2(1-$$

```
[Out] -1/3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/c^2/d+4/9*b^2*(-c^2*d*x^2+d)^
(1/2)/c^2+2/27*b^2*(-c^2*x^2+1)*(-c^2*d*x^2+d)^(1/2)/c^2+2/3*b*x*(a+b*arcsi
n(c*x))*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-2/9*b*c*x^3*(a+b*arcsin(c
*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 188, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {4677, 4645, 444, 43}

$$-\frac{2bcx^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{9\sqrt{1-c^2x^2}}+\frac{2bx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3c\sqrt{1-c^2x^2}}-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d}+\frac{2b^2(1$$

Antiderivative was successfully verified.

```
[In] Int[x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (4*b^2*Sqrt[d - c^2*d*x^2])/(9*c^2) + (2*b^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x
^2])/(27*c^2) + (2*b*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*c*Sqrt[1
 - c^2*x^2]) - (2*b*c*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(9*Sqrt[
1 - c^2*x^2]) - ((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/(3*c^2*d)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 444

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx=-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d}+\frac{\left(2b\sqrt{d-c^2dx^2}\right)\int\left(1-c^2x^2\right)\left(a\right.}{3c\sqrt{1-c^2x^2}}$$

$$=\frac{2bx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3c\sqrt{1-c^2x^2}}-\frac{2bcx^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right.}{9\sqrt{1-c^2x^2}}$$

$$=\frac{2bx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3c\sqrt{1-c^2x^2}}-\frac{2bcx^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right.}{9\sqrt{1-c^2x^2}}$$

$$=\frac{2bx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3c\sqrt{1-c^2x^2}}-\frac{2bcx^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right.}{9\sqrt{1-c^2x^2}}$$

$$=\frac{4b^2\sqrt{d-c^2dx^2}}{9c^2}+\frac{2b^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}{27c^2}+\frac{2bx\sqrt{d-c^2dx^2}\left(a+b\right.}{3c\sqrt{1-c^2x^2}}$$

Mathematica [A] time = 0.30, size = 120, normalized size = 0.64

$$\frac{\sqrt{d-c^2dx^2}\left(\left(c^2x^2-1\right)\left(a+b\sin^{-1}(cx)\right)^2-\frac{2b\left(3acx\left(c^2x^2-3\right)+b\sqrt{1-c^2x^2}\left(c^2x^2-7\right)+3bcx\left(c^2x^2-3\right)\sin^{-1}(cx)\right)}{9\sqrt{1-c^2x^2}}\right)}{3c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*((-1 + c^2*x^2)*(a + b*ArcSin[c*x])^2 - (2*b*(b*Sqrt[1
 - c^2*x^2]*(-7 + c^2*x^2) + 3*a*c*x*(-3 + c^2*x^2) + 3*b*c*x*(-3 + c^2*x^2
)*ArcSin[c*x]))/(9*Sqrt[1 - c^2*x^2])))/(3*c^2)
```

fricas [A] time = 0.80, size = 208, normalized size = 1.11

$$\frac{6\left(abc^3x^3-3\,abcx+\left(b^2c^3x^3-3\,b^2cx\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+1}\,+\left(\left(9\,a^2-2\,b^2\right)c^4x^4-2\left(9\,a^2-8\right.\right.}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] 1/27*(6*(a*b*c^3*x^3 - 3*a*b*c*x + (b^2*c^3*x^3 - 3*b^2*c*x)*arcsin(c*x))*s
qrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1) + ((9*a^2 - 2*b^2)*c^4*x^4 - 2*(9*a^
2 - 8*b^2)*c^2*x^2 + 9*(b^2*c^4*x^4 - 2*b^2*c^2*x^2 + b^2)*arcsin(c*x)^2 +
9*a^2 - 14*b^2 + 18*(a*b*c^4*x^4 - 2*a*b*c^2*x^2 + a*b)*arcsin(c*x))*sqrt(-
c^2*d*x^2 + d))/(c^4*x^2 - c^2)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.30, size = 700, normalized size = 3.72

$$-\frac{a^2\left(-c^2 d\,x^2+d\right)^{\frac{3}{2}}}{3c^2 d}+b^2\left(\frac{\sqrt{-d\left(c^2x^2-1\right)}\,\left(4c^4x^4-5c^2x^2-4i\sqrt{-c^2x^2+1}\,x^3c^3+3i\sqrt{-c^2x^2+1}\,xc+1\right)\left(6i\arcsin\right.}{216c^2\left(c^2x^2-1\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] -1/3*a^2/c^2/d*(-c^2*d*x^2+d)^(3/2)+b^2*(1/216*(-d*(c^2*x^2-1))^(1/2)*(4*c^
4*x^4-5*c^2*x^2-4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+3*I*(-c^2*x^2+1)^(1/2)*x*c+1
)*(6*I*arcsin(c*x)+9*arcsin(c*x)^2-2)/c^2/(c^2*x^2-1)-1/8*(-d*(c^2*x^2-1))^
(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*(arcsin(c*x)^2-2+2*I*arcsin(c*x)
)/c^2/(c^2*x^2-1)-1/8*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*
x^2-1)*(arcsin(c*x)^2-2-2*I*arcsin(c*x))/c^2/(c^2*x^2-1)+1/216*(-d*(c^2*x^2
-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/2)
*x*c-5*c^2*x^2+1)*(-6*I*arcsin(c*x)+9*arcsin(c*x)^2-2)/c^2/(c^2*x^2-1))+2*a
*b*(1/72*(-d*(c^2*x^2-1))^(1/2)*(4*c^4*x^4-5*c^2*x^2-4*I*(-c^2*x^2+1)^(1/2)
*x^3*c^3+3*I*(-c^2*x^2+1)^(1/2)*x*c+1)*(I+3*arcsin(c*x))/c^2/(c^2*x^2-1)-1/
8*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*(I+arcsin(c*x
))/c^2/(c^2*x^2-1)-1/8*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2
*x^2-1)*(arcsin(c*x)-I)/c^2/(c^2*x^2-1)+1/72*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-
c^2*x^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*
(-I+3*arcsin(c*x))/c^2/(c^2*x^2-1))
```

maxima [A] time = 0.52, size = 188, normalized size = 1.00

$$-\frac{2}{27}b^2\left(\frac{\sqrt{-c^2x^2+1}\,d^{\frac{3}{2}}x^2-\frac{7\sqrt{-c^2x^2+1}\,d^{\frac{3}{2}}}{c^2}}{d}+\frac{3\left(c^2d^{\frac{3}{2}}x^3-3\,d^{\frac{3}{2}}x\right)\arcsin\left(cx\right)}{cd}\right)-\frac{\left(-c^2dx^2+d\right)^{\frac{3}{2}}b^2\arcsin\left(cx\right)^2}{3\,c^2d}-\frac{2\left(-c\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] -2/27*b^2*((sqrt(-c^2*x^2 + 1)*d^(3/2)*x^2 - 7*sqrt(-c^2*x^2 + 1)*d^(3/2)/c
^2)/d + 3*(c^2*d^(3/2)*x^3 - 3*d^(3/2)*x)*arcsin(c*x)/(c*d)) - 1/3*(-c^2*d*
x^2 + d)^(3/2)*b^2*arcsin(c*x)^2/(c^2*d) - 2/3*(-c^2*d*x^2 + d)^(3/2)*a*b*a
rcsin(c*x)/(c^2*d) - 2/9*(c^2*d^(3/2)*x^3 - 3*d^(3/2)*x)*a*b/(c*d) - 1/3*(-
c^2*d*x^2 + d)^(3/2)*a^2/(c^2*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^2\,\sqrt{d-c^2\,d\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int(x*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x\sqrt{-d\left(cx-1\right)\left(cx+1\right)}\,\left(a+b\,\mathrm{asin}\left(cx\right)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(x*sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**2, x)
```

3.213 $\int \sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2 dx$

Optimal. Leaf size=192

$$\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{6bc\sqrt{1-c^2x^2}}+\frac{1}{2}x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2-\frac{bcx^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{1-c^2x^2}}-\frac{1}{4}b^2x\sqrt{d-}$$

```
[Out] -1/4*b^2*x*(-c^2*d*x^2+d)^(1/2)+1/2*x*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x)
)^2+1/4*b^2*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-1/2*b*c*x
^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/6*(a+b*arcsi
n(c*x))^3*(-c^2*d*x^2+d)^(1/2)/b/c/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 192, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {4647, 4641, 4627, 321, 216}

$$\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{6bc\sqrt{1-c^2x^2}}+\frac{1}{2}x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2-\frac{bcx^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{1-c^2x^2}}-\frac{1}{4}b^2x\sqrt{d-}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -(b^2*x*Sqrt[d - c^2*d*x^2])/4 + (b^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(4*c
*Sqrt[1 - c^2*x^2]) - (b*c*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(2*
Sqrt[1 - c^2*x^2]) + (x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/2 + (Sqr
t[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(6*b*c*Sqrt[1 - c^2*x^2])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
```

```
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rubi steps

$$\int \sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx=\frac{1}{2}x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2+\frac{\sqrt{d-c^2dx^2}\int\frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{2\sqrt{1-c^2x^2}}-$$

$$=-\frac{bcx^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{1-c^2x^2}}+\frac{1}{2}x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2$$

$$=-\frac{1}{4}b^2x\sqrt{d-c^2dx^2}-\frac{bcx^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{1-c^2x^2}}+\frac{1}{2}x\sqrt{d-c^2dx}$$

$$=-\frac{1}{4}b^2x\sqrt{d-c^2dx^2}+\frac{b^2\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{4c\sqrt{1-c^2x^2}}-\frac{bcx^2\sqrt{d-c^2dx^2}\left(a+b\right.}{2\sqrt{1-c^2x^2}}$$

Mathematica [A] time = 0.23, size = 128, normalized size = 0.67

$$\frac{1}{6}\sqrt{d-c^2dx^2}\left(\frac{\left(a+b\sin^{-1}(cx)\right)^3}{bc\sqrt{1-c^2x^2}}-\frac{3b\left(cx\left(2acx+b\sqrt{1-c^2x^2}\right)+b\left(2c^2x^2-1\right)\sin^{-1}(cx)\right)}{2c\sqrt{1-c^2x^2}}+3x\left(a+b\sin^{-1}(c\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(3*x*(a + b*ArcSin[c*x])^2 + (a + b*ArcSin[c*x])^3/(b*
c*Sqrt[1 - c^2*x^2]) - (3*b*(c*x*(2*a*c*x + b*Sqrt[1 - c^2*x^2]) + b*(-1 +
2*c^2*x^2)*ArcSin[c*x]))/(2*c*Sqrt[1 - c^2*x^2])))/6
```

fricas [F] time = 0.79, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{-c^2dx^2+d}\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)
, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [B] time = 0.20, size = 564, normalized size = 2.94

$$\frac{x\sqrt{-c^2d\,x^2+d}\;a^2}{2}+\frac{a^2d\arctan\left(\frac{\sqrt{c^2d}\;x}{\sqrt{-c^2d\,x^2+d}}\right)}{2\sqrt{c^2d}}-\frac{b^2\sqrt{-d\left(c^2x^2-1\right)}\;\sqrt{-c^2x^2+1}\;\arcsin\left(cx\right)^3}{6c\left(c^2x^2-1\right)}-\frac{b^2\sqrt{-d\left(c^2x^2-1\right)}\;\text{arc}}{4c\left(c^2x^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/2*x*(-c^2*d*x^2+d)^(1/2)*a^2+1/2*a^2*d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)
*x/(-c^2*d*x^2+d)^(1/2))-1/6*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/
c/(c^2*x^2-1)*arcsin(c*x)^3-1/4*b^2*(-d*(c^2*x^2-1))^(1/2)/c/(c^2*x^2-1)*ar
csin(c*x)*(-c^2*x^2+1)^(1/2)+1/2*b^2*(-d*(c^2*x^2-1))^(1/2)*c^2/(c^2*x^2-1)
*arcsin(c*x)^2*x^3-1/2*b^2*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)*arcsin(c*x)^2
*x-1/4*b^2*(-d*(c^2*x^2-1))^(1/2)*c^2/(c^2*x^2-1)*x^3+1/4*b^2*(-d*(c^2*x^2-
1))^(1/2)/(c^2*x^2-1)*x+1/2*b^2*(-d*(c^2*x^2-1))^(1/2)*c/(c^2*x^2-1)*arcsin
(c*x)*(-c^2*x^2+1)^(1/2)*x^2-1/2*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1
/2)/c/(c^2*x^2-1)*arcsin(c*x)^2+1/2*a*b*(-d*(c^2*x^2-1))^(1/2)*c/(c^2*x^2-1
)*(-c^2*x^2+1)^(1/2)*x^2+a*b*(-d*(c^2*x^2-1))^(1/2)*c^2/(c^2*x^2-1)*arcsin(
c*x)*x^3-1/4*a*b*(-d*(c^2*x^2-1))^(1/2)/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)-a*
b*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)*arcsin(c*x)*x
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\left(\sqrt{-c^2dx^2+d}\,x+\frac{\sqrt{d}\;\arcsin\left(cx\right)}{c}\right)a^2+\sqrt{d}\int\left(b^2\arctan\left(cx,\sqrt{cx+1}\;\sqrt{-cx+1}\right)^2+2\,ab\arctan\left(cx,\sqrt{cx+1}\;\sqrt{\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] 1/2*(sqrt(-c^2*d*x^2 + d)*x + sqrt(d)*arcsin(c*x)/c)*a^2 + sqrt(d)*integrat
e((b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a*b*arctan2(c*x, sq
rt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int {\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,\sqrt{d-c^2\,d\,x^2}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\sqrt{-d\left(cx-1\right)\left(cx+1\right)}\;\left(a+b\operatorname{asin}\left(cx\right)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**2, x)
```

3.214 $\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{x}\,dx$

Optimal. Leaf size=378

$$\frac{2ib\sqrt{d-c^2dx^2}\,\text{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}-\frac{2ib\sqrt{d-c^2dx^2}\,\text{Li}_2\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}-\frac{2abcx\sqrt{d-}}{\sqrt{1-c^2}}$$

```
[Out] -2*b^2*(-c^2*d*x^2+d)^(1/2)+(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2-2*a*b*
c*x*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-2*b^2*c*x*arcsin(c*x)*(-c^2*d*x
^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-2*(a+b*arcsin(c*x))^2*arctanh(I*c*x+(-c^2*x^
2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+2*I*b*(a+b*arcsin(c*x))
*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/
2)-2*I*b*(a+b*arcsin(c*x))*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+
d)^(1/2)/(-c^2*x^2+1)^(1/2)-2*b^2*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2))*(-c^
2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+2*b^2*polylog(3,I*c*x+(-c^2*x^2+1)^(1/2
))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.35, antiderivative size = 378, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.276, Rules used = {4697, 4709, 4183, 2531, 2282, 6589, 4619, 261}

$$\frac{2ib\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}-\frac{2ib\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(c\right.}{\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/x,x]
```

```
[Out] -2*b^2*Sqrt[d - c^2*d*x^2] - (2*a*b*c*x*Sqrt[d - c^2*d*x^2])/Sqrt[1 - c^2*x
^2] - (2*b^2*c*x*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/Sqrt[1 - c^2*x^2] + Sqrt[
d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2 - (2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin
[c*x])^2*ArcTanh[E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] + ((2*I)*b*Sqrt[d -
c^2*d*x^2]*(a + b*ArcSin[c*x])*PolyLog[2, -E^(I*ArcSin[c*x])])/Sqrt[1 - c^2
*x^2] - ((2*I)*b*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])*PolyLog[2, E^(I*Ar
cSin[c*x])])/Sqrt[1 - c^2*x^2] - (2*b^2*Sqrt[d - c^2*d*x^2]*PolyLog[3, -E^(
I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] + (2*b^2*Sqrt[d - c^2*d*x^2]*PolyLog[3,
E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
```

```
, g, n}, x] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{x}\,dx = \sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2 + \frac{\sqrt{d-c^2dx^2}\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\sqrt{1-c^2x^2}}\,dx}{\sqrt{1-c^2x^2}} - \frac{(2bc$$

$$= -\frac{2abcx\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} + \sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2 + \frac{\sqrt{d-c^2dx^2}\,\text{Sub}$$

$$= -\frac{2abcx\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} - \frac{2b^2cx\sqrt{d-c^2dx^2}\,\sin^{-1}(cx)}{\sqrt{1-c^2x^2}} + \sqrt{d-c^2dx^2}\,\left(a+b\right.$$

$$= -2b^2\sqrt{d-c^2dx^2} - \frac{2abcx\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} - \frac{2b^2cx\sqrt{d-c^2dx^2}\,\sin^{-1}(cx)}{\sqrt{1-c^2x^2}} +$$

$$= -2b^2\sqrt{d-c^2dx^2} - \frac{2abcx\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} - \frac{2b^2cx\sqrt{d-c^2dx^2}\,\sin^{-1}(cx)}{\sqrt{1-c^2x^2}} +$$

$$= -2b^2\sqrt{d-c^2dx^2} - \frac{2abcx\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} - \frac{2b^2cx\sqrt{d-c^2dx^2}\,\sin^{-1}(cx)}{\sqrt{1-c^2x^2}} +$$

Mathematica [A] time = 1.21, size = 391, normalized size = 1.03

$$a^2\sqrt{d-c^2dx^2} - a^2\sqrt{d}\,\log\left(\sqrt{d}\,\sqrt{d-c^2dx^2}+d\right) + a^2\sqrt{d}\,\log(cx) + \frac{2ab\sqrt{d-c^2dx^2}\,\left(\sqrt{1-c^2x^2}\,\sin^{-1}(cx) + i\text{Li}_2\left(-\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/x,x]
```

```
[Out] a^2*Sqrt[d - c^2*d*x^2] + a^2*Sqrt[d]*Log[c*x] - a^2*Sqrt[d]*Log[d + Sqrt[d
]*Sqrt[d - c^2*d*x^2]] + (2*a*b*Sqrt[d - c^2*d*x^2]*(-(c*x) + Sqrt[1 - c^2*
x^2]*ArcSin[c*x] + ArcSin[c*x]*Log[1 - E^(I*ArcSin[c*x])] - ArcSin[c*x]*Log
[1 + E^(I*ArcSin[c*x])] + I*PolyLog[2, -E^(I*ArcSin[c*x])] - I*PolyLog[2, E
^(I*ArcSin[c*x])]))/Sqrt[1 - c^2*x^2] + (b^2*Sqrt[d - c^2*d*x^2]*(-2*Sqrt[1
 - c^2*x^2] - 2*c*x*ArcSin[c*x] + Sqrt[1 - c^2*x^2]*ArcSin[c*x]^2 + ArcSin[
c*x]^2*Log[1 - E^(I*ArcSin[c*x])] - ArcSin[c*x]^2*Log[1 + E^(I*ArcSin[c*x])
] + (2*I)*ArcSin[c*x]*PolyLog[2, -E^(I*ArcSin[c*x])] - (2*I)*ArcSin[c*x]*Po
lyLog[2, E^(I*ArcSin[c*x])] - 2*PolyLog[3, -E^(I*ArcSin[c*x])] + 2*PolyLog[
3, E^(I*ArcSin[c*x])]))/Sqrt[1 - c^2*x^2]
```

fricas [F] time = 0.54, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}\,\left(b^2\arcsin(cx)^2 + 2\,ab\arcsin(cx) + a^2\right)}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2/x,x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)
/x, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2/x,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [B] time = 0.38, size = 1017, normalized size = 2.69

$$-\sqrt{d}\ \ln\left(\frac{2d+2\sqrt{d}\ \sqrt{-c^2d\,x^2+d}}{x}\right)a^2+\sqrt{-c^2d\,x^2+d}\ a^2+\frac{2b^2\sqrt{-d\left(c^2x^2-1\right)}\ \sqrt{-c^2x^2+1}\ \arcsin\left(cx\right)xc}{c^2x^2-1}+\frac{b^2\sqrt{-d}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2/x,x)
```

```
[Out] -d^(1/2)*ln((2*d+2*d^(1/2)*(-c^2*d*x^2+d)^(1/2))/x)*a^2+(-c^2*d*x^2+d)^(1/2
)*a^2+2*b^2*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*
x)*x*c+b^2*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)*arcsin(c*x)^2*x^2*c^2-2*b^2*(
-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)*c^2*x^2-b^2*(-d*(c^2*x^2-1))^(1/2)/(c^2*x
^2-1)*arcsin(c*x)^2+2*b^2*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)-b^2*(-d*(c^2*x
^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*arcsin(c*x)^2*ln(1-I*c*x-(-c^2*
x^2+1)^(1/2))+b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*arc
sin(c*x)^2*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+2*I*b^2*(-d*(c^2*x^2-1))^(1/2)*(-
c^2*x^2+1)^(1/2)/(c^2*x^2-1)*arcsin(c*x)*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2)
)+2*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)*polylog(2,I
*c*x+(-c^2*x^2+1)^(1/2))-2*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c
^2*x^2-1)*polylog(3,I*c*x+(-c^2*x^2+1)^(1/2))+2*b^2*(-d*(c^2*x^2-1))^(1/2)*
(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2))+2*a*b*(
-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x*c+2*a*b*(-d*(c^2*x^2
-1))^(1/2)/(c^2*x^2-1)*arcsin(c*x)*x^2*c^2-2*a*b*(-d*(c^2*x^2-1))^(1/2)/(c^
2*x^2-1)*arcsin(c*x)-2*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/(c^2*x
^2-1)*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))+2*a*b*(-c^2*x^2+1)^(1/2)*(
-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2)
)-2*I*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*arcsin(c*x)
*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))-2*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x
^2-1))^(1/2)/(c^2*x^2-1)*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\left(\sqrt{d}\ \log\left(\frac{2\sqrt{-c^2dx^2+d}\,\sqrt{d}}{|x|}+\frac{2\,d}{|x|}\right)-\sqrt{-c^2dx^2+d}\right)a^2+\sqrt{d}\int\frac{\left(b^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)^2+2\,ab\,\mathrm{arct}\right.}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2/x,x, algorithm="maxima")
```

```
[Out] -(sqrt(d)*log(2*sqrt(-c^2*d*x^2 + d)*sqrt(d)/abs(x) + 2*d/abs(x)) - sqrt(-c
^2*d*x^2 + d))*a^2 + sqrt(d)*integrate((b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt
(-c*x + 1))^2 + 2*a*b*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x
+ 1)*sqrt(-c*x + 1)/x, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,\sqrt{d-c^2\,d\,x^2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2))/x,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2))/x, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-d\,(cx-1)\,(cx+1)}\;(a+b\,\mathrm{asin}\,(cx))^2}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x))**2/x,x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**2/x, x)
```

3.215 $\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{x^2}\,dx$

Optimal. Leaf size=227

$$-\frac{c\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{3b\sqrt{1-c^2x^2}}-\frac{ic\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{x}+\frac{2bc\sqrt{d-c^2d}}{}$$

```
[Out] -(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2/x-I*c*(a+b*arcsin(c*x))^2*(-c^2*d
*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-1/3*c*(a+b*arcsin(c*x))^3*(-c^2*d*x^2+d)^(
1/2)/b/(-c^2*x^2+1)^(1/2)+2*b*c*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^
(1/2))^2)*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-I*b^2*c*polylog(2,(I*c*x+
(-c^2*x^2+1)^(1/2))^2)*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.32, antiderivative size = 227, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.241, Rules used = {4693, 4625, 3717, 2190, 2279, 2391, 4641}

$$-\frac{ib^2c\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)}{\sqrt{1-c^2x^2}}-\frac{c\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{3b\sqrt{1-c^2x^2}}-\frac{ic\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}-\frac{\sqrt{d}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/x^2,x]
```

```
[Out] -((Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/x) - (I*c*Sqrt[d - c^2*d*x^2]
*(a + b*ArcSin[c*x])^2)/Sqrt[1 - c^2*x^2] - (c*Sqrt[d - c^2*d*x^2]*(a + b*A
rcSin[c*x])^3)/(3*b*Sqrt[1 - c^2*x^2]) + (2*b*c*Sqrt[d - c^2*d*x^2]*(a + b*
ArcSin[c*x])*Log[1 - E^((2*I)*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] - (I*b^2*c*S
qrt[d - c^2*d*x^2]*PolyLog[2, E^((2*I)*ArcSin[c*x])])/Sqrt[1 - c^2*x^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4693

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(b*c*n*Sqrt[d + e*x^2])/(f*(m + 1)*Sqr
t[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1), x], x] + Di
st[(c^2*Sqrt[d + e*x^2])/(f^2*(m + 1)*Sqrt[1 - c^2*x^2]), Int[((f*x)^(m + 2
)*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c, d, e
, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && LtQ[m, -1]
```

Rubi steps

$$\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{x^2}dx = -\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{x} + \frac{\left(2bc\sqrt{d-c^2dx^2}\right)\int \frac{a+b\sin^{-1}(cx)}{x}dx}{\sqrt{1-c^2x^2}} -$$

$$= -\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{x} - \frac{c\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{3b\sqrt{1-c^2x^2}} + \Big($$

$$= -\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{x} - \frac{ic\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}} - \frac{c}{}$$

$$= -\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{x} - \frac{ic\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}} - \frac{c}{}$$

$$= -\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{x} - \frac{ic\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}} - \frac{c}{}$$

$$= -\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{x} - \frac{ic\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}} - \frac{c}{}$$

Mathematica [A] time = 1.05, size = 257, normalized size = 1.13

$$-\frac{a^2\sqrt{d-c^2dx^2}}{x}+a^2c\sqrt{d}\tan^{-1}\left(\frac{cx\sqrt{d-c^2dx^2}}{\sqrt{d}\left(c^2x^2-1\right)}\right)-\frac{ab\sqrt{d-c^2dx^2}\left(2\sqrt{1-c^2x^2}\sin^{-1}(cx)-2cx\log(cx)+cx\sin^{-}\right.}{x\sqrt{1-c^2x^2}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/x^2,x]
```

```
[Out] -((a^2*Sqrt[d - c^2*d*x^2])/x) + a^2*c*Sqrt[d]*ArcTan[(c*x*Sqrt[d - c^2*d*x
^2])/(Sqrt[d]*(-1 + c^2*x^2))] - (a*b*Sqrt[d - c^2*d*x^2]*(2*Sqrt[1 - c^2*x
^2]*ArcSin[c*x] + c*x*ArcSin[c*x]^2 - 2*c*x*Log[c*x]))/(x*Sqrt[1 - c^2*x^2]
) - (b^2*c*Sqrt[d - c^2*d*x^2]*(ArcSin[c*x]*((3*I + (3*Sqrt[1 - c^2*x^2])/(
c*x))*ArcSin[c*x] + ArcSin[c*x]^2 - 6*Log[1 - E^((2*I)*ArcSin[c*x])]) + (3*
I)*PolyLog[2, E^((2*I)*ArcSin[c*x])]))/(3*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)}{x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2/x^2,x, algorithm="fricas
")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)
/x^2, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2/x^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [B] time = 0.42, size = 762, normalized size = 3.36

$$-\frac{a^2\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}}{dx}-a^2c^2x\sqrt{-c^2d\,x^2+d}-\frac{a^2c^2d\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2d\,x^2+d}}\right)}{\sqrt{c^2d}}+\frac{b^2\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x^2+1}\,\arcsin(cx)^3}{3c^2x^2-3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2/x^2,x)
```

```
[Out] -a^2/d/x*(-c^2*d*x^2+d)^(3/2)-a^2*c^2*x*(-c^2*d*x^2+d)^(1/2)-a^2*c^2*d/(c^2
*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+1/3*b^2*(-d*(c^2*x^2
-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*arcsin(c*x)^3*c+2*I*b^2*(-c^2*x^2
+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)*c*polylog(2,I*c*x+(-c^2*x^2+1)
^(1/2))-b^2*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)^2/(c^2*x^2-1)*x*c^2+b^2*(-d*
(c^2*x^2-1))^(1/2)*arcsin(c*x)^2/(c^2*x^2-1)/x-2*b^2*(-c^2*x^2+1)^(1/2)*(-d
*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)*c*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))*arcsin(c*x
)-2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)*c*ln(1-I*c*x-
(-c^2*x^2+1)^(1/2))*arcsin(c*x)+2*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))
^(1/2)/(c^2*x^2-1)*arcsin(c*x)*c+2*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1)
)^(1/2)/(c^2*x^2-1)*c*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))+a*b*(-d*(c^2*x^2
-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*arcsin(c*x)^2*c+I*b^2*(-d*(c^2*x^
2-1))^(1/2)*arcsin(c*x)^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c-2*a*b*(-d*(c^2*x
^2-1))^(1/2)*arcsin(c*x)/(c^2*x^2-1)*x*c^2+2*a*b*(-d*(c^2*x^2-1))^(1/2)*arc
sin(c*x)/(c^2*x^2-1)/x-2*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2
*x^2-1)*ln((I*c*x+(-c^2*x^2+1)^(1/2))^2-1)*c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\left(c\sqrt{d}\,\arcsin(cx)+\frac{\sqrt{-c^2dx^2+d}}{x}\right)a^2+\sqrt{d}\int\frac{\left(b^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)^2+2\,ab\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-\right.\right.}{x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2/x^2,x, algorithm="maxima
")
```

```
[Out] -(c*sqrt(d)*arcsin(c*x) + sqrt(-c^2*d*x^2 + d)/x)*a^2 + sqrt(d)*integrate((
b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a*b*arctan2(c*x, sqrt(
c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/x^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\mathrm{asin}\,(c\,x))^2\,\sqrt{d - c^2\,d\,x^2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2))/x^2,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2))/x^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-d\,(cx - 1)\,(cx + 1)}\,\left(a + b\,\mathrm{asin}\,(cx)\right)^2}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x))**2/x**2,x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**2/x**2, x)
```

3.216 $\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{x^3}\,dx$

Optimal. Leaf size=398

$$-\frac{ibc^2\sqrt{d-c^2dx^2}\,\mathrm{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}+\frac{ibc^2\sqrt{d-c^2dx^2}\,\mathrm{Li}_2\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}-\frac{bc\sqrt{d-c^2d}}{x}$$

```
[Out] -1/2*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2/x^2-b*c*(a+b*arcsin(c*x))*(-c
^2*d*x^2+d)^(1/2)/x/(-c^2*x^2+1)^(1/2)+c^2*(a+b*arcsin(c*x))^2*arctanh(I*c*
x+(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-b^2*c^2*arcta
nh((-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-I*b*c^2*(a+b
*arcsin(c*x))*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c
^2*x^2+1)^(1/2)+I*b*c^2*(a+b*arcsin(c*x))*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2
))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+b^2*c^2*polylog(3,-I*c*x-(-c^2*x
^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-b^2*c^2*polylog(3,I*c*
x+(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.38, antiderivative size = 398, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.345$, Rules used = {4693, 4627, 266, 63, 208, 4709, 4183, 2531, 2282, 6589}

$$-\frac{ibc^2\sqrt{d-c^2dx^2}\,\mathrm{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}+\frac{ibc^2\sqrt{d-c^2dx^2}\,\mathrm{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(c\right.}{\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/x^3,x]
```

```
[Out] -((b*c*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(x*Sqrt[1 - c^2*x^2])) - (S
qrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(2*x^2) + (c^2*Sqrt[d - c^2*d*x^2
]*(a + b*ArcSin[c*x])^2*ArcTanh[E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] - (b^
2*c^2*Sqrt[d - c^2*d*x^2]*ArcTanh[Sqrt[1 - c^2*x^2]])/Sqrt[1 - c^2*x^2] - (
I*b*c^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])*PolyLog[2, -E^(I*ArcSin[c*x
])])/Sqrt[1 - c^2*x^2] + (I*b*c^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])*P
olyLog[2, E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] + (b^2*c^2*Sqrt[d - c^2*d*x
^2]*PolyLog[3, -E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] - (b^2*c^2*Sqrt[d - c
^2*d*x^2]*PolyLog[3, E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4693

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(b*c*n*Sqrt[d + e*x^2])/(f*(m + 1)*Sqr
t[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1), x], x] + Di
st[(c^2*Sqrt[d + e*x^2])/(f^2*(m + 1)*Sqrt[1 - c^2*x^2]), Int[((f*x)^(m + 2
)*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c, d, e
, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && LtQ[m, -1]
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{x^3}\,dx = -\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2x^2} + \frac{\left(bc\sqrt{d-c^2dx^2}\right)\int \frac{a+b\sin^{-1}(cx)}{x^2}\,dx}{\sqrt{1-c^2x^2}} - \frac{\left(c^2\right.}{}$$

$$= -\frac{bc\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x\sqrt{1-c^2x^2}} - \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2x^2} - \frac{\left(c^2\sqrt{\right.}}{}$$

$$= -\frac{bc\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x\sqrt{1-c^2x^2}} - \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2x^2} + \frac{c^2\sqrt{d}}{}$$

$$= -\frac{bc\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x\sqrt{1-c^2x^2}} - \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2x^2} + \frac{c^2\sqrt{d}}{}$$

$$= -\frac{bc\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x\sqrt{1-c^2x^2}} - \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2x^2} + \frac{c^2\sqrt{d}}{}$$

$$= -\frac{bc\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x\sqrt{1-c^2x^2}} - \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2x^2} + \frac{c^2\sqrt{d}}{}$$

Mathematica [A] time = 5.28, size = 480, normalized size = 1.21

$$\frac{1}{8}\left(-\frac{4a^2\sqrt{d-c^2dx^2}}{x^2} + 4a^2c^2\sqrt{d}\,\log\left(\sqrt{d}\sqrt{d-c^2dx^2}+d\right) - 4a^2c^2\sqrt{d}\,\log(x) + \frac{2abc^2d\sqrt{1-c^2x^2}\left(-4i\mathrm{Li}_2\left(-e^{i\sin^{-}}\right.\right.}{}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/x^3,x]
```

```
[Out] ((-4*a^2*Sqrt[d - c^2*d*x^2])/x^2 - 4*a^2*c^2*Sqrt[d]*Log[x] + 4*a^2*c^2*Sq
rt[d]*Log[d + Sqrt[d]*Sqrt[d - c^2*d*x^2]] + (2*a*b*c^2*d*Sqrt[1 - c^2*x^2]
*(-2*Cot[ArcSin[c*x]/2] - ArcSin[c*x]*Csc[ArcSin[c*x]/2]^2 - 4*ArcSin[c*x]*
Log[1 - E^(I*ArcSin[c*x])] + 4*ArcSin[c*x]*Log[1 + E^(I*ArcSin[c*x])] - (4*
I)*PolyLog[2, -E^(I*ArcSin[c*x])] + (4*I)*PolyLog[2, E^(I*ArcSin[c*x])] + A
rcSin[c*x]*Sec[ArcSin[c*x]/2]^2 - 2*Tan[ArcSin[c*x]/2]))/Sqrt[d - c^2*d*x^2
] + (b^2*c^2*d*Sqrt[1 - c^2*x^2]*(-4*ArcSin[c*x]*Cot[ArcSin[c*x]/2] - ArcSi
n[c*x]^2*Csc[ArcSin[c*x]/2]^2 - 4*ArcSin[c*x]^2*Log[1 - E^(I*ArcSin[c*x])]
+ 4*ArcSin[c*x]^2*Log[1 + E^(I*ArcSin[c*x])] + 8*Log[Tan[ArcSin[c*x]/2]] -
(8*I)*ArcSin[c*x]*PolyLog[2, -E^(I*ArcSin[c*x])] + (8*I)*ArcSin[c*x]*PolyLo
g[2, E^(I*ArcSin[c*x])] + 8*PolyLog[3, -E^(I*ArcSin[c*x])] - 8*PolyLog[3, E
^(I*ArcSin[c*x])] + ArcSin[c*x]^2*Sec[ArcSin[c*x]/2]^2 - 4*ArcSin[c*x]*Tan[
ArcSin[c*x]/2]))/Sqrt[d - c^2*d*x^2])/8
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{-c^2dx^2+d}\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)}{x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2/x^3,x, algorithm="fricas
")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)
/x^3, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2/x^3,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [B] time = 0.55, size = 1082, normalized size = 2.72

$$-\frac{a^2\left(-c^2 d\,x^2+d\right)^{\frac{3}{2}}}{2d\,x^2}+\frac{a^2\sqrt{d}\ \ln\left(\frac{2d+2\sqrt{d}\ \sqrt{-c^2 d\,x^2+d}}{x}\right)c^2}{2}-\frac{a^2\sqrt{-c^2 d\,x^2+d}\ c^2}{2}-\frac{b^2\arcsin\left(cx\right)^2\sqrt{-d\left(c^2x^2-1\right)}\ c^2}{2\left(c^2x^2-1\right)}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2/x^3,x)
```

```
[Out] -1/2*a^2/d/x^2*(-c^2*d*x^2+d)^(3/2)+1/2*a^2*d^(1/2)*ln((2*d+2*d^(1/2)*(-c^2
*d*x^2+d)^(1/2))/x)*c^2-1/2*a^2*(-c^2*d*x^2+d)^(1/2)*c^2-1/2*b^2*arcsin(c*x
)^2*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)*c^2+b^2*arcsin(c*x)*(-d*(c^2*x^2-1))
^(1/2)/x/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c+1/2*b^2*arcsin(c*x)^2*(-d*(c^2*x^
2-1))^(1/2)/x^2/(c^2*x^2-1)+1/2*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/
2)*c^2/(c^2*x^2-1)*arcsin(c*x)^2*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))+2*I*a*b*(-c
^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*c^2/(2*c^2*x^2-2)*polylog(2,-I*c*x-(
-c^2*x^2+1)^(1/2))-1/2*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*c^2/(c
^2*x^2-1)*arcsin(c*x)^2*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-I*b^2*(-d*(c^2*x^2-1
))^(1/2)*(-c^2*x^2+1)^(1/2)*c^2/(c^2*x^2-1)*polylog(2,I*c*x+(-c^2*x^2+1)^(1
/2))*arcsin(c*x)+2*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*c^2/(c^2*x
^2-1)*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))+b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^
2+1)^(1/2)*c^2/(c^2*x^2-1)*polylog(3,I*c*x+(-c^2*x^2+1)^(1/2))-b^2*(-d*(c^2
*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*c^2/(c^2*x^2-1)*polylog(3,-I*c*x-(-c^2*x^
2+1)^(1/2))-a*b*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)*arcsin(c*x)*c^2+a*b*(-d*
(c^2*x^2-1))^(1/2)/x/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c+a*b*arcsin(c*x)*(-d*(
c^2*x^2-1))^(1/2)/x^2/(c^2*x^2-1)+2*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))
^(1/2)*c^2/(2*c^2*x^2-2)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))*arcsin(c*x)-2*a*b*(
-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*c^2/(2*c^2*x^2-2)*ln(1+I*c*x+(-c^2
*x^2+1)^(1/2))*arcsin(c*x)-2*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2
)*c^2/(2*c^2*x^2-2)*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))+I*b^2*(-d*(c^2*x^2-
1))^(1/2)*(-c^2*x^2+1)^(1/2)*c^2/(c^2*x^2-1)*polylog(2,-I*c*x-(-c^2*x^2+1)^
(1/2))*arcsin(c*x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\left(c^2\sqrt{d}\,\log\left(\frac{2\sqrt{-c^2dx^2+d}\,\sqrt{d}}{|x|}+\frac{2\,d}{|x|}\right)-\sqrt{-c^2dx^2+d}\,c^2-\frac{\left(-c^2dx^2+d\right)^{\frac{3}{2}}}{dx^2}\right)a^2+\sqrt{d}\int\frac{\left(b^2\arctan\left(cx,\sqrt{cx+\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2/x^3,x, algorithm="maxima
")
```

```
[Out] 1/2*(c^2*sqrt(d)*log(2*sqrt(-c^2*d*x^2 + d)*sqrt(d)/abs(x) + 2*d/abs(x)) -
sqrt(-c^2*d*x^2 + d)*c^2 - (-c^2*d*x^2 + d)^(3/2)/(d*x^2))*a^2 + sqrt(d)*in
tegrate((b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a*b*arctan2(c
*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/x^3, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left (a+b\,\mathrm {asin}\left (c\,x\right)\right)}^2\,\sqrt {d-c^2\,d\,x^2}}{x^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2))/x^3,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2))/x^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{- d \left (c x - 1\right) \left (c x + 1\right)} \left (a + b \operatorname{asin}{\left (c x \right)}\right)^{2}}{x^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x))**2/x**3,x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**2/x**3, x)
```

3.217 $\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{x^4}\,dx$

Optimal. Leaf size=314

$$-\frac{bc\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3x^2}-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{3dx^3}+\frac{ic^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx\right.}{3\sqrt{1-c^2x^2}}$$

```
[Out] -1/3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/d/x^3-1/3*b^2*c^2*(-c^2*d*x^2
+d)^(1/2)/x-1/3*b^2*c^3*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
+1/3*I*c^3*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-2/3*
b*c^3*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*d*x^2+d)^(
1/2)/(-c^2*x^2+1)^(1/2)+1/3*I*b^2*c^3*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^
2)*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-1/3*b*c*(a+b*arcsin(c*x))*(-c^2*
x^2+1)^(1/2)*(-c^2*d*x^2+d)^(1/2)/x^2
```

Rubi [A] time = 0.27, antiderivative size = 314, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 9, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.310, Rules used = {4681, 4685, 277, 216, 4625, 3717, 2190, 2279, 2391}

$$\frac{ib^2c^3\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)}{3\sqrt{1-c^2x^2}}+\frac{ic^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{3\sqrt{1-c^2x^2}}-\frac{bc\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}\left(a+b\,\text{si}\right.}{3x^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/x^4,x]
```

```
[Out] -(b^2*c^2*Sqrt[d - c^2*d*x^2])/(3*x) - (b^2*c^3*Sqrt[d - c^2*d*x^2]*ArcSin[
c*x])/(3*Sqrt[1 - c^2*x^2]) - (b*c*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]*(a
 + b*ArcSin[c*x]))/(3*x^2) + ((I/3)*c^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c
*x])^2)/Sqrt[1 - c^2*x^2] - ((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/(
3*d*x^3) - (2*b*c^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])*Log[1 - E^((2*I
)*ArcSin[c*x])])/(3*Sqrt[1 - c^2*x^2]) + ((I/3)*b^2*c^3*Sqrt[d - c^2*d*x^2]
*PolyLog[2, E^((2*I)*ArcSin[c*x])])/Sqrt[1 - c^2*x^2]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 277

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c
*x)^(m + 1)*(a + b*x^n)^p)/(c*(m + 1)), x] - Dist[(b*n*p)/(c^n*(m + 1)), In
t[(c*x)^(m + n)*(a + b*x^n)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[
n, 0] && GtQ[p, 0] && LtQ[m, -1] &&  !ILtQ[(m + n*p + n + 1)/n, 0] && IntBi
nomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
```

```
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4681

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^F
racPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c
^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d,
 e, f, m, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] &
& NeQ[m, -1]
```

Rule 4685

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcSin[c*x
]))/(f*(m + 1)), x] + (-Dist[(b*c*d^p)/(f*(m + 1)), Int[(f*x)^(m + 1)*(1 -
c^2*x^2)^(p - 1/2), x], x] - Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m + 2)*
(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x]), x], x]) /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0] && ILtQ[(m + 1)/2, 0]
```

Rule Rubi steps

$$\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{x^4}dx = -\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{3dx^3} + \frac{\left(2bc\sqrt{d-c^2dx^2}\right)\int \frac{\left(1-c^2x^2\right)\left(a+b\sin\right.}{x^3}}{3\sqrt{1-c^2x^2}}$$

$$= -\frac{bc\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3x^2} - \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin\right.}{3dx^3}$$

$$= -\frac{b^2c^2\sqrt{d-c^2dx^2}}{3x} - \frac{bc\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3x^2} - \frac{\left(d-\right.}{}$$

$$= -\frac{b^2c^2\sqrt{d-c^2dx^2}}{3x} - \frac{b^2c^3\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{3\sqrt{1-c^2x^2}} - \frac{bc\sqrt{1-c^2x^2}\sqrt{d-c^2}}{3x}$$

$$= -\frac{b^2c^2\sqrt{d-c^2dx^2}}{3x} - \frac{b^2c^3\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{3\sqrt{1-c^2x^2}} - \frac{bc\sqrt{1-c^2x^2}\sqrt{d-c^2}}{3x}$$

$$= -\frac{b^2c^2\sqrt{d-c^2dx^2}}{3x} - \frac{b^2c^3\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{3\sqrt{1-c^2x^2}} - \frac{bc\sqrt{1-c^2x^2}\sqrt{d-c^2}}{3x}$$

$$= -\frac{b^2c^2\sqrt{d-c^2dx^2}}{3x} - \frac{b^2c^3\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{3\sqrt{1-c^2x^2}} - \frac{bc\sqrt{1-c^2x^2}\sqrt{d-c^2}}{3x}$$

Mathematica [A] time = 1.25, size = 248, normalized size = 0.79

$$\frac{\sqrt{d-c^2dx^2}\left(-2\left(a^2\left(1-c^2x^2\right)^{3/2}+2abc^3x^3\log(cx)+abcx+b^2c^2x^2\sqrt{1-c^2x^2}\right)-b\sin^{-1}(cx)\left(3a\sqrt{1-c^2x^2}+\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/x^4,x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(2*b^2*(I*c^3*x^3 - Sqrt[1 - c^2*x^2] + c^2*x^2*Sqrt[1
 - c^2*x^2])*ArcSin[c*x]^2 - b*ArcSin[c*x]*(2*b*c*x + 3*a*Sqrt[1 - c^2*x^2]
 + a*Cos[3*ArcSin[c*x]] + 4*b*c^3*x^3*Log[1 - E^((2*I)*ArcSin[c*x])]) - 2*(
a*b*c*x + b^2*c^2*x^2*Sqrt[1 - c^2*x^2] + a^2*(1 - c^2*x^2)^(3/2) + 2*a*b*c
^3*x^3*Log[c*x]) + (2*I)*b^2*c^3*x^3*PolyLog[2, E^((2*I)*ArcSin[c*x])]))/(6
*x^3*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 1.49, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{-c^2dx^2+d}\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)}{x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2/x^4,x, algorithm="fricas
")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)
/x^4, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2/x^4,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [B] time = 0.59, size = 3017, normalized size = 9.61

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2/x^4,x)
```

```
[Out] -1/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x/(c^2*x^2-1)*c^4
+a*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x^2/(c^2*x^2-1)*(-c^2*x
^2+1)^(1/2)*c^5+20/3*a*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x/(
c^2*x^2-1)*arcsin(c*x)*c^4-6*a*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^
2+1)*x^3/(c^2*x^2-1)*arcsin(c*x)*c^6+1/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*
x^4-3*c^2*x^2+1)/x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c+I*b^2*(-d
*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1
/2)*c^5+2*a*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x^5/(c^2*x^2-1
)*arcsin(c*x)*c^8-I*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x^4/
(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c^7+2/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*
x^4-3*c^2*x^2+1)*x^3/(c^2*x^2-1)*arcsin(c*x)*c^6+b^2*(-d*(c^2*x^2-1))^(1/2)
/(3*c^4*x^4-3*c^2*x^2+1)*x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^5
+1/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)/(c^2*x^2-1)*(-c^2
*x^2+1)^(1/2)*arcsin(c*x)^2*c^3+10/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-
3*c^2*x^2+1)*x/(c^2*x^2-1)*arcsin(c*x)^2*c^4-5/3*b^2*(-d*(c^2*x^2-1))^(1/2)
/(3*c^4*x^4-3*c^2*x^2+1)/x/(c^2*x^2-1)*arcsin(c*x)^2*c^2-a*b*(-d*(c^2*x^2-1
))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c^3+2/3*a*b
*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)/x^3/(c^2*x^2-1)*arcsin(c*x)
+2/3*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*ln((I*c*x+(-
c^2*x^2+1)^(1/2))^2-1)*c^3-1/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^
2*x^2+1)*x/(c^2*x^2-1)*arcsin(c*x)*c^4-10/3*a*b*(-d*(c^2*x^2-1))^(1/2)/(3*c
^4*x^4-3*c^2*x^2+1)/x/(c^2*x^2-1)*arcsin(c*x)*c^2+1/3*a*b*(-d*(c^2*x^2-1))^
(1/2)/(3*c^4*x^4-3*c^2*x^2+1)/x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c-4*I*a*b*
(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)*c^3/(3*c^2*x^2-3)-1/3
*I*a*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x^5/(c^2*x^2-1)*c^8+2
/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x^3/(c^2*x^2-1)*c^6
-1/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x^5/(c^2*x^2-1)*a
rcsin(c*x)*c^8+2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*c^3/(3*c^2*x
^2-3)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))*arcsin(c*x)+2*b^2*(-c^2*x^2+1)^(1/2)*(
-d*(c^2*x^2-1))^(1/2)*c^3/(3*c^2*x^2-3)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))*arcs
in(c*x)+1/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x^3/(c^2*x^2
-1)*(-c^2*x^2+1)*c^6-1/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+
1)/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c^3-2*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x
^2-1))^(1/2)*c^3/(3*c^2*x^2-3)*arcsin(c*x)^2-2*I*b^2*(-c^2*x^2+1)^(1/2)*(-d
*(c^2*x^2-1))^(1/2)*c^3/(3*c^2*x^2-3)*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))-
2*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*c^3/(3*c^2*x^2-3)*polylog
(2,I*c*x+(-c^2*x^2+1)^(1/2))-b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^
2+1)/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^3+b^2*(-d*(c^2*x^2-1))^(1
/2)/(3*c^4*x^4-3*c^2*x^2+1)*x^5/(c^2*x^2-1)*arcsin(c*x)^2*c^8-3*b^2*(-d*(c^
2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x^3/(c^2*x^2-1)*arcsin(c*x)^2*c^6-1
/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x^3/(c^2*x^2-1)*(-c
^2*x^2+1)*arcsin(c*x)*c^6-I*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2
+1)*x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)^2*c^5+1/3*I*b^2*(-d*(c^2
*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x/(c^2*x^2-1)*(-c^2*x^2+1)*arcsin(c*
x)*c^4+I*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x^4/(c^2*x^2-1)
*(-c^2*x^2+1)^(1/2)*arcsin(c*x)^2*c^7-1/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/(3*c
^4*x^4-3*c^2*x^2+1)*x^3/(c^2*x^2-1)*(-c^2*x^2+1)*c^6+1/3*I*a*b*(-d*(c^2*x^2
```

```
-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x/(c^2*x^2-1)*(-c^2*x^2+1)*c^4+2/3*I*a*b
*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)/(c^2*x^2-1)*(-c^2*x^2+1)^(1
/2)*arcsin(c*x)*c^3-2/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*
x^5/(c^2*x^2-1)*c^8+5/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*
x^3/(c^2*x^2-1)*c^6-4/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*
x/(c^2*x^2-1)*c^4+1/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)/x/
(c^2*x^2-1)*c^2+1/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)/x^3/
(c^2*x^2-1)*arcsin(c*x)^2-1/3*a^2/d/x^3*(-c^2*d*x^2+d)^(3/2)+2*I*a*b*(-d*(c
^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)
*arcsin(c*x)*c^7-2*I*a*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-3*c^2*x^2+1)*x^2
/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^5
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\left((-1)^{-2\,c^2dx^2+2\,d}\,c^2d^{\frac{3}{2}}\log\left(-2\,c^2d+\frac{2\,d}{x^2}\right)+c^2d^{\frac{3}{2}}\log\left(x^2-\frac{1}{c^2}\right)-\frac{\sqrt{c^4dx^4-2\,c^2dx^2+d}\,d}{x^2}\right)abc}{3\,d}-\frac{2\left(-c^2dx^2+d\right)^{\frac{3}{2}}ab\,\mathrm{arcsir}}{3\,dx^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2/x^4,x, algorithm="maxima
")
```

```
[Out] 1/3*((-1)^(-2*c^2*d*x^2 + 2*d)*c^2*d^(3/2)*log(-2*c^2*d + 2*d/x^2) + c^2*d^
(3/2)*log(x^2 - 1/c^2) - sqrt(c^4*d*x^4 - 2*c^2*d*x^2 + d)*d/x^2)*a*b*c/d -
 2/3*(-c^2*d*x^2 + d)^(3/2)*a*b*arcsin(c*x)/(d*x^3) + 1/3*((c^2*x^2 - 1)*sq
rt(c*x + 1)*sqrt(-c*x + 1)*sqrt(d)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1
))^2 - sqrt(d)*x^3*integrate(2*(c^3*x^2 - c)*arctan2(c*x, sqrt(c*x + 1)*sqr
t(-c*x + 1))/x^3, x))*b^2/x^3 - 1/3*(-c^2*d*x^2 + d)^(3/2)*a^2/(d*x^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,\sqrt{d-c^2\,d\,x^2}}{x^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2))/x^4,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2))/x^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-d\left(cx-1\right)\left(cx+1\right)}\,\left(a+b\operatorname{asin}{\left(cx\right)}\right)^{2}}{x^{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x))**2/x**4,x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**2/x**4, x)
```

3.218 $\int x^3\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=503

$$-\frac{dx^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{35c^2}-\frac{16bcdx^5\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{175\sqrt{1-c^2x^2}}+\frac{1}{7}x^4\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2$$

```
[Out] 1/7*x^4*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2+304/3675*b^2*d*(-c^2*d*x^2
+d)^(1/2)/c^4+152/11025*b^2*d*(-c^2*x^2+1)*(-c^2*d*x^2+d)^(1/2)/c^4+38/6125
*b^2*d*(-c^2*x^2+1)^2*(-c^2*d*x^2+d)^(1/2)/c^4-2/343*b^2*d*(-c^2*x^2+1)^3*(
-c^2*d*x^2+d)^(1/2)/c^4-2/35*d*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/c^4
-1/35*d*x^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/c^2+3/35*d*x^4*(a+b*ar
csin(c*x))^2*(-c^2*d*x^2+d)^(1/2)+4/35*a*b*d*x*(-c^2*d*x^2+d)^(1/2)/c^3/(-c
^2*x^2+1)^(1/2)+4/35*b^2*d*x*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/c^3/(-c^2*x^2
+1)^(1/2)+2/105*b*d*x^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+
1)^(1/2)-16/175*b*c*d*x^5*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+
1)^(1/2)+2/49*b*c^3*d*x^7*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+
1)^(1/2)
```

Rubi [A] time = 0.78, antiderivative size = 503, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 14, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.483, Rules used = {4699, 4697, 4707, 4677, 4619, 261, 4627, 266, 43, 14, 4687, 12, 446, 77}

$$\frac{4abdx\sqrt{d-c^2dx^2}}{35c^3\sqrt{1-c^2x^2}}+\frac{2bc^3dx^7\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{49\sqrt{1-c^2x^2}}-\frac{16bcdx^5\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{175\sqrt{1-c^2x^2}}+\frac{1}{7}x^4\left(d-c^2dx^2\right.$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (304*b^2*d*Sqrt[d - c^2*d*x^2])/(3675*c^4) + (4*a*b*d*x*Sqrt[d - c^2*d*x^2]
)/(35*c^3*Sqrt[1 - c^2*x^2]) + (152*b^2*d*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2]
)/(11025*c^4) + (38*b^2*d*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2])/(6125*c^4) -
 (2*b^2*d*(1 - c^2*x^2)^3*Sqrt[d - c^2*d*x^2])/(343*c^4) + (4*b^2*d*x*Sqrt[
d - c^2*d*x^2]*ArcSin[c*x])/(35*c^3*Sqrt[1 - c^2*x^2]) + (2*b*d*x^3*Sqrt[d
- c^2*d*x^2]*(a + b*ArcSin[c*x]))/(105*c*Sqrt[1 - c^2*x^2]) - (16*b*c*d*x^5
*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(175*Sqrt[1 - c^2*x^2]) + (2*b*c^
3*d*x^7*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(49*Sqrt[1 - c^2*x^2]) - (
2*d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(35*c^4) - (d*x^2*Sqrt[d - c
^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(35*c^2) + (3*d*x^4*Sqrt[d - c^2*d*x^2]*(a
 + b*ArcSin[c*x])^2)/35 + (x^4*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)
/7
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
```

```
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 446

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p
*(c + d*x)^q, x], x, x^n], x] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[
b*c - a*d, 0] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
```

```
IGtQ[p, 0]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int x^3\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx=\frac{1}{7}x^4\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2+\frac{1}{7}(3d)\int x^3\sqrt{d-c^2dx^2}\,\left(a\right.$$

$$=-\frac{2bcdx^5\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{35\sqrt{1-c^2x^2}}+\frac{2bc^3dx^7\sqrt{d-c^2dx^2}\left(a+\right.}{49\sqrt{1-c^2x^2}}$$

$$=-\frac{16bcdx^5\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{175\sqrt{1-c^2x^2}}+\frac{2bc^3dx^7\sqrt{d-c^2dx^2}\left(a+\right.}{49\sqrt{1-c^2x^2}}$$

$$=\frac{2bdx^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{105c\sqrt{1-c^2x^2}}-\frac{16bcdx^5\sqrt{d-c^2dx^2}\left(a+b\sin\right.}{175\sqrt{1-c^2x^2}}$$

$$=\frac{4abdx\sqrt{d-c^2dx^2}}{35c^3\sqrt{1-c^2x^2}}+\frac{2bdx^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{105c\sqrt{1-c^2x^2}}-16bcdx$$

$$=-\frac{62b^2d\sqrt{d-c^2dx^2}}{1225c^4}+\frac{4abdx\sqrt{d-c^2dx^2}}{35c^3\sqrt{1-c^2x^2}}+\frac{74b^2d\left(1-c^2x^2\right)\sqrt{d-}}{3675c^4}$$

$$=\frac{304b^2d\sqrt{d-c^2dx^2}}{3675c^4}+\frac{4abdx\sqrt{d-c^2dx^2}}{35c^3\sqrt{1-c^2x^2}}+\frac{152b^2d\left(1-c^2x^2\right)\sqrt{d-}}{11025c^4}$$

Mathematica [A] time = 0.33, size = 244, normalized size = 0.49

$$\frac{d\sqrt{d-c^2dx^2}\left(-11025a^2\left(5c^2x^2+2\right)\left(1-c^2x^2\right)^{5/2}+210abcx\left(75c^6x^6-168c^4x^4+35c^2x^2+210\right)+210b\sin^{-1}(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (d*Sqrt[d - c^2*d*x^2]*(-11025*a^2*(1 - c^2*x^2)^(5/2)*(2 + 5*c^2*x^2) + 21
0*a*b*c*x*(210 + 35*c^2*x^2 - 168*c^4*x^4 + 75*c^6*x^6) + 2*b^2*Sqrt[1 - c^
2*x^2]*(18692 - 1679*c^2*x^2 - 2178*c^4*x^4 + 1125*c^6*x^6) + 210*b*(-105*a
*(1 - c^2*x^2)^(5/2)*(2 + 5*c^2*x^2) + b*c*x*(210 + 35*c^2*x^2 - 168*c^4*x^
4 + 75*c^6*x^6))*ArcSin[c*x] - 11025*b^2*(1 - c^2*x^2)^(5/2)*(2 + 5*c^2*x^2
)*ArcSin[c*x]^2))/(385875*c^4*Sqrt[1 - c^2*x^2])
```

fricas [A] time = 0.59, size = 360, normalized size = 0.72

$$-\frac{210\left(75\,abc^7dx^7-168\,abc^5dx^5+35\,abc^3dx^3+210\,abcdx+\left(75\,b^2c^7dx^7-168\,b^2c^5dx^5+35\,b^2c^3dx^3+210\,b^2c\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="fricas
")
```

```
[Out] -1/385875*(210*(75*a*b*c^7*d*x^7 - 168*a*b*c^5*d*x^5 + 35*a*b*c^3*d*x^3 + 2
10*a*b*c*d*x + (75*b^2*c^7*d*x^7 - 168*b^2*c^5*d*x^5 + 35*b^2*c^3*d*x^3 + 2
10*b^2*c*d*x)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1) + (1125*
(49*a^2 - 2*b^2)*c^8*d*x^8 - 9*(15925*a^2 - 734*b^2)*c^6*d*x^6 + (99225*a^2
 - 998*b^2)*c^4*d*x^4 + (11025*a^2 - 40742*b^2)*c^2*d*x^2 + 11025*(5*b^2*c^
```

```
8*d*x^8 - 13*b^2*c^6*d*x^6 + 9*b^2*c^4*d*x^4 + b^2*c^2*d*x^2 - 2*b^2*d)*arc
sin(c*x)^2 - 2*(11025*a^2 - 18692*b^2)*d + 22050*(5*a*b*c^8*d*x^8 - 13*a*b*
c^6*d*x^6 + 9*a*b*c^4*d*x^4 + a*b*c^2*d*x^2 - 2*a*b*d)*arcsin(c*x))*sqrt(-c
^2*d*x^2 + d))/(c^6*x^2 - c^4)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.63, size = 1678, normalized size = 3.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] a^2*(-1/7*x^2*(-c^2*d*x^2+d)^(5/2)/c^2/d-2/35/d/c^4*(-c^2*d*x^2+d)^(5/2))+b
^2*(-1/43904*(-d*(c^2*x^2-1))^(1/2)*(64*c^8*x^8-144*c^6*x^6-64*I*(-c^2*x^2+
1)^(1/2)*x^7*c^7+104*c^4*x^4+112*I*(-c^2*x^2+1)^(1/2)*x^5*c^5-25*c^2*x^2-56
*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+7*I*(-c^2*x^2+1)^(1/2)*x*c+1)*(14*I*arcsin(c*
x)+49*arcsin(c*x)^2-2)*d/c^4/(c^2*x^2-1)+1/16000*(-d*(c^2*x^2-1))^(1/2)*(16
*c^6*x^6-28*c^4*x^4-16*I*(-c^2*x^2+1)^(1/2)*x^5*c^5+13*c^2*x^2+20*I*(-c^2*x
^2+1)^(1/2)*x^3*c^3-5*I*(-c^2*x^2+1)^(1/2)*x*c-1)*(10*I*arcsin(c*x)+25*arcs
in(c*x)^2-2)*d/c^4/(c^2*x^2-1)+1/1152*(-d*(c^2*x^2-1))^(1/2)*(4*c^4*x^4-5*c
^2*x^2-4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+3*I*(-c^2*x^2+1)^(1/2)*x*c+1)*(6*I*ar
csin(c*x)+9*arcsin(c*x)^2-2)*d/c^4/(c^2*x^2-1)-3/128*(-d*(c^2*x^2-1))^(1/2)
*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*(arcsin(c*x)^2-2+2*I*arcsin(c*x))*d/c
^4/(c^2*x^2-1)-3/128*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x
^2-1)*(arcsin(c*x)^2-2-2*I*arcsin(c*x))*d/c^4/(c^2*x^2-1)+1/1152*(-d*(c^2*x
^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/
2)*x*c-5*c^2*x^2+1)*(-6*I*arcsin(c*x)+9*arcsin(c*x)^2-2)*d/c^4/(c^2*x^2-1)+
1/16000*(-d*(c^2*x^2-1))^(1/2)*(16*I*(-c^2*x^2+1)^(1/2)*x^5*c^5+16*c^6*x^6-
20*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-28*c^4*x^4+5*I*(-c^2*x^2+1)^(1/2)*x*c+13*c^
2*x^2-1)*(-10*I*arcsin(c*x)+25*arcsin(c*x)^2-2)*d/c^4/(c^2*x^2-1)-1/43904*(
-d*(c^2*x^2-1))^(1/2)*(64*I*(-c^2*x^2+1)^(1/2)*x^7*c^7+64*c^8*x^8-112*I*(-c
^2*x^2+1)^(1/2)*x^5*c^5-144*c^6*x^6+56*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+104*c^4
*x^4-7*I*(-c^2*x^2+1)^(1/2)*x*c-25*c^2*x^2+1)*(-14*I*arcsin(c*x)+49*arcsin(
c*x)^2-2)*d/c^4/(c^2*x^2-1))+2*a*b*(-1/6272*(-d*(c^2*x^2-1))^(1/2)*(64*c^8*
x^8-144*c^6*x^6-64*I*(-c^2*x^2+1)^(1/2)*x^7*c^7+104*c^4*x^4+112*I*(-c^2*x^2
+1)^(1/2)*x^5*c^5-25*c^2*x^2-56*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+7*I*(-c^2*x^2+
1)^(1/2)*x*c+1)*(I+7*arcsin(c*x))*d/c^4/(c^2*x^2-1)-3/128*(-d*(c^2*x^2-1))^
(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*(I+arcsin(c*x))*d/c^4/(c^2*x^2-1
)-3/128*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(arcsin
(c*x)-I)*d/c^4/(c^2*x^2-1)+1/384*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(
1/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*(-I+3*arcsin
(c*x))*d/c^4/(c^2*x^2-1)+3/39200*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/
2)*x*c+c^2*x^2-1)*(2*I+35*arcsin(c*x))*cos(6*arcsin(c*x))*d/c^4/(c^2*x^2-1)
+1/78400*(-d*(c^2*x^2-1))^(1/2)*(I*c^2*x^2-c*x*(-c^2*x^2+1)^(1/2)-I)*(37*I+
35*arcsin(c*x))*sin(6*arcsin(c*x))*d/c^4/(c^2*x^2-1)-1/2400*(-d*(c^2*x^2-1)
)^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(7*I+15*arcsin(c*x))*cos(4*arc
sin(c*x))*d/c^4/(c^2*x^2-1)-1/4800*(-d*(c^2*x^2-1))^(1/2)*(I*c^2*x^2-c*x*(-
c^2*x^2+1)^(1/2)-I)*(11*I+45*arcsin(c*x))*sin(4*arcsin(c*x))*d/c^4/(c^2*x^2
-1))
```

maxima [A] time = 1.54, size = 356, normalized size = 0.71

$$-\frac{1}{35}\left(\frac{5\left(-c^2dx^2+d\right)^{\frac{5}{2}}x^2}{c^2d}+\frac{2\left(-c^2dx^2+d\right)^{\frac{5}{2}}}{c^4d}\right)b^2\arcsin\left(cx\right)^2-\frac{2}{35}\left(\frac{5\left(-c^2dx^2+d\right)^{\frac{5}{2}}x^2}{c^2d}+\frac{2\left(-c^2dx^2+d\right)^{\frac{5}{2}}}{c^4d}\right)ab\,\mathrm{ar}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="maxima
")
```

```
[Out] -1/35*(5*(-c^2*d*x^2 + d)^(5/2)*x^2/(c^2*d) + 2*(-c^2*d*x^2 + d)^(5/2)/(c^4
*d))*b^2*arcsin(c*x)^2 - 2/35*(5*(-c^2*d*x^2 + d)^(5/2)*x^2/(c^2*d) + 2*(-c
^2*d*x^2 + d)^(5/2)/(c^4*d))*a*b*arcsin(c*x) - 1/35*(5*(-c^2*d*x^2 + d)^(5/
2)*x^2/(c^2*d) + 2*(-c^2*d*x^2 + d)^(5/2)/(c^4*d))*a^2 + 2/385875*b^2*((112
5*sqrt(-c^2*x^2 + 1)*c^4*d^(3/2)*x^6 - 2178*sqrt(-c^2*x^2 + 1)*c^2*d^(3/2)*
x^4 - 1679*sqrt(-c^2*x^2 + 1)*d^(3/2)*x^2 + 18692*sqrt(-c^2*x^2 + 1)*d^(3/2
)/c^2)/c^2 + 105*(75*c^6*d^(3/2)*x^7 - 168*c^4*d^(3/2)*x^5 + 35*c^2*d^(3/2)
*x^3 + 210*d^(3/2)*x)*arcsin(c*x)/c^3) + 2/3675*(75*c^6*d^(3/2)*x^7 - 168*c
^4*d^(3/2)*x^5 + 35*c^2*d^(3/2)*x^3 + 210*d^(3/2)*x)*a*b/c^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^3\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(d-c^2\,d\,x^2\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int(x^3*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{3} \left(- d \left(c x - 1\right) \left(c x + 1\right)\right)^{\frac{3}{2}} \left(a + b \operatorname{asin}{\left(c x \right)}\right)^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(x**3*(-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))**2, x)
```

3.219 $\int x^2 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right)^2 dx$

Optimal. Leaf size=421

$$\frac{bdx^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{16c\sqrt{1-c^2x^2}}-\frac{dx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{16c^2}-\frac{7bcdx^4\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{48\sqrt{1-c^2x^2}}+\frac{1}{6}x^3($$

```
[Out] 1/6*x^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2-7/1152*b^2*d*x*(-c^2*d*x^2
+d)^(1/2)/c^2-43/1728*b^2*d*x^3*(-c^2*d*x^2+d)^(1/2)+1/108*b^2*c^2*d*x^5*(-
c^2*d*x^2+d)^(1/2)-1/16*d*x*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/c^2+1/
8*d*x^3*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)+7/1152*b^2*d*arcsin(c*x)*(
-c^2*d*x^2+d)^(1/2)/c^3/(-c^2*x^2+1)^(1/2)+1/16*b*d*x^2*(a+b*arcsin(c*x))*(
-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-7/48*b*c*d*x^4*(a+b*arcsin(c*x))*(
-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/18*b*c^3*d*x^6*(a+b*arcsin(c*x))*(
-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/48*d*(a+b*arcsin(c*x))^3*(-c^2*d*x
^2+d)^(1/2)/b/c^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.71, antiderivative size = 421, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 11, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.379, Rules used = {4699, 4697, 4707, 4641, 4627, 321, 216, 14, 4687, 12, 459}

$$\frac{bc^3dx^6\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{18\sqrt{1-c^2x^2}}-\frac{7bcdx^4\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{48\sqrt{1-c^2x^2}}+\frac{1}{6}x^3\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2-$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (-7*b^2*d*x*Sqrt[d - c^2*d*x^2])/(1152*c^2) - (43*b^2*d*x^3*Sqrt[d - c^2*d*
x^2])/1728 + (b^2*c^2*d*x^5*Sqrt[d - c^2*d*x^2])/108 + (7*b^2*d*Sqrt[d - c^
2*d*x^2]*ArcSin[c*x])/(1152*c^3*Sqrt[1 - c^2*x^2]) + (b*d*x^2*Sqrt[d - c^2*
d*x^2]*(a + b*ArcSin[c*x]))/(16*c*Sqrt[1 - c^2*x^2]) - (7*b*c*d*x^4*Sqrt[d
- c^2*d*x^2]*(a + b*ArcSin[c*x]))/(48*Sqrt[1 - c^2*x^2]) + (b*c^3*d*x^6*Sqr
t[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(18*Sqrt[1 - c^2*x^2]) - (d*x*Sqrt[d
- c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(16*c^2) + (d*x^3*Sqrt[d - c^2*d*x^2]*(
a + b*ArcSin[c*x])^2)/8 + (x^3*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)
/6 + (d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(48*b*c^3*Sqrt[1 - c^2*x
^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
```

```
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 459

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_)), x_Symbol] :> Simp[(d*(e*x)^(m + 1)*(a + b*x^n)^(p + 1))/(b*e*(m + n*(p
 + 1) + 1)), x] - Dist[(a*d*(m + 1) - b*c*(m + n*(p + 1) + 1))/(b*(m + n*(p
 + 1) + 1)), Int[(e*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, d, e, m,
n, p}, x] && NeQ[b*c - a*d, 0] && NeQ[m + n*(p + 1) + 1, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
```

```
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int x^2 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right)^2 dx = \frac{1}{6}x^3 \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right)^2 + \frac{1}{2}d\int x^2\sqrt{d-c^2dx^2}\left(a+b\sin\right.$$

$$= -\frac{bcdx^4\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{12\sqrt{1-c^2x^2}} + \frac{bc^3dx^6\sqrt{d-c^2dx^2}\left(a+b\sin\right.}{18\sqrt{1-c^2x^2}}$$

$$= -\frac{7bcdx^4\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{48\sqrt{1-c^2x^2}} + \frac{bc^3dx^6\sqrt{d-c^2dx^2}\left(a+b\sin\right.}{18\sqrt{1-c^2x^2}}$$

$$= -\frac{1}{64}b^2dx^3\sqrt{d-c^2dx^2} + \frac{1}{108}b^2c^2dx^5\sqrt{d-c^2dx^2} + \frac{bdx^2\sqrt{d-c^2dx^2}\left(\right.}{16c\sqrt{1-}}$$

$$= \frac{b^2dx\sqrt{d-c^2dx^2}}{128c^2} - \frac{43b^2dx^3\sqrt{d-c^2dx^2}}{1728} + \frac{1}{108}b^2c^2dx^5\sqrt{d-c^2dx^2} +$$

$$= -\frac{7b^2dx\sqrt{d-c^2dx^2}}{1152c^2} - \frac{43b^2dx^3\sqrt{d-c^2dx^2}}{1728} + \frac{1}{108}b^2c^2dx^5\sqrt{d-c^2dx^2}$$

$$= -\frac{7b^2dx\sqrt{d-c^2dx^2}}{1152c^2} - \frac{43b^2dx^3\sqrt{d-c^2dx^2}}{1728} + \frac{1}{108}b^2c^2dx^5\sqrt{d-c^2dx^2}$$

Mathematica [A] time = 0.33, size = 297, normalized size = 0.71

$$\frac{d\sqrt{d-c^2dx^2}\left(72a^3+3b\sin^{-1}(cx)\left(72a^2-48abcx\sqrt{1-c^2x^2}\left(8c^4x^4-14c^2x^2+3\right)+b^2\left(64c^6x^6-168c^4x^4+72c^2\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (d*Sqrt[d - c^2*d*x^2]*(72*a^3 + 24*a*b^2*c^2*x^2*(9 - 21*c^2*x^2 + 8*c^4*x
^4) - 72*a^2*b*c*x*Sqrt[1 - c^2*x^2]*(3 - 14*c^2*x^2 + 8*c^4*x^4) + b^3*c*x
*Sqrt[1 - c^2*x^2]*(-21 - 86*c^2*x^2 + 32*c^4*x^4) + 3*b*(72*a^2 - 48*a*b*c
*x*Sqrt[1 - c^2*x^2]*(3 - 14*c^2*x^2 + 8*c^4*x^4) + b^2*(7 + 72*c^2*x^2 - 1
68*c^4*x^4 + 64*c^6*x^6))*ArcSin[c*x] + 72*b^2*(3*a + b*c*x*Sqrt[1 - c^2*x^
2]*(-3 + 14*c^2*x^2 - 8*c^4*x^4))*ArcSin[c*x]^2 + 72*b^3*ArcSin[c*x]^3))/(3
456*b*c^3*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(a^2c^2dx^4-a^2dx^2+\left(b^2c^2dx^4-b^2dx^2\right)\arcsin(cx)^2+2\left(abc^2dx^4-abdx^2\right)\arcsin(cx)\right)\sqrt{-c^2dx^2+d},x\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="fricas
")
```

```
[Out] integral(-(a^2*c^2*d*x^4 - a^2*d*x^2 + (b^2*c^2*d*x^4 - b^2*d*x^2)*arcsin(c
*x)^2 + 2*(a*b*c^2*d*x^4 - a*b*d*x^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-c^2dx^2+d\right)^{\frac{3}{2}}(b\arcsin(cx)+a)^2x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(3/2)*(b*arcsin(c*x) + a)^2*x^2, x)
```

maple [C] time = 0.64, size = 4469, normalized size = 10.62

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] -31/27648*b^2*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))*d/c^3/(c^2*x^2-1)-1
/12*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)*arcsin(c*x)^2*x^3+1/216*b^2*(-
d*(c^2*x^2-1))^(1/2)*d*c^4/(c^2*x^2-1)*x^7-1/108*b^2*(-d*(c^2*x^2-1))^(1/2)
*d*c^2/(c^2*x^2-1)*x^5+1/144*b^2*(-d*(c^2*x^2-1))^(1/2)*d/c^2/(c^2*x^2-1)*x
+3/1024*b^2*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d/c^3/(c^2*x^2-1)+1/2
4*a^2/c^2*x*(-c^2*d*x^2+d)^(3/2)+1/12*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d*c^3/(c
^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)^2*x^6-1/8*I*b^2*(-d*(c^2*x^2-1))^(
1/2)*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)^2*x^4+1/16*I*b^2*(-d*(c
^2*x^2-1))^(1/2)*d/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)^2*x^2+1/192
*I*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsin(c*x))*d/c/(c^2*x^2-1)*arcsin(c*x
)^2*x^2-7/2304*I*b^2*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))*d/c/(c^2*x^2
-1)*arcsin(c*x)*x^2+31/27648*I*b^2*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x)
)*d/c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-1/64*I*b^2*(-d*(c^2*x^2-1))^(1/2)*
cos(3*arcsin(c*x))*d/c/(c^2*x^2-1)*arcsin(c*x)^2*x^2+3/256*I*b^2*(-d*(c^2*x
^2-1))^(1/2)*sin(3*arcsin(c*x))*d/c/(c^2*x^2-1)*arcsin(c*x)*x^2-3/1024*I*b^
2*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d/c^2/(c^2*x^2-1)*(-c^2*x^2+1)^
(1/2)*x-1/48*a*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))*d/c/(c^2*x^2-1)*
arcsin(c*x)*x^2-3/256*a*b*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d/c^2/(
c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+7/2304*a*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arc
sin(c*x))*d/c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-1/48*I*a*b*(-d*(c^2*x^2-1)
)^(1/2)*d/c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)-1/96*I*a*b*(-d*(c^
2*x^2-1))^(1/2)*cos(5*arcsin(c*x))*d/c^3/(c^2*x^2-1)*arcsin(c*x)-7/2304*I*a
*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))*d/c/(c^2*x^2-1)*x^2+1/32*I*a*b
*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d/c^3/(c^2*x^2-1)*arcsin(c*x)+3/
256*I*a*b*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d/c/(c^2*x^2-1)*x^2-1/1
92*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsin(c*x))*d/c^2/(c^2*x^2-1)*(-c^2*x^
2+1)^(1/2)*arcsin(c*x)^2*x+1/64*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x
))*d/c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)^2*x-3/256*b^2*(-d*(c^2*
x^2-1))^(1/2)*sin(3*arcsin(c*x))*d/c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsi
n(c*x)*x+7/2304*b^2*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))*d/c^2/(c^2*x^
2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x-1/32*I*a*b*(-d*(c^2*x^2-1))^(1/2)*cos
(3*arcsin(c*x))*d/c/(c^2*x^2-1)*arcsin(c*x)*x^2+1/256*I*a*b*(-d*(c^2*x^2-1)
)^(1/2)*cos(3*arcsin(c*x))*d/c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-11/2304*I
*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsin(c*x))*d/c^2/(c^2*x^2-1)*(-c^2*x^2+
1)^(1/2)*arcsin(c*x)*x-1/96*I*b^2*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))
*d/c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)^2*x+1/256*I*b^2*(-d*(c^2*
x^2-1))^(1/2)*cos(3*arcsin(c*x))*d/c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsi
n(c*x)*x-1/48*I*a*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))*d/c^2/(c^2*x^
2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x-1/6*a^2*x*(-c^2*d*x^2+d)^(5/2)/c^2/d+
```

1/16*a^2/c^2*d*x*(-c^2*d*x^2+d)^(1/2)+1/16*a^2/c^2*d^2/(c^2*d)^(1/2)*arctan
((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-1/432*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(
c^2*x^2-1)*x^3-1/12*b^2*(-d*(c^2*x^2-1))^(1/2)*d*c^4/(c^2*x^2-1)*arcsin(c*x
)^2*x^7+1/6*b^2*(-d*(c^2*x^2-1))^(1/2)*d*c^2/(c^2*x^2-1)*arcsin(c*x)^2*x^5+
31/27648*b^2*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))*d/c/(c^2*x^2-1)*x^2+
1/96*b^2*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))*d/c^3/(c^2*x^2-1)*arcsin
(c*x)^2-1/48*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/(c^2*x^2-1)*
arcsin(c*x)^3*d-1/256*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d/c^3/(
c^2*x^2-1)*arcsin(c*x)-3/1024*b^2*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))
*d/c/(c^2*x^2-1)*x^2+11/2304*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsin(c*x))*
d/c^3/(c^2*x^2-1)*arcsin(c*x)-1/144*b^2*(-d*(c^2*x^2-1))^(1/2)*d/c^3/(c^2*x
^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)-7/144*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(
c^2*x^2-1)*arcsin(c*x)*x^3+7/1728*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d/c^3/(c^2*x
^2-1)*(-c^2*x^2+1)^(1/2)+23/27648*I*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsin
(c*x))*d/c^3/(c^2*x^2-1)-5/1024*I*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c
*x))*d/c^3/(c^2*x^2-1)-1/144*a*b*(-d*(c^2*x^2-1))^(1/2)*d/c^3/(c^2*x^2-1)*(
-c^2*x^2+1)^(1/2)+11/2304*a*b*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsin(c*x))*d/c
^3/(c^2*x^2-1)-7/144*I*a*b*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)*x^3-1/6*a*b
(-d(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)*arcsin(c*x)*x^3-1/256*a*b*(-d*(c^2*x^
2-1))^(1/2)*cos(3*arcsin(c*x))*d/c^3/(c^2*x^2-1)-1/216*I*b^2*(-d*(c^2*x^2-1
))^(1/2)*d*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^6+1/18*I*b^2*(-d*(c^2*x^2-1
))^(1/2)*d*c^2/(c^2*x^2-1)*arcsin(c*x)*x^5+1/144*I*b^2*(-d*(c^2*x^2-1))^(1/
2)*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4-1/96*I*b^2*(-d*(c^2*x^2-1))^(1/2)
*d/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2-1/96*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d
/c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)^2-1/36*a*b*(-d*(c^2*x^2-1))
^(1/2)*d*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^6+1/24*a*b*(-d*(c^2*x^2-1))^(
1/2)*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4-3/256*I*b^2*(-d*(c^2*x^2-1))^(1
/2)*sin(3*arcsin(c*x))*d/c^3/(c^2*x^2-1)*arcsin(c*x)-1/36*I*b^2*(-d*(c^2*x^
2-1))^(1/2)*d*c^4/(c^2*x^2-1)*arcsin(c*x)*x^7-23/27648*I*b^2*(-d*(c^2*x^2-1
))^(1/2)*cos(5*arcsin(c*x))*d/c/(c^2*x^2-1)*x^2-1/192*I*b^2*(-d*(c^2*x^2-1)
)^(1/2)*cos(5*arcsin(c*x))*d/c^3/(c^2*x^2-1)*arcsin(c*x)^2+7/2304*I*b^2*(-d
*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))*d/c^3/(c^2*x^2-1)*arcsin(c*x)+5/1024
*I*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d/c/(c^2*x^2-1)*x^2+1/48*I
b^2(-d*(c^2*x^2-1))^(1/2)*d/c^2/(c^2*x^2-1)*arcsin(c*x)*x-1/16*a*b*(-d*(c
^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/(c^2*x^2-1)*arcsin(c*x)^2*d+7/2304*
I*a*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))*d/c^3/(c^2*x^2-1)-3/256*I*a
b(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d/c^3/(c^2*x^2-1)-1/36*b^2*(-d
*(c^2*x^2-1))^(1/2)*d*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^6+1/
24*b^2*(-d*(c^2*x^2-1))^(1/2)*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x
)*x^4-11/2304*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsin(c*x))*d/c/(c^2*x^2-1)
*arcsin(c*x)*x^2+1/256*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d/c/(c
^2*x^2-1)*arcsin(c*x)*x^2-5/1024*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*
x))*d/c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+23/27648*b^2*(-d*(c^2*x^2-1))^(1
/2)*cos(5*arcsin(c*x))*d/c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-1/96*b^2*(-d*
(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))*d/c/(c^2*x^2-1)*arcsin(c*x)^2*x^2+1/6
4*I*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d/c^3/(c^2*x^2-1)*arcsin(
c*x)^2-1/36*I*a*b*(-d*(c^2*x^2-1))^(1/2)*d*c^4/(c^2*x^2-1)*x^7+1/18*I*a*b*(
-d*(c^2*x^2-1))^(1/2)*d*c^2/(c^2*x^2-1)*x^5+1/48*I*a*b*(-d*(c^2*x^2-1))^(1/
2)*d/c^2/(c^2*x^2-1)*x-11/2304*a*b*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsin(c*x)
)*d/c/(c^2*x^2-1)*x^2+1/256*a*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d
/c/(c^2*x^2-1)*x^2+1/48*a*b*(-d*(c^2*x^2-1))^(1/2)*sin(5*arcsin(c*x))*d/c^3
/(c^2*x^2-1)*arcsin(c*x)-1/6*a*b*(-d*(c^2*x^2-1))^(1/2)*d*c^4/(c^2*x^2-1)*a
rcsin(c*x)*x^7+1/3*a*b*(-d*(c^2*x^2-1))^(1/2)*d*c^2/(c^2*x^2-1)*arcsin(c*x)
*x^5-1/96*a*b*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsin(c*x))*d/c^2/(c^2*x^2-1)*(
-c^2*x^2+1)^(1/2)*arcsin(c*x)*x+1/32*a*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsi
n(c*x))*d/c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x+1/6*I*a*b*(-d*(c
^2*x^2-1))^(1/2)*d*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^6-1/4*I
*a*b*(-d*(c^2*x^2-1))^(1/2)*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*
x^4+1/8*I*a*b*(-d*(c^2*x^2-1))^(1/2)*d/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arc

```
sin(c*x)*x^2+1/96*I*a*b*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsin(c*x))*d/c/(c^2*
x^2-1)*arcsin(c*x)*x^2-11/2304*I*a*b*(-d*(c^2*x^2-1))^(1/2)*cos(5*arcsin(c*
x))*d/c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{48}a^2\left(\frac{2\left(-c^2dx^2+d\right)^{\frac{3}{2}}x}{c^2}-\frac{8\left(-c^2dx^2+d\right)^{\frac{5}{2}}x}{c^2d}+\frac{3\sqrt{-c^2dx^2+d}\,dx}{c^2}+\frac{3d^{\frac{3}{2}}\arcsin(cx)}{c^3}\right)+\sqrt{d}\int-\left(\left(b^2c^2dx^4-b^2\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="maxima
")
```

```
[Out] 1/48*a^2*(2*(-c^2*d*x^2 + d)^(3/2)*x/c^2 - 8*(-c^2*d*x^2 + d)^(5/2)*x/(c^2*
d) + 3*sqrt(-c^2*d*x^2 + d)*d*x/c^2 + 3*d^(3/2)*arcsin(c*x)/c^3) + sqrt(d)*
integrate(-((b^2*c^2*d*x^4 - b^2*d*x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*
x + 1))^2 + 2*(a*b*c^2*d*x^4 - a*b*d*x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-
c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,(a+b\,\mathrm{asin}\,(c\,x))^2\,\left(d-c^2\,d\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int(x^2*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2\left(-d\,(cx-1)\,(cx+1)\right)^{\frac{3}{2}}\left(a+b\,\mathrm{asin}\,(cx)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(x**2*(-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))**2, x)
```

3.220 $\int x \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=279

$$\frac{2bdx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{5c\sqrt{1-c^2x^2}}-\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{5c^2d}-\frac{4bcdx^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{15\sqrt{1-c^2x^2}}+\frac{2bc^3 \cdots}{\cdots}$$

```
[Out] -1/5*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/c^2/d+16/75*b^2*d*(-c^2*d*x^2
+d)^(1/2)/c^2+8/225*b^2*d*(-c^2*x^2+1)*(-c^2*d*x^2+d)^(1/2)/c^2+2/125*b^2*d
*(-c^2*x^2+1)^2*(-c^2*d*x^2+d)^(1/2)/c^2+2/5*b*d*x*(a+b*arcsin(c*x))*(-c^2*
d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-4/15*b*c*d*x^3*(a+b*arcsin(c*x))*(-c^2*
d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+2/25*b*c^3*d*x^5*(a+b*arcsin(c*x))*(-c^2*
d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.23, antiderivative size = 279, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = {4677, 194, 4645, 12, 1247, 698}

$$\frac{2bc^3dx^5\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{25\sqrt{1-c^2x^2}}-\frac{4bcdx^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{15\sqrt{1-c^2x^2}}+\frac{2bdx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{5c\sqrt{1-c^2x^2}}- \cdots$$

Antiderivative was successfully verified.

```
[In] Int[x*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (16*b^2*d*Sqrt[d - c^2*d*x^2])/(75*c^2) + (8*b^2*d*(1 - c^2*x^2)*Sqrt[d - c
^2*d*x^2])/(225*c^2) + (2*b^2*d*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2])/(125*c
^2) + (2*b*d*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(5*c*Sqrt[1 - c^2*x
^2]) - (4*b*c*d*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(15*Sqrt[1 - c
^2*x^2]) + (2*b*c^3*d*x^5*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(25*Sqrt
[1 - c^2*x^2]) - ((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2)/(5*c^2*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 698

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 1247

```
Int[(x_)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(
p_.), x_Symbol] :> Dist[1/2, Subst[Int[(d + e*x)^q*(a + b*x + c*x^2)^p, x],
 x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x]
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int x\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx=-\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{5c^2d}+\frac{\left(2bd\sqrt{d-c^2dx^2}\right)\int\left(1-c^2x^2\right)}{5c\sqrt{1-c^2}}$$

$$=\frac{2bdx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{5c\sqrt{1-c^2x^2}}-\frac{4bcdx^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-}\right.}{15\sqrt{1-c^2x^2}}$$

$$=\frac{2bdx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{5c\sqrt{1-c^2x^2}}-\frac{4bcdx^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-}\right.}{15\sqrt{1-c^2x^2}}$$

$$=\frac{2bdx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{5c\sqrt{1-c^2x^2}}-\frac{4bcdx^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-}\right.}{15\sqrt{1-c^2x^2}}$$

$$=\frac{2bdx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{5c\sqrt{1-c^2x^2}}-\frac{4bcdx^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-}\right.}{15\sqrt{1-c^2x^2}}$$

$$=\frac{16b^2d\sqrt{d-c^2dx^2}}{75c^2}+\frac{8b^2d\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}{225c^2}+\frac{2b^2d\left(1-c^2x^2\right)}{125}$$

Mathematica [A] time = 0.20, size = 159, normalized size = 0.57

$$\frac{2bd\sqrt{d-c^2dx^2}\left(15acx\left(3c^4x^4-10c^2x^2+15\right)+b\sqrt{1-c^2x^2}\left(9c^4x^4-38c^2x^2+149\right)+15bcx\left(3c^4x^4-10c^2x^2+\right.\right.}{1125c^2\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -1/5*((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2)/(c^2*d) + (2*b*d*Sqrt[d
- c^2*d*x^2]*(15*a*c*x*(15 - 10*c^2*x^2 + 3*c^4*x^4) + b*Sqrt[1 - c^2*x^2]*
(149 - 38*c^2*x^2 + 9*c^4*x^4) + 15*b*c*x*(15 - 10*c^2*x^2 + 3*c^4*x^4)*Arc
Sin[c*x]))/(1125*c^2*Sqrt[1 - c^2*x^2])
```

fricas [A] time = 0.64, size = 295, normalized size = 1.06

$$-\frac{30\left(3\,abc^5dx^5-10\,abc^3dx^3+15\,abcdx+\left(3\,b^2c^5dx^5-10\,b^2c^3dx^3+15\,b^2cdx\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2+d}\,\sqrt{-c^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] -1/1125*(30*(3*a*b*c^5*d*x^5 - 10*a*b*c^3*d*x^3 + 15*a*b*c*d*x + (3*b^2*c^5
*d*x^5 - 10*b^2*c^3*d*x^3 + 15*b^2*c*d*x)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)
*sqrt(-c^2*x^2 + 1) + (9*(25*a^2 - 2*b^2)*c^6*d*x^6 - (675*a^2 - 94*b^2)*c^
4*d*x^4 + (675*a^2 - 374*b^2)*c^2*d*x^2 + 225*(b^2*c^6*d*x^6 - 3*b^2*c^4*d*
x^4 + 3*b^2*c^2*d*x^2 - b^2*d)*arcsin(c*x)^2 - (225*a^2 - 298*b^2)*d + 450*
(a*b*c^6*d*x^6 - 3*a*b*c^4*d*x^4 + 3*a*b*c^2*d*x^2 - a*b*d)*arcsin(c*x))*sq
rt(-c^2*d*x^2 + d))/(c^4*x^2 - c^2)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.39, size = 1151, normalized size = 4.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] -1/5*a^2/c^2/d*(-c^2*d*x^2+d)^(5/2)+b^2*(-1/4000*(-d*(c^2*x^2-1))^(1/2)*(16
*c^6*x^6-28*c^4*x^4-16*I*(-c^2*x^2+1)^(1/2)*x^5*c^5+13*c^2*x^2+20*I*(-c^2*x
^2+1)^(1/2)*x^3*c^3-5*I*(-c^2*x^2+1)^(1/2)*x*c-1)*(10*I*arcsin(c*x)+25*arcs
in(c*x)^2-2)*d/c^2/(c^2*x^2-1)+1/288*(-d*(c^2*x^2-1))^(1/2)*(4*c^4*x^4-5*c^
2*x^2-4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+3*I*(-c^2*x^2+1)^(1/2)*x*c+1)*(6*I*arc
sin(c*x)+9*arcsin(c*x)^2-2)*d/c^2/(c^2*x^2-1)-1/16*(-d*(c^2*x^2-1))^(1/2)*(
c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*(arcsin(c*x)^2-2+2*I*arcsin(c*x))*d/c^2
/(c^2*x^2-1)-1/16*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-
1)*(arcsin(c*x)^2-2-2*I*arcsin(c*x))*d/c^2/(c^2*x^2-1)+1/288*(-d*(c^2*x^2-1
))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x
*c-5*c^2*x^2+1)*(-6*I*arcsin(c*x)+9*arcsin(c*x)^2-2)*d/c^2/(c^2*x^2-1)-1/40
00*(-d*(c^2*x^2-1))^(1/2)*(16*I*(-c^2*x^2+1)^(1/2)*x^5*c^5+16*c^6*x^6-20*I*
(-c^2*x^2+1)^(1/2)*x^3*c^3-28*c^4*x^4+5*I*(-c^2*x^2+1)^(1/2)*x*c+13*c^2*x^2
-1)*(-10*I*arcsin(c*x)+25*arcsin(c*x)^2-2)*d/c^2/(c^2*x^2-1))+2*a*b*(-1/800
*(-d*(c^2*x^2-1))^(1/2)*(16*c^6*x^6-28*c^4*x^4-16*I*(-c^2*x^2+1)^(1/2)*x^5*
c^5+13*c^2*x^2+20*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-5*I*(-c^2*x^2+1)^(1/2)*x*c-1
)*(I+5*arcsin(c*x))*d/c^2/(c^2*x^2-1)-1/16*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-
I*(-c^2*x^2+1)^(1/2)*x*c-1)*(I+arcsin(c*x))*d/c^2/(c^2*x^2-1)-1/16*(-d*(c^2
*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(arcsin(c*x)-I)*d/c^2/(
c^2*x^2-1)+1/96*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^
4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*(-I+3*arcsin(c*x))*d/c^2/(c^2
*x^2-1)-1/1200*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*
(11*I+45*arcsin(c*x))*cos(4*arcsin(c*x))*d/c^2/(c^2*x^2-1)-1/600*(-d*(c^2*x
^2-1))^(1/2)*(I*c^2*x^2-c*x*(-c^2*x^2+1)^(1/2)-I)*(7*I+15*arcsin(c*x))*sin(
4*arcsin(c*x))*d/c^2/(c^2*x^2-1))
```

maxima [A] time = 0.94, size = 236, normalized size = 0.85

$$-\frac{\left(-c^2dx^2+d\right)^{\frac{5}{2}}b^2\arcsin\left(cx\right)^2}{5\,c^2d}+\frac{2}{1125}\,b^2\left(\frac{9\,\sqrt{-c^2x^2+1}\,c^2d^{\frac{5}{2}}x^4-38\,\sqrt{-c^2x^2+1}\,d^{\frac{5}{2}}x^2+\frac{149\,\sqrt{-c^2x^2+1}\,d^{\frac{5}{2}}}{c^2}}{d}+\frac{15\left(3\,c^4d\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] -1/5*(-c^2*d*x^2 + d)^(5/2)*b^2*arcsin(c*x)^2/(c^2*d) + 2/1125*b^2*((9*sqrt
(-c^2*x^2 + 1)*c^2*d^(5/2)*x^4 - 38*sqrt(-c^2*x^2 + 1)*d^(5/2)*x^2 + 149*sq
rt(-c^2*x^2 + 1)*d^(5/2)/c^2)/d + 15*(3*c^4*d^(5/2)*x^5 - 10*c^2*d^(5/2)*x^
3 + 15*d^(5/2)*x)*arcsin(c*x)/(c*d)) - 2/5*(-c^2*d*x^2 + d)^(5/2)*a*b*arcsi
n(c*x)/(c^2*d) - 1/5*(-c^2*d*x^2 + d)^(5/2)*a^2/(c^2*d) + 2/75*(3*c^4*d^(5/
2)*x^5 - 10*c^2*d^(5/2)*x^3 + 15*d^(5/2)*x)*a*b/(c*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x\,(a+b\,\mathrm{asin}\,(c\,x))^2\,\left(d-c^2\,d\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int(x*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x\,(-d\,(cx-1)\,(cx+1))^{\frac{3}{2}}\,(a+b\,\mathrm{asin}\,(cx))^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(x*(-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))**2, x)
```

3.221 $\int \left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=305

$$-\frac{5bcdx^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{8\sqrt{1-c^2x^2}}+\frac{1}{4}x\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2+\frac{3}{8}dx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2+$$

```
[Out] 1/4*x*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2-17/64*b^2*d*x*(-c^2*d*x^2+d)
^(1/2)+1/32*b^2*c^2*d*x^3*(-c^2*d*x^2+d)^(1/2)+3/8*d*x*(a+b*arcsin(c*x))^2*
(-c^2*d*x^2+d)^(1/2)+17/64*b^2*d*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x
^2+1)^(1/2)-5/8*b*c*d*x^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+
1)^(1/2)+1/8*b*c^3*d*x^4*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1
)^(1/2)+1/8*d*(a+b*arcsin(c*x))^3*(-c^2*d*x^2+d)^(1/2)/b/c/(-c^2*x^2+1)^(1/
2)
```

Rubi [A] time = 0.24, antiderivative size = 307, normalized size of antiderivative = 1.01, number of steps used = 10, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.308$, Rules used = {4649, 4647, 4641, 4627, 321, 216, 4677, 195}

$$\frac{d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{8bc\sqrt{1-c^2x^2}}+\frac{1}{4}x\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2+\frac{3}{8}dx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2+\frac{bd\left(1-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (-15*b^2*d*x*Sqrt[d - c^2*d*x^2])/64 - (b^2*d*x*(1 - c^2*x^2)*Sqrt[d - c^2*
d*x^2])/32 + (9*b^2*d*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(64*c*Sqrt[1 - c^2*x
^2]) - (3*b*c*d*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(8*Sqrt[1 - c^
2*x^2]) + (b*d*(1 - c^2*x^2)^(3/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))
/(8*c) + (3*d*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/8 + (x*(d - c^2*
d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/4 + (d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSi
n[c*x])^3)/(8*b*c*Sqrt[1 - c^2*x^2])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
```

```
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx = \frac{1}{4}x\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2+\frac{1}{4}(3d)\int\sqrt{d-c^2dx^2}\,\left(a+b\sin\right.$$

$$=\frac{bd\left(1-c^2x^2\right)^{3/2}\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)}{8c}+\frac{3}{8}dx\sqrt{d-c^2dx^2}\,\left(a+\right.$$

$$=-\frac{1}{32}b^2dx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}-\frac{3bcdx^2\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx\right.}{8\sqrt{1-c^2x^2}}$$

$$=-\frac{15}{64}b^2dx\sqrt{d-c^2dx^2}-\frac{1}{32}b^2dx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}-\frac{3bcdx^2\sqrt{d-}}{}$$

$$=-\frac{15}{64}b^2dx\sqrt{d-c^2dx^2}-\frac{1}{32}b^2dx\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}+\frac{9b^2d\sqrt{d-c}}{64c\sqrt{}}$$

Mathematica [A] time = 1.21, size = 329, normalized size = 1.08

$$d\sqrt{d-c^2dx^2}\left(160a^2cx\sqrt{1-c^2x^2}-64a^2c^3x^3\sqrt{1-c^2x^2}+64ab\cos\left(2\sin^{-1}(cx)\right)+4ab\cos\left(4\sin^{-1}(cx)\right)-32b^2\text{si}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (32*b^2*d*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^3 - 96*a^2*d^(3/2)*Sqrt[1 - c^2*x
^2]*ArcTan[(c*x*Sqrt[d - c^2*d*x^2])/(Sqrt[d]*(-1 + c^2*x^2))] + 8*b*d*Sqrt
[d - c^2*d*x^2]*ArcSin[c*x]^2*(12*a + 8*b*Sin[2*ArcSin[c*x]] + b*Sin[4*ArcS
in[c*x]]) + d*Sqrt[d - c^2*d*x^2]*(160*a^2*c*x*Sqrt[1 - c^2*x^2] - 64*a^2*c
^3*x^3*Sqrt[1 - c^2*x^2] + 64*a*b*Cos[2*ArcSin[c*x]] + 4*a*b*Cos[4*ArcSin[c
*x]] - 32*b^2*Sin[2*ArcSin[c*x]] - b^2*Sin[4*ArcSin[c*x]]) + 4*b*d*Sqrt[d -
 c^2*d*x^2]*ArcSin[c*x]*(16*b*Cos[2*ArcSin[c*x]] + b*Cos[4*ArcSin[c*x]] + 4
*a*(8*Sin[2*ArcSin[c*x]] + Sin[4*ArcSin[c*x]])))/(256*c*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(a^2c^2dx^2-a^2d+\left(b^2c^2dx^2-b^2d\right)\arcsin\left(cx\right)^2+2\left(abc^2dx^2-abd\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2+d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral(-(a^2*c^2*d*x^2 - a^2*d + (b^2*c^2*d*x^2 - b^2*d)*arcsin(c*x)^2 +
2*(a*b*c^2*d*x^2 - a*b*d)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.27, size = 2936, normalized size = 9.63

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 17/128*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d*c/(c^2*x^2-1)*arcsin
(c*x)*x^2-15/128*b^2*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d/(c^2*x^2-1
)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x+7/64*I*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(3*
arcsin(c*x))*d/c/(c^2*x^2-1)*arcsin(c*x)^2-15/128*I*b^2*(-d*(c^2*x^2-1))^(1
/2)*sin(3*arcsin(c*x))*d/c/(c^2*x^2-1)*arcsin(c*x)-33/512*I*b^2*(-d*(c^2*x^
2-1))^(1/2)*sin(3*arcsin(c*x))*d/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-5/32*I*b^
2*(-d*(c^2*x^2-1))^(1/2)*d*c^2/(c^2*x^2-1)*arcsin(c*x)*x^3-1/16*b^2*(-d*(c^
2*x^2-1))^(1/2)*d*c^3/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^4+5/16*b
^2*(-d*(c^2*x^2-1))^(1/2)*d*c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^
2-7/64*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2-
7/64*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d/c/(c^2*x^2-1)*arcsin(c*x)^2*(-c^2*x^2+1
)^(1/2)+31/512*I*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d*c/(c^2*x^2
```

```
-1)*x^2-1/16*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d*c^4/(c^2*x^2-1)*arcsin(c*x)*x^5
-1/64*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4
+9/64*b^2*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d*c/(c^2*x^2-1)*arcsin(
c*x)^2*x^2+7/64*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d/(c^2*x^2-1)
*arcsin(c*x)^2*(-c^2*x^2+1)^(1/2)*x+17/128*I*a*b*(-d*(c^2*x^2-1))^(1/2)*cos
(3*arcsin(c*x))*d/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-7/32*I*a*b*(-d*(c^2*x^2-
1))^(1/2)*d/c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+7/32*I*a*b*(-d*(c^
2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d/c/(c^2*x^2-1)*arcsin(c*x)+15/128*I*a*b
*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d*c/(c^2*x^2-1)*x^2-17/128*a*b*(
-d*(c^2*x^2-1))^(1/2)*d/c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)-17/128*a*b*(-d*(c^
2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d/c/(c^2*x^2-1)-5/8*a*b*(-d*(c^2*x^2-1))
^(1/2)*d/(c^2*x^2-1)*arcsin(c*x)*x+7/32*I*a*b*(-d*(c^2*x^2-1))^(1/2)*d/(c^2
*x^2-1)*x-17/128*b^2*(-d*(c^2*x^2-1))^(1/2)*d/c/(c^2*x^2-1)*arcsin(c*x)*(-c
^2*x^2+1)^(1/2)-17/128*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d/c/(c
^2*x^2-1)*arcsin(c*x)-1/8*b^2*(-d*(c^2*x^2-1))^(1/2)*d*c^4/(c^2*x^2-1)*arcs
in(c*x)^2*x^5+7/16*b^2*(-d*(c^2*x^2-1))^(1/2)*d*c^2/(c^2*x^2-1)*arcsin(c*x)
^2*x^3-1/8*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcs
in(c*x)^3*d-33/512*b^2*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d*c/(c^2*x
^2-1)*x^2-9/64*b^2*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d/c/(c^2*x^2-1
)*arcsin(c*x)^2-31/512*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d/(c^2
*x^2-1)*(-c^2*x^2+1)^(1/2)*x+31/512*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d/c/(c^2*x
^2-1)*(-c^2*x^2+1)^(1/2)-31/512*I*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c
*x))*d/c/(c^2*x^2-1)+7/32*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)*arcsin
(c*x)*x+33/512*b^2*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d/c/(c^2*x^2-1
)+1/64*b^2*(-d*(c^2*x^2-1))^(1/2)*d*c^4/(c^2*x^2-1)*x^5-19/128*b^2*(-d*(c^2
*x^2-1))^(1/2)*d*c^2/(c^2*x^2-1)*x^3-5/16*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(c^2
*x^2-1)*arcsin(c*x)^2*x-1/16*I*a*b*(-d*(c^2*x^2-1))^(1/2)*d*c^4/(c^2*x^2-1)
*x^5-5/32*I*a*b*(-d*(c^2*x^2-1))^(1/2)*d*c^2/(c^2*x^2-1)*x^3-9/32*a*b*(-d*(
c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d/c/(c^2*x^2-1)*arcsin(c*x)-3/8*a*b*(-
d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/(c^2*x^2-1)*arcsin(c*x)^2*d+3/8*a
^2*d*x*(-c^2*d*x^2+d)^(1/2)+3/8*a^2*d^2/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*
x/(-c^2*d*x^2+d)^(1/2))+7/32*a*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*
d/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x+1/8*I*b^2*(-d*(c^2*x^2-1))^(
1/2)*d*c/(c^2*x^2-1)*arcsin(c*x)^2*(-c^2*x^2+1)^(1/2)*x^2-7/64*I*b^2*(-d*(c
^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d*c/(c^2*x^2-1)*arcsin(c*x)^2*x^2+9/64*
I*b^2*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d/(c^2*x^2-1)*arcsin(c*x)^2
*(-c^2*x^2+1)^(1/2)*x+17/128*I*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x)
)*d/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x+15/128*I*b^2*(-d*(c^2*x^2-
1))^(1/2)*sin(3*arcsin(c*x))*d*c/(c^2*x^2-1)*arcsin(c*x)*x^2+1/8*I*b^2*(-d*
(c^2*x^2-1))^(1/2)*d*c^3/(c^2*x^2-1)*arcsin(c*x)^2*(-c^2*x^2+1)^(1/2)*x^4+9
/32*a*b*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d*c/(c^2*x^2-1)*arcsin(c*
x)*x^2+17/128*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)*x+1/4*I*a*b*(-d*(c^2
*x^2-1))^(1/2)*d*c^3/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^4+1/4*I*a
*b*(-d*(c^2*x^2-1))^(1/2)*d*c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^
2-7/32*I*a*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d*c/(c^2*x^2-1)*arcs
in(c*x)*x^2+9/32*I*a*b*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d/(c^2*x^2
-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x-15/128*a*b*(-d*(c^2*x^2-1))^(1/2)*sin(
3*arcsin(c*x))*d/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-1/16*a*b*(-d*(c^2*x^2-1))
^(1/2)*d*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4+5/16*a*b*(-d*(c^2*x^2-1))^(
1/2)*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2+17/128*a*b*(-d*(c^2*x^2-1))^(1/
2)*cos(3*arcsin(c*x))*d*c/(c^2*x^2-1)*x^2-15/128*I*a*b*(-d*(c^2*x^2-1))^(1/
2)*sin(3*arcsin(c*x))*d/c/(c^2*x^2-1)-1/4*a*b*(-d*(c^2*x^2-1))^(1/2)*d*c^4/
(c^2*x^2-1)*arcsin(c*x)*x^5+7/8*a*b*(-d*(c^2*x^2-1))^(1/2)*d*c^2/(c^2*x^2-1
)*arcsin(c*x)*x^3+1/4*x*(-c^2*d*x^2+d)^(3/2)*a^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{8}\left(2\left(-c^2dx^2+d\right)^{\frac{3}{2}}x+3\sqrt{-c^2dx^2+d}\,dx+\frac{3\,d^{\frac{3}{2}}\arcsin\left(cx\right)}{c}\right)a^2+\sqrt{d}\int-\left(\left(b^2c^2dx^2-b^2d\right)\arctan\left(cx,\sqrt{cx+1}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] 1/8*(2*(-c^2*d*x^2 + d)^(3/2)*x + 3*sqrt(-c^2*d*x^2 + d)*d*x + 3*d^(3/2)*ar
csin(c*x)/c)*a^2 + sqrt(d)*integrate(-((b^2*c^2*d*x^2 - b^2*d)*arctan2(c*x,
 sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c^2*d*x^2 - a*b*d)*arctan2(c*x, s
qrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a + b\,\mathrm{asin}\,(c\,x))^2\,\left(d - c^2\,d\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (-d\,(cx - 1)\,(cx + 1))^{\frac{3}{2}}\,(a + b\,\mathrm{asin}\,(cx))^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))**2, x)
```

3.222 $\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{x}\,dx$

Optimal. Leaf size=545

$$\frac{2ibd\sqrt{d-c^2dx^2}\,\text{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}-\frac{2ibd\sqrt{d-c^2dx^2}\,\text{Li}_2\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}-\frac{2abcdx\sqrt{}}{\sqrt{1-}}$$

```
[Out] 1/3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2-22/9*b^2*d*(-c^2*d*x^2+d)^(1/2
)-2/27*b^2*d*(-c^2*x^2+1)*(-c^2*d*x^2+d)^(1/2)+d*(a+b*arcsin(c*x))^2*(-c^2*
d*x^2+d)^(1/2)-2*a*b*c*d*x*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-2*b^2*c*
d*x*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-2/3*b*c*d*x*(a+b*ar
csin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+2/9*b*c^3*d*x^3*(a+b*arc
sin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-2*d*(a+b*arcsin(c*x))^2*a
rctanh(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+2*
I*b*d*(a+b*arcsin(c*x))*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)
^(1/2)/(-c^2*x^2+1)^(1/2)-2*I*b*d*(a+b*arcsin(c*x))*polylog(2,I*c*x+(-c^2*x
^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-2*b^2*d*polylog(3,-I*c
*x-(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+2*b^2*d*poly
log(3,I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.60, antiderivative size = 545, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 12, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.414, Rules used = {4699, 4697, 4709, 4183, 2531, 2282, 6589, 4619, 261, 4645, 444, 43}

$$\frac{2ibd\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}-\frac{2ibd\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}\right.}{\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/x,x]
```

```
[Out] (-22*b^2*d*Sqrt[d - c^2*d*x^2])/9 - (2*a*b*c*d*x*Sqrt[d - c^2*d*x^2])/Sqrt[
1 - c^2*x^2] - (2*b^2*d*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/27 - (2*b^2*c*d*
x*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/Sqrt[1 - c^2*x^2] - (2*b*c*d*x*Sqrt[d -
c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*Sqrt[1 - c^2*x^2]) + (2*b*c^3*d*x^3*Sqrt
[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(9*Sqrt[1 - c^2*x^2]) + d*Sqrt[d - c^2
*d*x^2]*(a + b*ArcSin[c*x])^2 + ((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^
2)/3 - (2*d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2*ArcTanh[E^(I*ArcSin[c
*x])])/Sqrt[1 - c^2*x^2] + ((2*I)*b*d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x
])*PolyLog[2, -E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] - ((2*I)*b*d*Sqrt[d -
c^2*d*x^2]*(a + b*ArcSin[c*x])*PolyLog[2, E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*
x^2] - (2*b^2*d*Sqrt[d - c^2*d*x^2]*PolyLog[3, -E^(I*ArcSin[c*x])])/Sqrt[1
- c^2*x^2] + (2*b^2*d*Sqrt[d - c^2*d*x^2]*PolyLog[3, E^(I*ArcSin[c*x])])/Sq
rt[1 - c^2*x^2]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 444

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
```

```
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{x}\,dx = \frac{1}{3}\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2 + d\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx\right.}{x}$$

$$= -\frac{2bcdx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3\sqrt{1-c^2x^2}} + \frac{2bc^3dx^3\sqrt{d-c^2dx^2}\left(a+b\,\mathrm{si}\right.}{9\sqrt{1-c^2x^2}}$$

$$= -\frac{2abcdx\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} - \frac{2bcdx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3\sqrt{1-c^2x^2}} + \frac{2bc^3dx}{}$$

$$= -\frac{2abcdx\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} - \frac{2b^2cdx\sqrt{d-c^2dx^2}\,\sin^{-1}(cx)}{\sqrt{1-c^2x^2}} - \frac{2bcdx\sqrt{d-c^2}}{3}$$

$$= -\frac{22}{9}b^2d\sqrt{d-c^2dx^2} - \frac{2abcdx\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} - \frac{2}{27}b^2d\left(1-c^2x^2\right)\sqrt{d-c}$$

$$= -\frac{22}{9}b^2d\sqrt{d-c^2dx^2} - \frac{2abcdx\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} - \frac{2}{27}b^2d\left(1-c^2x^2\right)\sqrt{d-c}$$

$$= -\frac{22}{9}b^2d\sqrt{d-c^2dx^2} - \frac{2abcdx\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} - \frac{2}{27}b^2d\left(1-c^2x^2\right)\sqrt{d-c}$$

Mathematica [A] time = 2.65, size = 576, normalized size = 1.06

$$-a^2d^{3/2}\log\left(\sqrt{d}\sqrt{d-c^2dx^2}+d\right)-\frac{1}{3}a^2d\left(c^2x^2-4\right)\sqrt{d-c^2dx^2}+a^2d^{3/2}\log(cx)+\frac{2abd\sqrt{d-c^2dx^2}\left(\sqrt{1-c^2x^2}\,\mathrm{s}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/x,x]
```

```
[Out] -1/3*(a^2*d*(-4 + c^2*x^2)*Sqrt[d - c^2*d*x^2]) + a^2*d^(3/2)*Log[c*x] - a^
2*d^(3/2)*Log[d + Sqrt[d]*Sqrt[d - c^2*d*x^2]] + (2*a*b*d*Sqrt[d - c^2*d*x^
2]*(-(c*x) + Sqrt[1 - c^2*x^2]*ArcSin[c*x] + ArcSin[c*x]*Log[1 - E^(I*ArcSi
```

```
n[c*x])] - ArcSin[c*x]*Log[1 + E^(I*ArcSin[c*x])] + I*PolyLog[2, -E^(I*ArcS
in[c*x])] - I*PolyLog[2, E^(I*ArcSin[c*x])]))/Sqrt[1 - c^2*x^2] - (b^2*d*Sq
rt[d - c^2*d*x^2]*(2*Sqrt[1 - c^2*x^2] + 2*c*x*ArcSin[c*x] - Sqrt[1 - c^2*x
^2]*ArcSin[c*x]^2 - ArcSin[c*x]^2*(Log[1 - E^(I*ArcSin[c*x])] - Log[1 + E^(
I*ArcSin[c*x])]) - (2*I)*ArcSin[c*x]*(PolyLog[2, -E^(I*ArcSin[c*x])] - Poly
Log[2, E^(I*ArcSin[c*x])]) + 2*(PolyLog[3, -E^(I*ArcSin[c*x])] - PolyLog[3,
 E^(I*ArcSin[c*x])])))/Sqrt[1 - c^2*x^2] - (a*b*d*Sqrt[d - c^2*d*x^2]*(9*c*
x - 3*ArcSin[c*x]*(3*Sqrt[1 - c^2*x^2] + Cos[3*ArcSin[c*x]]) + Sin[3*ArcSin
[c*x]]))/(18*Sqrt[1 - c^2*x^2]) + (b^2*d*Sqrt[d - c^2*d*x^2]*(27*Sqrt[1 - c
^2*x^2]*(-2 + ArcSin[c*x]^2) + (-2 + 9*ArcSin[c*x]^2)*Cos[3*ArcSin[c*x]] -
6*ArcSin[c*x]*(9*c*x + Sin[3*ArcSin[c*x]])))/(108*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(-\frac{\left(a^2c^2dx^2 - a^2d + \left(b^2c^2dx^2 - b^2d\right)\arcsin\left(cx\right)^2 + 2\left(abc^2dx^2 - abd\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2 + d}}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/x,x, algorithm="fricas")
```

```
[Out] integral(-(a^2*c^2*d*x^2 - a^2*d + (b^2*c^2*d*x^2 - b^2*d)*arcsin(c*x)^2 +
2*(a*b*c^2*d*x^2 - a*b*d)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/x, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/x,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [B] time = 0.45, size = 1276, normalized size = 2.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/x,x)
```

```
[Out] -2/9*a*b*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^3*c^3+8/
3*a*b*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x*c+2*I*a*b*(
-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)*polylog(2,I*c*x+(-c^
2*x^2+1)^(1/2))-2*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^
2-1)*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))+2*I*b^2*(-d*(c^2*x^2-1))^(1/2)*(-
c^2*x^2+1)^(1/2)*d/(c^2*x^2-1)*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))*arcsin(c
*x)-2*I*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d/(c^2*x^2-1)*polylog
(2,-I*c*x-(-c^2*x^2+1)^(1/2))*arcsin(c*x)+8/3*b^2*(-d*(c^2*x^2-1))^(1/2)*d/
(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x*c-2/9*b^2*(-d*(c^2*x^2-1))^(1/
2)*d/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^3*c^3-2*a*b*(-c^2*x^2+1)^
(1/2)*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))*a
rcsin(c*x)+2*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)*ln
(1+I*c*x+(-c^2*x^2+1)^(1/2))*arcsin(c*x)-2/3*a*b*(-d*(c^2*x^2-1))^(1/2)*d/(
c^2*x^2-1)*arcsin(c*x)*x^4*c^4+10/3*a*b*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1
)*arcsin(c*x)*x^2*c^2+b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d/(c^2*
x^2-1)*arcsin(c*x)^2*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-1/3*b^2*(-d*(c^2*x^2-1)
)^(1/2)*d/(c^2*x^2-1)*arcsin(c*x)^2*x^4*c^4+5/3*b^2*(-d*(c^2*x^2-1))^(1/2)*
```

```
d/(c^2*x^2-1)*arcsin(c*x)^2*x^2*c^2-b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)
^(1/2)*d/(c^2*x^2-1)*arcsin(c*x)^2*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))+1/3*(-c^2
*d*x^2+d)^(3/2)*a^2+68/27*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)-a^2*d^(3
/2)*ln((2*d+2*d^(1/2)*(-c^2*d*x^2+d)^(1/2))/x)+a^2*(-c^2*d*x^2+d)^(1/2)*d+2
/27*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)*c^4*x^4-70/27*b^2*(-d*(c^2*x^2
-1))^(1/2)*d/(c^2*x^2-1)*c^2*x^2-2*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^
(1/2)*d/(c^2*x^2-1)*polylog(3,I*c*x+(-c^2*x^2+1)^(1/2))+2*b^2*(-d*(c^2*x^2-
1))^(1/2)*(-c^2*x^2+1)^(1/2)*d/(c^2*x^2-1)*polylog(3,-I*c*x-(-c^2*x^2+1)^(1
/2))-8/3*a*b*(-d*(c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)*arcsin(c*x)-4/3*b^2*(-d*(
c^2*x^2-1))^(1/2)*d/(c^2*x^2-1)*arcsin(c*x)^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{3}\left(3\,d^{\frac{3}{2}}\log\left(\frac{2\,\sqrt{-c^2dx^2+d}\,\sqrt{d}}{|x|}+\frac{2\,d}{|x|}\right)-\left(-c^2dx^2+d\right)^{\frac{3}{2}}-3\,\sqrt{-c^2dx^2+d}\,d\right)a^2-\sqrt{d}\int\frac{\left(\left(b^2c^2dx^2-b^2d\right)\mathrm{arct}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/x,x, algorithm="maxima")
```

```
[Out] -1/3*(3*d^(3/2)*log(2*sqrt(-c^2*d*x^2 + d)*sqrt(d)/abs(x) + 2*d/abs(x)) - (
-c^2*d*x^2 + d)^(3/2) - 3*sqrt(-c^2*d*x^2 + d)*d)*a^2 - sqrt(d)*integrate((
(b^2*c^2*d*x^2 - b^2*d)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a
*b*c^2*d*x^2 - a*b*d)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x
+ 1)*sqrt(-c*x + 1)/x, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(d-c^2\,d\,x^2\right)}^{3/2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2))/x,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2))/x, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(-d\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}\left(a+b\,\mathrm{asin}\left(cx\right)\right)^2}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))**2/x,x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))**2/x, x)
```

3.223 $\int \frac{(d-c^2dx^2)^{3/2}(a+b\sin^{-1}(cx))^2}{x^2}\,dx$

Optimal. Leaf size=424

$$-\frac{3}{2}c^2dx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2-\frac{cd\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{2b\sqrt{1-c^2x^2}}-\frac{icd\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}+bcd$$

```
[Out] -(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/x+1/4*b^2*c^2*d*x*(-c^2*d*x^2+d)^
(1/2)-3/2*c^2*d*x*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)-5/4*b^2*c*d*arcs
in(c*x)*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+3/2*b*c^3*d*x^2*(a+b*arcsin
(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-I*c*d*(a+b*arcsin(c*x))^2*(-
c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-1/2*c*d*(a+b*arcsin(c*x))^3*(-c^2*d*x
^2+d)^(1/2)/b/(-c^2*x^2+1)^(1/2)+2*b*c*d*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^
2*x^2+1)^(1/2))^2)*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-I*b^2*c*d*polylo
g(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+b
*c*d*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)*(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.40, antiderivative size = 424, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 13, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.448, Rules used = {4695, 4647, 4641, 4627, 321, 216, 4683, 4625, 3717, 2190, 2279, 2391, 195}

$$-\frac{ib^2cd\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)}{\sqrt{1-c^2x^2}}+\frac{3bc^3dx^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{1-c^2x^2}}-\frac{3}{2}c^2dx\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}\right.$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/x^2,x]
```

```
[Out] (b^2*c^2*d*x*Sqrt[d - c^2*d*x^2])/4 - (5*b^2*c*d*Sqrt[d - c^2*d*x^2]*ArcSin
[c*x])/(4*Sqrt[1 - c^2*x^2]) + (3*b*c^3*d*x^2*Sqrt[d - c^2*d*x^2]*(a + b*Ar
cSin[c*x]))/(2*Sqrt[1 - c^2*x^2]) + b*c*d*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*
x^2]*(a + b*ArcSin[c*x]) - (3*c^2*d*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x
])^2)/2 - (I*c*d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/Sqrt[1 - c^2*x^
2] - ((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/x - (c*d*Sqrt[d - c^2*d*
x^2]*(a + b*ArcSin[c*x])^3)/(2*b*Sqrt[1 - c^2*x^2]) + (2*b*c*d*Sqrt[d - c^2
*d*x^2]*(a + b*ArcSin[c*x])*Log[1 - E^((2*I)*ArcSin[c*x])])/Sqrt[1 - c^2*x^
2] - (I*b^2*c*d*Sqrt[d - c^2*d*x^2]*PolyLog[2, E^((2*I)*ArcSin[c*x])])/Sqrt
[1 - c^2*x^2]
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
```

```
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4683

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.))/(x_),
x_Symbol] :> Simp[((d + e*x^2)^p*(a + b*ArcSin[c*x]))/(2*p), x] + (Dist[d,
Int[((d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x]))/x, x], x] - Dist[(b*c*d^p)/(2
*p), Int[(1 - c^2*x^2)^(p - 1/2), x], x]) /; FreeQ[{a, b, c, d, e}, x] && E
qQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4695

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m +
2)*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPar
t[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f
*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /;
 FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0
] && LtQ[m, -1]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{x^2}\,dx = -\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{x} - \left(3c^2d\right)\int \sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(\right.$$

$$= bcd\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right) - \frac{3}{2}c^2dx\sqrt{d-c^2dx^2}\,\left(a+b\,\mathrm{s}\right.$$

$$= -\frac{1}{2}b^2c^2dx\sqrt{d-c^2dx^2} + \frac{3bc^3dx^2\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{1-c^2x^2}} + bcd\sqrt{1}$$

$$= \frac{1}{4}b^2c^2dx\sqrt{d-c^2dx^2} - \frac{b^2cd\sqrt{d-c^2dx^2}\,\sin^{-1}(cx)}{2\sqrt{1-c^2x^2}} + \frac{3bc^3dx^2\sqrt{d-c^2dx^2}}{2\sqrt{1-}}$$

$$= \frac{1}{4}b^2c^2dx\sqrt{d-c^2dx^2} - \frac{5b^2cd\sqrt{d-c^2dx^2}\,\sin^{-1}(cx)}{4\sqrt{1-c^2x^2}} + \frac{3bc^3dx^2\sqrt{d-c^2dx}}{2\sqrt{1-}}$$

$$= \frac{1}{4}b^2c^2dx\sqrt{d-c^2dx^2} - \frac{5b^2cd\sqrt{d-c^2dx^2}\,\sin^{-1}(cx)}{4\sqrt{1-c^2x^2}} + \frac{3bc^3dx^2\sqrt{d-c^2dx}}{2\sqrt{1-}}$$

$$= \frac{1}{4}b^2c^2dx\sqrt{d-c^2dx^2} - \frac{5b^2cd\sqrt{d-c^2dx^2}\,\sin^{-1}(cx)}{4\sqrt{1-c^2x^2}} + \frac{3bc^3dx^2\sqrt{d-c^2dx}}{2\sqrt{1-}}$$

Mathematica [A] time = 2.67, size = 396, normalized size = 0.93

$$36a^2cd^{3/2}x\sqrt{1-c^2x^2}\,\tan^{-1}\left(\frac{cx\sqrt{d-c^2dx^2}}{\sqrt{d}\left(c^2x^2-1\right)}\right) - 12a^2d\sqrt{1-c^2x^2}\,\left(c^2x^2+2\right)\sqrt{d-c^2dx^2} - 24abd\sqrt{d-c^2dx^2}\,\left(2\sqrt{1-c^2}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/x^2,x]
```

```
[Out] (-12*a^2*d*Sqrt[1 - c^2*x^2]*(2 + c^2*x^2)*Sqrt[d - c^2*d*x^2] + 36*a^2*c*d
^(3/2)*x*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d - c^2*d*x^2])/(Sqrt[d]*(-1 +
c^2*x^2))] - 24*a*b*d*Sqrt[d - c^2*d*x^2]*(2*Sqrt[1 - c^2*x^2]*ArcSin[c*x]
+ c*x*ArcSin[c*x]^2 - 2*c*x*Log[c*x]) - 8*b^2*d*Sqrt[d - c^2*d*x^2]*(ArcSin
```

```
[c*x]*(3*Sqrt[1 - c^2*x^2]*ArcSin[c*x] + c*x*ArcSin[c*x]*(3*I + ArcSin[c*x]
) - 6*c*x*Log[1 - E^((2*I)*ArcSin[c*x])]) + (3*I)*c*x*PolyLog[2, E^((2*I)*A
rcSin[c*x])]) - b^2*c*d*x*Sqrt[d - c^2*d*x^2]*(4*ArcSin[c*x]^3 + 6*ArcSin[c
*x]*Cos[2*ArcSin[c*x]] + (-3 + 6*ArcSin[c*x]^2)*Sin[2*ArcSin[c*x]]) - 6*a*b
*c*d*x*Sqrt[d - c^2*d*x^2]*(Cos[2*ArcSin[c*x]] + 2*ArcSin[c*x]*(ArcSin[c*x]
 + Sin[2*ArcSin[c*x]])))/(24*x*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(a^2c^2dx^2 - a^2d + \left(b^2c^2dx^2 - b^2d\right)\arcsin\left(cx\right)^2 + 2\left(abc^2dx^2 - abd\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2 + d}}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/x^2,x, algorithm="fricas
")
```

```
[Out] integral(-(a^2*c^2*d*x^2 - a^2*d + (b^2*c^2*d*x^2 - b^2*d)*arcsin(c*x)^2 +
2*(a*b*c^2*d*x^2 - a*b*d)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/x^2, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/x^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [B] time = 0.47, size = 1148, normalized size = 2.71

$$\frac{2ab\sqrt{-d\left(c^2x^2-1\right)}\ \arcsin\left(cx\right)d}{\left(c^2x^2-1\right)x}-\frac{b^2\sqrt{-d\left(c^2x^2-1\right)}\ d\,c^4\arcsin\left(cx\right)^2x^3}{2\left(c^2x^2-1\right)}-a^2c^2x\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}-\frac{a^2\left(-c^2d\,x^2+\right.}{dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/x^2,x)
```

```
[Out] 1/4*a*b*(-d*(c^2*x^2-1))^(1/2)*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)+2*a*b*(-d
*(c^2*x^2-1))^(1/2)*arcsin(c*x)*d/(c^2*x^2-1)/x+1/2*b^2*(-d*(c^2*x^2-1))^(1
/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*arcsin(c*x)^3*d*c+1/4*b^2*(-d*(c^2*x^2-1
))^(1/2)*d*c/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)-1/2*b^2*(-d*(c^2*x^
2-1))^(1/2)*d*c^4/(c^2*x^2-1)*arcsin(c*x)^2*x^3-a^2*c^2*x*(-c^2*d*x^2+d)^(3
/2)-a^2/d/x*(-c^2*d*x^2+d)^(5/2)+2*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1)
)^(1/2)/(c^2*x^2-1)*arcsin(c*x)*d*c-3/2*a^2*c^2*d*x*(-c^2*d*x^2+d)^(1/2)-3/
2*a^2*c^2*d^2/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-1/
2*b^2*(-d*(c^2*x^2-1))^(1/2)*d*c^2/(c^2*x^2-1)*arcsin(c*x)^2*x+1/4*b^2*(-d*
(c^2*x^2-1))^(1/2)*d*c^4/(c^2*x^2-1)*x^3-1/4*b^2*(-d*(c^2*x^2-1))^(1/2)*d*c
^2/(c^2*x^2-1)*x+b^2*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)^2*d/(c^2*x^2-1)/x-1
/2*b^2*(-d*(c^2*x^2-1))^(1/2)*d*c^3/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1
/2)*x^2+2*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*p
olylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))+2*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d*c/(c^2
*x^2-1)*(-c^2*x^2+1)^(1/2)*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))-2*a*b*(-d*(c
^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*ln((I*c*x+(-c^2*x^2+1)^(1/2
))^2-1)*d*c+3/2*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*a
rcsin(c*x)^2*d*c-2*b^2*(-d*(c^2*x^2-1))^(1/2)*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^
(1/2)*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-2*b^2*(-d*(c^2*x^2-1))^(1/
```

```
2)*d*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(
1/2))+I*b^2*(-d*(c^2*x^2-1))^(1/2)*d*c/(c^2*x^2-1)*arcsin(c*x)^2*(-c^2*x^2+
1)^(1/2)-1/2*a*b*(-d*(c^2*x^2-1))^(1/2)*d*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2
)*x^2-a*b*(-d*(c^2*x^2-1))^(1/2)*d*c^4/(c^2*x^2-1)*arcsin(c*x)*x^3-a*b*(-d*
(c^2*x^2-1))^(1/2)*d*c^2/(c^2*x^2-1)*arcsin(c*x)*x
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\left(3\sqrt{-c^2dx^2+d}\,c^2dx+3\,cd^{\frac{3}{2}}\arcsin(cx)+\frac{2\left(-c^2dx^2+d\right)^{\frac{3}{2}}}{x}\right)a^2-\sqrt{d}\int\frac{\left(\left(b^2c^2dx^2-b^2d\right)\arctan\left(cx,\sqrt{cx+1}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/x^2,x, algorithm="maxima
")
```

```
[Out] -1/2*(3*sqrt(-c^2*d*x^2 + d)*c^2*d*x + 3*c*d^(3/2)*arcsin(c*x) + 2*(-c^2*d*
x^2 + d)^(3/2)/x)*a^2 - sqrt(d)*integrate(((b^2*c^2*d*x^2 - b^2*d)*arctan2(
c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c^2*d*x^2 - a*b*d)*arctan2(c*
x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/x^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^2\,\left(d-c^2\,d\,x^2\right)^{3/2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2))/x^2,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2))/x^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(-d\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}\left(a+b\,\mathrm{asin}\left(cx\right)\right)^2}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))**2/x**2,x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))**2/x**2, x)
```

3.224 $\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{x^3}\,dx$

Optimal. Leaf size=590

$$-\frac{3ibc^2d\sqrt{d-c^2dx^2}\,\mathrm{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}+\frac{3ibc^2d\sqrt{d-c^2dx^2}\,\mathrm{Li}_2\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}-\frac{3}{2}c$$

```
[Out] -1/2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/x^2+2*b^2*c^2*d*(-c^2*d*x^2+d
)^(1/2)-3/2*c^2*d*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)+3*a*b*c^3*d*x*(-
c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+3*b^2*c^3*d*x*arcsin(c*x)*(-c^2*d*x^2
+d)^(1/2)/(-c^2*x^2+1)^(1/2)-b*c*d*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/x
/(-c^2*x^2+1)^(1/2)-b*c^3*d*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*
x^2+1)^(1/2)+3*c^2*d*(a+b*arcsin(c*x))^2*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))*
(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-b^2*c^2*d*arctanh((-c^2*x^2+1)^(1/2
))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-3*I*b*c^2*d*(a+b*arcsin(c*x))*po
lylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+
3*I*b*c^2*d*(a+b*arcsin(c*x))*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*d*x
^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+3*b^2*c^2*d*polylog(3,-I*c*x-(-c^2*x^2+1)^(1
/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-3*b^2*c^2*d*polylog(3,I*c*x+(-
c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.61, antiderivative size = 590, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 15, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.517, Rules used = {4695, 4697, 4709, 4183, 2531, 2282, 6589, 4619, 261, 14, 4687, 446, 80, 63, 208}

$$-\frac{3ibc^2d\sqrt{d-c^2dx^2}\,\mathrm{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}+\frac{3ibc^2d\sqrt{d-c^2dx^2}\,\mathrm{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)\left(a+b\right.}{\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/x^3,x]
```

```
[Out] 2*b^2*c^2*d*Sqrt[d - c^2*d*x^2] + (3*a*b*c^3*d*x*Sqrt[d - c^2*d*x^2])/Sqrt[
1 - c^2*x^2] + (3*b^2*c^3*d*x*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/Sqrt[1 - c^2
*x^2] - (b*c*d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(x*Sqrt[1 - c^2*x^2
]) - (b*c^3*d*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/Sqrt[1 - c^2*x^2]
- (3*c^2*d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/2 - ((d - c^2*d*x^2)^
(3/2)*(a + b*ArcSin[c*x])^2)/(2*x^2) + (3*c^2*d*Sqrt[d - c^2*d*x^2]*(a + b*
ArcSin[c*x])^2*ArcTanh[E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] - (b^2*c^2*d*S
qrt[d - c^2*d*x^2]*ArcTanh[Sqrt[1 - c^2*x^2]])/Sqrt[1 - c^2*x^2] - ((3*I)*b
*c^2*d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])*PolyLog[2, -E^(I*ArcSin[c*x]
)])/Sqrt[1 - c^2*x^2] + ((3*I)*b*c^2*d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*
x])*PolyLog[2, E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] + (3*b^2*c^2*d*Sqrt[d
- c^2*d*x^2]*PolyLog[3, -E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] - (3*b^2*c^2
*d*Sqrt[d - c^2*d*x^2]*PolyLog[3, E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
```

```
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 446

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p
*(c + d*x)^q, x], x, x^n], x] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[
b*c - a*d, 0] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rule 4695

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m +
2)*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPar
t[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f
*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /;
 FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0
] && LtQ[m, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{x^3}\,dx = -\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{2x^2} - \frac{1}{2}\left(3c^2d\right)\int \frac{\sqrt{d-c^2dx^2}\,\left(a+b\sin\right.}{x}$$

$$= -\frac{bcd\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)}{x\sqrt{1-c^2x^2}} - \frac{bc^3dx\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}$$

$$= \frac{3abc^3dx\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} - \frac{bcd\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)}{x\sqrt{1-c^2x^2}} - \frac{bc^3dx\sqrt{d-c}}{}$$

$$= -b^2c^2d\sqrt{d-c^2dx^2} + \frac{3abc^3dx\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} + \frac{3b^2c^3dx\sqrt{d-c^2dx^2}\,\sin^{-1}(}{\sqrt{1-c^2x^2}}$$

$$= 2b^2c^2d\sqrt{d-c^2dx^2} + \frac{3abc^3dx\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} + \frac{3b^2c^3dx\sqrt{d-c^2dx^2}\,\sin^{-1}(}{\sqrt{1-c^2x^2}}$$

$$= 2b^2c^2d\sqrt{d-c^2dx^2} + \frac{3abc^3dx\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} + \frac{3b^2c^3dx\sqrt{d-c^2dx^2}\,\sin^{-1}(}{\sqrt{1-c^2x^2}}$$

$$= 2b^2c^2d\sqrt{d-c^2dx^2} + \frac{3abc^3dx\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} + \frac{3b^2c^3dx\sqrt{d-c^2dx^2}\,\sin^{-1}(}{\sqrt{1-c^2x^2}}$$

Mathematica [A] time = 7.19, size = 854, normalized size = 1.45

$$-\frac{3}{2}a^2d^{3/2}\log(x)c^2+\frac{3}{2}a^2d^{3/2}\log\left(d+\sqrt{-d\left(c^2x^2-1\right)}\sqrt{d}\right)c^2-2abd\sqrt{d\left(1-c^2x^2\right)}\left(-\frac{cx}{\sqrt{1-c^2x^2}}+\sin^{-1}(cx)+\frac{\sin}{}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/x^3,x]
```

```
[Out] (-(a^2*c^2*d) - (a^2*d)/(2*x^2))*Sqrt[-(d*(-1 + c^2*x^2))] - (3*a^2*c^2*d^(
3/2)*Log[x])/2 + (3*a^2*c^2*d^(3/2)*Log[d + Sqrt[d]*Sqrt[-(d*(-1 + c^2*x^2)
)]])/2 - 2*a*b*c^2*d*Sqrt[d*(1 - c^2*x^2)]*(-((c*x)/Sqrt[1 - c^2*x^2]) + Ar
cSin[c*x] + (ArcSin[c*x]*(Log[1 - E^(I*ArcSin[c*x])] - Log[1 + E^(I*ArcSin[
c*x])]))/Sqrt[1 - c^2*x^2] + (I*(PolyLog[2, -E^(I*ArcSin[c*x])] - PolyLog[2
, E^(I*ArcSin[c*x])]))/Sqrt[1 - c^2*x^2]) - b^2*c^2*d*Sqrt[d*(1 - c^2*x^2)]
*(-2 - (2*c*x*ArcSin[c*x])/Sqrt[1 - c^2*x^2] + ArcSin[c*x]^2 + (ArcSin[c*x]
^2*(Log[1 - E^(I*ArcSin[c*x])] - Log[1 + E^(I*ArcSin[c*x])]))/Sqrt[1 - c^2*
x^2] + ((2*I)*ArcSin[c*x]*(PolyLog[2, -E^(I*ArcSin[c*x])] - PolyLog[2, E^(I
*ArcSin[c*x])]))/Sqrt[1 - c^2*x^2] + (2*(-PolyLog[3, -E^(I*ArcSin[c*x])] +
PolyLog[3, E^(I*ArcSin[c*x])]))/Sqrt[1 - c^2*x^2]) + (a*b*c^2*d^2*Sqrt[1 -
c^2*x^2]*(-2*Cot[ArcSin[c*x]/2] - ArcSin[c*x]*Csc[ArcSin[c*x]/2]^2 - 4*ArcS
in[c*x]*Log[1 - E^(I*ArcSin[c*x])] + 4*ArcSin[c*x]*Log[1 + E^(I*ArcSin[c*x]
)] - (4*I)*PolyLog[2, -E^(I*ArcSin[c*x])] + (4*I)*PolyLog[2, E^(I*ArcSin[c*
x])] + ArcSin[c*x]*Sec[ArcSin[c*x]/2]^2 - 2*Tan[ArcSin[c*x]/2]))/(4*Sqrt[d*
(1 - c^2*x^2)]) + (b^2*c^2*d^2*Sqrt[1 - c^2*x^2]*(-4*ArcSin[c*x]*Cot[ArcSin
[c*x]/2] - ArcSin[c*x]^2*Csc[ArcSin[c*x]/2]^2 - 4*ArcSin[c*x]^2*Log[1 - E^(
I*ArcSin[c*x])] + 4*ArcSin[c*x]^2*Log[1 + E^(I*ArcSin[c*x])] + 8*Log[Tan[Ar
cSin[c*x]/2]] - (8*I)*ArcSin[c*x]*PolyLog[2, -E^(I*ArcSin[c*x])] + (8*I)*Ar
cSin[c*x]*PolyLog[2, E^(I*ArcSin[c*x])] + 8*PolyLog[3, -E^(I*ArcSin[c*x])]
- 8*PolyLog[3, E^(I*ArcSin[c*x])] + ArcSin[c*x]^2*Sec[ArcSin[c*x]/2]^2 - 4*
ArcSin[c*x]*Tan[ArcSin[c*x]/2]))/(8*Sqrt[d*(1 - c^2*x^2)])
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(a^2c^2dx^2-a^2d+\left(b^2c^2dx^2-b^2d\right)\arcsin\left(cx\right)^2+2\left(abc^2dx^2-abd\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2+d}}{x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/x^3,x, algorithm="fricas
")
```

```
[Out] integral(-(a^2*c^2*d*x^2 - a^2*d + (b^2*c^2*d*x^2 - b^2*d)*arcsin(c*x)^2 +
2*(a*b*c^2*d*x^2 - a*b*d)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/x^3, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/x^3,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [B] time = 0.60, size = 1372, normalized size = 2.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/x^3,x)
```

```
[Out] -1/2*a^2/d/x^2*(-c^2*d*x^2+d)^(5/2)-2*b^2*(-d*(c^2*x^2-1))^(1/2)*c^3*d/(c^2
*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x+b^2*d*arcsin(c*x)*(-d*(c^2*x^2-1))
^(1/2)/x/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c+3/2*b^2*(-d*(c^2*x^2-1))^(1/2)*(-
c^2*x^2+1)^(1/2)*c^2*d/(c^2*x^2-1)*arcsin(c*x)^2*ln(1-I*c*x-(-c^2*x^2+1)^(1
/2))-3/2*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*c^2*d/(c^2*x^2-1)*ar
csin(c*x)^2*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-2*a*b*(-d*(c^2*x^2-1))^(1/2)*c^3
*d/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-2*a*b*(-d*(c^2*x^2-1))^(1/2)*c^4*d/(c^2
*x^2-1)*arcsin(c*x)*x^2+a*b*d*(-d*(c^2*x^2-1))^(1/2)/x/(c^2*x^2-1)*(-c^2*x^
2+1)^(1/2)*c-1/2*a^2*c^2*(-c^2*d*x^2+d)^(3/2)+a*b*(-d*(c^2*x^2-1))^(1/2)*c^
2*d/(c^2*x^2-1)*arcsin(c*x)+a*b*d*arcsin(c*x)*(-d*(c^2*x^2-1))^(1/2)/x^2/(c
^2*x^2-1)-b^2*(-d*(c^2*x^2-1))^(1/2)*c^4*d/(c^2*x^2-1)*arcsin(c*x)^2*x^2+2*
b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*c^2*d/(c^2*x^2-1)*arctanh(I*c
*x+(-c^2*x^2+1)^(1/2))+3*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*c^2*
d/(c^2*x^2-1)*polylog(3,I*c*x+(-c^2*x^2+1)^(1/2))-3*b^2*(-d*(c^2*x^2-1))^(1
/2)*(-c^2*x^2+1)^(1/2)*c^2*d/(c^2*x^2-1)*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2
))+2*b^2*(-d*(c^2*x^2-1))^(1/2)*c^4*d/(c^2*x^2-1)*x^2+1/2*b^2*(-d*(c^2*x^2-
1))^(1/2)*c^2*d/(c^2*x^2-1)*arcsin(c*x)^2+1/2*b^2*d*arcsin(c*x)^2*(-d*(c^2*
x^2-1))^(1/2)/x^2/(c^2*x^2-1)-2*b^2*(-d*(c^2*x^2-1))^(1/2)*c^2*d/(c^2*x^2-1
)+3/2*a^2*c^2*d^(3/2)*ln((2*d+2*d^(1/2)*(-c^2*d*x^2+d)^(1/2))/x)-3/2*a^2*c^
2*(-c^2*d*x^2+d)^(1/2)*d+3*I*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*
c^2*d/(c^2*x^2-1)*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))*arcsin(c*x)-3*I*b^2*
(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*c^2*d/(c^2*x^2-1)*polylog(2,I*c*x
+(-c^2*x^2+1)^(1/2))*arcsin(c*x)+6*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^
(1/2)*c^2*d/(2*c^2*x^2-2)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))*arcsin(c*x)-6*a*b*
(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*c^2*d/(2*c^2*x^2-2)*ln(1+I*c*x+(-
c^2*x^2+1)^(1/2))*arcsin(c*x)-6*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(
1/2)*c^2*d/(2*c^2*x^2-2)*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))+6*I*a*b*(-c^2*
```

```
x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*c^2*d/(2*c^2*x^2-2)*polylog(2,-I*c*x-(-
c^2*x^2+1)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\left(3\,c^2d^{\frac{3}{2}}\log\left(\frac{2\,\sqrt{-c^2dx^2+d}\,\sqrt{d}}{|x|}+\frac{2\,d}{|x|}\right)-\left(-c^2dx^2+d\right)^{\frac{3}{2}}c^2-3\,\sqrt{-c^2dx^2+d}\,c^2d-\frac{\left(-c^2dx^2+d\right)^{\frac{5}{2}}}{dx^2}\right)a^2-\sqrt{d}\int\frac{((}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/x^3,x, algorithm="maxima
")
```

```
[Out] 1/2*(3*c^2*d^(3/2)*log(2*sqrt(-c^2*d*x^2 + d)*sqrt(d)/abs(x) + 2*d/abs(x))
- (-c^2*d*x^2 + d)^(3/2)*c^2 - 3*sqrt(-c^2*d*x^2 + d)*c^2*d - (-c^2*d*x^2 +
 d)^(5/2)/(d*x^2))*a^2 - sqrt(d)*integrate(((b^2*c^2*d*x^2 - b^2*d)*arctan2
(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c^2*d*x^2 - a*b*d)*arctan2(c
*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/x^3, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(d-c^2\,d\,x^2\right)}^{3/2}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2))/x^3,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2))/x^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(-d\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}\left(a+b\,\mathrm{asin}\left(cx\right)\right)^2}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))**2/x**3,x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))**2/x**3, x)
```

3.225 $\int \frac{(d-c^2dx^2)^{3/2}(a+b\sin^{-1}(cx))^2}{x^4}\,dx$

Optimal. Leaf size=400

$$\frac{c^2d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{x}-\frac{bcd\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3x^2}-\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx\right.}{3x^3}$$

```
[Out] -1/3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/x^3-1/3*b^2*c^2*d*(-c^2*d*x^2
+d)^(1/2)/x+c^2*d*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/x-1/3*b^2*c^3*d*
arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+4/3*I*c^3*d*(a+b*arcsin
(c*x))^2*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+1/3*c^3*d*(a+b*arcsin(c*x)
)^3*(-c^2*d*x^2+d)^(1/2)/b/(-c^2*x^2+1)^(1/2)-8/3*b*c^3*d*(a+b*arcsin(c*x))
*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
+4/3*I*b^2*c^3*d*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*d*x^2+d)^(1/
2)/(-c^2*x^2+1)^(1/2)-1/3*b*c*d*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)*(-c^2*
d*x^2+d)^(1/2)/x^2
```

Rubi [A] time = 0.55, antiderivative size = 400, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 11, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.379, Rules used = {4695, 4693, 4625, 3717, 2190, 2279, 2391, 4641, 4685, 277, 216}

$$\frac{4ib^2c^3d\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)}{3\sqrt{1-c^2x^2}}+\frac{c^3d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{3b\sqrt{1-c^2x^2}}+\frac{4ic^3d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}\right.}{3\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/x^4,x]
```

```
[Out] -(b^2*c^2*d*Sqrt[d - c^2*d*x^2])/(3*x) - (b^2*c^3*d*Sqrt[d - c^2*d*x^2]*Arc
Sin[c*x])/(3*Sqrt[1 - c^2*x^2]) - (b*c*d*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x]))/(3*x^2) + (c^2*d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin
[c*x])^2)/x + (((4*I)/3)*c^3*d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/S
qrt[1 - c^2*x^2] - ((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/(3*x^3) +
(c^3*d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*Sqrt[1 - c^2*x^2]) -
 (8*b*c^3*d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])*Log[1 - E^((2*I)*ArcSin
[c*x])])/(3*Sqrt[1 - c^2*x^2]) + (((4*I)/3)*b^2*c^3*d*Sqrt[d - c^2*d*x^2]*P
olyLog[2, E^((2*I)*ArcSin[c*x])])/Sqrt[1 - c^2*x^2]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 277

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c
*x)^(m + 1)*(a + b*x^n)^p)/(c*(m + 1)), x] - Dist[(b*n*p)/(c^n*(m + 1)), In
t[(c*x)^(m + n)*(a + b*x^n)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[
n, 0] && GtQ[p, 0] && LtQ[m, -1] &&  !ILtQ[(m + n*p + n + 1)/n, 0] && IntBi
nomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
```

```
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4685

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcSin[c*x
]))/(f*(m + 1)), x] + (-Dist[(b*c*d^p)/(f*(m + 1)), Int[(f*x)^(m + 1)*(1 -
c^2*x^2)^(p - 1/2), x], x] - Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m + 2)*
(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x]), x], x]) /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0] && ILtQ[(m + 1)/2, 0]
```

Rule 4693

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(b*c*n*Sqrt[d + e*x^2])/(f*(m + 1)*Sqr
t[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1), x], x] + Di
st[(c^2*Sqrt[d + e*x^2])/(f^2*(m + 1)*Sqrt[1 - c^2*x^2]), Int[((f*x)^(m + 2
)*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c, d, e
, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && LtQ[m, -1]
```

Rule 4695

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m +
2)*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPar
t[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f
*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /;
 FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0
```

```
] && LtQ[m, -1]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{x^4}\,dx = -\frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{3x^3} - \left(c^2d\right)\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}\right.}{x^2}$$

$$= -\frac{bcd\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3x^2} + \frac{c^2d\sqrt{d-c^2dx^2}\left(a+\right.}{x}$$

$$= -\frac{b^2c^2d\sqrt{d-c^2dx^2}}{3x} - \frac{bcd\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3x^2} + \cdots$$

$$= -\frac{b^2c^2d\sqrt{d-c^2dx^2}}{3x} - \frac{b^2c^3d\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{3\sqrt{1-c^2x^2}} - \frac{bcd\sqrt{1-c^2x^2}\sqrt{d}}{}$$

$$= -\frac{b^2c^2d\sqrt{d-c^2dx^2}}{3x} - \frac{b^2c^3d\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{3\sqrt{1-c^2x^2}} - \frac{bcd\sqrt{1-c^2x^2}\sqrt{d}}{}$$

$$= -\frac{b^2c^2d\sqrt{d-c^2dx^2}}{3x} - \frac{b^2c^3d\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{3\sqrt{1-c^2x^2}} - \frac{bcd\sqrt{1-c^2x^2}\sqrt{d}}{}$$

$$= -\frac{b^2c^2d\sqrt{d-c^2dx^2}}{3x} - \frac{b^2c^3d\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{3\sqrt{1-c^2x^2}} - \frac{bcd\sqrt{1-c^2x^2}\sqrt{d}}{}$$

Mathematica [A] time = 2.14, size = 493, normalized size = 1.23

$$\frac{4a^2c^2dx^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2} - a^2d\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2} - 3a^2c^3d^{3/2}x^3\sqrt{1-c^2x^2}\tan^{-1}\left(\frac{cx\sqrt{d-c^2dx^2}}{\sqrt{d}\left(c^2x^2-1\right)}\right) - abcd}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/x^4,x]
```

```
[Out] (-(a*b*c*d*x*Sqrt[d - c^2*d*x^2]) - a^2*d*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*
x^2] + 4*a^2*c^2*d*x^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2] - b^2*c^2*d*x^
2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2] + b*d*Sqrt[d - c^2*d*x^2]*(3*a*c^3*
x^3 + b*((4*I)*c^3*x^3 - Sqrt[1 - c^2*x^2] + 4*c^2*x^2*Sqrt[1 - c^2*x^2]))*
ArcSin[c*x]^2 + b^2*c^3*d*x^3*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^3 - 3*a^2*c^3
*d^(3/2)*x^3*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d - c^2*d*x^2])/(Sqrt[d]*(-
1 + c^2*x^2))] - b*d*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*(b*c*x + 2*a*(1 - 4*c^
2*x^2)*Sqrt[1 - c^2*x^2] + 8*b*c^3*x^3*Log[1 - E^((2*I)*ArcSin[c*x])]) - 8*
a*b*c^3*d*x^3*Sqrt[d - c^2*d*x^2]*Log[c*x] + (4*I)*b^2*c^3*d*x^3*Sqrt[d - c
^2*d*x^2]*PolyLog[2, E^((2*I)*ArcSin[c*x])])/(3*x^3*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(a^2c^2dx^2 - a^2d + \left(b^2c^2dx^2 - b^2d\right)\arcsin(cx)^2 + 2\left(abc^2dx^2 - abd\right)\arcsin(cx)\right)\sqrt{-c^2dx^2+d}}{x^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/x^4,x, algorithm="fricas
")
```

[Out] integral(-(a^2*c^2*d*x^2 - a^2*d + (b^2*c^2*d*x^2 - b^2*d)*arcsin(c*x)^2 + 2*(a*b*c^2*d*x^2 - a*b*d)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/x^4, x)

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/x^4,x, algorithm="giac")

[Out] Exception raised: TypeError >> An error occurred running a Giac command:INPUT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vecteur & l) Error: Bad Argument Value

maple [B] time = 0.63, size = 3281, normalized size = 8.20

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/x^4,x)

[Out] -20/3*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x^5/(c^2*x^2-1)*c^8+29/3*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x^3/(c^2*x^2-1)*c^6-10/3*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x/(c^2*x^2-1)*c^4+1/3*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)/x/(c^2*x^2-1)*c^2+1/3*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)/x^3/(c^2*x^2-1)*arcsin(c*x)^2-1/3*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*arcsin(c*x)^3*d*c^3-1/3*a^2/d/x^3*(-c^2*d*x^2+d)^(5/2)+2/3*a^2*c^4*x*(-c^2*d*x^2+d)^(3/2)-4/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x/(c^2*x^2-1)*c^4+64*I*a*b*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^7-24*I*a*b*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^5+a^2*c^4*d^2/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+2/3*a^2*c^2/d/x*(-c^2*d*x^2+d)^(5/2)+32*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)^2*c^7+a^2*c^4*d*x*(-c^2*d*x^2+d)^(1/2)-16/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x^3/(c^2*x^2-1)*(-c^2*x^2+1)*c^6+4/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x/(c^2*x^2-1)*(-c^2*x^2+1)*c^4+8/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^3-16/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x^3/(c^2*x^2-1)*(-c^2*x^2+1)*arcsin(c*x)*c^6-12*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)^2*c^5+4/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x/(c^2*x^2-1)*(-c^2*x^2+1)*arcsin(c*x)*c^4+1/3*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)/x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c+8*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^5-16/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x^5/(c^2*x^2-1)*arcsin(c*x)*c^8-8*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c^7+20/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x^3/(c^2*x^2-1)*arcsin(c*x)*c^6+3*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c^5-4/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x/(c^2*x^2-1)*arcsin(c*x)*c^4+4/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)^2*c^3+64*a*b*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x^5/(c^2*x^2-1)*arcsin(c*x)*c^8-104*a*b*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x^3/(c^2*x^2-1)*arcsin(c*x)*c^6+8*a*b*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c^5+146/3*a*b*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x/(c^2*

```
x^2-1)*arcsin(c*x)*c^4-28/3*a*b*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*
x^2+1)/x/(c^2*x^2-1)*arcsin(c*x)*c^2+1/3*a*b*(-d*(c^2*x^2-1))^(1/2)*d/(24*c
^4*x^4-9*c^2*x^2+1)/x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c-16*I*a*b*(-c^2*x^2
+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)*d*c^3/(3*c^2*x^2-3)-16/3*I*a*b
*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x^5/(c^2*x^2-1)*c^8+20/3
*I*a*b*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x^3/(c^2*x^2-1)*c^
6+73/3*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x/(c^2*x^2-1)*
arcsin(c*x)^2*c^4-14/3*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1
)/x/(c^2*x^2-1)*arcsin(c*x)^2*c^2-8*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1
))^(1/2)*d*c^3/(3*c^2*x^2-3)*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))-1/3*I*b^2*
(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)/(c^2*x^2-1)*(-c^2*x^2+1)^
(1/2)*c^3-8*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*d*c^3/(3*c^2*x^
2-3)*arcsin(c*x)^2-a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1
)*arcsin(c*x)^2*d*c^3-3*a*b*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+
1)/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c^3+2/3*a*b*(-d*(c^2*x^2-1))^(1/2)*d/(24*
c^4*x^4-9*c^2*x^2+1)/x^3/(c^2*x^2-1)*arcsin(c*x)+8/3*a*b*(-d*(c^2*x^2-1))^(
1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*ln((I*c*x+(-c^2*x^2+1)^(1/2))^2-1)*d*c^
3+8*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*d*c^3/(3*c^2*x^2-3)*ln(1-
I*c*x-(-c^2*x^2+1)^(1/2))*arcsin(c*x)-52*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(24*c
^4*x^4-9*c^2*x^2+1)*x^3/(c^2*x^2-1)*arcsin(c*x)^2*c^6-3*b^2*(-d*(c^2*x^2-1)
)^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*
x)*c^3+32*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x^2+1)*x^5/(c^2*x^
2-1)*arcsin(c*x)^2*c^8+4/3*b^2*(-d*(c^2*x^2-1))^(1/2)*d/(24*c^4*x^4-9*c^2*x
^2+1)*x^3/(c^2*x^2-1)*(-c^2*x^2+1)*c^6-8*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*
x^2-1))^(1/2)*d*c^3/(3*c^2*x^2-3)*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))+8*b^
2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*d*c^3/(3*c^2*x^2-3)*ln(1+I*c*x+
(-c^2*x^2+1)^(1/2))*arcsin(c*x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{3}\left(3\sqrt{-c^2dx^2+d}\,c^4dx+3\,c^3d^{\frac{3}{2}}\arcsin(cx)+\frac{2\left(-c^2dx^2+d\right)^{\frac{3}{2}}c^2}{x}-\frac{\left(-c^2dx^2+d\right)^{\frac{5}{2}}}{dx^3}\right)a^2-\sqrt{d}\int\frac{\left(\left(b^2c^2dx^2-b^2d\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/x^4,x, algorithm="maxima
")
```

```
[Out] 1/3*(3*sqrt(-c^2*d*x^2 + d)*c^4*d*x + 3*c^3*d^(3/2)*arcsin(c*x) + 2*(-c^2*d
*x^2 + d)^(3/2)*c^2/x - (-c^2*d*x^2 + d)^(5/2)/(d*x^3))*a^2 - sqrt(d)*integ
rate(((b^2*c^2*d*x^2 - b^2*d)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2
+ 2*(a*b*c^2*d*x^2 - a*b*d)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqr
t(c*x + 1)*sqrt(-c*x + 1)/x^4, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))^2\,\left(d-c^2\,d\,x^2\right)^{3/2}}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2))/x^4,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2))/x^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-d\,(cx-1)\,(cx+1)\right)^{\frac{3}{2}}\,(a+b\,\mathrm{asin}\,(cx))^2}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))**2/x**4,x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))**2/x**4, x)
```

3.226 $\int x^3 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=651

$$-\frac{d^2x^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{63c^2}-\frac{2bcd^2x^5\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{21\sqrt{1-c^2x^2}}+\frac{1}{21}d^2x^4\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(c\right.$$

```
[Out] 5/63*d*x^4*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2+1/9*x^4*(-c^2*d*x^2+d)^
(5/2)*(a+b*arcsin(c*x))^2+160/3969*b^2*d^2*(-c^2*d*x^2+d)^(1/2)/c^4+80/1190
7*b^2*d^2*(-c^2*x^2+1)*(-c^2*d*x^2+d)^(1/2)/c^4+4/1323*b^2*d^2*(-c^2*x^2+1)
^2*(-c^2*d*x^2+d)^(1/2)/c^4+50/27783*b^2*d^2*(-c^2*x^2+1)^3*(-c^2*d*x^2+d)^
(1/2)/c^4-2/729*b^2*d^2*(-c^2*x^2+1)^4*(-c^2*d*x^2+d)^(1/2)/c^4-2/63*d^2*(a
+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/c^4-1/63*d^2*x^2*(a+b*arcsin(c*x))^2
*(-c^2*d*x^2+d)^(1/2)/c^2+1/21*d^2*x^4*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(
1/2)+4/63*a*b*d^2*x*(-c^2*d*x^2+d)^(1/2)/c^3/(-c^2*x^2+1)^(1/2)+4/63*b^2*d^
2*x*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/c^3/(-c^2*x^2+1)^(1/2)+2/189*b*d^2*x^3
*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-2/21*b*c*d^2*x
^5*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+38/441*b*c^3*d
^2*x^7*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-2/81*b*c^5
*d^2*x^9*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 1.25, antiderivative size = 651, normalized size of antiderivative = 1.00, number of steps used = 27, number of rules used = 18, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.621, Rules used = {4699, 4697, 4707, 4677, 4619, 261, 4627, 266, 43, 14, 4687, 12, 446, 77, 270, 1251, 897, 1153}

$$\frac{4abd^2x\sqrt{d-c^2dx^2}}{63c^3\sqrt{1-c^2x^2}}-\frac{2bc^5d^2x^9\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{81\sqrt{1-c^2x^2}}+\frac{38bc^3d^2x^7\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{441\sqrt{1-c^2x^2}}-\frac{2bcd^2x^5}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (160*b^2*d^2*Sqrt[d - c^2*d*x^2])/(3969*c^4) + (4*a*b*d^2*x*Sqrt[d - c^2*d*
x^2])/(63*c^3*Sqrt[1 - c^2*x^2]) + (80*b^2*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d
*x^2])/(11907*c^4) + (4*b^2*d^2*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2])/(1323*
c^4) + (50*b^2*d^2*(1 - c^2*x^2)^3*Sqrt[d - c^2*d*x^2])/(27783*c^4) - (2*b^
2*d^2*(1 - c^2*x^2)^4*Sqrt[d - c^2*d*x^2])/(729*c^4) + (4*b^2*d^2*x*Sqrt[d
- c^2*d*x^2]*ArcSin[c*x])/(63*c^3*Sqrt[1 - c^2*x^2]) + (2*b*d^2*x^3*Sqrt[d
- c^2*d*x^2]*(a + b*ArcSin[c*x]))/(189*c*Sqrt[1 - c^2*x^2]) - (2*b*c*d^2*x^
5*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(21*Sqrt[1 - c^2*x^2]) + (38*b*c
^3*d^2*x^7*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(441*Sqrt[1 - c^2*x^2])
 - (2*b*c^5*d^2*x^9*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(81*Sqrt[1 - c
^2*x^2]) - (2*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(63*c^4) - (d^
2*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(63*c^2) + (d^2*x^4*Sqrt[d
 - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/21 + (5*d*x^4*(d - c^2*d*x^2)^(3/2)*(a
 + b*ArcSin[c*x])^2)/63 + (x^4*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2)
/9
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
```

```
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 446

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p
*(c + d*x)^q, x], x, x^n], x] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[
b*c - a*d, 0] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 897

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_.) + (b_.)*(x_)
 + (c_.)*(x_)^2)^(p_.), x_Symbol] :> With[{q = Denominator[m]}, Dist[q/e, S
ubst[Int[x^(q*(m + 1) - 1)*((e*f - d*g)/e + (g*x^q)/e)^n*((c*d^2 - b*d*e +
a*e^2)/e^2 - ((2*c*d - b*e)*x^q)/e^2 + (c*x^(2*q))/e^2)^p, x], x, (d + e*x)
^(1/q)], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ
[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegersQ[n, p] && Fra
ctionQ[m]
```

Rule 1153

```
Int[((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.),
 x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^q*(a + b*x^2 + c*x^4)^p, x],
x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e
```

```
 + a*e^2, 0] && IGtQ[p, 0] && IGtQ[q, -2]
```

Rule 1251

```
Int[(x_)^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_
)^4)^(p_.), x_Symbol] :> Dist[1/2, Subst[Int[x^((m - 1)/2)*(d + e*x)^q*(a +
 b*x + c*x^2)^p, x], x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x] && Inte
gerQ[(m - 1)/2]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
```

```
GtQ[p, 0] && !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int x^3\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx=\frac{1}{9}x^4\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2+\frac{1}{9}(5d)\int x^3\left(d-c^2dx^2\right)^{3/2}\left(a\right.$$

$$=-\frac{2bcd^2x^5\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{45\sqrt{1-c^2x^2}}+\frac{4bc^3d^2x^7\sqrt{d-c^2dx^2}\left(a+b\right.}{63\sqrt{1-c^2x^2}}$$

$$=-\frac{8bcd^2x^5\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{105\sqrt{1-c^2x^2}}+\frac{38bc^3d^2x^7\sqrt{d-c^2dx^2}\left(a+\right.}{441\sqrt{1-c^2x^2}}$$

$$=-\frac{2bcd^2x^5\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{21\sqrt{1-c^2x^2}}+\frac{38bc^3d^2x^7\sqrt{d-c^2dx^2}\left(a+\right.}{441\sqrt{1-c^2x^2}}$$

$$=\frac{2bd^2x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{189c\sqrt{1-c^2x^2}}-\frac{2bcd^2x^5\sqrt{d-c^2dx^2}\left(a+b\sin\right.}{21\sqrt{1-c^2x^2}}$$

$$=\frac{4abd^2x\sqrt{d-c^2dx^2}}{63c^3\sqrt{1-c^2x^2}}+\frac{2bd^2x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{189c\sqrt{1-c^2x^2}}-\frac{2bcd^2x^5}{}$$

$$=-\frac{134b^2d^2\sqrt{d-c^2dx^2}}{3969c^4}+\frac{4abd^2x\sqrt{d-c^2dx^2}}{63c^3\sqrt{1-c^2x^2}}+\frac{122b^2d^2\left(1-c^2x^2\right)\sqrt{d}}{11907c^4}$$

$$=\frac{160b^2d^2\sqrt{d-c^2dx^2}}{3969c^4}+\frac{4abd^2x\sqrt{d-c^2dx^2}}{63c^3\sqrt{1-c^2x^2}}+\frac{80b^2d^2\left(1-c^2x^2\right)\sqrt{d-}}{11907c^4}$$

Mathematica [A] time = 0.45, size = 270, normalized size = 0.41

$$-\frac{d^2\sqrt{d-c^2dx^2}\left(3969a^2\left(7c^2x^2+2\right)\left(1-c^2x^2\right)^{7/2}+126abcx\left(49c^8x^8-171c^6x^6+189c^4x^4-21c^2x^2-126\right)+126b\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -1/250047*(d^2*Sqrt[d - c^2*d*x^2]*(3969*a^2*(1 - c^2*x^2)^(7/2)*(2 + 7*c^2
*x^2) + 126*a*b*c*x*(-126 - 21*c^2*x^2 + 189*c^4*x^4 - 171*c^6*x^6 + 49*c^8
*x^8) + 2*b^2*Sqrt[1 - c^2*x^2]*(-6140 + 899*c^2*x^2 + 1005*c^4*x^4 - 1147*
c^6*x^6 + 343*c^8*x^8) + 126*b*(63*a*(1 - c^2*x^2)^(7/2)*(2 + 7*c^2*x^2) +
b*c*x*(-126 - 21*c^2*x^2 + 189*c^4*x^4 - 171*c^6*x^6 + 49*c^8*x^8))*ArcSin[
```

```
c*x] + 3969*b^2*(1 - c^2*x^2)^(7/2)*(2 + 7*c^2*x^2)*ArcSin[c*x]^2))/(c^4*Sq
rt[1 - c^2*x^2])
```

fricas [A] time = 0.55, size = 486, normalized size = 0.75

$$126\left(49\,abc^{9}d^{2}x^{9}-171\,abc^{7}d^{2}x^{7}+189\,abc^{5}d^{2}x^{5}-21\,abc^{3}d^{2}x^{3}-126\,abcd^{2}x+\left(49\,b^{2}c^{9}d^{2}x^{9}-171\,b^{2}c^{7}d^{2}x^{7}+1\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="fricas
")
```

```
[Out] 1/250047*(126*(49*a*b*c^9*d^2*x^9 - 171*a*b*c^7*d^2*x^7 + 189*a*b*c^5*d^2*x
^5 - 21*a*b*c^3*d^2*x^3 - 126*a*b*c*d^2*x + (49*b^2*c^9*d^2*x^9 - 171*b^2*c
^7*d^2*x^7 + 189*b^2*c^5*d^2*x^5 - 21*b^2*c^3*d^2*x^3 - 126*b^2*c*d^2*x)*ar
csin(c*x))*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1) + (343*(81*a^2 - 2*b^2)*
c^10*d^2*x^10 - 2*(51597*a^2 - 1490*b^2)*c^8*d^2*x^8 + 2*(67473*a^2 - 2152*
b^2)*c^6*d^2*x^6 - 4*(15876*a^2 - 53*b^2)*c^4*d^2*x^4 - (3969*a^2 - 14078*b
^2)*c^2*d^2*x^2 + 2*(3969*a^2 - 6140*b^2)*d^2 + 3969*(7*b^2*c^10*d^2*x^10 -
 26*b^2*c^8*d^2*x^8 + 34*b^2*c^6*d^2*x^6 - 16*b^2*c^4*d^2*x^4 - b^2*c^2*d^2
*x^2 + 2*b^2*d^2)*arcsin(c*x)^2 + 7938*(7*a*b*c^10*d^2*x^10 - 26*a*b*c^8*d^
2*x^8 + 34*a*b*c^6*d^2*x^6 - 16*a*b*c^4*d^2*x^4 - a*b*c^2*d^2*x^2 + 2*a*b*d
^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d))/(c^6*x^2 - c^4)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.67, size = 2146, normalized size = 3.30

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] a^2*(-1/9*x^2*(-c^2*d*x^2+d)^(7/2)/c^2/d-2/63/d/c^4*(-c^2*d*x^2+d)^(7/2))+b
^2*(1/373248*(-d*(c^2*x^2-1))^(1/2)*(256*c^10*x^10-704*c^8*x^8-256*I*(-c^2*
x^2+1)^(1/2)*x^9*c^9+688*c^6*x^6+576*I*(-c^2*x^2+1)^(1/2)*x^7*c^7-280*c^4*x
^4-432*I*(-c^2*x^2+1)^(1/2)*x^5*c^5+41*c^2*x^2+120*I*(-c^2*x^2+1)^(1/2)*x^3
*c^3-9*I*(-c^2*x^2+1)^(1/2)*x*c-1)*(18*I*arcsin(c*x)+81*arcsin(c*x)^2-2)*d^
2/c^4/(c^2*x^2-1)-3/175616*(-d*(c^2*x^2-1))^(1/2)*(64*c^8*x^8-144*c^6*x^6-6
4*I*(-c^2*x^2+1)^(1/2)*x^7*c^7+104*c^4*x^4+112*I*(-c^2*x^2+1)^(1/2)*x^5*c^5
-25*c^2*x^2-56*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+7*I*(-c^2*x^2+1)^(1/2)*x*c+1)*(
14*I*arcsin(c*x)+49*arcsin(c*x)^2-2)*d^2/c^4/(c^2*x^2-1)+1/1728*(-d*(c^2*x^
2-1))^(1/2)*(4*c^4*x^4-5*c^2*x^2-4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+3*I*(-c^2*x
^2+1)^(1/2)*x*c+1)*(6*I*arcsin(c*x)+9*arcsin(c*x)^2-2)*d^2/c^4/(c^2*x^2-1)-
3/256*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*(arcsin(c
*x)^2-2+2*I*arcsin(c*x))*d^2/c^4/(c^2*x^2-1)-3/256*(-d*(c^2*x^2-1))^(1/2)*(
I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(arcsin(c*x)^2-2-2*I*arcsin(c*x))*d^2/c
^4/(c^2*x^2-1)+1/1728*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^
3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*(-6*I*arcsin(c*x)+9*arc
```

```
sin(c*x)^2-2)*d^2/c^4/(c^2*x^2-1)-3/175616*(-d*(c^2*x^2-1))^(1/2)*(64*I*(-c
^2*x^2+1)^(1/2)*x^7*c^7+64*c^8*x^8-112*I*(-c^2*x^2+1)^(1/2)*x^5*c^5-144*c^6
*x^6+56*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+104*c^4*x^4-7*I*(-c^2*x^2+1)^(1/2)*x*c
-25*c^2*x^2+1)*(-14*I*arcsin(c*x)+49*arcsin(c*x)^2-2)*d^2/c^4/(c^2*x^2-1)+1
/373248*(-d*(c^2*x^2-1))^(1/2)*(256*I*(-c^2*x^2+1)^(1/2)*x^9*c^9+256*c^10*x
^10-576*I*(-c^2*x^2+1)^(1/2)*x^7*c^7-704*c^8*x^8+432*I*(-c^2*x^2+1)^(1/2)*x
^5*c^5+688*c^6*x^6-120*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-280*c^4*x^4+9*I*(-c^2*x
^2+1)^(1/2)*x*c+41*c^2*x^2-1)*(-18*I*arcsin(c*x)+81*arcsin(c*x)^2-2)*d^2/c^
4/(c^2*x^2-1))+2*a*b*(1/41472*(-d*(c^2*x^2-1))^(1/2)*(256*c^10*x^10-704*c^8
*x^8-256*I*(-c^2*x^2+1)^(1/2)*x^9*c^9+688*c^6*x^6+576*I*(-c^2*x^2+1)^(1/2)*
x^7*c^7-280*c^4*x^4-432*I*(-c^2*x^2+1)^(1/2)*x^5*c^5+41*c^2*x^2+120*I*(-c^2
*x^2+1)^(1/2)*x^3*c^3-9*I*(-c^2*x^2+1)^(1/2)*x*c-1)*(I+9*arcsin(c*x))*d^2/c
^4/(c^2*x^2-1)-3/25088*(-d*(c^2*x^2-1))^(1/2)*(64*c^8*x^8-144*c^6*x^6-64*I*
(-c^2*x^2+1)^(1/2)*x^7*c^7+104*c^4*x^4+112*I*(-c^2*x^2+1)^(1/2)*x^5*c^5-25*
c^2*x^2-56*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+7*I*(-c^2*x^2+1)^(1/2)*x*c+1)*(I+7*
arcsin(c*x))*d^2/c^4/(c^2*x^2-1)+1/576*(-d*(c^2*x^2-1))^(1/2)*(4*c^4*x^4-5*
c^2*x^2-4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+3*I*(-c^2*x^2+1)^(1/2)*x*c+1)*(I+3*a
rcsin(c*x))*d^2/c^4/(c^2*x^2-1)-3/256*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c
^2*x^2+1)^(1/2)*x*c-1)*(I+arcsin(c*x))*d^2/c^4/(c^2*x^2-1)-3/256*(-d*(c^2*x
^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(arcsin(c*x)-I)*d^2/c^4/(
c^2*x^2-1)+1/576*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c
^4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*(-I+3*arcsin(c*x))*d^2/c^4/(
c^2*x^2-1)-3/25088*(-d*(c^2*x^2-1))^(1/2)*(64*I*(-c^2*x^2+1)^(1/2)*x^7*c^7+
64*c^8*x^8-112*I*(-c^2*x^2+1)^(1/2)*x^5*c^5-144*c^6*x^6+56*I*(-c^2*x^2+1)^(
1/2)*x^3*c^3+104*c^4*x^4-7*I*(-c^2*x^2+1)^(1/2)*x*c-25*c^2*x^2+1)*(-I+7*arc
sin(c*x))*d^2/c^4/(c^2*x^2-1)+1/41472*(-d*(c^2*x^2-1))^(1/2)*(256*I*(-c^2*x
^2+1)^(1/2)*x^9*c^9+256*c^10*x^10-576*I*(-c^2*x^2+1)^(1/2)*x^7*c^7-704*c^8*
x^8+432*I*(-c^2*x^2+1)^(1/2)*x^5*c^5+688*c^6*x^6-120*I*(-c^2*x^2+1)^(1/2)*x
^3*c^3-280*c^4*x^4+9*I*(-c^2*x^2+1)^(1/2)*x*c+41*c^2*x^2-1)*(-I+9*arcsin(c*
x))*d^2/c^4/(c^2*x^2-1))
```

maxima [A] time = 0.68, size = 401, normalized size = 0.62

$$-\frac{1}{63}\left(\frac{7\left(-c^2dx^2+d\right)^{\frac{7}{2}}x^2}{c^2d}+\frac{2\left(-c^2dx^2+d\right)^{\frac{7}{2}}}{c^4d}\right)b^2\arcsin\left(cx\right)^2-\frac{2}{63}\left(\frac{7\left(-c^2dx^2+d\right)^{\frac{7}{2}}x^2}{c^2d}+\frac{2\left(-c^2dx^2+d\right)^{\frac{7}{2}}}{c^4d}\right)ab\,\mathrm{arcsi}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="maxima
")
```

```
[Out] -1/63*(7*(-c^2*d*x^2 + d)^(7/2)*x^2/(c^2*d) + 2*(-c^2*d*x^2 + d)^(7/2)/(c^4
*d))*b^2*arcsin(c*x)^2 - 2/63*(7*(-c^2*d*x^2 + d)^(7/2)*x^2/(c^2*d) + 2*(-c
^2*d*x^2 + d)^(7/2)/(c^4*d))*a*b*arcsin(c*x) - 1/63*(7*(-c^2*d*x^2 + d)^(7/
2)*x^2/(c^2*d) + 2*(-c^2*d*x^2 + d)^(7/2)/(c^4*d))*a^2 - 2/250047*b^2*((343
*sqrt(-c^2*x^2 + 1)*c^6*d^(5/2)*x^8 - 1147*sqrt(-c^2*x^2 + 1)*c^4*d^(5/2)*x
^6 + 1005*sqrt(-c^2*x^2 + 1)*c^2*d^(5/2)*x^4 + 899*sqrt(-c^2*x^2 + 1)*d^(5/
2)*x^2 - 6140*sqrt(-c^2*x^2 + 1)*d^(5/2)/c^2)/c^2 + 63*(49*c^8*d^(5/2)*x^9
- 171*c^6*d^(5/2)*x^7 + 189*c^4*d^(5/2)*x^5 - 21*c^2*d^(5/2)*x^3 - 126*d^(5
/2)*x)*arcsin(c*x)/c^3) - 2/3969*(49*c^8*d^(5/2)*x^9 - 171*c^6*d^(5/2)*x^7
+ 189*c^4*d^(5/2)*x^5 - 21*c^2*d^(5/2)*x^3 - 126*d^(5/2)*x)*a*b/c^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^3\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(d-c^2\,d\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int(x^3*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Timed out
```

3.227 $\int x^2 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=556

$$\frac{5bd^2x^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{128c\sqrt{1-c^2x^2}}-\frac{5d^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{128c^2}-\frac{59bcd^2x^4\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{384\sqrt{1-c^2x^2}}$$

```
[Out] 5/48*d*x^3*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2+1/8*x^3*(-c^2*d*x^2+d)^
(5/2)*(a+b*arcsin(c*x))^2-359/36864*b^2*d^2*x*(-c^2*d*x^2+d)^(1/2)/c^2-1079
/55296*b^2*d^2*x^3*(-c^2*d*x^2+d)^(1/2)+209/13824*b^2*c^2*d^2*x^5*(-c^2*d*x
^2+d)^(1/2)-1/256*b^2*c^4*d^2*x^7*(-c^2*d*x^2+d)^(1/2)-5/128*d^2*x*(a+b*arc
sin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/c^2+5/64*d^2*x^3*(a+b*arcsin(c*x))^2*(-c^2
*d*x^2+d)^(1/2)+359/36864*b^2*d^2*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/c^3/(-c^
2*x^2+1)^(1/2)+5/128*b*d^2*x^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/c/(-c
^2*x^2+1)^(1/2)-59/384*b*c*d^2*x^4*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(
-c^2*x^2+1)^(1/2)+17/144*b*c^3*d^2*x^6*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/
2)/(-c^2*x^2+1)^(1/2)-1/32*b*c^5*d^2*x^8*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(
1/2)/(-c^2*x^2+1)^(1/2)+5/384*d^2*(a+b*arcsin(c*x))^3*(-c^2*d*x^2+d)^(1/2)/
b/c^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 1.11, antiderivative size = 556, normalized size of antiderivative = 1.00, number of steps used = 25, number of rules used = 14, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.483, Rules used = {4699, 4697, 4707, 4641, 4627, 321, 216, 14, 4687, 12, 459, 266, 43, 1267}

$$-\frac{bc^5d^2x^8\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{32\sqrt{1-c^2x^2}}+\frac{17bc^3d^2x^6\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{144\sqrt{1-c^2x^2}}-\frac{59bcd^2x^4\sqrt{d-c^2dx^2}\left(a+b\sin\right.}{384\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (-359*b^2*d^2*x*Sqrt[d - c^2*d*x^2])/(36864*c^2) - (1079*b^2*d^2*x^3*Sqrt[d
 - c^2*d*x^2])/55296 + (209*b^2*c^2*d^2*x^5*Sqrt[d - c^2*d*x^2])/13824 - (b
^2*c^4*d^2*x^7*Sqrt[d - c^2*d*x^2])/256 + (359*b^2*d^2*Sqrt[d - c^2*d*x^2]*
ArcSin[c*x])/(36864*c^3*Sqrt[1 - c^2*x^2]) + (5*b*d^2*x^2*Sqrt[d - c^2*d*x^
2]*(a + b*ArcSin[c*x]))/(128*c*Sqrt[1 - c^2*x^2]) - (59*b*c*d^2*x^4*Sqrt[d
 - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(384*Sqrt[1 - c^2*x^2]) + (17*b*c^3*d^2*x
^6*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(144*Sqrt[1 - c^2*x^2]) - (b*c^
5*d^2*x^8*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(32*Sqrt[1 - c^2*x^2]) -
 (5*d^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(128*c^2) + (5*d^2*x^3
*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/64 + (5*d*x^3*(d - c^2*d*x^2)^(
3/2)*(a + b*ArcSin[c*x])^2)/48 + (x^3*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c
*x])^2)/8 + (5*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(384*b*c^3*Sq
rt[1 - c^2*x^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 459

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_)), x_Symbol] :> Simp[(d*(e*x)^(m + 1)*(a + b*x^n)^(p + 1))/(b*e*(m + n*(p
 + 1) + 1)), x] - Dist[(a*d*(m + 1) - b*c*(m + n*(p + 1) + 1))/(b*(m + n*(p
 + 1) + 1)), Int[(e*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, d, e, m,
n, p}, x] && NeQ[b*c - a*d, 0] && NeQ[m + n*(p + 1) + 1, 0]
```

Rule 1267

```
Int[((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (
c_.)*(x_)^4)^(p_.), x_Symbol] :> Simp[(c^p*(f*x)^(m + 4*p - 1)*(d + e*x^2)^
(q + 1))/(e*f^(4*p - 1)*(m + 4*p + 2*q + 1)), x] + Dist[1/(e*(m + 4*p + 2*q
 + 1)), Int[(f*x)^m*(d + e*x^2)^q*ExpandToSum[e*(m + 4*p + 2*q + 1)*((a + b
*x^2 + c*x^4)^p - c^p*x^(4*p)) - d*c^p*(m + 4*p - 1)*x^(4*p - 2), x], x], x
] /; FreeQ[{a, b, c, d, e, f, m, q}, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[p, 0
] &&  !IntegerQ[q] && NeQ[m + 4*p + 2*q + 1, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
```

```
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int x^2 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx = \frac{1}{8}x^3 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right)^2 + \frac{1}{8}(5d) \int x^2 \left(d-c^2dx^2\right)^{3/2} ($$

$$= -\frac{bcd^2x^4\sqrt{d-c^2dx^2} \left(a+b\sin^{-1}(cx)\right)}{16\sqrt{1-c^2x^2}} + \frac{bc^3d^2x^6\sqrt{d-c^2dx^2} \left(a+b\right.}{12\sqrt{1-c^2x^2}}$$

$$= -\frac{11bcd^2x^4\sqrt{d-c^2dx^2} \left(a+b\sin^{-1}(cx)\right)}{96\sqrt{1-c^2x^2}} + \frac{17bc^3d^2x^6\sqrt{d-c^2dx^2} \left(\right.}{144\sqrt{1-c}}$$

$$= -\frac{1}{256}b^2c^4d^2x^7\sqrt{d-c^2dx^2} - \frac{59bcd^2x^4\sqrt{d-c^2dx^2} \left(a+b\sin^{-1}(cx\right.}{384\sqrt{1-c^2x^2}}$$

$$= -\frac{5}{512}b^2d^2x^3\sqrt{d-c^2dx^2} + \frac{209b^2c^2d^2x^5\sqrt{d-c^2dx^2}}{13824} - \frac{1}{256}b^2c^4d^2x$$

$$= \frac{5b^2d^2x\sqrt{d-c^2dx^2}}{1024c^2} - \frac{1079b^2d^2x^3\sqrt{d-c^2dx^2}}{55296} + \frac{209b^2c^2d^2x^5\sqrt{d-}}{13824}$$

$$= -\frac{359b^2d^2x\sqrt{d-c^2dx^2}}{36864c^2} - \frac{1079b^2d^2x^3\sqrt{d-c^2dx^2}}{55296} + \frac{209b^2c^2d^2x^5}{1382}$$

$$= -\frac{359b^2d^2x\sqrt{d-c^2dx^2}}{36864c^2} - \frac{1079b^2d^2x^3\sqrt{d-c^2dx^2}}{55296} + \frac{209b^2c^2d^2x^5}{1382}$$

Mathematica [A] time = 0.47, size = 348, normalized size = 0.63

$$\frac{d^2\sqrt{d-c^2dx^2} \left(1440a^3 + 3b\sin^{-1}(cx)\left(1440a^2 + 192abcx\sqrt{1-c^2x^2} \left(48c^6x^6 - 136c^4x^4 + 118c^2x^2 - 15\right) + b^2 (-\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (d^2*Sqrt[d - c^2*d*x^2]*(1440*a^3 - 96*a*b^2*c^2*x^2*(-45 + 177*c^2*x^2 -
136*c^4*x^4 + 36*c^6*x^6) + 288*a^2*b*c*x*Sqrt[1 - c^2*x^2]*(-15 + 118*c^2*
x^2 - 136*c^4*x^4 + 48*c^6*x^6) - b^3*c*x*Sqrt[1 - c^2*x^2]*(1077 + 2158*c^
2*x^2 - 1672*c^4*x^4 + 432*c^6*x^6) + 3*b*(1440*a^2 + 192*a*b*c*x*Sqrt[1 -
c^2*x^2]*(-15 + 118*c^2*x^2 - 136*c^4*x^4 + 48*c^6*x^6) + b^2*(359 + 1440*c
^2*x^2 - 5664*c^4*x^4 + 4352*c^6*x^6 - 1152*c^8*x^8))*ArcSin[c*x] + 288*b^2
*(15*a + b*c*x*Sqrt[1 - c^2*x^2]*(-15 + 118*c^2*x^2 - 136*c^4*x^4 + 48*c^6*
x^6))*ArcSin[c*x]^2 + 1440*b^3*ArcSin[c*x]^3))/(110592*b*c^3*Sqrt[1 - c^2*x
^2])
```

fricas [F] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a^2c^4d^2x^6 - 2\,a^2c^2d^2x^4 + a^2d^2x^2 + \left(b^2c^4d^2x^6 - 2\,b^2c^2d^2x^4 + b^2d^2x^2\right)\arcsin(cx)^2 + 2\left(abc^4d^2x^6 - 2\,a\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="fricas
")
```

```
[Out] integral((a^2*c^4*d^2*x^6 - 2*a^2*c^2*d^2*x^4 + a^2*d^2*x^2 + (b^2*c^4*d^2*
x^6 - 2*b^2*c^2*d^2*x^4 + b^2*d^2*x^2)*arcsin(c*x)^2 + 2*(a*b*c^4*d^2*x^6 -
 2*a*b*c^2*d^2*x^4 + a*b*d^2*x^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-c^2dx^2+d\right)^{\frac{5}{2}}(b\arcsin\left(cx\right)+a)^2x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(5/2)*(b*arcsin(c*x) + a)^2*x^2, x)
```

maple [C] time = 0.76, size = 6108, normalized size = 10.99

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{384}\left(\frac{8\left(-c^2dx^2+d\right)^{\frac{5}{2}}x}{c^2}-\frac{48\left(-c^2dx^2+d\right)^{\frac{7}{2}}x}{c^2d}+\frac{10\left(-c^2dx^2+d\right)^{\frac{3}{2}}dx}{c^2}+\frac{15\sqrt{-c^2dx^2+d}\,d^2x}{c^2}+\frac{15\,d^{\frac{5}{2}}\arcsin\left(cx\right)}{c^3}\right)a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="maxima
")
```

```
[Out] 1/384*(8*(-c^2*d*x^2 + d)^(5/2)*x/c^2 - 48*(-c^2*d*x^2 + d)^(7/2)*x/(c^2*d)
 + 10*(-c^2*d*x^2 + d)^(3/2)*d*x/c^2 + 15*sqrt(-c^2*d*x^2 + d)*d^2*x/c^2 +
15*d^(5/2)*arcsin(c*x)/c^3)*a^2 + sqrt(d)*integrate(((b^2*c^4*d^2*x^6 - 2*b
^2*c^2*d^2*x^4 + b^2*d^2*x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2
+ 2*(a*b*c^4*d^2*x^6 - 2*a*b*c^2*d^2*x^4 + a*b*d^2*x^2)*arctan2(c*x, sqrt(c
*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(d-c^2\,d\,x^2\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int(x^2*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Timed out
```

3.228 $\int x\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=382

$$\frac{2bd^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{7c\sqrt{1-c^2x^2}}-\frac{2bcd^2x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{7\sqrt{1-c^2x^2}}-\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)^2}{7c^2d}-$$

```
[Out] -1/7*(-c^2*d*x^2+d)^(7/2)*(a+b*arcsin(c*x))^2/c^2/d+32/245*b^2*d^2*(-c^2*d*
x^2+d)^(1/2)/c^2+16/735*b^2*d^2*(-c^2*x^2+1)*(-c^2*d*x^2+d)^(1/2)/c^2+12/12
25*b^2*d^2*(-c^2*x^2+1)^2*(-c^2*d*x^2+d)^(1/2)/c^2+2/343*b^2*d^2*(-c^2*x^2+
1)^3*(-c^2*d*x^2+d)^(1/2)/c^2+2/7*b*d^2*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^
(1/2)/c/(-c^2*x^2+1)^(1/2)-2/7*b*c*d^2*x^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)
^(1/2)/(-c^2*x^2+1)^(1/2)+6/35*b*c^3*d^2*x^5*(a+b*arcsin(c*x))*(-c^2*d*x^2+
d)^(1/2)/(-c^2*x^2+1)^(1/2)-2/49*b*c^5*d^2*x^7*(a+b*arcsin(c*x))*(-c^2*d*x^
2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.29, antiderivative size = 382, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {4677, 194, 4645, 12, 1799, 1850}

$$-\frac{2bc^5d^2x^7\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{49\sqrt{1-c^2x^2}}+\frac{6bc^3d^2x^5\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{35\sqrt{1-c^2x^2}}-\frac{2bcd^2x^3\sqrt{d-c^2dx^2}\left(a+b\sin\right.}{7\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[x*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (32*b^2*d^2*Sqrt[d - c^2*d*x^2])/(245*c^2) + (16*b^2*d^2*(1 - c^2*x^2)*Sqrt
[d - c^2*d*x^2])/(735*c^2) + (12*b^2*d^2*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2
])/(1225*c^2) + (2*b^2*d^2*(1 - c^2*x^2)^3*Sqrt[d - c^2*d*x^2])/(343*c^2) +
 (2*b*d^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(7*c*Sqrt[1 - c^2*x^2]
) - (2*b*c*d^2*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(7*Sqrt[1 - c^2
*x^2]) + (6*b*c^3*d^2*x^5*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(35*Sqrt
[1 - c^2*x^2]) - (2*b*c^5*d^2*x^7*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/
(49*Sqrt[1 - c^2*x^2]) - ((d - c^2*d*x^2)^(7/2)*(a + b*ArcSin[c*x])^2)/(7*c
^2*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 1799

```
Int[(Pq_)*(x_)^(m_.)*((a_) + (b_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/2, Su
bst[Int[x^((m - 1)/2)*SubstFor[x^2, Pq, x]*(a + b*x)^p, x], x, x^2], x] /;
FreeQ[{a, b, p}, x] && PolyQ[Pq, x^2] && IntegerQ[(m - 1)/2]
```

Rule 1850

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_.), x_Symbol] :> Int[ExpandIntegrand
[Pq*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, n}, x] && PolyQ[Pq, x] && (IGtQ[p
, 0] || EqQ[n, 1])
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int x\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx=-\frac{\left(d-c^2dx^2\right)^{7/2}\left(a+b\sin^{-1}(cx)\right)^2}{7c^2d}+\frac{\left(2bd^2\sqrt{d-c^2dx^2}\right)\int\left(1-c^2x^2\right)^3}{7c\sqrt{1-c^2x^2}}$$

$$=\frac{2bd^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{7c\sqrt{1-c^2x^2}}-\frac{2bcd^2x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}\right.}{7\sqrt{1-c^2x^2}}$$

$$=\frac{2bd^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{7c\sqrt{1-c^2x^2}}-\frac{2bcd^2x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}\right.}{7\sqrt{1-c^2x^2}}$$

$$=\frac{2bd^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{7c\sqrt{1-c^2x^2}}-\frac{2bcd^2x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}\right.}{7\sqrt{1-c^2x^2}}$$

$$=\frac{2bd^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{7c\sqrt{1-c^2x^2}}-\frac{2bcd^2x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}\right.}{7\sqrt{1-c^2x^2}}$$

$$=\frac{32b^2d^2\sqrt{d-c^2dx^2}}{245c^2}+\frac{16b^2d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}{735c^2}+\frac{12b^2d^2\left(1-c^2x\right.}{122}$$

Mathematica [A] time = 0.39, size = 216, normalized size = 0.57

$$-\frac{d^2\sqrt{d-c^2dx^2}\left(3675a^2\left(1-c^2x^2\right)^{7/2}+210abcx\left(5c^6x^6-21c^4x^4+35c^2x^2-35\right)+210b\sin^{-1}(cx)\left(35a\left(1-c^2x^2\right)\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -1/25725*(d^2*Sqrt[d - c^2*d*x^2]*(3675*a^2*(1 - c^2*x^2)^(7/2) + 210*a*b*c
*x*(-35 + 35*c^2*x^2 - 21*c^4*x^4 + 5*c^6*x^6) + 2*b^2*Sqrt[1 - c^2*x^2]*(-
2161 + 757*c^2*x^2 - 351*c^4*x^4 + 75*c^6*x^6) + 210*b*(35*a*(1 - c^2*x^2)^
(7/2) + b*c*x*(-35 + 35*c^2*x^2 - 21*c^4*x^4 + 5*c^6*x^6))*ArcSin[c*x] + 36
75*b^2*(1 - c^2*x^2)^(7/2)*ArcSin[c*x]^2))/(c^2*Sqrt[1 - c^2*x^2])
```

fricas [A] time = 0.47, size = 405, normalized size = 1.06

$$\frac{210\left(5\,abc^7d^2x^7-21\,abc^5d^2x^5+35\,abc^3d^2x^3-35\,abcd^2x+\left(5\,b^2c^7d^2x^7-21\,b^2c^5d^2x^5+35\,b^2c^3d^2x^3-35\,b^2cd^2x\right)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] 1/25725*(210*(5*a*b*c^7*d^2*x^7 - 21*a*b*c^5*d^2*x^5 + 35*a*b*c^3*d^2*x^3 -
 35*a*b*c*d^2*x + (5*b^2*c^7*d^2*x^7 - 21*b^2*c^5*d^2*x^5 + 35*b^2*c^3*d^2*
x^3 - 35*b^2*c*d^2*x)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1)
+ (75*(49*a^2 - 2*b^2)*c^8*d^2*x^8 - 12*(1225*a^2 - 71*b^2)*c^6*d^2*x^6 + 2
*(11025*a^2 - 1108*b^2)*c^4*d^2*x^4 - 4*(3675*a^2 - 1459*b^2)*c^2*d^2*x^2 +
 (3675*a^2 - 4322*b^2)*d^2 + 3675*(b^2*c^8*d^2*x^8 - 4*b^2*c^6*d^2*x^6 + 6*
b^2*c^4*d^2*x^4 - 4*b^2*c^2*d^2*x^2 + b^2*d^2)*arcsin(c*x)^2 + 7350*(a*b*c^
8*d^2*x^8 - 4*a*b*c^6*d^2*x^6 + 6*a*b*c^4*d^2*x^4 - 4*a*b*c^2*d^2*x^2 + a*b
*d^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d))/(c^4*x^2 - c^2)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.47, size = 1611, normalized size = 4.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] -1/7*a^2/c^2/d*(-c^2*d*x^2+d)^(7/2)+b^2*(1/43904*(-d*(c^2*x^2-1))^(1/2)*(64
*c^8*x^8-144*c^6*x^6-64*I*(-c^2*x^2+1)^(1/2)*x^7*c^7+104*c^4*x^4+112*I*(-c^
2*x^2+1)^(1/2)*x^5*c^5-25*c^2*x^2-56*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+7*I*(-c^2
*x^2+1)^(1/2)*x*c+1)*(14*I*arcsin(c*x)+49*arcsin(c*x)^2-2)*d^2/c^2/(c^2*x^2
-1)-1/3200*(-d*(c^2*x^2-1))^(1/2)*(16*c^6*x^6-28*c^4*x^4-16*I*(-c^2*x^2+1)^
(1/2)*x^5*c^5+13*c^2*x^2+20*I*(-c^2*x^2+1)^(1/2)*x^3*c^3-5*I*(-c^2*x^2+1)^(
1/2)*x*c-1)*(10*I*arcsin(c*x)+25*arcsin(c*x)^2-2)*d^2/c^2/(c^2*x^2-1)-5/128
*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*(arcsin(c*x)^2
-2+2*I*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)-5/128*(-d*(c^2*x^2-1))^(1/2)*(I*(-c
^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(arcsin(c*x)^2-2-2*I*arcsin(c*x))*d^2/c^2/(c
^2*x^2-1)+1/384*(-d*(c^2*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^
4*x^4-3*I*(-c^2*x^2+1)^(1/2)*x*c-5*c^2*x^2+1)*(-6*I*arcsin(c*x)+9*arcsin(c*
x)^2-2)*d^2/c^2/(c^2*x^2-1)+1/43904*(-d*(c^2*x^2-1))^(1/2)*(64*I*(-c^2*x^2+
1)^(1/2)*x^7*c^7+64*c^8*x^8-112*I*(-c^2*x^2+1)^(1/2)*x^5*c^5-144*c^6*x^6+56
*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+104*c^4*x^4-7*I*(-c^2*x^2+1)^(1/2)*x*c-25*c^2
*x^2+1)*(-14*I*arcsin(c*x)+49*arcsin(c*x)^2-2)*d^2/c^2/(c^2*x^2-1)-1/2400*(
-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(30*I*arcsin(c*x
)+75*arcsin(c*x)^2-14)*cos(4*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)-1/4800*(-d*(c
^2*x^2-1))^(1/2)*(I*c^2*x^2-c*x*(-c^2*x^2+1)^(1/2)-I)*(90*I*arcsin(c*x)+75*
arcsin(c*x)^2-22)*sin(4*arcsin(c*x))*d^2/c^2/(c^2*x^2-1))+2*a*b*(1/6272*(-d
*(c^2*x^2-1))^(1/2)*(64*c^8*x^8-144*c^6*x^6-64*I*(-c^2*x^2+1)^(1/2)*x^7*c^7
+104*c^4*x^4+112*I*(-c^2*x^2+1)^(1/2)*x^5*c^5-25*c^2*x^2-56*I*(-c^2*x^2+1)^
(1/2)*x^3*c^3+7*I*(-c^2*x^2+1)^(1/2)*x*c+1)*(I+7*arcsin(c*x))*d^2/c^2/(c^2*
x^2-1)-5/128*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*(I
+arcsin(c*x))*d^2/c^2/(c^2*x^2-1)-5/128*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2
+1)^(1/2)*x*c+c^2*x^2-1)*(arcsin(c*x)-I)*d^2/c^2/(c^2*x^2-1)+1/128*(-d*(c^2
*x^2-1))^(1/2)*(4*I*(-c^2*x^2+1)^(1/2)*x^3*c^3+4*c^4*x^4-3*I*(-c^2*x^2+1)^(
1/2)*x*c-5*c^2*x^2+1)*(-I+3*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)-1/7840*(-d*(c^
```

```
2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(11*I+70*arcsin(c*x))*
cos(6*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)-3/15680*(-d*(c^2*x^2-1))^(1/2)*(I*c^
2*x^2-c*x*(-c^2*x^2+1)^(1/2)-I)*(9*I+35*arcsin(c*x))*sin(6*arcsin(c*x))*d^2
/c^2/(c^2*x^2-1)-1/160*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2
*x^2-1)*(I+5*arcsin(c*x))*cos(4*arcsin(c*x))*d^2/c^2/(c^2*x^2-1)-1/320*(-d*
(c^2*x^2-1))^(1/2)*(I*c^2*x^2-c*x*(-c^2*x^2+1)^(1/2)-I)*(3*I+5*arcsin(c*x))
*sin(4*arcsin(c*x))*d^2/c^2/(c^2*x^2-1))
```

maxima [A] time = 0.56, size = 281, normalized size = 0.74

$$-\frac{\left(-c^2dx^2+d\right)^{\frac{7}{2}}b^2\arcsin\left(cx\right)^2}{7\,c^2d}-\frac{2\left(-c^2dx^2+d\right)^{\frac{7}{2}}ab\arcsin\left(cx\right)}{7\,c^2d}-\frac{2}{25725}\,b^2\left(\frac{75\,\sqrt{-c^2x^2+1}\,c^4d^{\frac{7}{2}}x^6-351\,\sqrt{-c^2x^2+\cdots}}{\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] -1/7*(-c^2*d*x^2 + d)^(7/2)*b^2*arcsin(c*x)^2/(c^2*d) - 2/7*(-c^2*d*x^2 + d
)^(7/2)*a*b*arcsin(c*x)/(c^2*d) - 2/25725*b^2*((75*sqrt(-c^2*x^2 + 1)*c^4*d
^(7/2)*x^6 - 351*sqrt(-c^2*x^2 + 1)*c^2*d^(7/2)*x^4 + 757*sqrt(-c^2*x^2 + 1
)*d^(7/2)*x^2 - 2161*sqrt(-c^2*x^2 + 1)*d^(7/2)/c^2)/d + 105*(5*c^6*d^(7/2)
*x^7 - 21*c^4*d^(7/2)*x^5 + 35*c^2*d^(7/2)*x^3 - 35*d^(7/2)*x)*arcsin(c*x)/
(c*d)) - 1/7*(-c^2*d*x^2 + d)^(7/2)*a^2/(c^2*d) - 2/245*(5*c^6*d^(7/2)*x^7
- 21*c^4*d^(7/2)*x^5 + 35*c^2*d^(7/2)*x^3 - 35*d^(7/2)*x)*a*b/(c*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^2\,{\left(d-c^2\,d\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int(x*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Timed out
```

3.229 $\int \left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=438

$$\frac{5d^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{48bc\sqrt{1-c^2x^2}}+\frac{5}{16}d^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2+\frac{bd^2\left(1-c^2x^2\right)^{5/2}\sqrt{d-c^2dx^2}\left(a+b\sin\right.}{18c}$$

```
[Out] 5/24*d*x*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2+1/6*x*(-c^2*d*x^2+d)^(5/2
)*(a+b*arcsin(c*x))^2-245/1152*b^2*d^2*x*(-c^2*d*x^2+d)^(1/2)-65/1728*b^2*d
^2*x*(-c^2*x^2+1)*(-c^2*d*x^2+d)^(1/2)-1/108*b^2*d^2*x*(-c^2*x^2+1)^2*(-c^2
*d*x^2+d)^(1/2)+5/48*b*d^2*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))*(-c^2*d*x^2
+d)^(1/2)/c+1/18*b*d^2*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^
(1/2)/c+5/16*d^2*x*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)+115/1152*b^2*d^
2*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/c/(-c^2*x^2+1)^(1/2)-5/16*b*c*d^2*x^2*(a
+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+5/48*d^2*(a+b*arcsi
n(c*x))^3*(-c^2*d*x^2+d)^(1/2)/b/c/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.39, antiderivative size = 438, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {4649, 4647, 4641, 4627, 321, 216, 4677, 195}

$$\frac{5d^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{48bc\sqrt{1-c^2x^2}}+\frac{5}{16}d^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2+\frac{bd^2\left(1-c^2x^2\right)^{5/2}\sqrt{d-c^2dx^2}\left(a+b\sin\right.}{18c}$$

Antiderivative was successfully verified.

```
[In] Int[(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (-245*b^2*d^2*x*Sqrt[d - c^2*d*x^2])/1152 - (65*b^2*d^2*x*(1 - c^2*x^2)*Sqr
t[d - c^2*d*x^2])/1728 - (b^2*d^2*x*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2])/10
8 + (115*b^2*d^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(1152*c*Sqrt[1 - c^2*x^2]
) - (5*b*c*d^2*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(16*Sqrt[1 - c^
2*x^2]) + (5*b*d^2*(1 - c^2*x^2)^(3/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*
x]))/(48*c) + (b*d^2*(1 - c^2*x^2)^(5/2)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[
c*x]))/(18*c) + (5*d^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/16 + (5
*d*x*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/24 + (x*(d - c^2*d*x^2)^(
5/2)*(a + b*ArcSin[c*x])^2)/6 + (5*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*
x])^3)/(48*b*c*Sqrt[1 - c^2*x^2])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
```

```
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx = \frac{1}{6}x\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2+\frac{1}{6}(5d)\int \left(d-c^2dx^2\right)^{3/2}\left(a+b\right.$$

$$= \frac{bd^2\left(1-c^2x^2\right)^{5/2}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{18c}+\frac{5}{24}dx\left(d-c^2dx^2\right)^{3/2}$$

$$= -\frac{1}{108}b^2d^2x\left(1-c^2x^2\right)^2\sqrt{d-c^2dx^2}+\frac{5bd^2\left(1-c^2x^2\right)^{3/2}\sqrt{d-c^2dx^2}}{48c}$$

$$= -\frac{65b^2d^2x\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}{1728}-\frac{1}{108}b^2d^2x\left(1-c^2x^2\right)^2\sqrt{d-c^2dx^2}$$

$$= -\frac{245b^2d^2x\sqrt{d-c^2dx^2}}{1152}-\frac{65b^2d^2x\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}{1728}-\frac{1}{108}b^2d^2$$

$$= -\frac{245b^2d^2x\sqrt{d-c^2dx^2}}{1152}-\frac{65b^2d^2x\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}{1728}-\frac{1}{108}b^2d^2$$

Mathematica [A] time = 2.09, size = 407, normalized size = 0.93

$$d^2\left(\sqrt{d-c^2dx^2}\left(9504a^2cx\sqrt{1-c^2x^2}+2304a^2c^5x^5\sqrt{1-c^2x^2}-7488a^2c^3x^3\sqrt{1-c^2x^2}+3240ab\cos\left(2\sin^{-1}(c\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (d^2*(1440*b^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^3 - 4320*a^2*Sqrt[d]*Sqrt[1
- c^2*x^2]*ArcTan[(c*x*Sqrt[d - c^2*d*x^2])/(Sqrt[d]*(-1 + c^2*x^2))] + 12*
b*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*(270*b*Cos[2*ArcSin[c*x]] + 27*b*Cos[4*Ar
cSin[c*x]] + 2*b*Cos[6*ArcSin[c*x]] + 540*a*Sin[2*ArcSin[c*x]] + 108*a*Sin[
4*ArcSin[c*x]] + 12*a*Sin[6*ArcSin[c*x]]) + 72*b*Sqrt[d - c^2*d*x^2]*ArcSin
[c*x]^2*(60*a + 45*b*Sin[2*ArcSin[c*x]] + 9*b*Sin[4*ArcSin[c*x]] + b*Sin[6*
ArcSin[c*x]]) + Sqrt[d - c^2*d*x^2]*(9504*a^2*c*x*Sqrt[1 - c^2*x^2] - 7488*
a^2*c^3*x^3*Sqrt[1 - c^2*x^2] + 2304*a^2*c^5*x^5*Sqrt[1 - c^2*x^2] + 3240*a
*b*Cos[2*ArcSin[c*x]] + 324*a*b*Cos[4*ArcSin[c*x]] + 24*a*b*Cos[6*ArcSin[c*
x]] - 1620*b^2*Sin[2*ArcSin[c*x]] - 81*b^2*Sin[4*ArcSin[c*x]] - 4*b^2*Sin[6
*ArcSin[c*x]])))/(13824*c*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a^2c^4d^2x^4-2\,a^2c^2d^2x^2+a^2d^2+\left(b^2c^4d^2x^4-2\,b^2c^2d^2x^2+b^2d^2\right)\arcsin\left(cx\right)^2+2\left(abc^4d^2x^4-2\,abc^2d\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral((a^2*c^4*d^2*x^4 - 2*a^2*c^2*d^2*x^2 + a^2*d^2 + (b^2*c^4*d^2*x^4
- 2*b^2*c^2*d^2*x^2 + b^2*d^2)*arcsin(c*x)^2 + 2*(a*b*c^4*d^2*x^4 - 2*a*b*c
^2*d^2*x^2 + a*b*d^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.34, size = 5048, normalized size = 11.53

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{48}\left(8\left(-c^2dx^2+d\right)^{\frac{5}{2}}x+10\left(-c^2dx^2+d\right)^{\frac{3}{2}}dx+15\sqrt{-c^2dx^2+d}\,d^2x+\frac{15\,d^{\frac{5}{2}}\arcsin\left(cx\right)}{c}\right)a^2+\sqrt{d}\int\left(\left(b^2c^4d^2x^4-2\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] 1/48*(8*(-c^2*d*x^2 + d)^(5/2)*x + 10*(-c^2*d*x^2 + d)^(3/2)*d*x + 15*sqrt(
-c^2*d*x^2 + d)*d^2*x + 15*d^(5/2)*arcsin(c*x)/c)*a^2 + sqrt(d)*integrate((
(b^2*c^4*d^2*x^4 - 2*b^2*c^2*d^2*x^2 + b^2*d^2)*arctan2(c*x, sqrt(c*x + 1)*
sqrt(-c*x + 1))^2 + 2*(a*b*c^4*d^2*x^4 - 2*a*b*c^2*d^2*x^2 + a*b*d^2)*arcta
n2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,\mathrm{asin}\left(c\,x\right))^2\,\left(d-c^2\,d\,x^2\right)^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-d\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}\left(a+b\,\mathrm{asin}\left(cx\right)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(5/2)*(a + b*asin(c*x))**2, x)
```

3.230 $\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{x}\,dx$

Optimal. Leaf size=687

$$\frac{2ibd^2\sqrt{d-c^2dx^2}\,\text{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}-\frac{2ibd^2\sqrt{d-c^2dx^2}\,\text{Li}_2\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}-\frac{2abcd^2}{\sqrt{}}$$

```
[Out] 1/3*d*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2+1/5*(-c^2*d*x^2+d)^(5/2)*(a+
b*arcsin(c*x))^2-598/225*b^2*d^2*(-c^2*d*x^2+d)^(1/2)-74/675*b^2*d^2*(-c^2*
x^2+1)*(-c^2*d*x^2+d)^(1/2)-2/125*b^2*d^2*(-c^2*x^2+1)^2*(-c^2*d*x^2+d)^(1/
2)+d^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)-2*a*b*c*d^2*x*(-c^2*d*x^2+d
)^(1/2)/(-c^2*x^2+1)^(1/2)-2*b^2*c*d^2*x*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/(
-c^2*x^2+1)^(1/2)-16/15*b*c*d^2*x*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-
c^2*x^2+1)^(1/2)+22/45*b*c^3*d^2*x^3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)
/(-c^2*x^2+1)^(1/2)-2/25*b*c^5*d^2*x^5*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/
2)/(-c^2*x^2+1)^(1/2)-2*d^2*(a+b*arcsin(c*x))^2*arctanh(I*c*x+(-c^2*x^2+1)^
(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+2*I*b*d^2*(a+b*arcsin(c*x))*
polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2
)-2*I*b*d^2*(a+b*arcsin(c*x))*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*d*x
^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-2*b^2*d^2*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2
))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+2*b^2*d^2*polylog(3,I*c*x+(-c^2*
x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.89, antiderivative size = 687, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 16, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.552, Rules used = {4699, 4697, 4709, 4183, 2531, 2282, 6589, 4619, 261, 4645, 444, 43, 194, 12, 1247, 698}

$$\frac{2ibd^2\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}-\frac{2ibd^2\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)\left(a+b\sin\right.}{\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2)/x,x]
```

```
[Out] (-598*b^2*d^2*Sqrt[d - c^2*d*x^2])/225 - (2*a*b*c*d^2*x*Sqrt[d - c^2*d*x^2]
)/Sqrt[1 - c^2*x^2] - (74*b^2*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/675 -
(2*b^2*d^2*(1 - c^2*x^2)^2*Sqrt[d - c^2*d*x^2])/125 - (2*b^2*c*d^2*x*Sqrt[d
 - c^2*d*x^2]*ArcSin[c*x])/Sqrt[1 - c^2*x^2] - (16*b*c*d^2*x*Sqrt[d - c^2*d
*x^2]*(a + b*ArcSin[c*x]))/(15*Sqrt[1 - c^2*x^2]) + (22*b*c^3*d^2*x^3*Sqrt[
d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(45*Sqrt[1 - c^2*x^2]) - (2*b*c^5*d^2*x
^5*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(25*Sqrt[1 - c^2*x^2]) + d^2*Sq
rt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2 + (d*(d - c^2*d*x^2)^(3/2)*(a + b*A
rcSin[c*x])^2)/3 + ((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2)/5 - (2*d^2
*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2*ArcTanh[E^(I*ArcSin[c*x])])/Sqrt
[1 - c^2*x^2] + ((2*I)*b*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])*PolyLo
g[2, -E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] - ((2*I)*b*d^2*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x])*PolyLog[2, E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] -
(2*b^2*d^2*Sqrt[d - c^2*d*x^2]*PolyLog[3, -E^(I*ArcSin[c*x])])/Sqrt[1 - c^2
*x^2] + (2*b^2*d^2*Sqrt[d - c^2*d*x^2]*PolyLog[3, E^(I*ArcSin[c*x])])/Sqrt[
1 - c^2*x^2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 444

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 698

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 1247

```
Int[(x_)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(
p_.), x_Symbol] :> Dist[1/2, Subst[Int[(d + e*x)^q*(a + b*x + c*x^2)^p, x],
 x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
```

```
[m, 0]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{x}\,dx = \frac{1}{5}\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2 + d\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx\right.}{x}$$

$$= -\frac{2bcd^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{5\sqrt{1-c^2x^2}} + \frac{4bc^3d^2x^3\sqrt{d-c^2dx^2}\left(a+b\sin\right.}{15\sqrt{1-c^2x^2}}$$

$$= -\frac{16bcd^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{15\sqrt{1-c^2x^2}} + \frac{22bc^3d^2x^3\sqrt{d-c^2dx^2}\left(a+b\right.}{45\sqrt{1-c^2x^2}}$$

$$= -\frac{2abcd^2x\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} - \frac{16bcd^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{15\sqrt{1-c^2x^2}} + \frac{22bc^3d}{}$$

$$= -\frac{2abcd^2x\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} - \frac{2b^2cd^2x\sqrt{d-c^2dx^2}\sin^{-1}(cx)}{\sqrt{1-c^2x^2}} - \frac{16bcd^2x\sqrt{d-}}{15}$$

$$= -\frac{598}{225}b^2d^2\sqrt{d-c^2dx^2} - \frac{2abcd^2x\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} - \frac{74}{675}b^2d^2\left(1-c^2x^2\right)\sqrt{d-}$$

$$= -\frac{598}{225}b^2d^2\sqrt{d-c^2dx^2} - \frac{2abcd^2x\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} - \frac{74}{675}b^2d^2\left(1-c^2x^2\right)\sqrt{d-}$$

$$= -\frac{598}{225}b^2d^2\sqrt{d-c^2dx^2} - \frac{2abcd^2x\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} - \frac{74}{675}b^2d^2\left(1-c^2x^2\right)\sqrt{d-}$$

Mathematica [A] time = 5.01, size = 775, normalized size = 1.13

$$\frac{d^2\left(54000a^2\sqrt{d}\sqrt{1-c^2x^2}\log(cx) - 54000a^2\sqrt{d}\sqrt{1-c^2x^2}\log\left(\sqrt{d}\sqrt{d-c^2dx^2}+d\right) + 3600a^2\sqrt{1-c^2x^2}\left(3c^4x^4\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2)/x,x]
```

```
[Out] (d^2*(3600*a^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]*(23 - 11*c^2*x^2 + 3*c
^4*x^4) + 54000*a^2*Sqrt[d]*Sqrt[1 - c^2*x^2]*Log[c*x] - 54000*a^2*Sqrt[d]*
Sqrt[1 - c^2*x^2]*Log[d + Sqrt[d]*Sqrt[d - c^2*d*x^2]] - 108000*a*b*Sqrt[d
- c^2*d*x^2]*(c*x - Sqrt[1 - c^2*x^2]*ArcSin[c*x] - ArcSin[c*x]*(Log[1 - E^
(I*ArcSin[c*x])] - Log[1 + E^(I*ArcSin[c*x])]) - I*(PolyLog[2, -E^(I*ArcSin
[c*x])] - PolyLog[2, E^(I*ArcSin[c*x])])) - 54000*b^2*Sqrt[d - c^2*d*x^2]*(
2*Sqrt[1 - c^2*x^2] + 2*c*x*ArcSin[c*x] - Sqrt[1 - c^2*x^2]*ArcSin[c*x]^2 -
 ArcSin[c*x]^2*(Log[1 - E^(I*ArcSin[c*x])] - Log[1 + E^(I*ArcSin[c*x])]) -
(2*I)*ArcSin[c*x]*(PolyLog[2, -E^(I*ArcSin[c*x])] - PolyLog[2, E^(I*ArcSin[
c*x])]) + 2*(PolyLog[3, -E^(I*ArcSin[c*x])] - PolyLog[3, E^(I*ArcSin[c*x])]
)) - 6000*a*b*Sqrt[d - c^2*d*x^2]*(9*c*x - 3*ArcSin[c*x]*(3*Sqrt[1 - c^2*x^
2] + Cos[3*ArcSin[c*x]]) + Sin[3*ArcSin[c*x]]) + 1000*b^2*Sqrt[d - c^2*d*x^
2]*(27*Sqrt[1 - c^2*x^2]*(-2 + ArcSin[c*x]^2) + (-2 + 9*ArcSin[c*x]^2)*Cos[
3*ArcSin[c*x]] - 6*ArcSin[c*x]*(9*c*x + Sin[3*ArcSin[c*x]])) + 30*a*b*Sqrt[
d - c^2*d*x^2]*(450*c*x - 15*ArcSin[c*x]*(30*Sqrt[1 - c^2*x^2] + 5*Cos[3*Ar
cSin[c*x]] - 3*Cos[5*ArcSin[c*x]]) + 25*Sin[3*ArcSin[c*x]] - 9*Sin[5*ArcSin
[c*x]]) - b^2*Sqrt[d - c^2*d*x^2]*(6750*Sqrt[1 - c^2*x^2]*(-2 + ArcSin[c*x]
^2) + 125*(-2 + 9*ArcSin[c*x]^2)*Cos[3*ArcSin[c*x]] - 27*(-2 + 25*ArcSin[c*
x]^2)*Cos[5*ArcSin[c*x]] + 30*ArcSin[c*x]*(-25*Sin[3*ArcSin[c*x]] + 9*(-50*
c*x + Sin[5*ArcSin[c*x]])))))/(54000*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(a^2c^4d^2x^4 - 2\,a^2c^2d^2x^2 + a^2d^2 + \left(b^2c^4d^2x^4 - 2\,b^2c^2d^2x^2 + b^2d^2\right)\arcsin\left(cx\right)^2 + 2\left(abc^4d^2x^4 - 2\,abc^2d\right.}{x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/x,x, algorithm="fricas")
```

```
[Out] integral((a^2*c^4*d^2*x^4 - 2*a^2*c^2*d^2*x^2 + a^2*d^2 + (b^2*c^4*d^2*x^4
- 2*b^2*c^2*d^2*x^2 + b^2*d^2)*arcsin(c*x)^2 + 2*(a*b*c^4*d^2*x^4 - 2*a*b*c
^2*d^2*x^2 + a*b*d^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/x, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/x,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [B] time = 0.55, size = 1574, normalized size = 2.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/x,x)
```

```
[Out] 2*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)*polylog(2
,I*c*x+(-c^2*x^2+1)^(1/2))+2/25*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)*
(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^5*c^5-22/45*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2
/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^3*c^3+46/15*b^2*(-d*(c^2*x^2-
1))^(1/2)*d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x*c+2*I*b^2*(-d*(c
^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d^2/(c^2*x^2-1)*arcsin(c*x)*polylog(2,I
*c*x+(-c^2*x^2+1)^(1/2))-2*I*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*
d^2/(c^2*x^2-1)*arcsin(c*x)*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))-22/45*a*b*
(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^3*c^3+46/15*a*b
*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x*c-2*a*b*(-c^2*
x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)*arcsin(c*x)*ln(1-I*c*x-
(-c^2*x^2+1)^(1/2))+2*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^
2*x^2-1)*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-28/15*a*b*(-d*(c^2*x^2-
1))^(1/2)*d^2/(c^2*x^2-1)*arcsin(c*x)*x^4*c^4+68/15*a*b*(-d*(c^2*x^2-1))^(1
/2)*d^2/(c^2*x^2-1)*arcsin(c*x)*x^2*c^2+2/25*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2
/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^5*c^5+2/5*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2/
(c^2*x^2-1)*arcsin(c*x)*x^6*c^6-2*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))
^(1/2)*d^2/(c^2*x^2-1)*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))+1/5*(-c^2*d*x^2
+d)^(5/2)*a^2+1/5*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)*arcsin(c*x)^2*
x^6*c^6-14/15*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)*arcsin(c*x)^2*x^4*
c^4+34/15*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)*arcsin(c*x)^2*x^2*c^2-
b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d^2/(c^2*x^2-1)*arcsin(c*x)^2
*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))+1/3*a^2*d*(-c^2*d*x^2+d)^(3/2)-a^2*d^(5/2)*
ln((2*d+2*d^(1/2)*(-c^2*d*x^2+d)^(1/2))/x)+a^2*(-c^2*d*x^2+d)^(1/2)*d^2+939
4/3375*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)+b^2*(-d*(c^2*x^2-1))^(1/2
)*(-c^2*x^2+1)^(1/2)*d^2/(c^2*x^2-1)*arcsin(c*x)^2*ln(1+I*c*x+(-c^2*x^2+1)^
(1/2))-23/15*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)*arcsin(c*x)^2-46/15
*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)*arcsin(c*x)-2/125*b^2*(-d*(c^2*
```

```
x^2-1))^(1/2)*d^2/(c^2*x^2-1)*c^6*x^6+532/3375*b^2*(-d*(c^2*x^2-1))^(1/2)*d
^2/(c^2*x^2-1)*c^4*x^4-9872/3375*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2/(c^2*x^2-1)
*c^2*x^2-2*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d^2/(c^2*x^2-1)*po
lylog(3,I*c*x+(-c^2*x^2+1)^(1/2))+2*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)
^(1/2)*d^2/(c^2*x^2-1)*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{15}\left(15\,d^{\frac{5}{2}}\log\left(\frac{2\,\sqrt{-c^2dx^2+d}\,\sqrt{d}}{|x|}+\frac{2\,d}{|x|}\right)-3\left(-c^2dx^2+d\right)^{\frac{5}{2}}-5\left(-c^2dx^2+d\right)^{\frac{3}{2}}d-15\,\sqrt{-c^2dx^2+d}\,d^2\right)a^2+\sqrt{d}\int$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/x,x, algorithm="maxima")
```

```
[Out] -1/15*(15*d^(5/2)*log(2*sqrt(-c^2*d*x^2 + d)*sqrt(d)/abs(x) + 2*d/abs(x)) -
 3*(-c^2*d*x^2 + d)^(5/2) - 5*(-c^2*d*x^2 + d)^(3/2)*d - 15*sqrt(-c^2*d*x^2
 + d)*d^2)*a^2 + sqrt(d)*integrate(((b^2*c^4*d^2*x^4 - 2*b^2*c^2*d^2*x^2 +
b^2*d^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c^4*d^2*x^4
- 2*a*b*c^2*d^2*x^2 + a*b*d^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*
sqrt(c*x + 1)*sqrt(-c*x + 1)/x, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))^2\,\left(d-c^2\,d\,x^2\right)^{5/2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2))/x,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2))/x, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))**2/x,x)
```

```
[Out] Timed out
```

3.231 $\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{x^2}\,dx$

Optimal. Leaf size=561

$$-\frac{15}{8}c^2d^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2-\frac{5cd^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^3}{8b\sqrt{1-c^2x^2}}-\frac{icd^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx\right.}{\sqrt{1-c^2x^2}}$$

```
[Out] -5/4*c^2*d*x*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2-(-c^2*d*x^2+d)^(5/2)*
(a+b*arcsin(c*x))^2/x+31/64*b^2*c^2*d^2*x*(-c^2*d*x^2+d)^(1/2)+1/32*b^2*c^2
*d^2*x*(-c^2*x^2+1)*(-c^2*d*x^2+d)^(1/2)-1/8*b*c*d^2*(-c^2*x^2+1)^(3/2)*(a+
b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)-15/8*c^2*d^2*x*(a+b*arcsin(c*x))^2*(-c^
2*d*x^2+d)^(1/2)-89/64*b^2*c*d^2*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2
+1)^(1/2)+15/8*b*c^3*d^2*x^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x
^2+1)^(1/2)-I*c*d^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(
1/2)-5/8*c*d^2*(a+b*arcsin(c*x))^3*(-c^2*d*x^2+d)^(1/2)/b/(-c^2*x^2+1)^(1/2
)+2*b*c*d^2*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*d*x^
2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-I*b^2*c*d^2*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/
2))^2)*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+b*c*d^2*(a+b*arcsin(c*x))*(-
c^2*x^2+1)^(1/2)*(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.60, antiderivative size = 561, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 15, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.517, Rules used = {4695, 4649, 4647, 4641, 4627, 321, 216, 4677, 195, 4683, 4625, 3717, 2190, 2279, 2391}

$$-\frac{ib^2cd^2\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)}{\sqrt{1-c^2x^2}}+\frac{15bc^3d^2x^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{8\sqrt{1-c^2x^2}}-\frac{15}{8}c^2d^2x\sqrt{d-c^2dx^2}\left(a\right.$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2)/x^2,x]
```

```
[Out] (31*b^2*c^2*d^2*x*Sqrt[d - c^2*d*x^2])/64 + (b^2*c^2*d^2*x*(1 - c^2*x^2)*Sq
rt[d - c^2*d*x^2])/32 - (89*b^2*c*d^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(64*
Sqrt[1 - c^2*x^2]) + (15*b*c^3*d^2*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*
x]))/(8*Sqrt[1 - c^2*x^2]) + b*c*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]*
(a + b*ArcSin[c*x]) - (b*c*d^2*(1 - c^2*x^2)^(3/2)*Sqrt[d - c^2*d*x^2]*(a +
 b*ArcSin[c*x]))/8 - (15*c^2*d^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^
2)/8 - (I*c*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/Sqrt[1 - c^2*x^2
] - (5*c^2*d*x*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/4 - ((d - c^2*d
*x^2)^(5/2)*(a + b*ArcSin[c*x])^2)/x - (5*c*d^2*Sqrt[d - c^2*d*x^2]*(a + b*
ArcSin[c*x])^3)/(8*b*Sqrt[1 - c^2*x^2]) + (2*b*c*d^2*Sqrt[d - c^2*d*x^2]*(a
 + b*ArcSin[c*x])*Log[1 - E^((2*I)*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] - (I*b^
2*c*d^2*Sqrt[d - c^2*d*x^2]*PolyLog[2, E^((2*I)*ArcSin[c*x])])/Sqrt[1 - c^2
*x^2]
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
```

```
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4683

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.))/(x_),
x_Symbol] :> Simp[((d + e*x^2)^p*(a + b*ArcSin[c*x]))/(2*p), x] + (Dist[d,
Int[((d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x]))/x, x], x] - Dist[(b*c*d^p)/(2
*p), Int[(1 - c^2*x^2)^(p - 1/2), x], x]) /; FreeQ[{a, b, c, d, e}, x] && E
qQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4695

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m +
2)*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPar
t[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f
*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /;
 FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0
] && LtQ[m, -1]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{x^2}\,dx = -\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{x} - \left(5c^2d\right)\int\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-}\right.$$

$$= \frac{1}{2}bcd^2\left(1-c^2x^2\right)^{3/2}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right) - \frac{5}{4}c^2dx\left(d-c^2dx^2\right)^{3/2}$$

$$= -\frac{1}{8}b^2c^2d^2x\left(1-c^2x^2\right)\sqrt{d-c^2dx^2} + bcd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}\left(a+b\,\mathrm{si}\right.$$

$$= -\frac{11}{16}b^2c^2d^2x\sqrt{d-c^2dx^2} + \frac{1}{32}b^2c^2d^2x\left(1-c^2x^2\right)\sqrt{d-c^2dx^2} + \frac{15bc^3d^2x}{}$$

$$= \frac{31}{64}b^2c^2d^2x\sqrt{d-c^2dx^2} + \frac{1}{32}b^2c^2d^2x\left(1-c^2x^2\right)\sqrt{d-c^2dx^2} - \frac{11b^2cd^2\sqrt{}}{16}$$

$$= \frac{31}{64}b^2c^2d^2x\sqrt{d-c^2dx^2} + \frac{1}{32}b^2c^2d^2x\left(1-c^2x^2\right)\sqrt{d-c^2dx^2} - \frac{89b^2cd^2\sqrt{}}{64}$$

$$= \frac{31}{64}b^2c^2d^2x\sqrt{d-c^2dx^2} + \frac{1}{32}b^2c^2d^2x\left(1-c^2x^2\right)\sqrt{d-c^2dx^2} - \frac{89b^2cd^2\sqrt{}}{64}$$

$$= \frac{31}{64}b^2c^2d^2x\sqrt{d-c^2dx^2} + \frac{1}{32}b^2c^2d^2x\left(1-c^2x^2\right)\sqrt{d-c^2dx^2} - \frac{89b^2cd^2\sqrt{}}{64}$$

Mathematica [A] time = 2.31, size = 586, normalized size = 1.04

$$\frac{d^2\left(-288a^2c^2x^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2} - 256a^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2} + 480a^2c\sqrt{d}\,x\sqrt{1-c^2x^2}\tan^{-1}\left(\frac{cx\sqrt{d-c^2dx^2}}{\sqrt{d}\left(c^2x^2-1\right)}\right)\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2)/x^2,x]
```

```
[Out] (d^2*(-256*a^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2] - 288*a^2*c^2*x^2*Sqrt
[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2] + 64*a^2*c^4*x^4*Sqrt[1 - c^2*x^2]*Sqrt[d
 - c^2*d*x^2] - 160*b^2*c*x*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^3 + 480*a^2*c*S
qrt[d]*x*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d - c^2*d*x^2])/(Sqrt[d]*(-1 +
c^2*x^2))] - 128*a*b*c*x*Sqrt[d - c^2*d*x^2]*Cos[2*ArcSin[c*x]] - 4*a*b*c*x
*Sqrt[d - c^2*d*x^2]*Cos[4*ArcSin[c*x]] + 512*a*b*c*x*Sqrt[d - c^2*d*x^2]*L
og[c*x] - (256*I)*b^2*c*x*Sqrt[d - c^2*d*x^2]*PolyLog[2, E^((2*I)*ArcSin[c*
x])] + 64*b^2*c*x*Sqrt[d - c^2*d*x^2]*Sin[2*ArcSin[c*x]] + b^2*c*x*Sqrt[d -
 c^2*d*x^2]*Sin[4*ArcSin[c*x]] - 4*b*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]*(128*a
*Sqrt[1 - c^2*x^2] + 32*b*c*x*Cos[2*ArcSin[c*x]] + b*c*x*Cos[4*ArcSin[c*x]]
 - 128*b*c*x*Log[1 - E^((2*I)*ArcSin[c*x])] + 64*a*c*x*Sin[2*ArcSin[c*x]] +
 4*a*c*x*Sin[4*ArcSin[c*x]]) - 8*b*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^2*(60*a*
c*x + (32*I)*b*c*x + 32*b*Sqrt[1 - c^2*x^2] + 16*b*c*x*Sin[2*ArcSin[c*x]] +
 b*c*x*Sin[4*ArcSin[c*x]])))/(256*x*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.50, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(a^2c^4d^2x^4 - 2a^2c^2d^2x^2 + a^2d^2 + \left(b^2c^4d^2x^4 - 2b^2c^2d^2x^2 + b^2d^2\right)\arcsin(cx)^2 + 2\left(abc^4d^2x^4 - 2abc^2d^2x\right.\right.}{x^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/x^2,x, algorithm="fricas
")
```

```
[Out] integral((a^2*c^4*d^2*x^4 - 2*a^2*c^2*d^2*x^2 + a^2*d^2 + (b^2*c^4*d^2*x^4
- 2*b^2*c^2*d^2*x^2 + b^2*d^2)*arcsin(c*x)^2 + 2*(a*b*c^4*d^2*x^4 - 2*a*b*c
^2*d^2*x^2 + a*b*d^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/x^2, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/x^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [B] time = 0.56, size = 3585, normalized size = 6.39

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/x^2,x)
```

```
[Out] -3/8*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c^3/(c^2*x^2-1)*arcsin(c*x)^2*(-c^2*x
^2+1)^(1/2)*x^2+15/64*I*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d^2*c
^3/(c^2*x^2-1)*arcsin(c*x)^2*x^2-31/128*I*b^2*(-d*(c^2*x^2-1))^(1/2)*sin(3*
arcsin(c*x))*d^2*c^3/(c^2*x^2-1)*arcsin(c*x)*x^2+65/512*I*b^2*(-d*(c^2*x^2-
1))^(1/2)*sin(3*arcsin(c*x))*d^2*c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-15/64
*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d^2*c^2/(c^2*x^2-1)*arcsin(c
*x)^2*(-c^2*x^2+1)^(1/2)*x+31/128*b^2*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c
*x))*d^2*c^2/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x-a^2/d/x*(-c^2*d*x
^2+d)^(7/2)-a^2*c^2*x*(-c^2*d*x^2+d)^(5/2)-17/32*I*a*b*(-d*(c^2*x^2-1))^(1/
2)*sin(3*arcsin(c*x))*d^2*c^2/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x-
15/8*a^2*c^2*d^2*x*(-c^2*d*x^2+d)^(1/2)+b^2*(-d*(c^2*x^2-1))^(1/2)*arcsin(c
*x)^2*d^2/(c^2*x^2-1)/x-1/64*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c^6/(c^2*x^2-1)
*x^5+35/128*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c^4/(c^2*x^2-1)*x^3-33/128*b^2*(
-d*(c^2*x^2-1))^(1/2)*d^2*c^2/(c^2*x^2-1)*x-65/512*b^2*(-d*(c^2*x^2-1))^(1/
2)*sin(3*arcsin(c*x))*d^2*c/(c^2*x^2-1)-15/32*a*b*(-d*(c^2*x^2-1))^(1/2)*co
s(3*arcsin(c*x))*d^2*c^2/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x-1/4*I
*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^5/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1
/2)*x^4-3/4*I*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^3/(c^2*x^2-1)*arcsin(c*x)*(-
c^2*x^2+1)^(1/2)*x^2+15/32*I*a*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*
d^2*c^3/(c^2*x^2-1)*arcsin(c*x)*x^2-33/128*I*a*b*(-d*(c^2*x^2-1))^(1/2)*cos
(3*arcsin(c*x))*d^2*c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-33/128*I*b^2*(-d*(
c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d^2*c^2/(c^2*x^2-1)*arcsin(c*x)*(-c^2*
x^2+1)^(1/2)*x-17/64*I*b^2*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d^2*c^
2/(c^2*x^2-1)*arcsin(c*x)^2*(-c^2*x^2+1)^(1/2)*x-15/8*a^2*c^2*d^3/(c^2*d)^(
1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-5/4*a^2*c^2*d*x*(-c^2*d*x
^2+d)^(3/2)-17/32*a*b*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d^2*c^3/(c^
2*x^2-1)*arcsin(c*x)*x^2+31/128*a*b*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x
))*d^2*c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-15/32*I*a*b*(-d*(c^2*x^2-1))^(1
/2)*cos(3*arcsin(c*x))*d^2*c/(c^2*x^2-1)*arcsin(c*x)-31/128*I*a*b*(-d*(c^2*
x^2-1))^(1/2)*sin(3*arcsin(c*x))*d^2*c^3/(c^2*x^2-1)*x^2+79/32*I*a*b*(-c^2*
x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)*arcsin(c*x)*d^2*c-1/8*I*b^2
*(-d*(c^2*x^2-1))^(1/2)*d^2*c^5/(c^2*x^2-1)*arcsin(c*x)^2*(-c^2*x^2+1)^(1/2
)*x^4+65/512*b^2*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d^2*c^3/(c^2*x^2
```

```
-1)*x^2+17/64*b^2*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d^2*c/(c^2*x^2-
1)*arcsin(c*x)^2+5/8*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2
-1)*arcsin(c*x)^3*d^2*c+1/8*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c^6/(c^2*x^2-1)*
arcsin(c*x)^2*x^5-11/16*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c^4/(c^2*x^2-1)*arcs
in(c*x)^2*x^3-7/16*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c^2/(c^2*x^2-1)*arcsin(c*
x)^2*x+33/128*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c/(c^2*x^2-1)*arcsin(c*x)*(-c^
2*x^2+1)^(1/2)+33/128*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d^2*c/(
c^2*x^2-1)*arcsin(c*x)-63/512*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c/(c^2*x^2-1
)*(-c^2*x^2+1)^(1/2)+63/512*I*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))
*d^2*c/(c^2*x^2-1)+2*a*b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)*d^2/(c^2*x^2-1)
/x+33/128*a*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d^2*c/(c^2*x^2-1)+3
3/128*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)-9/16*
b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c^3/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/
2)*x^2-2*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*ln
(1+I*c*x+(-c^2*x^2+1)^(1/2))*arcsin(c*x)+1/16*b^2*(-d*(c^2*x^2-1))^(1/2)*d^
2*c^5/(c^2*x^2-1)*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^4-2*b^2*(-d*(c^2*x^2-1))
^(1/2)*d^2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))*
arcsin(c*x)-33/128*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*x))*d^2*c^3/(c
^2*x^2-1)*arcsin(c*x)*x^2+63/512*b^2*(-d*(c^2*x^2-1))^(1/2)*cos(3*arcsin(c*
x))*d^2*c^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x-17/64*b^2*(-d*(c^2*x^2-1))^(1/
2)*sin(3*arcsin(c*x))*d^2*c^3/(c^2*x^2-1)*arcsin(c*x)^2*x^2+1/64*I*b^2*(-d*
(c^2*x^2-1))^(1/2)*d^2*c^5/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4+13/32*I*b^2*(
-d*(c^2*x^2-1))^(1/2)*d^2*c^4/(c^2*x^2-1)*arcsin(c*x)*x^3+15/64*I*b^2*(-d*(
c^2*x^2-1))^(1/2)*d^2*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2+79/64*I*b^2*(-
d*(c^2*x^2-1))^(1/2)*d^2*c/(c^2*x^2-1)*arcsin(c*x)^2*(-c^2*x^2+1)^(1/2)-15/
32*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c^2/(c^2*x^2-1)*arcsin(c*x)*x+2*I*b^2*(
-d*(c^2*x^2-1))^(1/2)*d^2*c/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*polylog(2,-I*c*x
-(-c^2*x^2+1)^(1/2))+2*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c/(c^2*x^2-1)*(-c^2
*x^2+1)^(1/2)*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))-63/512*I*b^2*(-d*(c^2*x^2
-1))^(1/2)*cos(3*arcsin(c*x))*d^2*c^3/(c^2*x^2-1)*x^2-15/64*I*b^2*(-d*(c^2*
x^2-1))^(1/2)*cos(3*arcsin(c*x))*d^2*c/(c^2*x^2-1)*arcsin(c*x)^2+31/128*I*b
^2*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d^2*c/(c^2*x^2-1)*arcsin(c*x)+
1/16*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c^6/(c^2*x^2-1)*arcsin(c*x)*x^5-15/32
*I*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^2/(c^2*x^2-1)*x+13/32*I*a*b*(-d*(c^2*x^
2-1))^(1/2)*d^2*c^4/(c^2*x^2-1)*x^3+1/16*I*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c
^6/(c^2*x^2-1)*x^5+17/32*a*b*(-d*(c^2*x^2-1))^(1/2)*sin(3*arcsin(c*x))*d^2*
c/(c^2*x^2-1)*arcsin(c*x)+15/8*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2
)/(c^2*x^2-1)*arcsin(c*x)^2*d^2*c-2*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)
^(1/2)/(c^2*x^2-1)*ln((I*c*x+(-c^2*x^2+1)^(1/2))^2-1)*d^2*c-7/8*a*b*(-d*(c^
2*x^2-1))^(1/2)*d^2*c^2/(c^2*x^2-1)*arcsin(c*x)*x-11/8*a*b*(-d*(c^2*x^2-1))
^(1/2)*d^2*c^4/(c^2*x^2-1)*arcsin(c*x)*x^3+1/4*a*b*(-d*(c^2*x^2-1))^(1/2)*d
^2*c^6/(c^2*x^2-1)*arcsin(c*x)*x^5-9/16*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^3/
(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2-33/128*a*b*(-d*(c^2*x^2-1))^(1/2)*cos(3*
arcsin(c*x))*d^2*c^3/(c^2*x^2-1)*x^2+1/16*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^
5/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^4+31/128*I*a*b*(-d*(c^2*x^2-1))^(1/2)*si
n(3*arcsin(c*x))*d^2*c/(c^2*x^2-1)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{8}\left(10\left(-c^2dx^2+d\right)^{\frac{3}{2}}c^2dx+15\sqrt{-c^2dx^2+d}\,c^2d^2x+15\,cd^{\frac{5}{2}}\arcsin\left(cx\right)+\frac{8\left(-c^2dx^2+d\right)^{\frac{5}{2}}}{x}\right)a^2+\sqrt{d}\int\frac{\left(\left(b^2c^4d^2x^4\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/x^2,x, algorithm="maxima
")
```

```
[Out] -1/8*(10*(-c^2*d*x^2 + d)^(3/2)*c^2*d*x + 15*sqrt(-c^2*d*x^2 + d)*c^2*d^2*x
 + 15*c*d^(5/2)*arcsin(c*x) + 8*(-c^2*d*x^2 + d)^(5/2)/x)*a^2 + sqrt(d)*int
```

```
egrate(((b^2*c^4*d^2*x^4 - 2*b^2*c^2*d^2*x^2 + b^2*d^2)*arctan2(c*x, sqrt(c
*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c^4*d^2*x^4 - 2*a*b*c^2*d^2*x^2 + a*b*d^
2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)
/x^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))^2\,\left(d-c^2\,d\,x^2\right)^{5/2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2))/x^2,x)
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2))/x^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(-d\,(cx-1)\,(cx+1))^{\frac{5}{2}}\,(a+b\,\mathrm{asin}\,(cx))^2}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))**2/x**2,x)
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(5/2)*(a + b*asin(c*x))**2/x**2, x)
```

3.232 $\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{x^3}\,dx$

Optimal. Leaf size=740

$$-\frac{5ibc^2d^2\sqrt{d-c^2dx^2}\,\text{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}+\frac{5ibc^2d^2\sqrt{d-c^2dx^2}\,\text{Li}_2\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}-\frac{5}{2}c^2$$

```
[Out] -5/6*c^2*d*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2-1/2*(-c^2*d*x^2+d)^(5/2
)*(a+b*arcsin(c*x))^2/x^2+40/9*b^2*c^2*d^2*(-c^2*d*x^2+d)^(1/2)+2/27*b^2*c^
2*d^2*(-c^2*x^2+1)*(-c^2*d*x^2+d)^(1/2)-5/2*c^2*d^2*(a+b*arcsin(c*x))^2*(-c
^2*d*x^2+d)^(1/2)+5*a*b*c^3*d^2*x*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+5
*b^2*c^3*d^2*x*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-b*c*d^2*
(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/x/(-c^2*x^2+1)^(1/2)-1/3*b*c^3*d^2*x
*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-2/9*b*c^5*d^2*x^
3*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+5*c^2*d^2*(a+b*
arcsin(c*x))^2*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2
*x^2+1)^(1/2)-b^2*c^2*d^2*arctanh((-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/
(-c^2*x^2+1)^(1/2)+5*I*b*c^2*d^2*(a+b*arcsin(c*x))*polylog(2,I*c*x+(-c^2*x^
2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-5*I*b*c^2*d^2*(a+b*arcs
in(c*x))*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^
2+1)^(1/2)+5*b^2*c^2*d^2*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2))*(-c^2*d*x^2+d
)^(1/2)/(-c^2*x^2+1)^(1/2)-5*b^2*c^2*d^2*polylog(3,I*c*x+(-c^2*x^2+1)^(1/2)
)*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.96, antiderivative size = 740, normalized size of antiderivative = 1.00, number of steps used = 25, number of rules used = 20, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.690, Rules used = {4695, 4699, 4697, 4709, 4183, 2531, 2282, 6589, 4619, 261, 4645, 444, 43, 270, 4687, 12, 1251, 897, 1153, 208}

$$-\frac{5ibc^2d^2\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}+\frac{5ibc^2d^2\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)\left(a+b\right.}{\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2)/x^3,x]
```

```
[Out] (40*b^2*c^2*d^2*Sqrt[d - c^2*d*x^2])/9 + (5*a*b*c^3*d^2*x*Sqrt[d - c^2*d*x^
2])/Sqrt[1 - c^2*x^2] + (2*b^2*c^2*d^2*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])/2
7 + (5*b^2*c^3*d^2*x*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/Sqrt[1 - c^2*x^2] - (
b*c*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(x*Sqrt[1 - c^2*x^2]) - (b
*c^3*d^2*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(3*Sqrt[1 - c^2*x^2]) -
 (2*b*c^5*d^2*x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x]))/(9*Sqrt[1 - c^2*
x^2]) - (5*c^2*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/2 - (5*c^2*d*
(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/6 - ((d - c^2*d*x^2)^(5/2)*(a
+ b*ArcSin[c*x])^2)/(2*x^2) + (5*c^2*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[
c*x])^2*ArcTanh[E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] - (b^2*c^2*d^2*Sqrt[d
 - c^2*d*x^2]*ArcTanh[Sqrt[1 - c^2*x^2]])/Sqrt[1 - c^2*x^2] - ((5*I)*b*c^2*
d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])*PolyLog[2, -E^(I*ArcSin[c*x])])
/Sqrt[1 - c^2*x^2] + ((5*I)*b*c^2*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x
])*PolyLog[2, E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] + (5*b^2*c^2*d^2*Sqrt[d
 - c^2*d*x^2]*PolyLog[3, -E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] - (5*b^2*c^
2*d^2*Sqrt[d - c^2*d*x^2]*PolyLog[3, E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 444

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 897

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_.) + (b_.)*(x_)
 + (c_.)*(x_)^2)^(p_.), x_Symbol] :> With[{q = Denominator[m]}, Dist[q/e, S
ubst[Int[x^(q*(m + 1) - 1)*((e*f - d*g)/e + (g*x^q)/e)^n*((c*d^2 - b*d*e +
a*e^2)/e^2 - ((2*c*d - b*e)*x^q)/e^2 + (c*x^(2*q))/e^2)^p, x], x, (d + e*x)
^(1/q)], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ
[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegersQ[n, p] && Fra
ctionQ[m]
```

Rule 1153

```
Int[((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.),
 x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^q*(a + b*x^2 + c*x^4)^p, x],
x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e
 + a*e^2, 0] && IGtQ[p, 0] && IGtQ[q, -2]
```

Rule 1251

```
Int[(x_)^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_
)^4)^(p_.), x_Symbol] :> Dist[1/2, Subst[Int[x^((m - 1)/2)*(d + e*x)^q*(a +
 b*x + c*x^2)^p, x], x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x] && Inte
gerQ[(m - 1)/2]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
```

```
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rule 4695

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m +
2)*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPar
t[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f
*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /;
 FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0
] && LtQ[m, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
```

```
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{x^3}\,dx = -\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{2x^2} - \frac{1}{2}\left(5c^2d\right)\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\,\mathrm{si}\right.}{x}$$

$$= -\frac{bcd^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x\sqrt{1-c^2x^2}} - \frac{2bc^3d^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(\right.}{\sqrt{1-c^2x^2}}$$

$$= -\frac{bcd^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x\sqrt{1-c^2x^2}} - \frac{bc^3d^2x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(c\right.}{3\sqrt{1-c^2x^2}}$$

$$= \frac{5abc^3d^2x\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} - \frac{bcd^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{x\sqrt{1-c^2x^2}} - \frac{bc^3d^2x\sqrt{d}}{}$$

$$= \frac{5abc^3d^2x\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} + \frac{5b^2c^3d^2x\sqrt{d-c^2dx^2}\,\sin^{-1}(cx)}{\sqrt{1-c^2x^2}} - \frac{bcd^2\sqrt{d-c^2d}}{x\sqrt{}}$$

$$= \frac{55}{9}b^2c^2d^2\sqrt{d-c^2dx^2} + \frac{5abc^3d^2x\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} + \frac{5}{27}b^2c^2d^2\left(1-c^2x^2\right)\sqrt{d}$$

$$= \frac{40}{9}b^2c^2d^2\sqrt{d-c^2dx^2} + \frac{5abc^3d^2x\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} + \frac{2}{27}b^2c^2d^2\left(1-c^2x^2\right)\sqrt{d}$$

$$= \frac{40}{9}b^2c^2d^2\sqrt{d-c^2dx^2} + \frac{5abc^3d^2x\sqrt{d-c^2dx^2}}{\sqrt{1-c^2x^2}} + \frac{2}{27}b^2c^2d^2\left(1-c^2x^2\right)\sqrt{d}$$

Mathematica [A] time = 7.47, size = 1073, normalized size = 1.45

$$\frac{abc^2\sqrt{1-c^2x^2}\left(-\sin^{-1}(cx)\csc^2\left(\frac{1}{2}\sin^{-1}(cx)\right)+\sin^{-1}(cx)\sec^2\left(\frac{1}{2}\sin^{-1}(cx)\right)-2\cot\left(\frac{1}{2}\sin^{-1}(cx)\right)-4\sin^{-1}(cx)\,\mathrm{lo}\right.}{4\sqrt{d\left(1\right.}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2)/x^3,x]
```

```
[Out] Sqrt[-(d*(-1 + c^2*x^2))]*((-7*a^2*c^2*d^2)/3 - (a^2*d^2)/(2*x^2) + (a^2*c^
4*d^2*x^2)/3) - (5*a^2*c^2*d^(5/2)*Log[x])/2 + (5*a^2*c^2*d^(5/2)*Log[d + S
qrt[d]*Sqrt[-(d*(-1 + c^2*x^2))]])/2 - 4*a*b*c^2*d^2*Sqrt[d*(1 - c^2*x^2)]*
(-((c*x)/Sqrt[1 - c^2*x^2]) + ArcSin[c*x] + (ArcSin[c*x]*(Log[1 - E^(I*ArcS
in[c*x])] - Log[1 + E^(I*ArcSin[c*x])]))/Sqrt[1 - c^2*x^2] + (I*(PolyLog[2,
 -E^(I*ArcSin[c*x])] - PolyLog[2, E^(I*ArcSin[c*x])]))/Sqrt[1 - c^2*x^2]) -
 2*b^2*c^2*d^2*Sqrt[d*(1 - c^2*x^2)]*(-2 - (2*c*x*ArcSin[c*x])/Sqrt[1 - c^2
*x^2] + ArcSin[c*x]^2 + (ArcSin[c*x]^2*(Log[1 - E^(I*ArcSin[c*x])] - Log[1
+ E^(I*ArcSin[c*x])]))/Sqrt[1 - c^2*x^2] + ((2*I)*ArcSin[c*x]*(PolyLog[2, -
E^(I*ArcSin[c*x])] - PolyLog[2, E^(I*ArcSin[c*x])]))/Sqrt[1 - c^2*x^2] + (2
*(-PolyLog[3, -E^(I*ArcSin[c*x])] + PolyLog[3, E^(I*ArcSin[c*x])]))/Sqrt[1
- c^2*x^2]) - (a*b*c^2*d^2*Sqrt[d*(1 - c^2*x^2)]*(-9*c*x + 9*Sqrt[1 - c^2*x
^2]*ArcSin[c*x] + 3*ArcSin[c*x]*Cos[3*ArcSin[c*x]] - Sin[3*ArcSin[c*x]]))/(
18*Sqrt[1 - c^2*x^2]) - (b^2*c^2*d^2*Sqrt[d*(1 - c^2*x^2)]*(27*Sqrt[1 - c^2
*x^2]*(-2 + ArcSin[c*x]^2) + (-2 + 9*ArcSin[c*x]^2)*Cos[3*ArcSin[c*x]] - 6*
```

```
ArcSin[c*x]*(9*c*x + Sin[3*ArcSin[c*x]])))/(108*Sqrt[1 - c^2*x^2]) + (a*b*c
^2*d^3*Sqrt[1 - c^2*x^2]*(-2*Cot[ArcSin[c*x]/2] - ArcSin[c*x]*Csc[ArcSin[c*
x]/2]^2 - 4*ArcSin[c*x]*Log[1 - E^(I*ArcSin[c*x])] + 4*ArcSin[c*x]*Log[1 +
E^(I*ArcSin[c*x])] - (4*I)*PolyLog[2, -E^(I*ArcSin[c*x])] + (4*I)*PolyLog[2
, E^(I*ArcSin[c*x])] + ArcSin[c*x]*Sec[ArcSin[c*x]/2]^2 - 2*Tan[ArcSin[c*x]
/2]))/(4*Sqrt[d*(1 - c^2*x^2)]) + (b^2*c^2*d^3*Sqrt[1 - c^2*x^2]*(-4*ArcSin
[c*x]*Cot[ArcSin[c*x]/2] - ArcSin[c*x]^2*Csc[ArcSin[c*x]/2]^2 - 4*ArcSin[c*
x]^2*Log[1 - E^(I*ArcSin[c*x])] + 4*ArcSin[c*x]^2*Log[1 + E^(I*ArcSin[c*x])
] + 8*Log[Tan[ArcSin[c*x]/2]] - (8*I)*ArcSin[c*x]*PolyLog[2, -E^(I*ArcSin[c
*x])] + (8*I)*ArcSin[c*x]*PolyLog[2, E^(I*ArcSin[c*x])] + 8*PolyLog[3, -E^(
I*ArcSin[c*x])] - 8*PolyLog[3, E^(I*ArcSin[c*x])] + ArcSin[c*x]^2*Sec[ArcSi
n[c*x]/2]^2 - 4*ArcSin[c*x]*Tan[ArcSin[c*x]/2]))/(8*Sqrt[d*(1 - c^2*x^2)])
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(a^2c^4d^2x^4 - 2\,a^2c^2d^2x^2 + a^2d^2 + \left(b^2c^4d^2x^4 - 2\,b^2c^2d^2x^2 + b^2d^2\right)\arcsin\left(cx\right)^2 + 2\left(abc^4d^2x^4 - 2\,abc^2d\right.}{x^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/x^3,x, algorithm="fricas
")
```

```
[Out] integral((a^2*c^4*d^2*x^4 - 2*a^2*c^2*d^2*x^2 + a^2*d^2 + (b^2*c^4*d^2*x^4
- 2*b^2*c^2*d^2*x^2 + b^2*d^2)*arcsin(c*x)^2 + 2*(a*b*c^4*d^2*x^4 - 2*a*b*c
^2*d^2*x^2 + a*b*d^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/x^3, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/x^3,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [B] time = 0.69, size = 1674, normalized size = 2.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/x^3,x)
```

```
[Out] -122/27*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c^2/(c^2*x^2-1)+a*b*d^2*arcsin(c*x)*
(-d*(c^2*x^2-1))^(1/2)/x^2/(c^2*x^2-1)+11/3*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2*
c^2/(c^2*x^2-1)*arcsin(c*x)+2*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)
*d^2*c^2/(c^2*x^2-1)*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))+5*b^2*(-d*(c^2*x^2-1
))^(1/2)*(-c^2*x^2+1)^(1/2)*d^2*c^2/(c^2*x^2-1)*polylog(3,I*c*x+(-c^2*x^2+1
)^(1/2))-5*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d^2*c^2/(c^2*x^2-1
)*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2))+1/3*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c
^6/(c^2*x^2-1)*arcsin(c*x)^2*x^4-8/3*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c^4/(c^
2*x^2-1)*arcsin(c*x)^2*x^2+10*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)
*d^2*c^2/(2*c^2*x^2-2)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))*arcsin(c*x)-10*a*b*(-
c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*d^2*c^2/(2*c^2*x^2-2)*ln(1+I*c*x+(-
c^2*x^2+1)^(1/2))*arcsin(c*x)-10*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^
(1/2)*d^2*c^2/(2*c^2*x^2-2)*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))+10*I*a*b*(-
c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*d^2*c^2/(2*c^2*x^2-2)*polylog(2,-I*
```

```
c*x-(-c^2*x^2+1)^(1/2))-5*I*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d
^2*c^2/(c^2*x^2-1)*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))*arcsin(c*x)+5*I*b^2*
(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d^2*c^2/(c^2*x^2-1)*polylog(2,-I*
c*x-(-c^2*x^2+1)^(1/2))*arcsin(c*x)-1/2*a^2*c^2*(-c^2*d*x^2+d)^(5/2)-1/2*a^
2/d/x^2*(-c^2*d*x^2+d)^(7/2)-5/6*a^2*c^2*d*(-c^2*d*x^2+d)^(3/2)+5/2*a^2*c^2
*d^(5/2)*ln((2*d+2*d^(1/2)*(-c^2*d*x^2+d)^(1/2))/x)-5/2*a^2*c^2*(-c^2*d*x^2
+d)^(1/2)*d^2-14/3*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c^3/(c^2*x^2-1)*(-c^2*x^2
+1)^(1/2)*arcsin(c*x)*x+2/9*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c^5/(c^2*x^2-1)*
(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^3+b^2*d^2*arcsin(c*x)*(-d*(c^2*x^2-1))^(1/
2)/x/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c+5/2*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*
x^2+1)^(1/2)*d^2*c^2/(c^2*x^2-1)*arcsin(c*x)^2*ln(1-I*c*x-(-c^2*x^2+1)^(1/2
))-5/2*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)*d^2*c^2/(c^2*x^2-1)*ar
csin(c*x)^2*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+2/9*a*b*(-d*(c^2*x^2-1))^(1/2)*d
^2*c^5/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^3-14/3*a*b*(-d*(c^2*x^2-1))^(1/2)*d
^2*c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+2/3*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2*
c^6/(c^2*x^2-1)*arcsin(c*x)*x^4-16/3*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^4/(c^
2*x^2-1)*arcsin(c*x)*x^2+a*b*d^2*(-d*(c^2*x^2-1))^(1/2)/x/(c^2*x^2-1)*(-c^2
*x^2+1)^(1/2)*c-2/27*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c^6/(c^2*x^2-1)*x^4+124
/27*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c^4/(c^2*x^2-1)*x^2+11/6*b^2*(-d*(c^2*x^
2-1))^(1/2)*d^2*c^2/(c^2*x^2-1)*arcsin(c*x)^2+1/2*b^2*d^2*arcsin(c*x)^2*(-d
*(c^2*x^2-1))^(1/2)/x^2/(c^2*x^2-1)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{6}\left(15\,c^2d^{\frac{5}{2}}\log\left(\frac{2\,\sqrt{-c^2dx^2+d}\,\sqrt{d}}{|x|}+\frac{2\,d}{|x|}\right)-3\left(-c^2dx^2+d\right)^{\frac{5}{2}}c^2-5\left(-c^2dx^2+d\right)^{\frac{3}{2}}c^2d-15\,\sqrt{-c^2dx^2+d}\,c^2d^2-\frac{3}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/x^3,x, algorithm="maxima
")
```

```
[Out] 1/6*(15*c^2*d^(5/2)*log(2*sqrt(-c^2*d*x^2 + d)*sqrt(d)/abs(x) + 2*d/abs(x))
 - 3*(-c^2*d*x^2 + d)^(5/2)*c^2 - 5*(-c^2*d*x^2 + d)^(3/2)*c^2*d - 15*sqrt(
-c^2*d*x^2 + d)*c^2*d^2 - 3*(-c^2*d*x^2 + d)^(7/2)/(d*x^2))*a^2 + sqrt(d)*i
ntegrate(((b^2*c^4*d^2*x^4 - 2*b^2*c^2*d^2*x^2 + b^2*d^2)*arctan2(c*x, sqrt
(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c^4*d^2*x^4 - 2*a*b*c^2*d^2*x^2 + a*b*
d^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x +
1)/x^3, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(d-c^2\,d\,x^2\right)}^{5/2}}{x^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2))/x^3,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2))/x^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-d\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}\left(a+b\operatorname{asin}\left(cx\right)\right)^{2}}{x^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))**2/x**3,x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(5/2)*(a + b*asin(c*x))**2/x**3, x)
```

3.233 $\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{x^4}\,dx$

Optimal. Leaf size=591

$$-\frac{bcd^2\left(1-c^2x^2\right)^{3/2}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3x^2}+\frac{5c^2d\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{3x}-\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\right.}{3x^3}$$

```
[Out] 5/3*c^2*d*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/x-1/3*(-c^2*d*x^2+d)^(5/
2)*(a+b*arcsin(c*x))^2/x^3-7/12*b^2*c^4*d^2*x*(-c^2*d*x^2+d)^(1/2)-1/3*b^2*
c^2*d^2*(-c^2*x^2+1)*(-c^2*d*x^2+d)^(1/2)/x-1/3*b*c*d^2*(-c^2*x^2+1)^(3/2)*
(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/x^2+5/2*c^4*d^2*x*(a+b*arcsin(c*x))^
2*(-c^2*d*x^2+d)^(1/2)+23/12*b^2*c^3*d^2*arcsin(c*x)*(-c^2*d*x^2+d)^(1/2)/(
-c^2*x^2+1)^(1/2)-5/2*b*c^5*d^2*x^2*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/
(-c^2*x^2+1)^(1/2)+7/3*I*c^3*d^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/(
-c^2*x^2+1)^(1/2)+5/6*c^3*d^2*(a+b*arcsin(c*x))^3*(-c^2*d*x^2+d)^(1/2)/b/(-
c^2*x^2+1)^(1/2)-14/3*b*c^3*d^2*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^
(1/2))^2)*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)+7/3*I*b^2*c^3*d^2*polylog
(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*d*x^2+d)^(1/2)/(-c^2*x^2+1)^(1/2)-7/
3*b*c^3*d^2*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)*(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.88, antiderivative size = 591, normalized size of antiderivative = 1.00, number of steps used = 27, number of rules used = 15, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.517, Rules used = {4695, 4647, 4641, 4627, 321, 216, 4683, 4625, 3717, 2190, 2279, 2391, 195, 4685, 277}

$$\frac{7ib^2c^3d^2\sqrt{d-c^2dx^2}\,\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)}{3\sqrt{1-c^2x^2}}-\frac{5bc^5d^2x^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{1-c^2x^2}}+\frac{5}{2}c^4d^2x\sqrt{d-c^2dx^2}\,\left(a+\right.$$

Antiderivative was successfully verified.

```
[In] Int[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2)/x^4,x]
```

```
[Out] (-7*b^2*c^4*d^2*x*Sqrt[d - c^2*d*x^2])/12 - (b^2*c^2*d^2*(1 - c^2*x^2)*Sqrt
[d - c^2*d*x^2])/(3*x) + (23*b^2*c^3*d^2*Sqrt[d - c^2*d*x^2]*ArcSin[c*x])/(
12*Sqrt[1 - c^2*x^2]) - (5*b*c^5*d^2*x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[
c*x]))/(2*Sqrt[1 - c^2*x^2]) - (7*b*c^3*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*
d*x^2]*(a + b*ArcSin[c*x]))/3 - (b*c*d^2*(1 - c^2*x^2)^(3/2)*Sqrt[d - c^2*d
*x^2]*(a + b*ArcSin[c*x]))/(3*x^2) + (5*c^4*d^2*x*Sqrt[d - c^2*d*x^2]*(a +
b*ArcSin[c*x])^2)/2 + (((7*I)/3)*c^3*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[
c*x])^2)/Sqrt[1 - c^2*x^2] + (5*c^2*d*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c
*x])^2)/(3*x) - ((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2)/(3*x^3) + (5*
c^3*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^3)/(6*b*Sqrt[1 - c^2*x^2])
- (14*b*c^3*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])*Log[1 - E^((2*I)*Ar
cSin[c*x])])/(3*Sqrt[1 - c^2*x^2]) + (((7*I)/3)*b^2*c^3*d^2*Sqrt[d - c^2*d*
x^2]*PolyLog[2, E^((2*I)*ArcSin[c*x])])/Sqrt[1 - c^2*x^2]
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 277

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c
*x)^(m + 1)*(a + b*x^n)^p)/(c*(m + 1)), x] - Dist[(b*n*p)/(c^n*(m + 1)), In
t[(c*x)^(m + n)*(a + b*x^n)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[
n, 0] && GtQ[p, 0] && LtQ[m, -1] &&  !ILtQ[(m + n*p + n + 1)/n, 0] && IntBi
nomialQ[a, b, c, n, m, p, x]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4683

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.))/(x_),
x_Symbol] :> Simp[((d + e*x^2)^p*(a + b*ArcSin[c*x]))/(2*p), x] + (Dist[d,
Int[((d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x]))/x, x], x] - Dist[(b*c*d^p)/(2
*p), Int[(1 - c^2*x^2)^(p - 1/2), x], x]) /; FreeQ[{a, b, c, d, e}, x] && E
qQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4685

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcSin[c*x
]))/(f*(m + 1)), x] + (-Dist[(b*c*d^p)/(f*(m + 1)), Int[(f*x)^(m + 1)*(1 -
c^2*x^2)^(p - 1/2), x], x] - Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m + 2)*
(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x]), x], x]) /; FreeQ[{a, b, c, d, e, f
}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0] && ILtQ[(m + 1)/2, 0]
```

Rule 4695

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m +
2)*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPar
t[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f
*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /;
 FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0
] && LtQ[m, -1]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{x^4}dx = -\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3x^3} - \frac{1}{3}\left(5c^2d\right)\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin\right.}{x^2}$$

$$= -\frac{bcd^2\left(1-c^2x^2\right)^{3/2}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{3x^2} + \frac{5c^2d\left(d-c^2dx^2\right)^{3/2}\left(\right.}{3x}$$

$$= -\frac{b^2c^2d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}{3x} - \frac{7}{3}bc^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}\left(a+b\sin\right.$$

$$= \frac{2}{3}b^2c^4d^2x\sqrt{d-c^2dx^2} - \frac{b^2c^2d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}{3x} - \frac{5bc^5d^2x^2\sqrt{d-c}}{2}$$

$$= -\frac{7}{12}b^2c^4d^2x\sqrt{d-c^2dx^2} - \frac{b^2c^2d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}{3x} + \frac{2b^2c^3d^2\sqrt{d-}}{3\sqrt{1}}$$

$$= -\frac{7}{12}b^2c^4d^2x\sqrt{d-c^2dx^2} - \frac{b^2c^2d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}{3x} + \frac{23b^2c^3d^2\sqrt{d}}{12\sqrt{}}$$

$$= -\frac{7}{12}b^2c^4d^2x\sqrt{d-c^2dx^2} - \frac{b^2c^2d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}{3x} + \frac{23b^2c^3d^2\sqrt{d}}{12\sqrt{}}$$

$$= -\frac{7}{12}b^2c^4d^2x\sqrt{d-c^2dx^2} - \frac{b^2c^2d^2\left(1-c^2x^2\right)\sqrt{d-c^2dx^2}}{3x} + \frac{23b^2c^3d^2\sqrt{d}}{12\sqrt{}}$$

Mathematica [A] time = 3.92, size = 690, normalized size = 1.17

$$\frac{d^2\left(28a^2c^2x^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2} - 4a^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2} + 6a^2c^4x^4\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2} - 30a^2c^3\sqrt{d}\,x^3\sqrt{}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2)/x^4,x]
```

```
[Out] (d^2*(-4*a*b*c*x*Sqrt[d - c^2*d*x^2] + 3*a*b*c^3*x^3*Sqrt[d - c^2*d*x^2] -
6*a*b*c^5*x^5*Sqrt[d - c^2*d*x^2] - 4*a^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*
x^2] + 28*a^2*c^2*x^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2] - 4*b^2*c^2*x^2
*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2] + 6*a^2*c^4*x^4*Sqrt[1 - c^2*x^2]*Sq
rt[d - c^2*d*x^2] - 3*b^2*c^4*x^4*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2] + 1
0*b^2*c^3*x^3*Sqrt[d - c^2*d*x^2]*ArcSin[c*x]^3 - 30*a^2*c^3*Sqrt[d]*x^3*Sq
rt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d - c^2*d*x^2])/(Sqrt[d]*(-1 + c^2*x^2))]
- 56*a*b*c^3*x^3*Sqrt[d - c^2*d*x^2]*Log[c*x] + (28*I)*b^2*c^3*x^3*Sqrt[d -
 c^2*d*x^2]*PolyLog[2, E^((2*I)*ArcSin[c*x])] + b*Sqrt[d - c^2*d*x^2]*ArcSi
n[c*x]*(-4*b*c*x - 6*a*Sqrt[1 - c^2*x^2] + 48*a*c^2*x^2*Sqrt[1 - c^2*x^2] +
 3*b*c^3*x^3*Cos[2*ArcSin[c*x]] - 2*a*Cos[3*ArcSin[c*x]] - 56*b*c^3*x^3*Log
[1 - E^((2*I)*ArcSin[c*x])] + 6*a*c^3*x^3*Sin[2*ArcSin[c*x]]) + b*Sqrt[d -
c^2*d*x^2]*ArcSin[c*x]^2*(30*a*c^3*x^3 + 4*b*((7*I)*c^3*x^3 - Sqrt[1 - c^2*
x^2] + 7*c^2*x^2*Sqrt[1 - c^2*x^2]) + 3*b*c^3*x^3*Sin[2*ArcSin[c*x]])))/(12
*x^3*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(a^2c^4d^2x^4 - 2\,a^2c^2d^2x^2 + a^2d^2 + \left(b^2c^4d^2x^4 - 2\,b^2c^2d^2x^2 + b^2d^2\right)\arcsin\left(cx\right)^2 + 2\left(abc^4d^2x^4 - 2\,abc^2d^2x\right.\right.}{x^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/x^4,x, algorithm="fricas
")
```

```
[Out] integral((a^2*c^4*d^2*x^4 - 2*a^2*c^2*d^2*x^2 + a^2*d^2 + (b^2*c^4*d^2*x^4
- 2*b^2*c^2*d^2*x^2 + b^2*d^2)*arcsin(c*x)^2 + 2*(a*b*c^4*d^2*x^4 - 2*a*b*c
^2*d^2*x^2 + a*b*d^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)/x^4, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/x^4,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [B] time = 0.73, size = 3855, normalized size = 6.52

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/x^4,x)
```

```
[Out] -70*I*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)*x^2/(c^2*x^2
-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^5+294*I*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2
/(63*c^4*x^4-15*c^2*x^2+1)*x^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c
^7+5/2*a^2*c^4*d^2*x*(-c^2*d*x^2+d)^(1/2)-1/4*b^2*(-d*(c^2*x^2-1))^(1/2)*d^
2*c^6/(c^2*x^2-1)*x^3+1/4*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c^4/(c^2*x^2-1)*x+
7/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)*x/(c^2*x^2-1
)*(-c^2*x^2+1)*c^4+14/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2
*x^2+1)/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^3-49/3*I*a*b*(-d*(c^2*
x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)*x^3/(c^2*x^2-1)*(-c^2*x^2+1)*c^
6+7/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)*x/(c^2*x^2
-1)*(-c^2*x^2+1)*arcsin(c*x)*c^4+147*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c
^4*x^4-15*c^2*x^2+1)*x^4/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)^2*c^7-4
9/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)*x^3/(c^2*x^2
-1)*(-c^2*x^2+1)*arcsin(c*x)*c^6-35*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^
4*x^4-15*c^2*x^2+1)*x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)^2*c^5-1/
3*a^2/d/x^3*(-c^2*d*x^2+d)^(7/2)+4/3*a^2*c^4*x*(-c^2*d*x^2+d)^(5/2)+5/2*a^2
*c^4*d^3/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+4/3*a^2
*c^2/d/x*(-c^2*d*x^2+d)^(7/2)+5/3*a^2*c^4*d*x*(-c^2*d*x^2+d)^(3/2)+1/2*b^2*
(-d*(c^2*x^2-1))^(1/2)*d^2*c^6/(c^2*x^2-1)*arcsin(c*x)^2*x^3-1/2*b^2*(-d*(c
^2*x^2-1))^(1/2)*d^2*c^4/(c^2*x^2-1)*arcsin(c*x)^2*x-56/3*b^2*(-d*(c^2*x^2-
1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)*x^5/(c^2*x^2-1)*c^8+71/3*b^2*(-d*(c
^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)*x^3/(c^2*x^2-1)*c^6-16/3*b^2
*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)*x/(c^2*x^2-1)*c^4+1/3
*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)/x/(c^2*x^2-1)*c^2
+1/3*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)/x^3/(c^2*x^2-
1)*arcsin(c*x)^2-5/6*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2
-1)*arcsin(c*x)^3*d^2*c^3-1/4*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c^3/(c^2*x^2-1
)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)-1/4*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^3/(c^
2*x^2-1)*(-c^2*x^2+1)^(1/2)-46/3*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4
-15*c^2*x^2+1)/x/(c^2*x^2-1)*arcsin(c*x)*c^2+1/3*a*b*(-d*(c^2*x^2-1))^(1/2)
*d^2/(63*c^4*x^4-15*c^2*x^2+1)/x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c+294*a*b
*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)*x^5/(c^2*x^2-1)*arcsi
n(c*x)*c^8-406*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)*x^3
```

```
/(c^2*x^2-1)*arcsin(c*x)*c^6+21*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-
15*c^2*x^2+1)*x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c^5-28*I*a*b*(-c^2*x^2+1)^
(1/2)*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)*d^2*c^3/(3*c^2*x^2-3)-49/3*I*a*b*(
-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)*x^5/(c^2*x^2-1)*c^8+56/
3*I*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)*x^3/(c^2*x^2-1
)*c^6-7/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)*x/(c^2
*x^2-1)*c^4+5*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)*x^
2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c^5-7/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2/(
63*c^4*x^4-15*c^2*x^2+1)*x/(c^2*x^2-1)*arcsin(c*x)*c^4-49/3*I*b^2*(-d*(c^2*
x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)*x^5/(c^2*x^2-1)*arcsin(c*x)*c^8
-21*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)*x^4/(c^2*x^2
-1)*(-c^2*x^2+1)^(1/2)*c^7+21*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15
*c^2*x^2+1)*x^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^5+1/3*b^2*(-d*
(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)/x^2/(c^2*x^2-1)*(-c^2*x^2+
1)^(1/2)*arcsin(c*x)*c+7/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*
c^2*x^2+1)/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)^2*c^3+56/3*I*b^2*(-d*
(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)*x^3/(c^2*x^2-1)*arcsin(c*x
)*c^6+380/3*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)*x/(c^2
*x^2-1)*arcsin(c*x)*c^4+147*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c
^2*x^2+1)*x^5/(c^2*x^2-1)*arcsin(c*x)^2*c^8-203*b^2*(-d*(c^2*x^2-1))^(1/2)*
d^2/(63*c^4*x^4-15*c^2*x^2+1)*x^3/(c^2*x^2-1)*arcsin(c*x)^2*c^6+190/3*b^2*(
-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)*x/(c^2*x^2-1)*arcsin(c*
x)^2*c^4-14*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*d^2*c^3/(3*c^2*
x^2-3)*arcsin(c*x)^2-14*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*d^2
*c^3/(3*c^2*x^2-3)*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))-14*I*b^2*(-c^2*x^2+
1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*d^2*c^3/(3*c^2*x^2-3)*polylog(2,I*c*x+(-c^2
*x^2+1)^(1/2))-1/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+
1)/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c^3+1/2*b^2*(-d*(c^2*x^2-1))^(1/2)*d^2*c^
5/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^2+7/3*b^2*(-d*(c^2*x^2-1))^(
1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)*x^3/(c^2*x^2-1)*(-c^2*x^2+1)*c^6-23/3*b^
2*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)/x/(c^2*x^2-1)*arcsin
(c*x)^2*c^2+14*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*d^2*c^3/(3*c^2
*x^2-3)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))*arcsin(c*x)-5*b^2*(-d*(c^2*x^2-1))^(
1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*
x)*c^3+a*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^6/(c^2*x^2-1)*arcsin(c*x)*x^3+1/2*a
*b*(-d*(c^2*x^2-1))^(1/2)*d^2*c^5/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x^2-a*b*(-
d*(c^2*x^2-1))^(1/2)*d^2*c^4/(c^2*x^2-1)*arcsin(c*x)*x+2/3*a*b*(-d*(c^2*x^2
-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)/x^3/(c^2*x^2-1)*arcsin(c*x)-5/2*a*
b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)*arcsin(c*x)^2*d^2*c
^3-5*a*b*(-d*(c^2*x^2-1))^(1/2)*d^2/(63*c^4*x^4-15*c^2*x^2+1)/(c^2*x^2-1)*(
-c^2*x^2+1)^(1/2)*c^3+14/3*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c
^2*x^2-1)*ln((I*c*x+(-c^2*x^2+1)^(1/2))^2-1)*d^2*c^3+14*b^2*(-c^2*x^2+1)^(1
/2)*(-d*(c^2*x^2-1))^(1/2)*d^2*c^3/(3*c^2*x^2-3)*ln(1-I*c*x-(-c^2*x^2+1)^(1
/2))*arcsin(c*x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{6}\left(10\left(-c^2dx^2+d\right)^{\frac{3}{2}}c^4dx+15\sqrt{-c^2dx^2+d}\,c^4d^2x+15\,c^3d^{\frac{5}{2}}\arcsin\left(cx\right)+\frac{8\left(-c^2dx^2+d\right)^{\frac{5}{2}}c^2}{x}-\frac{2\left(-c^2dx^2+d\right)^{\frac{7}{2}}}{dx^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/x^4,x, algorithm="maxima
")
```

```
[Out] 1/6*(10*(-c^2*d*x^2 + d)^(3/2)*c^4*d*x + 15*sqrt(-c^2*d*x^2 + d)*c^4*d^2*x
+ 15*c^3*d^(5/2)*arcsin(c*x) + 8*(-c^2*d*x^2 + d)^(5/2)*c^2/x - 2*(-c^2*d*x
^2 + d)^(7/2)/(d*x^3))*a^2 + sqrt(d)*integrate(((b^2*c^4*d^2*x^4 - 2*b^2*c^
2*d^2*x^2 + b^2*d^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*
```

```
c^4*d^2*x^4 - 2*a*b*c^2*d^2*x^2 + a*b*d^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(
-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/x^4, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))^2\,\left(d-c^2\,d\,x^2\right)^{5/2}}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2))/x^4,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2))/x^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(-d\,(cx-1)\,(cx+1))^{\frac{5}{2}}\,(a+b\,\mathrm{asin}\,(cx))^2}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))**2/x**4,x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(5/2)*(a + b*asin(c*x))**2/x**4, x)
```

3.234 $\int \frac{x^5\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=400

$$\frac{2bx^5\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{25c\sqrt{d-c^2dx^2}}-\frac{x^4\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{5c^2d}-\frac{8\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{15c^6d}+\frac{16abx\sqrt{1-}}{15c^5\sqrt{d-c}}$$

```
[Out] 298/225*b^2*(-c^2*x^2+1)/c^6/(-c^2*d*x^2+d)^(1/2)-76/675*b^2*(-c^2*x^2+1)^2
/c^6/(-c^2*d*x^2+d)^(1/2)+2/125*b^2*(-c^2*x^2+1)^3/c^6/(-c^2*d*x^2+d)^(1/2)
+16/15*a*b*x*(-c^2*x^2+1)^(1/2)/c^5/(-c^2*d*x^2+d)^(1/2)+16/15*b^2*x*arcsin
(c*x)*(-c^2*x^2+1)^(1/2)/c^5/(-c^2*d*x^2+d)^(1/2)+8/45*b*x^3*(a+b*arcsin(c*
x))*(-c^2*x^2+1)^(1/2)/c^3/(-c^2*d*x^2+d)^(1/2)+2/25*b*x^5*(a+b*arcsin(c*x)
)*(-c^2*x^2+1)^(1/2)/c/(-c^2*d*x^2+d)^(1/2)-8/15*(a+b*arcsin(c*x))^2*(-c^2*
d*x^2+d)^(1/2)/c^6/d-4/15*x^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/c^4/
d-1/5*x^4*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/c^2/d
```

Rubi [A] time = 0.58, antiderivative size = 400, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 7, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.241, Rules used = {4707, 4677, 4619, 261, 4627, 266, 43}

$$\frac{16abx\sqrt{1-c^2x^2}}{15c^5\sqrt{d-c^2dx^2}}+\frac{2bx^5\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{25c\sqrt{d-c^2dx^2}}-\frac{x^4\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{5c^2d}+\frac{8bx^3\sqrt{1-c^2x^2}\left(a+b\sin\right.}{45c^3\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (16*a*b*x*Sqrt[1 - c^2*x^2])/(15*c^5*Sqrt[d - c^2*d*x^2]) + (298*b^2*(1 - c
^2*x^2))/(225*c^6*Sqrt[d - c^2*d*x^2]) - (76*b^2*(1 - c^2*x^2)^2)/(675*c^6*
Sqrt[d - c^2*d*x^2]) + (2*b^2*(1 - c^2*x^2)^3)/(125*c^6*Sqrt[d - c^2*d*x^2]
) + (16*b^2*x*Sqrt[1 - c^2*x^2]*ArcSin[c*x])/(15*c^5*Sqrt[d - c^2*d*x^2]) +
 (8*b*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(45*c^3*Sqrt[d - c^2*d*x^2
]) + (2*b*x^5*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(25*c*Sqrt[d - c^2*d*x
^2]) - (8*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(15*c^6*d) - (4*x^2*Sq
rt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(15*c^4*d) - (x^4*Sqrt[d - c^2*d*x
^2]*(a + b*ArcSin[c*x])^2)/(5*c^2*d)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^5\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx = -\frac{x^4\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{5c^2d}+\frac{4\int\frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx}{5c^2}+\frac{\left(2b\sqrt{1-c^2x^2}\right)\int x}{5c\sqrt{d}}$$

$$=\frac{2bx^5\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{25c\sqrt{d-c^2dx^2}}-\frac{4x^2\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{15c^4d}-\frac{x^4\sqrt{d-}}{}$$

$$=\frac{8bx^3\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{45c^3\sqrt{d-c^2dx^2}}+\frac{2bx^5\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{25c\sqrt{d-c^2dx^2}}-\frac{8\sqrt{d-c^2}}{}$$

$$=\frac{16abx\sqrt{1-c^2x^2}}{15c^5\sqrt{d-c^2dx^2}}+\frac{8bx^3\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{45c^3\sqrt{d-c^2dx^2}}+\frac{2bx^5\sqrt{1-c^2x^2}\,\left(a+b\sin\right.}{25c\sqrt{d-c^2dx^2}}$$

$$=\frac{16abx\sqrt{1-c^2x^2}}{15c^5\sqrt{d-c^2dx^2}}+\frac{2b^2\left(1-c^2x^2\right)}{25c^6\sqrt{d-c^2dx^2}}-\frac{4b^2\left(1-c^2x^2\right)^2}{75c^6\sqrt{d-c^2dx^2}}+\frac{2b^2\left(1-c^2x^2\right)^3}{125c^6\sqrt{d-c^2dx^2}}+$$

$$=\frac{16abx\sqrt{1-c^2x^2}}{15c^5\sqrt{d-c^2dx^2}}+\frac{298b^2\left(1-c^2x^2\right)}{225c^6\sqrt{d-c^2dx^2}}-\frac{76b^2\left(1-c^2x^2\right)^2}{675c^6\sqrt{d-c^2dx^2}}+\frac{2b^2\left(1-c^2x^2\right)^3}{125c^6\sqrt{d-c^2dx^2}}$$

Mathematica [A] time = 0.20, size = 230, normalized size = 0.58

$$\frac{225a^2\left(3c^6x^6+c^4x^4+4c^2x^2-8\right)+30abcx\sqrt{1-c^2x^2}\left(9c^4x^4+20c^2x^2+120\right)+30b\sin^{-1}(cx)\left(15a\left(3c^6x^6+c^4x^4\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (30*a*b*c*x*Sqrt[1 - c^2*x^2]*(120 + 20*c^2*x^2 + 9*c^4*x^4) + 225*a^2*(-8
+ 4*c^2*x^2 + c^4*x^4 + 3*c^6*x^6) - 2*b^2*(-2072 + 1936*c^2*x^2 + 109*c^4*
x^4 + 27*c^6*x^6) + 30*b*(b*c*x*Sqrt[1 - c^2*x^2]*(120 + 20*c^2*x^2 + 9*c^4
*x^4) + 15*a*(-8 + 4*c^2*x^2 + c^4*x^4 + 3*c^6*x^6))*ArcSin[c*x] + 225*b^2*
(-8 + 4*c^2*x^2 + c^4*x^4 + 3*c^6*x^6)*ArcSin[c*x]^2)/(3375*c^6*Sqrt[d - c^
2*d*x^2])
```

fricas [A] time = 0.46, size = 276, normalized size = 0.69

$$-\frac{30\left(9\,abc^5x^5+20\,abc^3x^3+120\,abcx+\left(9\,b^2c^5x^5+20\,b^2c^3x^3+120\,b^2cx\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+1}\,-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="fricas
")
```

```
[Out] -1/3375*(30*(9*a*b*c^5*x^5 + 20*a*b*c^3*x^3 + 120*a*b*c*x + (9*b^2*c^5*x^5
+ 20*b^2*c^3*x^3 + 120*b^2*c*x)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)*sqrt(-c^2
*x^2 + 1) + (27*(25*a^2 - 2*b^2)*c^6*x^6 + (225*a^2 - 218*b^2)*c^4*x^4 + 4*
(225*a^2 - 968*b^2)*c^2*x^2 + 225*(3*b^2*c^6*x^6 + b^2*c^4*x^4 + 4*b^2*c^2*
x^2 - 8*b^2)*arcsin(c*x)^2 - 1800*a^2 + 4144*b^2 + 450*(3*a*b*c^6*x^6 + a*b
*c^4*x^4 + 4*a*b*c^2*x^2 - 8*a*b)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d))/(c^8*d
*x^2 - c^6*d)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.79, size = 1020, normalized size = 2.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] a^2*(-1/5*x^4/c^2/d*(-c^2*d*x^2+d)^(1/2)+4/5/c^2*(-1/3*x^2/c^2/d*(-c^2*d*x^
2+d)^(1/2)-2/3/d/c^4*(-c^2*d*x^2+d)^(1/2)))+b^2*(5/1728*(-d*(c^2*x^2-1))^(1
/2)*(2*c^2*x^2-2*I*(-c^2*x^2+1)^(1/2)*x*c-1)*(6*I*arcsin(c*x)+9*arcsin(c*x)
^2-2)/c^6/d/(c^2*x^2-1)-5/16*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)
^(1/2)*x*c-1)*(arcsin(c*x)^2-2+2*I*arcsin(c*x))/c^6/d/(c^2*x^2-1)-5/16*(-d*
(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(arcsin(c*x)^2-2-2*
I*arcsin(c*x))/c^6/d/(c^2*x^2-1)+5/1728*(-d*(c^2*x^2-1))^(1/2)*(2*I*(-c^2*x
```

```
^2+1)^(1/2)*x*c+2*c^2*x^2-1)*(-6*I*arcsin(c*x)+9*arcsin(c*x)^2-2)/c^6/d/(c^
2*x^2-1)+1/4000*(-d*(c^2*x^2-1))^(1/2)/c^6/d/(c^2*x^2-1)*(25*arcsin(c*x)^2-
2)*cos(6*arcsin(c*x))-1/400*(-d*(c^2*x^2-1))^(1/2)/c^6/d/(c^2*x^2-1)*arcsin
(c*x)*sin(6*arcsin(c*x))-1/54000*(-d*(c^2*x^2-1))^(1/2)/c^6/d/(c^2*x^2-1)*(
2475*arcsin(c*x)^2-598)*cos(4*arcsin(c*x))+29/900*(-d*(c^2*x^2-1))^(1/2)/c^
6/d/(c^2*x^2-1)*arcsin(c*x)*sin(4*arcsin(c*x)))+2*a*b*(5/576*(-d*(c^2*x^2-1
))^(1/2)*(2*c^2*x^2-2*I*(-c^2*x^2+1)^(1/2)*x*c-1)*(I+3*arcsin(c*x))/c^6/d/(
c^2*x^2-1)-5/16*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)
*(I+arcsin(c*x))/c^6/d/(c^2*x^2-1)-5/16*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2
+1)^(1/2)*x*c+c^2*x^2-1)*(arcsin(c*x)-I)/c^6/d/(c^2*x^2-1)+5/576*(-d*(c^2*x
^2-1))^(1/2)*(2*I*(-c^2*x^2+1)^(1/2)*x*c+2*c^2*x^2-1)*(-I+3*arcsin(c*x))/c^
6/d/(c^2*x^2-1)+1/160*(-d*(c^2*x^2-1))^(1/2)/c^6/d/(c^2*x^2-1)*arcsin(c*x)*
cos(6*arcsin(c*x))-1/800*(-d*(c^2*x^2-1))^(1/2)/c^6/d/(c^2*x^2-1)*sin(6*arc
sin(c*x))-11/240*(-d*(c^2*x^2-1))^(1/2)/c^6/d/(c^2*x^2-1)*arcsin(c*x)*cos(4
*arcsin(c*x))+29/1800*(-d*(c^2*x^2-1))^(1/2)/c^6/d/(c^2*x^2-1)*sin(4*arcsin
(c*x)))
```

maxima [A] time = 1.47, size = 365, normalized size = 0.91

$$-\frac{1}{15}\left(\frac{3\sqrt{-c^2dx^2+d}\,x^4}{c^2d}+\frac{4\sqrt{-c^2dx^2+d}\,x^2}{c^4d}+\frac{8\sqrt{-c^2dx^2+d}}{c^6d}\right)b^2\arcsin(cx)^2-\frac{2}{15}\left(\frac{3\sqrt{-c^2dx^2+d}\,x^4}{c^2d}+\frac{4\sqrt{-}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxima
")
```

```
[Out] -1/15*(3*sqrt(-c^2*d*x^2 + d)*x^4/(c^2*d) + 4*sqrt(-c^2*d*x^2 + d)*x^2/(c^4
*d) + 8*sqrt(-c^2*d*x^2 + d)/(c^6*d))*b^2*arcsin(c*x)^2 - 2/15*(3*sqrt(-c^2
*d*x^2 + d)*x^4/(c^2*d) + 4*sqrt(-c^2*d*x^2 + d)*x^2/(c^4*d) + 8*sqrt(-c^2*
d*x^2 + d)/(c^6*d))*a*b*arcsin(c*x) - 1/15*(3*sqrt(-c^2*d*x^2 + d)*x^4/(c^2
*d) + 4*sqrt(-c^2*d*x^2 + d)*x^2/(c^4*d) + 8*sqrt(-c^2*d*x^2 + d)/(c^6*d))*
a^2 + 2/3375*b^2*((27*sqrt(-c^2*x^2 + 1)*c^2*x^4 + 136*sqrt(-c^2*x^2 + 1)*x
^2 + 2072*sqrt(-c^2*x^2 + 1)/c^2)/(c^4*sqrt(d)) + 15*(9*c^4*x^5 + 20*c^2*x^
3 + 120*x)*arcsin(c*x)/(c^5*sqrt(d))) + 2/225*(9*c^4*x^5 + 20*c^2*x^3 + 120
*x)*a*b/(c^5*sqrt(d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^5\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int((x^5*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^5\left(a+b\,\mathrm{asin}\,(cx)\right)^2}{\sqrt{-d\,(cx-1)\,(cx+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral(x**5*(a + b*asin(c*x))**2/sqrt(-d*(c*x - 1)*(c*x + 1)), x)
```

3.235 $\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=337

$$\frac{bx^4\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{8c\sqrt{d-c^2dx^2}}-\frac{x^3\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{4c^2d}+\frac{\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^3}{8bc^5\sqrt{d-c^2dx^2}}-\frac{3x\sqrt{d-c^2dx^2}}{8}$$

```
[Out] 15/64*b^2*x*(-c^2*x^2+1)/c^4/(-c^2*d*x^2+d)^(1/2)+1/32*b^2*x^3*(-c^2*x^2+1)
/c^2/(-c^2*d*x^2+d)^(1/2)-15/64*b^2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)/c^5/(-c^
2*d*x^2+d)^(1/2)+3/8*b*x^2*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3/(-c^2*d
*x^2+d)^(1/2)+1/8*b*x^4*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c/(-c^2*d*x^2+
d)^(1/2)+1/8*(a+b*arcsin(c*x))^3*(-c^2*x^2+1)^(1/2)/b/c^5/(-c^2*d*x^2+d)^(1
/2)-3/8*x*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/c^4/d-1/4*x^3*(a+b*arcsi
n(c*x))^2*(-c^2*d*x^2+d)^(1/2)/c^2/d
```

Rubi [A] time = 0.48, antiderivative size = 337, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = {4707, 4643, 4641, 4627, 321, 216}

$$\frac{bx^4\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{8c\sqrt{d-c^2dx^2}}-\frac{x^3\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{4c^2d}+\frac{3bx^2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{8c^3\sqrt{d-c^2dx^2}}-\frac{3x\sqrt{d-c^2}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (15*b^2*x*(1 - c^2*x^2))/(64*c^4*Sqrt[d - c^2*d*x^2]) + (b^2*x^3*(1 - c^2*x
^2))/(32*c^2*Sqrt[d - c^2*d*x^2]) - (15*b^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x])/
(64*c^5*Sqrt[d - c^2*d*x^2]) + (3*b*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x
]))/(8*c^3*Sqrt[d - c^2*d*x^2]) + (b*x^4*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*
x]))/(8*c*Sqrt[d - c^2*d*x^2]) - (3*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x
])^2)/(8*c^4*d) - (x^3*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(4*c^2*d)
 + (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3)/(8*b*c^5*Sqrt[d - c^2*d*x^2])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
```

```
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4643

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcSin[c*x])^n
/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e
, 0] &&  !GtQ[d, 0]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx = -\frac{x^3\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{4c^2d}+\frac{3\int\frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx}{4c^2}+\frac{\left(b\sqrt{1-c^2x^2}\right)\int x^3}{2c\sqrt{d}}$$

$$=\frac{bx^4\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{8c\sqrt{d-c^2dx^2}}-\frac{3x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{8c^4d}-\frac{x^3\sqrt{d-c^2}}{}$$

$$=\frac{b^2x^3\left(1-c^2x^2\right)}{32c^2\sqrt{d-c^2dx^2}}+\frac{3bx^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{8c^3\sqrt{d-c^2dx^2}}+\frac{bx^4\sqrt{1-c^2x^2}\left(a+b\sin\right.}{8c\sqrt{d-c^2dx^2}}$$

$$=\frac{15b^2x\left(1-c^2x^2\right)}{64c^4\sqrt{d-c^2dx^2}}+\frac{b^2x^3\left(1-c^2x^2\right)}{32c^2\sqrt{d-c^2dx^2}}+\frac{3bx^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{8c^3\sqrt{d-c^2dx^2}}+\frac{bx^4\sqrt{}}{}$$

$$=\frac{15b^2x\left(1-c^2x^2\right)}{64c^4\sqrt{d-c^2dx^2}}+\frac{b^2x^3\left(1-c^2x^2\right)}{32c^2\sqrt{d-c^2dx^2}}-\frac{15b^2\sqrt{1-c^2x^2}\sin^{-1}(cx)}{64c^5\sqrt{d-c^2dx^2}}+\frac{3bx^2\sqrt{1-c^2x}}{8c^3\sqrt{}}$$

Mathematica [A] time = 1.55, size = 283, normalized size = 0.84

$$32a^2c\sqrt{d}\,x\left(c^2x^2-1\right)\left(2c^2x^2+3\right)-96a^2\sqrt{d-c^2dx^2}\tan^{-1}\left(\frac{cx\sqrt{d-c^2dx^2}}{\sqrt{d}\left(c^2x^2-1\right)}\right)-4ab\sqrt{d}\sqrt{1-c^2x^2}\left(-4\sin^{-1}(cx)\left(6\sin\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (32*a^2*c*Sqrt[d]*x*(-1 + c^2*x^2)*(3 + 2*c^2*x^2) - 96*a^2*Sqrt[d - c^2*d*
x^2]*ArcTan[(c*x*Sqrt[d - c^2*d*x^2])/(Sqrt[d]*(-1 + c^2*x^2))] + b^2*Sqrt[
d]*Sqrt[1 - c^2*x^2]*(32*ArcSin[c*x]^3 + 4*ArcSin[c*x]*(-16*Cos[2*ArcSin[c*
x]] + Cos[4*ArcSin[c*x]]) + 32*Sin[2*ArcSin[c*x]] - Sin[4*ArcSin[c*x]] + 8*
ArcSin[c*x]^2*(-8*Sin[2*ArcSin[c*x]] + Sin[4*ArcSin[c*x]])) - 4*a*b*Sqrt[d]
*Sqrt[1 - c^2*x^2]*(16*Cos[2*ArcSin[c*x]] - Cos[4*ArcSin[c*x]] - 4*ArcSin[c
*x]*(6*ArcSin[c*x] - 8*Sin[2*ArcSin[c*x]] + Sin[4*ArcSin[c*x]])))/(256*c^5*
Sqrt[d]*Sqrt[d - c^2*d*x^2])
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(b^2x^4\arcsin\left(cx\right)^2+2\,abx^4\arcsin\left(cx\right)+a^2x^4\right)\sqrt{-c^2dx^2+d}}{c^2dx^2-d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="fricas
")
```

```
[Out] integral(-(b^2*x^4*arcsin(c*x)^2 + 2*a*b*x^4*arcsin(c*x) + a^2*x^4)*sqrt(-c
^2*d*x^2 + d)/(c^2*d*x^2 - d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\arcsin\left(cx\right)+a\right)^2x^4}{\sqrt{-c^2dx^2+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2*x^4/sqrt(-c^2*d*x^2 + d), x)
```

maple [B] time = 0.94, size = 858, normalized size = 2.55

$$-\frac{a^2x^3\sqrt{-c^2d\,x^2+d}}{4c^2d}-\frac{3a^2x\sqrt{-c^2d\,x^2+d}}{8c^4d}+\frac{3a^2\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2d\,x^2+d}}\right)}{8c^4\sqrt{c^2d}}-\frac{b^2\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x^2+1}\,\arcsin\left(cx\right)^3}{8c^5d\left(c^2x^2-1\right)}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] -1/4*a^2*x^3/c^2/d*(-c^2*d*x^2+d)^(1/2)-3/8*a^2/c^4*x/d*(-c^2*d*x^2+d)^(1/2
)+3/8*a^2/c^4/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-1/
8*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^5/d/(c^2*x^2-1)*arcsin(c*
x)^3+1/8*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^5/d/(c^2*x^2-1)*ar
csin(c*x)+1/8*b^2*(-d*(c^2*x^2-1))^(1/2)/c^4/d/(c^2*x^2-1)*x*arcsin(c*x)^2-
1/16*b^2*(-d*(c^2*x^2-1))^(1/2)/c^4/d/(c^2*x^2-1)*x-1/128*b^2*(-d*(c^2*x^2-
1))^(1/2)/c^5/d/(c^2*x^2-1)*arcsin(c*x)*cos(5*arcsin(c*x))-1/64*b^2*(-d*(c^
2*x^2-1))^(1/2)/c^5/d/(c^2*x^2-1)*sin(5*arcsin(c*x))*arcsin(c*x)^2+1/512*b^
2*(-d*(c^2*x^2-1))^(1/2)/c^5/d/(c^2*x^2-1)*sin(5*arcsin(c*x))+15/128*b^2*(-
d*(c^2*x^2-1))^(1/2)/c^5/d/(c^2*x^2-1)*arcsin(c*x)*cos(3*arcsin(c*x))+7/64*
b^2*(-d*(c^2*x^2-1))^(1/2)/c^5/d/(c^2*x^2-1)*sin(3*arcsin(c*x))*arcsin(c*x)
^2-31/512*b^2*(-d*(c^2*x^2-1))^(1/2)/c^5/d/(c^2*x^2-1)*sin(3*arcsin(c*x))-3
/8*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^5/d/(c^2*x^2-1)*arcsin(c
*x)^2-1/8*a*b/c^5/(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)+1/4*a*b*(-d*(c^
2*x^2-1))^(1/2)/c^4/d/(c^2*x^2-1)*arcsin(c*x)*x-1/128*a*b*(-d*(c^2*x^2-1))^
(1/2)/c^5/d/(c^2*x^2-1)*cos(5*arcsin(c*x))-1/32*a*b*(-d*(c^2*x^2-1))^(1/2)/
c^5/d/(c^2*x^2-1)*arcsin(c*x)*sin(5*arcsin(c*x))+15/128*a*b*(-d*(c^2*x^2-1)
)^(1/2)/c^5/d/(c^2*x^2-1)*cos(3*arcsin(c*x))+7/32*a*b*(-d*(c^2*x^2-1))^(1/2
)/c^5/d/(c^2*x^2-1)*arcsin(c*x)*sin(3*arcsin(c*x))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{8}a^2\left(\frac{2\sqrt{-c^2dx^2+d}\,x^3}{c^2d}+\frac{3\sqrt{-c^2dx^2+d}\,x}{c^4d}-\frac{3\arcsin\left(cx\right)}{c^5\sqrt{d}}\right)-\sqrt{d}\int\frac{\left(b^2x^4\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)^2+2\,a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxima
")
```

```
[Out] -1/8*a^2*(2*sqrt(-c^2*d*x^2 + d)*x^3/(c^2*d) + 3*sqrt(-c^2*d*x^2 + d)*x/(c^
4*d) - 3*arcsin(c*x)/(c^5*sqrt(d))) - sqrt(d)*integrate((b^2*x^4*arctan2(c*
x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a*b*x^4*arctan2(c*x, sqrt(c*x + 1)*s
qrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c^2*d*x^2 - d), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^4\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int((x^4*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{4} \left(a + b \operatorname{asin}{\left(cx \right)}\right)^{2}}{\sqrt{- d \left(cx - 1\right) \left(cx + 1\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral(x**4*(a + b*asin(c*x))**2/sqrt(-d*(c*x - 1)*(c*x + 1)), x)
```

3.236 $\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=277

$$-\frac{x^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d}+\frac{2bx^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{9c\sqrt{d-c^2dx^2}}-\frac{2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{3c^4d}+\frac{4abx\sqrt{1-}}{3c^3\sqrt{d-}}$$

```
[Out] 14/9*b^2*(-c^2*x^2+1)/c^4/(-c^2*d*x^2+d)^(1/2)-2/27*b^2*(-c^2*x^2+1)^2/c^4/
(-c^2*d*x^2+d)^(1/2)+4/3*a*b*x*(-c^2*x^2+1)^(1/2)/c^3/(-c^2*d*x^2+d)^(1/2)+
4/3*b^2*x*arcsin(c*x)*(-c^2*x^2+1)^(1/2)/c^3/(-c^2*d*x^2+d)^(1/2)+2/9*b*x^3
*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c/(-c^2*d*x^2+d)^(1/2)-2/3*(a+b*arcsi
n(c*x))^2*(-c^2*d*x^2+d)^(1/2)/c^4/d-1/3*x^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^
2+d)^(1/2)/c^2/d
```

Rubi [A] time = 0.33, antiderivative size = 277, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.241$, Rules used = {4707, 4677, 4619, 261, 4627, 266, 43}

$$\frac{4abx\sqrt{1-c^2x^2}}{3c^3\sqrt{d-c^2dx^2}}+\frac{2bx^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{9c\sqrt{d-c^2dx^2}}-\frac{x^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d}-\frac{2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(c\right.}{3c^4d}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (4*a*b*x*Sqrt[1 - c^2*x^2])/(3*c^3*Sqrt[d - c^2*d*x^2]) + (14*b^2*(1 - c^2*
x^2))/(9*c^4*Sqrt[d - c^2*d*x^2]) - (2*b^2*(1 - c^2*x^2)^2)/(27*c^4*Sqrt[d
- c^2*d*x^2]) + (4*b^2*x*Sqrt[1 - c^2*x^2]*ArcSin[c*x])/(3*c^3*Sqrt[d - c^2
*d*x^2]) + (2*b*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(9*c*Sqrt[d - c^
2*d*x^2]) - (2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(3*c^4*d) - (x^2*
Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(3*c^2*d)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx = -\frac{x^2\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d}+\frac{2\int\frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx}{3c^2}+\frac{\left(2b\sqrt{1-c^2x^2}\right)\int x^{\cdots}}{3c\sqrt{d\cdots}}$$

$$= \frac{2bx^3\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{9c\sqrt{d-c^2dx^2}}-\frac{2\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{3c^4d}-\frac{x^2\sqrt{d-c^2\cdots}}{\cdots}$$

$$= \frac{4abx\sqrt{1-c^2x^2}}{3c^3\sqrt{d-c^2dx^2}}+\frac{2bx^3\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{9c\sqrt{d-c^2dx^2}}-\frac{2\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(\cdots\right.}{3c^4d}$$

$$= \frac{4abx\sqrt{1-c^2x^2}}{3c^3\sqrt{d-c^2dx^2}}+\frac{4b^2x\sqrt{1-c^2x^2}\,\sin^{-1}(cx)}{3c^3\sqrt{d-c^2dx^2}}+\frac{2bx^3\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{9c\sqrt{d-c^2dx^2}}\cdots$$

$$= \frac{4abx\sqrt{1-c^2x^2}}{3c^3\sqrt{d-c^2dx^2}}+\frac{14b^2\left(1-c^2x^2\right)}{9c^4\sqrt{d-c^2dx^2}}-\frac{2b^2\left(1-c^2x^2\right)^2}{27c^4\sqrt{d-c^2dx^2}}+\frac{4b^2x\sqrt{1-c^2x^2}\,\sin^{-1}(cx\cdots}{3c^3\sqrt{d-c^2dx^2}}$$

Mathematica [A] time = 0.13, size = 176, normalized size = 0.64

$$\frac{9a^2\left(c^4x^4+c^2x^2-2\right)+6abcx\sqrt{1-c^2x^2}\,\left(c^2x^2+6\right)+6b\sin^{-1}(cx)\left(3a\left(c^4x^4+c^2x^2-2\right)+bcx\sqrt{1-c^2x^2}\,\left(c^2x^2\cdots\right.\right.}{27c^4\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (6*a*b*c*x*Sqrt[1 - c^2*x^2]*(6 + c^2*x^2) + 9*a^2*(-2 + c^2*x^2 + c^4*x^4)
 - 2*b^2*(-20 + 19*c^2*x^2 + c^4*x^4) + 6*b*(b*c*x*Sqrt[1 - c^2*x^2]*(6 + c
^2*x^2) + 3*a*(-2 + c^2*x^2 + c^4*x^4))*ArcSin[c*x] + 9*b^2*(-2 + c^2*x^2 +
 c^4*x^4)*ArcSin[c*x]^2)/(27*c^4*Sqrt[d - c^2*d*x^2])
```

fricas [A] time = 0.45, size = 210, normalized size = 0.76

$$-\frac{6\left(abc^3x^3+6\,abcx+\left(b^2c^3x^3+6\,b^2cx\right)\arcsin\left(cx\right)\right)\sqrt{-c^2dx^2+d}\,\sqrt{-c^2x^2+1}+\left(\left(9\,a^2-2\,b^2\right)c^4x^4+\left(9\,a^2-38\,b^2\right.\right.}{27\left(c\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="fricas
")
```

```
[Out] -1/27*(6*(a*b*c^3*x^3 + 6*a*b*c*x + (b^2*c^3*x^3 + 6*b^2*c*x)*arcsin(c*x))*
sqrt(-c^2*d*x^2 + d)*sqrt(-c^2*x^2 + 1) + ((9*a^2 - 2*b^2)*c^4*x^4 + (9*a^2
 - 38*b^2)*c^2*x^2 + 9*(b^2*c^4*x^4 + b^2*c^2*x^2 - 2*b^2)*arcsin(c*x)^2 -
18*a^2 + 40*b^2 + 18*(a*b*c^4*x^4 + a*b*c^2*x^2 - 2*a*b)*arcsin(c*x))*sqrt(
-c^2*d*x^2 + d))/(c^6*d*x^2 - c^4*d)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.59, size = 812, normalized size = 2.93

$$a^2\left(-\frac{x^2\sqrt{-c^2d\,x^2+d}}{3c^2d}-\frac{2\sqrt{-c^2d\,x^2+d}}{3d\,c^4}\right)+b^2\left(\frac{\sqrt{-d\left(c^2x^2-1\right)}\,\left(2c^2x^2-2i\sqrt{-c^2x^2+1}\,xc-1\right)\left(6i\arcsin\left(cx\right)+9\right.}{432c^4d\left(c^2x^2-1\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] a^2*(-1/3*x^2/c^2/d*(-c^2*d*x^2+d)^(1/2)-2/3/d/c^4*(-c^2*d*x^2+d)^(1/2))+b^
2*(1/432*(-d*(c^2*x^2-1))^(1/2)*(2*c^2*x^2-2*I*(-c^2*x^2+1)^(1/2)*x*c-1)*(6
*I*arcsin(c*x)+9*arcsin(c*x)^2-2)/c^4/d/(c^2*x^2-1)-3/8*(-d*(c^2*x^2-1))^(1
/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*(arcsin(c*x)^2-2+2*I*arcsin(c*x))/
c^4/d/(c^2*x^2-1)-3/8*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*
x^2-1)*(arcsin(c*x)^2-2-2*I*arcsin(c*x))/c^4/d/(c^2*x^2-1)+1/432*(-d*(c^2*x
^2-1))^(1/2)*(2*I*(-c^2*x^2+1)^(1/2)*x*c+2*c^2*x^2-1)*(-6*I*arcsin(c*x)+9*a
rcsin(c*x)^2-2)/c^4/d/(c^2*x^2-1)-1/216*(-d*(c^2*x^2-1))^(1/2)/c^4/d/(c^2*x
^2-1)*(9*arcsin(c*x)^2-2)*cos(4*arcsin(c*x))+1/36*(-d*(c^2*x^2-1))^(1/2)/c^
4/d/(c^2*x^2-1)*arcsin(c*x)*sin(4*arcsin(c*x)))+2*a*b*(1/144*(-d*(c^2*x^2-1
))^(1/2)*(2*c^2*x^2-2*I*(-c^2*x^2+1)^(1/2)*x*c-1)*(I+3*arcsin(c*x))/c^4/d/(
c^2*x^2-1)-3/8*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*
(I+arcsin(c*x))/c^4/d/(c^2*x^2-1)-3/8*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1
)^(1/2)*x*c+c^2*x^2-1)*(arcsin(c*x)-I)/c^4/d/(c^2*x^2-1)+1/144*(-d*(c^2*x^2
-1))^(1/2)*(2*I*(-c^2*x^2+1)^(1/2)*x*c+2*c^2*x^2-1)*(-I+3*arcsin(c*x))/c^4/
d/(c^2*x^2-1)-1/24*(-d*(c^2*x^2-1))^(1/2)/c^4/d/(c^2*x^2-1)*arcsin(c*x)*cos
(4*arcsin(c*x))+1/72*(-d*(c^2*x^2-1))^(1/2)/c^4/d/(c^2*x^2-1)*sin(4*arcsin(
c*x)))
```

maxima [A] time = 0.56, size = 251, normalized size = 0.91

$$-\frac{1}{3}\,b^2\left(\frac{\sqrt{-c^2dx^2+d}\,x^2}{c^2d}+\frac{2\sqrt{-c^2dx^2+d}}{c^4d}\right)\arcsin\left(cx\right)^2-\frac{2}{3}\,ab\left(\frac{\sqrt{-c^2dx^2+d}\,x^2}{c^2d}+\frac{2\sqrt{-c^2dx^2+d}}{c^4d}\right)\arcsin\left(cx\right)-\frac{1}{3}\,a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxima
")
```

```
[Out] -1/3*b^2*(sqrt(-c^2*d*x^2 + d)*x^2/(c^2*d) + 2*sqrt(-c^2*d*x^2 + d)/(c^4*d)
)*arcsin(c*x)^2 - 2/3*a*b*(sqrt(-c^2*d*x^2 + d)*x^2/(c^2*d) + 2*sqrt(-c^2*d
*x^2 + d)/(c^4*d))*arcsin(c*x) - 1/3*a^2*(sqrt(-c^2*d*x^2 + d)*x^2/(c^2*d)
+ 2*sqrt(-c^2*d*x^2 + d)/(c^4*d)) + 2/27*b^2*((sqrt(-c^2*x^2 + 1)*x^2 + 20*
sqrt(-c^2*x^2 + 1)/c^2)/(c^2*sqrt(d)) + 3*(c^2*x^3 + 6*x)*arcsin(c*x)/(c^3*
sqrt(d))) + 2/9*(c^2*x^3 + 6*x)*a*b/(c^3*sqrt(d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{\sqrt{d-c^2\,d\,x^2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int((x^3*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{3} \left(a + b \operatorname{asin}{\left(c x \right)}\right)^{2}}{\sqrt{- d \left(c x - 1\right) \left(c x + 1\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral(x**3*(a + b*asin(c*x))**2/sqrt(-d*(c*x - 1)*(c*x + 1)), x)
```

3.237 $\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=206

$$-\frac{x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d}+\frac{bx^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c\sqrt{d-c^2dx^2}}+\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{6bc^3\sqrt{d-c^2dx^2}}+\frac{b^2x\sqrt{d-c^2dx^2}}{4c^2d}$$

```
[Out] -1/4*b^2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)/c^3/(-c^2*d*x^2+d)^(1/2)+1/2*b*x^2*
(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c/(-c^2*d*x^2+d)^(1/2)+1/6*(a+b*arcsin
(c*x))^3*(-c^2*x^2+1)^(1/2)/b/c^3/(-c^2*d*x^2+d)^(1/2)+1/4*b^2*x*(-c^2*d*x^
2+d)^(1/2)/c^2/d-1/2*x*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/c^2/d
```

Rubi [A] time = 0.27, antiderivative size = 213, normalized size of antiderivative = 1.03, number of steps used = 6, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {4707, 4643, 4641, 4627, 321, 216}

$$\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{6bc^3\sqrt{d-c^2dx^2}}-\frac{x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d}+\frac{bx^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c\sqrt{d-c^2dx^2}}+\frac{b^2x\left(1-c^2x^2\right)}{4c^2\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (b^2*x*(1 - c^2*x^2))/(4*c^2*Sqrt[d - c^2*d*x^2]) - (b^2*Sqrt[1 - c^2*x^2]*
ArcSin[c*x])/(4*c^3*Sqrt[d - c^2*d*x^2]) + (b*x^2*Sqrt[1 - c^2*x^2]*(a + b*
ArcSin[c*x]))/(2*c*Sqrt[d - c^2*d*x^2]) - (x*Sqrt[d - c^2*d*x^2]*(a + b*Arc
Sin[c*x])^2)/(2*c^2*d) + (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3)/(6*b*c^3
*Sqrt[d - c^2*d*x^2])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4643

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcSin[c*x])^n
/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e
, 0] &&  !GtQ[d, 0]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx = -\frac{x\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d} + \frac{\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx}{2c^2} + \frac{\left(b\sqrt{1-c^2x^2}\right)\int x\left(a+\right.}{c\sqrt{d-c^2d}}$$

$$= \frac{bx^2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{2c\sqrt{d-c^2dx^2}} - \frac{x\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{2c^2d} - \frac{\left(b^2\sqrt{1-c^2\right.}{2\sqrt{d}}$$

$$= \frac{b^2x\left(1-c^2x^2\right)}{4c^2\sqrt{d-c^2dx^2}} + \frac{bx^2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{2c\sqrt{d-c^2dx^2}} - \frac{x\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(c\right.}{2c^2d}$$

$$= \frac{b^2x\left(1-c^2x^2\right)}{4c^2\sqrt{d-c^2dx^2}} - \frac{b^2\sqrt{1-c^2x^2}\,\sin^{-1}(cx)}{4c^3\sqrt{d-c^2dx^2}} + \frac{bx^2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{2c\sqrt{d-c^2dx^2}} - \frac{x}{}$$

Mathematica [A] time = 1.34, size = 210, normalized size = 1.02

$$\frac{12a^2cdx\left(c^2x^2-1\right) - 12a^2\sqrt{d}\,\sqrt{d-c^2dx^2}\,\tan^{-1}\left(\frac{cx\sqrt{d-c^2dx^2}}{\sqrt{d}\left(c^2x^2-1\right)}\right) - 6abd\sqrt{1-c^2x^2}\,\left(-2\sin^{-1}(cx)^2+2\sin\left(2\sin^{-1}(\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (12*a^2*c*d*x*(-1 + c^2*x^2) - 12*a^2*Sqrt[d]*Sqrt[d - c^2*d*x^2]*ArcTan[(c
*x*Sqrt[d - c^2*d*x^2])/(Sqrt[d]*(-1 + c^2*x^2))] - 6*a*b*d*Sqrt[1 - c^2*x^
2]*(-2*ArcSin[c*x]^2 + Cos[2*ArcSin[c*x]] + 2*ArcSin[c*x]*Sin[2*ArcSin[c*x]
]) + b^2*d*Sqrt[1 - c^2*x^2]*(4*ArcSin[c*x]^3 - 6*ArcSin[c*x]*Cos[2*ArcSin[
c*x]] + (3 - 6*ArcSin[c*x]^2)*Sin[2*ArcSin[c*x]]))/(24*c^3*d*Sqrt[d - c^2*d
*x^2])
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(b^2x^2\arcsin\left(cx\right)^2 + 2\,abx^2\arcsin\left(cx\right) + a^2x^2\right)\sqrt{-c^2dx^2+d}}{c^2dx^2-d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="fricas
")
```

```
[Out] integral(-(b^2*x^2*arcsin(c*x)^2 + 2*a*b*x^2*arcsin(c*x) + a^2*x^2)*sqrt(-c
^2*d*x^2 + d)/(c^2*d*x^2 - d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b \arcsin(cx) + a)^2 x^2}{\sqrt{-c^2dx^2 + d}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2*x^2/sqrt(-c^2*d*x^2 + d), x)
```

maple [B] time = 0.43, size = 604, normalized size = 2.93

$$-\frac{a^2 x\sqrt{-c^2 d\, x^2 + d}}{2c^2 d} + \frac{a^2 \arctan\left(\frac{\sqrt{c^2 d}\; x}{\sqrt{-c^2 d\, x^2 + d}}\right)}{2c^2\sqrt{c^2 d}} - \frac{b^2\sqrt{-d\left(c^2x^2-1\right)}\;\sqrt{-c^2x^2+1}\;\arcsin(cx)^3}{6c^3 d\left(c^2x^2-1\right)} + \frac{b^2\sqrt{-d\left(c^2x^2-1\right)}\;\sqrt{-c}}{8c^3 d\left(c^2x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] -1/2*a^2*x/c^2/d*(-c^2*d*x^2+d)^(1/2)+1/2*a^2/c^2/(c^2*d)^(1/2)*arctan((c^2
*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-1/6*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+
1)^(1/2)/c^3/d/(c^2*x^2-1)*arcsin(c*x)^3+1/8*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c
^2*x^2+1)^(1/2)/c^3/d/(c^2*x^2-1)*arcsin(c*x)+1/8*b^2*(-d*(c^2*x^2-1))^(1/2
)/c^2/d/(c^2*x^2-1)*x*arcsin(c*x)^2-1/16*b^2*(-d*(c^2*x^2-1))^(1/2)/c^2/d/(
c^2*x^2-1)*x+1/8*b^2*(-d*(c^2*x^2-1))^(1/2)/c^3/d/(c^2*x^2-1)*arcsin(c*x)*c
os(3*arcsin(c*x))+1/8*b^2*(-d*(c^2*x^2-1))^(1/2)/c^3/d/(c^2*x^2-1)*sin(3*ar
csin(c*x))*arcsin(c*x)^2-1/16*b^2*(-d*(c^2*x^2-1))^(1/2)/c^3/d/(c^2*x^2-1)*
sin(3*arcsin(c*x))-1/2*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^3/d/
(c^2*x^2-1)*arcsin(c*x)^2-1/8*a*b/c^3/(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(
1/2)+1/4*a*b*(-d*(c^2*x^2-1))^(1/2)/c^2/d/(c^2*x^2-1)*arcsin(c*x)*x+1/8*a*b
*(-d*(c^2*x^2-1))^(1/2)/c^3/d/(c^2*x^2-1)*cos(3*arcsin(c*x))+1/4*a*b*(-d*(c
^2*x^2-1))^(1/2)/c^3/d/(c^2*x^2-1)*arcsin(c*x)*sin(3*arcsin(c*x))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}a^2\left(\frac{\sqrt{-c^2dx^2+d}\,x}{c^2 d} - \frac{\arcsin(cx)}{c^3\sqrt{d}}\right) - \sqrt{d}\int \frac{\left(b^2x^2\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)^2 + 2\,abx^2\arctan\left(cx, \sqrt{cx+1}\right.\right.}{c^2dx^2 - d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxima
")
```

```
[Out] -1/2*a^2*(sqrt(-c^2*d*x^2 + d)*x/(c^2*d) - arcsin(c*x)/(c^3*sqrt(d))) - sqr
t(d)*integrate((b^2*x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a*
b*x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x +
 1)/(c^2*d*x^2 - d), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{\sqrt{d-c^2\,d\,x^2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(1/2),x)
[Out] int((x^2*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(1/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2 (a + b \operatorname{asin}(cx))^2}{\sqrt{-d (cx - 1)(cx + 1)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(1/2),x)
[Out] Integral(x**2*(a + b*asin(c*x))**2/sqrt(-d*(c*x - 1)*(c*x + 1)), x)
```

3.238 $\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=146

$$\frac{2abx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}}-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{c^2d}+\frac{2b^2\left(1-c^2x^2\right)}{c^2\sqrt{d-c^2dx^2}}+\frac{2b^2x\sqrt{1-c^2x^2}\sin^{-1}(cx)}{c\sqrt{d-c^2dx^2}}$$

```
[Out] 2*b^2*(-c^2*x^2+1)/c^2/(-c^2*d*x^2+d)^(1/2)+2*a*b*x*(-c^2*x^2+1)^(1/2)/c/(-
c^2*d*x^2+d)^(1/2)+2*b^2*x*arcsin(c*x)*(-c^2*x^2+1)^(1/2)/c/(-c^2*d*x^2+d)^
(1/2)-(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/c^2/d
```

Rubi [A] time = 0.12, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {4677, 4619, 261}

$$\frac{2abx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}}-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{c^2d}+\frac{2b^2\left(1-c^2x^2\right)}{c^2\sqrt{d-c^2dx^2}}+\frac{2b^2x\sqrt{1-c^2x^2}\sin^{-1}(cx)}{c\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (2*a*b*x*Sqrt[1 - c^2*x^2])/(c*Sqrt[d - c^2*d*x^2]) + (2*b^2*(1 - c^2*x^2))
/(c^2*Sqrt[d - c^2*d*x^2]) + (2*b^2*x*Sqrt[1 - c^2*x^2]*ArcSin[c*x])/(c*Sqr
t[d - c^2*d*x^2]) - (Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(c^2*d)
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx = -\frac{\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{c^2d} + \frac{\left(2b\sqrt{1-c^2x^2}\right)\int\left(a+b\sin^{-1}(cx)\right)\,dx}{c\sqrt{d-c^2dx^2}}$$

$$= \frac{2abx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}} - \frac{\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{c^2d} + \frac{\left(2b^2\sqrt{1-c^2x^2}\right)\int\sin^{-1}(cx)\,d}{c\sqrt{d-c^2dx^2}}$$

$$= \frac{2abx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}} + \frac{2b^2x\sqrt{1-c^2x^2}\,\sin^{-1}(cx)}{c\sqrt{d-c^2dx^2}} - \frac{\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{c^2d} - \frac{(}{}$$

$$= \frac{2abx\sqrt{1-c^2x^2}}{c\sqrt{d-c^2dx^2}} + \frac{2b^2\left(1-c^2x^2\right)}{c^2\sqrt{d-c^2dx^2}} + \frac{2b^2x\sqrt{1-c^2x^2}\,\sin^{-1}(cx)}{c\sqrt{d-c^2dx^2}} - \frac{\sqrt{d-c^2dx^2}\,\left(a+\right.}{c^2d}$$

Mathematica [A] time = 0.10, size = 86, normalized size = 0.59

$$\frac{\left(c^2x^2-1\right)\left(a+b\sin^{-1}(cx)\right)^2+2b\sqrt{1-c^2x^2}\left(acx+b\sqrt{1-c^2x^2}+bcx\sin^{-1}(cx)\right)}{c^2\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] ((-1 + c^2*x^2)*(a + b*ArcSin[c*x])^2 + 2*b*Sqrt[1 - c^2*x^2]*(a*c*x + b*Sq
rt[1 - c^2*x^2] + b*c*x*ArcSin[c*x]))/(c^2*Sqrt[d - c^2*d*x^2])
```

fricas [A] time = 0.43, size = 147, normalized size = 1.01

$$-\frac{2\sqrt{-c^2dx^2+d}\left(b^2cx\arcsin(cx)+abcx\right)\sqrt{-c^2x^2+1}+\left(\left(a^2-2b^2\right)c^2x^2+\left(b^2c^2x^2-b^2\right)\arcsin(cx)^2-a^2+2\right.}{c^4dx^2-c^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="fricas")
```

```
[Out] -(2*sqrt(-c^2*d*x^2 + d)*(b^2*c*x*arcsin(c*x) + a*b*c*x)*sqrt(-c^2*x^2 + 1)
 + ((a^2 - 2*b^2)*c^2*x^2 + (b^2*c^2*x^2 - b^2)*arcsin(c*x)^2 - a^2 + 2*b^2
 + 2*(a*b*c^2*x^2 - a*b)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d))/(c^4*d*x^2 - c^
2*d)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b\arcsin(cx)+a)^2x}{\sqrt{-c^2dx^2+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2*x/sqrt(-c^2*d*x^2 + d), x)
```

maple [C] time = 0.22, size = 316, normalized size = 2.16

$$-\frac{a^2\sqrt{-c^2d\,x^2+d}}{c^2d}+b^2\left(-\frac{\sqrt{-d\left(c^2x^2-1\right)}\,\left(c^2x^2-i\sqrt{-c^2x^2+1}\,xc-1\right)\left(\arcsin(cx)^2-2+2i\arcsin(cx)\right)}{2c^2d\left(c^2x^2-1\right)}-\frac{\sqrt{}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] -a^2/c^2/d*(-c^2*d*x^2+d)^(1/2)+b^2*(-1/2*(-d*(c^2*x^2-1))^(1/2)*(c^2*x^2-I
*(-c^2*x^2+1)^(1/2)*x*c-1)*(arcsin(c*x)^2-2+2*I*arcsin(c*x))/c^2/d/(c^2*x^2
-1)-1/2*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(arcsin
(c*x)^2-2-2*I*arcsin(c*x))/c^2/d/(c^2*x^2-1))+2*a*b*(-1/2*(-d*(c^2*x^2-1))^
(1/2)*(c^2*x^2-I*(-c^2*x^2+1)^(1/2)*x*c-1)*(I+arcsin(c*x))/c^2/d/(c^2*x^2-1
)-1/2*(-d*(c^2*x^2-1))^(1/2)*(I*(-c^2*x^2+1)^(1/2)*x*c+c^2*x^2-1)*(arcsin(c
*x)-I)/c^2/d/(c^2*x^2-1))
```

maxima [A] time = 0.60, size = 130, normalized size = 0.89

$$2\,b^{2}\left(\frac{x\arcsin\left(cx\right)}{c\sqrt{d}}+\frac{\sqrt{-c^{2}x^{2}+1}}{c^{2}\sqrt{d}}\right)+\frac{2\,abx}{c\sqrt{d}}-\frac{\sqrt{-c^{2}dx^{2}+d}\,b^{2}\arcsin\left(cx\right)^{2}}{c^{2}d}-\frac{2\,\sqrt{-c^{2}dx^{2}+d}\,ab\arcsin\left(cx\right)}{c^{2}d}-\frac{\sqrt{-c^{2}dx^{2}}}{c^{2}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2*b^2*(x*arcsin(c*x)/(c*sqrt(d)) + sqrt(-c^2*x^2 + 1)/(c^2*sqrt(d))) + 2*a*
b*x/(c*sqrt(d)) - sqrt(-c^2*d*x^2 + d)*b^2*arcsin(c*x)^2/(c^2*d) - 2*sqrt(-
c^2*d*x^2 + d)*a*b*arcsin(c*x)/(c^2*d) - sqrt(-c^2*d*x^2 + d)*a^2/(c^2*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int((x*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(1/2), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Exception raised: TypeError
```

3.239 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=49

$$\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{d-c^2dx^2}}$$

```
[Out] 1/3*(a+b*arcsin(c*x))^3*(-c^2*x^2+1)^(1/2)/b/c/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {4643, 4641}

$$\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c*Sqrt[d - c^2*d*x^2])
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4643

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcSin[c*x])^n
/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e
, 0] &&  !GtQ[d, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx &= \frac{\sqrt{1-c^2x^2}\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}\\
&= \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{d-c^2dx^2}}
\end{aligned}$$

Mathematica [A] time = 0.13, size = 64, normalized size = 1.31

$$\frac{\sqrt{1-c^2x^2}\sin^{-1}(cx)\left(3a^2+3ab\sin^{-1}(cx)+b^2\sin^{-1}(cx)^2\right)}{3c\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/Sqrt[d - c^2*d*x^2],x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*ArcSin[c*x]*(3*a^2 + 3*a*b*ArcSin[c*x] + b^2*ArcSin[c*x]
^2))/(3*c*Sqrt[d - c^2*d*x^2])
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\left(b^2\arcsin\left(cx\right)^2+2\,ab\arcsin\left(cx\right)+a^2\right)}{c^2dx^2-d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2
)/(c^2*d*x^2 - d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\arcsin\left(cx\right)+a\right)^2}{\sqrt{-c^2dx^2+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/sqrt(-c^2*d*x^2 + d), x)
```

maple [B] time = 0.08, size = 143, normalized size = 2.92

$$\frac{a^2\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2d\,x^2+d}}\right)}{\sqrt{c^2d}}-\frac{b^2\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x^2+1}\,\arcsin\left(cx\right)^3}{3cd\left(c^2x^2-1\right)}-\frac{ab\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x^2+1}\,\arcsin\left(cx\right)^2}{cd\left(c^2x^2-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] a^2/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-1/3*b^2*(-d*
(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/d/(c^2*x^2-1)*arcsin(c*x)^3-a*b*(-d
*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/d/(c^2*x^2-1)*arcsin(c*x)^2
```

maxima [A] time = 0.61, size = 47, normalized size = 0.96

$$\frac{b^2\arcsin\left(cx\right)^3}{3\,c\sqrt{d}}+\frac{ab\arcsin\left(cx\right)^2}{c\sqrt{d}}+\frac{a^2\arcsin\left(cx\right)}{c\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/3*b^2*arcsin(c*x)^3/(c*sqrt(d)) + a*b*arcsin(c*x)^2/(c*sqrt(d)) + a^2*arc
sin(c*x)/(c*sqrt(d))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int\frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^2}{\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int((a + b*asin(c*x))^2/(d - c^2*d*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+b\operatorname{asin}(cx))^2}{\sqrt{-d(cx-1)(cx+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(1/2),x)
[Out] Integral((a + b*asin(c*x))**2/sqrt(-d*(c*x - 1)*(c*x + 1)), x)
```

3.240 $\int \frac{(a+b\sin^{-1}(cx))^2}{x\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=257

$$\frac{2ib\sqrt{1-c^2x^2}\,\mathrm{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}-\frac{2ib\sqrt{1-c^2x^2}\,\mathrm{Li}_2\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}-\frac{2\sqrt{1-c^2x^2}\,\tanh$$

```
[Out] -2*(a+b*arcsin(c*x))^2*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)
/(-c^2*d*x^2+d)^(1/2)+2*I*b*(a+b*arcsin(c*x))*polylog(2,-I*c*x-(-c^2*x^2+1)
^(1/2))*(-c^2*x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)-2*I*b*(a+b*arcsin(c*x))*pol
ylog(2,I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)-2*
b^2*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/(-c^2*d*x^2+d)^
(1/2)+2*b^2*polylog(3,I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/(-c^2*d*
x^2+d)^(1/2)
```

Rubi [A] time = 0.34, antiderivative size = 257, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {4713, 4709, 4183, 2531, 2282, 6589}

$$\frac{2ib\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}-\frac{2ib\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}-$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] (-2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2*ArcTanh[E^(I*ArcSin[c*x])])/Sqr
t[d - c^2*d*x^2] + ((2*I)*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*PolyLog[2
, -E^(I*ArcSin[c*x])])/Sqrt[d - c^2*d*x^2] - ((2*I)*b*Sqrt[1 - c^2*x^2]*(a
+ b*ArcSin[c*x])*PolyLog[2, E^(I*ArcSin[c*x])])/Sqrt[d - c^2*d*x^2] - (2*b^
2*Sqrt[1 - c^2*x^2]*PolyLog[3, -E^(I*ArcSin[c*x])])/Sqrt[d - c^2*d*x^2] + (
2*b^2*Sqrt[1 - c^2*x^2]*PolyLog[3, E^(I*ArcSin[c*x])])/Sqrt[d - c^2*d*x^2]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4713

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(
(f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c,
 d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&  !GtQ[d, 0] && (Integ
erQ[m] || EqQ[n, 1])
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\sqrt{d-c^2dx^2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\sqrt{1-c^2x^2}}\,dx}{\sqrt{d-c^2dx^2}}$$
$$= \frac{\sqrt{1-c^2x^2}\ \text{Subst}\left(\int (a+bx)^2\csc(x)\,dx, x, \sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}$$
$$= -\frac{2\sqrt{1-c^2x^2}\ \left(a+b\sin^{-1}(cx)\right)^2\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{\sqrt{d-c^2dx^2}} - \frac{\left(2b\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int (a+\right.}{\sqrt{d-}}$$
$$= -\frac{2\sqrt{1-c^2x^2}\ \left(a+b\sin^{-1}(cx)\right)^2\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{\sqrt{d-c^2dx^2}} + \frac{2ib\sqrt{1-c^2x^2}\ \left(a+b\sin^{-1}(cx\right.}{\sqrt{d-c^2dx^2}}$$
$$= -\frac{2\sqrt{1-c^2x^2}\ \left(a+b\sin^{-1}(cx)\right)^2\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{\sqrt{d-c^2dx^2}} + \frac{2ib\sqrt{1-c^2x^2}\ \left(a+b\sin^{-1}(cx\right.}{\sqrt{d-c^2dx^2}}$$
$$= -\frac{2\sqrt{1-c^2x^2}\ \left(a+b\sin^{-1}(cx)\right)^2\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{\sqrt{d-c^2dx^2}} + \frac{2ib\sqrt{1-c^2x^2}\ \left(a+b\sin^{-1}(cx\right.}{\sqrt{d-c^2dx^2}}$$

Mathematica [A] time = 0.69, size = 301, normalized size = 1.17

$$-\frac{a^2\log\left(\sqrt{d}\sqrt{d-c^2dx^2}+d\right)}{\sqrt{d}}+\frac{a^2\log(cx)}{\sqrt{d}}+\frac{2ab\sqrt{1-c^2x^2}\ \left(i\text{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)-i\text{Li}_2\left(e^{i\sin^{-1}(cx)}\right)+\sin^{-1}(cx)\left(\text{lo}\right.\right.}{\sqrt{d-c^2dx^2}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] (a^2*Log[c*x])/Sqrt[d] - (a^2*Log[d + Sqrt[d]*Sqrt[d - c^2*d*x^2]])/Sqrt[d]
 + (2*a*b*Sqrt[1 - c^2*x^2]*(ArcSin[c*x]*(Log[1 - E^(I*ArcSin[c*x])] - Log[
1 + E^(I*ArcSin[c*x])]) + I*PolyLog[2, -E^(I*ArcSin[c*x])] - I*PolyLog[2, E
^(I*ArcSin[c*x])]))/Sqrt[d - c^2*d*x^2] + (b^2*Sqrt[1 - c^2*x^2]*(ArcSin[c*
x]^2*Log[1 - E^(I*ArcSin[c*x])] - ArcSin[c*x]^2*Log[1 + E^(I*ArcSin[c*x])]
+ (2*I)*ArcSin[c*x]*PolyLog[2, -E^(I*ArcSin[c*x])] - (2*I)*ArcSin[c*x]*Poly
```

```
Log[2, E^(I*ArcSin[c*x])] - 2*PolyLog[3, -E^(I*ArcSin[c*x])] + 2*PolyLog[3,
 E^(I*ArcSin[c*x])]))/Sqrt[d - c^2*d*x^2]
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\left(b^2\arcsin(cx)^2+2ab\arcsin(cx)+a^2\right)}{c^2dx^3-dx},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x/(-c^2*d*x^2+d)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2
)/(c^2*d*x^3 - d*x), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

maple [A] time = 0.28, size = 388, normalized size = 1.51

$$-\frac{a^2\ln\left(\frac{2d+2\sqrt{d}\,\sqrt{-c^2d\,x^2+d}}{x}\right)}{\sqrt{d}}-\frac{b^2\sqrt{-c^2x^2+1}\,\sqrt{-d\left(c^2x^2-1\right)}\,\left(2i\arcsin(cx)\operatorname{polylog}\left(2,-icx-\sqrt{-c^2x^2+1}\right)-2i\,a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] -a^2/d^(1/2)*ln((2*d+2*d^(1/2)*(-c^2*d*x^2+d)^(1/2))/x)-b^2*(-c^2*x^2+1)^(1
/2)*(-d*(c^2*x^2-1))^(1/2)*(2*I*arcsin(c*x)*polylog(2,-I*c*x-(-c^2*x^2+1)^(
1/2))-2*I*arcsin(c*x)*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))+arcsin(c*x)^2*ln(
1-I*c*x-(-c^2*x^2+1)^(1/2))-arcsin(c*x)^2*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+2*
polylog(3,I*c*x+(-c^2*x^2+1)^(1/2))-2*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2)))
/d/(c^2*x^2-1)+2*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d/(c^2*x^2
-1)*(I*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))-I*arcsin(c*x)*ln(1+I*c*x+
(-c^2*x^2+1)^(1/2))-polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))+polylog(2,I*c*x+(-
c^2*x^2+1)^(1/2)))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{a^2\log\left(\frac{2\sqrt{-c^2dx^2+d}\sqrt{d}}{|x|}+\frac{2d}{|x|}\right)}{\sqrt{d}}-\sqrt{d}\int\frac{\left(b^2\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)^2+2ab\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)\right)}{c^2dx^3-dx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxima")
```

```
[Out] -a^2*log(2*sqrt(-c^2*d*x^2 + d)*sqrt(d)/abs(x) + 2*d/abs(x))/sqrt(d) - sqrt
(d)*integrate((b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a*b*arc
tan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c^2*
d*x^3 - d*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\mathrm{asin}\,(c\,x))^2}{x\,\sqrt{d - c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x*(d - c^2*d*x^2)^(1/2)),x)
[Out] int((a + b*asin(c*x))^2/(x*(d - c^2*d*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\,\mathrm{asin}\,(cx))^2}{x\sqrt{-d\,(cx - 1)\,(cx + 1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x/(-c**2*d*x**2+d)**(1/2),x)
[Out] Integral((a + b*asin(c*x))**2/(x*sqrt(-d*(c*x - 1)*(c*x + 1))), x)
```

3.241 $\int \frac{(a+b\sin^{-1}(cx))^2}{x^2\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=183

$$-\frac{\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{dx}-\frac{ic\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}+\frac{2bc\sqrt{1-c^2x^2}\,\log\left(1-e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(\right.}{\sqrt{d-c^2dx^2}}$$

```
[Out] -I*c*(a+b*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)+2*b*c*(a+b
*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/(-c^2*d
*x^2+d)^(1/2)-I*b^2*c*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^
(1/2)/(-c^2*d*x^2+d)^(1/2)-(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/d/x
```

Rubi [A] time = 0.22, antiderivative size = 183, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {4681, 4625, 3717, 2190, 2279, 2391}

$$-\frac{ib^2c\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)}{\sqrt{d-c^2dx^2}}-\frac{\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{dx}-\frac{ic\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}+\frac{2bc\sqrt{1}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x^2*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] ((-I)*c*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2] - (Sqr
t[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(d*x) + (2*b*c*Sqrt[1 - c^2*x^2]*(a
 + b*ArcSin[c*x])*Log[1 - E^((2*I)*ArcSin[c*x])])/Sqrt[d - c^2*d*x^2] - (I*
b^2*c*Sqrt[1 - c^2*x^2]*PolyLog[2, E^((2*I)*ArcSin[c*x])])/Sqrt[d - c^2*d*x
^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4681

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^F
racPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c
^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d,
 e, f, m, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] &
& NeQ[m, -1]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^2\sqrt{d-c^2dx^2}}\,dx = -\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{dx} + \frac{\left(2bc\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{x}\,dx}{\sqrt{d-c^2dx^2}}$$

$$= -\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{dx} + \frac{\left(2bc\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int (a+bx)\cot(x)\,dx, x, \text{si}\ldots\right.}{\sqrt{d-c^2dx^2}}$$

$$= -\frac{ic\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}} - \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{dx} - \frac{\left(4ibc\sqrt{1-c^2x^2}\ldots\right.}{\ldots}$$

$$= -\frac{ic\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}} - \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{dx} + \frac{2bc\sqrt{1-c^2x^2}\ldots}{\ldots}$$

$$= -\frac{ic\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}} - \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{dx} + \frac{2bc\sqrt{1-c^2x^2}\ldots}{\ldots}$$

$$= -\frac{ic\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}} - \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{dx} + \frac{2bc\sqrt{1-c^2x^2}\ldots}{\ldots}$$

Mathematica [A] time = 0.45, size = 159, normalized size = 0.87

$$-\frac{\sqrt{1-c^2x^2}\left(a\left(a\sqrt{1-c^2x^2}-2bcx\log(cx)\right)+2b\sin^{-1}(cx)\left(a\sqrt{1-c^2x^2}-bcx\log\left(1-e^{2i\sin^{-1}(cx)}\right)\right)+b^2\left(\sqrt{1-\ldots}\right.\right.}{x\sqrt{d-c^2dx^2}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x^2*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] -((Sqrt[1 - c^2*x^2]*(b^2*(I*c*x + Sqrt[1 - c^2*x^2])*ArcSin[c*x]^2 + 2*b*A
rcSin[c*x]*(a*Sqrt[1 - c^2*x^2] - b*c*x*Log[1 - E^((2*I)*ArcSin[c*x])]) + a
*(a*Sqrt[1 - c^2*x^2] - 2*b*c*x*Log[c*x]) + I*b^2*c*x*PolyLog[2, E^((2*I)*A
rcSin[c*x])]))/(x*Sqrt[d - c^2*d*x^2]))
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)}{c^2dx^4-dx^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="fricas
")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2
)/(c^2*d*x^4 - d*x^2), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

maple [B] time = 0.38, size = 638, normalized size = 3.49

$$-\frac{a^2\sqrt{-c^2 d\,x^2+d}}{dx}+\frac{i b^2\sqrt{-d\left(c^2x^2-1\right)}\,\arcsin(cx)^2\sqrt{-c^2x^2+1}\,c}{\left(c^2x^2-1\right)d}-\frac{b^2\sqrt{-d\left(c^2x^2-1\right)}\,\arcsin(cx)^2\,x\,c^2}{\left(c^2x^2-1\right)d}+\frac{b^2\sqrt{-d\left(\right.}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x^2/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] -a^2/d/x*(-c^2*d*x^2+d)^(1/2)+I*b^2*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)^2/(c
^2*x^2-1)/d*(-c^2*x^2+1)^(1/2)*c-b^2*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)^2/(
c^2*x^2-1)*x/d*c^2+b^2*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)^2/(c^2*x^2-1)/x/d
-2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d/(c^2*x^2-1)*c*arcsin(c*x
)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^
(1/2)/d/(c^2*x^2-1)*c*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))+2*I*b^2*(-
c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d/(c^2*x^2-1)*c*polylog(2,-I*c*x-(-
c^2*x^2+1)^(1/2))+2*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d/(c^2*
x^2-1)*c*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))+2*I*a*b*(-c^2*x^2+1)^(1/2)*(-d
*(c^2*x^2-1))^(1/2)/d/(c^2*x^2-1)*arcsin(c*x)*c-2*a*b*(-d*(c^2*x^2-1))^(1/2
)*arcsin(c*x)/(c^2*x^2-1)*x/d*c^2+2*a*b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/
(c^2*x^2-1)/x/d-2*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d/(c^2*x^2-
1)*ln((I*c*x+(-c^2*x^2+1)^(1/2))^2-1)*c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\left((-1)^{-2c^2dx^2+2d}\sqrt{d}\,\log\left(-2c^2d+\frac{2d}{x^2}\right)+\sqrt{d}\,\log\left(x^2-\frac{1}{c^2}\right)\right)abc}{d}+\frac{-\frac{\frac{1}{4}\left(7\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)^2+4x\int\frac{9\sqrt{}}{}\right.}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxima
")
```

```
[Out] -((-1)^(-2*c^2*d*x^2 + 2*d)*sqrt(d)*log(-2*c^2*d + 2*d/x^2) + sqrt(d)*log(x
^2 - 1/c^2))*a*b*c/d + b^2*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x +
 1))^2/(sqrt(c*x + 1)*sqrt(-c*x + 1)*x^2), x)/sqrt(d) - 2*sqrt(-c^2*d*x^2 +
 d)*a*b*arcsin(c*x)/(d*x) - sqrt(-c^2*d*x^2 + d)*a^2/(d*x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{(a+b\,\mathrm{asin}(c\,x))^2}{x^2\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x^2*(d - c^2*d*x^2)^(1/2)),x)
[Out] int((a + b*asin(c*x))^2/(x^2*(d - c^2*d*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(cx))^2}{x^2 \sqrt{-d(cx-1)(cx+1)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x**2/(-c**2*d*x**2+d)**(1/2),x)
[Out] Integral((a + b*asin(c*x))**2/(x**2*sqrt(-d*(c*x - 1)*(c*x + 1))), x)
```

3.242 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^3\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=402

$$\frac{ibc^2\sqrt{1-c^2x^2}\,\mathrm{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}-\frac{ibc^2\sqrt{1-c^2x^2}\,\mathrm{Li}_2\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}-\frac{bc\sqrt{1-c^2x^2}\,(a}{x\sqrt{d-}}$$

```
[Out] -b*c*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/x/(-c^2*d*x^2+d)^(1/2)-c^2*(a+b*a
rcsin(c*x))^2*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/(-c^2*d*
x^2+d)^(1/2)-b^2*c^2*arctanh((-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/(-c^2*d
*x^2+d)^(1/2)+I*b*c^2*(a+b*arcsin(c*x))*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2)
)*(-c^2*x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)-I*b*c^2*(a+b*arcsin(c*x))*polylog
(2,I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)-b^2*c^
2*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1
/2)+b^2*c^2*polylog(3,I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/(-c^2*d*
x^2+d)^(1/2)-1/2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/d/x^2
```

Rubi [A] time = 0.52, antiderivative size = 402, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 11, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.379, Rules used = {4701, 4713, 4709, 4183, 2531, 2282, 6589, 4627, 266, 63, 208}

$$\frac{ibc^2\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}-\frac{ibc^2\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d-c^2dx^2}}-$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x^3*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] -((b*c*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(x*Sqrt[d - c^2*d*x^2])) - (S
qrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(2*d*x^2) - (c^2*Sqrt[1 - c^2*x^2
]*(a + b*ArcSin[c*x])^2*ArcTanh[E^(I*ArcSin[c*x])])/Sqrt[d - c^2*d*x^2] - (
b^2*c^2*Sqrt[1 - c^2*x^2]*ArcTanh[Sqrt[1 - c^2*x^2]])/Sqrt[d - c^2*d*x^2] +
 (I*b*c^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*PolyLog[2, -E^(I*ArcSin[c*x
])])/Sqrt[d - c^2*d*x^2] - (I*b*c^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*P
olyLog[2, E^(I*ArcSin[c*x])])/Sqrt[d - c^2*d*x^2] - (b^2*c^2*Sqrt[1 - c^2*x
^2]*PolyLog[3, -E^(I*ArcSin[c*x])])/Sqrt[d - c^2*d*x^2] + (b^2*c^2*Sqrt[1 -
 c^2*x^2]*PolyLog[3, E^(I*ArcSin[c*x])])/Sqrt[d - c^2*d*x^2]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4713

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(
(f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c,
 d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&  !GtQ[d, 0] && (Integ
erQ[m] || EqQ[n, 1])
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^3\sqrt{d-c^2dx^2}}\,dx = -\frac{\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{2dx^2}+\frac{1}{2}c^2\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\sqrt{d-c^2dx^2}}\,dx+\frac{\left(bc\sqrt{1-c^2x^2}\right)\int \frac{a+}{}}{\sqrt{d-c^2dx}}$$

$$= -\frac{bc\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{x\sqrt{d-c^2dx^2}}-\frac{\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{2dx^2}+\frac{\left(c^2\sqrt{1-c^2x^2}\right)\int (}{2\sqrt{d-c}}$$

$$= -\frac{bc\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{x\sqrt{d-c^2dx^2}}-\frac{\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{2dx^2}+\frac{\left(c^2\sqrt{1-c^2x^2}\right)\text{Su}}{}$$

$$= -\frac{bc\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{x\sqrt{d-c^2dx^2}}-\frac{\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{2dx^2}-\frac{c^2\sqrt{1-c^2x^2}\,(a+}{}$$

$$= -\frac{bc\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{x\sqrt{d-c^2dx^2}}-\frac{\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{2dx^2}-\frac{c^2\sqrt{1-c^2x^2}\,(a+}{}$$

$$= -\frac{bc\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{x\sqrt{d-c^2dx^2}}-\frac{\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{2dx^2}-\frac{c^2\sqrt{1-c^2x^2}\,(a+}{}$$

$$= -\frac{bc\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{x\sqrt{d-c^2dx^2}}-\frac{\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{2dx^2}-\frac{c^2\sqrt{1-c^2x^2}\,(a+}{}$$

Mathematica [A] time = 6.25, size = 487, normalized size = 1.21

$$\frac{-\frac{4a^2\sqrt{d-c^2dx^2}}{x^2}-4a^2c^2\sqrt{d}\,\log\left(\sqrt{d}\,\sqrt{d-c^2dx^2}+d\right)+4a^2c^2\sqrt{d}\,\log(x)+\frac{2abc^2d^2\left(1-c^2x^2\right)^{3/2}\left(4i\text{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)-4i\text{Li}_2\left(e^{i\sin^{-1}(}\right.\right.}{}}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x^3*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] ((-4*a^2*Sqrt[d - c^2*d*x^2])/x^2 + 4*a^2*c^2*Sqrt[d]*Log[x] - 4*a^2*c^2*Sq
rt[d]*Log[d + Sqrt[d]*Sqrt[d - c^2*d*x^2]] + (2*a*b*c^2*d^2*(1 - c^2*x^2)^(
3/2)*(-2*Cot[ArcSin[c*x]/2] - ArcSin[c*x]*Csc[ArcSin[c*x]/2]^2 + 4*ArcSin[c
*x]*Log[1 - E^(I*ArcSin[c*x])] - 4*ArcSin[c*x]*Log[1 + E^(I*ArcSin[c*x])] +
 (4*I)*PolyLog[2, -E^(I*ArcSin[c*x])] - (4*I)*PolyLog[2, E^(I*ArcSin[c*x])]
 + ArcSin[c*x]*Sec[ArcSin[c*x]/2]^2 - 2*Tan[ArcSin[c*x]/2]))/(d - c^2*d*x^2
)^(3/2) + (b^2*c^2*d^2*(1 - c^2*x^2)^(3/2)*(-4*ArcSin[c*x]*Cot[ArcSin[c*x]/
2] - ArcSin[c*x]^2*Csc[ArcSin[c*x]/2]^2 + 4*ArcSin[c*x]^2*Log[1 - E^(I*ArcS
in[c*x])] - 4*ArcSin[c*x]^2*Log[1 + E^(I*ArcSin[c*x])] + 8*Log[Tan[ArcSin[c
*x]/2]] + (8*I)*ArcSin[c*x]*PolyLog[2, -E^(I*ArcSin[c*x])] - (8*I)*ArcSin[c
*x]*PolyLog[2, E^(I*ArcSin[c*x])] - 8*PolyLog[3, -E^(I*ArcSin[c*x])] + 8*Po
lyLog[3, E^(I*ArcSin[c*x])] + ArcSin[c*x]^2*Sec[ArcSin[c*x]/2]^2 - 4*ArcSin
[c*x]*Tan[ArcSin[c*x]/2]))/(d - c^2*d*x^2)^(3/2))/(8*d)
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\,\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)}{c^2dx^5-dx^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^3/(-c^2*d*x^2+d)^(1/2),x, algorithm="fricas
")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2
)/(c^2*d*x^5 - d*x^3), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^3/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

maple [B] time = 0.56, size = 1107, normalized size = 2.75

$$-\frac{a^2\sqrt{-c^2d\,x^2+d}}{2d\,x^2}-\frac{a^2c^2\ln\left(\frac{2d+2\sqrt{d}\,\sqrt{-c^2d\,x^2+d}}{x}\right)}{2\sqrt{d}}-\frac{b^2\arcsin(cx)^2\sqrt{-d\left(c^2x^2-1\right)}\,c^2}{2d\left(c^2x^2-1\right)}+\frac{b^2\arcsin(cx)\sqrt{-d\left(c^2x^2-\right.}}{xd\left(c^2x^2-\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x^3/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] -1/2*a^2/d/x^2*(-c^2*d*x^2+d)^(1/2)-1/2*a^2*c^2/d^(1/2)*ln((2*d+2*d^(1/2)*(
-c^2*d*x^2+d)^(1/2))/x)-1/2*b^2*arcsin(c*x)^2*(-d*(c^2*x^2-1))^(1/2)/d/(c^2
*x^2-1)*c^2+b^2*arcsin(c*x)*(-d*(c^2*x^2-1))^(1/2)/x/d/(c^2*x^2-1)*(-c^2*x^
2+1)^(1/2)*c+1/2*b^2*arcsin(c*x)^2*(-d*(c^2*x^2-1))^(1/2)/x^2/d/(c^2*x^2-1)
-1/2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*c^2/d/(c^2*x^2-1)*arcsin
(c*x)^2*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))-I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^
2-1))^(1/2)*c^2/d/(c^2*x^2-1)*arcsin(c*x)*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/
2))+1/2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*c^2/d/(c^2*x^2-1)*arc
sin(c*x)^2*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2
*x^2-1))^(1/2)/d/(c^2*x^2-1)*c^2*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))-b^2*(
-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*c^2/d/(c^2*x^2-1)*polylog(3,I*c*x+
(-c^2*x^2+1)^(1/2))+b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*c^2/d/(c^
2*x^2-1)*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2))+2*b^2*(-c^2*x^2+1)^(1/2)*(-d*
(c^2*x^2-1))^(1/2)*c^2/d/(c^2*x^2-1)*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))-a*b*
(-d*(c^2*x^2-1))^(1/2)/d/(c^2*x^2-1)*arcsin(c*x)*c^2+a*b*(-d*(c^2*x^2-1))^(
1/2)/x/d/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*c+a*b*arcsin(c*x)*(-d*(c^2*x^2-1))^
(1/2)/x^2/d/(c^2*x^2-1)-a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d/(c^
2*x^2-1)*c^2*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))+a*b*(-c^2*x^2+1)^(1
/2)*(-d*(c^2*x^2-1))^(1/2)/d/(c^2*x^2-1)*c^2*arcsin(c*x)*ln(1+I*c*x+(-c^2*x
^2+1)^(1/2))+I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d/(c^2*x^2-1)*
c^2*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))+I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x
^2-1))^(1/2)*c^2/d/(c^2*x^2-1)*arcsin(c*x)*polylog(2,I*c*x+(-c^2*x^2+1)^(1/
2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\left(\frac{c^2\log\left(\frac{2\sqrt{-c^2dx^2+d}\,\sqrt{d}}{|x|}+\frac{2d}{|x|}\right)}{\sqrt{d}}+\frac{\sqrt{-c^2dx^2+d}}{dx^2}\right)a^2-\sqrt{d}\int\frac{\left(b^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)^2+2\,ab\,\mathrm{arcta}\right.}{c^2dx^5-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^3/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxima
")
```

```
[Out] -1/2*(c^2*log(2*sqrt(-c^2*d*x^2 + d)*sqrt(d)/abs(x) + 2*d/abs(x))/sqrt(d) +
 sqrt(-c^2*d*x^2 + d)/(d*x^2))*a^2 - sqrt(d)*integrate((b^2*arctan2(c*x, sq
rt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a*b*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x
+ 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c^2*d*x^5 - d*x^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))^2}{x^3\,\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x^3*(d - c^2*d*x^2)^(1/2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/(x^3*(d - c^2*d*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+b\,\mathrm{asin}\,(cx))^2}{x^3\sqrt{-d\,(cx-1)\,(cx+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x**3/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2/(x**3*sqrt(-d*(c*x - 1)*(c*x + 1))), x)
```

3.243 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^4\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=319

$$-\frac{2c^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{3dx}-\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3x^2\sqrt{d-c^2dx^2}}-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{3dx^3}-\frac{2ic^3\sqrt{1-}}{}$$

```
[Out] -1/3*b^2*c^2*(-c^2*x^2+1)/x/(-c^2*d*x^2+d)^(1/2)-1/3*b*c*(a+b*arcsin(c*x))*
(-c^2*x^2+1)^(1/2)/x^2/(-c^2*d*x^2+d)^(1/2)-2/3*I*c^3*(a+b*arcsin(c*x))^2*(
-c^2*x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)+4/3*b*c^3*(a+b*arcsin(c*x))*ln(1-(I*
c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)-2/3*I*b^
2*c^3*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/(-c^2*d*x^
2+d)^(1/2)-1/3*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/d/x^3-2/3*c^2*(a+b*
arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/d/x
```

Rubi [A] time = 0.39, antiderivative size = 319, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 9, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.310, Rules used = {4701, 4681, 4625, 3717, 2190, 2279, 2391, 4627, 264}

$$-\frac{2ib^2c^3\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)}{3\sqrt{d-c^2dx^2}}-\frac{2ic^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{3\sqrt{d-c^2dx^2}}-\frac{2c^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right.}{3dx}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x^4*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] -(b^2*c^2*(1 - c^2*x^2))/(3*x*Sqrt[d - c^2*d*x^2]) - (b*c*Sqrt[1 - c^2*x^2]
*(a + b*ArcSin[c*x]))/(3*x^2*Sqrt[d - c^2*d*x^2]) - (((2*I)/3)*c^3*Sqrt[1 -
 c^2*x^2]*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2] - (Sqrt[d - c^2*d*x^2]
*(a + b*ArcSin[c*x])^2)/(3*d*x^3) - (2*c^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSi
n[c*x])^2)/(3*d*x) + (4*b*c^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 -
 E^((2*I)*ArcSin[c*x])])/(3*Sqrt[d - c^2*d*x^2]) - (((2*I)/3)*b^2*c^3*Sqrt[
1 - c^2*x^2]*PolyLog[2, E^((2*I)*ArcSin[c*x])])/Sqrt[d - c^2*d*x^2]
```

Rule 264

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c
*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] /; FreeQ[{a, b, c, m, n,
 p}, x] && EqQ[(m + 1)/n + p + 1, 0] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4681

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^F
racPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c
^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d,
 e, f, m, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] &
& NeQ[m, -1]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^4\sqrt{d-c^2dx^2}}dx = -\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{3dx^3}+\frac{1}{3}\left(2c^2\right)\int\frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^2\sqrt{d-c^2dx^2}}dx+\frac{\left(2bc\sqrt{1-c^2x\right.}{3\sqrt{}}$$

$$= -\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3x^2\sqrt{d-c^2dx^2}}-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{3dx^3}-\frac{2c^2\sqrt{d-c^2dx^2}}{}$$

$$= -\frac{b^2c^2\left(1-c^2x^2\right)}{3x\sqrt{d-c^2dx^2}}-\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3x^2\sqrt{d-c^2dx^2}}-\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{3dx^3}$$

$$= -\frac{b^2c^2\left(1-c^2x^2\right)}{3x\sqrt{d-c^2dx^2}}-\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3x^2\sqrt{d-c^2dx^2}}-\frac{2ic^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx\right.}{3\sqrt{d-c^2dx^2}}$$

$$= -\frac{b^2c^2\left(1-c^2x^2\right)}{3x\sqrt{d-c^2dx^2}}-\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3x^2\sqrt{d-c^2dx^2}}-\frac{2ic^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx\right.}{3\sqrt{d-c^2dx^2}}$$

$$= -\frac{b^2c^2\left(1-c^2x^2\right)}{3x\sqrt{d-c^2dx^2}}-\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3x^2\sqrt{d-c^2dx^2}}-\frac{2ic^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx\right.}{3\sqrt{d-c^2dx^2}}$$

$$= -\frac{b^2c^2\left(1-c^2x^2\right)}{3x\sqrt{d-c^2dx^2}}-\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3x^2\sqrt{d-c^2dx^2}}-\frac{2ic^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx\right.}{3\sqrt{d-c^2dx^2}}$$

Mathematica [A] time = 0.82, size = 269, normalized size = 0.84

$$-\frac{\sqrt{1-c^2x^2}\left(2a^2c^2x^2\sqrt{1-c^2x^2}+a^2\sqrt{1-c^2x^2}-4abc^3x^3\log(cx)-b\sin^{-1}(cx)\left(-2a\sqrt{1-c^2x^2}\left(2c^2x^2+1\right)+4\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x^4*Sqrt[d - c^2*d*x^2]),x]
```

```
[Out] -1/3*(Sqrt[1 - c^2*x^2]*(a*b*c*x + a^2*Sqrt[1 - c^2*x^2] + 2*a^2*c^2*x^2*Sq
rt[1 - c^2*x^2] + b^2*c^2*x^2*Sqrt[1 - c^2*x^2] + b^2*((2*I)*c^3*x^3 + Sqrt
[1 - c^2*x^2] + 2*c^2*x^2*Sqrt[1 - c^2*x^2])*ArcSin[c*x]^2 - b*ArcSin[c*x]*
(-(b*c*x) - 2*a*Sqrt[1 - c^2*x^2]*(1 + 2*c^2*x^2) + 4*b*c^3*x^3*Log[1 - E^(
(2*I)*ArcSin[c*x])]) - 4*a*b*c^3*x^3*Log[c*x] + (2*I)*b^2*c^3*x^3*PolyLog[2
, E^((2*I)*ArcSin[c*x])]))/(x^3*Sqrt[d - c^2*d*x^2])
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\left(b^2\arcsin\left(cx\right)^2+2\,ab\arcsin\left(cx\right)+a^2\right)}{c^2dx^6-dx^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^4/(-c^2*d*x^2+d)^(1/2),x, algorithm="fricas
")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2
)/(c^2*d*x^6 - d*x^4), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^4/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

maple [B] time = 0.71, size = 2320, normalized size = 7.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x^4/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*(-c^2*x^2+1)^(1/2)*arc
sin(c*x)*c^3-2*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*x^3*arc
sin(c*x)^2*c^6+1/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*x*a
rcsin(c*x)^2*c^4+4/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d/x
*arcsin(c*x)^2*c^2-2/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d
*x^3*(-c^2*x^2+1)*c^6-1/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2
-1)/d*(-c^2*x^2+1)^(1/2)*c^3+a*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^
2-1)/d*c^3*(-c^2*x^2+1)^(1/2)+2/3*a*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c
^2*x^2-1)/d/x^3*arcsin(c*x)-2/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2
*x^2-1)/d*x^5*c^8-1/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*
x^3*c^6+2/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*x*c^4+1/3*
b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d/x*c^2+1/3*b^2*(-d*(c^2
*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d/x^3*arcsin(c*x)^2-4*I*a*b*(-d*(c^2
*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*x^2*(-c^2*x^2+1)^(1/2)*arcsin(c*x)
*c^5-2*I*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*x^2*(-c^2*x^2
+1)^(1/2)*arcsin(c*x)^2*c^5-4/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c
^2*x^2-1)/d*x^3*(-c^2*x^2+1)*arcsin(c*x)*c^6-2/3*a^2*c^2/d/x*(-c^2*d*x^2+d)
^(1/2)+8/3*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d/(c^2*x^2-1)*ar
csin(c*x)*c^3-4/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*x^
3*(-c^2*x^2+1)*c^6-2/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)
/d*x*(-c^2*x^2+1)*c^4-4/3*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d/(
c^2*x^2-1)*c^3*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-4/3*b^2*(-c^2*x^2
+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d/(c^2*x^2-1)*c^3*arcsin(c*x)*ln(1-I*c*x-(
-c^2*x^2+1)^(1/2))+1/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d
/x^2*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c-2/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c
^4*x^4-2*c^2*x^2-1)/d*(-c^2*x^2+1)^(1/2)*arcsin(c*x)^2*c^3+2/3*I*b^2*(-d*(c
^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*x^3*arcsin(c*x)*c^6-I*b^2*(-d*(c
^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*x^2*(-c^2*x^2+1)^(1/2)*c^5+8/3*a
*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d/x*arcsin(c*x)*c^2+1/3*a
*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d/x^2*(-c^2*x^2+1)^(1/2)*
c-4/3*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d/(c^2*x^2-1)*ln((I*c*x
+(-c^2*x^2+1)^(1/2))^2-1)*c^3-4/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2
*c^2*x^2-1)/d*x^5*c^8+2/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2
-1)/d*x^3*c^6+2/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*x*
c^4+2/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*x*arcsin(c*x
)*c^4+4/3*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d/(c^2*x^2-1)*c^3
*arcsin(c*x)^2+4/3*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d/(c^2*x
^2-1)*c^3*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))+4/3*I*b^2*(-c^2*x^2+1)^(1/2)
*(-d*(c^2*x^2-1))^(1/2)/d/(c^2*x^2-1)*c^3*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2
))-4/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*x^5*arcsin(c*
x)*c^8-4*a*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*x^3*arcsin(c*
x)*c^6+2/3*a*b*(-d*(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*x*arcsin(c*
x)*c^4-1/3*a^2/d/x^3*(-c^2*d*x^2+d)^(1/2)-4/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/
(3*c^4*x^4-2*c^2*x^2-1)/d*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^3-2/3*I*b^2*(-d*
(c^2*x^2-1))^(1/2)/(3*c^4*x^4-2*c^2*x^2-1)/d*x*(-c^2*x^2+1)*arcsin(c*x)*c^4
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{3}\left(\frac{4\,c^2\log(x)}{\sqrt{d}}-\frac{1}{\sqrt{d}\,x^2}\right)abc-\frac{2}{3}\,ab\left(\frac{2\sqrt{-c^2dx^2+d}\,c^2}{dx}+\frac{\sqrt{-c^2dx^2+d}}{dx^3}\right)\arcsin\left(cx\right)-\frac{1}{3}\,a^2\left(\frac{2\sqrt{-c^2dx^2+d}\,c^2}{dx}+\cdots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^4/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxima
")
```

```
[Out] 1/3*(4*c^2*log(x)/sqrt(d) - 1/(sqrt(d)*x^2))*a*b*c - 2/3*a*b*(2*sqrt(-c^2*d
*x^2 + d)*c^2/(d*x) + sqrt(-c^2*d*x^2 + d)/(d*x^3))*arcsin(c*x) - 1/3*a^2*(
2*sqrt(-c^2*d*x^2 + d)*c^2/(d*x) + sqrt(-c^2*d*x^2 + d)/(d*x^3)) + b^2*inte
grate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2/(sqrt(c*x + 1)*sqrt(-c*x
 + 1)*x^4), x)/sqrt(d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^2}{x^4\,\sqrt{d-c^2\,d\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x^4*(d - c^2*d*x^2)^(1/2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/(x^4*(d - c^2*d*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\,\mathrm{asin}\,(cx)\right)^2}{x^4\sqrt{-d\,(cx-1)\,(cx+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x**4/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2/(x**4*sqrt(-d*(c*x - 1)*(c*x + 1))), x)
```

3.244 $\int \frac{x^5\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=549

$$\frac{x^4\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}}+\frac{8\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{3c^6d^2}+\frac{4ib\sqrt{1-c^2x^2}\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^6d\sqrt{d-c^2dx^2}}-\frac{16abx}{3c^5d\sqrt{}}$$

```
[Out] -32/9*b^2*(-c^2*x^2+1)/c^6/d/(-c^2*d*x^2+d)^(1/2)+2/27*b^2*(-c^2*x^2+1)^2/c
^6/d/(-c^2*d*x^2+d)^(1/2)+x^4*(a+b*arcsin(c*x))^2/c^2/d/(-c^2*d*x^2+d)^(1/2
)-16/3*a*b*x*(-c^2*x^2+1)^(1/2)/c^5/d/(-c^2*d*x^2+d)^(1/2)-16/3*b^2*x*arcsi
n(c*x)*(-c^2*x^2+1)^(1/2)/c^5/d/(-c^2*d*x^2+d)^(1/2)+2*b*x*(a+b*arcsin(c*x)
)*(-c^2*x^2+1)^(1/2)/c^5/d/(-c^2*d*x^2+d)^(1/2)-2/9*b*x^3*(a+b*arcsin(c*x))
*(-c^2*x^2+1)^(1/2)/c^3/d/(-c^2*d*x^2+d)^(1/2)+4*I*b*(a+b*arcsin(c*x))*arct
an(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/c^6/d/(-c^2*d*x^2+d)^(1/2)-
2*I*b^2*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/c^6/d/(
-c^2*d*x^2+d)^(1/2)+2*I*b^2*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x
^2+1)^(1/2)/c^6/d/(-c^2*d*x^2+d)^(1/2)+8/3*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+
d)^(1/2)/c^6/d^2+4/3*x^2*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/c^4/d^2
```

Rubi [A] time = 0.74, antiderivative size = 549, normalized size of antiderivative = 1.00, number of steps used = 22, number of rules used = 13, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.448$, Rules used = {4703, 4707, 4677, 4619, 261, 4627, 266, 43, 4715, 4657, 4181, 2279, 2391}

$$-\frac{2ib^2\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{c^6d\sqrt{d-c^2dx^2}}+\frac{2ib^2\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{c^6d\sqrt{d-c^2dx^2}}+\frac{4x^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(c\right.}{3c^4d^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (-16*a*b*x*Sqrt[1 - c^2*x^2])/(3*c^5*d*Sqrt[d - c^2*d*x^2]) - (32*b^2*(1 -
c^2*x^2))/(9*c^6*d*Sqrt[d - c^2*d*x^2]) + (2*b^2*(1 - c^2*x^2)^2)/(27*c^6*d
*Sqrt[d - c^2*d*x^2]) - (16*b^2*x*Sqrt[1 - c^2*x^2]*ArcSin[c*x])/(3*c^5*d*S
qrt[d - c^2*d*x^2]) + (2*b*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(c^5*d*
Sqrt[d - c^2*d*x^2]) - (2*b*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(9*c
^3*d*Sqrt[d - c^2*d*x^2]) + (x^4*(a + b*ArcSin[c*x])^2)/(c^2*d*Sqrt[d - c^2
*d*x^2]) + (8*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(3*c^6*d^2) + (4*x
^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(3*c^4*d^2) + ((4*I)*b*Sqrt[1
 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])])/(c^6*d*Sqrt[d -
c^2*d*x^2]) - ((2*I)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)*E^(I*ArcSin[c*x]
)])/(c^6*d*Sqrt[d - c^2*d*x^2]) + ((2*I)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, I
*E^(I*ArcSin[c*x])])/(c^6*d*Sqrt[d - c^2*d*x^2])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
```

```
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(e*(m + 2*p + 1)), x] + (Dist[(f^2*(m - 1))/(c^2*(m + 2*
p + 1)), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(c*(m + 2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c
*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e,
0] && GtQ[n, 0] && GtQ[m, 1] && NeQ[m + 2*p + 1, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^5 \left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx = \frac{x^4\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} - \frac{4\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx}{c^2d} - \frac{\left(2b\sqrt{1-c^2x^2}\right)\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)}{1-c^2x^2}\,dx}{cd\sqrt{d-c^2dx^2}}$$

$$= \frac{2bx^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3c^3d\sqrt{d-c^2dx^2}} + \frac{x^4\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{4x^2\sqrt{d-c^2dx^2}\left(a+b\mathrm{s}\right.}{3c^4d^2}$$

$$= \frac{2bx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c^5d\sqrt{d-c^2dx^2}} - \frac{2bx^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{9c^3d\sqrt{d-c^2dx^2}} + \frac{x^4\left(a+b\sin\right.}{c^2d\sqrt{d-c}}$$

$$= -\frac{16abx\sqrt{1-c^2x^2}}{3c^5d\sqrt{d-c^2dx^2}} + \frac{2b^2\left(1-c^2x^2\right)}{c^6d\sqrt{d-c^2dx^2}} + \frac{2bx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c^5d\sqrt{d-c^2dx^2}} - \frac{2bx^3\sqrt{1-}}{9}$$

$$= -\frac{16abx\sqrt{1-c^2x^2}}{3c^5d\sqrt{d-c^2dx^2}} + \frac{8b^2\left(1-c^2x^2\right)}{3c^6d\sqrt{d-c^2dx^2}} - \frac{2b^2\left(1-c^2x^2\right)^2}{9c^6d\sqrt{d-c^2dx^2}} - \frac{16b^2x\sqrt{1-c^2x^2}\sin^{-1}(}{3c^5d\sqrt{d-c^2dx^2}}$$

$$= -\frac{16abx\sqrt{1-c^2x^2}}{3c^5d\sqrt{d-c^2dx^2}} - \frac{32b^2\left(1-c^2x^2\right)}{9c^6d\sqrt{d-c^2dx^2}} + \frac{2b^2\left(1-c^2x^2\right)^2}{27c^6d\sqrt{d-c^2dx^2}} - \frac{16b^2x\sqrt{1-c^2x^2}\sin^{-1}}{3c^5d\sqrt{d-c^2dx^2}}$$

$$= -\frac{16abx\sqrt{1-c^2x^2}}{3c^5d\sqrt{d-c^2dx^2}} - \frac{32b^2\left(1-c^2x^2\right)}{9c^6d\sqrt{d-c^2dx^2}} + \frac{2b^2\left(1-c^2x^2\right)^2}{27c^6d\sqrt{d-c^2dx^2}} - \frac{16b^2x\sqrt{1-c^2x^2}\sin^{-1}}{3c^5d\sqrt{d-c^2dx^2}}$$

Mathematica [A] time = 0.86, size = 453, normalized size = 0.83

$$-72a^2c^4x^4 - 288a^2c^2x^2 + 576a^2 + 432ab\sqrt{1-c^2x^2}\log\left(\cos\left(\frac{1}{2}\sin^{-1}(cx)\right) - \sin\left(\frac{1}{2}\sin^{-1}(cx)\right)\right) - 432ab\sqrt{1-c^2x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (576*a^2 - 378*b^2 - 288*a^2*c^2*x^2 - 72*a^2*c^4*x^4 + 810*a*b*ArcSin[c*x]
 + 405*b^2*ArcSin[c*x]^2 - 376*b^2*Cos[2*ArcSin[c*x]] + 360*a*b*ArcSin[c*x]
*Cos[2*ArcSin[c*x]] + 180*b^2*ArcSin[c*x]^2*Cos[2*ArcSin[c*x]] + 2*b^2*Cos[
4*ArcSin[c*x]] - 18*a*b*ArcSin[c*x]*Cos[4*ArcSin[c*x]] - 9*b^2*ArcSin[c*x]^
2*Cos[4*ArcSin[c*x]] - 432*b^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*Log[1 - I*E^(I
*ArcSin[c*x])] + 432*b^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*Log[1 + I*E^(I*ArcSi
n[c*x])] + 432*a*b*Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*
x]/2]] - 432*a*b*Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]
/2]] - (432*I)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] + (
432*I)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])] - 372*a*b*Sin[
2*ArcSin[c*x]] - 372*b^2*ArcSin[c*x]*Sin[2*ArcSin[c*x]] + 6*a*b*Sin[4*ArcSi
n[c*x]] + 6*b^2*ArcSin[c*x]*Sin[4*ArcSin[c*x]])/(216*c^6*d*Sqrt[d - c^2*d*x
^2])
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b^2x^5\arcsin\left(cx\right)^2+2\,abx^5\arcsin\left(cx\right)+a^2x^5\right)\sqrt{-c^2dx^2+d}}{c^4d^2x^4-2\,c^2d^2x^2+d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="fricas
")
```

```
[Out] integral((b^2*x^5*arcsin(c*x)^2 + 2*a*b*x^5*arcsin(c*x) + a^2*x^5)*sqrt(-c^
2*d*x^2 + d)/(c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [B] time = 0.83, size = 1085, normalized size = 1.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] -1/3*a^2*x^4/c^2/d/(-c^2*d*x^2+d)^(1/2)-4/3*a^2/c^4*x^2/d/(-c^2*d*x^2+d)^(1
/2)+8/3*a^2/c^6/d/(-c^2*d*x^2+d)^(1/2)+1/24*b^2*(-d*(c^2*x^2-1))^(1/2)/d^2/
c^6/(c^2*x^2-1)*cos(4*arcsin(c*x))*arcsin(c*x)^2-1/36*b^2*(-d*(c^2*x^2-1))^
(1/2)/d^2/c^6/(c^2*x^2-1)*arcsin(c*x)*sin(4*arcsin(c*x))+2*I*b^2*(-c^2*x^2+
1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^2/c^6/(c^2*x^2-1)*dilog(1+I*(I*c*x+(-c^2*
x^2+1)^(1/2)))-2*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^2/c^6/(c
^2*x^2-1)*dilog(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-2*b^2*(-c^2*x^2+1)^(1/2)*(-
d*(c^2*x^2-1))^(1/2)/d^2/c^6/(c^2*x^2-1)*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^
2+1)^(1/2)))+2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^2/c^6/(c^2*x
^2-1)*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+377/108*b^2*(-d*(c^2*x
^2-1))^(1/2)/d^2/c^6/(c^2*x^2-1)-65/24*b^2*(-d*(c^2*x^2-1))^(1/2)/d^2/c^6/(
```

```
c^2*x^2-1)*arcsin(c*x)^2-1/108*b^2*(-d*(c^2*x^2-1))^(1/2)/d^2/c^6/(c^2*x^2-
1)*cos(4*arcsin(c*x))+5/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^2/c^4/(c^2*x^2-1)*ar
csin(c*x)^2*x^2-94/27*b^2*(-d*(c^2*x^2-1))^(1/2)/d^2/c^4/(c^2*x^2-1)*x^2+31
/9*b^2*(-d*(c^2*x^2-1))^(1/2)/d^2/c^5/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin
(c*x)*x+10/3*a*b*(-d*(c^2*x^2-1))^(1/2)/d^2/c^4/(c^2*x^2-1)*arcsin(c*x)*x^2
+2*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^2/c^6/(c^2*x^2-1)*ln(I*c
*x+(-c^2*x^2+1)^(1/2)+I)+31/9*a*b*(-d*(c^2*x^2-1))^(1/2)/d^2/c^5/(c^2*x^2-1
)*(-c^2*x^2+1)^(1/2)*x-65/12*a*b*(-d*(c^2*x^2-1))^(1/2)/d^2/c^6/(c^2*x^2-1)
*arcsin(c*x)-1/36*a*b*(-d*(c^2*x^2-1))^(1/2)/d^2/c^6/(c^2*x^2-1)*sin(4*arcs
in(c*x))-2*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^2/c^6/(c^2*x^2-1
)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)+1/12*a*b*(-d*(c^2*x^2-1))^(1/2)/d^2/c^6/(c
^2*x^2-1)*arcsin(c*x)*cos(4*arcsin(c*x))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{3}a^2\left(\frac{x^4}{\sqrt{-c^2dx^2+d}\,c^2d}+\frac{4\,x^2}{\sqrt{-c^2dx^2+d}\,c^4d}-\frac{8}{\sqrt{-c^2dx^2+d}\,c^6d}\right)+\frac{\left(b^2c^4x^4+4\,b^2c^2x^2-8\,b^2\right)\sqrt{cx+1}\,\sqrt{-cx+1}\,\sqrt{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxima
")
```

```
[Out] -1/3*a^2*(x^4/(sqrt(-c^2*d*x^2 + d)*c^2*d) + 4*x^2/(sqrt(-c^2*d*x^2 + d)*c^
4*d) - 8/(sqrt(-c^2*d*x^2 + d)*c^6*d)) + 1/3*((b^2*c^4*x^4 + 4*b^2*c^2*x^2
- 8*b^2)*sqrt(c*x + 1)*sqrt(-c*x + 1)*sqrt(d)*arctan2(c*x, sqrt(c*x + 1)*sq
rt(-c*x + 1))^2 + 3*(c^8*d^2*x^2 - c^6*d^2)*integrate(2/3*(3*sqrt(c*x + 1)*
sqrt(-c*x + 1)*a*b*c^5*sqrt(d)*x^5*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1
)) - (b^2*c^6*x^6 + 3*b^2*c^4*x^4 - 12*b^2*c^2*x^2 + 8*b^2)*sqrt(d)*arctan2
(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))/(c^9*d^2*x^4 - 2*c^7*d^2*x^2 + c^5*d^2
), x))/(c^8*d^2*x^2 - c^6*d^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^5\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{{\left(d-c^2\,d\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int((x^5*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{5} \left(a + b \operatorname{asin}{\left(cx \right)}\right)^{2}}{\left(- d \left(cx - 1\right) \left(cx + 1\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral(x**5*(a + b*asin(c*x))**2/(-d*(c*x - 1)*(c*x + 1))**(3/2), x)
```

3.245 $\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=424

$$\frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}}-\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{2bc^5d\sqrt{d-c^2dx^2}}-\frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{c^5d\sqrt{d-c^2dx^2}}+\frac{2b\sqrt{1-c^2x^2}\log\left(1+e^{2i\sin}\right.}{c^5d\sqrt{d-}}$$

```
[Out] -1/4*b^2*x*(-c^2*x^2+1)/c^4/d/(-c^2*d*x^2+d)^(1/2)+x^3*(a+b*arcsin(c*x))^2/
c^2/d/(-c^2*d*x^2+d)^(1/2)+1/4*b^2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)/c^5/d/(-c
^2*d*x^2+d)^(1/2)-1/2*b*x^2*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3/d/(-c^
2*d*x^2+d)^(1/2)-I*(a+b*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/c^5/d/(-c^2*d*x^2
+d)^(1/2)-1/2*(a+b*arcsin(c*x))^3*(-c^2*x^2+1)^(1/2)/b/c^5/d/(-c^2*d*x^2+d)
^(1/2)+2*b*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1
)^(1/2)/c^5/d/(-c^2*d*x^2+d)^(1/2)-I*b^2*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/
2))^2)*(-c^2*x^2+1)^(1/2)/c^5/d/(-c^2*d*x^2+d)^(1/2)+3/2*x*(a+b*arcsin(c*x)
)^2*(-c^2*d*x^2+d)^(1/2)/c^4/d^2
```

Rubi [A] time = 0.64, antiderivative size = 424, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 13, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.448, Rules used = {4703, 4707, 4643, 4641, 4627, 321, 216, 4715, 4675, 3719, 2190, 2279, 2391}

$$-\frac{ib^2\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{c^5d\sqrt{d-c^2dx^2}}+\frac{3x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{2c^4d^2}+\frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}}-\frac{bx^2\sqrt{1-c^2}}{2c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] -(b^2*x*(1 - c^2*x^2))/(4*c^4*d*Sqrt[d - c^2*d*x^2]) + (b^2*Sqrt[1 - c^2*x^
2]*ArcSin[c*x])/(4*c^5*d*Sqrt[d - c^2*d*x^2]) - (b*x^2*Sqrt[1 - c^2*x^2]*(a
 + b*ArcSin[c*x]))/(2*c^3*d*Sqrt[d - c^2*d*x^2]) + (x^3*(a + b*ArcSin[c*x])
^2)/(c^2*d*Sqrt[d - c^2*d*x^2]) - (I*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^
2)/(c^5*d*Sqrt[d - c^2*d*x^2]) + (3*x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x
])^2)/(2*c^4*d^2) - (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3)/(2*b*c^5*d*Sq
rt[d - c^2*d*x^2]) + (2*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 + E^(
(2*I)*ArcSin[c*x])])/(c^5*d*Sqrt[d - c^2*d*x^2]) - (I*b^2*Sqrt[1 - c^2*x^2]
*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(c^5*d*Sqrt[d - c^2*d*x^2])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
```

```
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4643

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcSin[c*x])^n
/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e
, 0] &&  !GtQ[d, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(e*(m + 2*p + 1)), x] + (Dist[(f^2*(m - 1))/(c^2*(m + 2*
p + 1)), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(c*(m + 2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c
*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e,
0] && GtQ[n, 0] && GtQ[m, 1] && NeQ[m + 2*p + 1, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}dx = \frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} - \frac{3\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}dx}{c^2d} - \frac{\left(2b\sqrt{1-c^2x^2}\right)\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{1-c^2x^2}}{cd\sqrt{d-c^2dx^2}}$$

$$= \frac{bx^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c^3d\sqrt{d-c^2dx^2}} + \frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{3x\sqrt{d-c^2dx^2}\left(a+b\,\mathrm{s}\right.}{2c^4d^2}$$

$$= \frac{b^2x\left(1-c^2x^2\right)}{2c^4d\sqrt{d-c^2dx^2}} - \frac{bx^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c^3d\sqrt{d-c^2dx^2}} + \frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{3x}{}$$

$$= -\frac{b^2x\left(1-c^2x^2\right)}{4c^4d\sqrt{d-c^2dx^2}} - \frac{b^2\sqrt{1-c^2x^2}\sin^{-1}(cx)}{2c^5d\sqrt{d-c^2dx^2}} - \frac{bx^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c^3d\sqrt{d-c^2dx^2}} +$$

$$= -\frac{b^2x\left(1-c^2x^2\right)}{4c^4d\sqrt{d-c^2dx^2}} + \frac{b^2\sqrt{1-c^2x^2}\sin^{-1}(cx)}{4c^5d\sqrt{d-c^2dx^2}} - \frac{bx^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c^3d\sqrt{d-c^2dx^2}} +$$

$$= -\frac{b^2x\left(1-c^2x^2\right)}{4c^4d\sqrt{d-c^2dx^2}} + \frac{b^2\sqrt{1-c^2x^2}\sin^{-1}(cx)}{4c^5d\sqrt{d-c^2dx^2}} - \frac{bx^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c^3d\sqrt{d-c^2dx^2}} +$$

$$= -\frac{b^2x\left(1-c^2x^2\right)}{4c^4d\sqrt{d-c^2dx^2}} + \frac{b^2\sqrt{1-c^2x^2}\sin^{-1}(cx)}{4c^5d\sqrt{d-c^2dx^2}} - \frac{bx^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c^3d\sqrt{d-c^2dx^2}} +$$

Mathematica [A] time = 2.44, size = 312, normalized size = 0.74

$$-4a^2c\sqrt{d}\,x\left(c^2x^2-3\right)+12a^2\sqrt{d-c^2dx^2}\,\tan^{-1}\left(\frac{cx\sqrt{d-c^2dx^2}}{\sqrt{d}\left(c^2x^2-1\right)}\right)+2ab\sqrt{d}\left(\sqrt{1-c^2x^2}\left(4\log\left(1-c^2x^2\right)-6\sin^{-1}(c\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^4*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (-4*a^2*c*Sqrt[d]*x*(-3 + c^2*x^2) + 12*a^2*Sqrt[d - c^2*d*x^2]*ArcTan[(c*x
*Sqrt[d - c^2*d*x^2])/(Sqrt[d]*(-1 + c^2*x^2))] + 2*a*b*Sqrt[d]*(8*c*x*ArcS
```

```
in[c*x] + Sqrt[1 - c^2*x^2]*(-6*ArcSin[c*x]^2 + Cos[2*ArcSin[c*x]] + 4*Log[
1 - c^2*x^2] + 2*ArcSin[c*x]*Sin[2*ArcSin[c*x]])) + b^2*Sqrt[d]*(8*c*x*ArcS
in[c*x]^2 - (8*I)*Sqrt[1 - c^2*x^2]*PolyLog[2, -E^((2*I)*ArcSin[c*x])] + Sq
rt[1 - c^2*x^2]*(-4*ArcSin[c*x]^3 + 2*ArcSin[c*x]*(Cos[2*ArcSin[c*x]] + 8*L
og[1 + E^((2*I)*ArcSin[c*x])]) - Sin[2*ArcSin[c*x]] + 2*ArcSin[c*x]^2*(-4*I
 + Sin[2*ArcSin[c*x]]))))/(8*c^5*d^(3/2)*Sqrt[d - c^2*d*x^2])
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(b^2x^4\arcsin(cx)^2+2\,abx^4\arcsin(cx)+a^2x^4\right)\sqrt{-c^2dx^2+d}}{c^4d^2x^4-2\,c^2d^2x^2+d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="fricas
")
```

```
[Out] integral((b^2*x^4*arcsin(c*x)^2 + 2*a*b*x^4*arcsin(c*x) + a^2*x^4)*sqrt(-c^
2*d*x^2 + d)/(c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Warning, integration of abs or sign assumes
constant sign by intervals (correct if the argument is real):Check [abs(t_n
ostep^4-1)]index.cc index_m i_lex_is_greater Error: Bad Argument Value
```

maple [B] time = 0.94, size = 973, normalized size = 2.29

$$-\frac{a^2x^3}{2c^2d\sqrt{-c^2d\,x^2+d}}+\frac{3a^2x}{2c^4d\sqrt{-c^2d\,x^2+d}}-\frac{3a^2\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2d\,x^2+d}}\right)}{2c^4d\sqrt{c^2d}}+\frac{b^2\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x^2+1}\,\arcsin(cx)^3}{2c^5d^2\left(c^2x^2-1\right)}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] -1/2*a^2*x^3/c^2/d/(-c^2*d*x^2+d)^(1/2)+3/2*a^2/c^4*x/d/(-c^2*d*x^2+d)^(1/2
)-3/2*a^2/c^4/d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))+
1/2*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^5/d^2/(c^2*x^2-1)*arcsi
n(c*x)^3-2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^5/d^2/(c^2*x^2-1
)*arcsin(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)+2*I*a*b*(-c^2*x^2+1)^(1/2)
*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/c^5/d^2/(c^2*x^2-1)+I*b^2*(-c^2*x^2+1)^
(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^5/d^2/(c^2*x^2-1)*arcsin(c*x)^2-1/8*b^2*(-c^
2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/c^5/d^2/(c^2*x^2-1)-9/8*b
^2*(-d*(c^2*x^2-1))^(1/2)/c^4/d^2/(c^2*x^2-1)*x*arcsin(c*x)^2+1/16*b^2*(-d*
(c^2*x^2-1))^(1/2)/c^4/d^2/(c^2*x^2-1)*x-1/8*b^2*(-d*(c^2*x^2-1))^(1/2)/c^5
/d^2/(c^2*x^2-1)*arcsin(c*x)*cos(3*arcsin(c*x))-1/8*b^2*(-d*(c^2*x^2-1))^(1
/2)/c^5/d^2/(c^2*x^2-1)*sin(3*arcsin(c*x))*arcsin(c*x)^2+1/16*b^2*(-d*(c^2*
x^2-1))^(1/2)/c^5/d^2/(c^2*x^2-1)*sin(3*arcsin(c*x))+3/2*a*b*(-d*(c^2*x^2-1
))^(1/2)*(-c^2*x^2+1)^(1/2)/c^5/d^2/(c^2*x^2-1)*arcsin(c*x)^2+I*b^2*(-c^2*x
^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^5/d^2/(c^2*x^2-1)*polylog(2,-(I*c*x+(-
c^2*x^2+1)^(1/2))^2)-2*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^5/d^
2/(c^2*x^2-1)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)-1/8*a*b*(-c^2*x^2+1)^(1/2)
*(-d*(c^2*x^2-1))^(1/2)/c^5/d^2/(c^2*x^2-1)-9/4*a*b*(-d*(c^2*x^2-1))^(1/2)/
```

```
c^4/d^2/(c^2*x^2-1)*arcsin(c*x)*x-1/8*a*b*(-d*(c^2*x^2-1))^(1/2)/c^5/d^2/(c
^2*x^2-1)*cos(3*arcsin(c*x))-1/4*a*b*(-d*(c^2*x^2-1))^(1/2)/c^5/d^2/(c^2*x^
2-1)*arcsin(c*x)*sin(3*arcsin(c*x))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}a^2\left(\frac{x^3}{\sqrt{-c^2dx^2+d}\,c^2d}-\frac{3x}{\sqrt{-c^2dx^2+d}\,c^4d}+\frac{3\arcsin(cx)}{c^5d^{\frac{3}{2}}}\right)+\sqrt{d}\int\frac{\left(b^2x^4\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)^2+\right.}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxima
")
```

```
[Out] -1/2*a^2*(x^3/(sqrt(-c^2*d*x^2 + d)*c^2*d) - 3*x/(sqrt(-c^2*d*x^2 + d)*c^4*
d) + 3*arcsin(c*x)/(c^5*d^(3/2))) + sqrt(d)*integrate((b^2*x^4*arctan2(c*x,
 sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a*b*x^4*arctan2(c*x, sqrt(c*x + 1)*sqr
t(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d
^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{x^4\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{{\left(d-c^2\,d\,x^2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int((x^4*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{x^4\left(a+b\,\mathrm{asin}\,(cx)\right)^2}{\left(-d\,(cx-1)\,(cx+1)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral(x**4*(a + b*asin(c*x))**2/(-d*(c*x - 1)*(c*x + 1))**(3/2), x)
```

3.246 $\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=412

$$\frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}}+\frac{2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{c^4d^2}+\frac{4ib\sqrt{1-c^2x^2}\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^4d\sqrt{d-c^2dx^2}}-\frac{4abx\sqrt{}}{c^3d\sqrt{d}}$$

```
[Out] -2*b^2*(-c^2*x^2+1)/c^4/d/(-c^2*d*x^2+d)^(1/2)+x^2*(a+b*arcsin(c*x))^2/c^2/
d/(-c^2*d*x^2+d)^(1/2)-4*a*b*x*(-c^2*x^2+1)^(1/2)/c^3/d/(-c^2*d*x^2+d)^(1/2
)-4*b^2*x*arcsin(c*x)*(-c^2*x^2+1)^(1/2)/c^3/d/(-c^2*d*x^2+d)^(1/2)+2*b*x*(
a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3/d/(-c^2*d*x^2+d)^(1/2)+4*I*b*(a+b*a
rcsin(c*x))*arctan(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/c^4/d/(-c^2
*d*x^2+d)^(1/2)-2*I*b^2*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+
1)^(1/2)/c^4/d/(-c^2*d*x^2+d)^(1/2)+2*I*b^2*polylog(2,I*(I*c*x+(-c^2*x^2+1)
^(1/2)))*(-c^2*x^2+1)^(1/2)/c^4/d/(-c^2*d*x^2+d)^(1/2)+2*(a+b*arcsin(c*x))^
2*(-c^2*d*x^2+d)^(1/2)/c^4/d^2
```

Rubi [A] time = 0.45, antiderivative size = 412, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 9, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.310, Rules used = {4703, 4677, 4619, 261, 4715, 4657, 4181, 2279, 2391}

$$-\frac{2ib^2\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{c^4d\sqrt{d-c^2dx^2}}+\frac{2ib^2\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{c^4d\sqrt{d-c^2dx^2}}+\frac{2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{c^4d^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (-4*a*b*x*Sqrt[1 - c^2*x^2])/(c^3*d*Sqrt[d - c^2*d*x^2]) - (2*b^2*(1 - c^2*
x^2))/(c^4*d*Sqrt[d - c^2*d*x^2]) - (4*b^2*x*Sqrt[1 - c^2*x^2]*ArcSin[c*x])
/(c^3*d*Sqrt[d - c^2*d*x^2]) + (2*b*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])
)/(c^3*d*Sqrt[d - c^2*d*x^2]) + (x^2*(a + b*ArcSin[c*x])^2)/(c^2*d*Sqrt[d -
 c^2*d*x^2]) + (2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(c^4*d^2) + ((
4*I)*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])])/(c^
4*d*Sqrt[d - c^2*d*x^2]) - ((2*I)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)*E^(
I*ArcSin[c*x])])/(c^4*d*Sqrt[d - c^2*d*x^2]) + ((2*I)*b^2*Sqrt[1 - c^2*x^2]
*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c^4*d*Sqrt[d - c^2*d*x^2])
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(e*(m + 2*p + 1)), x] + (Dist[(f^2*(m - 1))/(c^2*(m + 2*
p + 1)), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(c*(m + 2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c
*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e,
0] && GtQ[n, 0] && GtQ[m, 1] && NeQ[m + 2*p + 1, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^3 \left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx = \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} - \frac{2\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx}{c^2d} - \frac{\left(2b\sqrt{1-c^2x^2}\right)\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{1-c^2x^2}\,dx}{cd\sqrt{d-c^2dx^2}}$$

$$= \frac{2bx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c^3d\sqrt{d-c^2dx^2}} + \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}\right.}{c^4d^2}$$

$$= -\frac{4abx\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} + \frac{2b^2\left(1-c^2x^2\right)}{c^4d\sqrt{d-c^2dx^2}} + \frac{2bx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c^3d\sqrt{d-c^2dx^2}} + \frac{x^2\left(a+b\,\mathrm{s}\right.}{c^2d\sqrt{d}}$$

$$= -\frac{4abx\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} + \frac{2b^2\left(1-c^2x^2\right)}{c^4d\sqrt{d-c^2dx^2}} - \frac{4b^2x\sqrt{1-c^2x^2}\sin^{-1}(cx)}{c^3d\sqrt{d-c^2dx^2}} + \frac{2bx\sqrt{1-c^2x^2}\left(a\right.}{c^3d\sqrt{d-}}$$

$$= -\frac{4abx\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} - \frac{2b^2\left(1-c^2x^2\right)}{c^4d\sqrt{d-c^2dx^2}} - \frac{4b^2x\sqrt{1-c^2x^2}\sin^{-1}(cx)}{c^3d\sqrt{d-c^2dx^2}} + \frac{2bx\sqrt{1-c^2x^2}\left(a\right.}{c^3d\sqrt{d-}}$$

$$= -\frac{4abx\sqrt{1-c^2x^2}}{c^3d\sqrt{d-c^2dx^2}} - \frac{2b^2\left(1-c^2x^2\right)}{c^4d\sqrt{d-c^2dx^2}} - \frac{4b^2x\sqrt{1-c^2x^2}\sin^{-1}(cx)}{c^3d\sqrt{d-c^2dx^2}} + \frac{2bx\sqrt{1-c^2x^2}\left(a\right.}{c^3d\sqrt{d-}}$$

Mathematica [**A**] time = 0.60, size = 369, normalized size = 0.90

$$\frac{-2a^2c^2x^2+4a^2+4ab\sqrt{1-c^2x^2}\log\left(\cos\left(\frac{1}{2}\sin^{-1}(cx)\right)-\sin\left(\frac{1}{2}\sin^{-1}(cx)\right)\right)-4ab\sqrt{1-c^2x^2}\log\left(\sin\left(\frac{1}{2}\sin^{-1}(cx\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^3*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (4*a^2 - 2*b^2 - 2*a^2*c^2*x^2 + 6*a*b*ArcSin[c*x] + 3*b^2*ArcSin[c*x]^2 -
2*b^2*Cos[2*ArcSin[c*x]] + 2*a*b*ArcSin[c*x]*Cos[2*ArcSin[c*x]] + b^2*ArcSi
n[c*x]^2*Cos[2*ArcSin[c*x]] - 4*b^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*Log[1 - I
*E^(I*ArcSin[c*x])] + 4*b^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*Log[1 + I*E^(I*Ar
cSin[c*x])] + 4*a*b*Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c
*x]/2]] - 4*a*b*Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/
2]] - (4*I)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] + (4*I
)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])] - 2*a*b*Sin[2*ArcSi
n[c*x]] - 2*b^2*ArcSin[c*x]*Sin[2*ArcSin[c*x]])/(2*c^4*d*Sqrt[d - c^2*d*x^2
])
```

fricas [**F**] time = 0.48, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(b^2x^3\arcsin(cx)^2+2\,abx^3\arcsin(cx)+a^2x^3\right)\sqrt{-c^2dx^2+d}}{c^4d^2x^4-2\,c^2d^2x^2+d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="fricas
")
```

```
[Out] integral((b^2*x^3*arcsin(c*x)^2 + 2*a*b*x^3*arcsin(c*x) + a^2*x^3)*sqrt(-c^
2*d*x^2 + d)/(c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2), x)
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [B] time = 0.54, size = 830, normalized size = 2.01

$$-\frac{a^2x^2}{c^2d\sqrt{-c^2d\,x^2+d}}+\frac{2a^2}{d\,c^4\sqrt{-c^2d\,x^2+d}}+\frac{2b^2\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x^2+1}\,\arcsin\left(cx\right)x}{c^3d^2\left(c^2x^2-1\right)}+\frac{b^2\sqrt{-d\left(c^2x^2-1\right)}\,\mathrm{arc}}{c^2d^2\left(c^2x^2-\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] -a^2*x^2/c^2/d/(-c^2*d*x^2+d)^(1/2)+2*a^2/d/c^4/(-c^2*d*x^2+d)^(1/2)+2*b^2*
(-d*(c^2*x^2-1))^(1/2)/c^3/d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x
+b^2*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^2-1)*arcsin(c*x)^2*x^2-2*b^2*(-d
*(c^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^2-1)*x^2-2*b^2*(-d*(c^2*x^2-1))^(1/2)/c^
4/d^2/(c^2*x^2-1)*arcsin(c*x)^2+2*b^2*(-d*(c^2*x^2-1))^(1/2)/c^4/d^2/(c^2*x
^2-1)-2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^4/d^2/(c^2*x^2-1)*a
rcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+2*b^2*(-c^2*x^2+1)^(1/2)*(-d*
(c^2*x^2-1))^(1/2)/c^4/d^2/(c^2*x^2-1)*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+
1)^(1/2)))-2*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^4/d^2/(c^2*x
^2-1)*dilog(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+2*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*
(c^2*x^2-1))^(1/2)/c^4/d^2/(c^2*x^2-1)*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2))
)+2*a*b*(-d*(c^2*x^2-1))^(1/2)/c^3/d^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*x+2*a
*b*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^2-1)*arcsin(c*x)*x^2-4*a*b*(-d*(c^
2*x^2-1))^(1/2)/c^4/d^2/(c^2*x^2-1)*arcsin(c*x)+2*a*b*(-c^2*x^2+1)^(1/2)*(-
d*(c^2*x^2-1))^(1/2)/c^4/d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)-2*a
*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^4/d^2/(c^2*x^2-1)*ln(I*c*x+(
-c^2*x^2+1)^(1/2)-I)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-abc\left(\frac{2\,x}{c^4d^{\frac{3}{2}}}+\frac{\log\left(cx+1\right)}{c^5d^{\frac{3}{2}}}-\frac{\log\left(cx-1\right)}{c^5d^{\frac{3}{2}}}\right)-2\,ab\left(\frac{x^2}{\sqrt{-c^2dx^2+d}\,c^2d}-\frac{2}{\sqrt{-c^2dx^2+d}\,c^4d}\right)\arcsin\left(cx\right)-a^2\left(\frac{}{\sqrt{-c^2d}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxima
")
```

```
[Out] -a*b*c*(2*x/(c^4*d^(3/2)) + log(c*x + 1)/(c^5*d^(3/2)) - log(c*x - 1)/(c^5*
d^(3/2))) - 2*a*b*(x^2/(sqrt(-c^2*d*x^2 + d)*c^2*d) - 2/(sqrt(-c^2*d*x^2 +
d)*c^4*d))*arcsin(c*x) - a^2*(x^2/(sqrt(-c^2*d*x^2 + d)*c^2*d) - 2/(sqrt(-c
^2*d*x^2 + d)*c^4*d)) + ((c^2*x^2 - 2)*sqrt(c*x + 1)*sqrt(-c*x + 1)*sqrt(d)
*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 - (c^6*d^2*x^2 - c^4*d^2)*sqr
t(d)*integrate(2*(c^2*x^4 - 2*x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1
))/(c^3*d^2*x^2 - c*d^2), x))*b^2/(c^6*d^2*x^2 - c^4*d^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{{\left(d-c^2\,d\,x^2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int((x^3*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(3/2), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Exception raised: TypeError
```

3.247 $\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=250

$$\frac{x\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}}-\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc^3d\sqrt{d-c^2dx^2}}-\frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{c^3d\sqrt{d-c^2dx^2}}+\frac{2b\sqrt{1-c^2x^2}\log\left(1+e^{2i\sin\ldots}\right.}{c^3d\sqrt{d-\ldots}}$$

```
[Out] x*(a+b*arcsin(c*x))^2/c^2/d/(-c^2*d*x^2+d)^(1/2)-I*(a+b*arcsin(c*x))^2*(-c^
2*x^2+1)^(1/2)/c^3/d/(-c^2*d*x^2+d)^(1/2)-1/3*(a+b*arcsin(c*x))^3*(-c^2*x^2
+1)^(1/2)/b/c^3/d/(-c^2*d*x^2+d)^(1/2)+2*b*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-
c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/c^3/d/(-c^2*d*x^2+d)^(1/2)-I*b^2*po
lylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/c^3/d/(-c^2*d*x^2
+d)^(1/2)
```

Rubi [A] time = 0.36, antiderivative size = 250, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.276, Rules used = {4703, 4643, 4641, 4675, 3719, 2190, 2279, 2391}

$$-\frac{ib^2\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{c^3d\sqrt{d-c^2dx^2}}-\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc^3d\sqrt{d-c^2dx^2}}+\frac{x\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}}-\frac{i\sqrt{1-c^2x^2}\left(a+\ldots\right.}{c^3d\sqrt{d-\ldots}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (x*(a + b*ArcSin[c*x])^2)/(c^2*d*Sqrt[d - c^2*d*x^2]) - (I*Sqrt[1 - c^2*x^2
]*(a + b*ArcSin[c*x])^2)/(c^3*d*Sqrt[d - c^2*d*x^2]) - (Sqrt[1 - c^2*x^2]*(
a + b*ArcSin[c*x])^3)/(3*b*c^3*d*Sqrt[d - c^2*d*x^2]) + (2*b*Sqrt[1 - c^2*x
^2]*(a + b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(c^3*d*Sqrt[d - c^2
*d*x^2]) - (I*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(c^
3*d*Sqrt[d - c^2*d*x^2])
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4643

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcSin[c*x])^n
/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e
, 0] &&  !GtQ[d, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rubi steps

$$\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx = \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} - \frac{\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx}{c^2d} - \frac{\left(2b\sqrt{1-c^2x^2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{1-c^2x^2}\,dx}{cd\sqrt{d-c^2dx^2}}$$

$$= \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} - \frac{\left(2b\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int (a+bx)\tan(x)\,dx, x, \sin^{-1}(cx)\right)}{c^3d\sqrt{d-c^2dx^2}} - \cdots$$

$$= \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} - \frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{c^3d\sqrt{d-c^2dx^2}} - \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc^3d\sqrt{d-c^2dx^2}} \cdots$$

$$= \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} - \frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{c^3d\sqrt{d-c^2dx^2}} - \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc^3d\sqrt{d-c^2dx^2}} \cdots$$

$$= \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} - \frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{c^3d\sqrt{d-c^2dx^2}} - \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc^3d\sqrt{d-c^2dx^2}} \cdots$$

$$= \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} - \frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{c^3d\sqrt{d-c^2dx^2}} - \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc^3d\sqrt{d-c^2dx^2}} \cdots$$

Mathematica [A] time = 0.61, size = 295, normalized size = 1.18

$$-\frac{a^2x\sqrt{-d\left(c^2x^2-1\right)}}{c^2d^2\left(c^2x^2-1\right)}+\frac{a^2\tan^{-1}\left(\frac{cx\sqrt{-d\left(c^2x^2-1\right)}}{\sqrt{d}\left(c^2x^2-1\right)}\right)}{c^3d^{3/2}}+\frac{ab\left(2cx\sin^{-1}(cx)-\sqrt{1-c^2x^2}\left(\sin^{-1}(cx)^2-2\log\left(\sqrt{1-c^2x^2}\right.\right.\right.}{c^3d\sqrt{d\left(1-c^2x^2\right)}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^2*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] -((a^2*x*Sqrt[-(d*(-1 + c^2*x^2))])/(c^2*d^2*(-1 + c^2*x^2))) + (a^2*ArcTan
[(c*x*Sqrt[-(d*(-1 + c^2*x^2))])/(Sqrt[d]*(-1 + c^2*x^2))])/(c^3*d^(3/2)) +
 (a*b*(2*c*x*ArcSin[c*x] - Sqrt[1 - c^2*x^2]*(ArcSin[c*x]^2 - 2*Log[Sqrt[1
- c^2*x^2]])))/(c^3*d*Sqrt[d*(1 - c^2*x^2)]) + (b^2*(ArcSin[c*x]*(3*c*x*Arc
Sin[c*x] - Sqrt[1 - c^2*x^2]*ArcSin[c*x]*(3*I + ArcSin[c*x]) + 6*Sqrt[1 - c
^2*x^2]*Log[1 + E^((2*I)*ArcSin[c*x])]) - (3*I)*Sqrt[1 - c^2*x^2]*PolyLog[2
, -E^((2*I)*ArcSin[c*x])]))/(3*c^3*d*Sqrt[d*(1 - c^2*x^2)])
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b^2x^2\arcsin\left(cx\right)^2+2\,abx^2\arcsin\left(cx\right)+a^2x^2\right)\sqrt{-c^2dx^2+d}}{c^4d^2x^4-2\,c^2d^2x^2+d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="fricas
")
```

```
[Out] integral((b^2*x^2*arcsin(c*x)^2 + 2*a*b*x^2*arcsin(c*x) + a^2*x^2)*sqrt(-c^
2*d*x^2 + d)/(c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Warning, integration of abs or sign assumes
constant sign by intervals (correct if the argument is real):Check [abs(t_n
ostep^4-1)]index.cc index_m i_lex_is_greater Error: Bad Argument Value
```

maple [B] time = 0.41, size = 581, normalized size = 2.32

$$\frac{a^2x}{c^2d\sqrt{-c^2d\,x^2+d}}-\frac{a^2\arctan\left(\frac{\sqrt{c^2d}\,x}{\sqrt{-c^2d\,x^2+d}}\right)}{c^2d\sqrt{c^2d}}+\frac{b^2\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x^2+1}\,\arcsin\left(cx\right)^3}{3d^2c^3\left(c^2x^2-1\right)}+\frac{ib^2\sqrt{-d\left(c^2x^2-1\right)}\,\mathrm{a}}{d^2c^3\left(c\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] a^2*x/c^2/d/(-c^2*d*x^2+d)^(1/2)-a^2/c^2/d/(c^2*d)^(1/2)*arctan((c^2*d)^(1/
2)*x/(-c^2*d*x^2+d)^(1/2))+1/3*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2
)/d^2/c^3/(c^2*x^2-1)*arcsin(c*x)^3+I*b^2*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x
)^2/d^2/c^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)-b^2*(-d*(c^2*x^2-1))^(1/2)*arcsi
n(c*x)^2/d^2/c^2/(c^2*x^2-1)*x-2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1
/2)/d^2/c^3/(c^2*x^2-1)*arcsin(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)+I*b^
```

```
2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^2/c^3/(c^2*x^2-1)*polylog(2,-
(I*c*x+(-c^2*x^2+1)^(1/2))^2)+a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)
/d^2/c^3/(c^2*x^2-1)*arcsin(c*x)^2+2*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-
1))^(1/2)/d^2/c^3/(c^2*x^2-1)*arcsin(c*x)-2*a*b*(-d*(c^2*x^2-1))^(1/2)*arcs
in(c*x)/d^2/c^2/(c^2*x^2-1)*x-2*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/
2)/d^2/c^3/(c^2*x^2-1)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a^2\left(\frac{x}{\sqrt{-c^2dx^2+d}\,c^2d}-\frac{\arcsin(cx)}{c^3d^{\frac{3}{2}}}\right)+\sqrt{d}\int\frac{\left(b^2x^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)^2+2\,abx^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{\right.}\right.}{c^4d^2x^4-2\,c^2d^2x^2+d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxima
")
```

```
[Out] a^2*(x/(sqrt(-c^2*d*x^2 + d)*c^2*d) - arcsin(c*x)/(c^3*d^(3/2))) + sqrt(d)*
integrate((b^2*x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a*b*x^2
*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/(
c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{x^2\,(a+b\,\mathrm{asin}\,(c\,x))^2}{\left(d-c^2\,d\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int((x^2*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{x^2\,(a+b\,\mathrm{asin}\,(cx))^2}{(-d\,(cx-1)\,(cx+1))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral(x**2*(a + b*asin(c*x))**2/(-d*(c*x - 1)*(c*x + 1))**(3/2), x)
```

3.248 $\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=208

$$\frac{\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}}+\frac{4ib\sqrt{1-c^2x^2}\,\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}}-\frac{2ib^2\sqrt{1-c^2x^2}\,\mathrm{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)}{c^2d\sqrt{d-c^2dx^2}}+\frac{2ib^2\sqrt{1}}{}$$

```
[Out] (a+b*arcsin(c*x))^2/c^2/d/(-c^2*d*x^2+d)^(1/2)+4*I*b*(a+b*arcsin(c*x))*arct
an(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/c^2/d/(-c^2*d*x^2+d)^(1/2)-
2*I*b^2*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/c^2/d/(
-c^2*d*x^2+d)^(1/2)+2*I*b^2*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x
^2+1)^(1/2)/c^2/d/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.19, antiderivative size = 208, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {4677, 4657, 4181, 2279, 2391}

$$-\frac{2ib^2\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{c^2d\sqrt{d-c^2dx^2}}+\frac{2ib^2\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{c^2d\sqrt{d-c^2dx^2}}+\frac{\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}}+\frac{4ib\sqrt{1}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (a + b*ArcSin[c*x])^2/(c^2*d*Sqrt[d - c^2*d*x^2]) + ((4*I)*b*Sqrt[1 - c^2*x
^2]*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])])/(c^2*d*Sqrt[d - c^2*d*x^
2]) - ((2*I)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(c^2
*d*Sqrt[d - c^2*d*x^2]) + ((2*I)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*Ar
cSin[c*x])])/(c^2*d*Sqrt[d - c^2*d*x^2])
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx = \frac{\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} - \frac{\left(2b\sqrt{1-c^2x^2}\right)\int\frac{a+b\sin^{-1}(cx)}{1-c^2x^2}\,dx}{cd\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} - \frac{\left(2b\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int(a+bx)\sec(x)\,dx,x,\sin^{-1}(cx)\right)}{c^2d\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{4ib\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{c^2d\sqrt{d-c^2dx^2}} + \frac{\left(2b^2\sqrt{1-c^2\right.}{}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{4ib\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{c^2d\sqrt{d-c^2dx^2}} - \frac{\left(2ib^2\sqrt{1-c\right.}{}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2}{c^2d\sqrt{d-c^2dx^2}} + \frac{4ib\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{c^2d\sqrt{d-c^2dx^2}} - \frac{2ib^2\sqrt{1-c^2}}{c^2d}$$

Mathematica [A] time = 0.58, size = 276, normalized size = 1.33

$$\frac{a^2+2ab\sqrt{1-c^2x^2}\log\left(\cos\left(\frac{1}{2}\sin^{-1}(cx)\right)-\sin\left(\frac{1}{2}\sin^{-1}(cx)\right)\right)-2ab\sqrt{1-c^2x^2}\log\left(\sin\left(\frac{1}{2}\sin^{-1}(cx)\right)+\cos\left(\frac{1}{2}\sin\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (a^2 + 2*a*b*ArcSin[c*x] + b^2*ArcSin[c*x]^2 - 2*b^2*Sqrt[1 - c^2*x^2]*ArcS
in[c*x]*Log[1 - I*E^(I*ArcSin[c*x])] + 2*b^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*
Log[1 + I*E^(I*ArcSin[c*x])] + 2*a*b*Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*x]/
2] - Sin[ArcSin[c*x]/2]] - 2*a*b*Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*x]/2] +
 Sin[ArcSin[c*x]/2]] - (2*I)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)*E^(I*Arc
Sin[c*x])] + (2*I)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])])/(
c^2*d*Sqrt[d - c^2*d*x^2])
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}\left(b^2x\arcsin(cx)^2+2\,abx\arcsin(cx)+a^2x\right)}{c^4d^2x^4-2\,c^2d^2x^2+d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b^2*x*arcsin(c*x)^2 + 2*a*b*x*arcsin(c*x) +
a^2*x)/(c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Warning, integration of abs or sign assumes
constant sign by intervals (correct if the argument is real):Check [abs(t_n
ostep^4-1)]index.cc index_m i_lex_is_greater Error: Bad Argument Value
```

maple [B] time = 0.20, size = 540, normalized size = 2.60

$$\frac{a^2}{c^2 d\sqrt{-c^2 d\,x^2+d}}-\frac{b^2\sqrt{-d\left(c^2x^2-1\right)}\,\arcsin\left(cx\right)^2}{c^2d^2\left(c^2x^2-1\right)}+\frac{2ib^2\sqrt{-c^2x^2+1}\,\sqrt{-d\left(c^2x^2-1\right)}\,\mathrm{dilog}\left(1+i\left(icx+\sqrt{-c^2\right.\right.}}{c^2d^2\left(c^2x^2-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] a^2/c^2/d/(-c^2*d*x^2+d)^(1/2)-b^2*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^2-
1)*arcsin(c*x)^2+2*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2/
(c^2*x^2-1)*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-2*I*b^2*(-c^2*x^2+1)^(1/2
)*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^2-1)*dilog(1-I*(I*c*x+(-c^2*x^2+1)^
(1/2)))-2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^2-1)
*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+2*b^2*(-c^2*x^2+1)^(1/2)*(-
d*(c^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^2-1)*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^
2+1)^(1/2)))-2*a*b*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^2-1)*arcsin(c*x)-2
*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^2/d^2/(c^2*x^2-1)*ln(I*c*x
+(-c^2*x^2+1)^(1/2)-I)+2*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^2/
d^2/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\sqrt{d}\int\frac{\left(b^2x\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)^2+2\,abx\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)\right)\sqrt{cx+1}\,\sqrt{-cx+1}}{c^4d^2x^4-2\,c^2d^2x^2+d^2}\,dx+\frac{}{\sqrt{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxima")
```

```
[Out] sqrt(d)*integrate((b^2*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a
*b*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x +
1)/(c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2), x) + a^2/(sqrt(-c^2*d*x^2 + d)*c^2*
d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{x\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{{\left(d-c^2\,d\,x^2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int((x*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{x\left(a+b\,\mathrm{asin}\left(cx\right)\right)^2}{\left(-d\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral(x*(a + b*asin(c*x))**2/(-d*(c*x - 1)*(c*x + 1))**(3/2), x)
```

3.249 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=195

$$\frac{x\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}}-\frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{cd\sqrt{d-c^2dx^2}}+\frac{2b\sqrt{1-c^2x^2}\log\left(1+e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{cd\sqrt{d-c^2dx^2}}-\frac{ib^2\sqrt{}}{}$$

```
[Out] x*(a+b*arcsin(c*x))^2/d/(-c^2*d*x^2+d)^(1/2)-I*(a+b*arcsin(c*x))^2*(-c^2*x^
2+1)^(1/2)/c/d/(-c^2*d*x^2+d)^(1/2)+2*b*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2
*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/c/d/(-c^2*d*x^2+d)^(1/2)-I*b^2*polylog
(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/c/d/(-c^2*d*x^2+d)^(1/
2)
```

Rubi [A] time = 0.16, antiderivative size = 195, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231, Rules used = {4653, 4675, 3719, 2190, 2279, 2391}

$$-\frac{ib^2\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{cd\sqrt{d-c^2dx^2}}+\frac{x\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}}-\frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{cd\sqrt{d-c^2dx^2}}+\frac{2b\sqrt{1-c^2x^2}\,\text{lo}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (x*(a + b*ArcSin[c*x])^2)/(d*Sqrt[d - c^2*d*x^2]) - (I*Sqrt[1 - c^2*x^2]*(a
 + b*ArcSin[c*x])^2)/(c*d*Sqrt[d - c^2*d*x^2]) + (2*b*Sqrt[1 - c^2*x^2]*(a
+ b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(c*d*Sqrt[d - c^2*d*x^2])
- (I*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(c*d*Sqrt[d
- c^2*d*x^2])
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4653

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n*Sqrt[1 - c^2*x^2])/(d*Sqrt[d + e*x^2]), Int[(x*(a + b*ArcSin[c*x])^(n
 - 1))/(1 - c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e,
 0] && GtQ[n, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx &= \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} - \frac{\left(2bc\sqrt{1-c^2x^2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{1-c^2x^2}\,dx}{d\sqrt{d-c^2dx^2}}\\
&= \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} - \frac{\left(2b\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int (a+bx)\tan(x)\,dx, x, \sin^{-1}(cx)\right)}{cd\sqrt{d-c^2dx^2}}\\
&= \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} - \frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{cd\sqrt{d-c^2dx^2}} + \frac{\left(4ib\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int \frac{e^{2ix}(a\cdots}{1+e\cdots}\right.}{cd\sqrt{d-c^2dx\cdots}}\\
&= \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} - \frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{cd\sqrt{d-c^2dx^2}} + \frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\cdots}{cd\sqrt{d-c^2dx\cdots}}\\
&= \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} - \frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{cd\sqrt{d-c^2dx^2}} + \frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\cdots}{cd\sqrt{d-c^2dx\cdots}}\\
&= \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} - \frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{cd\sqrt{d-c^2dx^2}} + \frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\cdots}{cd\sqrt{d-c^2dx\cdots}}\end{aligned}$$

Mathematica [A] time = 0.53, size = 165, normalized size = 0.85

$$\frac{a\left(acx+b\sqrt{1-c^2x^2}\log\left(1-c^2x^2\right)\right)+2b\sin^{-1}(cx)\left(acx+b\sqrt{1-c^2x^2}\log\left(1+e^{2i\sin^{-1}(cx)}\right)\right)-ib^2\sqrt{1-c^2x^2}\,\text{Li}_2\left(-\cdots\right.}{cd\sqrt{d-c^2dx^2}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(d - c^2*d*x^2)^(3/2),x]
```

```
[Out] (b^2*(c*x - I*Sqrt[1 - c^2*x^2])*ArcSin[c*x]^2 + 2*b*ArcSin[c*x]*(a*c*x + b
*Sqrt[1 - c^2*x^2]*Log[1 + E^((2*I)*ArcSin[c*x])]) + a*(a*c*x + b*Sqrt[1 -
c^2*x^2]*Log[1 - c^2*x^2]) - I*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, -E^((2*I)*A
rcSin[c*x])])/(c*d*Sqrt[d - c^2*d*x^2])
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)}{c^4d^2x^4-2\,c^2d^2x^2+d^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)
/(c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Warning, integration of abs or sign assumes
constant sign by intervals (correct if the argument is real):Check [abs(t_n
ostep^4-1)]index.cc index_m i_lex_is_greater Error: Bad Argument Value
```

maple [B] time = 0.16, size = 425, normalized size = 2.18

$$\frac{a^2x}{d\sqrt{-c^2d\,x^2+d}}+\frac{ib^2\sqrt{-d\left(c^2x^2-1\right)}\,\arcsin\left(cx\right)^2\sqrt{-c^2x^2+1}}{c\,d^2\left(c^2x^2-1\right)}-\frac{b^2\sqrt{-d\left(c^2x^2-1\right)}\,\arcsin\left(cx\right)^2x}{d^2\left(c^2x^2-1\right)}-\frac{2b^2\sqrt{-c^2x^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] a^2*x/d/(-c^2*d*x^2+d)^(1/2)+I*b^2*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)^2/c/d
^2/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)-b^2*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)^2/
d^2/(c^2*x^2-1)*x-2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c/d^2/(c^
2*x^2-1)*arcsin(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)+I*b^2*(-c^2*x^2+1)^
(1/2)*(-d*(c^2*x^2-1))^(1/2)/c/d^2/(c^2*x^2-1)*polylog(2,-(I*c*x+(-c^2*x^2+
1)^(1/2))^2)+2*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c/d^2/(c^2*x
^2-1)*arcsin(c*x)-2*a*b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/d^2/(c^2*x^2-1)*
x-2*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c/d^2/(c^2*x^2-1)*ln(1+(I
*c*x+(-c^2*x^2+1)^(1/2))^2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2\,abx\arcsin\left(cx\right)}{\sqrt{-c^2dx^2+d}\,d}-\frac{\frac{b^2\int\frac{\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)^2}{(cx+1)^{\frac{3}{2}}(cx-1)\sqrt{-cx+1}}\,dx}{d}}{\sqrt{d}}+\frac{a^2x}{\sqrt{-c^2dx^2+d}\,d}-\frac{ab\log\left(x^2-\frac{1}{c^2}\right)}{cd^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxima")
```

```
[Out] 2*a*b*x*arcsin(c*x)/(sqrt(-c^2*d*x^2 + d)*d) - b^2*integrate(arctan2(c*x, s
qrt(c*x + 1)*sqrt(-c*x + 1))^2/((c^2*d*x^2 - d)*sqrt(c*x + 1)*sqrt(-c*x + 1
)), x)/sqrt(d) + a^2*x/(sqrt(-c^2*d*x^2 + d)*d) - a*b*log(x^2 - 1/c^2)/(c*d
^(3/2))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^2}{\left(d-c^2\,d\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int((a + b*asin(c*x))^2/(d - c^2*d*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\operatorname{asin}(cx))^2}{(-d(cx-1)(cx+1))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(3/2),x)
[Out] Integral((a + b*asin(c*x))**2/(-d*(c*x - 1)*(c*x + 1))**(3/2), x)
```

3.250 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=467

$$\frac{2ib\sqrt{1-c^2x^2}\,\mathrm{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d-c^2dx^2}}-\frac{2ib\sqrt{1-c^2x^2}\,\mathrm{Li}_2\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d-c^2dx^2}}+\frac{\left(a+b\sin^{-1}(c\right.}{d\sqrt{d-c^2dx}}$$

```
[Out] (a+b*arcsin(c*x))^2/d/(-c^2*d*x^2+d)^(1/2)+4*I*b*(a+b*arcsin(c*x))*arctan(I
*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x^2+d)^(1/2)-2*(a+b*a
rcsin(c*x))^2*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/d/(-c^2*
d*x^2+d)^(1/2)+2*I*b*(a+b*arcsin(c*x))*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))
*(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x^2+d)^(1/2)-2*I*b^2*polylog(2,-I*(I*c*x+(-c^
2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x^2+d)^(1/2)+2*I*b^2*polylog(
2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x^2+d)^(1/2)-2
*I*b*(a+b*arcsin(c*x))*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/
2)/d/(-c^2*d*x^2+d)^(1/2)-2*b^2*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2))*(-c^2*
x^2+1)^(1/2)/d/(-c^2*d*x^2+d)^(1/2)+2*b^2*polylog(3,I*c*x+(-c^2*x^2+1)^(1/2
))*(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.57, antiderivative size = 467, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 11, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.379, Rules used = {4705, 4713, 4709, 4183, 2531, 2282, 6589, 4657, 4181, 2279, 2391}

$$\frac{2ib\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d-c^2dx^2}}-\frac{2ib\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x*(d - c^2*d*x^2)^(3/2)),x]
```

```
[Out] (a + b*ArcSin[c*x])^2/(d*Sqrt[d - c^2*d*x^2]) + ((4*I)*b*Sqrt[1 - c^2*x^2]*
(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])])/(d*Sqrt[d - c^2*d*x^2]) - (2
*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2*ArcTanh[E^(I*ArcSin[c*x])])/(d*Sqr
t[d - c^2*d*x^2]) + ((2*I)*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*PolyLog[
2, -E^(I*ArcSin[c*x])])/(d*Sqrt[d - c^2*d*x^2]) - ((2*I)*b^2*Sqrt[1 - c^2*x
^2]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(d*Sqrt[d - c^2*d*x^2]) + ((2*I)*b^
2*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])])/(d*Sqrt[d - c^2*d*x^2]
) - ((2*I)*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*PolyLog[2, E^(I*ArcSin[c
*x])])/(d*Sqrt[d - c^2*d*x^2]) - (2*b^2*Sqrt[1 - c^2*x^2]*PolyLog[3, -E^(I*
ArcSin[c*x])])/(d*Sqrt[d - c^2*d*x^2]) + (2*b^2*Sqrt[1 - c^2*x^2]*PolyLog[3
, E^(I*ArcSin[c*x])])/(d*Sqrt[d - c^2*d*x^2])
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4705

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> -Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a +
b*ArcSin[c*x])^n)/(2*d*f*(p + 1)), x] + (Dist[(m + 2*p + 3)/(2*d*(p + 1)),
Int[(f*x)^m*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[(b*c*n
*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*f*(p + 1)*(1 - c^2*x^2)^FracPart[
p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
0] && LtQ[p, -1] &&  !GtQ[m, 1] && (IntegerQ[m] || IntegerQ[p] || EqQ[n, 1]
)
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4713

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(
(f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c,
 d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&  !GtQ[d, 0] && (Integ
```

```
erQ[m] || EqQ[n, 1])
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\left(d-c^2dx^2\right)^{3/2}}\,dx = \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} + \frac{\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\sqrt{d-c^2dx^2}}\,dx}{d} - \frac{\left(2bc\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{1-c^2x^2}\,dx}{d\sqrt{d-c^2dx^2}}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} + \frac{\sqrt{1-c^2x^2}\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\sqrt{1-c^2x^2}}\,dx}{d\sqrt{d-c^2dx^2}} - \frac{\left(2b\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int (a+\right.}{d\sqrt{d-c}}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} + \frac{4ib\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{d\sqrt{d-c^2dx^2}} + \frac{\sqrt{1-c^2x^2}}{}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} + \frac{4ib\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{d\sqrt{d-c^2dx^2}} - \frac{2\sqrt{1-c^2x}}{}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} + \frac{4ib\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{d\sqrt{d-c^2dx^2}} - \frac{2\sqrt{1-c^2x}}{}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} + \frac{4ib\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{d\sqrt{d-c^2dx^2}} - \frac{2\sqrt{1-c^2x}}{}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} + \frac{4ib\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{d\sqrt{d-c^2dx^2}} - \frac{2\sqrt{1-c^2x}}{}$$

Mathematica [A] time = 1.89, size = 667, normalized size = 1.43

$$\frac{a^2\sqrt{d}\sqrt{d-c^2dx^2}\log(cx) - a^2\sqrt{d}\sqrt{d-c^2dx^2}\log\left(\sqrt{d}\sqrt{d-c^2dx^2}+d\right) + a^2d + 2abd\left(i\sqrt{1-c^2x^2}\,\text{Li}_2\left(-e^{i\sin^{-1}}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x*(d - c^2*d*x^2)^(3/2)),x]
```

```
[Out] (a^2*d + a^2*Sqrt[d]*Sqrt[d - c^2*d*x^2]*Log[c*x] - a^2*Sqrt[d]*Sqrt[d - c^
2*d*x^2]*Log[d + Sqrt[d]*Sqrt[d - c^2*d*x^2]] + 2*a*b*d*(ArcSin[c*x] + Sqrt
[1 - c^2*x^2]*ArcSin[c*x]*Log[1 - E^(I*ArcSin[c*x])] - Sqrt[1 - c^2*x^2]*Ar
cSin[c*x]*Log[1 + E^(I*ArcSin[c*x])] + Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*x
]/2] - Sin[ArcSin[c*x]/2]] - Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*x]/2] + Sin
[ArcSin[c*x]/2]] + I*Sqrt[1 - c^2*x^2]*PolyLog[2, -E^(I*ArcSin[c*x])] - I*S
qrt[1 - c^2*x^2]*PolyLog[2, E^(I*ArcSin[c*x])]) + b^2*d*(ArcSin[c*x]^2 + Sq
rt[1 - c^2*x^2]*ArcSin[c*x]^2*Log[1 - E^(I*ArcSin[c*x])] - 2*Sqrt[1 - c^2*x
^2]*ArcSin[c*x]*Log[1 - I*E^(I*ArcSin[c*x])] + 2*Sqrt[1 - c^2*x^2]*ArcSin[c
*x]*Log[1 + I*E^(I*ArcSin[c*x])] - Sqrt[1 - c^2*x^2]*ArcSin[c*x]^2*Log[1 +
E^(I*ArcSin[c*x])] + (2*I)*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*PolyLog[2, -E^(I*A
rcSin[c*x])] - (2*I)*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] +
 (2*I)*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])] - (2*I)*Sqrt[1 - c
```

```
^2*x^2]*ArcSin[c*x]*PolyLog[2, E^(I*ArcSin[c*x])] - 2*Sqrt[1 - c^2*x^2]*Pol
yLog[3, -E^(I*ArcSin[c*x])] + 2*Sqrt[1 - c^2*x^2]*PolyLog[3, E^(I*ArcSin[c*
x])]))/(d^2*Sqrt[d - c^2*d*x^2])
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}\left(b^2\arcsin\left(cx\right)^2+2\,ab\arcsin\left(cx\right)+a^2\right)}{c^4d^2x^5-2\,c^2d^2x^3+d^2x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x/(-c^2*d*x^2+d)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)
/(c^4*d^2*x^5 - 2*c^2*d^2*x^3 + d^2*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\arcsin\left(cx\right)+a\right)^2}{\left(-c^2dx^2+d\right)^{\frac{3}{2}}x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/((-c^2*d*x^2 + d)^(3/2)*x), x)
```

maple [B] time = 0.40, size = 1096, normalized size = 2.35

$$\frac{a^2}{d\sqrt{-c^2d\,x^2+d}}-\frac{a^2\ln\left(\frac{2d+2\sqrt{d}\,\sqrt{-c^2d\,x^2+d}}{x}\right)}{d^{\frac{3}{2}}}-\frac{b^2\sqrt{-d\left(c^2x^2-1\right)}\,\arcsin\left(cx\right)^2}{d^2\left(c^2x^2-1\right)}-\frac{b^2\sqrt{-c^2x^2+1}\,\sqrt{-d\left(c^2x^2-1\right)}\,\text{arcsi}}{d^2\left(c^2x^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] a^2/d/(-c^2*d*x^2+d)^(1/2)-a^2/d^(3/2)*ln((2*d+2*d^(1/2)*(-c^2*d*x^2+d)^(1/
2))/x)-b^2*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)*arcsin(c*x)^2-b^2*(-c^2*x
^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)*arcsin(c*x)^2*ln(1-I*c*x
-(-c^2*x^2+1)^(1/2))+b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2
*x^2-1)*arcsin(c*x)^2*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-2*b^2*(-c^2*x^2+1)^(1/
2)*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x
^2+1)^(1/2)))+2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-
1)*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-2*b^2*(-c^2*x^2+1)^(1/2)*
(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)*polylog(3,I*c*x+(-c^2*x^2+1)^(1/2))+
2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)*polylog(3,-
I*c*x-(-c^2*x^2+1)^(1/2))-2*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)
/d^2/(c^2*x^2-1)*arcsin(c*x)*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))-2*I*a*b*(
-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)*dilog(I*c*x+(-c^2*
x^2+1)^(1/2))-2*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^
2-1)*dilog(1+I*c*x+(-c^2*x^2+1)^(1/2))-4*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*
x^2-1))^(1/2)/d^2/(c^2*x^2-1)*arctan(I*c*x+(-c^2*x^2+1)^(1/2))-2*a*b*(-d*(c
^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)*arcsin(c*x)+2*I*b^2*(-c^2*x^2+1)^(1/2)*(-d
*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-2
*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)*dilog(1-I*
(I*c*x+(-c^2*x^2+1)^(1/2)))+2*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/
2)/d^2/(c^2*x^2-1)*arcsin(c*x)*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))+2*a*b*(-
c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)*arcsin(c*x)*ln(1+I*
c*x+(-c^2*x^2+1)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-a^2\left(\frac{\log\left(\frac{2\sqrt{-c^2dx^2+d}\sqrt{d}}{|x|}+\frac{2d}{|x|}\right)}{d^{\frac{3}{2}}}-\frac{1}{\sqrt{-c^2dx^2+d}\,d}\right)+\sqrt{d}\int\frac{\left(b^2\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)^2+2\,ab\arctan\left(c\right.\right.}{c^4d^2x^5-2\,c^2d^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxima")
```

```
[Out] -a^2*(log(2*sqrt(-c^2*d*x^2 + d)*sqrt(d)/abs(x) + 2*d/abs(x))/d^(3/2) - 1/(
sqrt(-c^2*d*x^2 + d)*d)) + sqrt(d)*integrate((b^2*arctan2(c*x, sqrt(c*x + 1
)*sqrt(-c*x + 1))^2 + 2*a*b*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqr
t(c*x + 1)*sqrt(-c*x + 1)/(c^4*d^2*x^5 - 2*c^2*d^2*x^3 + d^2*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^2}{x\,\left(d-c^2\,d\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x*(d - c^2*d*x^2)^(3/2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/(x*(d - c^2*d*x^2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(a+b\,\mathrm{asin}\,(cx)\right)^2}{x\left(-d\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2/(x*(-d*(c*x - 1)*(c*x + 1))**(3/2)), x)
```

3.251 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^2\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=333

$$\frac{2c^2x\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}}-\frac{2ic\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{dx\sqrt{d-c^2dx^2}}+\frac{4bc\sqrt{1-c^2x^2}\log\left(1+e^{2i\sin^{-1}(cx)}\right)}{d\sqrt{d-c^2dx^2}}$$

```
[Out] -(a+b*arcsin(c*x))^2/d/x/(-c^2*d*x^2+d)^(1/2)+2*c^2*x*(a+b*arcsin(c*x))^2/d
/(-c^2*d*x^2+d)^(1/2)-2*I*c*(a+b*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/d/(-c^2*
d*x^2+d)^(1/2)-4*b*c*(a+b*arcsin(c*x))*arctanh((I*c*x+(-c^2*x^2+1)^(1/2))^2
)*(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x^2+d)^(1/2)+4*b*c*(a+b*arcsin(c*x))*ln(1+(I
*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x^2+d)^(1/2)-I*b^2
*c*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x^
2+d)^(1/2)-I*b^2*c*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/
2)/d/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.44, antiderivative size = 333, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 10, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.345, Rules used = {4701, 4653, 4675, 3719, 2190, 2279, 2391, 4679, 4419, 4183}

$$-\frac{ib^2c\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{d\sqrt{d-c^2dx^2}}-\frac{ib^2c\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)}{d\sqrt{d-c^2dx^2}}+\frac{2c^2x\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}}-\frac{2ic\sqrt{1}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x^2*(d - c^2*d*x^2)^(3/2)),x]
```

```
[Out] -((a + b*ArcSin[c*x])^2/(d*x*Sqrt[d - c^2*d*x^2])) + (2*c^2*x*(a + b*ArcSin
[c*x])^2)/(d*Sqrt[d - c^2*d*x^2]) - ((2*I)*c*Sqrt[1 - c^2*x^2]*(a + b*ArcSi
n[c*x])^2)/(d*Sqrt[d - c^2*d*x^2]) - (4*b*c*Sqrt[1 - c^2*x^2]*(a + b*ArcSin
[c*x])*ArcTanh[E^((2*I)*ArcSin[c*x])])/(d*Sqrt[d - c^2*d*x^2]) + (4*b*c*Sqr
t[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(d*Sqrt[
d - c^2*d*x^2]) - (I*b^2*c*Sqrt[1 - c^2*x^2]*PolyLog[2, -E^((2*I)*ArcSin[c*
x])])/(d*Sqrt[d - c^2*d*x^2]) - (I*b^2*c*Sqrt[1 - c^2*x^2]*PolyLog[2, E^((2
*I)*ArcSin[c*x])])/(d*Sqrt[d - c^2*d*x^2])
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4419

```
Int[Csc[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csc[2*a + 2*b*x]^n,
 x], x] /; FreeQ[{a, b, c, d, m}, x] && IntegerQ[n] && RationalQ[m]
```

Rule 4653

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n*Sqrt[1 - c^2*x^2])/(d*Sqrt[d + e*x^2]), Int[(x*(a + b*ArcSin[c*x])^(n
 - 1))/(1 - c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e,
 0] && GtQ[n, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4679

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((x_)*((d_) + (e_.)*(x_)^2)),
x_Symbol] :> Dist[1/d, Subst[Int[(a + b*x)^n/(Cos[x]*Sin[x]), x], x, ArcSin
[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^2\left(d-c^2dx^2\right)^{3/2}}\,dx = -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{dx\sqrt{d-c^2dx^2}} + \left(2c^2\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx + \frac{\left(2bc\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{x\left(1-c^2x^2\right)}\,c}{d\sqrt{d-c^2dx^2}}$$

$$= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{dx\sqrt{d-c^2dx^2}} + \frac{2c^2x\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} + \frac{\left(2bc\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int (a+bx)\csc\right.}{d\sqrt{d-c^2dx}}$$

$$= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{dx\sqrt{d-c^2dx^2}} + \frac{2c^2x\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} + \frac{\left(4bc\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int (a+bx)\csc\right.}{d\sqrt{d-c^2dx^2}}$$

$$= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{dx\sqrt{d-c^2dx^2}} + \frac{2c^2x\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} - \frac{2ic\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} - \frac{4b}{}$$

$$= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{dx\sqrt{d-c^2dx^2}} + \frac{2c^2x\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} - \frac{2ic\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} - \frac{4b}{}$$

$$= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{dx\sqrt{d-c^2dx^2}} + \frac{2c^2x\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} - \frac{2ic\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} - \frac{4b}{}$$

$$= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{dx\sqrt{d-c^2dx^2}} + \frac{2c^2x\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} - \frac{2ic\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{d\sqrt{d-c^2dx^2}} - \frac{4b}{}$$

Mathematica [**A**] time = 0.78, size = 322, normalized size = 0.97

$$\frac{2a^2c^2x^2 - a^2 + 2abcx\sqrt{1-c^2x^2}\,\log(cx) + abcx\sqrt{1-c^2x^2}\,\log\left(1-c^2x^2\right) + 4abc^2x^2\sin^{-1}(cx) - 2ab\sin^{-1}(cx) - ib^2}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x^2*(d - c^2*d*x^2)^(3/2)),x]
```

```
[Out] (-a^2 + 2*a^2*c^2*x^2 - 2*a*b*ArcSin[c*x] + 4*a*b*c^2*x^2*ArcSin[c*x] - b^2
*ArcSin[c*x]^2 + 2*b^2*c^2*x^2*ArcSin[c*x]^2 - (2*I)*b^2*c*x*Sqrt[1 - c^2*x
^2]*ArcSin[c*x]^2 + 2*b^2*c*x*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*Log[1 - E^((2*I
)*ArcSin[c*x])] + 2*b^2*c*x*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*Log[1 + E^((2*I)*
ArcSin[c*x])] + 2*a*b*c*x*Sqrt[1 - c^2*x^2]*Log[c*x] + a*b*c*x*Sqrt[1 - c^2
*x^2]*Log[1 - c^2*x^2] - I*b^2*c*x*Sqrt[1 - c^2*x^2]*PolyLog[2, -E^((2*I)*A
rcSin[c*x])] - I*b^2*c*x*Sqrt[1 - c^2*x^2]*PolyLog[2, E^((2*I)*ArcSin[c*x])
])/(d*x*Sqrt[d - c^2*d*x^2])
```

fricas [**F**] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}\left(b^2\arcsin\left(cx\right)^2 + 2\,ab\arcsin\left(cx\right) + a^2\right)}{c^4d^2x^6 - 2\,c^2d^2x^4 + d^2x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="fricas
")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)
/(c^4*d^2*x^6 - 2*c^2*d^2*x^4 + d^2*x^2), x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\arcsin\left(cx\right) + a\right)^2}{\left(-c^2dx^2 + d\right)^{\frac{3}{2}}x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/((-c^2*d*x^2 + d)^(3/2)*x^2), x)
```

maple [B] time = 0.38, size = 807, normalized size = 2.42

$$-\frac{a^2}{dx\sqrt{-c^2d\,x^2+d}}+\frac{2a^2c^2x}{d\sqrt{-c^2d\,x^2+d}}+\frac{2ib^2\sqrt{-d\left(c^2x^2-1\right)}\,\arcsin\left(cx\right)^2\sqrt{-c^2x^2+1}\,c}{\left(c^2x^2-1\right)d^2}-\frac{2b^2\sqrt{-d\left(c^2x^2-1\right)}\,\mathrm{arcs}}{\left(c^2x^2-1\right)d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x^2/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] -a^2/d/x/(-c^2*d*x^2+d)^(1/2)+2*a^2*c^2/d*x/(-c^2*d*x^2+d)^(1/2)+2*I*b^2*(-
d*(c^2*x^2-1))^(1/2)*arcsin(c*x)^2/(c^2*x^2-1)/d^2*(-c^2*x^2+1)^(1/2)*c-2*b
^2*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)^2/(c^2*x^2-1)/d^2*x*c^2+b^2*(-d*(c^2*
x^2-1))^(1/2)*arcsin(c*x)^2/(c^2*x^2-1)/d^2/x-2*b^2*(-c^2*x^2+1)^(1/2)*(-d*
(c^2*x^2-1))^(1/2)/(c^2*x^2-1)/d^2*c*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1
/2))-2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)/d^2*c*arcs
in(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)-2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^
2*x^2-1))^(1/2)/(c^2*x^2-1)/d^2*c*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2)
)+2*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)/d^2*c*polyl
og(2,I*c*x+(-c^2*x^2+1)^(1/2))+I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1
/2)/(c^2*x^2-1)/d^2*c*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)+2*I*b^2*(-c^
2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)/d^2*c*polylog(2,-I*c*x-(-
c^2*x^2+1)^(1/2))+4*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^
2-1)/d^2*arcsin(c*x)*c-4*a*b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/(c^2*x^2-1)
/d^2*x*c^2+2*a*b*(-d*(c^2*x^2-1))^(1/2)*arcsin(c*x)/(c^2*x^2-1)/d^2/x-2*a*b
*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/(c^2*x^2-1)/d^2*ln((I*c*x+(-c^2*
x^2+1)^(1/2))^4-1)*c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$abc\left(\frac{\log\left(cx+1\right)}{d^{\frac{3}{2}}}+\frac{\log\left(cx-1\right)}{d^{\frac{3}{2}}}+\frac{2\,\log(x)}{d^{\frac{3}{2}}}\right)+2\left(\frac{2\,c^2x}{\sqrt{-c^2dx^2+d}\,d}-\frac{1}{\sqrt{-c^2dx^2+d}\,dx}\right)ab\arcsin\left(cx\right)+\left(\frac{2\,c^2x}{\sqrt{-c^2dx^2}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxima
")
```

```
[Out] a*b*c*(log(c*x + 1)/d^(3/2) + log(c*x - 1)/d^(3/2) + 2*log(x)/d^(3/2)) + 2*
(2*c^2*x/(sqrt(-c^2*d*x^2 + d)*d) - 1/(sqrt(-c^2*d*x^2 + d)*d*x))*a*b*arcsi
n(c*x) + (2*c^2*x/(sqrt(-c^2*d*x^2 + d)*d) - 1/(sqrt(-c^2*d*x^2 + d)*d*x))*
a^2 - b^2*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2/((c^2*d*x^
4 - d*x^2)*sqrt(c*x + 1)*sqrt(-c*x + 1)), x)/sqrt(d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{x^2\,{\left(d-c^2\,d\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x^2*(d - c^2*d*x^2)^(3/2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/(x^2*(d - c^2*d*x^2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\,\mathrm{asin}\,(cx))^2}{x^2\,(-d\,(cx-1)\,(cx+1))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x**2/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2/(x**2*(-d*(c*x - 1)*(c*x + 1))**(3/2)), x)
```

3.252 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^3\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=634

$$\frac{3ibc^2\sqrt{1-c^2x^2}\,\text{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d-c^2dx^2}}-\frac{3ibc^2\sqrt{1-c^2x^2}\,\text{Li}_2\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d-c^2dx^2}}+\frac{3c^2\left(a+b\right.}{2d\sqrt{d}}$$

```
[Out] 3/2*c^2*(a+b*arcsin(c*x))^2/d/(-c^2*d*x^2+d)^(1/2)-1/2*(a+b*arcsin(c*x))^2/
d/x^2/(-c^2*d*x^2+d)^(1/2)-b*c*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/d/x/(-c
^2*d*x^2+d)^(1/2)+4*I*b*c^2*(a+b*arcsin(c*x))*arctan(I*c*x+(-c^2*x^2+1)^(1/
2))*(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x^2+d)^(1/2)-3*c^2*(a+b*arcsin(c*x))^2*arc
tanh(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x^2+d)^(1/2)-b^
2*c^2*arctanh((-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x^2+d)^(1/2)
+3*I*b*c^2*(a+b*arcsin(c*x))*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))*(-c^2*x^2
+1)^(1/2)/d/(-c^2*d*x^2+d)^(1/2)-2*I*b^2*c^2*polylog(2,-I*(I*c*x+(-c^2*x^2+
1)^(1/2)))*(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x^2+d)^(1/2)+2*I*b^2*c^2*polylog(2,
I*(I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x^2+d)^(1/2)-3*I
*b*c^2*(a+b*arcsin(c*x))*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(
1/2)/d/(-c^2*d*x^2+d)^(1/2)-3*b^2*c^2*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2))*
(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x^2+d)^(1/2)+3*b^2*c^2*polylog(3,I*c*x+(-c^2*x
^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.93, antiderivative size = 634, normalized size of antiderivative = 1.00, number of steps used = 27, number of rules used = 15, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.517, Rules used = {4701, 4705, 4713, 4709, 4183, 2531, 2282, 6589, 4657, 4181, 2279, 2391, 266, 63, 208}

$$\frac{3ibc^2\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d-c^2dx^2}}-\frac{3ibc^2\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}\right.}{d\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x^3*(d - c^2*d*x^2)^(3/2)),x]
```

```
[Out] -((b*c*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(d*x*Sqrt[d - c^2*d*x^2])) +
(3*c^2*(a + b*ArcSin[c*x])^2)/(2*d*Sqrt[d - c^2*d*x^2]) - (a + b*ArcSin[c*x
])^2/(2*d*x^2*Sqrt[d - c^2*d*x^2]) + ((4*I)*b*c^2*Sqrt[1 - c^2*x^2]*(a + b*
ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])])/(d*Sqrt[d - c^2*d*x^2]) - (3*c^2*Sq
rt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2*ArcTanh[E^(I*ArcSin[c*x])])/(d*Sqrt[d
 - c^2*d*x^2]) - (b^2*c^2*Sqrt[1 - c^2*x^2]*ArcTanh[Sqrt[1 - c^2*x^2]])/(d*
Sqrt[d - c^2*d*x^2]) + ((3*I)*b*c^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*P
olyLog[2, -E^(I*ArcSin[c*x])])/(d*Sqrt[d - c^2*d*x^2]) - ((2*I)*b^2*c^2*Sqr
t[1 - c^2*x^2]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(d*Sqrt[d - c^2*d*x^2])
+ ((2*I)*b^2*c^2*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])])/(d*Sqrt
[d - c^2*d*x^2]) - ((3*I)*b*c^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*PolyL
og[2, E^(I*ArcSin[c*x])])/(d*Sqrt[d - c^2*d*x^2]) - (3*b^2*c^2*Sqrt[1 - c^2
*x^2]*PolyLog[3, -E^(I*ArcSin[c*x])])/(d*Sqrt[d - c^2*d*x^2]) + (3*b^2*c^2*
Sqrt[1 - c^2*x^2]*PolyLog[3, E^(I*ArcSin[c*x])])/(d*Sqrt[d - c^2*d*x^2])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4705

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> -Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a +
b*ArcSin[c*x])^n)/(2*d*f*(p + 1)), x] + (Dist[(m + 2*p + 3)/(2*d*(p + 1)),
Int[(f*x)^m*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[(b*c*n
*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*f*(p + 1)*(1 - c^2*x^2)^FracPart[
p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
0] && LtQ[p, -1] &&  !GtQ[m, 1] && (IntegerQ[m] || IntegerQ[p] || EqQ[n, 1]
)
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4713

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(
(f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c,
 d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&  !GtQ[d, 0] && (Integ
erQ[m] || EqQ[n, 1])
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^3\left(d-c^2dx^2\right)^{3/2}}\,dx = -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{2dx^2\sqrt{d-c^2dx^2}} + \frac{1}{2}\left(3c^2\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\left(d-c^2dx^2\right)^{3/2}}\,dx + \frac{\left(bc\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{x^2\left(1-c^2x^2\right)}}{d\sqrt{d-c^2dx^2}}$$

$$= -\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{dx\sqrt{d-c^2dx^2}} + \frac{3c^2\left(a+b\sin^{-1}(cx)\right)^2}{2d\sqrt{d-c^2dx^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2dx^2\sqrt{d-c^2dx^2}} + \frac{\left(3c^2\right)}{}$$

$$= -\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{dx\sqrt{d-c^2dx^2}} + \frac{3c^2\left(a+b\sin^{-1}(cx)\right)^2}{2d\sqrt{d-c^2dx^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2dx^2\sqrt{d-c^2dx^2}} + \frac{\left(3c^2\right.}{}$$

$$= -\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{dx\sqrt{d-c^2dx^2}} + \frac{3c^2\left(a+b\sin^{-1}(cx)\right)^2}{2d\sqrt{d-c^2dx^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2dx^2\sqrt{d-c^2dx^2}} + \frac{4ibc^2}{}$$

$$= -\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{dx\sqrt{d-c^2dx^2}} + \frac{3c^2\left(a+b\sin^{-1}(cx)\right)^2}{2d\sqrt{d-c^2dx^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2dx^2\sqrt{d-c^2dx^2}} + \frac{4ibc^2}{}$$

$$= -\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{dx\sqrt{d-c^2dx^2}} + \frac{3c^2\left(a+b\sin^{-1}(cx)\right)^2}{2d\sqrt{d-c^2dx^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2dx^2\sqrt{d-c^2dx^2}} + \frac{4ibc^2}{}$$

$$= -\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{dx\sqrt{d-c^2dx^2}} + \frac{3c^2\left(a+b\sin^{-1}(cx)\right)^2}{2d\sqrt{d-c^2dx^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2dx^2\sqrt{d-c^2dx^2}} + \frac{4ibc^2}{}$$

$$= -\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{dx\sqrt{d-c^2dx^2}} + \frac{3c^2\left(a+b\sin^{-1}(cx)\right)^2}{2d\sqrt{d-c^2dx^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{2dx^2\sqrt{d-c^2dx^2}} + \frac{4ibc^2}{}$$

Mathematica [A] time = 8.45, size = 844, normalized size = 1.33

$$\frac{3a^2\log(x)c^2}{2d^{3/2}} - \frac{3a^2\log\left(d+\sqrt{-d\left(c^2x^2-1\right)}\sqrt{d}\right)c^2}{2d^{3/2}} + \frac{b^2\sqrt{1-c^2x^2}\left(-\csc^2\left(\frac{1}{2}\sin^{-1}(cx)\right)\sin^{-1}(cx)^2 + \sec^2\left(\frac{1}{2}\sin^{-1}\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x^3*(d - c^2*d*x^2)^(3/2)),x]
```

```
[Out] Sqrt[-(d*(-1 + c^2*x^2))]*(-1/2*a^2/(d^2*x^2) - (a^2*c^2)/(d^2*(-1 + c^2*x^
2))) + (3*a^2*c^2*Log[x])/(2*d^(3/2)) - (3*a^2*c^2*Log[d + Sqrt[d]*Sqrt[-(d
*(-1 + c^2*x^2))]])/(2*d^(3/2)) + (a*b*c*((6*I)*PolyLog[2, -E^(I*ArcSin[c*x
])]*Sin[2*ArcSin[c*x]] - (6*I)*PolyLog[2, E^(I*ArcSin[c*x])]*Sin[2*ArcSin[c
*x]] - (-2*ArcSin[c*x] + 6*ArcSin[c*x]*Cos[2*ArcSin[c*x]] + 3*ArcSin[c*x]*C
os[3*ArcSin[c*x]]*Log[1 - E^(I*ArcSin[c*x])] - 3*ArcSin[c*x]*Cos[3*ArcSin[c
*x]]*Log[1 + E^(I*ArcSin[c*x])] + 2*Cos[3*ArcSin[c*x]]*Log[Cos[ArcSin[c*x]/
2] - Sin[ArcSin[c*x]/2]] - 2*Cos[3*ArcSin[c*x]]*Log[Cos[ArcSin[c*x]/2] + Si
n[ArcSin[c*x]/2]] + Sqrt[1 - c^2*x^2]*(-3*ArcSin[c*x]*Log[1 - E^(I*ArcSin[c
*x])] + 3*ArcSin[c*x]*Log[1 + E^(I*ArcSin[c*x])] - 2*Log[Cos[ArcSin[c*x]/2]
 - Sin[ArcSin[c*x]/2]] + 2*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]) +
2*Sin[2*ArcSin[c*x]])/(c*x)))/(4*d*x*Sqrt[d*(1 - c^2*x^2)]) + (b^2*c^2*Sqrt
[1 - c^2*x^2]*(8*ArcSin[c*x]^2 - 4*ArcSin[c*x]*Cot[ArcSin[c*x]/2] - ArcSin[
c*x]^2*Csc[ArcSin[c*x]/2]^2 + 8*Log[Tan[ArcSin[c*x]/2]] - 16*(ArcSin[c*x]*(
Log[1 - I*E^(I*ArcSin[c*x])] - Log[1 + I*E^(I*ArcSin[c*x])]) + I*(PolyLog[2
, (-I)*E^(I*ArcSin[c*x])] - PolyLog[2, I*E^(I*ArcSin[c*x])])) + 12*(ArcSin[
c*x]^2*(Log[1 - E^(I*ArcSin[c*x])] - Log[1 + E^(I*ArcSin[c*x])]) + (2*I)*Ar
```

```
cSin[c*x]*(PolyLog[2, -E^(I*ArcSin[c*x])] - PolyLog[2, E^(I*ArcSin[c*x])])
+ 2*(-PolyLog[3, -E^(I*ArcSin[c*x])] + PolyLog[3, E^(I*ArcSin[c*x])])) + Ar
cSin[c*x]^2*Sec[ArcSin[c*x]/2]^2 + (8*ArcSin[c*x]^2*Sin[ArcSin[c*x]/2])/(Co
s[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]) - (8*ArcSin[c*x]^2*Sin[ArcSin[c*x]/2
])/(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]) - 4*ArcSin[c*x]*Tan[ArcSin[c*x
]/2]))/(8*d*Sqrt[d*(1 - c^2*x^2)])
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}\left(b^2\arcsin\left(cx\right)^2+2\,ab\arcsin\left(cx\right)+a^2\right)}{c^4d^2x^7-2\,c^2d^2x^5+d^2x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^3/(-c^2*d*x^2+d)^(3/2),x, algorithm="fricas
")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)
/(c^4*d^2*x^7 - 2*c^2*d^2*x^5 + d^2*x^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\arcsin\left(cx\right)+a\right)^2}{\left(-c^2dx^2+d\right)^{\frac{3}{2}}x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^3/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/((-c^2*d*x^2 + d)^(3/2)*x^3), x)
```

maple [B] time = 0.66, size = 1490, normalized size = 2.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x^3/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] 3*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)/d^2*c^2*arcsi
n(c*x)*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))-4*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(
c^2*x^2-1))^(1/2)/(c^2*x^2-1)/d^2*c^2*arctan(I*c*x+(-c^2*x^2+1)^(1/2))-3*I*
a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)/d^2*c^2*dilog(1+I
*c*x+(-c^2*x^2+1)^(1/2))-3*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/
(c^2*x^2-1)/d^2*c^2*dilog(I*c*x+(-c^2*x^2+1)^(1/2))+3*a*b*(-c^2*x^2+1)^(1/2
)*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)/d^2*c^2*arcsin(c*x)*ln(1+I*c*x+(-c^2*x
^2+1)^(1/2))-3*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)/
d^2*c^2*arcsin(c*x)*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))+1/2*b^2*(-d*(c^2*x
^2-1))^(1/2)/d^2/(c^2*x^2-1)/x^2*arcsin(c*x)^2-3*a*b*(-d*(c^2*x^2-1))^(1/2)
/d^2/(c^2*x^2-1)*arcsin(c*x)*c^2+a*b*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)
/x^2*arcsin(c*x)-b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)/
d^2*c^2*ln(I*c*x+(-c^2*x^2+1)^(1/2)-1)+3*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^
2-1))^(1/2)/(c^2*x^2-1)/d^2*c^2*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2))-3*b^2*
(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)/d^2*c^2*polylog(3,I*c
*x+(-c^2*x^2+1)^(1/2))+b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/(c^2*x
^2-1)/d^2*c^2*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-3/2*b^2*(-d*(c^2*x^2-1))^(1/2)
/d^2/(c^2*x^2-1)*arcsin(c*x)^2*c^2-3/2*a^2*c^2/d^(3/2)*ln((2*d+2*d^(1/2)*(-
c^2*d*x^2+d)^(1/2))/x)-1/2*a^2/d/x^2/(-c^2*d*x^2+d)^(1/2)+3/2*a^2*c^2/d/(-c
^2*d*x^2+d)^(1/2)-2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-
1)/d^2*c^2*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+2*b^2*(-c^2*x^2+1
```

```
)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)/d^2*c^2*arcsin(c*x)*ln(1-I*(I*c*
x+(-c^2*x^2+1)^(1/2)))+2*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/(c
^2*x^2-1)/d^2*c^2*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-2*I*b^2*(-c^2*x^2+1
)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)/d^2*c^2*dilog(1-I*(I*c*x+(-c^2*x
^2+1)^(1/2)))+a*b*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)/x*(-c^2*x^2+1)^(1/
2)*c+b^2*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)/x*arcsin(c*x)*(-c^2*x^2+1)^
(1/2)*c+3/2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)/d^2*c
^2*arcsin(c*x)^2*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-3/2*b^2*(-c^2*x^2+1)^(1/2)*
(-d*(c^2*x^2-1))^(1/2)/(c^2*x^2-1)/d^2*c^2*arcsin(c*x)^2*ln(1-I*c*x-(-c^2*x
^2+1)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\left(\frac{3\,c^2\log\left(\frac{2\,\sqrt{-c^2dx^2+d}\,\sqrt{d}}{|x|}+\frac{2\,d}{|x|}\right)}{d^{\frac{3}{2}}}-\frac{3\,c^2}{\sqrt{-c^2dx^2+d}\,d}+\frac{1}{\sqrt{-c^2dx^2+d}\,dx^2}\right)a^2+\sqrt{d}\int\frac{\left(b^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-c\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^3/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxima
")
```

```
[Out] -1/2*(3*c^2*log(2*sqrt(-c^2*d*x^2 + d)*sqrt(d)/abs(x) + 2*d/abs(x))/d^(3/2)
 - 3*c^2/(sqrt(-c^2*d*x^2 + d)*d) + 1/(sqrt(-c^2*d*x^2 + d)*d*x^2))*a^2 + s
qrt(d)*integrate((b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a*b*
arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c
^4*d^2*x^7 - 2*c^2*d^2*x^5 + d^2*x^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{x^3\,{\left(d-c^2\,d\,x^2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x^3*(d - c^2*d*x^2)^(3/2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/(x^3*(d - c^2*d*x^2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(a+b\,\mathrm{asin}\,(cx)\right)^2}{x^3\left(-d\,(cx-1)\,(cx+1)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x**3/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2/(x**3*(-d*(c*x - 1)*(c*x + 1))**(3/2)), x)
```

3.253 $\int \frac{\left(a+b \sin^{-1}(cx)\right)^2}{x^4\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=483

$$-\frac{4c^2\left(a+b\sin^{-1}(cx)\right)^2}{3dx\sqrt{d-c^2dx^2}}-\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3dx^2\sqrt{d-c^2dx^2}}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{3dx^3\sqrt{d-c^2dx^2}}+\frac{8c^4x\left(a+b\sin^{-1}(cx)\right)^2}{3d\sqrt{d-c^2dx^2}}-\frac{8ic^3\sqrt{1-}}{}$$

```
[Out] -1/3*b^2*c^2*(-c^2*x^2+1)/d/x/(-c^2*d*x^2+d)^(1/2)-1/3*(a+b*arcsin(c*x))^2/
d/x^3/(-c^2*d*x^2+d)^(1/2)-4/3*c^2*(a+b*arcsin(c*x))^2/d/x/(-c^2*d*x^2+d)^(
1/2)+8/3*c^4*x*(a+b*arcsin(c*x))^2/d/(-c^2*d*x^2+d)^(1/2)-1/3*b*c*(a+b*arcs
in(c*x))*(-c^2*x^2+1)^(1/2)/d/x^2/(-c^2*d*x^2+d)^(1/2)-8/3*I*c^3*(a+b*arcsi
n(c*x))^2*(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x^2+d)^(1/2)-20/3*b*c^3*(a+b*arcsin(
c*x))*arctanh((I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x^
2+d)^(1/2)+16/3*b*c^3*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)*
(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x^2+d)^(1/2)-I*b^2*c^3*polylog(2,-(I*c*x+(-c^2
*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x^2+d)^(1/2)-5/3*I*b^2*c^3*p
olylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/d/(-c^2*d*x^2+d)^
(1/2)
```

Rubi [A] time = 0.80, antiderivative size = 483, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 11, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.379, Rules used = {4701, 4653, 4675, 3719, 2190, 2279, 2391, 4679, 4419, 4183, 264}

$$-\frac{ib^2c^3\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{d\sqrt{d-c^2dx^2}}-\frac{5ib^2c^3\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)}{3d\sqrt{d-c^2dx^2}}+\frac{8c^4x\left(a+b\sin^{-1}(cx)\right)^2}{3d\sqrt{d-c^2dx^2}}-$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x^4*(d - c^2*d*x^2)^(3/2)),x]
```

```
[Out] -(b^2*c^2*(1 - c^2*x^2))/(3*d*x*Sqrt[d - c^2*d*x^2]) - (b*c*Sqrt[1 - c^2*x^
2]*(a + b*ArcSin[c*x]))/(3*d*x^2*Sqrt[d - c^2*d*x^2]) - (a + b*ArcSin[c*x])
^2/(3*d*x^3*Sqrt[d - c^2*d*x^2]) - (4*c^2*(a + b*ArcSin[c*x])^2)/(3*d*x*Sqr
t[d - c^2*d*x^2]) + (8*c^4*x*(a + b*ArcSin[c*x])^2)/(3*d*Sqrt[d - c^2*d*x^2
]) - (((8*I)/3)*c^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(d*Sqrt[d - c^
2*d*x^2]) - (20*b*c^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcTanh[E^((2*I
)*ArcSin[c*x])])/(3*d*Sqrt[d - c^2*d*x^2]) + (16*b*c^3*Sqrt[1 - c^2*x^2]*(a
 + b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(3*d*Sqrt[d - c^2*d*x^2])
 - (I*b^2*c^3*Sqrt[1 - c^2*x^2]*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(d*Sqrt
[d - c^2*d*x^2]) - (((5*I)/3)*b^2*c^3*Sqrt[1 - c^2*x^2]*PolyLog[2, E^((2*I)
*ArcSin[c*x])])/(d*Sqrt[d - c^2*d*x^2])
```

Rule 264

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c
*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] /; FreeQ[{a, b, c, m, n,
 p}, x] && EqQ[(m + 1)/n + p + 1, 0] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4419

```
Int[Csc[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csc[2*a + 2*b*x]^n,
 x], x] /; FreeQ[{a, b, c, d, m}, x] && IntegerQ[n] && RationalQ[m]
```

Rule 4653

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n*Sqrt[1 - c^2*x^2])/(d*Sqrt[d + e*x^2]), Int[(x*(a + b*ArcSin[c*x])^(n
 - 1))/(1 - c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e,
 0] && GtQ[n, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4679

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((x_)*((d_) + (e_.)*(x_)^2)),
x_Symbol] :> Dist[1/d, Subst[Int[(a + b*x)^n/(Cos[x]*Sin[x]), x], x, ArcSin
[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
```

```
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^4\left(d-c^2dx^2\right)^{3/2}}\,dx = -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{3dx^3\sqrt{d-c^2dx^2}}+\frac{1}{3}\left(4c^2\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^2\left(d-c^2dx^2\right)^{3/2}}\,dx+\frac{\left(2bc\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}}{x^3\left(1-c^2\right.}}{3d\sqrt{d-c^2dx^2}}$$

$$= -\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3dx^2\sqrt{d-c^2dx^2}}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{3dx^3\sqrt{d-c^2dx^2}}-\frac{4c^2\left(a+b\sin^{-1}(cx)\right)^2}{3dx\sqrt{d-c^2dx^2}}+\frac{1}{3}\left(\right.$$

$$= -\frac{b^2c^2\left(1-c^2x^2\right)}{3dx\sqrt{d-c^2dx^2}}-\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3dx^2\sqrt{d-c^2dx^2}}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{3dx^3\sqrt{d-c^2dx^2}}-\frac{4c^2\left(a+\right.}{3dx\sqrt{}}$$

$$= -\frac{b^2c^2\left(1-c^2x^2\right)}{3dx\sqrt{d-c^2dx^2}}-\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3dx^2\sqrt{d-c^2dx^2}}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{3dx^3\sqrt{d-c^2dx^2}}-\frac{4c^2\left(a+\right.}{3dx\sqrt{}}$$

$$= -\frac{b^2c^2\left(1-c^2x^2\right)}{3dx\sqrt{d-c^2dx^2}}-\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3dx^2\sqrt{d-c^2dx^2}}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{3dx^3\sqrt{d-c^2dx^2}}-\frac{4c^2\left(a+\right.}{3dx\sqrt{}}$$

$$= -\frac{b^2c^2\left(1-c^2x^2\right)}{3dx\sqrt{d-c^2dx^2}}-\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3dx^2\sqrt{d-c^2dx^2}}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{3dx^3\sqrt{d-c^2dx^2}}-\frac{4c^2\left(a+\right.}{3dx\sqrt{}}$$

$$= -\frac{b^2c^2\left(1-c^2x^2\right)}{3dx\sqrt{d-c^2dx^2}}-\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3dx^2\sqrt{d-c^2dx^2}}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{3dx^3\sqrt{d-c^2dx^2}}-\frac{4c^2\left(a+\right.}{3dx\sqrt{}}$$

$$= -\frac{b^2c^2\left(1-c^2x^2\right)}{3dx\sqrt{d-c^2dx^2}}-\frac{bc\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3dx^2\sqrt{d-c^2dx^2}}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{3dx^3\sqrt{d-c^2dx^2}}-\frac{4c^2\left(a+\right.}{3dx\sqrt{}}$$

Mathematica [A] time = 0.90, size = 462, normalized size = 0.96

$$\frac{8a^2c^4x^4-4a^2c^2x^2-a^2+16abc^4x^4\sin^{-1}(cx)-abcx\sqrt{1-c^2x^2}-8abc^2x^2\sin^{-1}(cx)+10abc^3x^3\sqrt{1-c^2x^2}\,\log(c}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x^4*(d - c^2*d*x^2)^(3/2)),x]
```

```
[Out] (-a^2 - 4*a^2*c^2*x^2 - b^2*c^2*x^2 + 8*a^2*c^4*x^4 + b^2*c^4*x^4 - a*b*c*x
*Sqrt[1 - c^2*x^2] - 2*a*b*ArcSin[c*x] - 8*a*b*c^2*x^2*ArcSin[c*x] + 16*a*b
*c^4*x^4*ArcSin[c*x] - b^2*c*x*Sqrt[1 - c^2*x^2]*ArcSin[c*x] - b^2*ArcSin[c
*x]^2 - 4*b^2*c^2*x^2*ArcSin[c*x]^2 + 8*b^2*c^4*x^4*ArcSin[c*x]^2 - (8*I)*b
^2*c^3*x^3*Sqrt[1 - c^2*x^2]*ArcSin[c*x]^2 + 10*b^2*c^3*x^3*Sqrt[1 - c^2*x^
2]*ArcSin[c*x]*Log[1 - E^((2*I)*ArcSin[c*x])] + 6*b^2*c^3*x^3*Sqrt[1 - c^2*
x^2]*ArcSin[c*x]*Log[1 + E^((2*I)*ArcSin[c*x])] + 10*a*b*c^3*x^3*Sqrt[1 - c
^2*x^2]*Log[c*x] + 3*a*b*c^3*x^3*Sqrt[1 - c^2*x^2]*Log[1 - c^2*x^2] - (3*I)
*b^2*c^3*x^3*Sqrt[1 - c^2*x^2]*PolyLog[2, -E^((2*I)*ArcSin[c*x])] - (5*I)*b
^2*c^3*x^3*Sqrt[1 - c^2*x^2]*PolyLog[2, E^((2*I)*ArcSin[c*x])])/(3*d*x^3*Sq
rt[d - c^2*d*x^2])
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\sqrt{-c^2dx^2+d}\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)}{c^4d^2x^8-2\,c^2d^2x^6+d^2x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^4/(-c^2*d*x^2+d)^(3/2),x, algorithm="fricas
")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)
/(c^4*d^2*x^8 - 2*c^2*d^2*x^6 + d^2*x^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b \arcsin(cx) + a)^2}{(-c^2dx^2 + d)^{\frac{3}{2}} x^4} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^4/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/((-c^2*d*x^2 + d)^(3/2)*x^4), x)
```

maple [B] time = 0.75, size = 2845, normalized size = 5.89

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x^4/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] 8/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2*x*arcsin(c*x)*
c^4+16/3*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)*c^
3*arcsin(c*x)^2-10/3*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2
*x^2-1)*c^3*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-10/3*b^2*(-c^2*x^2+1
)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)*c^3*arcsin(c*x)*ln(1-I*c*x-(
-c^2*x^2+1)^(1/2))+1/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d
^2/x^2*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c-2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x
^2-1))^(1/2)/d^2/(c^2*x^2-1)*c^3*arcsin(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2)
)^2)+32/3*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)*a
rcsin(c*x)*c^3+64/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^
2*x^5*(-c^2*x^2+1)*c^8-32/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x
^2-1)/d^2*x^3*(-c^2*x^2+1)*c^6-8/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4-
7*c^2*x^2-1)/d^2*x*(-c^2*x^2+1)*c^4-16/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^
4*x^4-7*c^2*x^2-1)/d^2*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^3-8/3*I*b^2*(-d*(c^
2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2*x*(-c^2*x^2+1)*arcsin(c*x)*c^4+
64/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2*x^5*(-c^2*x^2
+1)*arcsin(c*x)*c^8-32/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-
1)/d^2*x^3*(-c^2*x^2+1)*arcsin(c*x)*c^6+7/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c
^4*x^4-7*c^2*x^2-1)/d^2*x*c^4+1/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c
^2*x^2-1)/d^2/x*c^2+1/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/
d^2/x^3*arcsin(c*x)^2+32/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-
1)/d^2*x^7*c^10-40/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2
*x^5*c^8-64/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2*x^3*ar
csin(c*x)^2*c^6+8*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2*x*
arcsin(c*x)^2*c^4+4*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2/
x*arcsin(c*x)^2*c^2+8/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/
d^2*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^3+32/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c
^4*x^4-7*c^2*x^2-1)/d^2*x^5*(-c^2*x^2+1)*c^8-8/3*b^2*(-d*(c^2*x^2-1))^(1/2)
/(8*c^4*x^4-7*c^2*x^2-1)/d^2*x^3*(-c^2*x^2+1)*c^6-1/3*I*b^2*(-d*(c^2*x^2-1)
)^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2*(-c^2*x^2+1)^(1/2)*c^3+8/3*a*b*(-d*(c^2
*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2*(-c^2*x^2+1)^(1/2)*c^3+2/3*a*b*(
-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2/x^3*arcsin(c*x)-1/3*a^2/d
/x^3/(-c^2*d*x^2+d)^(1/2)-128/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c
^2*x^2-1)/d^2*x^2*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^5-4/3*a^2*c^2/d/x/(-c^2*
```

```
d*x^2+d)^(1/2)+8/3*a^2*c^4/d*x/(-c^2*d*x^2+d)^(1/2)-32*I*b^2*(-d*(c^2*x^2-1
))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2*x^5*arcsin(c*x)*c^8+8*I*b^2*(-d*(c^2*x
^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2*x^3*arcsin(c*x)*c^6-8/3*I*b^2*(-d*
(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2*x^2*(-c^2*x^2+1)^(1/2)*c^5+I
*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)*c^3*polylog(
2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)-8/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^
4-7*c^2*x^2-1)/d^2*(-c^2*x^2+1)^(1/2)*arcsin(c*x)^2*c^3+64/3*I*b^2*(-d*(c^2
*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2*x^7*arcsin(c*x)*c^10+8/3*I*a*b*(
-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2*x*c^4+64/3*I*a*b*(-d*(c^2
*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2*x^7*c^10-32*I*a*b*(-d*(c^2*x^2-1
))^(1/2)/(8*c^4*x^4-7*c^2*x^2-1)/d^2*x^5*c^8+8*I*a*b*(-d*(c^2*x^2-1))^(1/2)
/(8*c^4*x^4-7*c^2*x^2-1)/d^2*x^3*c^6+1/3*a*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*
x^4-7*c^2*x^2-1)/d^2/x^2*(-c^2*x^2+1)^(1/2)*c-2*a*b*(-d*(c^2*x^2-1))^(1/2)*
(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)*c^3-1
0/3*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^2/(c^2*x^2-1)*ln((I*c*x
+(-c^2*x^2+1)^(1/2))^2-1)*c^3+8*a*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7*c^2
*x^2-1)/d^2/x*arcsin(c*x)*c^2-128/3*a*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4-7
*c^2*x^2-1)/d^2*x^3*arcsin(c*x)*c^6+16*a*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^
4-7*c^2*x^2-1)/d^2*x*arcsin(c*x)*c^4+10/3*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2
*x^2-1))^(1/2)/d^2/(c^2*x^2-1)*c^3*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))+10/3
*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^2/(c^2*x^2-1)*c^3*polylo
g(2,-I*c*x-(-c^2*x^2+1)^(1/2))-64/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^4*x^4
-7*c^2*x^2-1)/d^2*x^2*(-c^2*x^2+1)^(1/2)*arcsin(c*x)^2*c^5
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{3}\left(\frac{8\,c^4x}{\sqrt{-c^2dx^2+d}\,d}-\frac{4\,c^2}{\sqrt{-c^2dx^2+d}\,dx}-\frac{1}{\sqrt{-c^2dx^2+d}\,dx^3}\right)a^2+\sqrt{d}\int\frac{\left(b^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)^2+2\,\ldots}{c^4d^2x^8\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^4/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxima
")
```

```
[Out] 1/3*(8*c^4*x/(sqrt(-c^2*d*x^2 + d)*d) - 4*c^2/(sqrt(-c^2*d*x^2 + d)*d*x) -
1/(sqrt(-c^2*d*x^2 + d)*d*x^3))*a^2 + sqrt(d)*integrate((b^2*arctan2(c*x, s
qrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a*b*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x
 + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c^4*d^2*x^8 - 2*c^2*d^2*x^6 + d^2*x^4
), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{x^4\,{\left(d-c^2\,d\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x^4*(d - c^2*d*x^2)^(3/2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/(x^4*(d - c^2*d*x^2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\,\mathrm{asin}\,(cx)\right)^2}{x^4\left(-d\,(cx-1)\,(cx+1)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x**4/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2/(x**4*(-d*(c*x - 1)*(c*x + 1))**(3/2)), x)
```

3.254 $\int \frac{x^5\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=546

$$\frac{x^4\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d\left(d-c^2dx^2\right)^{3/2}}-\frac{8\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{3c^6d^3}-\frac{22ib\sqrt{1-c^2x^2}\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{3c^6d^2\sqrt{d-c^2dx^2}}+\frac{16ab}{3c^5d^2}$$

```
[Out] 1/3*x^4*(a+b*arcsin(c*x))^2/c^2/d/(-c^2*d*x^2+d)^(3/2)+1/3*b^2/c^6/d^2/(-c^
2*d*x^2+d)^(1/2)+2*b^2*(-c^2*x^2+1)/c^6/d^2/(-c^2*d*x^2+d)^(1/2)-4/3*x^2*(a
+b*arcsin(c*x))^2/c^4/d^2/(-c^2*d*x^2+d)^(1/2)-1/3*b*x^3*(a+b*arcsin(c*x))/
c^3/d^2/(-c^2*x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)+16/3*a*b*x*(-c^2*x^2+1)^(1/
2)/c^5/d^2/(-c^2*d*x^2+d)^(1/2)+16/3*b^2*x*arcsin(c*x)*(-c^2*x^2+1)^(1/2)/c
^5/d^2/(-c^2*d*x^2+d)^(1/2)-11/3*b*x*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c
^5/d^2/(-c^2*d*x^2+d)^(1/2)-22/3*I*b*(a+b*arcsin(c*x))*arctan(I*c*x+(-c^2*x
^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/c^6/d^2/(-c^2*d*x^2+d)^(1/2)+11/3*I*b^2*pol
ylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/c^6/d^2/(-c^2*d*x^
2+d)^(1/2)-11/3*I*b^2*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+1)^
(1/2)/c^6/d^2/(-c^2*d*x^2+d)^(1/2)-8/3*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(
1/2)/c^6/d^3
```

Rubi [A] time = 0.86, antiderivative size = 546, normalized size of antiderivative = 1.00, number of steps used = 26, number of rules used = 11, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.379, Rules used = {4703, 4677, 4619, 261, 4715, 4657, 4181, 2279, 2391, 266, 43}

$$\frac{11ib^2\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{3c^6d^2\sqrt{d-c^2dx^2}}-\frac{11ib^2\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{3c^6d^2\sqrt{d-c^2dx^2}}+\frac{16abx\sqrt{1-c^2x^2}}{3c^5d^2\sqrt{d-c^2dx^2}}-\frac{bx^3\left(a\right.}{3c^3d^2\sqrt{1-}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] b^2/(3*c^6*d^2*Sqrt[d - c^2*d*x^2]) + (16*a*b*x*Sqrt[1 - c^2*x^2])/(3*c^5*d
^2*Sqrt[d - c^2*d*x^2]) + (2*b^2*(1 - c^2*x^2))/(c^6*d^2*Sqrt[d - c^2*d*x^2
]) + (16*b^2*x*Sqrt[1 - c^2*x^2]*ArcSin[c*x])/(3*c^5*d^2*Sqrt[d - c^2*d*x^2
]) - (b*x^3*(a + b*ArcSin[c*x]))/(3*c^3*d^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*
d*x^2]) - (11*b*x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(3*c^5*d^2*Sqrt[d
- c^2*d*x^2]) + (x^4*(a + b*ArcSin[c*x])^2)/(3*c^2*d*(d - c^2*d*x^2)^(3/2))
 - (4*x^2*(a + b*ArcSin[c*x])^2)/(3*c^4*d^2*Sqrt[d - c^2*d*x^2]) - (8*Sqrt[
d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2)/(3*c^6*d^3) - (((22*I)/3)*b*Sqrt[1 -
c^2*x^2]*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])])/(c^6*d^2*Sqrt[d - c
^2*d*x^2]) + (((11*I)/3)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)*E^(I*ArcSin[
c*x])])/(c^6*d^2*Sqrt[d - c^2*d*x^2]) - (((11*I)/3)*b^2*Sqrt[1 - c^2*x^2]*P
olyLog[2, I*E^(I*ArcSin[c*x])])/(c^6*d^2*Sqrt[d - c^2*d*x^2])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
```

```
NeQ[p, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rule 4715

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(e*(m + 2*p + 1)), x] + (Dist[(f^2*(m - 1))/(c^2*(m + 2*
p + 1)), Int[(f*x)^(m - 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] + Di
st[(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(c*(m + 2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c
*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e,
0] && GtQ[n, 0] && GtQ[m, 1] && NeQ[m + 2*p + 1, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^5\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}\,dx = \frac{x^4\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d\left(d-c^2dx^2\right)^{3/2}} - \frac{4\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx}{3c^2d} - \frac{\left(2b\sqrt{1-c^2x^2}\right)\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^2}\,dx}{3cd^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{bx^3\left(a+b\sin^{-1}(cx)\right)}{3c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{x^4\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d\left(d-c^2dx^2\right)^{3/2}} - \frac{4x^2\left(a+b\sin^{-1}(cx)\right)^2}{3c^4d^2\sqrt{d-c^2dx^2}} + \frac{8}{}$$

$$= -\frac{bx^3\left(a+b\sin^{-1}(cx)\right)}{3c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{11bx\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3c^5d^2\sqrt{d-c^2dx^2}} + \frac{x^4\left(a+b\sin^{-1}(\right.}{3c^2d\left(d-c^2dx\right.}$$

$$= \frac{16abx\sqrt{1-c^2x^2}}{3c^5d^2\sqrt{d-c^2dx^2}} - \frac{11b^2\left(1-c^2x^2\right)}{3c^6d^2\sqrt{d-c^2dx^2}} - \frac{bx^3\left(a+b\sin^{-1}(cx)\right)}{3c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{11bx\sqrt{1-c}}{3c^5}$$

$$= \frac{b^2}{3c^6d^2\sqrt{d-c^2dx^2}} + \frac{16abx\sqrt{1-c^2x^2}}{3c^5d^2\sqrt{d-c^2dx^2}} - \frac{10b^2\left(1-c^2x^2\right)}{3c^6d^2\sqrt{d-c^2dx^2}} + \frac{16b^2x\sqrt{1-c^2x^2}\sin^{-1}}{3c^5d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{b^2}{3c^6d^2\sqrt{d-c^2dx^2}} + \frac{16abx\sqrt{1-c^2x^2}}{3c^5d^2\sqrt{d-c^2dx^2}} + \frac{2b^2\left(1-c^2x^2\right)}{c^6d^2\sqrt{d-c^2dx^2}} + \frac{16b^2x\sqrt{1-c^2x^2}\sin^{-1}(}{3c^5d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{b^2}{3c^6d^2\sqrt{d-c^2dx^2}} + \frac{16abx\sqrt{1-c^2x^2}}{3c^5d^2\sqrt{d-c^2dx^2}} + \frac{2b^2\left(1-c^2x^2\right)}{c^6d^2\sqrt{d-c^2dx^2}} + \frac{16b^2x\sqrt{1-c^2x^2}\sin^{-1}(}{3c^5d^2\sqrt{d-c^2dx^2}}$$

Mathematica [A] time = 1.67, size = 594, normalized size = 1.09

$$\sqrt{d-c^2dx^2}\left(-24a^2c^4x^4+96a^2c^2x^2-64a^2-66ab\sqrt{1-c^2x^2}\log\left(\cos\left(\frac{1}{2}\sin^{-1}(cx)\right)-\sin\left(\frac{1}{2}\sin^{-1}(cx)\right)\right)+66ab\sqrt{}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^5*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(-64*a^2 + 22*b^2 + 96*a^2*c^2*x^2 - 24*a^2*c^4*x^4 -
50*a*b*ArcSin[c*x] - 25*b^2*ArcSin[c*x]^2 + 28*b^2*Cos[2*ArcSin[c*x]] - 72*
a*b*ArcSin[c*x]*Cos[2*ArcSin[c*x]] - 36*b^2*ArcSin[c*x]^2*Cos[2*ArcSin[c*x]
] + 6*b^2*Cos[4*ArcSin[c*x]] - 6*a*b*ArcSin[c*x]*Cos[4*ArcSin[c*x]] - 3*b^2
*ArcSin[c*x]^2*Cos[4*ArcSin[c*x]] + 66*b^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*Lo
g[1 - I*E^(I*ArcSin[c*x])] + 22*b^2*ArcSin[c*x]*Cos[3*ArcSin[c*x]]*Log[1 -
```

```
I*E^(I*ArcSin[c*x])] - 66*b^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*Log[1 + I*E^(I*
ArcSin[c*x])] - 22*b^2*ArcSin[c*x]*Cos[3*ArcSin[c*x]]*Log[1 + I*E^(I*ArcSin
[c*x])] - 66*a*b*Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]
/2]] - 22*a*b*Cos[3*ArcSin[c*x]]*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2
]] + 66*a*b*Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]
+ 22*a*b*Cos[3*ArcSin[c*x]]*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]] +
(88*I)*b^2*(1 - c^2*x^2)^(3/2)*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] - (88*I)*
b^2*(1 - c^2*x^2)^(3/2)*PolyLog[2, I*E^(I*ArcSin[c*x])] + 8*a*b*Sin[2*ArcSi
n[c*x]] + 8*b^2*ArcSin[c*x]*Sin[2*ArcSin[c*x]] + 6*a*b*Sin[4*ArcSin[c*x]] +
 6*b^2*ArcSin[c*x]*Sin[4*ArcSin[c*x]]))/(24*c^6*d^3*(-1 + c^2*x^2)^2)
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(b^2x^5\arcsin\left(cx\right)^2+2\,abx^5\arcsin\left(cx\right)+a^2x^5\right)\sqrt{-c^2dx^2+d}}{c^6d^3x^6-3\,c^4d^3x^4+3\,c^2d^3x^2-d^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="fricas
")
```

```
[Out] integral(-(b^2*x^5*arcsin(c*x)^2 + 2*a*b*x^5*arcsin(c*x) + a^2*x^5)*sqrt(-c
^2*d*x^2 + d)/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [B] time = 0.81, size = 1201, normalized size = 2.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] 2*a*b*(-d*(c^2*x^2-1))^(1/2)/c^6/d^3/(c^2*x^2-1)*arcsin(c*x)+4*a^2/c^4*x^2/
d/(-c^2*d*x^2+d)^(3/2)-2*b^2*(-d*(c^2*x^2-1))^(1/2)/c^6/d^3/(c^2*x^2-1)+1/3
*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)^2/c^6+2*b^2*(-d*(c^2*x^2-1))^(1
/2)/c^4/d^3/(c^2*x^2-1)*x^2+b^2*(-d*(c^2*x^2-1))^(1/2)/c^6/d^3/(c^2*x^2-1)*
arcsin(c*x)^2-1/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)^2/c^4*x^2-10/3
*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)^2/c^6*arcsin(c*x)-b^2*(-d*(c^2*
x^2-1))^(1/2)/c^4/d^3/(c^2*x^2-1)*arcsin(c*x)^2*x^2+2*b^2*(-d*(c^2*x^2-1))^
(1/2)/d^3/(c^2*x^2-1)^2/c^4*arcsin(c*x)^2*x^2-8/3*a^2/c^6/d/(-c^2*d*x^2+d)^
(3/2)+11/3*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^6/d^3/(c^2*x^2
-1)*dilog(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-2*b^2*(-d*(c^2*x^2-1))^(1/2)/c^5/
d^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x-11/3*I*b^2*(-c^2*x^2+1)^(1
/2)*(-d*(c^2*x^2-1))^(1/2)/c^6/d^3/(c^2*x^2-1)*dilog(1+I*(I*c*x+(-c^2*x^2+1
)^(1/2)))-2*a*b*(-d*(c^2*x^2-1))^(1/2)/c^5/d^3/(c^2*x^2-1)*(-c^2*x^2+1)^(1/
2)*x-2*a*b*(-d*(c^2*x^2-1))^(1/2)/c^4/d^3/(c^2*x^2-1)*arcsin(c*x)*x^2+4*a*b
*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)^2/c^4*arcsin(c*x)*x^2-1/3*a*b*(-d*(
c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)^2/c^5*(-c^2*x^2+1)^(1/2)*x-11/3*a*b*(-c^2
*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^6/d^3/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2
```

```
+1)^(1/2)+I)+11/3*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^6/d^3/(c^
2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)-1/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/
(c^2*x^2-1)^2/c^5*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x+11/3*b^2*(-c^2*x^2+1)^(1
/2)*(-d*(c^2*x^2-1))^(1/2)/c^6/d^3/(c^2*x^2-1)*arcsin(c*x)*ln(1+I*(I*c*x+(-
c^2*x^2+1)^(1/2)))-11/3*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^6/d
^3/(c^2*x^2-1)*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-a^2*x^4/c^2/d
/(-c^2*d*x^2+d)^(3/2)-5/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)^2/c^6*
arcsin(c*x)^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{3}a^2\left(\frac{3x^4}{\left(-c^2dx^2+d\right)^{\frac{3}{2}}c^2d}-\frac{12x^2}{\left(-c^2dx^2+d\right)^{\frac{3}{2}}c^4d}+\frac{8}{\left(-c^2dx^2+d\right)^{\frac{3}{2}}c^6d}\right)-\frac{\left(3b^2c^4x^4-12b^2c^2x^2+8b^2\right)\sqrt{cx+1}\sqrt{-cx}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxima
")
```

```
[Out] -1/3*a^2*(3*x^4/((-c^2*d*x^2 + d)^(3/2)*c^2*d) - 12*x^2/((-c^2*d*x^2 + d)^(
3/2)*c^4*d) + 8/((-c^2*d*x^2 + d)^(3/2)*c^6*d)) - 1/3*((3*b^2*c^4*x^4 - 12*
b^2*c^2*x^2 + 8*b^2)*sqrt(c*x + 1)*sqrt(-c*x + 1)*sqrt(d)*arctan2(c*x, sqrt
(c*x + 1)*sqrt(-c*x + 1))^2 + 3*(c^10*d^3*x^4 - 2*c^8*d^3*x^2 + c^6*d^3)*in
tegrate(2/3*(3*sqrt(c*x + 1)*sqrt(-c*x + 1)*a*b*c^5*sqrt(d)*x^5*arctan2(c*x
, sqrt(c*x + 1)*sqrt(-c*x + 1)) - (3*b^2*c^6*x^6 - 15*b^2*c^4*x^4 + 20*b^2*
c^2*x^2 - 8*b^2)*sqrt(d)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))/(c^11*
d^3*x^6 - 3*c^9*d^3*x^4 + 3*c^7*d^3*x^2 - c^5*d^3), x))/(c^10*d^3*x^4 - 2*c
^8*d^3*x^2 + c^6*d^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^5\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{{\left(d-c^2\,d\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int((x^5*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^5\left(a+b\,\mathrm{asin}\,(cx)\right)^2}{\left(-d\,(cx-1)\,(cx+1)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Integral(x**5*(a + b*asin(c*x))**2/(-d*(c*x - 1)*(c*x + 1))**(5/2), x)
```

3.255 $\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=421

$$\frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d\left(d-c^2dx^2\right)^{3/2}}+\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc^5d^2\sqrt{d-c^2dx^2}}+\frac{4i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{3c^5d^2\sqrt{d-c^2dx^2}}-\frac{8b\sqrt{1-c^2x^2}\log\left(1+e^2\right.}{3c^5d^2\sqrt{}}$$

```
[Out] 1/3*x^3*(a+b*arcsin(c*x))^2/c^2/d/(-c^2*d*x^2+d)^(3/2)+1/3*b^2*x/c^4/d^2/(-
c^2*d*x^2+d)^(1/2)-x*(a+b*arcsin(c*x))^2/c^4/d^2/(-c^2*d*x^2+d)^(1/2)-1/3*b
*x^2*(a+b*arcsin(c*x))/c^3/d^2/(-c^2*x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)-1/3*
b^2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)/c^5/d^2/(-c^2*d*x^2+d)^(1/2)+4/3*I*(a+b*
arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/c^5/d^2/(-c^2*d*x^2+d)^(1/2)+1/3*(a+b*arc
sin(c*x))^3*(-c^2*x^2+1)^(1/2)/b/c^5/d^2/(-c^2*d*x^2+d)^(1/2)-8/3*b*(a+b*ar
csin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/c^5/d^2/(-
c^2*d*x^2+d)^(1/2)+4/3*I*b^2*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2
*x^2+1)^(1/2)/c^5/d^2/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.73, antiderivative size = 421, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 10, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.345, Rules used = {4703, 4643, 4641, 4675, 3719, 2190, 2279, 2391, 288, 216}

$$\frac{4ib^2\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{3c^5d^2\sqrt{d-c^2dx^2}}-\frac{bx^2\left(a+b\sin^{-1}(cx)\right)}{3c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}-\frac{x\left(a+b\sin^{-1}(cx)\right)^2}{c^4d^2\sqrt{d-c^2dx^2}}+\frac{\sqrt{1-c^2x^2}\left(a+b\right.}{3bc^5d^2\sqrt{d-}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (b^2*x)/(3*c^4*d^2*Sqrt[d - c^2*d*x^2]) - (b^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x
])/(3*c^5*d^2*Sqrt[d - c^2*d*x^2]) - (b*x^2*(a + b*ArcSin[c*x]))/(3*c^3*d^2
*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) + (x^3*(a + b*ArcSin[c*x])^2)/(3*c^
2*d*(d - c^2*d*x^2)^(3/2)) - (x*(a + b*ArcSin[c*x])^2)/(c^4*d^2*Sqrt[d - c^
2*d*x^2]) + (((4*I)/3)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(c^5*d^2*Sq
rt[d - c^2*d*x^2]) + (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c^5*d^2
*Sqrt[d - c^2*d*x^2]) - (8*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 +
E^((2*I)*ArcSin[c*x])])/(3*c^5*d^2*Sqrt[d - c^2*d*x^2]) + (((4*I)/3)*b^2*Sq
rt[1 - c^2*x^2]*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(c^5*d^2*Sqrt[d - c^2*d
*x^2])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4643

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcSin[c*x])^n
/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e
, 0] &&  !GtQ[d, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rubi steps

$$\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}dx = \frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d\left(d-c^2dx^2\right)^{3/2}} - \frac{\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}dx}{c^2d} - \frac{\left(2b\sqrt{1-c^2x^2}\right)\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^2}d}{3cd^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{bx^2\left(a+b\sin^{-1}(cx)\right)}{3c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d\left(d-c^2dx^2\right)^{3/2}} - \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{c^4d^2\sqrt{d-c^2dx^2}} + -$$

$$= \frac{b^2x}{3c^4d^2\sqrt{d-c^2dx^2}} - \frac{bx^2\left(a+b\sin^{-1}(cx)\right)}{3c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d\left(d-c^2dx^2\right)^{3/2}} - \frac{x(a}{c^4d}$$

$$= \frac{b^2x}{3c^4d^2\sqrt{d-c^2dx^2}} - \frac{b^2\sqrt{1-c^2x^2}\sin^{-1}(cx)}{3c^5d^2\sqrt{d-c^2dx^2}} - \frac{bx^2\left(a+b\sin^{-1}(cx)\right)}{3c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{x^3}{3c}$$

$$= \frac{b^2x}{3c^4d^2\sqrt{d-c^2dx^2}} - \frac{b^2\sqrt{1-c^2x^2}\sin^{-1}(cx)}{3c^5d^2\sqrt{d-c^2dx^2}} - \frac{bx^2\left(a+b\sin^{-1}(cx)\right)}{3c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{x^3}{3c}$$

$$= \frac{b^2x}{3c^4d^2\sqrt{d-c^2dx^2}} - \frac{b^2\sqrt{1-c^2x^2}\sin^{-1}(cx)}{3c^5d^2\sqrt{d-c^2dx^2}} - \frac{bx^2\left(a+b\sin^{-1}(cx)\right)}{3c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{x^3}{3c}$$

$$= \frac{b^2x}{3c^4d^2\sqrt{d-c^2dx^2}} - \frac{b^2\sqrt{1-c^2x^2}\sin^{-1}(cx)}{3c^5d^2\sqrt{d-c^2dx^2}} - \frac{bx^2\left(a+b\sin^{-1}(cx)\right)}{3c^3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{x^3}{3c}$$

Mathematica [A] time = 1.63, size = 374, normalized size = 0.89

$$\frac{a^2c\sqrt{d}\,x\left(4c^2x^2-3\right)+3a^2\left(c^2x^2-1\right)\sqrt{d-c^2dx^2}\tan^{-1}\left(\frac{cx\sqrt{d-c^2dx^2}}{\sqrt{d}\left(c^2x^2-1\right)}\right)-ab\sqrt{d}\left(\sqrt{1-c^2x^2}+\left(1-c^2x^2\right)^{3/2}\left(4\log\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^4*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (a^2*c*Sqrt[d]*x*(-3 + 4*c^2*x^2) + 3*a^2*(-1 + c^2*x^2)*Sqrt[d - c^2*d*x^2
]*ArcTan[(c*x*Sqrt[d - c^2*d*x^2])/(Sqrt[d]*(-1 + c^2*x^2))] + b^2*Sqrt[d]*
(c*x - c^3*x^3 - Sqrt[1 - c^2*x^2]*ArcSin[c*x] - 3*c*x*ArcSin[c*x]^2 + 4*c^
3*x^3*ArcSin[c*x]^2 + (4*I)*(1 - c^2*x^2)^(3/2)*ArcSin[c*x]^2 + (1 - c^2*x^
2)^(3/2)*ArcSin[c*x]^3 - 8*(1 - c^2*x^2)^(3/2)*ArcSin[c*x]*Log[1 + E^((2*I)
*ArcSin[c*x])] + (4*I)*(1 - c^2*x^2)^(3/2)*PolyLog[2, -E^((2*I)*ArcSin[c*x]
)]) - a*b*Sqrt[d]*(Sqrt[1 - c^2*x^2] + (1 - c^2*x^2)^(3/2)*(-3*ArcSin[c*x]^
2 + 4*Log[1 - c^2*x^2]) + 2*ArcSin[c*x]*Sin[3*ArcSin[c*x]]))/(3*c^5*d^(5/2)
*(1 - c^2*x^2)*Sqrt[d - c^2*d*x^2])
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(b^2x^4\arcsin\left(cx\right)^2+2\,abx^4\arcsin\left(cx\right)+a^2x^4\right)\sqrt{-c^2dx^2+d}}{c^6d^3x^6-3\,c^4d^3x^4+3\,c^2d^3x^2-d^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="fricas
")
```

```
[Out] integral(-(b^2*x^4*arcsin(c*x)^2 + 2*a*b*x^4*arcsin(c*x) + a^2*x^4)*sqrt(-c
^2*d*x^2 + d)/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b\arcsin(cx)+a)^2x^4}{(-c^2dx^2+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2*x^4/(-c^2*d*x^2 + d)^(5/2), x)
```

maple [B] time = 1.00, size = 1304, normalized size = 3.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] 1/3*a^2*x^3/c^2/d/(-c^2*d*x^2+d)^(3/2)-a^2/c^4/d^2*x/(-c^2*d*x^2+d)^(1/2)+a
^2/c^4/d^2/(c^2*d)^(1/2)*arctan((c^2*d)^(1/2)*x/(-c^2*d*x^2+d)^(1/2))-1/3*b
^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)/c^5*arcsin(c*x)*(-c^2*x
^2+1)^(1/2)+8/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)/c^3*
arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^2-8/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^
4*x^4-2*c^2*x^2+1)/c^5*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+4/3*I*b^2*(-d*(c^2*x^
2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)/c^3*arcsin(c*x)^2*(-c^2*x^2+1)^(1/2)*
x^2-4/3*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^5/d^3/(c^2*x^2-1)
*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)+4/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^
3/(c^4*x^4-2*c^2*x^2+1)/c^2*arcsin(c*x)^2*x^3-b^2*(-d*(c^2*x^2-1))^(1/2)/d^
3/(c^4*x^4-2*c^2*x^2+1)/c^4*arcsin(c*x)^2*x-1/3*I*b^2*(-d*(c^2*x^2-1))^(1/2
)/d^3/(c^4*x^4-2*c^2*x^2+1)/c^3*x^2*(-c^2*x^2+1)^(1/2)+1/3*b^2*(-d*(c^2*x^2
-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)/c^4*x-1/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d
^3/(c^4*x^4-2*c^2*x^2+1)/c^2*x^3-4/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*
x^4-2*c^2*x^2+1)/c^5*arcsin(c*x)^2*(-c^2*x^2+1)^(1/2)+8/3*b^2*(-c^2*x^2+1)^
(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^5/d^3/(c^2*x^2-1)*arcsin(c*x)*ln(1+(I*c*x+(-
c^2*x^2+1)^(1/2))^2)-1/3*b^2*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^5/
d^3/(c^2*x^2-1)*arcsin(c*x)^3-a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)
/c^5/d^3/(c^2*x^2-1)*arcsin(c*x)^2+1/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^
4*x^4-2*c^2*x^2+1)/c^5*(-c^2*x^2+1)^(1/2)-1/3*a*b*(-d*(c^2*x^2-1))^(1/2)/d^
3/(c^4*x^4-2*c^2*x^2+1)/c^5*(-c^2*x^2+1)^(1/2)-16/3*I*a*b*(-c^2*x^2+1)^(1/2
)*(-d*(c^2*x^2-1))^(1/2)/c^5/d^3/(c^2*x^2-1)*arcsin(c*x)-2*a*b*(-d*(c^2*x^2
-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)/c^4*arcsin(c*x)*x+8/3*a*b*(-d*(c^2*x^2
-1))^(1/2)*(-c^2*x^2+1)^(1/2)/c^5/d^3/(c^2*x^2-1)*ln(1+(I*c*x+(-c^2*x^2+1)^
(1/2))^2)-8/3*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^5/d^3/(c^2*
x^2-1)*arcsin(c*x)^2+8/3*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+
1)/c^2*arcsin(c*x)*x^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{3}\left(x\left(\frac{3x^2}{(-c^2dx^2+d)^{\frac{3}{2}}c^2d}-\frac{2}{(-c^2dx^2+d)^{\frac{3}{2}}c^4d}\right)-\frac{x}{\sqrt{-c^2dx^2+d}\,c^4d^2}+\frac{3\arcsin(cx)}{c^5d^{\frac{5}{2}}}\right)a^2-\sqrt{d}\int\frac{\left(b^2x^4\arctan\left(cx,\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxima
")
```

```
[Out] 1/3*(x*(3*x^2/((-c^2*d*x^2 + d)^(3/2)*c^2*d) - 2/((-c^2*d*x^2 + d)^(3/2)*c^
4*d)) - x/(sqrt(-c^2*d*x^2 + d)*c^4*d^2) + 3*arcsin(c*x)/(c^5*d^(5/2)))*a^2
 - sqrt(d)*integrate((b^2*x^4*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2
+ 2*a*b*x^4*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(
-c*x + 1)/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^4\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{{\left(d-c^2\,d\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int((x^4*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{4} \left(a + b \operatorname{asin}{\left(c x \right)}\right)^{2}}{\left(- d \left(c x - 1\right) \left(c x + 1\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Integral(x**4*(a + b*asin(c*x))**2/(-d*(c*x - 1)*(c*x + 1))**(5/2), x)
```

3.256 $\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=332

$$\frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d\left(d-c^2dx^2\right)^{3/2}}-\frac{2\left(a+b\sin^{-1}(cx)\right)^2}{3c^4d^2\sqrt{d-c^2dx^2}}-\frac{10ib\sqrt{1-c^2x^2}\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{3c^4d^2\sqrt{d-c^2dx^2}}-\frac{bx\left(a+b\sin^{-}\right.}{3c^3d^2\sqrt{1-c^2x^2}\,\sqrt{}}$$

```
[Out] 1/3*x^2*(a+b*arcsin(c*x))^2/c^2/d/(-c^2*d*x^2+d)^(3/2)+1/3*b^2/c^4/d^2/(-c^
2*d*x^2+d)^(1/2)-2/3*(a+b*arcsin(c*x))^2/c^4/d^2/(-c^2*d*x^2+d)^(1/2)-1/3*b
*x*(a+b*arcsin(c*x))/c^3/d^2/(-c^2*x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)-10/3*I
*b*(a+b*arcsin(c*x))*arctan(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/c^
4/d^2/(-c^2*d*x^2+d)^(1/2)+5/3*I*b^2*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)
))*(-c^2*x^2+1)^(1/2)/c^4/d^2/(-c^2*d*x^2+d)^(1/2)-5/3*I*b^2*polylog(2,I*(I
*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/c^4/d^2/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.49, antiderivative size = 332, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 7, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.241, Rules used = {4703, 4677, 4657, 4181, 2279, 2391, 261}

$$\frac{5ib^2\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{3c^4d^2\sqrt{d-c^2dx^2}}-\frac{5ib^2\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{3c^4d^2\sqrt{d-c^2dx^2}}-\frac{bx\left(a+b\sin^{-1}(cx)\right)}{3c^3d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}}-\frac{2\left(\right.}{3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] b^2/(3*c^4*d^2*Sqrt[d - c^2*d*x^2]) - (b*x*(a + b*ArcSin[c*x]))/(3*c^3*d^2*
Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) + (x^2*(a + b*ArcSin[c*x])^2)/(3*c^2
*d*(d - c^2*d*x^2)^(3/2)) - (2*(a + b*ArcSin[c*x])^2)/(3*c^4*d^2*Sqrt[d - c
^2*d*x^2]) - (((10*I)/3)*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcTan[E^(
I*ArcSin[c*x])])/(c^4*d^2*Sqrt[d - c^2*d*x^2]) + (((5*I)/3)*b^2*Sqrt[1 - c^
2*x^2]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(c^4*d^2*Sqrt[d - c^2*d*x^2]) -
(((5*I)/3)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c^4*d^2*
Sqrt[d - c^2*d*x^2])
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
```

```
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rubi steps

$$\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}\,dx = \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d\left(d-c^2dx^2\right)^{3/2}} - \frac{2\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx}{3c^2d} - \frac{\left(2b\sqrt{1-c^2x^2}\right)\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^2}\,d}{3cd^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{bx\left(a+b\sin^{-1}(cx)\right)}{3c^3d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} + \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d\left(d-c^2dx^2\right)^{3/2}} - \frac{2\left(a+b\sin^{-1}(cx)\right)^2}{3c^4d^2\sqrt{d-c^2dx^2}} +$$

$$= \frac{b^2}{3c^4d^2\sqrt{d-c^2dx^2}} - \frac{bx\left(a+b\sin^{-1}(cx)\right)}{3c^3d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} + \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d\left(d-c^2dx^2\right)^{3/2}} - \frac{2(a}{3c^4}$$

$$= \frac{b^2}{3c^4d^2\sqrt{d-c^2dx^2}} - \frac{bx\left(a+b\sin^{-1}(cx)\right)}{3c^3d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} + \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d\left(d-c^2dx^2\right)^{3/2}} - \frac{2(a}{3c^4}$$

$$= \frac{b^2}{3c^4d^2\sqrt{d-c^2dx^2}} - \frac{bx\left(a+b\sin^{-1}(cx)\right)}{3c^3d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} + \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d\left(d-c^2dx^2\right)^{3/2}} - \frac{2(a}{3c^4}$$

$$= \frac{b^2}{3c^4d^2\sqrt{d-c^2dx^2}} - \frac{bx\left(a+b\sin^{-1}(cx)\right)}{3c^3d^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} + \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d\left(d-c^2dx^2\right)^{3/2}} - \frac{2(a}{3c^4}$$

Mathematica [A] time = 0.93, size = 511, normalized size = 1.54

$$\frac{-12a^2c^2x^2+8a^2+15ab\sqrt{1-c^2x^2}\log\left(\cos\left(\frac{1}{2}\sin^{-1}(cx)\right)-\sin\left(\frac{1}{2}\sin^{-1}(cx)\right)\right)-15ab\sqrt{1-c^2x^2}\log\left(\sin\left(\frac{1}{2}\sin^{-1}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (8*a^2 - 2*b^2 - 12*a^2*c^2*x^2 + 4*a*b*ArcSin[c*x] + 2*b^2*ArcSin[c*x]^2 -
 2*b^2*Cos[2*ArcSin[c*x]] + 12*a*b*ArcSin[c*x]*Cos[2*ArcSin[c*x]] + 6*b^2*A
rcSin[c*x]^2*Cos[2*ArcSin[c*x]] - 15*b^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*Log[
1 - I*E^(I*ArcSin[c*x])] - 5*b^2*ArcSin[c*x]*Cos[3*ArcSin[c*x]]*Log[1 - I*E
^(I*ArcSin[c*x])] + 15*b^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*Log[1 + I*E^(I*Arc
Sin[c*x])] + 5*b^2*ArcSin[c*x]*Cos[3*ArcSin[c*x]]*Log[1 + I*E^(I*ArcSin[c*x
])] + 15*a*b*Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]]
 + 5*a*b*Cos[3*ArcSin[c*x]]*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] -
15*a*b*Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]] - 5*a
*b*Cos[3*ArcSin[c*x]]*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]] - (20*I)
*b^2*(1 - c^2*x^2)^(3/2)*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] + (20*I)*b^2*(1
 - c^2*x^2)^(3/2)*PolyLog[2, I*E^(I*ArcSin[c*x])] + 2*a*b*Sin[2*ArcSin[c*x]
] + 2*b^2*ArcSin[c*x]*Sin[2*ArcSin[c*x]])/(12*c^4*d^2*(-1 + c^2*x^2)*Sqrt[d
 - c^2*d*x^2])
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(b^2x^3\arcsin(cx)^2+2\,abx^3\arcsin(cx)+a^2x^3\right)\sqrt{-c^2dx^2+d}}{c^6d^3x^6-3\,c^4d^3x^4+3\,c^2d^3x^2-d^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="fricas
")
```

```
[Out] integral(-(b^2*x^3*arcsin(c*x)^2 + 2*a*b*x^3*arcsin(c*x) + a^2*x^3)*sqrt(-c
^2*d*x^2 + d)/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [B] time = 0.56, size = 829, normalized size = 2.50

$$\frac{a^2x^2}{c^2d\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}}-\frac{2a^2}{3d\,c^4\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}}+\frac{b^2\sqrt{-d\left(c^2x^2-1\right)}\,\arcsin(cx)^2x^2}{d^3\left(c^2x^2-1\right)^2c^2}-\frac{b^2\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x^2+1}\,\text{arc}}{3d^3\left(c^2x^2-1\right)^2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] a^2*x^2/c^2/d/(-c^2*d*x^2+d)^(3/2)-2/3*a^2/d/c^4/(-c^2*d*x^2+d)^(3/2)+b^2*(
-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)^2/c^2*arcsin(c*x)^2*x^2-1/3*b^2*(-d*(
```

```
c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)^2/c^3*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x-1/
3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)^2/c^2*x^2-2/3*b^2*(-d*(c^2*x^2
-1))^(1/2)/d^3/(c^2*x^2-1)^2/c^4*arcsin(c*x)^2+1/3*b^2*(-d*(c^2*x^2-1))^(1/
2)/d^3/(c^2*x^2-1)^2/c^4+5/3*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/
c^4/d^3/(c^2*x^2-1)*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-5/3*b^2*
(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^4/d^3/(c^2*x^2-1)*arcsin(c*x)*l
n(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))-5/3*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2
-1))^(1/2)/c^4/d^3/(c^2*x^2-1)*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+5/3*I*
b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^4/d^3/(c^2*x^2-1)*dilog(1-I
*(I*c*x+(-c^2*x^2+1)^(1/2)))+2*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)^2
/c^2*arcsin(c*x)*x^2-1/3*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)^2/c^3*(
-c^2*x^2+1)^(1/2)*x-4/3*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)^2/c^4*ar
csin(c*x)-5/3*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^4/d^3/(c^2*x^
2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)+I)+5/3*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2
-1))^(1/2)/c^4/d^3/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)
```

maxima [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxima
")
```

```
[Out] Timed out
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{{\left(d-c^2\,d\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int((x^3*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(5/2), x)
```

sympy [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Exception raised: TypeError
```

3.257 $\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=332

$$-\frac{bx^2\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{3d\left(d-c^2dx^2\right)^{3/2}}+\frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{3c^3d^2\sqrt{d-c^2dx^2}}-\frac{2b\sqrt{1-c^2x^2}\log\left(1+e^{2i\sin^{-1}\right.}{3c^3d^2\sqrt{d-c}$$

```
[Out] 1/3*x^3*(a+b*arcsin(c*x))^2/d/(-c^2*d*x^2+d)^(3/2)+1/3*b^2*x/c^2/d^2/(-c^2*
d*x^2+d)^(1/2)-1/3*b*x^2*(a+b*arcsin(c*x))/c/d^2/(-c^2*x^2+1)^(1/2)/(-c^2*d
*x^2+d)^(1/2)-1/3*b^2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)/c^3/d^2/(-c^2*d*x^2+d)
^(1/2)+1/3*I*(a+b*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/c^3/d^2/(-c^2*d*x^2+d)^
(1/2)-2/3*b*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+
1)^(1/2)/c^3/d^2/(-c^2*d*x^2+d)^(1/2)+1/3*I*b^2*polylog(2,-(I*c*x+(-c^2*x^2
+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/c^3/d^2/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.35, antiderivative size = 332, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 9, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.310, Rules used = {4681, 4703, 4675, 3719, 2190, 2279, 2391, 288, 216}

$$\frac{ib^2\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{3c^3d^2\sqrt{d-c^2dx^2}}-\frac{bx^2\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{3c^3d^2\sqrt{d-c^2dx^2}}-\frac{2b\sqrt{1-c^2x^2}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (b^2*x)/(3*c^2*d^2*Sqrt[d - c^2*d*x^2]) - (b^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x
])/(3*c^3*d^2*Sqrt[d - c^2*d*x^2]) - (b*x^2*(a + b*ArcSin[c*x]))/(3*c*d^2*S
qrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) + (x^3*(a + b*ArcSin[c*x])^2)/(3*d*(d
 - c^2*d*x^2)^(3/2)) + ((I/3)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(c^3
*d^2*Sqrt[d - c^2*d*x^2]) - (2*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[
1 + E^((2*I)*ArcSin[c*x])])/(3*c^3*d^2*Sqrt[d - c^2*d*x^2]) + ((I/3)*b^2*Sq
rt[1 - c^2*x^2]*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(c^3*d^2*Sqrt[d - c^2*d
*x^2])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4681

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^F
racPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c
^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d,
 e, f, m, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] &
& NeQ[m, -1]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rubi steps

$$\int \frac{x^2 \left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}\,dx = \frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{3d\left(d-c^2dx^2\right)^{3/2}} - \frac{\left(2bc\sqrt{1-c^2x^2}\right)\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^2}\,dx}{3d^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{bx^2\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{\left(b^2\sqrt{1-c^2x^2}\right)\int \frac{x^2}{\left(1-c^2x^2\right)^{3/2}}\,d}{3d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{b^2x}{3c^2d^2\sqrt{d-c^2dx^2}} - \frac{bx^2\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{x^3\left(a+b\sin^{-1}(cx)\right)^2}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{\left(2b\sqrt{1-\right.}{}$$

$$= \frac{b^2x}{3c^2d^2\sqrt{d-c^2dx^2}} - \frac{b^2\sqrt{1-c^2x^2}\,\sin^{-1}(cx)}{3c^3d^2\sqrt{d-c^2dx^2}} - \frac{bx^2\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{x^3\left(a+\right.}{3d\left(d\right.}$$

$$= \frac{b^2x}{3c^2d^2\sqrt{d-c^2dx^2}} - \frac{b^2\sqrt{1-c^2x^2}\,\sin^{-1}(cx)}{3c^3d^2\sqrt{d-c^2dx^2}} - \frac{bx^2\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{x^3\left(a+\right.}{3d\left(d\right.}$$

$$= \frac{b^2x}{3c^2d^2\sqrt{d-c^2dx^2}} - \frac{b^2\sqrt{1-c^2x^2}\,\sin^{-1}(cx)}{3c^3d^2\sqrt{d-c^2dx^2}} - \frac{bx^2\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{x^3\left(a+\right.}{3d\left(d\right.}$$

$$= \frac{b^2x}{3c^2d^2\sqrt{d-c^2dx^2}} - \frac{b^2\sqrt{1-c^2x^2}\,\sin^{-1}(cx)}{3c^3d^2\sqrt{d-c^2dx^2}} - \frac{bx^2\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{x^3\left(a+\right.}{3d\left(d\right.}$$

Mathematica [A] time = 0.83, size = 303, normalized size = 0.91

$$\frac{-a^2c^3x^3+ab\sqrt{1-c^2x^2}-abc^2x^2\sqrt{1-c^2x^2}\log\left(1-c^2x^2\right)+ab\sqrt{1-c^2x^2}\log\left(1-c^2x^2\right)+b\sin^{-1}(cx)\left(-2ac^3x^3+\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^2*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (-(b^2*c*x) - a^2*c^3*x^3 + b^2*c^3*x^3 + a*b*Sqrt[1 - c^2*x^2] + I*b^2*(I*
c^3*x^3 - Sqrt[1 - c^2*x^2] + c^2*x^2*Sqrt[1 - c^2*x^2])*ArcSin[c*x]^2 + b*
ArcSin[c*x]*(-2*a*c^3*x^3 + b*Sqrt[1 - c^2*x^2] + 2*b*(1 - c^2*x^2)^(3/2)*L
og[1 + E^((2*I)*ArcSin[c*x])]) + a*b*Sqrt[1 - c^2*x^2]*Log[1 - c^2*x^2] - a
*b*c^2*x^2*Sqrt[1 - c^2*x^2]*Log[1 - c^2*x^2] - I*b^2*(1 - c^2*x^2)^(3/2)*P
olyLog[2, -E^((2*I)*ArcSin[c*x])])/(3*c^3*d^2*(-1 + c^2*x^2)*Sqrt[d - c^2*d
*x^2])
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(b^2x^2\arcsin(cx)^2+2\,abx^2\arcsin(cx)+a^2x^2\right)\sqrt{-c^2dx^2+d}}{c^6d^3x^6-3\,c^4d^3x^4+3\,c^2d^3x^2-d^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="fricas
")
```

```
[Out] integral(-(b^2*x^2*arcsin(c*x)^2 + 2*a*b*x^2*arcsin(c*x) + a^2*x^2)*sqrt(-c
^2*d*x^2 + d)/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b \arcsin\left(cx\right) + a\right)^2 x^2}{\left(-c^2 d x^2 + d\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2*x^2/(-c^2*d*x^2 + d)^(5/2), x)
```

maple [B] time = 0.50, size = 3277, normalized size = 9.87

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)
/c*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^2+2/3*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x
^2-1))^(1/2)/c^3/d^3/(c^2*x^2-1)*arcsin(c*x)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2)
)^2)+2*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2
*x^2+1)*c^4*arcsin(c*x)*x^7-a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6
*x^6+10*c^4*x^4-5*c^2*x^2+1)*c*(-c^2*x^2+1)^(1/2)*x^4+1/3*I*b^2*(-d*(c^2*x^
2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*(-c^2*x^2+1)*a
rcsin(c*x)*x^3-2/3*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^3/d^3/
(c^2*x^2-1)*arcsin(c*x)^2-1/3*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/
2)/c^3/d^3/(c^2*x^2-1)*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)-1/3*I*b^2*(
-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)/c^3*
(-c^2*x^2+1)^(1/2)*arcsin(c*x)^2-4/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^
8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)/c*x^2*(-c^2*x^2+1)^(1/2)+2*I*b^2*(-
d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*c*(-c
^2*x^2+1)^(1/2)*x^4-I*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+1
0*c^4*x^4-5*c^2*x^2+1)*c^3*(-c^2*x^2+1)^(1/2)*x^6+2/3*I*b^2*(-d*(c^2*x^2-1)
)^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*c^2*arcsin(c*x)*x^
5-1/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^
2*x^2+1)*c^4*arcsin(c*x)*x^7-b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^
6*x^6+10*c^4*x^4-5*c^2*x^2+1)*c*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^4-2*a*b*(-
d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*c^2*a
rcsin(c*x)*x^5+a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x
^4-5*c^2*x^2+1)/c*(-c^2*x^2+1)^(1/2)*x^2+2/3*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c
^2*x^2+1)^(1/2)/c^3/d^3/(c^2*x^2-1)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)-1/3*
I*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+
1)*c^4*x^7+2/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4
*x^4-5*c^2*x^2+1)*c^2*x^5+1/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9
*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*(-c^2*x^2+1)*x^3-1/3*a^2/c^2/d^2*x/(-c^2*d
*x^2+d)^(1/2)-1/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^
4*x^4-5*c^2*x^2+1)*x^3+1/3*a^2/c^2*x/d/(-c^2*d*x^2+d)^(3/2)+I*b^2*(-d*(c^2*
x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*c^3*(-c^2*x^
2+1)^(1/2)*arcsin(c*x)^2*x^6-1/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^
8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*c^2*(-c^2*x^2+1)*arcsin(c*x)*x^5-2*I*b^
2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*c
*(-c^2*x^2+1)^(1/2)*arcsin(c*x)^2*x^4+4/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/
(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)/c*(-c^2*x^2+1)^(1/2)*arcsin(c*
x)^2*x^2-4/3*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^3/d^3/(c^2*x
^2-1)*arcsin(c*x)-1/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6
+10*c^4*x^4-5*c^2*x^2+1)*c^2*(-c^2*x^2+1)*x^5-2/3*I*a*b*(-d*(c^2*x^2-1))^(1
/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)/c^3*arcsin(c*x)*(-c^2*
x^2+1)^(1/2)+2*I*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4
```

```
*x^4-5*c^2*x^2+1)*c^3*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^6-4*I*a*b*(-d*(c^2*x
^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*c*(-c^2*x^2+1
)^(1/2)*arcsin(c*x)*x^4+8/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c
^6*x^6+10*c^4*x^4-5*c^2*x^2+1)/c*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x^2-2/3*b^2
*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*(-
c^2*x^2+1)*x^3-2/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c
^4*x^4-5*c^2*x^2+1)*c^4*x^7+b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6
*x^6+10*c^4*x^4-5*c^2*x^2+1)*c^2*x^5+1/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*
c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*arcsin(c*x)^2*x^3+b^2*(-d*(c^2*x^
2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*c^4*arcsin(c*x
)^2*x^7-b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^
2*x^2+1)*c^2*arcsin(c*x)^2*x^5+1/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^
8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)*c^2*(-c^2*x^2+1)*x^5+1/3*b^2*(-d*(c^2*x
^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)/c^2*(-c^2*x^2
+1)*x-1/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*
c^2*x^2+1)/c^3*(-c^2*x^2+1)^(1/2)*arcsin(c*x)+1/3*I*b^2*(-d*(c^2*x^2-1))^(1
/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)/c^3*(-c^2*x^2+1)^(1/2)
-1/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2
*x^2+1)*arcsin(c*x)*x^3+2/3*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6
*x^6+10*c^4*x^4-5*c^2*x^2+1)*arcsin(c*x)*x^3-1/3*a*b*(-d*(c^2*x^2-1))^(1/2)
/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^2+1)/c^3*(-c^2*x^2+1)^(1/2)-1/
3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^8*x^8-9*c^6*x^6+10*c^4*x^4-5*c^2*x^
2+1)*x^3
```

maxima [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxima
")
```

```
[Out] Timed out
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{{\left(d-c^2\,d\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int((x^2*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(5/2), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{2} \left(a + b \operatorname{asin}{\left(cx \right)}\right)^{2}}{\left(- d \left(cx - 1\right) \left(cx + 1\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Integral(x**2*(a + b*asin(c*x))**2/(-d*(c*x - 1)*(c*x + 1))**(5/2), x)
```

3.258 $\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=294

$$-\frac{bx\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{2ib\sqrt{1-c^2x^2}\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{3c^2d^2\sqrt{d-c^2dx^2}}+\frac{\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d\left(d-c^2dx^2\right)^{3/2}}-\frac{ib^2\sqrt{1-}}{3c}$$

```
[Out] 1/3*(a+b*arcsin(c*x))^2/c^2/d/(-c^2*d*x^2+d)^(3/2)+1/3*b^2/c^2/d^2/(-c^2*d*
x^2+d)^(1/2)-1/3*b*x*(a+b*arcsin(c*x))/c/d^2/(-c^2*x^2+1)^(1/2)/(-c^2*d*x^2
+d)^(1/2)+2/3*I*b*(a+b*arcsin(c*x))*arctan(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*
x^2+1)^(1/2)/c^2/d^2/(-c^2*d*x^2+d)^(1/2)-1/3*I*b^2*polylog(2,-I*(I*c*x+(-c
^2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/c^2/d^2/(-c^2*d*x^2+d)^(1/2)+1/3*I*b^2
*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/c^2/d^2/(-c^2*d
*x^2+d)^(1/2)
```

Rubi [A] time = 0.22, antiderivative size = 294, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.259, Rules used = {4677, 4655, 4657, 4181, 2279, 2391, 261}

$$-\frac{ib^2\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{3c^2d^2\sqrt{d-c^2dx^2}}+\frac{ib^2\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{3c^2d^2\sqrt{d-c^2dx^2}}-\frac{bx\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\cdots$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] b^2/(3*c^2*d^2*Sqrt[d - c^2*d*x^2]) - (b*x*(a + b*ArcSin[c*x]))/(3*c*d^2*Sq
rt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) + (a + b*ArcSin[c*x])^2/(3*c^2*d*(d -
c^2*d*x^2)^(3/2)) + (((2*I)/3)*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcT
an[E^(I*ArcSin[c*x])])/(c^2*d^2*Sqrt[d - c^2*d*x^2]) - ((I/3)*b^2*Sqrt[1 -
c^2*x^2]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(c^2*d^2*Sqrt[d - c^2*d*x^2])
+ ((I/3)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c^2*d^2*Sq
rt[d - c^2*d*x^2])
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
```

```
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}\,dx = \frac{\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d\left(d-c^2dx^2\right)^{3/2}} - \frac{\left(2b\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{\left(1-c^2x^2\right)^2}\,dx}{3cd^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{bx\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d\left(d-c^2dx^2\right)^{3/2}} + \frac{\left(b^2\sqrt{1-c^2x^2}\right)\int \frac{x}{\left(1-c^2x^2\right)^{3/2}}\,dx}{3d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{b^2}{3c^2d^2\sqrt{d-c^2dx^2}} - \frac{bx\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d\left(d-c^2dx^2\right)^{3/2}} - \frac{\left(b\sqrt{1-c^2x^2}\right.}{}$$

$$= \frac{b^2}{3c^2d^2\sqrt{d-c^2dx^2}} - \frac{bx\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d\left(d-c^2dx^2\right)^{3/2}} + \frac{2ib\sqrt{1-c^2x}}{}$$

$$= \frac{b^2}{3c^2d^2\sqrt{d-c^2dx^2}} - \frac{bx\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d\left(d-c^2dx^2\right)^{3/2}} + \frac{2ib\sqrt{1-c^2x}}{}$$

$$= \frac{b^2}{3c^2d^2\sqrt{d-c^2dx^2}} - \frac{bx\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{3c^2d\left(d-c^2dx^2\right)^{3/2}} + \frac{2ib\sqrt{1-c^2x}}{}$$

Mathematica [A] time = 1.31, size = 461, normalized size = 1.57

$$\frac{a^2\sqrt{-d\left(c^2x^2-1\right)}}{3c^2d^3\left(c^2x^2-1\right)^2}+\frac{ab\left(3\sqrt{1-c^2x^2}\left(\log\left(\cos\left(\frac{1}{2}\sin^{-1}(cx)\right)-\sin\left(\frac{1}{2}\sin^{-1}(cx)\right)\right)-\log\left(\sin\left(\frac{1}{2}\sin^{-1}(cx)\right)+\cos\right.\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (a^2*Sqrt[-(d*(-1 + c^2*x^2))])/(3*c^2*d^3*(-1 + c^2*x^2)^2) + (a*b*(8*ArcS
in[c*x] + 3*Sqrt[1 - c^2*x^2]*(Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]]
 - Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]) + Cos[3*ArcSin[c*x]]*(Log[
Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] - Log[Cos[ArcSin[c*x]/2] + Sin[Arc
Sin[c*x]/2]]) - 2*Sin[2*ArcSin[c*x]]))/(12*c^2*d*(d*(1 - c^2*x^2))^(3/2)) +
 (b^2*(2 + 4*ArcSin[c*x]^2 + 2*Cos[2*ArcSin[c*x]] - 3*Sqrt[1 - c^2*x^2]*Arc
Sin[c*x]*Log[1 - I*E^(I*ArcSin[c*x])] - ArcSin[c*x]*Cos[3*ArcSin[c*x]]*Log[
1 - I*E^(I*ArcSin[c*x])] + 3*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*Log[1 + I*E^(I*A
rcSin[c*x])] + ArcSin[c*x]*Cos[3*ArcSin[c*x]]*Log[1 + I*E^(I*ArcSin[c*x])]
- (4*I)*(1 - c^2*x^2)^(3/2)*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] + (4*I)*(1 -
 c^2*x^2)^(3/2)*PolyLog[2, I*E^(I*ArcSin[c*x])] - 2*ArcSin[c*x]*Sin[2*ArcSi
n[c*x]]))/(12*c^2*d*(d*(1 - c^2*x^2))^(3/2))
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\left(b^2x\arcsin\left(cx\right)^2+2\,abx\arcsin\left(cx\right)+a^2x\right)}{c^6d^3x^6-3\,c^4d^3x^4+3\,c^2d^3x^2-d^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b^2*x*arcsin(c*x)^2 + 2*a*b*x*arcsin(c*x) +
 a^2*x)/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\arcsin\left(cx\right)+a\right)^2x}{\left(-c^2dx^2+d\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2*x/(-c^2*d*x^2 + d)^(5/2), x)
```

maple [B] time = 0.29, size = 762, normalized size = 2.59

$$\frac{a^2}{3c^2d\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}}-\frac{b^2\sqrt{-d\left(c^2x^2-1\right)}\,\sqrt{-c^2x^2+1}\,\arcsin\left(cx\right)x}{3d^3\left(c^4x^4-2c^2x^2+1\right)c}-\frac{b^2\sqrt{-d\left(c^2x^2-1\right)}\,x^2}{3d^3\left(c^4x^4-2c^2x^2+1\right)}+\frac{b^2\sqrt{-d\left(c^2x^2-1\right)}}{3d^3\left(c^4x^4-2c^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] 1/3*a^2/c^2/d/(-c^2*d*x^2+d)^(3/2)-1/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*
x^4-2*c^2*x^2+1)/c*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x-1/3*b^2*(-d*(c^2*x^2-1)
)^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)*x^2+1/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(c
^4*x^4-2*c^2*x^2+1)/c^2*arcsin(c*x)^2+1/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(c
```

```
^4*x^4-2*c^2*x^2+1)/c^2+1/3*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)
/c^2/d^3/(c^2*x^2-1)*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-1/3*I*b^2*(-c^2*
x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^2/d^3/(c^2*x^2-1)*dilog(1-I*(I*c*x+(-
c^2*x^2+1)^(1/2)))-1/3*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^2/d^
3/(c^2*x^2-1)*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+1/3*b^2*(-c^2*
x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^2/d^3/(c^2*x^2-1)*arcsin(c*x)*ln(1-I*
(I*c*x+(-c^2*x^2+1)^(1/2)))-1/3*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c
^2*x^2+1)/c*(-c^2*x^2+1)^(1/2)*x+2/3*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^
4-2*c^2*x^2+1)/c^2*arcsin(c*x)-1/3*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^
(1/2)/c^2/d^3/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-I)+1/3*a*b*(-c^2*x^2+
1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c^2/d^3/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(
1/2)+I)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\sqrt{d}\int\frac{\left(b^2x\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)^2+2\,abx\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)\right)\sqrt{cx+1}\sqrt{-cx+1}}{c^6d^3x^6-3\,c^4d^3x^4+3\,c^2d^3x^2-d^3}\,dx+\frac{}{3\left(-\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxima")
```

```
[Out] -sqrt(d)*integrate((b^2*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*
a*b*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x +
 1)/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3), x) + 1/3*a^2/((-c^
2*d*x^2 + d)^(3/2)*c^2*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{x\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{{\left(d-c^2\,d\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int((x*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{x\left(a+b\,\mathrm{asin}\left(cx\right)\right)^2}{\left(-d\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Integral(x*(a + b*asin(c*x))**2/(-d*(c*x - 1)*(c*x + 1))**(5/2), x)
```

3.259 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=311

$$-\frac{b\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}}+\frac{2x\left(a+b\sin^{-1}(cx)\right)^2}{3d^2\sqrt{d-c^2dx^2}}-\frac{2i\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{3cd^2\sqrt{d-c^2dx^2}}+\frac{4b\sqrt{1-c^2x^2}\,\log\left(1+e^{2\cdots}\right.}{3cd^2\sqrt{d\cdots}}$$

```
[Out] 1/3*x*(a+b*arcsin(c*x))^2/d/(-c^2*d*x^2+d)^(3/2)+1/3*b^2*x/d^2/(-c^2*d*x^2+
d)^(1/2)+2/3*x*(a+b*arcsin(c*x))^2/d^2/(-c^2*d*x^2+d)^(1/2)-1/3*b*(a+b*arcs
in(c*x))/c/d^2/(-c^2*x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)-2/3*I*(a+b*arcsin(c*
x))^2*(-c^2*x^2+1)^(1/2)/c/d^2/(-c^2*d*x^2+d)^(1/2)+4/3*b*(a+b*arcsin(c*x))
*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/c/d^2/(-c^2*d*x^2+d)
^(1/2)-2/3*I*b^2*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2
)/c/d^2/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.28, antiderivative size = 311, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {4655, 4653, 4675, 3719, 2190, 2279, 2391, 4677, 191}

$$-\frac{2ib^2\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{3cd^2\sqrt{d-c^2dx^2}}-\frac{b\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\,\sqrt{d-c^2dx^2}}+\frac{2x\left(a+b\sin^{-1}(cx)\right)^2}{3d^2\sqrt{d-c^2dx^2}}-\frac{2i\sqrt{1-c^2x^2}\,\left(a\cdots\right.}{3cd^2\sqrt{d\cdots}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (b^2*x)/(3*d^2*Sqrt[d - c^2*d*x^2]) - (b*(a + b*ArcSin[c*x]))/(3*c*d^2*Sqrt
[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) + (x*(a + b*ArcSin[c*x])^2)/(3*d*(d - c^
2*d*x^2)^(3/2)) + (2*x*(a + b*ArcSin[c*x])^2)/(3*d^2*Sqrt[d - c^2*d*x^2]) -
 (((2*I)/3)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(c*d^2*Sqrt[d - c^2*d*
x^2]) + (4*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[
c*x])])/(3*c*d^2*Sqrt[d - c^2*d*x^2]) - (((2*I)/3)*b^2*Sqrt[1 - c^2*x^2]*Po
lyLog[2, -E^((2*I)*ArcSin[c*x])])/(c*d^2*Sqrt[d - c^2*d*x^2])
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4653

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n*Sqrt[1 - c^2*x^2])/(d*Sqrt[d + e*x^2]), Int[(x*(a + b*ArcSin[c*x])^(n
 - 1))/(1 - c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e,
 0] && GtQ[n, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}dx = \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{2\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}dx}{3d} - \frac{\left(2bc\sqrt{1-c^2x^2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^2}dx}{3d^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{b\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{2x\left(a+b\sin^{-1}(cx)\right)^2}{3d^2\sqrt{d-c^2dx^2}} + \frac{\left(b^2\right.}{}$$

$$= \frac{b^2x}{3d^2\sqrt{d-c^2dx^2}} - \frac{b\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{2x\left(a+b\sin\right.}{3d^2\sqrt{d-}}$$

$$= \frac{b^2x}{3d^2\sqrt{d-c^2dx^2}} - \frac{b\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{2x\left(a+b\sin\right.}{3d^2\sqrt{d-}}$$

$$= \frac{b^2x}{3d^2\sqrt{d-c^2dx^2}} - \frac{b\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{2x\left(a+b\sin\right.}{3d^2\sqrt{d-}}$$

$$= \frac{b^2x}{3d^2\sqrt{d-c^2dx^2}} - \frac{b\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{2x\left(a+b\sin\right.}{3d^2\sqrt{d-}}$$

$$= \frac{b^2x}{3d^2\sqrt{d-c^2dx^2}} - \frac{b\left(a+b\sin^{-1}(cx)\right)}{3cd^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{2x\left(a+b\sin\right.}{3d^2\sqrt{d-}}$$

Mathematica [A] time = 1.06, size = 320, normalized size = 1.03

$$\frac{2a^2c^3x^3 - 3a^2cx + ab\sqrt{1-c^2x^2} + 2abc^2x^2\sqrt{1-c^2x^2}\log\left(1-c^2x^2\right) - 2ab\sqrt{1-c^2x^2}\log\left(1-c^2x^2\right) + b\sin^{-1}(c}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(d - c^2*d*x^2)^(5/2),x]
```

```
[Out] (-3*a^2*c*x - b^2*c*x + 2*a^2*c^3*x^3 + b^2*c^3*x^3 + a*b*Sqrt[1 - c^2*x^2]
 + b^2*(-3*c*x + 2*c^3*x^3 + (2*I)*Sqrt[1 - c^2*x^2] - (2*I)*c^2*x^2*Sqrt[1
 - c^2*x^2])*ArcSin[c*x]^2 + b*ArcSin[c*x]*(-6*a*c*x + 4*a*c^3*x^3 + b*Sqrt
[1 - c^2*x^2] - 4*b*(1 - c^2*x^2)^(3/2)*Log[1 + E^((2*I)*ArcSin[c*x])]) - 2
*a*b*Sqrt[1 - c^2*x^2]*Log[1 - c^2*x^2] + 2*a*b*c^2*x^2*Sqrt[1 - c^2*x^2]*L
og[1 - c^2*x^2] + (2*I)*b^2*(1 - c^2*x^2)^(3/2)*PolyLog[2, -E^((2*I)*ArcSin
[c*x])])/(3*c*d^2*(-1 + c^2*x^2)*Sqrt[d - c^2*d*x^2])
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\left(b^2\arcsin(cx)^2 + 2\,ab\arcsin(cx) + a^2\right)}{c^6d^3x^6 - 3\,c^4d^3x^4 + 3\,c^2d^3x^2 - d^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2
)/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b\arcsin(cx)+a)^2}{\left(-c^2dx^2+d\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/(-c^2*d*x^2 + d)^(5/2), x)
```

maple [B] time = 0.24, size = 2896, normalized size = 9.31

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] 4/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^
4*arcsin(c*x)*(-c^2*x^2+1)*x^5+14/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6
*x^6-10*c^4*x^4+11*c^2*x^2-4)*c*arcsin(c*x)^2*(-c^2*x^2+1)^(1/2)*x^2-10/3*I
*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^2*arc
sin(c*x)*(-c^2*x^2+1)*x^3-2*I*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*
c^4*x^4+11*c^2*x^2-4)*c^3*arcsin(c*x)^2*(-c^2*x^2+1)^(1/2)*x^4+8/3*I*a*b*(-
c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c/d^3/(c^2*x^2-1)*arcsin(c*x)+4/3*I
*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*(-c
^2*x^2+1)*x^5-10/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+1
1*c^2*x^2-4)*c^2*(-c^2*x^2+1)*x^3-16/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*
c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)/c*arcsin(c*x)*(-c^2*x^2+1)^(1/2)-2*b^2*(-d
*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*x+1/3*a^2*x/d/(
-c^2*d*x^2+d)^(3/2)+2/3*a^2/d^2*x/(-c^2*d*x^2+d)^(1/2)-a*b*(-d*(c^2*x^2-1))
^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c*(-c^2*x^2+1)^(1/2)*x^2-I*b
^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^3*(-c^2
*x^2+1)^(1/2)*x^4-14/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x
^4+11*c^2*x^2-4)*c^4*arcsin(c*x)*x^5+4/3*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*
x^2-1))^(1/2)/c/d^3/(c^2*x^2-1)*arcsin(c*x)^2+16/3*I*b^2*(-d*(c^2*x^2-1))^(
1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^2*arcsin(c*x)*x^3+4/3*I*b^2*
(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^6*arcsin(c
*x)*x^7+2*I*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2
-4)*arcsin(c*x)*(-c^2*x^2+1)*x-b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10
*c^4*x^4+11*c^2*x^2-4)*c*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^2-4/3*b^2*(-c^2*x
^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/c/d^3/(c^2*x^2-1)*arcsin(c*x)*ln(1+(I*c*
x+(-c^2*x^2+1)^(1/2))^2)+7/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10
*c^4*x^4+11*c^2*x^2-4)*c*x^2*(-c^2*x^2+1)^(1/2)+2/3*I*b^2*(-c^2*x^2+1)^(1/2
)*(-d*(c^2*x^2-1))^(1/2)/c/d^3/(c^2*x^2-1)*polylog(2,-(I*c*x+(-c^2*x^2+1)^(
1/2))^2)+16/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2
*x^2-4)*c^2*x^3+2*I*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11
*c^2*x^2-4)*(-c^2*x^2+1)*x-4/3*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2
)/c/d^3/(c^2*x^2-1)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)+4/3*I*a*b*(-d*(c^2*x
^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^6*x^7-14/3*I*a*b*(-d
*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*x^5+34/3*a*
b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^2*arcsin
(c*x)*x^3-4*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2
-4)*c^4*arcsin(c*x)*x^5-8/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*
c^4*x^4+11*c^2*x^2-4)/c*arcsin(c*x)^2*(-c^2*x^2+1)^(1/2)+28/3*I*a*b*(-d*(c^
2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c*arcsin(c*x)*(-c^2
*x^2+1)^(1/2)*x^2-4*I*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+
11*c^2*x^2-4)*c^3*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*x^4+2/3*b^2*(-d*(c^2*x^2-1
))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*(-c^2*x^2+1)*x-3*b^2*(-d*(
```

```
c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*x^5-4*b^2*(-d
*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*arcsin(c*x)^2*x
+13/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^
2*x^3+2/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4
)*c^6*x^7+17/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*
x^2-4)*c^2*arcsin(c*x)^2*x^3-4/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^
6-10*c^4*x^4+11*c^2*x^2-4)/c*(-c^2*x^2+1)^(1/2)-2*I*b^2*(-d*(c^2*x^2-1))^(1
/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*arcsin(c*x)*x-4/3*b^2*(-d*(c^2*
x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^2*(-c^2*x^2+1)*x^3+
2/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*
(-c^2*x^2+1)*x^5+4/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+1
1*c^2*x^2-4)/c*arcsin(c*x)*(-c^2*x^2+1)^(1/2)-2*b^2*(-d*(c^2*x^2-1))^(1/2)/
d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*c^4*arcsin(c*x)^2*x^5+4/3*a*b*(-d*(
c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)/c*(-c^2*x^2+1)^(1
/2)-8*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2*x^2-4)*ar
csin(c*x)*x-2*I*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(3*c^6*x^6-10*c^4*x^4+11*c^2
*x^2-4)*x
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{3}\,abc\left(\frac{1}{c^4d^{\frac{5}{2}}x^2-c^2d^{\frac{5}{2}}}+\frac{2\,\log\left(cx+1\right)}{c^2d^{\frac{5}{2}}}+\frac{2\,\log\left(cx-1\right)}{c^2d^{\frac{5}{2}}}\right)+\frac{2}{3}\,ab\left(\frac{2\,x}{\sqrt{-c^2dx^2+d}\,d^2}+\frac{x}{\left(-c^2dx^2+d\right)^{\frac{3}{2}}d}\right)\arcsin\left(cx\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/3*a*b*c*(1/(c^4*d^(5/2)*x^2 - c^2*d^(5/2)) + 2*log(c*x + 1)/(c^2*d^(5/2))
 + 2*log(c*x - 1)/(c^2*d^(5/2))) + 2/3*a*b*(2*x/(sqrt(-c^2*d*x^2 + d)*d^2)
+ x/((-c^2*d*x^2 + d)^(3/2)*d))*arcsin(c*x) + 1/3*a^2*(2*x/(sqrt(-c^2*d*x^2
 + d)*d^2) + x/((-c^2*d*x^2 + d)^(3/2)*d)) + b^2*integrate(arctan2(c*x, sqr
t(c*x + 1)*sqrt(-c*x + 1))^2/((c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2)*sqrt(c*x
+ 1)*sqrt(-c*x + 1)), x)/sqrt(d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^2}{\left(d-c^2\,d\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int((a + b*asin(c*x))^2/(d - c^2*d*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\,\mathrm{asin}\left(cx\right)\right)^2}{\left(-d\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2/(-d*(c*x - 1)*(c*x + 1))**(5/2), x)
```

3.260 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=577

$$\frac{2ib\sqrt{1-c^2x^2}\,\mathrm{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{d-c^2dx^2}}-\frac{2ib\sqrt{1-c^2x^2}\,\mathrm{Li}_2\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{d-c^2dx^2}}-\frac{bcx\left(a+b\sin\right.}{3d^2\sqrt{1-c^2x^2}\,\sqrt{d}}$$

```
[Out] 1/3*(a+b*arcsin(c*x))^2/d/(-c^2*d*x^2+d)^(3/2)+1/3*b^2/d^2/(-c^2*d*x^2+d)^(
1/2)+(a+b*arcsin(c*x))^2/d^2/(-c^2*d*x^2+d)^(1/2)-1/3*b*c*x*(a+b*arcsin(c*x
))/d^2/(-c^2*x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)+14/3*I*b*(a+b*arcsin(c*x))*a
rctan(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/d^2/(-c^2*d*x^2+d)^(1/2)
-2*(a+b*arcsin(c*x))^2*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)
/d^2/(-c^2*d*x^2+d)^(1/2)+2*I*b*(a+b*arcsin(c*x))*polylog(2,-I*c*x-(-c^2*x^
2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/d^2/(-c^2*d*x^2+d)^(1/2)-7/3*I*b^2*polylog(2
,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/d^2/(-c^2*d*x^2+d)^(1/2)
+7/3*I*b^2*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/d^2/(
-c^2*d*x^2+d)^(1/2)-2*I*b*(a+b*arcsin(c*x))*polylog(2,I*c*x+(-c^2*x^2+1)^(1
/2))*(-c^2*x^2+1)^(1/2)/d^2/(-c^2*d*x^2+d)^(1/2)-2*b^2*polylog(3,-I*c*x-(-c
^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/d^2/(-c^2*d*x^2+d)^(1/2)+2*b^2*polylog(
3,I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/d^2/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.86, antiderivative size = 577, normalized size of antiderivative = 1.00, number of steps used = 25, number of rules used = 13, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.448$, Rules used = {4705, 4713, 4709, 4183, 2531, 2282, 6589, 4657, 4181, 2279, 2391, 4655, 261}

$$\frac{2ib\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{d-c^2dx^2}}-\frac{2ib\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{d-c^2dx^2}}-$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x*(d - c^2*d*x^2)^(5/2)),x]
```

```
[Out] b^2/(3*d^2*Sqrt[d - c^2*d*x^2]) - (b*c*x*(a + b*ArcSin[c*x]))/(3*d^2*Sqrt[1
 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) + (a + b*ArcSin[c*x])^2/(3*d*(d - c^2*d*x^
2)^(3/2)) + (a + b*ArcSin[c*x])^2/(d^2*Sqrt[d - c^2*d*x^2]) + (((14*I)/3)*b
*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])])/(d^2*Sqrt
[d - c^2*d*x^2]) - (2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2*ArcTanh[E^(I*
ArcSin[c*x])])/(d^2*Sqrt[d - c^2*d*x^2]) + ((2*I)*b*Sqrt[1 - c^2*x^2]*(a +
b*ArcSin[c*x])*PolyLog[2, -E^(I*ArcSin[c*x])])/(d^2*Sqrt[d - c^2*d*x^2]) -
(((7*I)/3)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(d^2*S
qrt[d - c^2*d*x^2]) + (((7*I)/3)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*Ar
cSin[c*x])])/(d^2*Sqrt[d - c^2*d*x^2]) - ((2*I)*b*Sqrt[1 - c^2*x^2]*(a + b*
ArcSin[c*x])*PolyLog[2, E^(I*ArcSin[c*x])])/(d^2*Sqrt[d - c^2*d*x^2]) - (2*
b^2*Sqrt[1 - c^2*x^2]*PolyLog[3, -E^(I*ArcSin[c*x])])/(d^2*Sqrt[d - c^2*d*x
^2]) + (2*b^2*Sqrt[1 - c^2*x^2]*PolyLog[3, E^(I*ArcSin[c*x])])/(d^2*Sqrt[d
- c^2*d*x^2])
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4705

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> -Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a +
b*ArcSin[c*x])^n)/(2*d*f*(p + 1)), x] + (Dist[(m + 2*p + 3)/(2*d*(p + 1)),
Int[(f*x)^m*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[(b*c*n
*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*f*(p + 1)*(1 - c^2*x^2)^FracPart[
p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
0] && LtQ[p, -1] &&  !GtQ[m, 1] && (IntegerQ[m] || IntegerQ[p] || EqQ[n, 1]
)
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4713

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(
(f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c,
 d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&  !GtQ[d, 0] && (Integ
erQ[m] || EqQ[n, 1])
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\left(d-c^2dx^2\right)^{5/2}}\,dx = \frac{\left(a+b\sin^{-1}(cx)\right)^2}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\left(d-c^2dx^2\right)^{3/2}}\,dx}{d} - \frac{\left(2bc\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{\left(1-c^2x^2\right)^2}\,dx}{3d^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{bcx\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d^2\sqrt{d-c^2dx^2}} + \frac{\int \frac{(a+b\sin^{-}}{x\sqrt{d-c^2}}}{d^2}$$

$$= \frac{b^2}{3d^2\sqrt{d-c^2dx^2}} - \frac{bcx\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{\left(a+b\sin^{-1}(c\right.}{d^2\sqrt{d-c^2dx}}$$

$$= \frac{b^2}{3d^2\sqrt{d-c^2dx^2}} - \frac{bcx\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{\left(a+b\sin^{-1}(c\right.}{d^2\sqrt{d-c^2dx}}$$

$$= \frac{b^2}{3d^2\sqrt{d-c^2dx^2}} - \frac{bcx\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{\left(a+b\sin^{-1}(c\right.}{d^2\sqrt{d-c^2dx}}$$

$$= \frac{b^2}{3d^2\sqrt{d-c^2dx^2}} - \frac{bcx\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{\left(a+b\sin^{-1}(c\right.}{d^2\sqrt{d-c^2dx}}$$

$$= \frac{b^2}{3d^2\sqrt{d-c^2dx^2}} - \frac{bcx\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{\left(a+b\sin^{-1}(c\right.}{d^2\sqrt{d-c^2dx}}$$

$$= \frac{b^2}{3d^2\sqrt{d-c^2dx^2}} - \frac{bcx\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} + \frac{\left(a+b\sin^{-1}(cx)\right)^2}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{\left(a+b\sin^{-1}(c\right.}{d^2\sqrt{d-c^2dx}}$$

Mathematica [A] time = 8.89, size = 935, normalized size = 1.62

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x*(d - c^2*d*x^2)^(5/2)),x]
```

```
[Out] Sqrt[-(d*(-1 + c^2*x^2))]*(a^2/(3*d^3*(-1 + c^2*x^2)^2) - a^2/(d^3*(-1 + c^
2*x^2))) + (a^2*Log[c*x])/d^(5/2) - (a^2*Log[d + Sqrt[d]*Sqrt[-(d*(-1 + c^2
*x^2))]])/d^(5/2) + (b^2*(1 - c^2*x^2)^(3/2)*(4 - ((-2 + ArcSin[c*x])*ArcSi
n[c*x])/(-1 + c*x) + 14*ArcSin[c*x]^2 + 12*ArcSin[c*x]^2*(Log[1 - E^(I*ArcS
in[c*x])] - Log[1 + E^(I*ArcSin[c*x])]) - 28*(ArcSin[c*x]*(Log[1 - I*E^(I*A
rcSin[c*x])] - Log[1 + I*E^(I*ArcSin[c*x])]) + I*(PolyLog[2, (-I)*E^(I*ArcS
in[c*x])] - PolyLog[2, I*E^(I*ArcSin[c*x])])) + (24*I)*ArcSin[c*x]*(PolyLog
[2, -E^(I*ArcSin[c*x])] - PolyLog[2, E^(I*ArcSin[c*x])]) + 24*(-PolyLog[3,
-E^(I*ArcSin[c*x])] + PolyLog[3, E^(I*ArcSin[c*x])]) + (2*ArcSin[c*x]^2*Sin
[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^3 + (2*(2 + 7*Ar
cSin[c*x]^2)*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])
- (2*ArcSin[c*x]^2*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x
]/2])^3 + (ArcSin[c*x]*(2 + ArcSin[c*x]))/(Cos[ArcSin[c*x]/2] + Sin[ArcSin[
c*x]/2])^2 - (2*(2 + 7*ArcSin[c*x]^2)*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/
2] + Sin[ArcSin[c*x]/2])))/(12*d*(d*(1 - c^2*x^2))^(3/2)) + (a*b*(20*ArcSin
[c*x] + 12*ArcSin[c*x]*Cos[2*ArcSin[c*x]] + 18*Sqrt[1 - c^2*x^2]*ArcSin[c*x
]*Log[1 - E^(I*ArcSin[c*x])] + 6*ArcSin[c*x]*Cos[3*ArcSin[c*x]]*Log[1 - E^(
I*ArcSin[c*x])] - 18*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*Log[1 + E^(I*ArcSin[c*x]
```

```
)] - 6*ArcSin[c*x]*Cos[3*ArcSin[c*x]]*Log[1 + E^(I*ArcSin[c*x])] + 21*Sqrt[
1 - c^2*x^2]*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] + 7*Cos[3*ArcSin[
c*x]]*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] - 21*Sqrt[1 - c^2*x^2]*L
og[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]] - 7*Cos[3*ArcSin[c*x]]*Log[Cos[
ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]] + (24*I)*(1 - c^2*x^2)^(3/2)*PolyLog[2
, -E^(I*ArcSin[c*x])] - (24*I)*(1 - c^2*x^2)^(3/2)*PolyLog[2, E^(I*ArcSin[c
*x])] - 2*Sin[2*ArcSin[c*x]]))/(12*d*(d*(1 - c^2*x^2))^(3/2))
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\left(b^2\arcsin\left(cx\right)^2+2\,ab\arcsin\left(cx\right)+a^2\right)}{c^6d^3x^7-3\,c^4d^3x^5+3\,c^2d^3x^3-d^3x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x/(-c^2*d*x^2+d)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2
)/(c^6*d^3*x^7 - 3*c^4*d^3*x^5 + 3*c^2*d^3*x^3 - d^3*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\arcsin\left(cx\right)+a\right)^2}{\left(-c^2dx^2+d\right)^{\frac{5}{2}}x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/((-c^2*d*x^2 + d)^(5/2)*x), x)
```

maple [B] time = 0.48, size = 1373, normalized size = 2.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] -1/3*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)^2*(-c^2*x^2+1)^(1/2)*x*c-2*
a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)^2*arcsin(c*x)*x^2*c^2+2*I*b^2*(-
c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)*arcsin(c*x)*polylog
(2,I*c*x+(-c^2*x^2+1)^(1/2))-2*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1
/2)/d^3/(c^2*x^2-1)*arcsin(c*x)*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))-1/3*b^
2*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)^2*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*x
*c+2*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^3/(c^2*x^2-1)*arcsin(c
*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-14/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*
x^2+1)^(1/2)/d^3/(c^2*x^2-1)*arctan(I*c*x+(-c^2*x^2+1)^(1/2))-2*I*a*b*(-d*(
c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^3/(c^2*x^2-1)*dilog(1+I*c*x+(-c^2*x^
2+1)^(1/2))-2*I*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^3/(c^2*x^2-
1)*dilog(I*c*x+(-c^2*x^2+1)^(1/2))-1/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*
x^2-1)^2*c^2*x^2-2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x
^2-1)*polylog(3,I*c*x+(-c^2*x^2+1)^(1/2))+2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2
*x^2-1))^(1/2)/d^3/(c^2*x^2-1)*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2))+8/3*a*b
*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)^2*arcsin(c*x)-b^2*(-d*(c^2*x^2-1))^
(1/2)/d^3/(c^2*x^2-1)^2*arcsin(c*x)^2*x^2*c^2-b^2*(-c^2*x^2+1)^(1/2)*(-d*(c
^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)*arcsin(c*x)^2*ln(1-I*c*x-(-c^2*x^2+1)^(1/2
))+b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)*arcsin(c*x
)^2*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-7/3*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-
1))^(1/2)/d^3/(c^2*x^2-1)*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))+7/
```

```
3*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)*arcsin(c*x)
*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+7/3*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x
^2-1))^(1/2)/d^3/(c^2*x^2-1)*dilog(1+I*(I*c*x+(-c^2*x^2+1)^(1/2)))-7/3*I*b^
2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)*dilog(1-I*(I*c*
x+(-c^2*x^2+1)^(1/2)))+1/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)^2+a^2
/d^2/(-c^2*d*x^2+d)^(1/2)-a^2/d^(5/2)*ln((2*d+2*d^(1/2)*(-c^2*d*x^2+d)^(1/2
))/x)+1/3*a^2/d/(-c^2*d*x^2+d)^(3/2)+4/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^
2*x^2-1)^2*arcsin(c*x)^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{3}a^2\left(\frac{3\log\left(\frac{2\sqrt{-c^2dx^2+d}\sqrt{d}}{|x|}+\frac{2d}{|x|}\right)}{d^{\frac{5}{2}}}-\frac{3}{\sqrt{-c^2dx^2+d}\,d^2}-\frac{1}{\left(-c^2dx^2+d\right)^{\frac{3}{2}}d}\right)-\sqrt{d}\int\frac{\left(b^2\arctan\left(cx,\sqrt{cx+1}\sqrt{-c\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*a^2*(3*log(2*sqrt(-c^2*d*x^2 + d)*sqrt(d)/abs(x) + 2*d/abs(x))/d^(5/2)
 - 3/(sqrt(-c^2*d*x^2 + d)*d^2) - 1/((-c^2*d*x^2 + d)^(3/2)*d)) - sqrt(d)*i
ntegrate((b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a*b*arctan2(
c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c^6*d^3*x
^7 - 3*c^4*d^3*x^5 + 3*c^2*d^3*x^3 - d^3*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))^2}{x\left(d-c^2\,d\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x*(d - c^2*d*x^2)^(5/2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/(x*(d - c^2*d*x^2)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Timed out
```

3.261 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^2\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=452

$$-\frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{8c^2x\left(a+b\sin^{-1}(cx)\right)^2}{3d^2\sqrt{d-c^2dx^2}}-\frac{8ic\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{3d^2\sqrt{d-c^2dx^2}}+\frac{16bc\sqrt{1-c^2x^2}\log\left(1+e\right.}{3d^2\sqrt{d}}$$

```
[Out] -(a+b*arcsin(c*x))^2/d/x/(-c^2*d*x^2+d)^(3/2)+4/3*c^2*x*(a+b*arcsin(c*x))^2
/d/(-c^2*d*x^2+d)^(3/2)+1/3*b^2*c^2*x/d^2/(-c^2*d*x^2+d)^(1/2)+8/3*c^2*x*(a
+b*arcsin(c*x))^2/d^2/(-c^2*d*x^2+d)^(1/2)-1/3*b*c*(a+b*arcsin(c*x))/d^2/(-
c^2*x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)-8/3*I*c*(a+b*arcsin(c*x))^2*(-c^2*x^2
+1)^(1/2)/d^2/(-c^2*d*x^2+d)^(1/2)-4*b*c*(a+b*arcsin(c*x))*arctanh((I*c*x+(
-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/d^2/(-c^2*d*x^2+d)^(1/2)+16/3*b*c*
(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/d^2
/(-c^2*d*x^2+d)^(1/2)-5/3*I*b^2*c*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)*
(-c^2*x^2+1)^(1/2)/d^2/(-c^2*d*x^2+d)^(1/2)-I*b^2*c*polylog(2,(I*c*x+(-c^2*
x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/d^2/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 0.62, antiderivative size = 452, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 14, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.483, Rules used = {4701, 4655, 4653, 4675, 3719, 2190, 2279, 2391, 4677, 191, 4705, 4679, 4419, 4183}

$$-\frac{5ib^2c\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{3d^2\sqrt{d-c^2dx^2}}-\frac{ib^2c\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)}{d^2\sqrt{d-c^2dx^2}}-\frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{8}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x^2*(d - c^2*d*x^2)^(5/2)),x]
```

```
[Out] (b^2*c^2*x)/(3*d^2*Sqrt[d - c^2*d*x^2]) - (b*c*(a + b*ArcSin[c*x]))/(3*d^2*
Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) - (a + b*ArcSin[c*x])^2/(d*x*(d - c^
2*d*x^2)^(3/2)) + (4*c^2*x*(a + b*ArcSin[c*x])^2)/(3*d*(d - c^2*d*x^2)^(3/2
)) + (8*c^2*x*(a + b*ArcSin[c*x])^2)/(3*d^2*Sqrt[d - c^2*d*x^2]) - (((8*I)/
3)*c*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(d^2*Sqrt[d - c^2*d*x^2]) - (
4*b*c*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcTanh[E^((2*I)*ArcSin[c*x])])
/(d^2*Sqrt[d - c^2*d*x^2]) + (16*b*c*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*
Log[1 + E^((2*I)*ArcSin[c*x])])/(3*d^2*Sqrt[d - c^2*d*x^2]) - (((5*I)/3)*b^
2*c*Sqrt[1 - c^2*x^2]*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(d^2*Sqrt[d - c^2
*d*x^2]) - (I*b^2*c*Sqrt[1 - c^2*x^2]*PolyLog[2, E^((2*I)*ArcSin[c*x])])/(d
^2*Sqrt[d - c^2*d*x^2])
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4419

```
Int[Csc[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csc[2*a + 2*b*x]^n,
 x], x] /; FreeQ[{a, b, c, d, m}, x] && IntegerQ[n] && RationalQ[m]
```

Rule 4653

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n*Sqrt[1 - c^2*x^2])/(d*Sqrt[d + e*x^2]), Int[(x*(a + b*ArcSin[c*x])^(n
 - 1))/(1 - c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e,
 0] && GtQ[n, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
```

```
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4679

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((x_)*((d_) + (e_.)*(x_)^2)),
x_Symbol] :> Dist[1/d, Subst[Int[(a + b*x)^n/(Cos[x]*Sin[x]), x], x, ArcSin
[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4705

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> -Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a +
b*ArcSin[c*x])^n)/(2*d*f*(p + 1)), x] + (Dist[(m + 2*p + 3)/(2*d*(p + 1)),
Int[(f*x)^m*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[(b*c*n
*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*f*(p + 1)*(1 - c^2*x^2)^FracPart[
p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
0] && LtQ[p, -1] &&  !GtQ[m, 1] && (IntegerQ[m] || IntegerQ[p] || EqQ[n, 1]
)
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^2\left(d-c^2dx^2\right)^{5/2}}dx = -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{dx\left(d-c^2dx^2\right)^{3/2}} + \left(4c^2\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}dx + \frac{\left(2bc\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(c}{x\left(1-c^2x^2\right)}}{d^2\sqrt{d-c^2dx^2}}$$

$$= \frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{dx\left(d-c^2dx^2\right)^{3/2}} + \frac{4c^2x\left(a+b\sin^{-1}(cx)\right)^2}{3d\left(d-c^2dx^2\right)^{3/2}} + \frac{\left(8c^2\right)\int}{}$$

$$= -\frac{b^2c^2x}{d^2\sqrt{d-c^2dx^2}} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{dx\left(d-c^2dx^2\right)^{3/2}} + \frac{4c^2x\left(a+b\sin\right.}{3d\left(d-c^2d\right.}$$

$$= \frac{b^2c^2x}{3d^2\sqrt{d-c^2dx^2}} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{dx\left(d-c^2dx^2\right)^{3/2}} + \frac{4c^2x\left(a+b\sin\right.}{3d\left(d-c^2d\right.}$$

$$= \frac{b^2c^2x}{3d^2\sqrt{d-c^2dx^2}} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{dx\left(d-c^2dx^2\right)^{3/2}} + \frac{4c^2x\left(a+b\sin\right.}{3d\left(d-c^2d\right.}$$

$$= \frac{b^2c^2x}{3d^2\sqrt{d-c^2dx^2}} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{dx\left(d-c^2dx^2\right)^{3/2}} + \frac{4c^2x\left(a+b\sin\right.}{3d\left(d-c^2d\right.}$$

$$= \frac{b^2c^2x}{3d^2\sqrt{d-c^2dx^2}} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{dx\left(d-c^2dx^2\right)^{3/2}} + \frac{4c^2x\left(a+b\sin\right.}{3d\left(d-c^2d\right.}$$

$$= \frac{b^2c^2x}{3d^2\sqrt{d-c^2dx^2}} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{dx\left(d-c^2dx^2\right)^{3/2}} + \frac{4c^2x\left(a+b\sin\right.}{3d\left(d-c^2d\right.}$$

Mathematica [A] time = 2.91, size = 352, normalized size = 0.78

$$-\frac{c\left(\frac{a^2\left(8c^4x^4-12c^2x^2+3\right)}{cx} + ab\sqrt{1-c^2x^2}\left(6\left(c^2x^2-1\right)\log(cx)+5\left(c^2x^2-1\right)\log\left(1-c^2x^2\right)+1\right) + \frac{2ab\left(8c^4x^4-12c^2x^2+3\right)}{cx}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x^2*(d - c^2*d*x^2)^(5/2)),x]
```

```
[Out] -1/3*(c*((a^2*(3 - 12*c^2*x^2 + 8*c^4*x^4))/(c*x) + (2*a*b*(3 - 12*c^2*x^2
+ 8*c^4*x^4)*ArcSin[c*x])/(c*x) + a*b*Sqrt[1 - c^2*x^2]*(1 + 6*(-1 + c^2*x^
2)*Log[c*x] + 5*(-1 + c^2*x^2)*Log[1 - c^2*x^2]) - b^2*(1 - c^2*x^2)^(3/2)*
((c*x)/Sqrt[1 - c^2*x^2] + ArcSin[c*x]/(-1 + c^2*x^2) - (8*I)*ArcSin[c*x]^2
 + (c*x*ArcSin[c*x]^2)/(1 - c^2*x^2)^(3/2) + (5*c*x*ArcSin[c*x]^2)/Sqrt[1 -
 c^2*x^2] - (3*Sqrt[1 - c^2*x^2]*ArcSin[c*x]^2)/(c*x) + 6*ArcSin[c*x]*Log[1
 - E^((2*I)*ArcSin[c*x])] + 10*ArcSin[c*x]*Log[1 + E^((2*I)*ArcSin[c*x])] -
 (5*I)*PolyLog[2, -E^((2*I)*ArcSin[c*x])] - (3*I)*PolyLog[2, E^((2*I)*ArcSi
n[c*x])])))/(d*(d - c^2*d*x^2)^(3/2))
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\left(b^2\arcsin(cx)^2+2ab\arcsin(cx)+a^2\right)}{c^6d^3x^8-3c^4d^3x^6+3c^2d^3x^4-d^3x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="fricas
")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2
)/(c^6*d^3*x^8 - 3*c^4*d^3*x^6 + 3*c^2*d^3*x^4 - d^3*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b \arcsin(cx) + a)^2}{(-c^2dx^2 + d)^{\frac{5}{2}} x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/((-c^2*d*x^2 + d)^(5/2)*x^2), x)
```

maple [B] time = 0.49, size = 3777, normalized size = 8.36

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x^2/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] 4/3*a^2*c^2*x/d/(-c^2*d*x^2+d)^(3/2)+280/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*
c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x^5*arcsin(c*x)*c^6-8/3*I*b^2*(-d*(c^2
*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x^4*(-c^2*x^2+1)^(1/
2)*c^5+64/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9
)/d^3*x^9*arcsin(c*x)*c^10-224/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25
*c^4*x^4+26*c^2*x^2-9)/d^3*x^7*arcsin(c*x)*c^8-10/3*a*b*(-d*(c^2*x^2-1))^(1
/2)*(-c^2*x^2+1)^(1/2)/d^3/(c^2*x^2-1)*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)*c
-2*a*b*(-d*(c^2*x^2-1))^(1/2)*(-c^2*x^2+1)^(1/2)/d^3/(c^2*x^2-1)*ln((I*c*x+
(-c^2*x^2+1)^(1/2))^2-1)*c+64/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*
c^4*x^4+26*c^2*x^2-9)/d^3*x^9*c^10-224/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^
6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x^7*c^8+280/3*I*a*b*(-d*(c^2*x^2-1))^(1/
2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x^5*c^6-48*I*a*b*(-d*(c^2*x^2-1)
)^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x^3*c^4+8*I*a*b*(-d*(c^2*x^
2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x*c^2-128/3*a*b*(-d*(c^
2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x^5*arcsin(c*x)*c^6
+112*a*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x^3
*arcsin(c*x)*c^4-8/3*a*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^
2*x^2-9)/d^3*x^2*(-c^2*x^2+1)^(1/2)*c^3-88*a*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^
6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x*arcsin(c*x)*c^2+2*I*b^2*(-c^2*x^2+1)^(
1/2)*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)*c*polylog(2,I*c*x+(-c^2*x^2+1)^
(1/2))+5/3*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)*
c*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)+2*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(
c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)*c*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))+16
/3*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)*c*arcsin
(c*x)^2-48*I*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)
/d^3*x^3*arcsin(c*x)*c^4+17/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^
4*x^4+26*c^2*x^2-9)/d^3*x^2*(-c^2*x^2+1)^(1/2)*c^3+8*I*b^2*(-d*(c^2*x^2-1))
^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x*arcsin(c*x)*c^2-24*I*b^2*(
-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*(-c^2*x^2+1)^
(1/2)*arcsin(c*x)^2*c-2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^3/(
c^2*x^2-1)*c*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-8/3*b^2*(-d*(c^2*x^
2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x^2*(-c^2*x^2+1)^(1/2)*
arcsin(c*x)*c^3-2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^
2-1)*c*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))-10/3*b^2*(-c^2*x^2+1)^(1/
```

```
2)*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)*c*arcsin(c*x)*ln(1+(I*c*x+(-c^2*x
^2+1)^(1/2))^2)+3*a*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x
^2-9)/d^3*(-c^2*x^2+1)^(1/2)*c+18*a*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*
c^4*x^4+26*c^2*x^2-9)/d^3/x*arcsin(c*x)-8*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^6
*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x*(-c^2*x^2+1)*c^2-88/3*b^2*(-d*(c^2*x^2-
1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x^5*(-c^2*x^2+1)*c^6+80/3
*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x^3*(-c
^2*x^2+1)*c^4+32/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*
x^2-9)/d^3*x^9*c^10-40*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*
c^2*x^2-9)/d^3*x^7*c^8+160/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x
^4+26*c^2*x^2-9)/d^3*x^5*c^6-29*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^
4*x^4+26*c^2*x^2-9)/d^3*x^3*c^4+5*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*
c^4*x^4+26*c^2*x^2-9)/d^3*x*c^2+9*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*
c^4*x^4+26*c^2*x^2-9)/d^3/x*arcsin(c*x)^2+8/3*a^2*c^2/d^2*x/(-c^2*d*x^2+d)^
(1/2)+272/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9
)/d^3*x^2*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^3-128/3*I*a*b*(-d*(c^2*x^2-1))^(
1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x^4*(-c^2*x^2+1)^(1/2)*arcsin(
c*x)*c^5-a^2/d/x/(-c^2*d*x^2+d)^(3/2)+32/3*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^
6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x^7*(-c^2*x^2+1)*c^8-64/3*b^2*(-d*(c^2*x
^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x^5*arcsin(c*x)^2*c^6+
56*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x^3*a
rcsin(c*x)^2*c^4-44*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2
*x^2-9)/d^3*x*arcsin(c*x)^2*c^2+3*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*
c^4*x^4+26*c^2*x^2-9)/d^3*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c-3*I*b^2*(-d*(c^2
*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*(-c^2*x^2+1)^(1/2)*c
+136/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3
*x^2*(-c^2*x^2+1)^(1/2)*arcsin(c*x)^2*c^3-8*I*b^2*(-d*(c^2*x^2-1))^(1/2)/(8
*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x*(-c^2*x^2+1)*arcsin(c*x)*c^2+64/3*I
*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x^7*(-c
^2*x^2+1)*arcsin(c*x)*c^8-64/3*I*b^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c
^4*x^4+26*c^2*x^2-9)/d^3*x^4*(-c^2*x^2+1)^(1/2)*arcsin(c*x)^2*c^5-160/3*I*b
^2*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x^5*(-c^2
*x^2+1)*arcsin(c*x)*c^6-48*I*a*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x
^4+26*c^2*x^2-9)/d^3*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c-160/3*I*a*b*(-d*(c^2*
x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x^5*(-c^2*x^2+1)*c^6+
40*I*a*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x^3
*(-c^2*x^2+1)*c^4+64/3*I*a*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+2
6*c^2*x^2-9)/d^3*x^7*(-c^2*x^2+1)*c^8-8*I*a*b*(-d*(c^2*x^2-1))^(1/2)/(8*c^6
*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x*(-c^2*x^2+1)*c^2+32/3*I*a*b*(-c^2*x^2+1
)^(1/2)*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^2*x^2-1)*arcsin(c*x)*c+40*I*b^2*(-d*(
c^2*x^2-1))^(1/2)/(8*c^6*x^6-25*c^4*x^4+26*c^2*x^2-9)/d^3*x^3*(-c^2*x^2+1)*
arcsin(c*x)*c^4
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{3}a^2\left(\frac{8c^2x}{\sqrt{-c^2dx^2+d}\,d^2}+\frac{4c^2x}{\left(-c^2dx^2+d\right)^{\frac{3}{2}}d}-\frac{3}{\left(-c^2dx^2+d\right)^{\frac{3}{2}}dx}\right)-\sqrt{d}\int\frac{\left(b^2\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)^2+2\right.}{c^6d^3x^8-3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxima
")
```

```
[Out] 1/3*a^2*(8*c^2*x/(sqrt(-c^2*d*x^2 + d)*d^2) + 4*c^2*x/((-c^2*d*x^2 + d)^(3/
2)*d) - 3/((-c^2*d*x^2 + d)^(3/2)*d*x)) - sqrt(d)*integrate((b^2*arctan2(c*
x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a*b*arctan2(c*x, sqrt(c*x + 1)*sqrt(
-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c^6*d^3*x^8 - 3*c^4*d^3*x^6 + 3*c
^2*d^3*x^4 - d^3*x^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))^2}{x^2\,\left(d-c^2\,d\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x^2*(d - c^2*d*x^2)^(5/2)),x)
[Out] int((a + b*asin(c*x))^2/(x^2*(d - c^2*d*x^2)^(5/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+b\,\mathrm{asin}\,(cx))^2}{x^2\,(-d\,(cx-1)\,(cx+1))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x**2/(-c**2*d*x**2+d)**(5/2),x)
[Out] Integral((a + b*asin(c*x))**2/(x**2*(-d*(c*x - 1)*(c*x + 1))**(5/2)), x)
```

3.262 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^3\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=752

$$\frac{5ibc^2\sqrt{1-c^2x^2}\,\mathrm{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{d-c^2dx^2}}-\frac{5ibc^2\sqrt{1-c^2x^2}\,\mathrm{Li}_2\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{d-c^2dx^2}}+\frac{5c^2\left(a+b\right.}{2d^2\sqrt{d}}$$

```
[Out] 5/6*c^2*(a+b*arcsin(c*x))^2/d/(-c^2*d*x^2+d)^(3/2)-1/2*(a+b*arcsin(c*x))^2/
d/x^2/(-c^2*d*x^2+d)^(3/2)+1/3*b^2*c^2/d^2/(-c^2*d*x^2+d)^(1/2)+5/2*c^2*(a+
b*arcsin(c*x))^2/d^2/(-c^2*d*x^2+d)^(1/2)-b*c*(a+b*arcsin(c*x))/d^2/x/(-c^2
*x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)+2/3*b*c^3*x*(a+b*arcsin(c*x))/d^2/(-c^2*
x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)+26/3*I*b*c^2*(a+b*arcsin(c*x))*arctan(I*c
*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/d^2/(-c^2*d*x^2+d)^(1/2)-5*c^2*(a
+b*arcsin(c*x))^2*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/d^2/
(-c^2*d*x^2+d)^(1/2)-b^2*c^2*arctanh((-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)
/d^2/(-c^2*d*x^2+d)^(1/2)+5*I*b*c^2*(a+b*arcsin(c*x))*polylog(2,-I*c*x-(-c^
2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/d^2/(-c^2*d*x^2+d)^(1/2)-13/3*I*b^2*c^2*
polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/d^2/(-c^2*d*x^2
+d)^(1/2)+13/3*I*b^2*c^2*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+
1)^(1/2)/d^2/(-c^2*d*x^2+d)^(1/2)-5*I*b*c^2*(a+b*arcsin(c*x))*polylog(2,I*c
*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/d^2/(-c^2*d*x^2+d)^(1/2)-5*b^2*c^
2*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/d^2/(-c^2*d*x^2+d
)^(1/2)+5*b^2*c^2*polylog(3,I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/d^
2/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 1.26, antiderivative size = 752, normalized size of antiderivative = 1.00, number of steps used = 39, number of rules used = 18, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.621, Rules used = {4701, 4705, 4713, 4709, 4183, 2531, 2282, 6589, 4657, 4181, 2279, 2391, 4655, 261, 266, 51, 63, 208}

$$\frac{5ibc^2\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{d-c^2dx^2}}-\frac{5ibc^2\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}\right.}{d^2\sqrt{d-c^2dx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x^3*(d - c^2*d*x^2)^(5/2)),x]
```

```
[Out] (b^2*c^2)/(3*d^2*Sqrt[d - c^2*d*x^2]) - (b*c*(a + b*ArcSin[c*x]))/(d^2*x*Sq
rt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) + (2*b*c^3*x*(a + b*ArcSin[c*x]))/(3*d
^2*Sqrt[1 - c^2*x^2]*Sqrt[d - c^2*d*x^2]) + (5*c^2*(a + b*ArcSin[c*x])^2)/(
6*d*(d - c^2*d*x^2)^(3/2)) - (a + b*ArcSin[c*x])^2/(2*d*x^2*(d - c^2*d*x^2)
^(3/2)) + (5*c^2*(a + b*ArcSin[c*x])^2)/(2*d^2*Sqrt[d - c^2*d*x^2]) + (((26
*I)/3)*b*c^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])
])/(d^2*Sqrt[d - c^2*d*x^2]) - (5*c^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])
^2*ArcTanh[E^(I*ArcSin[c*x])])/(d^2*Sqrt[d - c^2*d*x^2]) - (b^2*c^2*Sqrt[1
- c^2*x^2]*ArcTanh[Sqrt[1 - c^2*x^2]])/(d^2*Sqrt[d - c^2*d*x^2]) + ((5*I)*b
*c^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*PolyLog[2, -E^(I*ArcSin[c*x])])/
(d^2*Sqrt[d - c^2*d*x^2]) - (((13*I)/3)*b^2*c^2*Sqrt[1 - c^2*x^2]*PolyLog[2
, (-I)*E^(I*ArcSin[c*x])])/(d^2*Sqrt[d - c^2*d*x^2]) + (((13*I)/3)*b^2*c^2*
Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])])/(d^2*Sqrt[d - c^2*d*x^2]
) - ((5*I)*b*c^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*PolyLog[2, E^(I*ArcS
in[c*x])])/(d^2*Sqrt[d - c^2*d*x^2]) - (5*b^2*c^2*Sqrt[1 - c^2*x^2]*PolyLog
[3, -E^(I*ArcSin[c*x])])/(d^2*Sqrt[d - c^2*d*x^2]) + (5*b^2*c^2*Sqrt[1 - c^
2*x^2]*PolyLog[3, E^(I*ArcSin[c*x])])/(d^2*Sqrt[d - c^2*d*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4705

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> -Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a +
b*ArcSin[c*x])^n)/(2*d*f*(p + 1)), x] + (Dist[(m + 2*p + 3)/(2*d*(p + 1)),
Int[(f*x)^m*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[(b*c*n
*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*f*(p + 1)*(1 - c^2*x^2)^FracPart[
p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
0] && LtQ[p, -1] &&  !GtQ[m, 1] && (IntegerQ[m] || IntegerQ[p] || EqQ[n, 1]
)
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
```

```
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4713

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(
(f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c,
 d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&  !GtQ[d, 0] && (Integ
erQ[m] || EqQ[n, 1])
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^3\left(d-c^2dx^2\right)^{5/2}}\,dx = -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{2dx^2\left(d-c^2dx^2\right)^{3/2}}+\frac{1}{2}\left(5c^2\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\left(d-c^2dx^2\right)^{5/2}}\,dx+\frac{\left(bc\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx}{x^2\left(1-c^2x^2\right)^2}}{d^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^2x\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{5c^2\left(a+b\sin^{-1}(cx)\right)^2}{6d\left(d-c^2dx^2\right)^{3/2}}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{2dx^2\left(d-c^2dx^2\right)^{3/2}}+\frac{\left(5c^2\right)\int}{}$$

$$= -\frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^2x\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{2bc^3x\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{5c^2\left(a+b\sin^{-1}(cx)\right)^2}{6d\left(d-c^2dx^2\right)^{3/2}}-\frac{(}{2d}$$

$$= \frac{b^2c^2}{3d^2\sqrt{d-c^2dx^2}}-\frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^2x\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{2bc^3x\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{5c^2\left(a+b\right.}{6d\left(d-\right.}$$

$$= \frac{b^2c^2}{3d^2\sqrt{d-c^2dx^2}}-\frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^2x\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{2bc^3x\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{5c^2\left(a+b\right.}{6d\left(d-\right.}$$

$$= \frac{b^2c^2}{3d^2\sqrt{d-c^2dx^2}}-\frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^2x\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{2bc^3x\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{5c^2\left(a+b\right.}{6d\left(d-\right.}$$

$$= \frac{b^2c^2}{3d^2\sqrt{d-c^2dx^2}}-\frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^2x\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{2bc^3x\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{5c^2\left(a+b\right.}{6d\left(d-\right.}$$

$$= \frac{b^2c^2}{3d^2\sqrt{d-c^2dx^2}}-\frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^2x\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{2bc^3x\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{5c^2\left(a+b\right.}{6d\left(d-\right.}$$

$$= \frac{b^2c^2}{3d^2\sqrt{d-c^2dx^2}}-\frac{bc\left(a+b\sin^{-1}(cx)\right)}{d^2x\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{2bc^3x\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}+\frac{5c^2\left(a+b\right.}{6d\left(d-\right.}$$

Mathematica [A] time = 11.32, size = 1090, normalized size = 1.45

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x^3*(d - c^2*d*x^2)^(5/2)),x]
```

```
[Out] Sqrt[-(d*(-1 + c^2*x^2))]*(-1/2*a^2/(d^3*x^2) + (a^2*c^2)/(3*d^3*(-1 + c^2*
x^2)^2) - (2*a^2*c^2)/(d^3*(-1 + c^2*x^2))) + (5*a^2*c^2*Log[x])/(2*d^(5/2)
) - (5*a^2*c^2*Log[d + Sqrt[d]*Sqrt[-(d*(-1 + c^2*x^2))]])/(2*d^(5/2)) + (a
*b*c^2*Sqrt[1 - c^2*x^2]*((-2*(-1 + ArcSin[c*x]))/(-1 + c*x) + 52*ArcSin[c*
x] - 6*Cot[ArcSin[c*x]/2] - 3*ArcSin[c*x]*Csc[ArcSin[c*x]/2]^2 + 60*ArcSin[
c*x]*(Log[1 - E^(I*ArcSin[c*x])] - Log[1 + E^(I*ArcSin[c*x])]) + 52*Log[Cos
[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] - 52*Log[Cos[ArcSin[c*x]/2] + Sin[Arc
Sin[c*x]/2]] + (60*I)*(PolyLog[2, -E^(I*ArcSin[c*x])] - PolyLog[2, E^(I*Arc
Sin[c*x])]) + 3*ArcSin[c*x]*Sec[ArcSin[c*x]/2]^2 + (4*ArcSin[c*x]*Sin[ArcSi
n[c*x]/2])/(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^3 + (52*ArcSin[c*x]*Si
n[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]) - (4*ArcSin[c*x
]*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^3 + (2*(1 +
 ArcSin[c*x]))/(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^2 - (52*ArcSin[c*x
]*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]) - 6*Tan[Arc
Sin[c*x]/2]))/(12*d^2*Sqrt[d*(1 - c^2*x^2)]) + (b^2*c^2*Sqrt[1 - c^2*x^2]*(
8 - (2*(-2 + ArcSin[c*x])*ArcSin[c*x])/(-1 + c*x) + 52*ArcSin[c*x]^2 - 12*A
rcSin[c*x]*Cot[ArcSin[c*x]/2] - 3*ArcSin[c*x]^2*Csc[ArcSin[c*x]/2]^2 + 24*L
og[Tan[ArcSin[c*x]/2]] - 104*(ArcSin[c*x]*(Log[1 - I*E^(I*ArcSin[c*x])] - L
og[1 + I*E^(I*ArcSin[c*x])]) + I*(PolyLog[2, (-I)*E^(I*ArcSin[c*x])] - Poly
Log[2, I*E^(I*ArcSin[c*x])])) + 60*(ArcSin[c*x]^2*(Log[1 - E^(I*ArcSin[c*x]
)] - Log[1 + E^(I*ArcSin[c*x])]) + (2*I)*ArcSin[c*x]*(PolyLog[2, -E^(I*ArcS
in[c*x])] - PolyLog[2, E^(I*ArcSin[c*x])]) + 2*(-PolyLog[3, -E^(I*ArcSin[c*
x])] + PolyLog[3, E^(I*ArcSin[c*x])])) + 3*ArcSin[c*x]^2*Sec[ArcSin[c*x]/2]
^2 + (4*ArcSin[c*x]^2*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] - Sin[ArcSin[
c*x]/2])^3 + (4*(2 + 13*ArcSin[c*x]^2)*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]
/2] - Sin[ArcSin[c*x]/2]) - (4*ArcSin[c*x]^2*Sin[ArcSin[c*x]/2])/(Cos[ArcSi
n[c*x]/2] + Sin[ArcSin[c*x]/2])^3 + (2*ArcSin[c*x]*(2 + ArcSin[c*x]))/(Cos[
ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^2 - (4*(2 + 13*ArcSin[c*x]^2)*Sin[ArcS
in[c*x]/2])/(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]) - 12*ArcSin[c*x]*Tan[
ArcSin[c*x]/2]))/(24*d^2*Sqrt[d*(1 - c^2*x^2)])
```

fricas [F] time = 0.50, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)}{c^6d^3x^9-3\,c^4d^3x^7+3\,c^2d^3x^5-d^3x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^3/(-c^2*d*x^2+d)^(5/2),x, algorithm="fricas
")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2
)/(c^6*d^3*x^9 - 3*c^4*d^3*x^7 + 3*c^2*d^3*x^5 - d^3*x^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(b\arcsin(cx)+a)^2}{\left(-c^2dx^2+d\right)^{\frac{5}{2}}x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^3/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/((-c^2*d*x^2 + d)^(5/2)*x^3), x)
```

maple [B] time = 0.74, size = 1876, normalized size = 2.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x^3/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] -1/2*a^2/d/x^2/(-c^2*d*x^2+d)^(3/2)+5/6*a^2*c^2/d/(-c^2*d*x^2+d)^(3/2)+5/2*
a^2*c^2/d^2/(-c^2*d*x^2+d)^(1/2)-5/2*a^2*c^2/d^(5/2)*ln((2*d+2*d^(1/2)*(-c^
2*d*x^2+d)^(1/2))/x)+5*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*c^2/d^
3/(c^2*x^2-1)*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-26/3*I*a*b*(-c^2*x
^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*c^2/d^3/(c^2*x^2-1)*arctan(I*c*x+(-c^2*x
^2+1)^(1/2))-5*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*c^2/d^3/(c^2
*x^2-1)*dilog(1+I*c*x+(-c^2*x^2+1)^(1/2))-5*I*a*b*(-c^2*x^2+1)^(1/2)*(-d*(c
^2*x^2-1))^(1/2)*c^2/d^3/(c^2*x^2-1)*dilog(I*c*x+(-c^2*x^2+1)^(1/2))-5*I*b^
2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*c^2/d^3/(c^2*x^2-1)*arcsin(c*x)
*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))+5*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x
^2-1))^(1/2)*c^2/d^3/(c^2*x^2-1)*arcsin(c*x)*polylog(2,I*c*x+(-c^2*x^2+1)^(
1/2))-5/2*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*c^2/d^3/(c^2*x^2-1)
*arcsin(c*x)^2*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))-13/3*b^2*(-c^2*x^2+1)^(1/2)*(
-d*(c^2*x^2-1))^(1/2)*c^2/d^3/(c^2*x^2-1)*arcsin(c*x)*ln(1+I*(I*c*x+(-c^2*x
^2+1)^(1/2)))+13/3*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*c^2/d^3/(c
^2*x^2-1)*arcsin(c*x)*ln(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+13/3*I*b^2*(-c^2*x
^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*c^2/d^3/(c^2*x^2-1)*dilog(1+I*(I*c*x+(-c
^2*x^2+1)^(1/2)))-13/3*I*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*c^2/
d^3/(c^2*x^2-1)*dilog(1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))+5/2*b^2*(-c^2*x^2+1)^
(1/2)*(-d*(c^2*x^2-1))^(1/2)*c^2/d^3/(c^2*x^2-1)*arcsin(c*x)^2*ln(1+I*c*x+(
-c^2*x^2+1)^(1/2))+2/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)
*x*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c^3+20/3*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(
c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)*c^2-a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^
4-2*c^2*x^2+1)/x^2*arcsin(c*x)-5/2*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-
2*c^2*x^2+1)*x^2*arcsin(c*x)^2*c^4-b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^
(1/2)*c^2/d^3/(c^2*x^2-1)*ln(I*c*x+(-c^2*x^2+1)^(1/2)-1)+5*b^2*(-c^2*x^2+1)
^(1/2)*(-d*(c^2*x^2-1))^(1/2)*c^2/d^3/(c^2*x^2-1)*polylog(3,-I*c*x-(-c^2*x^
2+1)^(1/2))-5*b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^2-1))^(1/2)*c^2/d^3/(c^2*x^
2-1)*polylog(3,I*c*x+(-c^2*x^2+1)^(1/2))+b^2*(-c^2*x^2+1)^(1/2)*(-d*(c^2*x^
2-1))^(1/2)*c^2/d^3/(c^2*x^2-1)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-b^2*(-d*(c^2
*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)/x*(-c^2*x^2+1)^(1/2)*arcsin(c*x)*c
-5*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)*x^2*arcsin(c*x)*c^4
+2/3*a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)*x*(-c^2*x^2+1)^(1
/2)*c^3-a*b*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)/x*(-c^2*x^2+1)
^(1/2)*c-1/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)*x^2*c^4+1
0/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)*arcsin(c*x)^2*c^2-
1/2*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)/x^2*arcsin(c*x)^2+
1/3*b^2*(-d*(c^2*x^2-1))^(1/2)/d^3/(c^4*x^4-2*c^2*x^2+1)*c^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{6}a^2\left(\frac{15\,c^2\log\left(\frac{2\sqrt{-c^2dx^2+d}\sqrt{d}}{|x|}+\frac{2\,d}{|x|}\right)}{d^{\frac{5}{2}}}-\frac{15\,c^2}{\sqrt{-c^2dx^2+d}\,d^2}-\frac{5\,c^2}{\left(-c^2dx^2+d\right)^{\frac{3}{2}}d}+\frac{3}{\left(-c^2dx^2+d\right)^{\frac{3}{2}}dx^2}\right)-\sqrt{d}\int\frac{\left(b^2\,\text{arc}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^3/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxima
")
```

```
[Out] -1/6*a^2*(15*c^2*log(2*sqrt(-c^2*d*x^2 + d)*sqrt(d)/abs(x) + 2*d/abs(x))/d^
(5/2) - 15*c^2/(sqrt(-c^2*d*x^2 + d)*d^2) - 5*c^2/((-c^2*d*x^2 + d)^(3/2)*d
) + 3/((-c^2*d*x^2 + d)^(3/2)*d*x^2)) - sqrt(d)*integrate((b^2*arctan2(c*x,
 sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a*b*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c
*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c^6*d^3*x^9 - 3*c^4*d^3*x^7 + 3*c^2
*d^3*x^5 - d^3*x^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))^2}{x^3\,\left(d-c^2\,d\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x^3*(d - c^2*d*x^2)^(5/2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/(x^3*(d - c^2*d*x^2)^(5/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+b\,\mathrm{asin}\,(cx))^2}{x^3\,(-d\,(cx-1)\,(cx+1))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x**3/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2/(x**3*(-d*(c*x - 1)*(c*x + 1))**(5/2)), x)
```

3.263 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^4\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=538

$$-\frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^2x^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}}-\frac{2c^2\left(a+b\sin^{-1}(cx)\right)^2}{dx\left(d-c^2dx^2\right)^{3/2}}-\frac{\left(a+b\sin^{-1}(cx)\right)^2}{3dx^3\left(d-c^2dx^2\right)^{3/2}}+\frac{16c^4x\left(a+b\sin^{-1}(cx)\right)^2}{3d^2\sqrt{d-c^2dx^2}}+\frac{8c^4x\left(a+b\right.}{3d\left(d-\right.}$$

```
[Out] -1/3*(a+b*arcsin(c*x))^2/d/x^3/(-c^2*d*x^2+d)^(3/2)-2*c^2*(a+b*arcsin(c*x))
^2/d/x/(-c^2*d*x^2+d)^(3/2)+8/3*c^4*x*(a+b*arcsin(c*x))^2/d/(-c^2*d*x^2+d)^
(3/2)-1/3*b^2*c^2/d^2/x/(-c^2*d*x^2+d)^(1/2)+2/3*b^2*c^4*x/d^2/(-c^2*d*x^2+
d)^(1/2)+16/3*c^4*x*(a+b*arcsin(c*x))^2/d^2/(-c^2*d*x^2+d)^(1/2)-1/3*b*c*(a
+b*arcsin(c*x))/d^2/x^2/(-c^2*x^2+1)^(1/2)/(-c^2*d*x^2+d)^(1/2)-16/3*I*c^3*
(a+b*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/d^2/(-c^2*d*x^2+d)^(1/2)-32/3*b*c^3*
(a+b*arcsin(c*x))*arctanh((I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/
d^2/(-c^2*d*x^2+d)^(1/2)+32/3*b*c^3*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2
+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/d^2/(-c^2*d*x^2+d)^(1/2)-8/3*I*b^2*c^3*pol
ylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/d^2/(-c^2*d*x^2+d)
^(1/2)-8/3*I*b^2*c^3*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(
1/2)/d^2/(-c^2*d*x^2+d)^(1/2)
```

Rubi [A] time = 1.05, antiderivative size = 538, normalized size of antiderivative = 1.00, number of steps used = 32, number of rules used = 15, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.517, Rules used = {4701, 4655, 4653, 4675, 3719, 2190, 2279, 2391, 4677, 191, 4705, 4679, 4419, 4183, 271}

$$-\frac{8ib^2c^3\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{3d^2\sqrt{d-c^2dx^2}}-\frac{8ib^2c^3\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)}{3d^2\sqrt{d-c^2dx^2}}+\frac{16c^4x\left(a+b\sin^{-1}(cx)\right)^2}{3d^2\sqrt{d-c^2dx^2}}-$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x^4*(d - c^2*d*x^2)^(5/2)),x]
```

```
[Out] -(b^2*c^2)/(3*d^2*x*Sqrt[d - c^2*d*x^2]) + (2*b^2*c^4*x)/(3*d^2*Sqrt[d - c^
2*d*x^2]) - (b*c*(a + b*ArcSin[c*x]))/(3*d^2*x^2*Sqrt[1 - c^2*x^2]*Sqrt[d -
 c^2*d*x^2]) - (a + b*ArcSin[c*x])^2/(3*d*x^3*(d - c^2*d*x^2)^(3/2)) - (2*c
^2*(a + b*ArcSin[c*x])^2)/(d*x*(d - c^2*d*x^2)^(3/2)) + (8*c^4*x*(a + b*Arc
Sin[c*x])^2)/(3*d*(d - c^2*d*x^2)^(3/2)) + (16*c^4*x*(a + b*ArcSin[c*x])^2)
/(3*d^2*Sqrt[d - c^2*d*x^2]) - (((16*I)/3)*c^3*Sqrt[1 - c^2*x^2]*(a + b*Arc
Sin[c*x])^2)/(d^2*Sqrt[d - c^2*d*x^2]) - (32*b*c^3*Sqrt[1 - c^2*x^2]*(a + b
*ArcSin[c*x])*ArcTanh[E^((2*I)*ArcSin[c*x])])/(3*d^2*Sqrt[d - c^2*d*x^2]) +
 (32*b*c^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*
x])])/(3*d^2*Sqrt[d - c^2*d*x^2]) - (((8*I)/3)*b^2*c^3*Sqrt[1 - c^2*x^2]*Po
lyLog[2, -E^((2*I)*ArcSin[c*x])])/(d^2*Sqrt[d - c^2*d*x^2]) - (((8*I)/3)*b^
2*c^3*Sqrt[1 - c^2*x^2]*PolyLog[2, E^((2*I)*ArcSin[c*x])])/(d^2*Sqrt[d - c^
2*d*x^2])
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 271

```
Int[(x_)^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x^(m + 1)*(
a + b*x^n)^(p + 1))/(a*(m + 1)), x] - Dist[(b*(m + n*(p + 1) + 1))/(a*(m +
1)), Int[x^(m + n)*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, m, n, p}, x] && IL
```

```
tQ[Simplify[(m + 1)/n + p + 1], 0] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4419

```
Int[Csc[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csc[2*a + 2*b*x]^n,
 x], x] /; FreeQ[{a, b, c, d, m}, x] && IntegerQ[n] && RationalQ[m]
```

Rule 4653

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n*Sqrt[1 - c^2*x^2])/(d*Sqrt[d + e*x^2]), Int[(x*(a + b*ArcSin[c*x])^(n
 - 1))/(1 - c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e,
 0] && GtQ[n, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
```

```
&& GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4679

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((x_)*((d_) + (e_.)*(x_)^2)),
x_Symbol] :> Dist[1/d, Subst[Int[(a + b*x)^n/(Cos[x]*Sin[x]), x], x, ArcSin
[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4705

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> -Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a +
b*ArcSin[c*x])^n)/(2*d*f*(p + 1)), x] + (Dist[(m + 2*p + 3)/(2*d*(p + 1)),
Int[(f*x)^m*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[(b*c*n
*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*f*(p + 1)*(1 - c^2*x^2)^FracPart[
p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
0] && LtQ[p, -1] &&  !GtQ[m, 1] && (IntegerQ[m] || IntegerQ[p] || EqQ[n, 1]
)
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^4\left(d-c^2dx^2\right)^{5/2}}dx = -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{3dx^3\left(d-c^2dx^2\right)^{3/2}} + \left(2c^2\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^2\left(d-c^2dx^2\right)^{5/2}}dx + \frac{\left(2bc\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}}{x^3\left(1-c^2x\right.}}{3d^2\sqrt{d-c^2dx^2}}$$

$$= -\frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^2x^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2}{3dx^3\left(d-c^2dx^2\right)^{3/2}} - \frac{2c^2\left(a+b\sin^{-1}(cx)\right)^2}{dx\left(d-c^2dx^2\right)^{3/2}} + (8c$$

$$= -\frac{b^2c^2}{3d^2x\sqrt{d-c^2dx^2}} + \frac{8bc^3\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^2x^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{(}{3}$$

$$= -\frac{b^2c^2}{3d^2x\sqrt{d-c^2dx^2}} - \frac{2b^2c^4x}{d^2\sqrt{d-c^2dx^2}} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^2x^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{\left(a+b\sin^{-1}(\right.}{3dx^3\left(d-c^2d\right.}$$

$$= -\frac{b^2c^2}{3d^2x\sqrt{d-c^2dx^2}} + \frac{2b^2c^4x}{3d^2\sqrt{d-c^2dx^2}} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^2x^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{\left(a+b\sin^{-}\right.}{3dx^3\left(d-c^2\right.}$$

$$= -\frac{b^2c^2}{3d^2x\sqrt{d-c^2dx^2}} + \frac{2b^2c^4x}{3d^2\sqrt{d-c^2dx^2}} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^2x^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{\left(a+b\sin^{-}\right.}{3dx^3\left(d-c^2\right.}$$

$$= -\frac{b^2c^2}{3d^2x\sqrt{d-c^2dx^2}} + \frac{2b^2c^4x}{3d^2\sqrt{d-c^2dx^2}} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^2x^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{\left(a+b\sin^{-}\right.}{3dx^3\left(d-c^2\right.}$$

$$= -\frac{b^2c^2}{3d^2x\sqrt{d-c^2dx^2}} + \frac{2b^2c^4x}{3d^2\sqrt{d-c^2dx^2}} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^2x^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{\left(a+b\sin^{-}\right.}{3dx^3\left(d-c^2\right.}$$

$$= -\frac{b^2c^2}{3d^2x\sqrt{d-c^2dx^2}} + \frac{2b^2c^4x}{3d^2\sqrt{d-c^2dx^2}} - \frac{bc\left(a+b\sin^{-1}(cx)\right)}{3d^2x^2\sqrt{1-c^2x^2}\sqrt{d-c^2dx^2}} - \frac{\left(a+b\sin^{-}\right.}{3dx^3\left(d-c^2\right.}$$

Mathematica [A] time = 4.22, size = 441, normalized size = 0.82

$$-\frac{a^2\left(16c^6x^6-24c^4x^4+6c^2x^2+1\right)}{x^3} - \frac{ab\left(cx\sqrt{1-c^2x^2}\left(16c^2x^2\left(c^2x^2-1\right)\log(cx)+8c^2x^2\left(c^2x^2-1\right)\log\left(1-c^2x^2\right)+1\right)+2\left(16c^6x^6-24c^4x^4+6c^2x^2+1\right)\sin^{-1}(c\right.}{x^3}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x^4*(d - c^2*d*x^2)^(5/2)),x]
```

```
[Out] (-((a^2*(1 + 6*c^2*x^2 - 24*c^4*x^4 + 16*c^6*x^6))/x^3) - (a*b*(2*(1 + 6*c^
2*x^2 - 24*c^4*x^4 + 16*c^6*x^6)*ArcSin[c*x] + c*x*Sqrt[1 - c^2*x^2]*(1 + 1
6*c^2*x^2*(-1 + c^2*x^2)*Log[c*x] + 8*c^2*x^2*(-1 + c^2*x^2)*Log[1 - c^2*x^
2])))/x^3 + b^2*c^3*(1 - c^2*x^2)^(3/2)*((c*x)/Sqrt[1 - c^2*x^2] - Sqrt[1 -
 c^2*x^2]/(c*x) - ArcSin[c*x]/(c^2*x^2) + ArcSin[c*x]/(-1 + c^2*x^2) - (16*
I)*ArcSin[c*x]^2 + (c*x*ArcSin[c*x]^2)/(1 - c^2*x^2)^(3/2) + (8*c*x*ArcSin[
c*x]^2)/Sqrt[1 - c^2*x^2] - (Sqrt[1 - c^2*x^2]*ArcSin[c*x]^2)/(c^3*x^3) - (
8*Sqrt[1 - c^2*x^2]*ArcSin[c*x]^2)/(c*x) + 16*ArcSin[c*x]*Log[1 - E^((2*I)*
ArcSin[c*x])] + 16*ArcSin[c*x]*Log[1 + E^((2*I)*ArcSin[c*x])] - (8*I)*PolyL
og[2, -E^((2*I)*ArcSin[c*x])] - (8*I)*PolyLog[2, E^((2*I)*ArcSin[c*x])]))/(
3*d*(d - c^2*d*x^2)^(3/2))
```

fricas [F] time = 0.54, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)}{c^6d^3x^{10}-3\,c^4d^3x^8+3\,c^2d^3x^6-d^3x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^4/(-c^2*d*x^2+d)^(5/2),x, algorithm="fricas
")
```

```
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2
)/(c^6*d^3*x^10 - 3*c^4*d^3*x^8 + 3*c^2*d^3*x^6 - d^3*x^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(b\arcsin(cx)+a)^2}{\left(-c^2dx^2+d\right)^{\frac{5}{2}}x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^4/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/((-c^2*d*x^2 + d)^(5/2)*x^4), x)
```

maple [B] time = 0.79, size = 5229, normalized size = 9.72

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x^4/(-c^2*d*x^2+d)^(5/2),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{3}abc\left(\frac{8\,c^2\log(cx+1)}{d^{\frac{5}{2}}}+\frac{8\,c^2\log(cx-1)}{d^{\frac{5}{2}}}+\frac{16\,c^2\log(x)}{d^{\frac{5}{2}}}+\frac{1}{c^2d^{\frac{5}{2}}x^4-d^{\frac{5}{2}}x^2}\right)+\frac{2}{3}\left(\frac{16\,c^4x}{\sqrt{-c^2dx^2+d}\,d^2}+\frac{8\,c^4x}{\left(-c^2dx^2+d\right)\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^4/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxima
")
```

```
[Out] 1/3*a*b*c*(8*c^2*log(c*x + 1)/d^(5/2) + 8*c^2*log(c*x - 1)/d^(5/2) + 16*c^2
*log(x)/d^(5/2) + 1/(c^2*d^(5/2)*x^4 - d^(5/2)*x^2)) + 2/3*(16*c^4*x/(sqrt(
-c^2*d*x^2 + d)*d^2) + 8*c^4*x/((-c^2*d*x^2 + d)^(3/2)*d) - 6*c^2/((-c^2*d*
x^2 + d)^(3/2)*d*x) - 1/((-c^2*d*x^2 + d)^(3/2)*d*x^3))*a*b*arcsin(c*x) + 1
/3*(16*c^4*x/(sqrt(-c^2*d*x^2 + d)*d^2) + 8*c^4*x/((-c^2*d*x^2 + d)^(3/2)*d
) - 6*c^2/((-c^2*d*x^2 + d)^(3/2)*d*x) - 1/((-c^2*d*x^2 + d)^(3/2)*d*x^3))*
a^2 + b^2*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2/((c^4*d^2*
x^8 - 2*c^2*d^2*x^6 + d^2*x^4)*sqrt(c*x + 1)*sqrt(-c*x + 1)), x)/sqrt(d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{(a+b\,\mathrm{asin}(c\,x))^2}{x^4\,\left(d-c^2\,d\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x^4*(d - c^2*d*x^2)^(5/2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/(x^4*(d - c^2*d*x^2)^(5/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(cx))^2}{x^4 (-d (cx-1)(cx+1))^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x**4/(-c**2*d*x**2+d)**(5/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2/(x**4*(-d*(c*x - 1)*(c*x + 1))**(5/2)), x)
```

3.264 $\int \frac{x^4 \sin^{-1}(ax)^2}{\sqrt{1-a^2x^2}} \, dx$

Optimal. Leaf size=157

$$\frac{\sin^{-1}(ax)^3}{8a^5} - \frac{15\sin^{-1}(ax)}{64a^5} + \frac{3x^2\sin^{-1}(ax)}{8a^3} + \frac{x^3\sqrt{1-a^2x^2}}{32a^2} - \frac{x^3\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{4a^2} + \frac{15x\sqrt{1-a^2x^2}}{64a^4} - \frac{3x\sqrt{1-a^2x^2}}{8a^4}$$

```
[Out] -15/64*arcsin(a*x)/a^5+3/8*x^2*arcsin(a*x)/a^3+1/8*x^4*arcsin(a*x)/a+1/8*ar
csin(a*x)^3/a^5+15/64*x*(-a^2*x^2+1)^(1/2)/a^4+1/32*x^3*(-a^2*x^2+1)^(1/2)/
a^2-3/8*x*arcsin(a*x)^2*(-a^2*x^2+1)^(1/2)/a^4-1/4*x^3*arcsin(a*x)^2*(-a^2*
x^2+1)^(1/2)/a^2
```

Rubi [A] time = 0.27, antiderivative size = 157, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = {4707, 4641, 4627, 321, 216}

$$\frac{x^3\sqrt{1-a^2x^2}}{32a^2} + \frac{15x\sqrt{1-a^2x^2}}{64a^4} - \frac{x^3\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{4a^2} + \frac{3x^2\sin^{-1}(ax)}{8a^3} - \frac{3x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{8a^4} + \frac{\sin^{-1}(ax)^3}{8a^5} - 15$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*ArcSin[a*x]^2)/Sqrt[1 - a^2*x^2],x]
```

```
[Out] (15*x*Sqrt[1 - a^2*x^2])/(64*a^4) + (x^3*Sqrt[1 - a^2*x^2])/(32*a^2) - (15*
ArcSin[a*x])/(64*a^5) + (3*x^2*ArcSin[a*x])/(8*a^3) + (x^4*ArcSin[a*x])/(8*
a) - (3*x*Sqrt[1 - a^2*x^2]*ArcSin[a*x]^2)/(8*a^4) - (x^3*Sqrt[1 - a^2*x^2]
*ArcSin[a*x]^2)/(4*a^2) + ArcSin[a*x]^3/(8*a^5)
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
```

```
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^4 \sin^{-1}(ax)^2}{\sqrt{1-a^2x^2}}\,dx = -\frac{x^3\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{4a^2} + \frac{3\int \frac{x^2\sin^{-1}(ax)^2}{\sqrt{1-a^2x^2}}\,dx}{4a^2} + \frac{\int x^3\sin^{-1}(ax)\,dx}{2a}$$

$$= \frac{x^4\sin^{-1}(ax)}{8a} - \frac{3x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{8a^4} - \frac{x^3\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{4a^2} - \frac{1}{8}\int \frac{x^4}{\sqrt{1-a^2x^2}}\,dx$$

$$= \frac{x^3\sqrt{1-a^2x^2}}{32a^2} + \frac{3x^2\sin^{-1}(ax)}{8a^3} + \frac{x^4\sin^{-1}(ax)}{8a} - \frac{3x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{8a^4} - \frac{x^3\sqrt{1-a^2x^2}}{4a}$$

$$= \frac{15x\sqrt{1-a^2x^2}}{64a^4} + \frac{x^3\sqrt{1-a^2x^2}}{32a^2} + \frac{3x^2\sin^{-1}(ax)}{8a^3} + \frac{x^4\sin^{-1}(ax)}{8a} - \frac{3x\sqrt{1-a^2x^2}\,\sin^{-1}(ax}{8a^4}$$

$$= \frac{15x\sqrt{1-a^2x^2}}{64a^4} + \frac{x^3\sqrt{1-a^2x^2}}{32a^2} - \frac{15\sin^{-1}(ax)}{64a^5} + \frac{3x^2\sin^{-1}(ax)}{8a^3} + \frac{x^4\sin^{-1}(ax)}{8a} - 3x\sqrt{1-}$$

Mathematica [A] time = 0.07, size = 100, normalized size = 0.64

$$\frac{ax\sqrt{1-a^2x^2}\left(2a^2x^2+15\right) - 8ax\sqrt{1-a^2x^2}\left(2a^2x^2+3\right)\sin^{-1}(ax)^2 + \left(8a^4x^4+24a^2x^2-15\right)\sin^{-1}(ax) + 8\sin}{64a^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*ArcSin[a*x]^2)/Sqrt[1 - a^2*x^2],x]
```

```
[Out] (a*x*Sqrt[1 - a^2*x^2]*(15 + 2*a^2*x^2) + (-15 + 24*a^2*x^2 + 8*a^4*x^4)*Ar
cSin[a*x] - 8*a*x*Sqrt[1 - a^2*x^2]*(3 + 2*a^2*x^2)*ArcSin[a*x]^2 + 8*ArcSi
n[a*x]^3)/(64*a^5)
```

fricas [A] time = 0.47, size = 84, normalized size = 0.54

$$\frac{8\,\arcsin(ax)^3 + \left(8\,a^4x^4 + 24\,a^2x^2 - 15\right)\arcsin(ax) + \left(2\,a^3x^3 - 8\left(2\,a^3x^3 + 3\,ax\right)\arcsin(ax)^2 + 15\,ax\right)\sqrt{-a^2x}}{64\,a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/64*(8*arcsin(a*x)^3 + (8*a^4*x^4 + 24*a^2*x^2 - 15)*arcsin(a*x) + (2*a^3*
x^3 - 8*(2*a^3*x^3 + 3*a*x)*arcsin(a*x)^2 + 15*a*x)*sqrt(-a^2*x^2 + 1))/a^5
```

giac [A] time = 0.60, size = 143, normalized size = 0.91

$$\frac{\left(-a^2x^2+1\right)^{\frac{3}{2}}x\arcsin(ax)^2}{4\,a^4} - \frac{5\sqrt{-a^2x^2+1}\,x\arcsin(ax)^2}{8\,a^4} - \frac{\left(-a^2x^2+1\right)^{\frac{3}{2}}x}{32\,a^4} + \frac{\left(a^2x^2-1\right)^2\arcsin(ax)}{8\,a^5} + \frac{\arcsin(a}{8\,a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*(-a^2*x^2 + 1)^(3/2)*x*arcsin(a*x)^2/a^4 - 5/8*sqrt(-a^2*x^2 + 1)*x*arc
sin(a*x)^2/a^4 - 1/32*(-a^2*x^2 + 1)^(3/2)*x/a^4 + 1/8*(a^2*x^2 - 1)^2*arcs
```

```
in(a*x)/a^5 + 1/8*arcsin(a*x)^3/a^5 + 17/64*sqrt(-a^2*x^2 + 1)*x/a^4 + 5/8*
(a^2*x^2 - 1)*arcsin(a*x)/a^5 + 17/64*arcsin(a*x)/a^5
```

maple [A] time = 0.12, size = 129, normalized size = 0.82

$$\frac{-16\arcsin(ax)^2\sqrt{-a^2x^2+1}\,x^3a^3+8a^4x^4\arcsin(ax)+2a^3x^3\sqrt{-a^2x^2+1}-24\arcsin(ax)^2\sqrt{-a^2x^2+1}\,xa+24}{64a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] 1/64*(-16*arcsin(a*x)^2*(-a^2*x^2+1)^(1/2)*x^3*a^3+8*a^4*x^4*arcsin(a*x)+2*
a^3*x^3*(-a^2*x^2+1)^(1/2)-24*arcsin(a*x)^2*(-a^2*x^2+1)^(1/2)*x*a+24*a^2*x
^2*arcsin(a*x)+8*arcsin(a*x)^3+15*a*x*(-a^2*x^2+1)^(1/2)-15*arcsin(a*x))/a^
5
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4\arcsin(ax)^2}{\sqrt{-a^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(x^4*arcsin(a*x)^2/sqrt(-a^2*x^2 + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^4\,\mathrm{asin}(a\,x)^2}{\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*asin(a*x)^2)/(1 - a^2*x^2)^(1/2),x)
```

```
[Out] int((x^4*asin(a*x)^2)/(1 - a^2*x^2)^(1/2), x)
```

sympy [A] time = 3.50, size = 146, normalized size = 0.93

$$\begin{cases} \frac{x^4\operatorname{asin}(ax)}{8a} - \frac{x^3\sqrt{-a^2x^2+1}\operatorname{asin}^2(ax)}{4a^2} + \frac{x^3\sqrt{-a^2x^2+1}}{32a^2} + \frac{3x^2\operatorname{asin}(ax)}{8a^3} - \frac{3x\sqrt{-a^2x^2+1}\operatorname{asin}^2(ax)}{8a^4} + \frac{15x\sqrt{-a^2x^2+1}}{64a^4} + \frac{\operatorname{asin}^3(ax)}{8a^5} - \frac{15\operatorname{asin}(}{64a^5} \\ 0 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*asin(a*x)**2/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Piecewise((x**4*asin(a*x)/(8*a) - x**3*sqrt(-a**2*x**2 + 1)*asin(a*x)**2/(4
*a**2) + x**3*sqrt(-a**2*x**2 + 1)/(32*a**2) + 3*x**2*asin(a*x)/(8*a**3) -
3*x*sqrt(-a**2*x**2 + 1)*asin(a*x)**2/(8*a**4) + 15*x*sqrt(-a**2*x**2 + 1)/
(64*a**4) + asin(a*x)**3/(8*a**5) - 15*asin(a*x)/(64*a**5), Ne(a, 0)), (0,
True))
```

3.265 $\int \frac{x^3 \sin^{-1}(ax)^2}{\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=126

$$\frac{4x\sin^{-1}(ax)}{3a^3}-\frac{x^2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{3a^2}-\frac{2\left(1-a^2x^2\right)^{3/2}}{27a^4}+\frac{14\sqrt{1-a^2x^2}}{9a^4}-\frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{3a^4}+\frac{2x^3\sin^{-1}(ax)}{9a}$$

```
[Out] -2/27*(-a^2*x^2+1)^(3/2)/a^4+4/3*x*arcsin(a*x)/a^3+2/9*x^3*arcsin(a*x)/a+14
/9*(-a^2*x^2+1)^(1/2)/a^4-2/3*arcsin(a*x)^2*(-a^2*x^2+1)^(1/2)/a^4-1/3*x^2*
arcsin(a*x)^2*(-a^2*x^2+1)^(1/2)/a^2
```

Rubi [A] time = 0.20, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {4707, 4677, 4619, 261, 4627, 266, 43}

$$-\frac{2\left(1-a^2x^2\right)^{3/2}}{27a^4}+\frac{14\sqrt{1-a^2x^2}}{9a^4}-\frac{x^2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{3a^2}-\frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{3a^4}+\frac{4x\sin^{-1}(ax)}{3a^3}+\frac{2x^3\sin^{-1}(ax)}{9a}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*ArcSin[a*x]^2)/Sqrt[1 - a^2*x^2],x]
```

```
[Out] (14*Sqrt[1 - a^2*x^2])/(9*a^4) - (2*(1 - a^2*x^2)^(3/2))/(27*a^4) + (4*x*Ar
cSin[a*x])/(3*a^3) + (2*x^3*ArcSin[a*x])/(9*a) - (2*Sqrt[1 - a^2*x^2]*ArcSi
n[a*x]^2)/(3*a^4) - (x^2*Sqrt[1 - a^2*x^2]*ArcSin[a*x]^2)/(3*a^2)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^3 \sin^{-1}(ax)^2}{\sqrt{1-a^2x^2}}\,dx = -\frac{x^2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{3a^2} + \frac{2\int \frac{x\sin^{-1}(ax)^2}{\sqrt{1-a^2x^2}}\,dx}{3a^2} + \frac{2\int x^2\sin^{-1}(ax)\,dx}{3a}$$
$$= \frac{2x^3\sin^{-1}(ax)}{9a} - \frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{3a^4} - \frac{x^2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{3a^2} - \frac{2}{9}\int \frac{x^3}{\sqrt{1-a^2x^2}}\,dx +$$
$$= \frac{4x\sin^{-1}(ax)}{3a^3} + \frac{2x^3\sin^{-1}(ax)}{9a} - \frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{3a^4} - \frac{x^2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{3a^2} - \frac{1}{9}\text{Sub}$$
$$= \frac{4\sqrt{1-a^2x^2}}{3a^4} + \frac{4x\sin^{-1}(ax)}{3a^3} + \frac{2x^3\sin^{-1}(ax)}{9a} - \frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{3a^4} - \frac{x^2\sqrt{1-a^2x^2}\,\sin^{-1}}{3a^2}$$
$$= \frac{14\sqrt{1-a^2x^2}}{9a^4} - \frac{2\left(1-a^2x^2\right)^{3/2}}{27a^4} + \frac{4x\sin^{-1}(ax)}{3a^3} + \frac{2x^3\sin^{-1}(ax)}{9a} - \frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{3a^4} -$$

Mathematica [A] time = 0.07, size = 81, normalized size = 0.64

$$\frac{2\sqrt{1-a^2x^2}\left(a^2x^2+20\right)-9\sqrt{1-a^2x^2}\left(a^2x^2+2\right)\sin^{-1}(ax)^2+6ax\left(a^2x^2+6\right)\sin^{-1}(ax)}{27a^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*ArcSin[a*x]^2)/Sqrt[1 - a^2*x^2],x]
```

```
[Out] (2*Sqrt[1 - a^2*x^2]*(20 + a^2*x^2) + 6*a*x*(6 + a^2*x^2)*ArcSin[a*x] - 9*S
qrt[1 - a^2*x^2]*(2 + a^2*x^2)*ArcSin[a*x]^2)/(27*a^4)
```

fricas [A] time = 0.47, size = 64, normalized size = 0.51

$$\frac{6\left(a^3x^3+6\,ax\right)\arcsin(ax)+\left(2\,a^2x^2-9\left(a^2x^2+2\right)\arcsin(ax)^2+40\right)\sqrt{-a^2x^2+1}}{27\,a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/27*(6*(a^3*x^3 + 6*a*x)*arcsin(a*x) + (2*a^2*x^2 - 9*(a^2*x^2 + 2)*arcsin
(a*x)^2 + 40)*sqrt(-a^2*x^2 + 1))/a^4
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.11, size = 127, normalized size = 1.01

$$-\frac{\left(9a^4x^4\arcsin\left(ax\right)^2+9\arcsin\left(ax\right)^2x^2a^2+6\arcsin\left(ax\right)\sqrt{-a^2x^2+1}\,x^3a^3-2a^4x^4-38a^2x^2-18\arcsin\left(ax\right)\right.}{27a^4\left(a^2x^2-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] -1/27/a^4*(9*a^4*x^4*arcsin(a*x)^2+9*arcsin(a*x)^2*x^2*a^2+6*arcsin(a*x)*(-
a^2*x^2+1)^(1/2)*x^3*a^3-2*a^4*x^4-38*a^2*x^2-18*arcsin(a*x)^2+36*arcsin(a*
x)*(-a^2*x^2+1)^(1/2)*x*a+40)*(-a^2*x^2+1)^(1/2)/(a^2*x^2-1)
```

maxima [A] time = 0.44, size = 105, normalized size = 0.83

$$-\frac{1}{3}\left(\frac{\sqrt{-a^2x^2+1}\,x^2}{a^2}+\frac{2\sqrt{-a^2x^2+1}}{a^4}\right)\arcsin\left(ax\right)^2+\frac{2\left(\sqrt{-a^2x^2+1}\,x^2+\frac{20\sqrt{-a^2x^2+1}}{a^2}\right)}{27\,a^2}+\frac{2\left(a^2x^3+6\,x\right)\arcsin\left(a\right.}{9\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/3*(sqrt(-a^2*x^2 + 1)*x^2/a^2 + 2*sqrt(-a^2*x^2 + 1)/a^4)*arcsin(a*x)^2
+ 2/27*(sqrt(-a^2*x^2 + 1)*x^2 + 20*sqrt(-a^2*x^2 + 1)/a^2)/a^2 + 2/9*(a^2*
x^3 + 6*x)*arcsin(a*x)/a^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^3\,\mathrm{asin}\left(a\,x\right)^2}{\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*asin(a*x)^2)/(1 - a^2*x^2)^(1/2),x)
```

```
[Out] int((x^3*asin(a*x)^2)/(1 - a^2*x^2)^(1/2), x)
```

sympy [A] time = 2.04, size = 121, normalized size = 0.96

$$\begin{cases} \frac{2x^3\operatorname{asin}\left(ax\right)}{9a}-\frac{x^2\sqrt{-a^2x^2+1}\operatorname{asin}^2\left(ax\right)}{3a^2}+\frac{2x^2\sqrt{-a^2x^2+1}}{27a^2}+\frac{4x\operatorname{asin}\left(ax\right)}{3a^3}-\frac{2\sqrt{-a^2x^2+1}\operatorname{asin}^2\left(ax\right)}{3a^4}+\frac{40\sqrt{-a^2x^2+1}}{27a^4} & \text{for}\: a\neq 0\\ 0 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*asin(a*x)**2/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Piecewise((2*x**3*asin(a*x)/(9*a) - x**2*sqrt(-a**2*x**2 + 1)*asin(a*x)**2/
(3*a**2) + 2*x**2*sqrt(-a**2*x**2 + 1)/(27*a**2) + 4*x*asin(a*x)/(3*a**3) -
 2*sqrt(-a**2*x**2 + 1)*asin(a*x)**2/(3*a**4) + 40*sqrt(-a**2*x**2 + 1)/(27
*a**4), Ne(a, 0)), (0, True))
```

3.266 $\int \frac{x^2 \sin^{-1}(ax)^2}{\sqrt{1-a^2x^2}} dx$

Optimal. Leaf size=89

$$\frac{\sin^{-1}(ax)^3}{6a^3} - \frac{\sin^{-1}(ax)}{4a^3} + \frac{x\sqrt{1-a^2x^2}}{4a^2} - \frac{x\sqrt{1-a^2x^2}\sin^{-1}(ax)^2}{2a^2} + \frac{x^2\sin^{-1}(ax)}{2a}$$

```
[Out] -1/4*arcsin(a*x)/a^3+1/2*x^2*arcsin(a*x)/a+1/6*arcsin(a*x)^3/a^3+1/4*x*(-a^
2*x^2+1)^(1/2)/a^2-1/2*x*arcsin(a*x)^2*(-a^2*x^2+1)^(1/2)/a^2
```

Rubi [A] time = 0.14, antiderivative size = 89, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = $\{4707, 4641, 4627, 321, 216\}$

$$\frac{x\sqrt{1-a^2x^2}}{4a^2} - \frac{x\sqrt{1-a^2x^2}\sin^{-1}(ax)^2}{2a^2} + \frac{\sin^{-1}(ax)^3}{6a^3} - \frac{\sin^{-1}(ax)}{4a^3} + \frac{x^2\sin^{-1}(ax)}{2a}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*ArcSin[a*x]^2)/Sqrt[1 - a^2*x^2],x]
```

```
[Out] (x*Sqrt[1 - a^2*x^2])/(4*a^2) - ArcSin[a*x]/(4*a^3) + (x^2*ArcSin[a*x])/(2*
a) - (x*Sqrt[1 - a^2*x^2]*ArcSin[a*x]^2)/(2*a^2) + ArcSin[a*x]^3/(6*a^3)
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^2 \sin^{-1}(ax)^2}{\sqrt{1-a^2x^2}}\,dx = -\frac{x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{2a^2}+\frac{\int \frac{\sin^{-1}(ax)^2}{\sqrt{1-a^2x^2}}\,dx}{2a^2}+\frac{\int x\sin^{-1}(ax)\,dx}{a}$$
$$=\frac{x^2\sin^{-1}(ax)}{2a}-\frac{x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{2a^2}+\frac{\sin^{-1}(ax)^3}{6a^3}-\frac{1}{2}\int \frac{x^2}{\sqrt{1-a^2x^2}}\,dx$$
$$=\frac{x\sqrt{1-a^2x^2}}{4a^2}+\frac{x^2\sin^{-1}(ax)}{2a}-\frac{x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{2a^2}+\frac{\sin^{-1}(ax)^3}{6a^3}-\frac{\int \frac{1}{\sqrt{1-a^2x^2}}\,dx}{4a^2}$$
$$=\frac{x\sqrt{1-a^2x^2}}{4a^2}-\frac{\sin^{-1}(ax)}{4a^3}+\frac{x^2\sin^{-1}(ax)}{2a}-\frac{x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{2a^2}+\frac{\sin^{-1}(ax)^3}{6a^3}$$

Mathematica [A] time = 0.03, size = 73, normalized size = 0.82

$$\frac{3ax\sqrt{1-a^2x^2}-6ax\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2+\left(6a^2x^2-3\right)\sin^{-1}(ax)+2\sin^{-1}(ax)^3}{12a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*ArcSin[a*x]^2)/Sqrt[1 - a^2*x^2],x]
```

```
[Out] (3*a*x*Sqrt[1 - a^2*x^2] + (-3 + 6*a^2*x^2)*ArcSin[a*x] - 6*a*x*Sqrt[1 - a^
2*x^2]*ArcSin[a*x]^2 + 2*ArcSin[a*x]^3)/(12*a^3)
```

fricas [A] time = 0.44, size = 59, normalized size = 0.66

$$\frac{2\,\arcsin(ax)^3+3\left(2\,a^2x^2-1\right)\arcsin(ax)-3\,\sqrt{-a^2x^2+1}\left(2\,ax\arcsin(ax)^2-ax\right)}{12\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/12*(2*arcsin(a*x)^3 + 3*(2*a^2*x^2 - 1)*arcsin(a*x) - 3*sqrt(-a^2*x^2 + 1
)*(2*a*x*arcsin(a*x)^2 - a*x))/a^3
```

giac [A] time = 0.47, size = 81, normalized size = 0.91

$$-\frac{\sqrt{-a^2x^2+1}\,x\arcsin(ax)^2}{2\,a^2}+\frac{\arcsin(ax)^3}{6\,a^3}+\frac{\sqrt{-a^2x^2+1}\,x}{4\,a^2}+\frac{\left(a^2x^2-1\right)\arcsin(ax)}{2\,a^3}+\frac{\arcsin(ax)}{4\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(-a^2*x^2 + 1)*x*arcsin(a*x)^2/a^2 + 1/6*arcsin(a*x)^3/a^3 + 1/4*s
qrt(-a^2*x^2 + 1)*x/a^2 + 1/2*(a^2*x^2 - 1)*arcsin(a*x)/a^3 + 1/4*arcsin(a*
x)/a^3
```

maple [A] time = 0.14, size = 71, normalized size = 0.80

$$\frac{-6\arcsin(ax)^2\sqrt{-a^2x^2+1}\;xa+6a^2x^2\arcsin(ax)+2\arcsin(ax)^3+3ax\sqrt{-a^2x^2+1}-3\arcsin(ax)}{12a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] 1/12*(-6*arcsin(a*x)^2*(-a^2*x^2+1)^(1/2)*x*a+6*a^2*x^2*arcsin(a*x)+2*arcsi
n(a*x)^3+3*a*x*(-a^2*x^2+1)^(1/2)-3*arcsin(a*x))/a^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2 \arcsin(ax)^2}{\sqrt{-a^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(x^2*arcsin(a*x)^2/sqrt(-a^2*x^2 + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^2 \operatorname{asin}(a\,x)^2}{\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*asin(a*x)^2)/(1 - a^2*x^2)^(1/2),x)
```

```
[Out] int((x^2*asin(a*x)^2)/(1 - a^2*x^2)^(1/2), x)
```

sympy [A] time = 1.17, size = 78, normalized size = 0.88

$$\begin{cases} \frac{x^2 \operatorname{asin}(ax)}{2a} - \frac{x\sqrt{-a^2x^2+1}\operatorname{asin}^2(ax)}{2a^2} + \frac{x\sqrt{-a^2x^2+1}}{4a^2} + \frac{\operatorname{asin}^3(ax)}{6a^3} - \frac{\operatorname{asin}(ax)}{4a^3} & \text{for } a \neq 0 \\ 0 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*asin(a*x)**2/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Piecewise((x**2*asin(a*x)/(2*a) - x*sqrt(-a**2*x**2 + 1)*asin(a*x)**2/(2*a*
*2) + x*sqrt(-a**2*x**2 + 1)/(4*a**2) + asin(a*x)**3/(6*a**3) - asin(a*x)/(
4*a**3), Ne(a, 0)), (0, True))
```

3.267 $\int \frac{x \sin^{-1}(ax)^2}{\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=55

$$\frac{2\sqrt{1-a^2x^2}}{a^2}-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{a^2}+\frac{2x\sin^{-1}(ax)}{a}$$

```
[Out] 2*x*arcsin(a*x)/a+2*(-a^2*x^2+1)^(1/2)/a^2-arcsin(a*x)^2*(-a^2*x^2+1)^(1/2)
/a^2
```

Rubi [A] time = 0.07, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {4677, 4619, 261}

$$\frac{2\sqrt{1-a^2x^2}}{a^2}-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{a^2}+\frac{2x\sin^{-1}(ax)}{a}$$

Antiderivative was successfully verified.

```
[In] Int[(x*ArcSin[a*x]^2)/Sqrt[1 - a^2*x^2],x]
```

```
[Out] (2*Sqrt[1 - a^2*x^2])/a^2 + (2*x*ArcSin[a*x])/a - (Sqrt[1 - a^2*x^2]*ArcSin
[a*x]^2)/a^2
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{x \sin^{-1}(ax)^2}{\sqrt{1-a^2x^2}}\,dx &= -\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{a^2}+\frac{2\int \sin^{-1}(ax)\,dx}{a}\\
&= \frac{2x\sin^{-1}(ax)}{a}-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{a^2}-2\int \frac{x}{\sqrt{1-a^2x^2}}\,dx\\
&= \frac{2\sqrt{1-a^2x^2}}{a^2}+\frac{2x\sin^{-1}(ax)}{a}-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{a^2}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 51, normalized size = 0.93

$$\frac{2\sqrt{1-a^2x^2}-\sqrt{1-a^2x^2}\sin^{-1}(ax)^2+2ax\sin^{-1}(ax)}{a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*ArcSin[a*x]^2)/Sqrt[1 - a^2*x^2],x]
```

```
[Out] (2*Sqrt[1 - a^2*x^2] + 2*a*x*ArcSin[a*x] - Sqrt[1 - a^2*x^2]*ArcSin[a*x]^2)
/a^2
```

fricas [A] time = 0.45, size = 35, normalized size = 0.64

$$\frac{2\,ax\arcsin(ax)-\sqrt{-a^2x^2+1}\left(\arcsin(ax)^2-2\right)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] (2*a*x*arcsin(a*x) - sqrt(-a^2*x^2 + 1)*(arcsin(a*x)^2 - 2))/a^2
```

giac [A] time = 0.41, size = 49, normalized size = 0.89

$$-\frac{\sqrt{-a^2x^2+1}\arcsin(ax)^2}{a^2}+\frac{2\left(ax\arcsin(ax)+\sqrt{-a^2x^2+1}\right)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] -sqrt(-a^2*x^2 + 1)*arcsin(a*x)^2/a^2 + 2*(a*x*arcsin(a*x) + sqrt(-a^2*x^2
+ 1))/a^2
```

maple [A] time = 0.10, size = 80, normalized size = 1.45

$$-\frac{\sqrt{-a^2x^2+1}\left(\arcsin(ax)^2x^2a^2-\arcsin(ax)^2+2\arcsin(ax)\sqrt{-a^2x^2+1}\,xa-2a^2x^2+2\right)}{a^2\left(a^2x^2-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] -1/a^2*(-a^2*x^2+1)^(1/2)/(a^2*x^2-1)*(arcsin(a*x)^2*x^2*a^2-arcsin(a*x)^2+
2*arcsin(a*x)*(-a^2*x^2+1)^(1/2)*x*a-2*a^2*x^2+2)
```

maxima [A] time = 0.78, size = 49, normalized size = 0.89

$$-\frac{\sqrt{-a^2x^2+1}\arcsin(ax)^2}{a^2}+\frac{2\left(ax\arcsin(ax)+\sqrt{-a^2x^2+1}\right)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] -sqrt(-a^2*x^2 + 1)*arcsin(a*x)^2/a^2 + 2*(a*x*arcsin(a*x) + sqrt(-a^2*x^2
+ 1))/a^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{x\,\mathrm{asin}(a\,x)^2}{\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*asin(a*x)^2)/(1 - a^2*x^2)^(1/2),x)
```

```
[Out] int((x*asin(a*x)^2)/(1 - a^2*x^2)^(1/2), x)
```

sympy [A] time = 0.66, size = 49, normalized size = 0.89

$$\begin{cases} \frac{2x\operatorname{asin}(ax)}{a} - \frac{\sqrt{-a^2x^2+1}\operatorname{asin}^2(ax)}{a^2} + \frac{2\sqrt{-a^2x^2+1}}{a^2} & \text{for } a \neq 0 \\ 0 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*asin(a*x)**2/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Piecewise((2*x*asin(a*x)/a - sqrt(-a**2*x**2 + 1)*asin(a*x)**2/a**2 + 2*sqr
t(-a**2*x**2 + 1)/a**2, Ne(a, 0)), (0, True))
```

3.268 $\int \frac{\sin^{-1}(ax)^2}{\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=13

$$\frac{\sin^{-1}(ax)^3}{3a}$$

[Out] 1/3*arcsin(a*x)^3/a

Rubi [A] time = 0.03, antiderivative size = 13, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {4641}

$$\frac{\sin^{-1}(ax)^3}{3a}$$

Antiderivative was successfully verified.

[In] Int[ArcSin[a*x]^2/Sqrt[1 - a^2*x^2],x]

[Out] ArcSin[a*x]^3/(3*a)

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{\sin^{-1}(ax)^2}{\sqrt{1-a^2x^2}}\,dx=\frac{\sin^{-1}(ax)^3}{3a}$$

Mathematica [A] time = 0.01, size = 13, normalized size = 1.00

$$\frac{\sin^{-1}(ax)^3}{3a}$$

Antiderivative was successfully verified.

[In] Integrate[ArcSin[a*x]^2/Sqrt[1 - a^2*x^2],x]

[Out] ArcSin[a*x]^3/(3*a)

fricas [A] time = 0.43, size = 11, normalized size = 0.85

$$\frac{\arcsin\left(ax\right)^3}{3\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")

[Out] 1/3*arcsin(a*x)^3/a

giac [A] time = 0.91, size = 11, normalized size = 0.85

$$\frac{\arcsin\left(ax\right)^3}{3\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] 1/3*arcsin(a*x)^3/a
```

maple [A] time = 0.00, size = 12, normalized size = 0.92

$$\frac{\arcsin(ax)^3}{3a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] 1/3*arcsin(a*x)^3/a
```

maxima [A] time = 2.04, size = 11, normalized size = 0.85

$$\frac{\arcsin(ax)^3}{3\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/3*arcsin(a*x)^3/a
```

mupad [B] time = 0.15, size = 11, normalized size = 0.85

$$\frac{\mathrm{asin}(a\,x)^3}{3\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^2/(1 - a^2*x^2)^(1/2),x)
```

```
[Out] asin(a*x)^3/(3*a)
```

sympy [A] time = 0.38, size = 10, normalized size = 0.77

$$\begin{cases} \frac{\mathrm{asin}^3(ax)}{3a} & \text{for } a \neq 0 \\ 0 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**2/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Piecewise((asin(a*x)**3/(3*a), Ne(a, 0)), (0, True))
```

3.269 $\int \frac{\sin^{-1}(ax)^2}{x\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=92

$$2i\sin^{-1}(ax)\text{Li}_2\left(-e^{i\sin^{-1}(ax)}\right)-2i\sin^{-1}(ax)\text{Li}_2\left(e^{i\sin^{-1}(ax)}\right)-2\text{Li}_3\left(-e^{i\sin^{-1}(ax)}\right)+2\text{Li}_3\left(e^{i\sin^{-1}(ax)}\right)-2\sin^{-1}(ax)^2\tanh^{-1}$$

```
[Out] -2*arcsin(a*x)^2*arctanh(I*a*x+(-a^2*x^2+1)^(1/2))+2*I*arcsin(a*x)*polylog(
2,-I*a*x-(-a^2*x^2+1)^(1/2))-2*I*arcsin(a*x)*polylog(2,I*a*x+(-a^2*x^2+1)^(
1/2))-2*polylog(3,-I*a*x-(-a^2*x^2+1)^(1/2))+2*polylog(3,I*a*x+(-a^2*x^2+1)
^(1/2))
```

Rubi [A] time = 0.14, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = {4709, 4183, 2531, 2282, 6589}

$$2i\sin^{-1}(ax)\text{PolyLog}\left(2,-e^{i\sin^{-1}(ax)}\right)-2i\sin^{-1}(ax)\text{PolyLog}\left(2,e^{i\sin^{-1}(ax)}\right)-2\text{PolyLog}\left(3,-e^{i\sin^{-1}(ax)}\right)+2\text{PolyLog}\left(\right.$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a*x]^2/(x*Sqrt[1 - a^2*x^2]),x]
```

```
[Out] -2*ArcSin[a*x]^2*ArcTanh[E^(I*ArcSin[a*x])] + (2*I)*ArcSin[a*x]*PolyLog[2,
-E^(I*ArcSin[a*x])] - (2*I)*ArcSin[a*x]*PolyLog[2, E^(I*ArcSin[a*x])] - 2*P
olyLog[3, -E^(I*ArcSin[a*x])] + 2*PolyLog[3, E^(I*ArcSin[a*x])]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
```

```
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\sin^{-1}(ax)^2}{x\sqrt{1-a^2x^2}}\,dx = \text{Subst}\left(\int x^2\csc(x)\,dx, x, \sin^{-1}(ax)\right)$$
$$= -2\sin^{-1}(ax)^2\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right) - 2\,\text{Subst}\left(\int x\log\left(1-e^{ix}\right)\,dx, x, \sin^{-1}(ax)\right) + 2\,\text{Subst}$$
$$= -2\sin^{-1}(ax)^2\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right) + 2i\sin^{-1}(ax)\text{Li}_2\left(-e^{i\sin^{-1}(ax)}\right) - 2i\sin^{-1}(ax)\text{Li}_2\left(e^{i\sin^{-1}(}\right.$$
$$= -2\sin^{-1}(ax)^2\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right) + 2i\sin^{-1}(ax)\text{Li}_2\left(-e^{i\sin^{-1}(ax)}\right) - 2i\sin^{-1}(ax)\text{Li}_2\left(e^{i\sin^{-1}(}\right.$$
$$= -2\sin^{-1}(ax)^2\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right) + 2i\sin^{-1}(ax)\text{Li}_2\left(-e^{i\sin^{-1}(ax)}\right) - 2i\sin^{-1}(ax)\text{Li}_2\left(e^{i\sin^{-1}(}\right.$$

Mathematica [A] time = 0.13, size = 116, normalized size = 1.26

$$2i\sin^{-1}(ax)\text{Li}_2\left(-e^{i\sin^{-1}(ax)}\right) - 2i\sin^{-1}(ax)\text{Li}_2\left(e^{i\sin^{-1}(ax)}\right) - 2\text{Li}_3\left(-e^{i\sin^{-1}(ax)}\right) + 2\text{Li}_3\left(e^{i\sin^{-1}(ax)}\right) + \sin^{-1}(ax)^2\log\left(\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcSin[a*x]^2/(x*Sqrt[1 - a^2*x^2]),x]
```

```
[Out] ArcSin[a*x]^2*Log[1 - E^(I*ArcSin[a*x])] - ArcSin[a*x]^2*Log[1 + E^(I*ArcSi
n[a*x])] + (2*I)*ArcSin[a*x]*PolyLog[2, -E^(I*ArcSin[a*x])] - (2*I)*ArcSin[
a*x]*PolyLog[2, E^(I*ArcSin[a*x])] - 2*PolyLog[3, -E^(I*ArcSin[a*x])] + 2*P
olyLog[3, E^(I*ArcSin[a*x])]
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-a^2x^2+1}\,\arcsin(ax)^2}{a^2x^3-x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^2/x/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-a^2*x^2 + 1)*arcsin(a*x)^2/(a^2*x^3 - x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^2}{\sqrt{-a^2x^2+1}\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^2/x/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(arcsin(a*x)^2/(sqrt(-a^2*x^2 + 1)*x), x)
```

maple [A] time = 0.12, size = 161, normalized size = 1.75

$$\arcsin(ax)^2\ln\left(1-iax-\sqrt{-a^2x^2+1}\right) - 2i\arcsin(ax)\,\text{polylog}\left(2, iax+\sqrt{-a^2x^2+1}\right) + 2\,\text{polylog}\left(3, iax+\sqrt{-}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^2/x/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] arcsin(a*x)^2*ln(1-I*a*x-(-a^2*x^2+1)^(1/2))-2*I*arcsin(a*x)*polylog(2,I*a*
x+(-a^2*x^2+1)^(1/2))+2*polylog(3,I*a*x+(-a^2*x^2+1)^(1/2))-arcsin(a*x)^2*l
n(1+I*a*x+(-a^2*x^2+1)^(1/2))+2*I*arcsin(a*x)*polylog(2,-I*a*x-(-a^2*x^2+1)
^(1/2))-2*polylog(3,-I*a*x-(-a^2*x^2+1)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^2}{\sqrt{-a^2x^2+1}\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^2/x/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(arcsin(a*x)^2/(sqrt(-a^2*x^2 + 1)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\operatorname{asin}(a\,x)^2}{x\,\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^2/(x*(1 - a^2*x^2)^(1/2)),x)
```

```
[Out] int(asin(a*x)^2/(x*(1 - a^2*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}^2(ax)}{x\sqrt{-(ax-1)(ax+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**2/x/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(asin(a*x)**2/(x*sqrt(-(a*x - 1)*(a*x + 1))), x)
```

3.270 $\int \frac{\sin^{-1}(ax)^2}{x^2\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=76

$$-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{x}-ia\text{Li}_2\left(e^{2i\sin^{-1}(ax)}\right)-ia\sin^{-1}(ax)^2+2a\sin^{-1}(ax)\log\left(1-e^{2i\sin^{-1}(ax)}\right)$$

```
[Out] -I*a*arcsin(a*x)^2+2*a*arcsin(a*x)*ln(1-(I*a*x+(-a^2*x^2+1)^(1/2))^2)-I*a*p
olylog(2,(I*a*x+(-a^2*x^2+1)^(1/2))^2)-arcsin(a*x)^2*(-a^2*x^2+1)^(1/2)/x
```

Rubi [A] time = 0.14, antiderivative size = 76, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {4681, 4625, 3717, 2190, 2279, 2391}

$$-ia\text{PolyLog}\left(2,e^{2i\sin^{-1}(ax)}\right)-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{x}-ia\sin^{-1}(ax)^2+2a\sin^{-1}(ax)\log\left(1-e^{2i\sin^{-1}(ax)}\right)$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a*x]^2/(x^2*Sqrt[1 - a^2*x^2]),x]
```

```
[Out] (-I)*a*ArcSin[a*x]^2 - (Sqrt[1 - a^2*x^2]*ArcSin[a*x]^2)/x + 2*a*ArcSin[a*x
]*Log[1 - E^((2*I)*ArcSin[a*x])] - I*a*PolyLog[2, E^((2*I)*ArcSin[a*x])]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4681

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^F
```

```
racPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c
^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d,
 e, f, m, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] &
& NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sin^{-1}(ax)^2}{x^2\sqrt{1-a^2x^2}}\,dx &= -\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{x}+(2a)\int \frac{\sin^{-1}(ax)}{x}\,dx\\
&= -\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{x}+(2a)\,\text{Subst}\left(\int x\cot(x)\,dx,x,\sin^{-1}(ax)\right)\\
&= -ia\sin^{-1}(ax)^2-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{x}-(4ia)\,\text{Subst}\left(\int \frac{e^{2ix}x}{1-e^{2ix}}\,dx,x,\sin^{-1}(ax)\right)\\
&= -ia\sin^{-1}(ax)^2-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{x}+2a\sin^{-1}(ax)\log\left(1-e^{2i\sin^{-1}(ax)}\right)-(2a)\,\text{Subst}\left(\int\right.\\
&= -ia\sin^{-1}(ax)^2-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{x}+2a\sin^{-1}(ax)\log\left(1-e^{2i\sin^{-1}(ax)}\right)+(ia)\,\text{Subst}\left(\int\right.\\
&= -ia\sin^{-1}(ax)^2-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{x}+2a\sin^{-1}(ax)\log\left(1-e^{2i\sin^{-1}(ax)}\right)-ia\text{Li}_2\left(e^{2i\sin^{-1}(\right.
\end{aligned}$$

Mathematica [A] time = 0.30, size = 72, normalized size = 0.95

$$\sin^{-1}(ax)\left(2a\log\left(1-e^{2i\sin^{-1}(ax)}\right)-\frac{\left(\sqrt{1-a^2x^2}+iax\right)\sin^{-1}(ax)}{x}\right)-ia\text{Li}_2\left(e^{2i\sin^{-1}(ax)}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a*x]^2/(x^2*Sqrt[1 - a^2*x^2]),x]
```

```
[Out] ArcSin[a*x]*(-(((I*a*x + Sqrt[1 - a^2*x^2])*ArcSin[a*x])/x) + 2*a*Log[1 - E
^((2*I)*ArcSin[a*x])]) - I*a*PolyLog[2, E^((2*I)*ArcSin[a*x])]
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-a^2x^2+1}\,\arcsin(ax)^2}{a^2x^4-x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^2/x^2/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-a^2*x^2 + 1)*arcsin(a*x)^2/(a^2*x^4 - x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^2}{\sqrt{-a^2x^2+1}\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^2/x^2/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(arcsin(a*x)^2/(sqrt(-a^2*x^2 + 1)*x^2), x)
```

maple [A] time = 0.22, size = 148, normalized size = 1.95

$$\frac{\left(iax-\sqrt{-a^2x^2+1}\right)\arcsin(ax)^2}{x}+2a\arcsin(ax)\ln\left(1+iax+\sqrt{-a^2x^2+1}\right)+2a\arcsin(ax)\ln\left(1-iax-\sqrt{-a^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^2/x^2/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] (I*a*x-(-a^2*x^2+1)^(1/2))/x*arcsin(a*x)^2+2*a*arcsin(a*x)*ln(1+I*a*x+(-a^2
*x^2+1)^(1/2))+2*a*arcsin(a*x)*ln(1-I*a*x-(-a^2*x^2+1)^(1/2))-2*I*arcsin(a*
x)^2*a-2*I*polylog(2,-I*a*x-(-a^2*x^2+1)^(1/2))*a-2*I*polylog(2,I*a*x+(-a^2
*x^2+1)^(1/2))*a
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\sqrt{ax+1}\,\sqrt{-ax+1}\,\arctan\left(ax,\sqrt{ax+1}\,\sqrt{-ax+1}\right)^2-2\,ax\int\frac{\arctan\left(ax,\sqrt{ax+1}\,\sqrt{-ax+1}\right)}{x}\,dx}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^2/x^2/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] -(sqrt(a*x + 1)*sqrt(-a*x + 1)*arctan2(a*x, sqrt(a*x + 1)*sqrt(-a*x + 1))^2
 - 2*a*x*integrate(arctan2(a*x, sqrt(a*x + 1)*sqrt(-a*x + 1))/x, x))/x
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{\mathrm{asin}\left(a\,x\right)^2}{x^2\,\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^2/(x^2*(1 - a^2*x^2)^(1/2)),x)
```

```
[Out] int(asin(a*x)^2/(x^2*(1 - a^2*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\mathrm{asin}^2\left(ax\right)}{x^2\sqrt{-\left(ax-1\right)\left(ax+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**2/x**2/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(asin(a*x)**2/(x**2*sqrt(-(a*x - 1)*(a*x + 1))), x)
```

3.271 $\int \frac{\sin^{-1}(ax)^2}{x^3\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=163

$$ia^2\sin^{-1}(ax)\text{Li}_2\left(-e^{i\sin^{-1}(ax)}\right)-ia^2\sin^{-1}(ax)\text{Li}_2\left(e^{i\sin^{-1}(ax)}\right)-a^2\text{Li}_3\left(-e^{i\sin^{-1}(ax)}\right)+a^2\text{Li}_3\left(e^{i\sin^{-1}(ax)}\right)-\frac{\sqrt{1-a^2x^2}\sin^{-}}{2x^2}$$

```
[Out] -a*arcsin(a*x)/x-a^2*arcsin(a*x)^2*arctanh(I*a*x+(-a^2*x^2+1)^(1/2))-a^2*ar
ctanh((-a^2*x^2+1)^(1/2))+I*a^2*arcsin(a*x)*polylog(2,-I*a*x-(-a^2*x^2+1)^(
1/2))-I*a^2*arcsin(a*x)*polylog(2,I*a*x+(-a^2*x^2+1)^(1/2))-a^2*polylog(3,-
I*a*x-(-a^2*x^2+1)^(1/2))+a^2*polylog(3,I*a*x+(-a^2*x^2+1)^(1/2))-1/2*arcsi
n(a*x)^2*(-a^2*x^2+1)^(1/2)/x^2
```

Rubi [A] time = 0.25, antiderivative size = 163, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.417, Rules used = {4701, 4709, 4183, 2531, 2282, 6589, 4627, 266, 63, 208}

$$ia^2\sin^{-1}(ax)\text{PolyLog}\left(2,-e^{i\sin^{-1}(ax)}\right)-ia^2\sin^{-1}(ax)\text{PolyLog}\left(2,e^{i\sin^{-1}(ax)}\right)-a^2\text{PolyLog}\left(3,-e^{i\sin^{-1}(ax)}\right)+a^2\text{PolyLo}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a*x]^2/(x^3*Sqrt[1 - a^2*x^2]),x]
```

```
[Out] -((a*ArcSin[a*x])/x) - (Sqrt[1 - a^2*x^2]*ArcSin[a*x]^2)/(2*x^2) - a^2*ArcS
in[a*x]^2*ArcTanh[E^(I*ArcSin[a*x])] - a^2*ArcTanh[Sqrt[1 - a^2*x^2]] + I*a
^2*ArcSin[a*x]*PolyLog[2, -E^(I*ArcSin[a*x])] - I*a^2*ArcSin[a*x]*PolyLog[2
, E^(I*ArcSin[a*x])] - a^2*PolyLog[3, -E^(I*ArcSin[a*x])] + a^2*PolyLog[3,
E^(I*ArcSin[a*x])]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] && !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] && !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\sin^{-1}(ax)^2}{x^3\sqrt{1-a^2x^2}}\,dx = -\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{2x^2} + a\int \frac{\sin^{-1}(ax)}{x^2}\,dx + \frac{1}{2}a^2\int \frac{\sin^{-1}(ax)^2}{x\sqrt{1-a^2x^2}}\,dx$$
$$= -\frac{a\sin^{-1}(ax)}{x} - \frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{2x^2} + \frac{1}{2}a^2\,\text{Subst}\left(\int x^2\csc(x)\,dx, x, \sin^{-1}(ax)\right) + a^2\int -\frac{}{x}$$
$$= -\frac{a\sin^{-1}(ax)}{x} - \frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{2x^2} - a^2\sin^{-1}(ax)^2\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right) + \frac{1}{2}a^2\,\text{Subst}\left(\int -\frac{}{x}\right.$$
$$= -\frac{a\sin^{-1}(ax)}{x} - \frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{2x^2} - a^2\sin^{-1}(ax)^2\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right) + ia^2\sin^{-1}(ax)\text{Li}_2$$
$$= -\frac{a\sin^{-1}(ax)}{x} - \frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{2x^2} - a^2\sin^{-1}(ax)^2\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right) - a^2\tanh^{-1}\left(\sqrt{1-}\right.$$
$$= -\frac{a\sin^{-1}(ax)}{x} - \frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{2x^2} - a^2\sin^{-1}(ax)^2\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right) - a^2\tanh^{-1}\left(\sqrt{1-}\right.$$

Mathematica [A] time = 1.57, size = 194, normalized size = 1.19

$$\frac{1}{8}a^2\left(8i\sin^{-1}(ax)\left(\text{Li}_2\left(-e^{i\sin^{-1}(ax)}\right) - \text{Li}_2\left(e^{i\sin^{-1}(ax)}\right)\right) + 8\left(\text{Li}_3\left(e^{i\sin^{-1}(ax)}\right) - \text{Li}_3\left(-e^{i\sin^{-1}(ax)}\right)\right) + 4\sin^{-1}(ax)^2\left(\log\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcSin[a*x]^2/(x^3*Sqrt[1 - a^2*x^2]),x]
```

```
[Out] (a^2*(-4*ArcSin[a*x]*Cot[ArcSin[a*x]/2] - ArcSin[a*x]^2*Csc[ArcSin[a*x]/2]^
2 + 4*ArcSin[a*x]^2*(Log[1 - E^(I*ArcSin[a*x])] - Log[1 + E^(I*ArcSin[a*x])
]) + 8*Log[Tan[ArcSin[a*x]/2]] + (8*I)*ArcSin[a*x]*(PolyLog[2, -E^(I*ArcSin
[a*x])] - PolyLog[2, E^(I*ArcSin[a*x])]) + 8*(-PolyLog[3, -E^(I*ArcSin[a*x]
)] + PolyLog[3, E^(I*ArcSin[a*x])]) + ArcSin[a*x]^2*Sec[ArcSin[a*x]/2]^2 -
4*ArcSin[a*x]*Tan[ArcSin[a*x]/2]))/8
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-a^2x^2+1}\,\arcsin(ax)^2}{a^2x^5-x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^2/x^3/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-a^2*x^2 + 1)*arcsin(a*x)^2/(a^2*x^5 - x^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^2}{\sqrt{-a^2x^2+1}\,x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^2/x^3/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(arcsin(a*x)^2/(sqrt(-a^2*x^2 + 1)*x^3), x)
```

maple [A] time = 0.33, size = 269, normalized size = 1.65

$$-\frac{\sqrt{-a^2x^2+1}\,\arcsin(ax)\left(a^2x^2\arcsin(ax) - 2ax\sqrt{-a^2x^2+1} - \arcsin(ax)\right)}{2\left(a^2x^2-1\right)x^2} + \frac{a^2\arcsin(ax)^2\ln\left(1-iax-\sqrt{-a^2}\right.}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^2/x^3/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] -1/2*(-a^2*x^2+1)^(1/2)/(a^2*x^2-1)/x^2*arcsin(a*x)*(a^2*x^2*arcsin(a*x)-2*
a*x*(-a^2*x^2+1)^(1/2)-arcsin(a*x))+1/2*a^2*arcsin(a*x)^2*ln(1-I*a*x-(-a^2*
x^2+1)^(1/2))-I*a^2*arcsin(a*x)*polylog(2,I*a*x+(-a^2*x^2+1)^(1/2))-1/2*a^2
*arcsin(a*x)^2*ln(1+I*a*x+(-a^2*x^2+1)^(1/2))+I*a^2*arcsin(a*x)*polylog(2,-
I*a*x-(-a^2*x^2+1)^(1/2))+a^2*polylog(3,I*a*x+(-a^2*x^2+1)^(1/2))-a^2*polyl
og(3,-I*a*x-(-a^2*x^2+1)^(1/2))-2*arctanh(I*a*x+(-a^2*x^2+1)^(1/2))*a^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^2}{\sqrt{-a^2x^2+1}\,x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^2/x^3/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(arcsin(a*x)^2/(sqrt(-a^2*x^2 + 1)*x^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\operatorname{asin}(a\,x)^2}{x^3\,\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^2/(x^3*(1 - a^2*x^2)^(1/2)),x)
```

```
[Out] int(asin(a*x)^2/(x^3*(1 - a^2*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}^2(ax)}{x^3\sqrt{-(ax-1)(ax+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**2/x**3/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(asin(a*x)**2/(x**3*sqrt(-(a*x - 1)*(a*x + 1))), x)
```

3.272 $\int \frac{\sin^{-1}(ax)^2}{\sqrt{c-a^2cx^2}} dx$

Optimal. Leaf size=42

$$\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{3a\sqrt{c-a^2cx^2}}$$

```
[Out] 1/3*arcsin(a*x)^3*(-a^2*x^2+1)^(1/2)/a/(-a^2*c*x^2+c)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {4643, 4641}

$$\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{3a\sqrt{c-a^2cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a*x]^2/Sqrt[c - a^2*c*x^2],x]
```

```
[Out] (Sqrt[1 - a^2*x^2]*ArcSin[a*x]^3)/(3*a*Sqrt[c - a^2*c*x^2])
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4643

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcSin[c*x])^n
/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e
, 0] &&  !GtQ[d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\sin^{-1}(ax)^2}{\sqrt{c-a^2cx^2}}\,dx &= \frac{\sqrt{1-a^2x^2}\int \frac{\sin^{-1}(ax)^2}{\sqrt{1-a^2x^2}}\,dx}{\sqrt{c-a^2cx^2}}\\ &= \frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{3a\sqrt{c-a^2cx^2}}\end{aligned}$$

Mathematica [A] time = 0.07, size = 42, normalized size = 1.00

$$\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{3a\sqrt{c-a^2cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a*x]^2/Sqrt[c - a^2*c*x^2],x]
```

```
[Out] (Sqrt[1 - a^2*x^2]*ArcSin[a*x]^3)/(3*a*Sqrt[c - a^2*c*x^2])
```

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-a^2cx^2+c}\,\arcsin(ax)^2}{a^2cx^2-c}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^2/(-a^2*c*x^2+c)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-a^2*c*x^2 + c)*arcsin(a*x)^2/(a^2*c*x^2 - c), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^2}{\sqrt{-a^2cx^2+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^2/(-a^2*c*x^2+c)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(arcsin(a*x)^2/sqrt(-a^2*c*x^2 + c), x)
```

maple [A] time = 0.05, size = 52, normalized size = 1.24

$$-\frac{\sqrt{-c\left(a^2x^2-1\right)}\,\sqrt{-a^2x^2+1}\,\arcsin(ax)^3}{3ac\left(a^2x^2-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^2/(-a^2*c*x^2+c)^(1/2),x)
```

```
[Out] -1/3*(-c*(a^2*x^2-1))^(1/2)*(-a^2*x^2+1)^(1/2)/a/c/(a^2*x^2-1)*arcsin(a*x)^
3
```

maxima [A] time = 1.28, size = 14, normalized size = 0.33

$$\frac{\arcsin(ax)^3}{3\,a\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^2/(-a^2*c*x^2+c)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/3*arcsin(a*x)^3/(a*sqrt(c))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\mathrm{asin}(a\,x)^2}{\sqrt{c-a^2\,c\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^2/(c - a^2*c*x^2)^(1/2),x)
```

```
[Out] int(asin(a*x)^2/(c - a^2*c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\mathrm{asin}^2(ax)}{\sqrt{-c(ax-1)(ax+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**2/(-a**2*c*x**2+c)**(1/2),x)
```

```
[Out] Integral(asin(a*x)**2/sqrt(-c*(a*x - 1)*(a*x + 1)), x)
```

3.273 $\int \frac{\sin^{-1}(ax)^2}{\left(c-a^2cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=179

$$-\frac{i\sqrt{1-a^2x^2}\,\text{Li}_2\left(-e^{2i\sin^{-1}(ax)}\right)}{ac\sqrt{c-a^2cx^2}}+\frac{x\sin^{-1}(ax)^2}{c\sqrt{c-a^2cx^2}}-\frac{i\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{ac\sqrt{c-a^2cx^2}}+\frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)\log\left(1+e^{2i\sin^{-1}(ax)}\right)}{ac\sqrt{c-a^2cx^2}}$$

```
[Out] x*arcsin(a*x)^2/c/(-a^2*c*x^2+c)^(1/2)-I*arcsin(a*x)^2*(-a^2*x^2+1)^(1/2)/a
/c/(-a^2*c*x^2+c)^(1/2)+2*arcsin(a*x)*ln(1+(I*a*x+(-a^2*x^2+1)^(1/2))^2)*(-
a^2*x^2+1)^(1/2)/a/c/(-a^2*c*x^2+c)^(1/2)-I*polylog(2,-(I*a*x+(-a^2*x^2+1)^
(1/2))^2)*(-a^2*x^2+1)^(1/2)/a/c/(-a^2*c*x^2+c)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {4653, 4675, 3719, 2190, 2279, 2391}

$$-\frac{i\sqrt{1-a^2x^2}\,\text{PolyLog}\left(2,-e^{2i\sin^{-1}(ax)}\right)}{ac\sqrt{c-a^2cx^2}}+\frac{x\sin^{-1}(ax)^2}{c\sqrt{c-a^2cx^2}}-\frac{i\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{ac\sqrt{c-a^2cx^2}}+\frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)\log\left(1+e^{2i\sin^{-1}(ax)}\right)}{ac\sqrt{c-a^2cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a*x]^2/(c - a^2*c*x^2)^(3/2),x]
```

```
[Out] (x*ArcSin[a*x]^2)/(c*Sqrt[c - a^2*c*x^2]) - (I*Sqrt[1 - a^2*x^2]*ArcSin[a*x
]^2)/(a*c*Sqrt[c - a^2*c*x^2]) + (2*Sqrt[1 - a^2*x^2]*ArcSin[a*x]*Log[1 + E
^((2*I)*ArcSin[a*x])])/(a*c*Sqrt[c - a^2*c*x^2]) - (I*Sqrt[1 - a^2*x^2]*Pol
yLog[2, -E^((2*I)*ArcSin[a*x])])/(a*c*Sqrt[c - a^2*c*x^2])
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4653

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
```

```
b*c*n*Sqrt[1 - c^2*x^2])/(d*Sqrt[d + e*x^2]), Int[(x*(a + b*ArcSin[c*x])^(n
 - 1))/(1 - c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e,
 0] && GtQ[n, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{\sin^{-1}(ax)^2}{\left(c-a^2cx^2\right)^{3/2}}\,dx = \frac{x\sin^{-1}(ax)^2}{c\sqrt{c-a^2cx^2}} - \frac{\left(2a\sqrt{1-a^2x^2}\right)\int \frac{x\sin^{-1}(ax)}{1-a^2x^2}\,dx}{c\sqrt{c-a^2cx^2}}$$

$$= \frac{x\sin^{-1}(ax)^2}{c\sqrt{c-a^2cx^2}} - \frac{\left(2\sqrt{1-a^2x^2}\right)\text{Subst}\left(\int x\tan(x)\,dx, x, \sin^{-1}(ax)\right)}{ac\sqrt{c-a^2cx^2}}$$

$$= \frac{x\sin^{-1}(ax)^2}{c\sqrt{c-a^2cx^2}} - \frac{i\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{ac\sqrt{c-a^2cx^2}} + \frac{\left(4i\sqrt{1-a^2x^2}\right)\text{Subst}\left(\int \frac{e^{2ix}x}{1+e^{2ix}}\,dx, x, \sin^{-1}(ax)\right.}{ac\sqrt{c-a^2cx^2}}$$

$$= \frac{x\sin^{-1}(ax)^2}{c\sqrt{c-a^2cx^2}} - \frac{i\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{ac\sqrt{c-a^2cx^2}} + \frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)\log\left(1+e^{2i\sin^{-1}(ax)}\right)}{ac\sqrt{c-a^2cx^2}} - \left(\right.$$

$$= \frac{x\sin^{-1}(ax)^2}{c\sqrt{c-a^2cx^2}} - \frac{i\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{ac\sqrt{c-a^2cx^2}} + \frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)\log\left(1+e^{2i\sin^{-1}(ax)}\right)}{ac\sqrt{c-a^2cx^2}} + \left(\right.$$

$$= \frac{x\sin^{-1}(ax)^2}{c\sqrt{c-a^2cx^2}} - \frac{i\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{ac\sqrt{c-a^2cx^2}} + \frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)\log\left(1+e^{2i\sin^{-1}(ax)}\right)}{ac\sqrt{c-a^2cx^2}} - i$$

Mathematica [A] time = 0.26, size = 108, normalized size = 0.60

$$\frac{\sin^{-1}(ax)\left(ax\sin^{-1}(ax)+\sqrt{1-a^2x^2}\left(2\log\left(1+e^{2i\sin^{-1}(ax)}\right)-i\sin^{-1}(ax)\right)\right)-i\sqrt{1-a^2x^2}\,\text{Li}_2\left(-e^{2i\sin^{-1}(ax)}\right)}{ac\sqrt{c\left(1-a^2x^2\right)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a*x]^2/(c - a^2*c*x^2)^(3/2),x]
```

```
[Out] (ArcSin[a*x]*(a*x*ArcSin[a*x] + Sqrt[1 - a^2*x^2]*((-I)*ArcSin[a*x] + 2*Log
[1 + E^((2*I)*ArcSin[a*x])])) - I*Sqrt[1 - a^2*x^2]*PolyLog[2, -E^((2*I)*Ar
cSin[a*x])])/(a*c*Sqrt[c*(1 - a^2*x^2)])
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-a^2cx^2+c}\,\arcsin(ax)^2}{a^4c^2x^4-2\,a^2c^2x^2+c^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^2/(-a^2*c*x^2+c)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-a^2*c*x^2 + c)*arcsin(a*x)^2/(a^4*c^2*x^4 - 2*a^2*c^2*x^2 +
c^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^2}{\left(-a^2cx^2+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^2/(-a^2*c*x^2+c)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(arcsin(a*x)^2/(-a^2*c*x^2 + c)^(3/2), x)
```

maple [A] time = 0.21, size = 169, normalized size = 0.94

$$-\frac{\sqrt{-c\left(a^2x^2-1\right)}\,\left(i\sqrt{-a^2x^2+1}+ax\right)\arcsin(ax)^2}{c^2a\left(a^2x^2-1\right)}+\frac{i\sqrt{-a^2x^2+1}\,\sqrt{-c\left(a^2x^2-1\right)}\,\left(2i\arcsin(ax)\ln\left(1+\left(iax+\right.\right.\right.}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^2/(-a^2*c*x^2+c)^(3/2),x)
```

```
[Out] -(-c*(a^2*x^2-1))^(1/2)*(I*(-a^2*x^2+1)^(1/2)+a*x)*arcsin(a*x)^2/c^2/a/(a^2
*x^2-1)+I*(-a^2*x^2+1)^(1/2)*(-c*(a^2*x^2-1))^(1/2)/c^2/a/(a^2*x^2-1)*(2*I*
arcsin(a*x)*ln(1+(I*a*x+(-a^2*x^2+1)^(1/2))^2)+2*arcsin(a*x)^2+polylog(2,-(
I*a*x+(-a^2*x^2+1)^(1/2))^2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^2}{\left(-a^2cx^2+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^2/(-a^2*c*x^2+c)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(arcsin(a*x)^2/(-a^2*c*x^2 + c)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\mathrm{asin}(a\,x)^2}{\left(c-a^2\,c\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^2/(c - a^2*c*x^2)^(3/2),x)
```

```
[Out] int(asin(a*x)^2/(c - a^2*c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\mathrm{asin}^2(ax)}{\left(-c(ax-1)(ax+1)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**2/(-a**2*c*x**2+c)**(3/2),x)
```

```
[Out] Integral(asin(a*x)**2/(-c*(a*x - 1)*(a*x + 1))**(3/2), x)
```

3.274 $\int \frac{\sin^{-1}(ax)^2}{\left(c-a^2cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=283

$$-\frac{2i\sqrt{1-a^2x^2}\,\text{Li}_2\left(-e^{2i\sin^{-1}(ax)}\right)}{3ac^2\sqrt{c-a^2cx^2}}+\frac{x}{3c^2\sqrt{c-a^2cx^2}}+\frac{2x\sin^{-1}(ax)^2}{3c^2\sqrt{c-a^2cx^2}}-\frac{2i\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{3ac^2\sqrt{c-a^2cx^2}}-\frac{\sin^{-1}(ax)}{3ac^2\sqrt{1-a^2x^2}\,\sqrt{c}}$$

```
[Out] 1/3*x*arcsin(a*x)^2/c/(-a^2*c*x^2+c)^(3/2)+1/3*x/c^2/(-a^2*c*x^2+c)^(1/2)+2
/3*x*arcsin(a*x)^2/c^2/(-a^2*c*x^2+c)^(1/2)-1/3*arcsin(a*x)/a/c^2/(-a^2*x^2
+1)^(1/2)/(-a^2*c*x^2+c)^(1/2)-2/3*I*arcsin(a*x)^2*(-a^2*x^2+1)^(1/2)/a/c^2
/(-a^2*c*x^2+c)^(1/2)+4/3*arcsin(a*x)*ln(1+(I*a*x+(-a^2*x^2+1)^(1/2))^2)*(-
a^2*x^2+1)^(1/2)/a/c^2/(-a^2*c*x^2+c)^(1/2)-2/3*I*polylog(2,-(I*a*x+(-a^2*x
^2+1)^(1/2))^2)*(-a^2*x^2+1)^(1/2)/a/c^2/(-a^2*c*x^2+c)^(1/2)
```

Rubi [A] time = 0.22, antiderivative size = 283, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 9, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.409, Rules used = {4655, 4653, 4675, 3719, 2190, 2279, 2391, 4677, 191}

$$-\frac{2i\sqrt{1-a^2x^2}\,\text{PolyLog}\left(2,-e^{2i\sin^{-1}(ax)}\right)}{3ac^2\sqrt{c-a^2cx^2}}+\frac{x}{3c^2\sqrt{c-a^2cx^2}}+\frac{2x\sin^{-1}(ax)^2}{3c^2\sqrt{c-a^2cx^2}}-\frac{2i\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{3ac^2\sqrt{c-a^2cx^2}}-\frac{s}{3ac^2\sqrt{1-}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a*x]^2/(c - a^2*c*x^2)^(5/2),x]
```

```
[Out] x/(3*c^2*Sqrt[c - a^2*c*x^2]) - ArcSin[a*x]/(3*a*c^2*Sqrt[1 - a^2*x^2]*Sqrt
[c - a^2*c*x^2]) + (x*ArcSin[a*x]^2)/(3*c*(c - a^2*c*x^2)^(3/2)) + (2*x*Arc
Sin[a*x]^2)/(3*c^2*Sqrt[c - a^2*c*x^2]) - (((2*I)/3)*Sqrt[1 - a^2*x^2]*ArcS
in[a*x]^2)/(a*c^2*Sqrt[c - a^2*c*x^2]) + (4*Sqrt[1 - a^2*x^2]*ArcSin[a*x]*L
og[1 + E^((2*I)*ArcSin[a*x])])/(3*a*c^2*Sqrt[c - a^2*c*x^2]) - (((2*I)/3)*S
qrt[1 - a^2*x^2]*PolyLog[2, -E^((2*I)*ArcSin[a*x])])/(a*c^2*Sqrt[c - a^2*c*
x^2])
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4653

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n*Sqrt[1 - c^2*x^2])/(d*Sqrt[d + e*x^2]), Int[(x*(a + b*ArcSin[c*x])^(n
 - 1))/(1 - c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e,
 0] && GtQ[n, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{\sin^{-1}(ax)^2}{\left(c-a^2cx^2\right)^{5/2}}\,dx = \frac{x\sin^{-1}(ax)^2}{3c\left(c-a^2cx^2\right)^{3/2}} + \frac{2\int \frac{\sin^{-1}(ax)^2}{\left(c-a^2cx^2\right)^{3/2}}\,dx}{3c} - \frac{\left(2a\sqrt{1-a^2x^2}\right)\int \frac{x\sin^{-1}(ax)}{\left(1-a^2x^2\right)^2}\,dx}{3c^2\sqrt{c-a^2cx^2}}$$

$$= -\frac{\sin^{-1}(ax)}{3ac^2\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}} + \frac{x\sin^{-1}(ax)^2}{3c\left(c-a^2cx^2\right)^{3/2}} + \frac{2x\sin^{-1}(ax)^2}{3c^2\sqrt{c-a^2cx^2}} + \frac{\sqrt{1-a^2x^2}\int \frac{1}{(1-a^2\ldots}}{3c^2\sqrt{c-a^2c\ldots}}$$

$$= \frac{x}{3c^2\sqrt{c-a^2cx^2}} - \frac{\sin^{-1}(ax)}{3ac^2\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}} + \frac{x\sin^{-1}(ax)^2}{3c\left(c-a^2cx^2\right)^{3/2}} + \frac{2x\sin^{-1}(ax)^2}{3c^2\sqrt{c-a^2cx^2}} - \ldots$$

$$= \frac{x}{3c^2\sqrt{c-a^2cx^2}} - \frac{\sin^{-1}(ax)}{3ac^2\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}} + \frac{x\sin^{-1}(ax)^2}{3c\left(c-a^2cx^2\right)^{3/2}} + \frac{2x\sin^{-1}(ax)^2}{3c^2\sqrt{c-a^2cx^2}} - \frac{2i\ldots}{}$$

$$= \frac{x}{3c^2\sqrt{c-a^2cx^2}} - \frac{\sin^{-1}(ax)}{3ac^2\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}} + \frac{x\sin^{-1}(ax)^2}{3c\left(c-a^2cx^2\right)^{3/2}} + \frac{2x\sin^{-1}(ax)^2}{3c^2\sqrt{c-a^2cx^2}} - \frac{2i\ldots}{}$$

$$= \frac{x}{3c^2\sqrt{c-a^2cx^2}} - \frac{\sin^{-1}(ax)}{3ac^2\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}} + \frac{x\sin^{-1}(ax)^2}{3c\left(c-a^2cx^2\right)^{3/2}} + \frac{2x\sin^{-1}(ax)^2}{3c^2\sqrt{c-a^2cx^2}} - \frac{2i\ldots}{}$$

$$= \frac{x}{3c^2\sqrt{c-a^2cx^2}} - \frac{\sin^{-1}(ax)}{3ac^2\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}} + \frac{x\sin^{-1}(ax)^2}{3c\left(c-a^2cx^2\right)^{3/2}} + \frac{2x\sin^{-1}(ax)^2}{3c^2\sqrt{c-a^2cx^2}} - \frac{2i\ldots}{}$$

Mathematica [A] time = 0.70, size = 149, normalized size = 0.53

$$\frac{-2i\sqrt{1-a^2x^2}\,\mathrm{Li}_2\left(-e^{2i\sin^{-1}(ax)}\right) + \left(ax\left(\frac{1}{1-a^2x^2}+2\right) - 2i\sqrt{1-a^2x^2}\right)\sin^{-1}(ax)^2 + \frac{\sin^{-1}(ax)\left(-1+\left(4-4a^2x^2\right)\log\left(1+e^{2i\sin^{-1}\ldots}\right)\right)}{\sqrt{1-a^2x^2}}}{3ac^2\sqrt{c-a^2cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a*x]^2/(c - a^2*c*x^2)^(5/2),x]
```

```
[Out] (a*x + ((-2*I)*Sqrt[1 - a^2*x^2] + a*x*(2 + (1 - a^2*x^2)^(-1)))*ArcSin[a*x
]^2 + (ArcSin[a*x]*(-1 + (4 - 4*a^2*x^2)*Log[1 + E^((2*I)*ArcSin[a*x])]))/S
qrt[1 - a^2*x^2] - (2*I)*Sqrt[1 - a^2*x^2]*PolyLog[2, -E^((2*I)*ArcSin[a*x]
)])/(3*a*c^2*Sqrt[c - a^2*c*x^2])
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{-a^2cx^2+c}\,\arcsin(ax)^2}{a^6c^3x^6-3\,a^4c^3x^4+3\,a^2c^3x^2-c^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^2/(-a^2*c*x^2+c)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-a^2*c*x^2 + c)*arcsin(a*x)^2/(a^6*c^3*x^6 - 3*a^4*c^3*x^4 +
 3*a^2*c^3*x^2 - c^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^2}{\left(-a^2cx^2+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^2/(-a^2*c*x^2+c)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(arcsin(a*x)^2/(-a^2*c*x^2 + c)^(5/2), x)
```

maple [A] time = 0.27, size = 365, normalized size = 1.29

$$-\frac{\sqrt{-c\left(a^2x^2-1\right)}\,\left(2i\sqrt{-a^2x^2+1}\,x^2a^2+2a^3x^3-2i\sqrt{-a^2x^2+1}\,-3ax\right)\left(-2i\arcsin\left(ax\right)x^4a^4-2\arcsin\left(ax\right)\sqrt{-a^2x^2+1}\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^2/(-a^2*c*x^2+c)^(5/2),x)
```

```
[Out] -1/3*(-c*(a^2*x^2-1))^(1/2)*(2*I*(-a^2*x^2+1)^(1/2)*x^2*a^2+2*a^3*x^3-2*I*(
-a^2*x^2+1)^(1/2)-3*a*x)*(-2*I*arcsin(a*x)*x^4*a^4-2*arcsin(a*x)*(-a^2*x^2+
1)^(1/2)*x^3*a^3+I*(-a^2*x^2+1)^(1/2)*x^3*a^3-a^4*x^4+3*arcsin(a*x)^2*x^2*a
^2+4*I*arcsin(a*x)*x^2*a^2+3*arcsin(a*x)*(-a^2*x^2+1)^(1/2)*x*a-I*(-a^2*x^2
+1)^(1/2)*x*a+3*a^2*x^2-4*arcsin(a*x)^2-2*I*arcsin(a*x)-2)/c^3/(3*a^6*x^6-1
0*a^4*x^4+11*a^2*x^2-4)/a+2/3*I*(-a^2*x^2+1)^(1/2)*(-c*(a^2*x^2-1))^(1/2)*(
2*I*arcsin(a*x)*ln(1+(I*a*x+(-a^2*x^2+1)^(1/2))^2)+2*arcsin(a*x)^2+polylog(
2,-(I*a*x+(-a^2*x^2+1)^(1/2))^2))/a/c^3/(a^2*x^2-1)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin\left(ax\right)^2}{\left(-a^2cx^2+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^2/(-a^2*c*x^2+c)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(arcsin(a*x)^2/(-a^2*c*x^2 + c)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\mathrm{asin}\left(a\,x\right)^2}{\left(c-a^2\,c\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^2/(c - a^2*c*x^2)^(5/2),x)
```

```
[Out] int(asin(a*x)^2/(c - a^2*c*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}^{2}\left(ax\right)}{\left(-c\left(ax-1\right)\left(ax+1\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**2/(-a**2*c*x**2+c)**(5/2),x)
```

```
[Out] Integral(asin(a*x)**2/(-c*(a*x - 1)*(a*x + 1))**(5/2), x)
```

3.275 $\int \frac{\sin^{-1}(ax)^2}{\left(c-a^2cx^2\right)^{7/2}}\,dx$

Optimal. Leaf size=390

$$-\frac{8i\sqrt{1-a^2x^2}\,\mathrm{Li}_2\left(-e^{2i\sin^{-1}(ax)}\right)}{15ac^3\sqrt{c-a^2cx^2}}+\frac{x}{3c^3\sqrt{c-a^2cx^2}}+\frac{x}{30c^3\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}}+\frac{8x\sin^{-1}(ax)^2}{15c^3\sqrt{c-a^2cx^2}}-\frac{8i\sqrt{1-a^2x^2}}{15ac^3\sqrt{c-}}$$

```
[Out] 1/5*x*arcsin(a*x)^2/c/(-a^2*c*x^2+c)^(5/2)+4/15*x*arcsin(a*x)^2/c^2/(-a^2*c
*x^2+c)^(3/2)+1/3*x/c^3/(-a^2*c*x^2+c)^(1/2)+1/30*x/c^3/(-a^2*x^2+1)/(-a^2*
c*x^2+c)^(1/2)-1/10*arcsin(a*x)/a/c^3/(-a^2*x^2+1)^(3/2)/(-a^2*c*x^2+c)^(1/
2)+8/15*x*arcsin(a*x)^2/c^3/(-a^2*c*x^2+c)^(1/2)-4/15*arcsin(a*x)/a/c^3/(-a
^2*x^2+1)^(1/2)/(-a^2*c*x^2+c)^(1/2)-8/15*I*arcsin(a*x)^2*(-a^2*x^2+1)^(1/2
)/a/c^3/(-a^2*c*x^2+c)^(1/2)+16/15*arcsin(a*x)*ln(1+(I*a*x+(-a^2*x^2+1)^(1/
2))^2)*(-a^2*x^2+1)^(1/2)/a/c^3/(-a^2*c*x^2+c)^(1/2)-8/15*I*polylog(2,-(I*a
*x+(-a^2*x^2+1)^(1/2))^2)*(-a^2*x^2+1)^(1/2)/a/c^3/(-a^2*c*x^2+c)^(1/2)
```

Rubi [A] time = 0.33, antiderivative size = 390, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.454, Rules used = {4655, 4653, 4675, 3719, 2190, 2279, 2391, 4677, 191, 192}

$$-\frac{8i\sqrt{1-a^2x^2}\,\mathrm{PolyLog}\left(2,-e^{2i\sin^{-1}(ax)}\right)}{15ac^3\sqrt{c-a^2cx^2}}+\frac{x}{3c^3\sqrt{c-a^2cx^2}}+\frac{x}{30c^3\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}}+\frac{8x\sin^{-1}(ax)^2}{15c^3\sqrt{c-a^2cx^2}}-\frac{8i\sqrt{1}}{15}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a*x]^2/(c - a^2*c*x^2)^(7/2),x]
```

```
[Out] x/(3*c^3*Sqrt[c - a^2*c*x^2]) + x/(30*c^3*(1 - a^2*x^2)*Sqrt[c - a^2*c*x^2]
) - ArcSin[a*x]/(10*a*c^3*(1 - a^2*x^2)^(3/2)*Sqrt[c - a^2*c*x^2]) - (4*Arc
Sin[a*x])/(15*a*c^3*Sqrt[1 - a^2*x^2]*Sqrt[c - a^2*c*x^2]) + (x*ArcSin[a*x]
^2)/(5*c*(c - a^2*c*x^2)^(5/2)) + (4*x*ArcSin[a*x]^2)/(15*c^2*(c - a^2*c*x^
2)^(3/2)) + (8*x*ArcSin[a*x]^2)/(15*c^3*Sqrt[c - a^2*c*x^2]) - (((8*I)/15)*
Sqrt[1 - a^2*x^2]*ArcSin[a*x]^2)/(a*c^3*Sqrt[c - a^2*c*x^2]) + (16*Sqrt[1 -
 a^2*x^2]*ArcSin[a*x]*Log[1 + E^((2*I)*ArcSin[a*x])])/(15*a*c^3*Sqrt[c - a^
2*c*x^2]) - (((8*I)/15)*Sqrt[1 - a^2*x^2]*PolyLog[2, -E^((2*I)*ArcSin[a*x])
])/(a*c^3*Sqrt[c - a^2*c*x^2])
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 192

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b, n, p}, x] && ILtQ[Simplify[1/n + p + 1], 0]
 && NeQ[p, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4653

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n*Sqrt[1 - c^2*x^2])/(d*Sqrt[d + e*x^2]), Int[(x*(a + b*ArcSin[c*x])^(n
 - 1))/(1 - c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e,
 0] && GtQ[n, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{\sin^{-1}(ax)^2}{\left(c-a^2cx^2\right)^{7/2}}\,dx = \frac{x\sin^{-1}(ax)^2}{5c\left(c-a^2cx^2\right)^{5/2}} + \frac{4\int \frac{\sin^{-1}(ax)^2}{\left(c-a^2cx^2\right)^{5/2}}\,dx}{5c} - \frac{\left(2a\sqrt{1-a^2x^2}\right)\int \frac{x\sin^{-1}(ax)}{\left(1-a^2x^2\right)^3}\,dx}{5c^3\sqrt{c-a^2cx^2}}$$

$$= -\frac{\sin^{-1}(ax)}{10ac^3\left(1-a^2x^2\right)^{3/2}\sqrt{c-a^2cx^2}} + \frac{x\sin^{-1}(ax)^2}{5c\left(c-a^2cx^2\right)^{5/2}} + \frac{4x\sin^{-1}(ax)^2}{15c^2\left(c-a^2cx^2\right)^{3/2}} + \frac{8\int \frac{\sin^{-1}(a}{\left(c-a^2cx^2\right.}}{15c^2}$$

$$= \frac{x}{30c^3\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}} - \frac{\sin^{-1}(ax)}{10ac^3\left(1-a^2x^2\right)^{3/2}\sqrt{c-a^2cx^2}} - \frac{4\sin^{-1}(ax)}{15ac^3\sqrt{1-a^2x^2}\sqrt{c-a}}$$

$$= \frac{x}{3c^3\sqrt{c-a^2cx^2}} + \frac{x}{30c^3\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}} - \frac{\sin^{-1}(ax)}{10ac^3\left(1-a^2x^2\right)^{3/2}\sqrt{c-a^2cx^2}} - \frac{}{15ac}$$

$$= \frac{x}{3c^3\sqrt{c-a^2cx^2}} + \frac{x}{30c^3\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}} - \frac{\sin^{-1}(ax)}{10ac^3\left(1-a^2x^2\right)^{3/2}\sqrt{c-a^2cx^2}} - \frac{}{15ac}$$

$$= \frac{x}{3c^3\sqrt{c-a^2cx^2}} + \frac{x}{30c^3\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}} - \frac{\sin^{-1}(ax)}{10ac^3\left(1-a^2x^2\right)^{3/2}\sqrt{c-a^2cx^2}} - \frac{}{15ac}$$

$$= \frac{x}{3c^3\sqrt{c-a^2cx^2}} + \frac{x}{30c^3\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}} - \frac{\sin^{-1}(ax)}{10ac^3\left(1-a^2x^2\right)^{3/2}\sqrt{c-a^2cx^2}} - \frac{}{15ac}$$

$$= \frac{x}{3c^3\sqrt{c-a^2cx^2}} + \frac{x}{30c^3\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}} - \frac{\sin^{-1}(ax)}{10ac^3\left(1-a^2x^2\right)^{3/2}\sqrt{c-a^2cx^2}} - \frac{}{15ac}$$

Mathematica [A] time = 0.96, size = 234, normalized size = 0.60

$$\frac{\sqrt{1-a^2x^2}\left(\frac{11ax}{\sqrt{1-a^2x^2}} + \frac{16ax\sin^{-1}(ax)^2}{\sqrt{1-a^2x^2}} + \frac{8\sin^{-1}(ax)\left(\frac{ax\sin^{-1}(ax)}{\sqrt{1-a^2x^2}}-1\right)}{1-a^2x^2} + \frac{3\sin^{-1}(ax)\left(\frac{2ax\sin^{-1}(ax)}{\sqrt{1-a^2x^2}}-1\right)}{\left(1-a^2x^2\right)^2} + \frac{a^3x^3}{\left(1-a^2x^2\right)^{3/2}} - 16i\text{Li}_2\left(-e^{2i}\right.\right.}{30ac^3\sqrt{c\left(1-a^2x^2\right)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a*x]^2/(c - a^2*c*x^2)^(7/2),x]
```

```
[Out] (Sqrt[1 - a^2*x^2]*((a^3*x^3)/(1 - a^2*x^2)^(3/2) + (11*a*x)/Sqrt[1 - a^2*x
^2] - (16*I)*ArcSin[a*x]^2 + (16*a*x*ArcSin[a*x]^2)/Sqrt[1 - a^2*x^2] + (8*
ArcSin[a*x]*(-1 + (a*x*ArcSin[a*x])/Sqrt[1 - a^2*x^2]))/(1 - a^2*x^2) + (3*
ArcSin[a*x]*(-1 + (2*a*x*ArcSin[a*x])/Sqrt[1 - a^2*x^2]))/(1 - a^2*x^2)^2 +
 32*ArcSin[a*x]*Log[1 + E^((2*I)*ArcSin[a*x])] - (16*I)*PolyLog[2, -E^((2*I
)*ArcSin[a*x])]))/(30*a*c^3*Sqrt[c*(1 - a^2*x^2)])
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-a^2cx^2+c}\,\arcsin(ax)^2}{a^8c^4x^8-4\,a^6c^4x^6+6\,a^4c^4x^4-4\,a^2c^4x^2+c^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^2/(-a^2*c*x^2+c)^(7/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-a^2*c*x^2 + c)*arcsin(a*x)^2/(a^8*c^4*x^8 - 4*a^6*c^4*x^6 +
6*a^4*c^4*x^4 - 4*a^2*c^4*x^2 + c^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^2}{(-a^2cx^2+c)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^2/(-a^2*c*x^2+c)^(7/2),x, algorithm="giac")
[Out] integrate(arcsin(a*x)^2/(-a^2*c*x^2 + c)^(7/2), x)
```

maple [A] time = 0.34, size = 556, normalized size = 1.43

$$-\frac{\sqrt{-c\left(a^2x^2-1\right)}\,\left(8a^5x^5-20a^3x^3+8i\sqrt{-a^2x^2+1}\,x^4a^4+15ax-16i\sqrt{-a^2x^2+1}\,x^2a^2+8i\sqrt{-a^2x^2+1}\right)\left(-280i\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^2/(-a^2*c*x^2+c)^(7/2),x)
[Out] -1/30*(-c*(a^2*x^2-1))^(1/2)*(8*a^5*x^5-20*a^3*x^3+8*I*(-a^2*x^2+1)^(1/2)*x
^4*a^4+15*a*x-16*I*(-a^2*x^2+1)^(1/2)*x^2*a^2+8*I*(-a^2*x^2+1)^(1/2))*(-280
*I*arcsin(a*x)*x^6*a^6+64*(-a^2*x^2+1)^(1/2)*arcsin(a*x)*x^7*a^7+126*I*(-a^
2*x^2+1)^(1/2)*x^5*a^5+32*x^8*a^8-156*I*(-a^2*x^2+1)^(1/2)*x^3*a^3-248*(-a^
2*x^2+1)^(1/2)*arcsin(a*x)*x^5*a^5-328*I*arcsin(a*x)*x^2*a^2-142*a^6*x^6+80
*a^4*x^4*arcsin(a*x)^2+456*I*arcsin(a*x)*x^4*a^4+340*arcsin(a*x)*(-a^2*x^2+
1)^(1/2)*x^3*a^3+62*I*(-a^2*x^2+1)^(1/2)*x*a+265*a^4*x^4-190*arcsin(a*x)^2*
x^2*a^2-32*I*(-a^2*x^2+1)^(1/2)*x^7*a^7-165*arcsin(a*x)*(-a^2*x^2+1)^(1/2)*
x*a+88*I*arcsin(a*x)-235*a^2*x^2+128*arcsin(a*x)^2+64*I*arcsin(a*x)*x^8*a^8
+80)/c^4/(40*a^10*x^10-215*a^8*x^8+469*a^6*x^6-517*a^4*x^4+287*a^2*x^2-64)/
a+8/15*I*(-a^2*x^2+1)^(1/2)*(-c*(a^2*x^2-1))^(1/2)*(2*I*arcsin(a*x)*ln(1+(I
*a*x+(-a^2*x^2+1)^(1/2))^2)+2*arcsin(a*x)^2+polylog(2,-(I*a*x+(-a^2*x^2+1)^
(1/2))^2))/a/c^4/(a^2*x^2-1)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^2}{(-a^2cx^2+c)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^2/(-a^2*c*x^2+c)^(7/2),x, algorithm="maxima")
[Out] integrate(arcsin(a*x)^2/(-a^2*c*x^2 + c)^(7/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\mathrm{asin}(a\,x)^2}{{\left(c-a^2\,c\,x^2\right)}^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^2/(c - a^2*c*x^2)^(7/2),x)
[Out] int(asin(a*x)^2/(c - a^2*c*x^2)^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}^2(ax)}{(-c(ax-1)(ax+1))^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**2/(-a**2*c*x**2+c)**(7/2),x)
```

```
[Out] Integral(asin(a*x)**2/(-c*(a*x - 1)*(a*x + 1))**(7/2), x)
```

3.276 $\int x^m \left(d-c^2 d x^2\right)^3 \left(a+b \sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=1312

$$\frac{d^3\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2x^{m+1}}{m+7}+\frac{6d^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2x^{m+1}}{(m+5)(m+7)}+\frac{24d^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(m+7)\left(m^2+8m+15\right)}$$

```
[Out] d^3*x^(1+m)*(-c^2*x^2+1)^3*(a+b*arcsin(c*x))^2/(7+m)-30*b*c*d^3*x^(2+m)*(a+
b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/(7+m)^2/(m^2+8*m+15)-36*b*c*d^3*x^(2+m)*(
a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/(3+m)/(5+m)^2/(7+m)-48*b*c*d^3*x^(2+m)*
(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/(3+m)^2/(5+m)/(7+m)+30*b^2*c^2*d^3*x^(
3+m)/(3+m)^2/(5+m)/(7+m)^2+12*b^2*c^2*d^3*x^(3+m)/(3+m)/(5+m)^2/(7+m)+48*b^
2*c^2*d^3*x^(3+m)/(3+m)^3/(5+m)/(7+m)-2*b*c*d^3*x^(2+m)*(-c^2*x^2+1)^(5/2)*
(a+b*arcsin(c*x))/(7+m)^2+36*b^2*c^2*d^3*x^(3+m)*HypergeometricPFQ([1, 3/2+
1/2*m, 3/2+1/2*m],[2+1/2*m, 5/2+1/2*m],c^2*x^2)/(m^2+8*m+15)^2/(m^2+9*m+14)
+2*b^2*c^6*d^3*x^(7+m)/(7+m)^3+2*b^2*c^2*d^3*x^(3+m)/(3+m)/(7+m)^2+36*b^2*c
^2*d^3*x^(3+m)/(7+m)/(m^2+8*m+15)^2+10*b^2*c^2*d^3*x^(3+m)/(7+m)^2/(m^2+8*m
+15)-10*b^2*c^4*d^3*x^(5+m)/(5+m)^2/(7+m)^2-4*b^2*c^4*d^3*x^(5+m)/(5+m)/(7+
m)^2-12*b^2*c^4*d^3*x^(5+m)/(5+m)^3/(7+m)+48*d^3*x^(1+m)*(a+b*arcsin(c*x))^
2/(5+m)/(7+m)/(m^2+4*m+3)+24*d^3*x^(1+m)*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2/(
7+m)/(m^2+8*m+15)+6*d^3*x^(1+m)*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))^2/(5+m)/(7
+m)-30*b*c*d^3*x^(2+m)*(a+b*arcsin(c*x))*hypergeom([1/2, 1+1/2*m],[2+1/2*m]
,c^2*x^2)/(5+m)/(7+m)^2/(m^2+5*m+6)-36*b*c*d^3*x^(2+m)*(a+b*arcsin(c*x))*hy
pergeom([1/2, 1+1/2*m],[2+1/2*m],c^2*x^2)/(5+m)^2/(7+m)/(m^2+5*m+6)-48*b*c*
d^3*x^(2+m)*(a+b*arcsin(c*x))*hypergeom([1/2, 1+1/2*m],[2+1/2*m],c^2*x^2)/(
3+m)^2/(7+m)/(m^2+7*m+10)-96*b*c*d^3*x^(2+m)*(a+b*arcsin(c*x))*hypergeom([1
/2, 1+1/2*m],[2+1/2*m],c^2*x^2)/(5+m)/(7+m)/(m^3+6*m^2+11*m+6)+96*b^2*c^2*d
^3*x^(3+m)*HypergeometricPFQ([1, 3/2+1/2*m, 3/2+1/2*m],[2+1/2*m, 5/2+1/2*m]
,c^2*x^2)/(3+m)^2/(5+m)/(7+m)/(m^2+3*m+2)+48*b^2*c^2*d^3*x^(3+m)*Hypergeome
tricPFQ([1, 3/2+1/2*m, 3/2+1/2*m],[2+1/2*m, 5/2+1/2*m],c^2*x^2)/(3+m)^3/(7+
m)/(m^2+7*m+10)-10*b*c*d^3*x^(2+m)*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))/(5+
m)/(7+m)^2-12*b*c*d^3*x^(2+m)*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))/(5+m)^2/
(7+m)+30*b^2*c^2*d^3*x^(3+m)*HypergeometricPFQ([1, 3/2+1/2*m, 3/2+1/2*m],[2
+1/2*m, 5/2+1/2*m],c^2*x^2)/(3+m)^2/(7+m)^2/(m^2+7*m+10)
```

Rubi [F] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int x^m \left(d-c^2dx^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2 dx$$

Verification is Not applicable to the result.

```
[In] Int[x^m*(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] Defer[Int][x^m*(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x])^2, x]
```

Rubi steps

$$\int x^m \left(d-c^2dx^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2 dx=\int x^m \left(d-c^2dx^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2 dx$$

Mathematica [F] time = 3.67, size = 0, normalized size = 0.00

$$\int x^m \left(d-c^2dx^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2 dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x^m*(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x])^2,x]
[Out] Integrate[x^m*(d - c^2*d*x^2)^3*(a + b*ArcSin[c*x])^2, x]
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(a^2c^6d^3x^6 - 3\,a^2c^4d^3x^4 + 3\,a^2c^2d^3x^2 - a^2d^3 + \left(b^2c^6d^3x^6 - 3\,b^2c^4d^3x^4 + 3\,b^2c^2d^3x^2 - b^2d^3\right)\arcsin(c\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
[Out] integral(-(a^2*c^6*d^3*x^6 - 3*a^2*c^4*d^3*x^4 + 3*a^2*c^2*d^3*x^2 - a^2*d^
3 + (b^2*c^6*d^3*x^6 - 3*b^2*c^4*d^3*x^4 + 3*b^2*c^2*d^3*x^2 - b^2*d^3)*arc
sin(c*x)^2 + 2*(a*b*c^6*d^3*x^6 - 3*a*b*c^4*d^3*x^4 + 3*a*b*c^2*d^3*x^2 - a
*b*d^3)*arcsin(c*x))*x^m, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\left(c^2dx^2 - d\right)^3 (b\arcsin(cx) + a)^2 x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2,x, algorithm="giac")
[Out] integrate(-(c^2*d*x^2 - d)^3*(b*arcsin(c*x) + a)^2*x^m, x)
```

maple [F] time = 22.23, size = 0, normalized size = 0.00

$$\int x^m \left(-c^2d\,x^2 + d\right)^3 (a + b\arcsin(cx))^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2,x)
[Out] int(x^m*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{a^2c^6d^3x^{m+7}}{m+7} + \frac{3\,a^2c^4d^3x^{m+5}}{m+5} - \frac{3\,a^2c^2d^3x^{m+3}}{m+3} + \frac{a^2d^3x^{m+1}}{m+1} - \frac{\left(\left(b^2c^6d^3m^3 + 9\,b^2c^6d^3m^2 + 23\,b^2c^6d^3m + 15\,b^2c^6d^3\right)x\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^3*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
[Out] -a^2*c^6*d^3*x^(m + 7)/(m + 7) + 3*a^2*c^4*d^3*x^(m + 5)/(m + 5) - 3*a^2*c^
2*d^3*x^(m + 3)/(m + 3) + a^2*d^3*x^(m + 1)/(m + 1) - (((b^2*c^6*d^3*m^3 +
9*b^2*c^6*d^3*m^2 + 23*b^2*c^6*d^3*m + 15*b^2*c^6*d^3)*x^7 - 3*(b^2*c^4*d^3
*m^3 + 11*b^2*c^4*d^3*m^2 + 31*b^2*c^4*d^3*m + 21*b^2*c^4*d^3)*x^5 + 3*(b^2
*c^2*d^3*m^3 + 13*b^2*c^2*d^3*m^2 + 47*b^2*c^2*d^3*m + 35*b^2*c^2*d^3)*x^3
- (b^2*d^3*m^3 + 15*b^2*d^3*m^2 + 71*b^2*d^3*m + 105*b^2*d^3)*x)*x^m*arctan
2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + (m^4 + 16*m^3 + 86*m^2 + 176*m + 1
05)*integrate(-2*(((b^2*c^7*d^3*m^3 + 9*b^2*c^7*d^3*m^2 + 23*b^2*c^7*d^3*m
+ 15*b^2*c^7*d^3)*x^7 - 3*(b^2*c^5*d^3*m^3 + 11*b^2*c^5*d^3*m^2 + 31*b^2*c^
5*d^3*m + 21*b^2*c^5*d^3)*x^5 + 3*(b^2*c^3*d^3*m^3 + 13*b^2*c^3*d^3*m^2 + 4
7*b^2*c^3*d^3*m + 35*b^2*c^3*d^3)*x^3 - (b^2*c*d^3*m^3 + 15*b^2*c*d^3*m^2 +
 71*b^2*c*d^3*m + 105*b^2*c*d^3)*x)*sqrt(c*x + 1)*sqrt(-c*x + 1)*x^m*arctan
2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + (a*b*d^3*m^4 + (a*b*c^8*d^3*m^4 + 16
```

```
*a*b*c^8*d^3*m^3 + 86*a*b*c^8*d^3*m^2 + 176*a*b*c^8*d^3*m + 105*a*b*c^8*d^3
)*x^8 + 16*a*b*d^3*m^3 + 86*a*b*d^3*m^2 - 4*(a*b*c^6*d^3*m^4 + 16*a*b*c^6*d
^3*m^3 + 86*a*b*c^6*d^3*m^2 + 176*a*b*c^6*d^3*m + 105*a*b*c^6*d^3)*x^6 + 17
6*a*b*d^3*m + 105*a*b*d^3 + 6*(a*b*c^4*d^3*m^4 + 16*a*b*c^4*d^3*m^3 + 86*a*
b*c^4*d^3*m^2 + 176*a*b*c^4*d^3*m + 105*a*b*c^4*d^3)*x^4 - 4*(a*b*c^2*d^3*m
^4 + 16*a*b*c^2*d^3*m^3 + 86*a*b*c^2*d^3*m^2 + 176*a*b*c^2*d^3*m + 105*a*b*
c^2*d^3)*x^2)*x^m*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))/(m^4 + 16*m^3
 - (c^2*m^4 + 16*c^2*m^3 + 86*c^2*m^2 + 176*c^2*m + 105*c^2)*x^2 + 86*m^2 +
 176*m + 105), x))/(m^4 + 16*m^3 + 86*m^2 + 176*m + 105)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int x^m\,(a+b\,\mathrm{asin}\,(c\,x))^2\,\left(d-c^2\,d\,x^2\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^3,x)
```

```
[Out] int(x^m*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^3, x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(-c**2*d*x**2+d)**3*(a+b*asin(c*x))**2,x)
```

```
[Out] Timed out
```

3.277 $\int x^m \left(d-c^2dx^2\right)^2 \left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=756

$$\frac{16b^2c^2d^2x^{m+3}\,{}_3F_2\left(1,\frac{m}{2}+\frac{3}{2},\frac{m}{2}+\frac{3}{2};\frac{m}{2}+2,\frac{m}{2}+\frac{5}{2};c^2x^2\right)}{(m+3)^2(m+5)\left(m^2+3m+2\right)}+\frac{8b^2c^2d^2x^{m+3}\,{}_3F_2\left(1,\frac{m}{2}+\frac{3}{2},\frac{m}{2}+\frac{3}{2};\frac{m}{2}+2,\frac{m}{2}+\frac{5}{2};c^2x^2\right)}{(m+2)(m+3)^3(m+5)}$$

```
[Out] 6*b^2*c^2*d^2*x^(3+m)/(3+m)^2/(5+m)^2+2*b^2*c^2*d^2*x^(3+m)/(3+m)/(5+m)^2+8
*b^2*c^2*d^2*x^(3+m)/(3+m)^3/(5+m)-2*b^2*c^4*d^2*x^(5+m)/(5+m)^3-2*b*c*d^2*
x^(2+m)*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))/(5+m)^2+8*d^2*x^(1+m)*(a+b*arc
sin(c*x))^2/(5+m)/(m^2+4*m+3)+4*d^2*x^(1+m)*(-c^2*x^2+1)*(a+b*arcsin(c*x))^
2/(m^2+8*m+15)+d^2*x^(1+m)*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))^2/(5+m)-6*b*c*d
^2*x^(2+m)*(a+b*arcsin(c*x))*hypergeom([1/2, 1+1/2*m],[2+1/2*m],c^2*x^2)/(5
+m)^2/(m^2+5*m+6)-8*b*c*d^2*x^(2+m)*(a+b*arcsin(c*x))*hypergeom([1/2, 1+1/2
*m],[2+1/2*m],c^2*x^2)/(3+m)^2/(m^2+7*m+10)-16*b*c*d^2*x^(2+m)*(a+b*arcsin(
c*x))*hypergeom([1/2, 1+1/2*m],[2+1/2*m],c^2*x^2)/(5+m)/(m^3+6*m^2+11*m+6)+
8*b^2*c^2*d^2*x^(3+m)*HypergeometricPFQ([1, 3/2+1/2*m, 3/2+1/2*m],[2+1/2*m,
 5/2+1/2*m],c^2*x^2)/(2+m)/(3+m)^3/(5+m)+16*b^2*c^2*d^2*x^(3+m)*Hypergeomet
ricPFQ([1, 3/2+1/2*m, 3/2+1/2*m],[2+1/2*m, 5/2+1/2*m],c^2*x^2)/(3+m)^2/(5+m
)/(m^2+3*m+2)+6*b^2*c^2*d^2*x^(3+m)*HypergeometricPFQ([1, 3/2+1/2*m, 3/2+1/
2*m],[2+1/2*m, 5/2+1/2*m],c^2*x^2)/(2+m)/(m^2+8*m+15)^2-6*b*c*d^2*x^(2+m)*(
a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/(3+m)/(5+m)^2-8*b*c*d^2*x^(2+m)*(a+b*ar
csin(c*x))*(-c^2*x^2+1)^(1/2)/(3+m)^2/(5+m)
```

Rubi [F] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int x^m \left(d-c^2dx^2\right)^2 \left(a+b\sin^{-1}(cx)\right)^2\,dx$$

Verification is Not applicable to the result.

```
[In] Int[x^m*(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] Defer[Int][x^m*(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x])^2, x]
```

Rubi steps

$$\int x^m \left(d-c^2dx^2\right)^2 \left(a+b\sin^{-1}(cx)\right)^2\,dx=\int x^m \left(d-c^2dx^2\right)^2 \left(a+b\sin^{-1}(cx)\right)^2\,dx$$

Mathematica [F] time = 0.15, size = 0, normalized size = 0.00

$$\int x^m \left(d-c^2dx^2\right)^2 \left(a+b\sin^{-1}(cx)\right)^2\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x^m*(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] Integrate[x^m*(d - c^2*d*x^2)^2*(a + b*ArcSin[c*x])^2, x]
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a^2c^4d^2x^4-2\,a^2c^2d^2x^2+a^2d^2+\left(b^2c^4d^2x^4-2\,b^2c^2d^2x^2+b^2d^2\right)\arcsin\left(cx\right)^2+2\left(abc^4d^2x^4-2\,abc^2d\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral((a^2*c^4*d^2*x^4 - 2*a^2*c^2*d^2*x^2 + a^2*d^2 + (b^2*c^4*d^2*x^4
- 2*b^2*c^2*d^2*x^2 + b^2*d^2)*arcsin(c*x)^2 + 2*(a*b*c^4*d^2*x^4 - 2*a*b*c
^2*d^2*x^2 + a*b*d^2)*arcsin(c*x))*x^m, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(c^2dx^2 - d\right)^2 (b\arcsin(cx) + a)^2 x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] integrate((c^2*d*x^2 - d)^2*(b*arcsin(c*x) + a)^2*x^m, x)
```

maple [F] time = 10.62, size = 0, normalized size = 0.00

$$\int x^m \left(-c^2 d\, x^2 + d\right)^2 (a + b\arcsin(cx))^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2,x)
```

```
[Out] int(x^m*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{a^2c^4d^2x^{m+5}}{m+5} - \frac{2\,a^2c^2d^2x^{m+3}}{m+3} + \frac{a^2d^2x^{m+1}}{m+1} + \frac{\left(\left(b^2c^4d^2m^2 + 4\,b^2c^4d^2m + 3\,b^2c^4d^2\right)x^5 - 2\left(b^2c^2d^2m^2 + 6\,b^2c^2d^2m + 5\,b^2\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^2*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] a^2*c^4*d^2*x^(m + 5)/(m + 5) - 2*a^2*c^2*d^2*x^(m + 3)/(m + 3) + a^2*d^2*x
^(m + 1)/(m + 1) + (((b^2*c^4*d^2*m^2 + 4*b^2*c^4*d^2*m + 3*b^2*c^4*d^2)*x^
5 - 2*(b^2*c^2*d^2*m^2 + 6*b^2*c^2*d^2*m + 5*b^2*c^2*d^2)*x^3 + (b^2*d^2*m^
2 + 8*b^2*d^2*m + 15*b^2*d^2)*x)*x^m*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x +
 1))^2 + (m^3 + 9*m^2 + 23*m + 15)*integrate(-2*(((b^2*c^5*d^2*m^2 + 4*b^2*
c^5*d^2*m + 3*b^2*c^5*d^2)*x^5 - 2*(b^2*c^3*d^2*m^2 + 6*b^2*c^3*d^2*m + 5*b
^2*c^3*d^2)*x^3 + (b^2*c*d^2*m^2 + 8*b^2*c*d^2*m + 15*b^2*c*d^2)*x)*sqrt(c*
x + 1)*sqrt(-c*x + 1)*x^m*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) - (a*b
*d^2*m^3 - (a*b*c^6*d^2*m^3 + 9*a*b*c^6*d^2*m^2 + 23*a*b*c^6*d^2*m + 15*a*b
*c^6*d^2)*x^6 + 9*a*b*d^2*m^2 + 23*a*b*d^2*m + 3*(a*b*c^4*d^2*m^3 + 9*a*b*c
^4*d^2*m^2 + 23*a*b*c^4*d^2*m + 15*a*b*c^4*d^2)*x^4 + 15*a*b*d^2 - 3*(a*b*c
^2*d^2*m^3 + 9*a*b*c^2*d^2*m^2 + 23*a*b*c^2*d^2*m + 15*a*b*c^2*d^2)*x^2)*x^
m*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))/(m^3 - (c^2*m^3 + 9*c^2*m^2 +
 23*c^2*m + 15*c^2)*x^2 + 9*m^2 + 23*m + 15), x))/(m^3 + 9*m^2 + 23*m + 15)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^m\,(a + b\,\mathrm{asin}(c\,x))^2\,\left(d - c^2\,d\,x^2\right)^2 \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^2,x)
```

```
[Out] int(x^m*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$d^2\left(\int a^2x^m\,dx+\int b^2x^m\operatorname{asin}^2(cx)\,dx+\int 2abx^m\operatorname{asin}(cx)\,dx+\int\left(-2a^2c^2x^2x^m\right)dx+\int a^2c^4x^4x^m\,dx+\int\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(-c**2*d*x**2+d)**2*(a+b*asin(c*x))**2,x)
```

```
[Out] d**2*(Integral(a**2*x**m, x) + Integral(b**2*x**m*asin(c*x)**2, x) + Integr
al(2*a*b*x**m*asin(c*x), x) + Integral(-2*a**2*c**2*x**2*x**m, x) + Integra
l(a**2*c**4*x**4*x**m, x) + Integral(-2*b**2*c**2*x**2*x**m*asin(c*x)**2, x
) + Integral(b**2*c**4*x**4*x**m*asin(c*x)**2, x) + Integral(-4*a*b*c**2*x*
*2*x**m*asin(c*x), x) + Integral(2*a*b*c**4*x**4*x**m*asin(c*x), x))
```

3.278 $\int x^m \left(d-c^2 d x^2\right) \left(a+b \sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=371

$$\frac{4 b^2 c^2 d x^{m+3} {}_3F_2\left(1,\frac{m}{2}+\frac{3}{2},\frac{m}{2}+\frac{3}{2};\frac{m}{2}+2,\frac{m}{2}+\frac{5}{2};c^2 x^2\right)}{(m+3)^2 \left(m^2+3 m+2\right)}+\frac{2 b^2 c^2 d x^{m+3} {}_3F_2\left(1,\frac{m}{2}+\frac{3}{2},\frac{m}{2}+\frac{3}{2};\frac{m}{2}+2,\frac{m}{2}+\frac{5}{2};c^2 x^2\right)}{(m+2)(m+3)^3}-\frac{4 b c}{}$$

```
[Out] 2*b^2*c^2*d*x^(3+m)/(3+m)^3+2*d*x^(1+m)*(a+b*arcsin(c*x))^2/(m^2+4*m+3)+d*x
^(1+m)*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2/(3+m)-2*b*c*d*x^(2+m)*(a+b*arcsin(c
*x))*hypergeom([1/2, 1+1/2*m],[2+1/2*m],c^2*x^2)/(2+m)/(3+m)^2-4*b*c*d*x^(2
+m)*(a+b*arcsin(c*x))*hypergeom([1/2, 1+1/2*m],[2+1/2*m],c^2*x^2)/(m^3+6*m^
2+11*m+6)+2*b^2*c^2*d*x^(3+m)*HypergeometricPFQ([1, 3/2+1/2*m, 3/2+1/2*m],[
2+1/2*m, 5/2+1/2*m],c^2*x^2)/(2+m)/(3+m)^3+4*b^2*c^2*d*x^(3+m)*Hypergeometr
icPFQ([1, 3/2+1/2*m, 3/2+1/2*m],[2+1/2*m, 5/2+1/2*m],c^2*x^2)/(3+m)^2/(m^2+
3*m+2)-2*b*c*d*x^(2+m)*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/(3+m)^2
```

Rubi [F] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int x^m \left(d-c^2 d x^2\right) \left(a+b \sin^{-1}(cx)\right)^2 \, dx$$

Verification is Not applicable to the result.

```
[In] Int[x^m*(d - c^2*d*x^2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] Defer[Int][x^m*(d - c^2*d*x^2)*(a + b*ArcSin[c*x])^2, x]
```

Rubi steps

$$\int x^m \left(d-c^2 d x^2\right) \left(a+b \sin^{-1}(cx)\right)^2 \, dx=\int x^m \left(d-c^2 d x^2\right) \left(a+b \sin^{-1}(cx)\right)^2 \, dx$$

Mathematica [F] time = 0.11, size = 0, normalized size = 0.00

$$\int x^m \left(d-c^2 d x^2\right) \left(a+b \sin^{-1}(cx)\right)^2 \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x^m*(d - c^2*d*x^2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] Integrate[x^m*(d - c^2*d*x^2)*(a + b*ArcSin[c*x])^2, x]
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(a^2 c^2 d x^2 - a^2 d + \left(b^2 c^2 d x^2 - b^2 d\right) \arcsin\left(cx\right)^2 + 2 \left(a b c^2 d x^2 - a b d\right) \arcsin\left(cx\right)\right) x^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral(-(a^2*c^2*d*x^2 - a^2*d + (b^2*c^2*d*x^2 - b^2*d)*arcsin(c*x)^2 +
2*(a*b*c^2*d*x^2 - a*b*d)*arcsin(c*x))*x^m, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\left(c^2 d x^2 - d\right) \left(b \arcsin\left(cx\right) + a\right)^2 x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] integrate(-(c^2*d*x^2 - d)*(b*arcsin(c*x) + a)^2*x^m, x)
```

maple [F] time = 4.48, size = 0, normalized size = 0.00

$$\int x^{m}\left(-c^{2}d\,x^{2}+d\right)\left(a+b\arcsin\left(cx\right)\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] int(x^m*(-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{a^{2}c^{2}dx^{m+3}}{m+3}+\frac{a^{2}dx^{m+1}}{m+1}-\frac{\left(\left(b^{2}c^{2}dm+b^{2}c^{2}d\right)x^{3}-\left(b^{2}dm+3\,b^{2}d\right)x\right)x^{m}\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)^{2}+2\left(m^{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] -a^2*c^2*d*x^(m + 3)/(m + 3) + a^2*d*x^(m + 1)/(m + 1) - (((b^2*c^2*d*m + b
^2*c^2*d)*x^3 - (b^2*d*m + 3*b^2*d)*x)*x^m*arctan2(c*x, sqrt(c*x + 1)*sqrt(
-c*x + 1))^2 + (m^2 + 4*m + 3)*integrate(2*(((b^2*c^3*d*m + b^2*c^3*d)*x^3
- (b^2*c*d*m + 3*b^2*c*d)*x)*sqrt(c*x + 1)*sqrt(-c*x + 1)*x^m*arctan2(c*x,
sqrt(c*x + 1)*sqrt(-c*x + 1)) + (a*b*d*m^2 + (a*b*c^4*d*m^2 + 4*a*b*c^4*d*m
 + 3*a*b*c^4*d)*x^4 + 4*a*b*d*m + 3*a*b*d - 2*(a*b*c^2*d*m^2 + 4*a*b*c^2*d*
m + 3*a*b*c^2*d)*x^2)*x^m*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))/((c^2
*m^2 + 4*c^2*m + 3*c^2)*x^2 - m^2 - 4*m - 3), x))/(m^2 + 4*m + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^{m}\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^{2}\,\left(d-c^{2}\,d\,x^{2}\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a + b*asin(c*x))^2*(d - c^2*d*x^2),x)
```

```
[Out] int(x^m*(a + b*asin(c*x))^2*(d - c^2*d*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-d\left(\int\left(-a^{2}x^{m}\right)dx+\int\left(-b^{2}x^{m}\operatorname{asin}^{2}\left(cx\right)\right)dx+\int\left(-2abx^{m}\operatorname{asin}\left(cx\right)\right)dx+\int a^{2}c^{2}x^{2}x^{m}\,dx+\int b^{2}c^{2}x^{2}x^{m}\operatorname{as}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(-c**2*d*x**2+d)*(a+b*asin(c*x))**2,x)
```

```
[Out] -d*(Integral(-a**2*x**m, x) + Integral(-b**2*x**m*asin(c*x)**2, x) + Integr
al(-2*a*b*x**m*asin(c*x), x) + Integral(a**2*c**2*x**2*x**m, x) + Integral(
b**2*c**2*x**2*x**m*asin(c*x)**2, x) + Integral(2*a*b*c**2*x**2*x**m*asin(c
*x), x))
```

3.279 $\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{d-c^2dx^2}\,dx$

Optimal. Leaf size=30

$$\text{Int}\left(\frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{d-c^2dx^2},x\right)$$

```
[Out] Unintegrable(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{d-c^2dx^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(x^m*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2),x]
[Out] Defer[Int][(x^m*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2), x]
```

Rubi steps

$$\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{d-c^2dx^2}\,dx=\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{d-c^2dx^2}\,dx$$

Mathematica [A] time = 7.50, size = 0, normalized size = 0.00

$$\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{d-c^2dx^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(x^m*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2),x]
[Out] Integrate[(x^m*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2), x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)x^m}{c^2dx^2-d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x, algorithm="fricas")
[Out] integral(-(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*x^m/(c^2*d*x^2 - d)
, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(b\arcsin(cx)+a\right)^2x^m}{c^2dx^2-d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x, algorithm="giac")
```

```
[Out] integrate(-(b*arcsin(c*x) + a)^2*x^m/(c^2*d*x^2 - d), x)
```

maple [A] time = 0.59, size = 0, normalized size = 0.00

$$\int \frac{x^{m} \left(a+b \arcsin \left(c x\right)\right)^{2}}{-c^{2} d \,x^{2}+d}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x)
[Out] int(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{{\left(b \arcsin \left(c x\right) + a\right)}^{2} x^{m}}{c^{2} d x^{2} - d}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x, algorithm="maxima")
[Out] -integrate((b*arcsin(c*x) + a)^2*x^m/(c^2*d*x^2 - d), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x^m\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{d-c^2\,d\,x^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*(a + b*asin(c*x))^2)/(d - c^2*d*x^2),x)
[Out] int((x^m*(a + b*asin(c*x))^2)/(d - c^2*d*x^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$- \frac{\int \frac{a^{2} x^{m}}{c^{2} x^{2} - 1}\, dx + \int \frac{b^{2} x^{m} \operatorname{asin}^{2}{\left (c x \right)}}{c^{2} x^{2} - 1}\, dx + \int \frac{2 a b x^{m} \operatorname{asin}{\left (c x \right)}}{c^{2} x^{2} - 1}\, dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(a+b*asin(c*x))**2/(-c**2*d*x**2+d),x)
[Out] -(Integral(a**2*x**m/(c**2*x**2 - 1), x) + Integral(b**2*x**m*asin(c*x)**2/
(c**2*x**2 - 1), x) + Integral(2*a*b*x**m*asin(c*x)/(c**2*x**2 - 1), x))/d
```

3.280 $\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^2}\,dx$

Optimal. Leaf size=280

$$-\frac{b^2c^2(m+1)x^{m+3}\,{}_3F_2\left(1,\frac{m}{2}+\frac{3}{2},\frac{m}{2}+\frac{3}{2};\frac{m}{2}+2,\frac{m}{2}+\frac{5}{2};c^2x^2\right)}{d^2\left(m^2+5m+6\right)}+\frac{(1-m)\text{Int}\left(\frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{d-c^2dx^2},x\right)}{2d}+\frac{bc(m+1)x^{m+2}\,{}_2F_1}{}$$

```
[Out] 1/2*x^(1+m)*(a+b*arcsin(c*x))^2/d^2/(-c^2*x^2+1)+b*c*(1+m)*x^(2+m)*(a+b*arc
sin(c*x))*hypergeom([1/2, 1+1/2*m],[2+1/2*m],c^2*x^2)/d^2/(2+m)+b^2*c^2*x^(
3+m)*hypergeom([1, 3/2+1/2*m],[5/2+1/2*m],c^2*x^2)/d^2/(3+m)-b^2*c^2*(1+m)*
x^(3+m)*HypergeometricPFQ([1, 3/2+1/2*m, 3/2+1/2*m],[2+1/2*m, 5/2+1/2*m],c^
2*x^2)/d^2/(m^2+5*m+6)-b*c*x^(2+m)*(a+b*arcsin(c*x))/d^2/(-c^2*x^2+1)^(1/2)
+1/2*(1-m)*Unintegrable(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x)/d
```

Rubi [A] time = 0.41, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(x^m*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^2,x]
```

```
[Out] -((b*c*x^(2 + m)*(a + b*ArcSin[c*x]))/(d^2*Sqrt[1 - c^2*x^2])) + (x^(1 + m)
*(a + b*ArcSin[c*x])^2)/(2*d^2*(1 - c^2*x^2)) + (b*c*(1 + m)*x^(2 + m)*(a +
 b*ArcSin[c*x])*Hypergeometric2F1[1/2, (2 + m)/2, (4 + m)/2, c^2*x^2])/(d^2
*(2 + m)) + (b^2*c^2*x^(3 + m)*Hypergeometric2F1[1, (3 + m)/2, (5 + m)/2, c
^2*x^2])/(d^2*(3 + m)) - (b^2*c^2*(1 + m)*x^(3 + m)*HypergeometricPFQ[{1, 3
/2 + m/2, 3/2 + m/2}, {2 + m/2, 5/2 + m/2}, c^2*x^2])/(d^2*(6 + 5*m + m^2))
 + ((1 - m)*Defer[Int][(x^m*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2), x])/(2*
d)
```

Rubi steps

$$\begin{aligned}\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^2}\,dx &= \frac{x^{1+m}\left(a+b\sin^{-1}(cx)\right)^2}{2d^2\left(1-c^2x^2\right)}-\frac{(bc)\int \frac{x^{1+m}\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}\,dx}{d^2}+\frac{(1-m)\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{d-c^2dx^2}\,dx}{2d}\\ &= -\frac{bcx^{2+m}\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{1-c^2x^2}}+\frac{x^{1+m}\left(a+b\sin^{-1}(cx)\right)^2}{2d^2\left(1-c^2x^2\right)}+\frac{\left(b^2c^2\right)\int \frac{x^{2+m}}{1-c^2x^2}\,dx}{d^2}+\frac{(1-m}{}\\ &= -\frac{bcx^{2+m}\left(a+b\sin^{-1}(cx)\right)}{d^2\sqrt{1-c^2x^2}}+\frac{x^{1+m}\left(a+b\sin^{-1}(cx)\right)^2}{2d^2\left(1-c^2x^2\right)}+\frac{bc(1+m)x^{2+m}\left(a+b\sin^{-1}\right.}{d^2(2}\end{aligned}$$

Mathematica [A] time = 9.14, size = 0, normalized size = 0.00

$$\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(x^m*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^2,x]
[Out] Integrate[(x^m*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^2, x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b^2 \arcsin(cx)^2 + 2\,ab\arcsin(cx) + a^2\right)x^m}{c^4d^2x^4 - 2\,c^2d^2x^2 + d^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^2,x, algorithm="fricas")
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*x^m/(c^4*d^2*x^4 - 2
*c^2*d^2*x^2 + d^2), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b\arcsin(cx) + a)^2 x^m}{\left(c^2dx^2 - d\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^2,x, algorithm="giac")
[Out] integrate((b*arcsin(c*x) + a)^2*x^m/(c^2*d*x^2 - d)^2, x)
```

maple [A] time = 0.75, size = 0, normalized size = 0.00

$$\int \frac{x^m\,(a + b\arcsin(cx))^2}{\left(-c^2d\,x^2 + d\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^2,x)
[Out] int(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b\arcsin(cx) + a)^2 x^m}{\left(c^2dx^2 - d\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^2,x, algorithm="maxima")
[Out] integrate((b*arcsin(c*x) + a)^2*x^m/(c^2*d*x^2 - d)^2, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^m\,(a + b\,\mathrm{asin}(c\,x))^2}{\left(d - c^2\,d\,x^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^2,x)
[Out] int((x^m*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^2, x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{a^2 x^m}{c^4 x^4 - 2c^2 x^2 + 1}\, dx + \int \frac{b^2 x^m \operatorname{asin}^2(cx)}{c^4 x^4 - 2c^2 x^2 + 1}\, dx + \int \frac{2abx^m \operatorname{asin}(cx)}{c^4 x^4 - 2c^2 x^2 + 1}\, dx}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**2,x)
```

```
[Out] (Integral(a**2*x**m/(c**4*x**4 - 2*c**2*x**2 + 1), x) + Integral(b**2*x**m*
asin(c*x)**2/(c**4*x**4 - 2*c**2*x**2 + 1), x) + Integral(2*a*b*x**m*asin(c
*x)/(c**4*x**4 - 2*c**2*x**2 + 1), x))/d**2
```

3.281 $\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^3}\,dx$

Optimal. Leaf size=669

$$-\frac{b^2c^2(1-m)(m+1)x^{m+3}\,{}_3F_2\left(1,\frac{m}{2}+\frac{3}{2},\frac{m}{2}+\frac{3}{2};\frac{m}{2}+2,\frac{m}{2}+\frac{5}{2};c^2x^2\right)}{6d^3\left(m^2+5m+6\right)}-\frac{b^2c^2(3-m)(m+1)x^{m+3}\,{}_3F_2\left(1,\frac{m}{2}+\frac{3}{2},\frac{m}{2}\right.}{4d^3\left(m^2+5m+6\right.}$$

```
[Out] -1/6*b*c*x^(2+m)*(a+b*arcsin(c*x))/d^3/(-c^2*x^2+1)^(3/2)+1/4*x^(1+m)*(a+b*
arcsin(c*x))^2/d^3/(-c^2*x^2+1)^2+1/8*(3-m)*x^(1+m)*(a+b*arcsin(c*x))^2/d^3
/(-c^2*x^2+1)+1/6*b*c*(1-m)*(1+m)*x^(2+m)*(a+b*arcsin(c*x))*hypergeom([1/2,
 1+1/2*m],[2+1/2*m],c^2*x^2)/d^3/(2+m)+1/4*b*c*(3-m)*(1+m)*x^(2+m)*(a+b*arc
sin(c*x))*hypergeom([1/2, 1+1/2*m],[2+1/2*m],c^2*x^2)/d^3/(2+m)+1/6*b^2*c^2
*(1-m)*x^(3+m)*hypergeom([1, 3/2+1/2*m],[5/2+1/2*m],c^2*x^2)/d^3/(3+m)+1/4*
b^2*c^2*(3-m)*x^(3+m)*hypergeom([1, 3/2+1/2*m],[5/2+1/2*m],c^2*x^2)/d^3/(3+
m)+1/6*b^2*c^2*x^(3+m)*hypergeom([2, 3/2+1/2*m],[5/2+1/2*m],c^2*x^2)/d^3/(3
+m)-1/6*b^2*c^2*(1-m)*(1+m)*x^(3+m)*HypergeometricPFQ([1, 3/2+1/2*m, 3/2+1/
2*m],[2+1/2*m, 5/2+1/2*m],c^2*x^2)/d^3/(m^2+5*m+6)-1/4*b^2*c^2*(3-m)*(1+m)*
x^(3+m)*HypergeometricPFQ([1, 3/2+1/2*m, 3/2+1/2*m],[2+1/2*m, 5/2+1/2*m],c^
2*x^2)/d^3/(m^2+5*m+6)-1/6*b*c*(1-m)*x^(2+m)*(a+b*arcsin(c*x))/d^3/(-c^2*x^
2+1)^(1/2)-1/4*b*c*(3-m)*x^(2+m)*(a+b*arcsin(c*x))/d^3/(-c^2*x^2+1)^(1/2)+1
/8*(1-m)*(3-m)*Unintegrable(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d),x)/d^2
```

Rubi [A] time = 0.91, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(x^m*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^3,x]
```

```
[Out] -(b*c*x^(2 + m)*(a + b*ArcSin[c*x]))/(6*d^3*(1 - c^2*x^2)^(3/2)) - (b*c*(1
- m)*x^(2 + m)*(a + b*ArcSin[c*x]))/(6*d^3*Sqrt[1 - c^2*x^2]) - (b*c*(3 - m
)*x^(2 + m)*(a + b*ArcSin[c*x]))/(4*d^3*Sqrt[1 - c^2*x^2]) + (x^(1 + m)*(a
+ b*ArcSin[c*x])^2)/(4*d^3*(1 - c^2*x^2)^2) + ((3 - m)*x^(1 + m)*(a + b*Arc
Sin[c*x])^2)/(8*d^3*(1 - c^2*x^2)) + (b*c*(1 - m)*(1 + m)*x^(2 + m)*(a + b*
ArcSin[c*x])*Hypergeometric2F1[1/2, (2 + m)/2, (4 + m)/2, c^2*x^2])/(6*d^3*
(2 + m)) + (b*c*(3 - m)*(1 + m)*x^(2 + m)*(a + b*ArcSin[c*x])*Hypergeometri
c2F1[1/2, (2 + m)/2, (4 + m)/2, c^2*x^2])/(4*d^3*(2 + m)) + (b^2*c^2*(1 - m
)*x^(3 + m)*Hypergeometric2F1[1, (3 + m)/2, (5 + m)/2, c^2*x^2])/(6*d^3*(3
+ m)) + (b^2*c^2*(3 - m)*x^(3 + m)*Hypergeometric2F1[1, (3 + m)/2, (5 + m)/
2, c^2*x^2])/(4*d^3*(3 + m)) + (b^2*c^2*x^(3 + m)*Hypergeometric2F1[2, (3 +
 m)/2, (5 + m)/2, c^2*x^2])/(6*d^3*(3 + m)) - (b^2*c^2*(1 - m)*(1 + m)*x^(3
 + m)*HypergeometricPFQ[{1, 3/2 + m/2, 3/2 + m/2}, {2 + m/2, 5/2 + m/2}, c^
2*x^2])/(6*d^3*(6 + 5*m + m^2)) - (b^2*c^2*(3 - m)*(1 + m)*x^(3 + m)*Hyperg
eometricPFQ[{1, 3/2 + m/2, 3/2 + m/2}, {2 + m/2, 5/2 + m/2}, c^2*x^2])/(4*d
^3*(6 + 5*m + m^2)) + ((1 - m)*(3 - m)*Defer[Int][(x^m*(a + b*ArcSin[c*x])^
2)/(d - c^2*d*x^2), x])/(8*d^2)
```

Rubi steps

$$\int \frac{x^m \left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^3}\,dx = \frac{x^{1+m}\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2} - \frac{(bc)\int \frac{x^{1+m}\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{5/2}}\,dx}{2d^3} + \frac{(3-m)\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^2}\,dx}{4d}$$

$$= -\frac{bcx^{2+m}\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}} + \frac{x^{1+m}\left(a+b\sin^{-1}(cx)\right)^2}{4d^3\left(1-c^2x^2\right)^2} + \frac{(3-m)x^{1+m}\left(a+b\sin^{-1}(c\right.}{8d^3\left(1-c^2x^2\right)}$$

$$= -\frac{bcx^{2+m}\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}} - \frac{bc(1-m)x^{2+m}\left(a+b\sin^{-1}(cx)\right)}{6d^3\sqrt{1-c^2x^2}} - \frac{bc(3-m)x^{2+m}\left(a+\right.}{4d^3\sqrt{1-c}}$$

$$= -\frac{bcx^{2+m}\left(a+b\sin^{-1}(cx)\right)}{6d^3\left(1-c^2x^2\right)^{3/2}} - \frac{bc(1-m)x^{2+m}\left(a+b\sin^{-1}(cx)\right)}{6d^3\sqrt{1-c^2x^2}} - \frac{bc(3-m)x^{2+m}\left(a+\right.}{4d^3\sqrt{1-c}}$$

Mathematica [**A**] time = 10.31, size = 0, normalized size = 0.00

$$\int \frac{x^m \left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(x^m*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^3,x]
[Out] Integrate[(x^m*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^3, x]
```

fricas [**A**] time = 1.19, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(b^2\arcsin\left(cx\right)^2+2\,ab\arcsin\left(cx\right)+a^2\right)x^m}{c^6d^3x^6-3\,c^4d^3x^4+3\,c^2d^3x^2-d^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^3,x, algorithm="fricas")
[Out] integral(-(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*x^m/(c^6*d^3*x^6 -
3*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3), x)
```

giac [**A**] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(b\arcsin\left(cx\right)+a\right)^2x^m}{\left(c^2dx^2-d\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^3,x, algorithm="giac")
[Out] integrate(-(b*arcsin(c*x) + a)^2*x^m/(c^2*d*x^2 - d)^3, x)
```

maple [**A**] time = 0.84, size = 0, normalized size = 0.00

$$\int \frac{x^m\left(a+b\arcsin\left(cx\right)\right)^2}{\left(-c^2d\,x^2+d\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^3,x)
```

```
[Out] int(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^3,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(b\arcsin(cx)+a)^2 x^m}{\left(c^2dx^2-d\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] -integrate((b*arcsin(c*x) + a)^2*x^m/(c^2*d*x^2 - d)^3, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^m\,(a+b\,\mathrm{asin}(c\,x))^2}{\left(d-c^2\,d\,x^2\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^3,x)
```

```
[Out] int((x^m*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**3,x)
```

```
[Out] Timed out
```

3.282 $\int x^m \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=958

$$\frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2 x^{m+1}}{m+6}+\frac{5d\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2 x^{m+1}}{(m+4)(m+6)}+\frac{15d^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(c\right.}{(m+6)\left(m^2+6m+8\right.}$$

```
[Out] 5*d*x^(1+m)*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/(4+m)/(6+m)+x^(1+m)*(-
c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2/(6+m)+10*b^2*c^2*d^2*x^(3+m)*(-c^2*d
*x^2+d)^(1/2)/(4+m)^3/(6+m)+2*b^2*c^2*d^2*(m^2+15*m+52)*x^(3+m)*(-c^2*d*x^2
+d)^(1/2)/(4+m)^2/(6+m)^3-2*b^2*c^4*d^2*x^(5+m)*(-c^2*d*x^2+d)^(1/2)/(6+m)^
3+15*d^2*x^(1+m)*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/(6+m)/(m^2+6*m+8)
-30*b*c*d^2*x^(2+m)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(2+m)^2/(4+m)/(6
+m)/(-c^2*x^2+1)^(1/2)-10*b*c*d^2*x^(2+m)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^
(1/2)/(6+m)/(m^2+6*m+8)/(-c^2*x^2+1)^(1/2)-2*b*c*d^2*x^(2+m)*(a+b*arcsin(c*
x))*(-c^2*d*x^2+d)^(1/2)/(m^2+8*m+12)/(-c^2*x^2+1)^(1/2)+10*b*c^3*d^2*x^(4+
m)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(4+m)^2/(6+m)/(-c^2*x^2+1)^(1/2)+
4*b*c^3*d^2*x^(4+m)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(4+m)/(6+m)/(-c^
2*x^2+1)^(1/2)-2*b*c^5*d^2*x^(6+m)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(
6+m)^2/(-c^2*x^2+1)^(1/2)+10*b^2*c^2*d^2*(10+3*m)*x^(3+m)*hypergeom([1/2, 3
/2+1/2*m],[5/2+1/2*m],c^2*x^2)*(-c^2*d*x^2+d)^(1/2)/(4+m)^3/(6+m)/(m^2+5*m+
6)/(-c^2*x^2+1)^(1/2)+30*b^2*c^2*d^2*x^(3+m)*hypergeom([1/2, 3/2+1/2*m],[5/
2+1/2*m],c^2*x^2)*(-c^2*d*x^2+d)^(1/2)/(2+m)^2/(6+m)/(m^2+7*m+12)/(-c^2*x^2
+1)^(1/2)+2*b^2*c^2*d^2*(15*m^2+130*m+264)*x^(3+m)*hypergeom([1/2, 3/2+1/2*
m],[5/2+1/2*m],c^2*x^2)*(-c^2*d*x^2+d)^(1/2)/(4+m)^2/(6+m)^3/(m^2+5*m+6)/(-
c^2*x^2+1)^(1/2)+15*d^3*Unintegrable(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)
^(1/2),x)/(6+m)/(m^2+6*m+8)
```

Rubi [A] time = 0.16, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int x^m \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx$$

Verification is Not applicable to the result.

```
[In] Int[x^m*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] Defer[Int][x^m*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2, x]
```

Rubi steps

$$\int x^m \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx = \int x^m \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx$$

Mathematica [A] time = 6.43, size = 0, normalized size = 0.00

$$\int x^m \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x^m*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] Integrate[x^m*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^2, x]
```

fricas [A] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a^2c^4d^2x^4 - 2\,a^2c^2d^2x^2 + a^2d^2 + \left(b^2c^4d^2x^4 - 2\,b^2c^2d^2x^2 + b^2d^2\right)\arcsin\left(cx\right)^2 + 2\left(abc^4d^2x^4 - 2\,abc^2d\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="fricas
")
```

```
[Out] integral((a^2*c^4*d^2*x^4 - 2*a^2*c^2*d^2*x^2 + a^2*d^2 + (b^2*c^4*d^2*x^4
- 2*b^2*c^2*d^2*x^2 + b^2*d^2)*arcsin(c*x)^2 + 2*(a*b*c^4*d^2*x^4 - 2*a*b*c
^2*d^2*x^2 + a*b*d^2)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)*x^m, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 12.28, size = 0, normalized size = 0.00

$$\int x^m \left(-c^2 d\,x^2 + d\right)^{\frac{5}{2}} \left(a + b\arcsin\left(cx\right)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] int(x^m*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-c^2dx^2 + d\right)^{\frac{5}{2}} \left(b\arcsin\left(cx\right) + a\right)^2 x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm="maxima
")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(5/2)*(b*arcsin(c*x) + a)^2*x^m, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.00

$$\int x^m\,\left(a + b\,\mathrm{asin}\left(c\,x\right)\right)^2\,\left(d - c^2\,d\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int(x^m*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Timed out
```

3.283 $\int x^m \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=500

$$\frac{3d^2\text{Int}\left(\frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}},x\right)}{m^2+6m+8}+\frac{3dx^{m+1}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{m^2+6m+8}-\frac{2bcdx^{m+2}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{\left(m^2+6m+8\right)\sqrt{1-c^2x^2}}+\frac{x^{m+}}{}$$

```
[Out] x^(1+m)*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2/(4+m)+2*b^2*c^2*d*x^(3+m)*
(-c^2*d*x^2+d)^(1/2)/(4+m)^3+3*d*x^(1+m)*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)
^(1/2)/(m^2+6*m+8)-6*b*c*d*x^(2+m)*(a+b*arcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(
2+m)^2/(4+m)/(-c^2*x^2+1)^(1/2)-2*b*c*d*x^(2+m)*(a+b*arcsin(c*x))*(-c^2*d*x
^2+d)^(1/2)/(m^2+6*m+8)/(-c^2*x^2+1)^(1/2)+2*b*c^3*d*x^(4+m)*(a+b*arcsin(c*
x))*(-c^2*d*x^2+d)^(1/2)/(4+m)^2/(-c^2*x^2+1)^(1/2)+2*b^2*c^2*d*(10+3*m)*x^
(3+m)*hypergeom([1/2, 3/2+1/2*m],[5/2+1/2*m],c^2*x^2)*(-c^2*d*x^2+d)^(1/2)/
(4+m)^3/(m^2+5*m+6)/(-c^2*x^2+1)^(1/2)+6*b^2*c^2*d*x^(3+m)*hypergeom([1/2,
3/2+1/2*m],[5/2+1/2*m],c^2*x^2)*(-c^2*d*x^2+d)^(1/2)/(2+m)^2/(m^2+7*m+12)/(
-c^2*x^2+1)^(1/2)+3*d^2*Unintegrable(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)
^(1/2),x)/(m^2+6*m+8)
```

Rubi [A] time = 0.15, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int x^m \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx$$

Verification is Not applicable to the result.

```
[In] Int[x^m*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] Defer[Int][x^m*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2, x]
```

Rubi steps

$$\int x^m \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx=\int x^m \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx$$

Mathematica [A] time = 0.16, size = 0, normalized size = 0.00

$$\int x^m \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right)^2 \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x^m*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] Integrate[x^m*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^2, x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(a^2c^2dx^2-a^2d+\left(b^2c^2dx^2-b^2d\right)\arcsin(cx)^2+2\left(abc^2dx^2-abd\right)\arcsin(cx)\right)\sqrt{-c^2dx^2+d}\,x^m,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="fricas
")
```

```
[Out] integral(-(a^2*c^2*d*x^2 - a^2*d + (b^2*c^2*d*x^2 - b^2*d)*arcsin(c*x)^2 +
2*(a*b*c^2*d*x^2 - a*b*d)*arcsin(c*x))*sqrt(-c^2*d*x^2 + d)*x^m, x)
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [**A**] time = 4.90, size = 0, normalized size = 0.00

$$\int x^{m} \left(-c^{2} d\,x^{2}+d\right)^{\frac{3}{2}} \left(a+b \arcsin \left(c x\right)\right)^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] int(x^m*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x)
```

maxima [**A**] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-c^{2} d x^{2} + d\right)^{\frac{3}{2}} {\left(b \arcsin \left(c x\right) + a\right)}^{2} x^{m}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm="maxima
")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(3/2)*(b*arcsin(c*x) + a)^2*x^m, x)
```

mupad [**A**] time = 0.00, size = -1, normalized size = -0.00

$$\int x^m\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(d-c^2\,d\,x^2\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int(x^m*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(3/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Timed out
```

3.284 $\int x^m \sqrt{d-c^2dx^2} \left(a+b\sin^{-1}(cx)\right)^2 dx$

Optimal. Leaf size=204

$$\frac{d\text{Int}\left(\frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}},x\right)}{m+2}+\frac{x^{m+1}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^2}{m+2}-\frac{2bcx^{m+2}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)}{(m+2)^2\sqrt{1-c^2x^2}}+\frac{2b^2c^2x^{m+3}}{(}$$

```
[Out] x^(1+m)*(a+b*arcsin(c*x))^2*(-c^2*d*x^2+d)^(1/2)/(2+m)-2*b*c*x^(2+m)*(a+b*a
rcsin(c*x))*(-c^2*d*x^2+d)^(1/2)/(2+m)^2/(-c^2*x^2+1)^(1/2)+2*b^2*c^2*x^(3+
m)*hypergeom([1/2, 3/2+1/2*m],[5/2+1/2*m],c^2*x^2)*(-c^2*d*x^2+d)^(1/2)/(2+
m)^2/(3+m)/(-c^2*x^2+1)^(1/2)+d*Unintegrable(x^m*(a+b*arcsin(c*x))^2/(-c^2*
d*x^2+d)^(1/2),x)/(2+m)
```

Rubi [A] time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int x^m \sqrt{d-c^2dx^2} \left(a+b\sin^{-1}(cx)\right)^2 dx$$

Verification is Not applicable to the result.

```
[In] Int[x^m*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] Defer[Int][x^m*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2, x]
```

Rubi steps

$$\int x^m \sqrt{d-c^2dx^2} \left(a+b\sin^{-1}(cx)\right)^2 dx = \int x^m \sqrt{d-c^2dx^2} \left(a+b\sin^{-1}(cx)\right)^2 dx$$

Mathematica [A] time = 0.11, size = 0, normalized size = 0.00

$$\int x^m \sqrt{d-c^2dx^2} \left(a+b\sin^{-1}(cx)\right)^2 dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x^m*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] Integrate[x^m*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^2, x]
```

fricas [A] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{-c^2dx^2+d}\left(b^2\arcsin(cx)^2+2ab\arcsin(cx)+a^2\right)x^m,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x, algorithm="fricas
")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)
*x^m, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 1.79, size = 0, normalized size = 0.00

$$\int x^{m}\sqrt{-c^{2}d\,x^{2}+d}\;\left(a+b\arcsin\left(cx\right)\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] int(x^m*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-c^{2}dx^{2}+d}\,{\left(b\arcsin\left(cx\right)+a\right)}^{2}x^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x, algorithm="maxima
")
```

```
[Out] integrate(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)^2*x^m, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.00

$$\int x^{m}\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^{2}\,\sqrt{d-c^{2}\,d\,x^{2}}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int(x^m*(a + b*asin(c*x))^2*(d - c^2*d*x^2)^(1/2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{m}\sqrt{-d\left(cx-1\right)\left(cx+1\right)}\;\left(a+b\operatorname{asin}{\left(cx\right)}\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(x**m*sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**2, x)
```

3.285 $\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx$

Optimal. Leaf size=32

$$\operatorname{Int}\left(\frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}},x\right)$$

```
[Out] Unintegrable(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x)
```

Rubi [A] time = 0.15, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(x^m*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2],x]
[Out] Defer[Int][(x^m*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2], x]
```

Rubi steps

$$\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx=\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx$$

Mathematica [A] time = 3.45, size = 0, normalized size = 0.00

$$\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d-c^2dx^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(x^m*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2],x]
[Out] Integrate[(x^m*(a + b*ArcSin[c*x])^2)/Sqrt[d - c^2*d*x^2], x]
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)x^m}{c^2dx^2-d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="fricas
")
[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2
)*x^m/(c^2*d*x^2 - d), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\arcsin(cx)+a\right)^2x^m}{\sqrt{-c^2dx^2+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2*x^m/sqrt(-c^2*d*x^2 + d), x)
```

maple [A] time = 0.93, size = 0, normalized size = 0.00

$$\int \frac{x^{m} \left(a+b \arcsin \left(c x\right)\right)^{2}}{\sqrt{-c^{2} d \,x^{2}+d}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x)
```

```
[Out] int(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{{\left(b \arcsin \left(c x\right) + a\right)}^{2} x^{m}}{\sqrt{-c^{2} d x^{2} + d}}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(1/2),x, algorithm="maxima
")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2*x^m/sqrt(-c^2*d*x^2 + d), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x^m\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{\sqrt{d-c^2\,d\,x^2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int((x^m*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(1/2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{m} \left(a + b \operatorname{asin}{\left(c x \right)}\right)^{2}}{\sqrt{- d \left(c x - 1\right) \left(c x + 1\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(1/2),x)
```

```
[Out] Integral(x**m*(a + b*asin(c*x))**2/sqrt(-d*(c*x - 1)*(c*x + 1)), x)
```

3.286 $\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=32

$$\text{Int}\left(\frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}},x\right)$$

```
[Out] Unintegrable(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x)
```

Rubi [A] time = 0.17, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(x^m*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2),x]
[Out] Defer[Int][(x^m*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2), x]
```

Rubi steps

$$\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx=\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx$$

Mathematica [A] time = 4.58, size = 0, normalized size = 0.00

$$\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(x^m*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2),x]
[Out] Integrate[(x^m*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(3/2), x]
```

fricas [A] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)x^m}{c^4d^2x^4-2\,c^2d^2x^2+d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="fricas
")
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)
*x^m/(c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Warning, integration of abs or sign assumes
constant sign by intervals (correct if the argument is real):Check [abs(t_n
ostep^4-1)]Evaluation time: 1.11index.cc index_m i_lex_is_greater Error: Ba
d Argument Value
```

maple [A] time = 0.82, size = 0, normalized size = 0.00

$$\int \frac{x^{m} \left(a+b \arcsin \left(c x\right)\right)^{2}}{\left(-c^{2} d \,x^{2}+d \right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x)
```

```
[Out] int(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{{\left(b \arcsin \left(c x\right) + a\right)}^{2} x^{m}}{{\left(-c^{2} d x^{2} + d\right)}^{\frac{3}{2}}}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(3/2),x, algorithm="maxima
")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2*x^m/(-c^2*d*x^2 + d)^(3/2), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x^m\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{{\left(d-c^2\,d\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int((x^m*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(3/2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{m} \left(a + b \operatorname{asin}{\left(c x \right)}\right)^{2}}{\left(- d \left(c x - 1\right) \left(c x + 1\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(3/2),x)
```

```
[Out] Integral(x**m*(a + b*asin(c*x))**2/(-d*(c*x - 1)*(c*x + 1))**(3/2), x)
```

3.287 $\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=32

$$\text{Int}\left(\frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}},x\right)$$

[Out] Unintegrable(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x)

Rubi [A] time = 0.17, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}\,dx$$

Verification is Not applicable to the result.

[In] Int[(x^m*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2),x]

[Out] Defer[Int][(x^m*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2), x]

Rubi steps

$$\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}\,dx=\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}\,dx$$

Mathematica [A] time = 4.76, size = 0, normalized size = 0.00

$$\int \frac{x^m\left(a+b\sin^{-1}(cx)\right)^2}{\left(d-c^2dx^2\right)^{5/2}}\,dx$$

Verification is Not applicable to the result.

[In] Integrate[(x^m*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2),x]

[Out] Integrate[(x^m*(a + b*ArcSin[c*x])^2)/(d - c^2*d*x^2)^(5/2), x]

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2dx^2+d}\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)x^m}{c^6d^3x^6-3\,c^4d^3x^4+3\,c^2d^3x^2-d^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="fricas")

[Out] integral(-sqrt(-c^2*d*x^2 + d)*(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*x^m/(c^6*d^3*x^6 - 3*c^4*d^3*x^4 + 3*c^2*d^3*x^2 - d^3), x)

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\arcsin(cx)+a\right)^2x^m}{\left(-c^2dx^2+d\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="giac")
[Out] integrate((b*arcsin(c*x) + a)^2*x^m/(-c^2*d*x^2 + d)^(5/2), x)
```

maple [A] time = 0.85, size = 0, normalized size = 0.00

$$\int \frac{x^{m} \left(a+b \arcsin \left(c x\right)\right)^{2}}{\left(-c^{2} d \,x^{2}+d \right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x)
[Out] int(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{{\left(b \arcsin \left(c x\right) + a\right)}^{2} x^{m}}{{\left(-c^{2} d x^{2} + d\right)}^{\frac{5}{2}}}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a+b*arcsin(c*x))^2/(-c^2*d*x^2+d)^(5/2),x, algorithm="maxima
")
[Out] integrate((b*arcsin(c*x) + a)^2*x^m/(-c^2*d*x^2 + d)^(5/2), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x^m\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{{\left(d-c^2\,d\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(5/2),x)
[Out] int((x^m*(a + b*asin(c*x))^2)/(d - c^2*d*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(a+b*asin(c*x))**2/(-c**2*d*x**2+d)**(5/2),x)
[Out] Timed out
```

3.288 $\int \frac{x^m \sin^{-1}(ax)^2}{\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{x^m \sin^{-1}(ax)^2}{\sqrt{1-a^2x^2}},x\right)$$

```
[Out] Unintegrable(x^m*arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x)
```

Rubi [A] time = 0.10, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m \sin^{-1}(ax)^2}{\sqrt{1-a^2x^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(x^m*ArcSin[a*x]^2)/Sqrt[1 - a^2*x^2],x]
[Out] Defer[Int][(x^m*ArcSin[a*x]^2)/Sqrt[1 - a^2*x^2], x]
```

Rubi steps

$$\int \frac{x^m \sin^{-1}(ax)^2}{\sqrt{1-a^2x^2}}\,dx = \int \frac{x^m \sin^{-1}(ax)^2}{\sqrt{1-a^2x^2}}\,dx$$

Mathematica [A] time = 0.94, size = 0, normalized size = 0.00

$$\int \frac{x^m \sin^{-1}(ax)^2}{\sqrt{1-a^2x^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(x^m*ArcSin[a*x]^2)/Sqrt[1 - a^2*x^2],x]
[Out] Integrate[(x^m*ArcSin[a*x]^2)/Sqrt[1 - a^2*x^2], x]
```

fricas [A] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-a^2x^2+1}\,x^m \arcsin(ax)^2}{a^2x^2-1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
[Out] integral(-sqrt(-a^2*x^2 + 1)*x^m*arcsin(a*x)^2/(a^2*x^2 - 1), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m \arcsin(ax)^2}{\sqrt{-a^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
[Out] integrate(x^m*arcsin(a*x)^2/sqrt(-a^2*x^2 + 1), x)
```

maple [A] time = 0.70, size = 0, normalized size = 0.00

$$\int \frac{x^m \arcsin(ax)^2}{\sqrt{-a^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] int(x^m*arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m \arcsin(ax)^2}{\sqrt{-a^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*arcsin(a*x)^2/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(x^m*arcsin(a*x)^2/sqrt(-a^2*x^2 + 1), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{x^m \operatorname{asin}(a\,x)^2}{\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*asin(a*x)^2)/(1 - a^2*x^2)^(1/2),x)
```

```
[Out] int((x^m*asin(a*x)^2)/(1 - a^2*x^2)^(1/2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m \operatorname{asin}^2(ax)}{\sqrt{-(ax-1)(ax+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*asin(a*x)**2/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(x**m*asin(a*x)**2/sqrt(-(a*x - 1)*(a*x + 1)), x)
```

3.289 $\int \left(c-a^2cx^2\right)^3 \sin^{-1}(ax)^3\,dx$

Optimal. Leaf size=370

$$\frac{6}{343}a^6c^3x^7\sin^{-1}(ax)-\frac{702a^4c^3x^5\sin^{-1}(ax)}{6125}+\frac{1514a^2c^3x^3\sin^{-1}(ax)}{3675}-\frac{6c^3\left(1-a^2x^2\right)^{7/2}}{2401a}-\frac{2664c^3\left(1-a^2x^2\right)^{5/2}}{214375a}-3025$$

```
[Out] -30256/385875*c^3*(-a^2*x^2+1)^(3/2)/a-2664/214375*c^3*(-a^2*x^2+1)^(5/2)/a
-6/2401*c^3*(-a^2*x^2+1)^(7/2)/a-4322/1225*c^3*x*arcsin(a*x)+1514/3675*a^2*
c^3*x^3*arcsin(a*x)-702/6125*a^4*c^3*x^5*arcsin(a*x)+6/343*a^6*c^3*x^7*arcs
in(a*x)+8/35*c^3*(-a^2*x^2+1)^(3/2)*arcsin(a*x)^2/a+18/175*c^3*(-a^2*x^2+1)
^(5/2)*arcsin(a*x)^2/a+3/49*c^3*(-a^2*x^2+1)^(7/2)*arcsin(a*x)^2/a+16/35*c^
3*x*arcsin(a*x)^3+8/35*c^3*x*(-a^2*x^2+1)*arcsin(a*x)^3+6/35*c^3*x*(-a^2*x^
2+1)^2*arcsin(a*x)^3+1/7*c^3*x*(-a^2*x^2+1)^3*arcsin(a*x)^3-413312/128625*c
^3*(-a^2*x^2+1)^(1/2)/a+48/35*c^3*arcsin(a*x)^2*(-a^2*x^2+1)^(1/2)/a
```

Rubi [A] time = 0.70, antiderivative size = 370, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 13, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.650, Rules used = {4649, 4619, 4677, 261, 4645, 444, 43, 194, 12, 1247, 698, 1799, 1850}

$$-\frac{6c^3\left(1-a^2x^2\right)^{7/2}}{2401a}-\frac{2664c^3\left(1-a^2x^2\right)^{5/2}}{214375a}-\frac{30256c^3\left(1-a^2x^2\right)^{3/2}}{385875a}-\frac{413312c^3\sqrt{1-a^2x^2}}{128625a}+\frac{6}{343}a^6c^3x^7\sin^{-1}(ax)-702$$

Antiderivative was successfully verified.

```
[In] Int[(c - a^2*c*x^2)^3*ArcSin[a*x]^3,x]
```

```
[Out] (-413312*c^3*Sqrt[1 - a^2*x^2])/(128625*a) - (30256*c^3*(1 - a^2*x^2)^(3/2)
)/(385875*a) - (2664*c^3*(1 - a^2*x^2)^(5/2))/(214375*a) - (6*c^3*(1 - a^2*
x^2)^(7/2))/(2401*a) - (4322*c^3*x*ArcSin[a*x])/1225 + (1514*a^2*c^3*x^3*Ar
cSin[a*x])/3675 - (702*a^4*c^3*x^5*ArcSin[a*x])/6125 + (6*a^6*c^3*x^7*ArcSi
n[a*x])/343 + (48*c^3*Sqrt[1 - a^2*x^2]*ArcSin[a*x]^2)/(35*a) + (8*c^3*(1 -
 a^2*x^2)^(3/2)*ArcSin[a*x]^2)/(35*a) + (18*c^3*(1 - a^2*x^2)^(5/2)*ArcSin[
a*x]^2)/(175*a) + (3*c^3*(1 - a^2*x^2)^(7/2)*ArcSin[a*x]^2)/(49*a) + (16*c^
3*x*ArcSin[a*x]^3)/35 + (8*c^3*x*(1 - a^2*x^2)*ArcSin[a*x]^3)/35 + (6*c^3*x
*(1 - a^2*x^2)^2*ArcSin[a*x]^3)/35 + (c^3*x*(1 - a^2*x^2)^3*ArcSin[a*x]^3)/
7
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
```

```
 NeQ[p, -1]
```

Rule 444

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 698

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 1247

```
Int[(x_)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(
p_.), x_Symbol] :> Dist[1/2, Subst[Int[(d + e*x)^q*(a + b*x + c*x^2)^p, x],
 x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x]
```

Rule 1799

```
Int[(Pq_)*(x_)^(m_.)*((a_) + (b_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/2, Su
bst[Int[x^((m - 1)/2)*SubstFor[x^2, Pq, x]*(a + b*x)^p, x], x, x^2], x] /;
FreeQ[{a, b, p}, x] && PolyQ[Pq, x^2] && IntegerQ[(m - 1)/2]
```

Rule 1850

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_.), x_Symbol] :> Int[ExpandIntegrand
[Pq*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, n}, x] && PolyQ[Pq, x] && (IGtQ[p
, 0] || EqQ[n, 1])
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \left(c-a^2cx^2\right)^3 \sin^{-1}(ax)^3\,dx = \frac{1}{7}c^3x\left(1-a^2x^2\right)^3\sin^{-1}(ax)^3+\frac{1}{7}(6c)\int \left(c-a^2cx^2\right)^2\sin^{-1}(ax)^3\,dx-\frac{1}{7}\left(3ac^3\right)\int x$$

$$=\frac{3c^3\left(1-a^2x^2\right)^{7/2}\sin^{-1}(ax)^2}{49a}+\frac{6}{35}c^3x\left(1-a^2x^2\right)^2\sin^{-1}(ax)^3+\frac{1}{7}c^3x\left(1-a^2x^2\right)^3\text{si}$$

$$=-\frac{6}{49}c^3x\sin^{-1}(ax)+\frac{6}{49}a^2c^3x^3\sin^{-1}(ax)-\frac{18}{245}a^4c^3x^5\sin^{-1}(ax)+\frac{6}{343}a^6c^3x^7\sin^{-}$$

$$=-\frac{402c^3x\sin^{-1}(ax)}{1225}+\frac{318a^2c^3x^3\sin^{-1}(ax)}{1225}-\frac{702a^4c^3x^5\sin^{-1}(ax)}{6125}+\frac{6}{343}a^6c^3x^7\text{si}$$

$$=-\frac{962c^3x\sin^{-1}(ax)}{1225}+\frac{1514a^2c^3x^3\sin^{-1}(ax)}{3675}-\frac{702a^4c^3x^5\sin^{-1}(ax)}{6125}+\frac{6}{343}a^6c^3x^7\text{s}$$

$$=-\frac{4322c^3x\sin^{-1}(ax)}{1225}+\frac{1514a^2c^3x^3\sin^{-1}(ax)}{3675}-\frac{702a^4c^3x^5\sin^{-1}(ax)}{6125}+\frac{6}{343}a^6c^3x^7$$

$$=-\frac{960c^3\sqrt{1-a^2x^2}}{343a}-\frac{16c^3\left(1-a^2x^2\right)^{3/2}}{1715a}-\frac{36c^3\left(1-a^2x^2\right)^{5/2}}{8575a}-\frac{6c^3\left(1-a^2x^2\right)^{7/2}}{2401a}-$$

$$=-\frac{413312c^3\sqrt{1-a^2x^2}}{128625a}-\frac{30256c^3\left(1-a^2x^2\right)^{3/2}}{385875a}-\frac{2664c^3\left(1-a^2x^2\right)^{5/2}}{214375a}-\frac{6c^3\left(1-\right.}{240}$$

Mathematica [A] time = 0.40, size = 171, normalized size = 0.46

$$\frac{c^3\left(2\sqrt{1-a^2x^2}\left(16875a^6x^6-134541a^4x^4+747937a^2x^2-22329151\right)-385875ax\left(5a^6x^6-21a^4x^4+35a^2x^2-3\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - a^2*c*x^2)^3*ArcSin[a*x]^3,x]
```

```
[Out] (c^3*(2*Sqrt[1 - a^2*x^2]*(-22329151 + 747937*a^2*x^2 - 134541*a^4*x^4 + 16
875*a^6*x^6) + 210*a*x*(-226905 + 26495*a^2*x^2 - 7371*a^4*x^4 + 1125*a^6*x
^6)*ArcSin[a*x] - 11025*Sqrt[1 - a^2*x^2]*(-2161 + 757*a^2*x^2 - 351*a^4*x^
4 + 75*a^6*x^6)*ArcSin[a*x]^2 - 385875*a*x*(-35 + 35*a^2*x^2 - 21*a^4*x^4 +
 5*a^6*x^6)*ArcSin[a*x]^3))/(13505625*a)
```

fricas [A] time = 0.46, size = 202, normalized size = 0.55

$$-\frac{385875\left(5a^7c^3x^7-21a^5c^3x^5+35a^3c^3x^3-35ac^3x\right)\arcsin(ax)^3-210\left(1125a^7c^3x^7-7371a^5c^3x^5+26495a^3c\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^3*arcsin(a*x)^3,x, algorithm="fricas")
```

```
[Out] -1/13505625*(385875*(5*a^7*c^3*x^7 - 21*a^5*c^3*x^5 + 35*a^3*c^3*x^3 - 35*a
*c^3*x)*arcsin(a*x)^3 - 210*(1125*a^7*c^3*x^7 - 7371*a^5*c^3*x^5 + 26495*a^
3*c^3*x^3 - 226905*a*c^3*x)*arcsin(a*x) - (33750*a^6*c^3*x^6 - 269082*a^4*c
^3*x^4 + 1495874*a^2*c^3*x^2 - 44658302*c^3 - 11025*(75*a^6*c^3*x^6 - 351*a
^4*c^3*x^4 + 757*a^2*c^3*x^2 - 2161*c^3)*arcsin(a*x)^2)*sqrt(-a^2*x^2 + 1))
/a
```

giac [A] time = 0.39, size = 379, normalized size = 1.02

$$-\frac{1}{7}\left(a^2x^2-1\right)^3c^3x\arcsin(ax)^3+\frac{6}{35}\left(a^2x^2-1\right)^2c^3x\arcsin(ax)^3+\frac{6}{343}\left(a^2x^2-1\right)^3c^3x\arcsin(ax)-\frac{8}{35}\left(a^2x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^3*arcsin(a*x)^3,x, algorithm="giac")
```

```
[Out] -1/7*(a^2*x^2 - 1)^3*c^3*x*arcsin(a*x)^3 + 6/35*(a^2*x^2 - 1)^2*c^3*x*arcsi
n(a*x)^3 + 6/343*(a^2*x^2 - 1)^3*c^3*x*arcsin(a*x) - 8/35*(a^2*x^2 - 1)*c^3
*x*arcsin(a*x)^3 - 3/49*(a^2*x^2 - 1)^3*sqrt(-a^2*x^2 + 1)*c^3*arcsin(a*x)^
2/a - 2664/42875*(a^2*x^2 - 1)^2*c^3*x*arcsin(a*x) + 16/35*c^3*x*arcsin(a*x
)^3 + 18/175*(a^2*x^2 - 1)^2*sqrt(-a^2*x^2 + 1)*c^3*arcsin(a*x)^2/a + 30256
/128625*(a^2*x^2 - 1)*c^3*x*arcsin(a*x) + 6/2401*(a^2*x^2 - 1)^3*sqrt(-a^2*
x^2 + 1)*c^3/a + 8/35*(-a^2*x^2 + 1)^(3/2)*c^3*arcsin(a*x)^2/a - 413312/128
625*c^3*x*arcsin(a*x) - 2664/214375*(a^2*x^2 - 1)^2*sqrt(-a^2*x^2 + 1)*c^3/
a + 48/35*sqrt(-a^2*x^2 + 1)*c^3*arcsin(a*x)^2/a - 30256/385875*(-a^2*x^2 +
 1)^(3/2)*c^3/a - 413312/128625*sqrt(-a^2*x^2 + 1)*c^3/a
```

maple [A] time = 0.14, size = 278, normalized size = 0.75

$$-\frac{c^3\left(1929375\arcsin(ax)^3a^7x^7+826875\arcsin(ax)^2\sqrt{-a^2x^2+1}\,a^6x^6-8103375\arcsin(ax)^3a^5x^5-236250\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)^3*arcsin(a*x)^3,x)
```

```
[Out] -1/13505625/a*c^3*(1929375*arcsin(a*x)^3*a^7*x^7+826875*arcsin(a*x)^2*(-a^2
*x^2+1)^(1/2)*a^6*x^6-8103375*arcsin(a*x)^3*a^5*x^5-236250*arcsin(a*x)*a^7*
x^7-3869775*arcsin(a*x)^2*(-a^2*x^2+1)^(1/2)*a^4*x^4-33750*a^6*x^6*(-a^2*x^
2+1)^(1/2)+13505625*a^3*x^3*arcsin(a*x)^3+1547910*arcsin(a*x)*a^5*x^5+83459
25*arcsin(a*x)^2*(-a^2*x^2+1)^(1/2)*a^2*x^2+269082*a^4*x^4*(-a^2*x^2+1)^(1/
2)-13505625*a*x*arcsin(a*x)^3-5563950*a^3*x^3*arcsin(a*x)-23825025*arcsin(a
*x)^2*(-a^2*x^2+1)^(1/2)-1495874*a^2*x^2*(-a^2*x^2+1)^(1/2)+47650050*a*x*ar
csin(a*x)+44658302*(-a^2*x^2+1)^(1/2))
```

maxima [A] time = 0.45, size = 284, normalized size = 0.77

$$-\frac{1}{1225}\left(75\sqrt{-a^2x^2+1}\,a^4c^3x^6-351\sqrt{-a^2x^2+1}\,a^2c^3x^4+757\sqrt{-a^2x^2+1}\,c^3x^2-\frac{2161\sqrt{-a^2x^2+1}\,c^3}{a^2}\right)a\,\mathrm{arcsin}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^3*arcsin(a*x)^3,x, algorithm="maxima")
```

```
[Out] -1/1225*(75*sqrt(-a^2*x^2 + 1)*a^4*c^3*x^6 - 351*sqrt(-a^2*x^2 + 1)*a^2*c^3
*x^4 + 757*sqrt(-a^2*x^2 + 1)*c^3*x^2 - 2161*sqrt(-a^2*x^2 + 1)*c^3/a^2)*a*
arcsin(a*x)^2 - 1/35*(5*a^6*c^3*x^7 - 21*a^4*c^3*x^5 + 35*a^2*c^3*x^3 - 35*
c^3*x)*arcsin(a*x)^3 + 2/13505625*(16875*sqrt(-a^2*x^2 + 1)*a^4*c^3*x^6 - 1
34541*sqrt(-a^2*x^2 + 1)*a^2*c^3*x^4 + 747937*sqrt(-a^2*x^2 + 1)*c^3*x^2 -
22329151*sqrt(-a^2*x^2 + 1)*c^3/a^2 + 105*(1125*a^6*c^3*x^7 - 7371*a^4*c^3*
x^5 + 26495*a^2*c^3*x^3 - 226905*c^3*x)*arcsin(a*x)/a)*a
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \operatorname{asin}(a\,x)^3\,\left(c-a^2\,c\,x^2\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^3*(c - a^2*c*x^2)^3,x)
```

```
[Out] int(asin(a*x)^3*(c - a^2*c*x^2)^3, x)
```

sympy [A] time = 17.11, size = 355, normalized size = 0.96

$$\begin{cases} -\frac{a^6c^3x^7\operatorname{asin}^3(ax)}{7}+\frac{6a^6c^3x^7\operatorname{asin}(ax)}{343}-\frac{3a^5c^3x^6\sqrt{-a^2x^2+1}\operatorname{asin}^2(ax)}{49}+\frac{6a^5c^3x^6\sqrt{-a^2x^2+1}}{2401}+\frac{3a^4c^3x^5\operatorname{asin}^3(ax)}{5}-\frac{702a^4c^3x^5\operatorname{asin}(ax)}{6125}+ \\ 0 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)**3*asin(a*x)**3,x)
```

```
[Out] Piecewise((-a**6*c**3*x**7*asin(a*x)**3/7 + 6*a**6*c**3*x**7*asin(a*x)/343
- 3*a**5*c**3*x**6*sqrt(-a**2*x**2 + 1)*asin(a*x)**2/49 + 6*a**5*c**3*x**6*
sqrt(-a**2*x**2 + 1)/2401 + 3*a**4*c**3*x**5*asin(a*x)**3/5 - 702*a**4*c**3
*x**5*asin(a*x)/6125 + 351*a**3*c**3*x**4*sqrt(-a**2*x**2 + 1)*asin(a*x)**2
/1225 - 29898*a**3*c**3*x**4*sqrt(-a**2*x**2 + 1)/1500625 - a**2*c**3*x**3*
asin(a*x)**3 + 1514*a**2*c**3*x**3*asin(a*x)/3675 - 757*a*c**3*x**2*sqrt(-a
**2*x**2 + 1)*asin(a*x)**2/1225 + 1495874*a*c**3*x**2*sqrt(-a**2*x**2 + 1)/
13505625 + c**3*x*asin(a*x)**3 - 4322*c**3*x*asin(a*x)/1225 + 2161*c**3*sqr
t(-a**2*x**2 + 1)*asin(a*x)**2/(1225*a) - 44658302*c**3*sqrt(-a**2*x**2 + 1
)/(13505625*a), Ne(a, 0)), (0, True))
```

3.290 $\int \left(c - a^2 c x^2\right)^2 \sin^{-1}(ax)^3 \, dx$

Optimal. Leaf size=273

$$-\frac{6}{125}a^4c^2x^5\sin^{-1}(ax)+\frac{76}{225}a^2c^2x^3\sin^{-1}(ax)-\frac{6c^2\left(1-a^2x^2\right)^{5/2}}{625a}-\frac{272c^2\left(1-a^2x^2\right)^{3/2}}{3375a}-\frac{4144c^2\sqrt{1-a^2x^2}}{1125a}+\frac{1}{5}c^2x$$

```
[Out] -272/3375*c^2*(-a^2*x^2+1)^(3/2)/a-6/625*c^2*(-a^2*x^2+1)^(5/2)/a-298/75*c^
2*x*arcsin(a*x)+76/225*a^2*c^2*x^3*arcsin(a*x)-6/125*a^4*c^2*x^5*arcsin(a*x
)+4/15*c^2*(-a^2*x^2+1)^(3/2)*arcsin(a*x)^2/a+3/25*c^2*(-a^2*x^2+1)^(5/2)*a
rcsin(a*x)^2/a+8/15*c^2*x*arcsin(a*x)^3+4/15*c^2*x*(-a^2*x^2+1)*arcsin(a*x)
^3+1/5*c^2*x*(-a^2*x^2+1)^2*arcsin(a*x)^3-4144/1125*c^2*(-a^2*x^2+1)^(1/2)/
a+8/5*c^2*arcsin(a*x)^2*(-a^2*x^2+1)^(1/2)/a
```

Rubi [A] time = 0.41, antiderivative size = 273, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 11, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.550, Rules used = {4649, 4619, 4677, 261, 4645, 444, 43, 194, 12, 1247, 698}

$$-\frac{6c^2\left(1-a^2x^2\right)^{5/2}}{625a}-\frac{272c^2\left(1-a^2x^2\right)^{3/2}}{3375a}-\frac{4144c^2\sqrt{1-a^2x^2}}{1125a}-\frac{6}{125}a^4c^2x^5\sin^{-1}(ax)+\frac{76}{225}a^2c^2x^3\sin^{-1}(ax)+\frac{1}{5}c^2x$$

Antiderivative was successfully verified.

```
[In] Int[(c - a^2*c*x^2)^2*ArcSin[a*x]^3,x]
```

```
[Out] (-4144*c^2*Sqrt[1 - a^2*x^2])/(1125*a) - (272*c^2*(1 - a^2*x^2)^(3/2))/(337
5*a) - (6*c^2*(1 - a^2*x^2)^(5/2))/(625*a) - (298*c^2*x*ArcSin[a*x])/75 + (
76*a^2*c^2*x^3*ArcSin[a*x])/225 - (6*a^4*c^2*x^5*ArcSin[a*x])/125 + (8*c^2*
Sqrt[1 - a^2*x^2]*ArcSin[a*x]^2)/(5*a) + (4*c^2*(1 - a^2*x^2)^(3/2)*ArcSin[
a*x]^2)/(15*a) + (3*c^2*(1 - a^2*x^2)^(5/2)*ArcSin[a*x]^2)/(25*a) + (8*c^2*
x*ArcSin[a*x]^3)/15 + (4*c^2*x*(1 - a^2*x^2)*ArcSin[a*x]^3)/15 + (c^2*x*(1
- a^2*x^2)^2*ArcSin[a*x]^3)/5
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 444

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 698

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 1247

```
Int[(x_)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(
p_.), x_Symbol] :> Dist[1/2, Subst[Int[(d + e*x)^q*(a + b*x + c*x^2)^p, x],
 x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \left(c-a^2cx^2\right)^2 \sin^{-1}(ax)^3\,dx = \frac{1}{5}c^2x\left(1-a^2x^2\right)^2 \sin^{-1}(ax)^3 + \frac{1}{5}(4c)\int \left(c-a^2cx^2\right)\sin^{-1}(ax)^3\,dx - \frac{1}{5}\left(3ac^2\right)\int$$

$$= \frac{3c^2\left(1-a^2x^2\right)^{5/2}\sin^{-1}(ax)^2}{25a} + \frac{4}{15}c^2x\left(1-a^2x^2\right)\sin^{-1}(ax)^3 + \frac{1}{5}c^2x\left(1-a^2x^2\right)^2$$

$$= -\frac{6}{25}c^2x\sin^{-1}(ax) + \frac{4}{25}a^2c^2x^3\sin^{-1}(ax) - \frac{6}{125}a^4c^2x^5\sin^{-1}(ax) + \frac{4c^2\left(1-a^2x^2\right.}{}$$

$$= -\frac{58}{75}c^2x\sin^{-1}(ax) + \frac{76}{225}a^2c^2x^3\sin^{-1}(ax) - \frac{6}{125}a^4c^2x^5\sin^{-1}(ax) + \frac{8c^2\sqrt{1-a^2}}{}$$

$$= -\frac{298}{75}c^2x\sin^{-1}(ax) + \frac{76}{225}a^2c^2x^3\sin^{-1}(ax) - \frac{6}{125}a^4c^2x^5\sin^{-1}(ax) + \frac{8c^2\sqrt{1-a}}{}$$

$$= -\frac{16c^2\sqrt{1-a^2x^2}}{5a} - \frac{298}{75}c^2x\sin^{-1}(ax) + \frac{76}{225}a^2c^2x^3\sin^{-1}(ax) - \frac{6}{125}a^4c^2x^5\sin^{-}$$

$$= -\frac{4144c^2\sqrt{1-a^2x^2}}{1125a} - \frac{272c^2\left(1-a^2x^2\right)^{3/2}}{3375a} - \frac{6c^2\left(1-a^2x^2\right)^{5/2}}{625a} - \frac{298}{75}c^2x\sin^{-1}($$

Mathematica [A] time = 0.25, size = 139, normalized size = 0.51

$$\frac{c^2\left(-2\sqrt{1-a^2x^2}\left(81a^4x^4-842a^2x^2+31841\right)+1125ax\left(3a^4x^4-10a^2x^2+15\right)\sin^{-1}(ax)^3+225\sqrt{1-a^2x^2}\left(9a\right.}{16875a}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - a^2*c*x^2)^2*ArcSin[a*x]^3,x]
```

```
[Out] (c^2*(-2*Sqrt[1 - a^2*x^2]*(31841 - 842*a^2*x^2 + 81*a^4*x^4) - 30*a*x*(223
5 - 190*a^2*x^2 + 27*a^4*x^4)*ArcSin[a*x] + 225*Sqrt[1 - a^2*x^2]*(149 - 38
*a^2*x^2 + 9*a^4*x^4)*ArcSin[a*x]^2 + 1125*a*x*(15 - 10*a^2*x^2 + 3*a^4*x^4
)*ArcSin[a*x]^3))/(16875*a)
```

fricas [A] time = 0.48, size = 158, normalized size = 0.58

$$\frac{1125\left(3\,a^5c^2x^5-10\,a^3c^2x^3+15\,ac^2x\right)\arcsin(ax)^3-30\left(27\,a^5c^2x^5-190\,a^3c^2x^3+2235\,ac^2x\right)\arcsin(ax)-\left(16\right.}{16875\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^2*arcsin(a*x)^3,x, algorithm="fricas")
```

```
[Out] 1/16875*(1125*(3*a^5*c^2*x^5 - 10*a^3*c^2*x^3 + 15*a*c^2*x)*arcsin(a*x)^3 -
 30*(27*a^5*c^2*x^5 - 190*a^3*c^2*x^3 + 2235*a*c^2*x)*arcsin(a*x) - (162*a^
4*c^2*x^4 - 1684*a^2*c^2*x^2 - 225*(9*a^4*c^2*x^4 - 38*a^2*c^2*x^2 + 149*c^
2)*arcsin(a*x)^2 + 63682*c^2)*sqrt(-a^2*x^2 + 1))/a
```

giac [A] time = 0.83, size = 267, normalized size = 0.98

$$\frac{1}{5}\left(a^2x^2-1\right)^2c^2x\arcsin(ax)^3-\frac{4}{15}\left(a^2x^2-1\right)c^2x\arcsin(ax)^3-\frac{6}{125}\left(a^2x^2-1\right)^2c^2x\arcsin(ax)+\frac{8}{15}c^2x\arcsin(a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^2*arcsin(a*x)^3,x, algorithm="giac")
```

```
[Out] 1/5*(a^2*x^2 - 1)^2*c^2*x*arcsin(a*x)^3 - 4/15*(a^2*x^2 - 1)*c^2*x*arcsin(a
*x)^3 - 6/125*(a^2*x^2 - 1)^2*c^2*x*arcsin(a*x) + 8/15*c^2*x*arcsin(a*x)^3
+ 3/25*(a^2*x^2 - 1)^2*sqrt(-a^2*x^2 + 1)*c^2*arcsin(a*x)^2/a + 272/1125*(a
^2*x^2 - 1)*c^2*x*arcsin(a*x) + 4/15*(-a^2*x^2 + 1)^(3/2)*c^2*arcsin(a*x)^2
/a - 4144/1125*c^2*x*arcsin(a*x) - 6/625*(a^2*x^2 - 1)^2*sqrt(-a^2*x^2 + 1)
*c^2/a + 8/5*sqrt(-a^2*x^2 + 1)*c^2*arcsin(a*x)^2/a - 272/3375*(-a^2*x^2 +
1)^(3/2)*c^2/a - 4144/1125*sqrt(-a^2*x^2 + 1)*c^2/a
```

maple [A] time = 0.09, size = 206, normalized size = 0.75

$$\frac{c^2\left(3375\arcsin(ax)^3a^5x^5+2025\arcsin(ax)^2\sqrt{-a^2x^2+1}\,a^4x^4-11250a^3x^3\arcsin(ax)^3-810\arcsin(ax)a^5x^5\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)^2*arcsin(a*x)^3,x)
```

```
[Out] 1/16875/a*c^2*(3375*arcsin(a*x)^3*a^5*x^5+2025*arcsin(a*x)^2*(-a^2*x^2+1)^(
1/2)*a^4*x^4-11250*a^3*x^3*arcsin(a*x)^3-810*arcsin(a*x)*a^5*x^5-8550*arcsi
n(a*x)^2*(-a^2*x^2+1)^(1/2)*a^2*x^2-162*a^4*x^4*(-a^2*x^2+1)^(1/2)+16875*a*
x*arcsin(a*x)^3+5700*a^3*x^3*arcsin(a*x)+33525*arcsin(a*x)^2*(-a^2*x^2+1)^(
1/2)+1684*a^2*x^2*(-a^2*x^2+1)^(1/2)-67050*a*x*arcsin(a*x)-63682*(-a^2*x^2+
1)^(1/2))
```

maxima [A] time = 0.51, size = 216, normalized size = 0.79

$$\frac{1}{75}\left(9\sqrt{-a^2x^2+1}\,a^2c^2x^4-38\sqrt{-a^2x^2+1}\,c^2x^2+\frac{149\sqrt{-a^2x^2+1}\,c^2}{a^2}\right)a\arcsin(ax)^2+\frac{1}{15}\left(3a^4c^2x^5-10a^2c^2x^3+1\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^2*arcsin(a*x)^3,x, algorithm="maxima")
```

```
[Out] 1/75*(9*sqrt(-a^2*x^2 + 1)*a^2*c^2*x^4 - 38*sqrt(-a^2*x^2 + 1)*c^2*x^2 + 14
9*sqrt(-a^2*x^2 + 1)*c^2/a^2)*a*arcsin(a*x)^2 + 1/15*(3*a^4*c^2*x^5 - 10*a^
2*c^2*x^3 + 15*c^2*x)*arcsin(a*x)^3 - 2/16875*(81*sqrt(-a^2*x^2 + 1)*a^2*c^
2*x^4 - 842*sqrt(-a^2*x^2 + 1)*c^2*x^2 + 15*(27*a^4*c^2*x^5 - 190*a^2*c^2*x
^3 + 2235*c^2*x)*arcsin(a*x)/a + 31841*sqrt(-a^2*x^2 + 1)*c^2/a^2)*a
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \mathrm{asin}(a\,x)^3\left(c-a^2\,c\,x^2\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^3*(c - a^2*c*x^2)^2,x)
```

```
[Out] int(asin(a*x)^3*(c - a^2*c*x^2)^2, x)
```

sympy [A] time = 6.25, size = 262, normalized size = 0.96

$$\begin{cases}\frac{a^4c^2x^5\operatorname{asin}^3(ax)}{5}-\frac{6a^4c^2x^5\operatorname{asin}(ax)}{125}+\frac{3a^3c^2x^4\sqrt{-a^2x^2+1}\operatorname{asin}^2(ax)}{25}-\frac{6a^3c^2x^4\sqrt{-a^2x^2+1}}{625}-\frac{2a^2c^2x^3\operatorname{asin}^3(ax)}{3}+\frac{76a^2c^2x^3\operatorname{asin}(ax)}{225}-\frac{38a}{}\\0\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)**2*asin(a*x)**3,x)
```

```
[Out] Piecewise((a**4*c**2*x**5*asin(a*x)**3/5 - 6*a**4*c**2*x**5*asin(a*x)/125 +
 3*a**3*c**2*x**4*sqrt(-a**2*x**2 + 1)*asin(a*x)**2/25 - 6*a**3*c**2*x**4*s
```

```
qrt(-a**2*x**2 + 1)/625 - 2*a**2*c**2*x**3*asin(a*x)**3/3 + 76*a**2*c**2*x*
*3*asin(a*x)/225 - 38*a*c**2*x**2*sqrt(-a**2*x**2 + 1)*asin(a*x)**2/75 + 16
84*a*c**2*x**2*sqrt(-a**2*x**2 + 1)/16875 + c**2*x*asin(a*x)**3 - 298*c**2*
x*asin(a*x)/75 + 149*c**2*sqrt(-a**2*x**2 + 1)*asin(a*x)**2/(75*a) - 63682*
c**2*sqrt(-a**2*x**2 + 1)/(16875*a), Ne(a, 0)), (0, True))
```

3.291 $\int \left(c-a^2cx^2\right) \sin^{-1}(ax)^3 \, dx$

Optimal. Leaf size=158

$$\frac{2}{9}a^2cx^3\sin^{-1}(ax)-\frac{2c\left(1-a^2x^2\right)^{3/2}}{27a}-\frac{40c\sqrt{1-a^2x^2}}{9a}+\frac{1}{3}cx\left(1-a^2x^2\right)\sin^{-1}(ax)^3+\frac{c\left(1-a^2x^2\right)^{3/2}\sin^{-1}(ax)^2}{3a}+\frac{2c\sqrt{1-}}{}$$

```
[Out] -2/27*c*(-a^2*x^2+1)^(3/2)/a-14/3*c*x*arcsin(a*x)+2/9*a^2*c*x^3*arcsin(a*x)
+1/3*c*(-a^2*x^2+1)^(3/2)*arcsin(a*x)^2/a+2/3*c*x*arcsin(a*x)^3+1/3*c*x*(-a
^2*x^2+1)*arcsin(a*x)^3-40/9*c*(-a^2*x^2+1)^(1/2)/a+2*c*arcsin(a*x)^2*(-a^2
*x^2+1)^(1/2)/a
```

Rubi [A] time = 0.21, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.389, Rules used = {4649, 4619, 4677, 261, 4645, 444, 43}

$$-\frac{2c\left(1-a^2x^2\right)^{3/2}}{27a}-\frac{40c\sqrt{1-a^2x^2}}{9a}+\frac{2}{9}a^2cx^3\sin^{-1}(ax)+\frac{1}{3}cx\left(1-a^2x^2\right)\sin^{-1}(ax)^3+\frac{c\left(1-a^2x^2\right)^{3/2}\sin^{-1}(ax)^2}{3a}+\frac{2c\sqrt{1}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c - a^2*c*x^2)*ArcSin[a*x]^3,x]
```

```
[Out] (-40*c*Sqrt[1 - a^2*x^2])/(9*a) - (2*c*(1 - a^2*x^2)^(3/2))/(27*a) - (14*c*
x*ArcSin[a*x])/3 + (2*a^2*c*x^3*ArcSin[a*x])/9 + (2*c*Sqrt[1 - a^2*x^2]*Arc
Sin[a*x]^2)/a + (c*(1 - a^2*x^2)^(3/2)*ArcSin[a*x]^2)/(3*a) + (2*c*x*ArcSin
[a*x]^3)/3 + (c*x*(1 - a^2*x^2)*ArcSin[a*x]^3)/3
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 444

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
```

```
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \left(c-a^2cx^2\right)\sin^{-1}(ax)^3\,dx = \frac{1}{3}cx\left(1-a^2x^2\right)\sin^{-1}(ax)^3+\frac{1}{3}(2c)\int \sin^{-1}(ax)^3\,dx-(ac)\int x\sqrt{1-a^2x^2}\,\sin^{-1}($$

$$= \frac{c\left(1-a^2x^2\right)^{3/2}\sin^{-1}(ax)^2}{3a}+\frac{2}{3}cx\sin^{-1}(ax)^3+\frac{1}{3}cx\left(1-a^2x^2\right)\sin^{-1}(ax)^3-\frac{1}{3}(2c$$

$$= -\frac{2}{3}cx\sin^{-1}(ax)+\frac{2}{9}a^2cx^3\sin^{-1}(ax)+\frac{2c\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{a}+\frac{c\left(1-a^2x^2\right)^{3/2}}{3a}$$

$$= -\frac{14}{3}cx\sin^{-1}(ax)+\frac{2}{9}a^2cx^3\sin^{-1}(ax)+\frac{2c\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{a}+\frac{c\left(1-a^2x^2\right)^{3/}}{3}$$

$$= -\frac{4c\sqrt{1-a^2x^2}}{a}-\frac{14}{3}cx\sin^{-1}(ax)+\frac{2}{9}a^2cx^3\sin^{-1}(ax)+\frac{2c\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2}{a}$$

$$= -\frac{40c\sqrt{1-a^2x^2}}{9a}-\frac{2c\left(1-a^2x^2\right)^{3/2}}{27a}-\frac{14}{3}cx\sin^{-1}(ax)+\frac{2}{9}a^2cx^3\sin^{-1}(ax)+\frac{2c\sqrt{}}{}$$

Mathematica [A] time = 0.11, size = 101, normalized size = 0.64

$$\frac{c\left(2\sqrt{1-a^2x^2}\left(a^2x^2-61\right)-9ax\left(a^2x^2-3\right)\sin^{-1}(ax)^3-9\sqrt{1-a^2x^2}\left(a^2x^2-7\right)\sin^{-1}(ax)^2+6ax\left(a^2x^2-21\right)s}{27a}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - a^2*c*x^2)*ArcSin[a*x]^3,x]
```

```
[Out] (c*(2*Sqrt[1 - a^2*x^2]*(-61 + a^2*x^2) + 6*a*x*(-21 + a^2*x^2)*ArcSin[a*x]
 - 9*Sqrt[1 - a^2*x^2]*(-7 + a^2*x^2)*ArcSin[a*x]^2 - 9*a*x*(-3 + a^2*x^2)*
ArcSin[a*x]^3))/(27*a)
```

fricas [A] time = 0.46, size = 95, normalized size = 0.60

$$-\frac{9\left(a^3cx^3-3\,acx\right)\arcsin\left(ax\right)^3-6\left(a^3cx^3-21\,acx\right)\arcsin\left(ax\right)-\left(2\,a^2cx^2-9\left(a^2cx^2-7\,c\right)\arcsin\left(ax\right)^2-122}{27\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)*arcsin(a*x)^3,x, algorithm="fricas")
```

```
[Out] -1/27*(9*(a^3*c*x^3 - 3*a*c*x)*arcsin(a*x)^3 - 6*(a^3*c*x^3 - 21*a*c*x)*arc
sin(a*x) - (2*a^2*c*x^2 - 9*(a^2*c*x^2 - 7*c)*arcsin(a*x)^2 - 122*c)*sqrt(-
a^2*x^2 + 1))/a
```

giac [A] time = 0.73, size = 139, normalized size = 0.88

$$-\frac{1}{3}\left(a^2x^2-1\right)cx\arcsin\left(ax\right)^3+\frac{2}{3}cx\arcsin\left(ax\right)^3+\frac{2}{9}\left(a^2x^2-1\right)cx\arcsin\left(ax\right)+\frac{\left(-a^2x^2+1\right)^{\frac{3}{2}}c\arcsin\left(ax\right)^2}{3a}-\frac{40}{9}cx\,a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)*arcsin(a*x)^3,x, algorithm="giac")
```

```
[Out] -1/3*(a^2*x^2 - 1)*c*x*arcsin(a*x)^3 + 2/3*c*x*arcsin(a*x)^3 + 2/9*(a^2*x^2
 - 1)*c*x*arcsin(a*x) + 1/3*(-a^2*x^2 + 1)^(3/2)*c*arcsin(a*x)^2/a - 40/9*c
*x*arcsin(a*x) + 2*sqrt(-a^2*x^2 + 1)*c*arcsin(a*x)^2/a - 2/27*(-a^2*x^2 +
1)^(3/2)*c/a - 40/9*sqrt(-a^2*x^2 + 1)*c/a
```

maple [A] time = 0.08, size = 132, normalized size = 0.84

$$-\frac{c\left(9a^3x^3\arcsin\left(ax\right)^3+9\arcsin\left(ax\right)^2\sqrt{-a^2x^2+1}\,a^2x^2-27ax\arcsin\left(ax\right)^3-6a^3x^3\arcsin\left(ax\right)-63\arcsin\left(ax\right)\right.}{27a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)*arcsin(a*x)^3,x)
```

```
[Out] -1/27/a*c*(9*a^3*x^3*arcsin(a*x)^3+9*arcsin(a*x)^2*(-a^2*x^2+1)^(1/2)*a^2*x
^2-27*a*x*arcsin(a*x)^3-6*a^3*x^3*arcsin(a*x)-63*arcsin(a*x)^2*(-a^2*x^2+1)
^(1/2)-2*a^2*x^2*(-a^2*x^2+1)^(1/2)+126*a*x*arcsin(a*x)+122*(-a^2*x^2+1)^(1
/2))
```

maxima [A] time = 0.49, size = 128, normalized size = 0.81

$$-\frac{1}{3}\left(\sqrt{-a^2x^2+1}\,cx^2-\frac{7\sqrt{-a^2x^2+1}\,c}{a^2}\right)a\arcsin\left(ax\right)^2-\frac{1}{3}\left(a^2cx^3-3\,cx\right)\arcsin\left(ax\right)^3+\frac{2}{27}\left(\sqrt{-a^2x^2+1}\,cx^2+\frac{3\left(a^2\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)*arcsin(a*x)^3,x, algorithm="maxima")
```

```
[Out] -1/3*(sqrt(-a^2*x^2 + 1)*c*x^2 - 7*sqrt(-a^2*x^2 + 1)*c/a^2)*a*arcsin(a*x)^
2 - 1/3*(a^2*c*x^3 - 3*c*x)*arcsin(a*x)^3 + 2/27*(sqrt(-a^2*x^2 + 1)*c*x^2
+ 3*(a^2*c*x^3 - 21*c*x)*arcsin(a*x)/a - 61*sqrt(-a^2*x^2 + 1)*c/a^2)*a
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \mathrm{asin}\left(a\,x\right)^3\,\left(c-a^2\,c\,x^2\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^3*(c - a^2*c*x^2),x)
```

```
[Out] int(asin(a*x)^3*(c - a^2*c*x^2), x)
```

sympy [A] time = 1.93, size = 150, normalized size = 0.95

$$\begin{cases} -\frac{a^2cx^3\operatorname{asin}^3(ax)}{3} + \frac{2a^2cx^3\operatorname{asin}(ax)}{9} - \frac{acx^2\sqrt{-a^2x^2+1}\operatorname{asin}^2(ax)}{3} + \frac{2acx^2\sqrt{-a^2x^2+1}}{27} + cx\operatorname{asin}^3(ax) - \frac{14cx\operatorname{asin}(ax)}{3} + \frac{7c\sqrt{-a^2x^2+}}{3} \\ 0 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)*asin(a*x)**3,x)
```

```
[Out] Piecewise((-a**2*c*x**3*asin(a*x)**3/3 + 2*a**2*c*x**3*asin(a*x)/9 - a*c*x*
*2*sqrt(-a**2*x**2 + 1)*asin(a*x)**2/3 + 2*a*c*x**2*sqrt(-a**2*x**2 + 1)/27
 + c*x*asin(a*x)**3 - 14*c*x*asin(a*x)/3 + 7*c*sqrt(-a**2*x**2 + 1)*asin(a*
x)**2/(3*a) - 122*c*sqrt(-a**2*x**2 + 1)/(27*a), Ne(a, 0)), (0, True))
```

3.292 $\int \frac{\sin^{-1}(ax)^3}{c-a^2cx^2}\,dx$

Optimal. Leaf size=200

$$\frac{3i\sin^{-1}(ax)^2\text{Li}_2\left(-ie^{i\sin^{-1}(ax)}\right)}{ac}-\frac{3i\sin^{-1}(ax)^2\text{Li}_2\left(ie^{i\sin^{-1}(ax)}\right)}{ac}-\frac{6\sin^{-1}(ax)\text{Li}_3\left(-ie^{i\sin^{-1}(ax)}\right)}{ac}+\frac{6\sin^{-1}(ax)\text{Li}_3\left(ie^{i\sin}\right.}{ac}$$

```
[Out] -2*I*arcsin(a*x)^3*arctan(I*a*x+(-a^2*x^2+1)^(1/2))/a/c+3*I*arcsin(a*x)^2*p
olylog(2,-I*(I*a*x+(-a^2*x^2+1)^(1/2)))/a/c-3*I*arcsin(a*x)^2*polylog(2,I*(
I*a*x+(-a^2*x^2+1)^(1/2)))/a/c-6*arcsin(a*x)*polylog(3,-I*(I*a*x+(-a^2*x^2+
1)^(1/2)))/a/c+6*arcsin(a*x)*polylog(3,I*(I*a*x+(-a^2*x^2+1)^(1/2)))/a/c-6*
I*polylog(4,-I*(I*a*x+(-a^2*x^2+1)^(1/2)))/a/c+6*I*polylog(4,I*(I*a*x+(-a^2
*x^2+1)^(1/2)))/a/c
```

Rubi [A] time = 0.13, antiderivative size = 200, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {4657, 4181, 2531, 6609, 2282, 6589}

$$\frac{3i\sin^{-1}(ax)^2\text{PolyLog}\left(2,-ie^{i\sin^{-1}(ax)}\right)}{ac}-\frac{3i\sin^{-1}(ax)^2\text{PolyLog}\left(2,ie^{i\sin^{-1}(ax)}\right)}{ac}-\frac{6\sin^{-1}(ax)\text{PolyLog}\left(3,-ie^{i\sin^{-1}(ax)}\right.}{ac}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a*x]^3/(c - a^2*c*x^2),x]
```

```
[Out] ((-2*I)*ArcSin[a*x]^3*ArcTan[E^(I*ArcSin[a*x])])/(a*c) + ((3*I)*ArcSin[a*x]
^2*PolyLog[2, (-I)*E^(I*ArcSin[a*x])])/(a*c) - ((3*I)*ArcSin[a*x]^2*PolyLog
[2, I*E^(I*ArcSin[a*x])])/(a*c) - (6*ArcSin[a*x]*PolyLog[3, (-I)*E^(I*ArcSi
n[a*x])])/(a*c) + (6*ArcSin[a*x]*PolyLog[3, I*E^(I*ArcSin[a*x])])/(a*c) - (
(6*I)*PolyLog[4, (-I)*E^(I*ArcSin[a*x])])/(a*c) + ((6*I)*PolyLog[4, I*E^(I*
ArcSin[a*x])])/(a*c)
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
```

```
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{\sin^{-1}(ax)^3}{c-a^2cx^2}\,dx = \frac{\text{Subst}\left(\int x^3\sec(x)\,dx, x, \sin^{-1}(ax)\right)}{ac}$$
$$= -\frac{2i\sin^{-1}(ax)^3\tan^{-1}\left(e^{i\sin^{-1}(ax)}\right)}{ac} - \frac{3\,\text{Subst}\left(\int x^2\log\left(1-ie^{ix}\right)dx, x, \sin^{-1}(ax)\right)}{ac} + \frac{3\,\text{Subst}}{}$$
$$= -\frac{2i\sin^{-1}(ax)^3\tan^{-1}\left(e^{i\sin^{-1}(ax)}\right)}{ac} + \frac{3i\sin^{-1}(ax)^2\text{Li}_2\left(-ie^{i\sin^{-1}(ax)}\right)}{ac} - \frac{3i\sin^{-1}(ax)^2\text{Li}_2\left(ie^{i\sin}\right.}{ac}$$
$$= -\frac{2i\sin^{-1}(ax)^3\tan^{-1}\left(e^{i\sin^{-1}(ax)}\right)}{ac} + \frac{3i\sin^{-1}(ax)^2\text{Li}_2\left(-ie^{i\sin^{-1}(ax)}\right)}{ac} - \frac{3i\sin^{-1}(ax)^2\text{Li}_2\left(ie^{i\sin}\right.}{ac}$$
$$= -\frac{2i\sin^{-1}(ax)^3\tan^{-1}\left(e^{i\sin^{-1}(ax)}\right)}{ac} + \frac{3i\sin^{-1}(ax)^2\text{Li}_2\left(-ie^{i\sin^{-1}(ax)}\right)}{ac} - \frac{3i\sin^{-1}(ax)^2\text{Li}_2\left(ie^{i\sin}\right.}{ac}$$
$$= -\frac{2i\sin^{-1}(ax)^3\tan^{-1}\left(e^{i\sin^{-1}(ax)}\right)}{ac} + \frac{3i\sin^{-1}(ax)^2\text{Li}_2\left(-ie^{i\sin^{-1}(ax)}\right)}{ac} - \frac{3i\sin^{-1}(ax)^2\text{Li}_2\left(ie^{i\sin}\right.}{ac}$$

Mathematica [A] time = 0.22, size = 162, normalized size = 0.81

$$-\frac{i\left(-3\sin^{-1}(ax)^2\text{Li}_2\left(-ie^{i\sin^{-1}(ax)}\right)+3\sin^{-1}(ax)^2\text{Li}_2\left(ie^{i\sin^{-1}(ax)}\right)-6i\sin^{-1}(ax)\text{Li}_3\left(-ie^{i\sin^{-1}(ax)}\right)+6i\sin^{-1}(ax\right.}{ac}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a*x]^3/(c - a^2*c*x^2),x]
```

```
[Out] ((-I)*(2*ArcSin[a*x]^3*ArcTan[E^(I*ArcSin[a*x])] - 3*ArcSin[a*x]^2*PolyLog[
2, (-I)*E^(I*ArcSin[a*x])] + 3*ArcSin[a*x]^2*PolyLog[2, I*E^(I*ArcSin[a*x])
] - (6*I)*ArcSin[a*x]*PolyLog[3, (-I)*E^(I*ArcSin[a*x])] + (6*I)*ArcSin[a*x
]*PolyLog[3, I*E^(I*ArcSin[a*x])] + 6*PolyLog[4, (-I)*E^(I*ArcSin[a*x])] -
6*PolyLog[4, I*E^(I*ArcSin[a*x])]))/(a*c)
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\arcsin(ax)^3}{a^2cx^2-c}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/(-a^2*c*x^2+c),x, algorithm="fricas")
```

```
[Out] integral(-arcsin(a*x)^3/(a^2*c*x^2 - c), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\arcsin(ax)^3}{a^2cx^2 - c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/(-a^2*c*x^2+c),x, algorithm="giac")
[Out] integrate(-arcsin(a*x)^3/(a^2*c*x^2 - c), x)
```

maple [F] time = 0.13, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^3}{-a^2c\,x^2 + c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^3/(-a^2*c*x^2+c),x)
[Out] int(arcsin(a*x)^3/(-a^2*c*x^2+c),x)
```

maxima [A] time = 0.62, size = 36, normalized size = 0.18

$$\frac{1}{2}\left(\frac{\log(ax+1)}{ac} - \frac{\log(ax-1)}{ac}\right)\arcsin(ax)^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/(-a^2*c*x^2+c),x, algorithm="maxima")
[Out] 1/2*(log(a*x + 1)/(a*c) - log(a*x - 1)/(a*c))*arcsin(a*x)^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\mathrm{asin}(a\,x)^3}{c - a^2\,c\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^3/(c - a^2*c*x^2),x)
[Out] int(asin(a*x)^3/(c - a^2*c*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\int \frac{\mathrm{asin}^3(ax)}{a^2x^2-1}\,dx}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**3/(-a**2*c*x**2+c),x)
[Out] -Integral(asin(a*x)**3/(a**2*x**2 - 1), x)/c
```

3.293 $\int \frac{\sin^{-1}(ax)^3}{\left(c-a^2cx^2\right)^2}\,dx$

Optimal. Leaf size=337

$$\frac{x\sin^{-1}(ax)^3}{2c^2\left(1-a^2x^2\right)}-\frac{3\sin^{-1}(ax)^2}{2ac^2\sqrt{1-a^2x^2}}+\frac{3i\sin^{-1}(ax)^2\text{Li}_2\left(-ie^{i\sin^{-1}(ax)}\right)}{2ac^2}-\frac{3i\sin^{-1}(ax)^2\text{Li}_2\left(ie^{i\sin^{-1}(ax)}\right)}{2ac^2}-\frac{3\sin^{-1}(ax)\text{Li}_3}{ac^2}$$

```
[Out] 1/2*x*arcsin(a*x)^3/c^2/(-a^2*x^2+1)-6*I*arcsin(a*x)*arctan(I*a*x+(-a^2*x^2
+1)^(1/2))/a/c^2-I*arcsin(a*x)^3*arctan(I*a*x+(-a^2*x^2+1)^(1/2))/a/c^2+3*I
*polylog(2,-I*(I*a*x+(-a^2*x^2+1)^(1/2)))/a/c^2+3/2*I*arcsin(a*x)^2*polylog
(2,-I*(I*a*x+(-a^2*x^2+1)^(1/2)))/a/c^2-3*I*polylog(2,I*(I*a*x+(-a^2*x^2+1)
^(1/2)))/a/c^2-3/2*I*arcsin(a*x)^2*polylog(2,I*(I*a*x+(-a^2*x^2+1)^(1/2)))/
a/c^2-3*arcsin(a*x)*polylog(3,-I*(I*a*x+(-a^2*x^2+1)^(1/2)))/a/c^2+3*arcsin
(a*x)*polylog(3,I*(I*a*x+(-a^2*x^2+1)^(1/2)))/a/c^2-3*I*polylog(4,-I*(I*a*x
+(-a^2*x^2+1)^(1/2)))/a/c^2+3*I*polylog(4,I*(I*a*x+(-a^2*x^2+1)^(1/2)))/a/c
^2-3/2*arcsin(a*x)^2/a/c^2/(-a^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.30, antiderivative size = 337, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 10, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {4655, 4657, 4181, 2531, 6609, 2282, 6589, 4677, 2279, 2391}

$$\frac{3i\sin^{-1}(ax)^2\text{PolyLog}\left(2,-ie^{i\sin^{-1}(ax)}\right)}{2ac^2}-\frac{3i\sin^{-1}(ax)^2\text{PolyLog}\left(2,ie^{i\sin^{-1}(ax)}\right)}{2ac^2}-\frac{3\sin^{-1}(ax)\text{PolyLog}\left(3,-ie^{i\sin^{-1}}\right.}{ac^2}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a*x]^3/(c - a^2*c*x^2)^2,x]
```

```
[Out] (-3*ArcSin[a*x]^2)/(2*a*c^2*Sqrt[1 - a^2*x^2]) + (x*ArcSin[a*x]^3)/(2*c^2*(
1 - a^2*x^2)) - ((6*I)*ArcSin[a*x]*ArcTan[E^(I*ArcSin[a*x])])/(a*c^2) - (I*
ArcSin[a*x]^3*ArcTan[E^(I*ArcSin[a*x])])/(a*c^2) + ((3*I)*PolyLog[2, (-I)*E
^(I*ArcSin[a*x])])/(a*c^2) + (((3*I)/2)*ArcSin[a*x]^2*PolyLog[2, (-I)*E^(I*
ArcSin[a*x])])/(a*c^2) - ((3*I)*PolyLog[2, I*E^(I*ArcSin[a*x])])/(a*c^2) -
(((3*I)/2)*ArcSin[a*x]^2*PolyLog[2, I*E^(I*ArcSin[a*x])])/(a*c^2) - (3*ArcS
in[a*x]*PolyLog[3, (-I)*E^(I*ArcSin[a*x])])/(a*c^2) + (3*ArcSin[a*x]*PolyLo
g[3, I*E^(I*ArcSin[a*x])])/(a*c^2) - ((3*I)*PolyLog[4, (-I)*E^(I*ArcSin[a*x
])])/(a*c^2) + ((3*I)*PolyLog[4, I*E^(I*ArcSin[a*x])])/(a*c^2)
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{\sin^{-1}(ax)^3}{\left(c-a^2cx^2\right)^2}\,dx = \frac{x\sin^{-1}(ax)^3}{2c^2\left(1-a^2x^2\right)} - \frac{(3a)\int \frac{x\sin^{-1}(ax)^2}{\left(1-a^2x^2\right)^{3/2}}\,dx}{2c^2} + \frac{\int \frac{\sin^{-1}(ax)^3}{c-a^2cx^2}\,dx}{2c}$$

$$= -\frac{3\sin^{-1}(ax)^2}{2ac^2\sqrt{1-a^2x^2}} + \frac{x\sin^{-1}(ax)^3}{2c^2\left(1-a^2x^2\right)} + \frac{3\int \frac{\sin^{-1}(ax)}{1-a^2x^2}\,dx}{c^2} + \frac{\text{Subst}\left(\int x^3\sec(x)\,dx, x, \sin^{-1}(ax\right.}{2ac^2}$$

$$= -\frac{3\sin^{-1}(ax)^2}{2ac^2\sqrt{1-a^2x^2}} + \frac{x\sin^{-1}(ax)^3}{2c^2\left(1-a^2x^2\right)} - \frac{i\sin^{-1}(ax)^3\tan^{-1}\left(e^{i\sin^{-1}(ax)}\right)}{ac^2} - \frac{3\,\text{Subst}\left(\int x^2\log\left(\right.\right.}{}$$

$$= -\frac{3\sin^{-1}(ax)^2}{2ac^2\sqrt{1-a^2x^2}} + \frac{x\sin^{-1}(ax)^3}{2c^2\left(1-a^2x^2\right)} - \frac{6i\sin^{-1}(ax)\tan^{-1}\left(e^{i\sin^{-1}(ax)}\right)}{ac^2} - \frac{i\sin^{-1}(ax)^3\tan^{-1}\left(\right.}{ac^2}$$

$$= -\frac{3\sin^{-1}(ax)^2}{2ac^2\sqrt{1-a^2x^2}} + \frac{x\sin^{-1}(ax)^3}{2c^2\left(1-a^2x^2\right)} - \frac{6i\sin^{-1}(ax)\tan^{-1}\left(e^{i\sin^{-1}(ax)}\right)}{ac^2} - \frac{i\sin^{-1}(ax)^3\tan^{-1}\left(\right.}{ac^2}$$

$$= -\frac{3\sin^{-1}(ax)^2}{2ac^2\sqrt{1-a^2x^2}} + \frac{x\sin^{-1}(ax)^3}{2c^2\left(1-a^2x^2\right)} - \frac{6i\sin^{-1}(ax)\tan^{-1}\left(e^{i\sin^{-1}(ax)}\right)}{ac^2} - \frac{i\sin^{-1}(ax)^3\tan^{-1}\left(\right.}{ac^2}$$

$$= -\frac{3\sin^{-1}(ax)^2}{2ac^2\sqrt{1-a^2x^2}} + \frac{x\sin^{-1}(ax)^3}{2c^2\left(1-a^2x^2\right)} - \frac{6i\sin^{-1}(ax)\tan^{-1}\left(e^{i\sin^{-1}(ax)}\right)}{ac^2} - \frac{i\sin^{-1}(ax)^3\tan^{-1}\left(\right.}{ac^2}$$

Mathematica [A] time = 0.52, size = 234, normalized size = 0.69

$$\frac{\frac{ax\sin^{-1}(ax)^3}{1-a^2x^2} - \frac{3\sin^{-1}(ax)^2}{\sqrt{1-a^2x^2}} - 6\sin^{-1}(ax)\text{Li}_3\left(-ie^{i\sin^{-1}(ax)}\right) + 6\sin^{-1}(ax)\text{Li}_3\left(ie^{i\sin^{-1}(ax)}\right) + 3i\left(\sin^{-1}(ax)^2+2\right)\text{Li}_2\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a*x]^3/(c - a^2*c*x^2)^2,x]
```

```
[Out] ((-3*ArcSin[a*x]^2)/Sqrt[1 - a^2*x^2] + (a*x*ArcSin[a*x]^3)/(1 - a^2*x^2) -
 (12*I)*ArcSin[a*x]*ArcTan[E^(I*ArcSin[a*x])] - (2*I)*ArcSin[a*x]^3*ArcTan[
E^(I*ArcSin[a*x])] + (3*I)*(2 + ArcSin[a*x]^2)*PolyLog[2, (-I)*E^(I*ArcSin[
a*x])] - (3*I)*(2 + ArcSin[a*x]^2)*PolyLog[2, I*E^(I*ArcSin[a*x])] - 6*ArcS
in[a*x]*PolyLog[3, (-I)*E^(I*ArcSin[a*x])] + 6*ArcSin[a*x]*PolyLog[3, I*E^(
I*ArcSin[a*x])] - (6*I)*PolyLog[4, (-I)*E^(I*ArcSin[a*x])] + (6*I)*PolyLog[
4, I*E^(I*ArcSin[a*x])])/(2*a*c^2)
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\arcsin\left(ax\right)^3}{a^4c^2x^4 - 2\,a^2c^2x^2 + c^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/(-a^2*c*x^2+c)^2,x, algorithm="fricas")
```

```
[Out] integral(arcsin(a*x)^3/(a^4*c^2*x^4 - 2*a^2*c^2*x^2 + c^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin\left(ax\right)^3}{\left(a^2cx^2 - c\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/(-a^2*c*x^2+c)^2,x, algorithm="giac")
```

```
[Out] integrate(arcsin(a*x)^3/(a^2*c*x^2 - c)^2, x)
```

maple [A] time = 0.25, size = 486, normalized size = 1.44

$$-\frac{\arcsin\left(ax\right)^{3} x}{2\left(a^{2}x^{2}-1\right)c^{2}}+\frac{3\arcsin\left(ax\right)^{2}\sqrt{-a^{2}x^{2}+1}}{2a\left(a^{2}x^{2}-1\right)c^{2}}+\frac{\arcsin\left(ax\right)^{3}\ln\left(1-i\left(iax+\sqrt{-a^{2}x^{2}+1}\right)\right)}{2a\,c^{2}}-\frac{3i\arcsin\left(ax\right)^{2}\operatorname{polylo}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^3/(-a^2*c*x^2+c)^2,x)
```

```
[Out] -1/2/(a^2*x^2-1)*arcsin(a*x)^3/c^2*x+3/2/a/(a^2*x^2-1)*arcsin(a*x)^2/c^2*(-
a^2*x^2+1)^(1/2)+1/2/a/c^2*arcsin(a*x)^3*ln(1-I*(I*a*x+(-a^2*x^2+1)^(1/2)))
-3/2*I*arcsin(a*x)^2*polylog(2,I*(I*a*x+(-a^2*x^2+1)^(1/2)))/a/c^2+3*arcsin
(a*x)*polylog(3,I*(I*a*x+(-a^2*x^2+1)^(1/2)))/a/c^2+3*I*polylog(4,I*(I*a*x+
(-a^2*x^2+1)^(1/2)))/a/c^2-1/2/a/c^2*arcsin(a*x)^3*ln(1+I*(I*a*x+(-a^2*x^2+
1)^(1/2)))+3/2*I*arcsin(a*x)^2*polylog(2,-I*(I*a*x+(-a^2*x^2+1)^(1/2)))/a/c
^2-3*arcsin(a*x)*polylog(3,-I*(I*a*x+(-a^2*x^2+1)^(1/2)))/a/c^2-3*I*polylog
(4,-I*(I*a*x+(-a^2*x^2+1)^(1/2)))/a/c^2-3/a/c^2*arcsin(a*x)*ln(1+I*(I*a*x+(
-a^2*x^2+1)^(1/2)))+3/a/c^2*arcsin(a*x)*ln(1-I*(I*a*x+(-a^2*x^2+1)^(1/2)))+
3*I/a/c^2*dilog(1+I*(I*a*x+(-a^2*x^2+1)^(1/2)))-3*I/a/c^2*dilog(1-I*(I*a*x+
(-a^2*x^2+1)^(1/2)))
```

maxima [A] time = 0.84, size = 57, normalized size = 0.17

$$-\frac{1}{4}\left(\frac{2\,x}{a^{2}c^{2}x^{2}-c^{2}}-\frac{\log\left(ax+1\right)}{ac^{2}}+\frac{\log\left(ax-1\right)}{ac^{2}}\right)\arcsin\left(ax\right)^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/(-a^2*c*x^2+c)^2,x, algorithm="maxima")
```

```
[Out] -1/4*(2*x/(a^2*c^2*x^2 - c^2) - log(a*x + 1)/(a*c^2) + log(a*x - 1)/(a*c^2)
)*arcsin(a*x)^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\mathrm{asin}\left(a\,x\right)^{3}}{\left(c-a^{2}\,c\,x^{2}\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^3/(c - a^2*c*x^2)^2,x)
```

```
[Out] int(asin(a*x)^3/(c - a^2*c*x^2)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\operatorname{asin}^{3}{\left(ax \right)}}{a^{4}x^{4}-2a^{2}x^{2}+1}\,dx}{c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**3/(-a**2*c*x**2+c)**2,x)
```

```
[Out] Integral(asin(a*x)**3/(a**4*x**4 - 2*a**2*x**2 + 1), x)/c**2
```

3.294 $\int \frac{\sin^{-1}(ax)^3}{\left(c-a^2cx^2\right)^3} dx$

Optimal. Leaf size=455

$$-\frac{1}{4ac^3\sqrt{1-a^2x^2}}+\frac{3x\sin^{-1}(ax)^3}{8c^3\left(1-a^2x^2\right)}+\frac{x\sin^{-1}(ax)^3}{4c^3\left(1-a^2x^2\right)^2}-\frac{9\sin^{-1}(ax)^2}{8ac^3\sqrt{1-a^2x^2}}-\frac{\sin^{-1}(ax)^2}{4ac^3\left(1-a^2x^2\right)^{3/2}}+\frac{x\sin^{-1}(ax)}{4c^3\left(1-a^2x^2\right)}+\frac{9i\sin$$

```
[Out] 1/4*x*arcsin(a*x)/c^3/(-a^2*x^2+1)-1/4*arcsin(a*x)^2/a/c^3/(-a^2*x^2+1)^(3/
2)+1/4*x*arcsin(a*x)^3/c^3/(-a^2*x^2+1)^2+3/8*x*arcsin(a*x)^3/c^3/(-a^2*x^2
+1)+9/8*I*arcsin(a*x)^2*polylog(2,-I*(I*a*x+(-a^2*x^2+1)^(1/2)))/a/c^3+5/2*
I*polylog(2,-I*(I*a*x+(-a^2*x^2+1)^(1/2)))/a/c^3-3/4*I*arcsin(a*x)^3*arctan
(I*a*x+(-a^2*x^2+1)^(1/2))/a/c^3-9/4*I*polylog(4,-I*(I*a*x+(-a^2*x^2+1)^(1/
2)))/a/c^3-9/8*I*arcsin(a*x)^2*polylog(2,I*(I*a*x+(-a^2*x^2+1)^(1/2)))/a/c^
3+9/4*I*polylog(4,I*(I*a*x+(-a^2*x^2+1)^(1/2)))/a/c^3-9/4*arcsin(a*x)*polyl
og(3,-I*(I*a*x+(-a^2*x^2+1)^(1/2)))/a/c^3+9/4*arcsin(a*x)*polylog(3,I*(I*a*
x+(-a^2*x^2+1)^(1/2)))/a/c^3-5*I*arcsin(a*x)*arctan(I*a*x+(-a^2*x^2+1)^(1/2
))/a/c^3-5/2*I*polylog(2,I*(I*a*x+(-a^2*x^2+1)^(1/2)))/a/c^3-1/4/a/c^3/(-a^
2*x^2+1)^(1/2)-9/8*arcsin(a*x)^2/a/c^3/(-a^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.51, antiderivative size = 455, normalized size of antiderivative = 1.00, number of steps used = 28, number of rules used = 11, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.550$, Rules used = {4655, 4657, 4181, 2531, 6609, 2282, 6589, 4677, 2279, 2391, 261}

$$\frac{9i\sin^{-1}(ax)^2\text{PolyLog}\left(2,-ie^{i\sin^{-1}(ax)}\right)}{8ac^3}-\frac{9i\sin^{-1}(ax)^2\text{PolyLog}\left(2,ie^{i\sin^{-1}(ax)}\right)}{8ac^3}-\frac{9\sin^{-1}(ax)\text{PolyLog}\left(3,-ie^{i\sin^{-1}\right.}}{4ac^3}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a*x]^3/(c - a^2*c*x^2)^3,x]
```

```
[Out] -1/(4*a*c^3*Sqrt[1 - a^2*x^2]) + (x*ArcSin[a*x])/(4*c^3*(1 - a^2*x^2)) - Ar
cSin[a*x]^2/(4*a*c^3*(1 - a^2*x^2)^(3/2)) - (9*ArcSin[a*x]^2)/(8*a*c^3*Sqrt
[1 - a^2*x^2]) + (x*ArcSin[a*x]^3)/(4*c^3*(1 - a^2*x^2)^2) + (3*x*ArcSin[a*
x]^3)/(8*c^3*(1 - a^2*x^2)) - ((5*I)*ArcSin[a*x]*ArcTan[E^(I*ArcSin[a*x])])
/(a*c^3) - (((3*I)/4)*ArcSin[a*x]^3*ArcTan[E^(I*ArcSin[a*x])])/(a*c^3) + ((
(5*I)/2)*PolyLog[2, (-I)*E^(I*ArcSin[a*x])])/(a*c^3) + (((9*I)/8)*ArcSin[a*
x]^2*PolyLog[2, (-I)*E^(I*ArcSin[a*x])])/(a*c^3) - (((5*I)/2)*PolyLog[2, I*
E^(I*ArcSin[a*x])])/(a*c^3) - (((9*I)/8)*ArcSin[a*x]^2*PolyLog[2, I*E^(I*Ar
cSin[a*x])])/(a*c^3) - (9*ArcSin[a*x]*PolyLog[3, (-I)*E^(I*ArcSin[a*x])])/(
4*a*c^3) + (9*ArcSin[a*x]*PolyLog[3, I*E^(I*ArcSin[a*x])])/(4*a*c^3) - (((9
*I)/4)*PolyLog[4, (-I)*E^(I*ArcSin[a*x])])/(a*c^3) + (((9*I)/4)*PolyLog[4,
I*E^(I*ArcSin[a*x])])/(a*c^3)
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{\sin^{-1}(ax)^3}{\left(c-a^2cx^2\right)^3}\,dx = \frac{x\sin^{-1}(ax)^3}{4c^3\left(1-a^2x^2\right)^2} - \frac{(3a)\int \frac{x\sin^{-1}(ax)^2}{\left(1-a^2x^2\right)^{5/2}}\,dx}{4c^3} + \frac{3\int \frac{\sin^{-1}(ax)^3}{\left(c-a^2cx^2\right)^2}\,dx}{4c}$$

$$= -\frac{\sin^{-1}(ax)^2}{4ac^3\left(1-a^2x^2\right)^{3/2}} + \frac{x\sin^{-1}(ax)^3}{4c^3\left(1-a^2x^2\right)^2} + \frac{3x\sin^{-1}(ax)^3}{8c^3\left(1-a^2x^2\right)} + \frac{\int \frac{\sin^{-1}(ax)}{\left(1-a^2x^2\right)^2}\,dx}{2c^3} - \frac{(9a)\int \frac{x\sin^{-1}(a}{\left(1-a^2x^2\right)}}{8c^3}$$

$$= \frac{x\sin^{-1}(ax)}{4c^3\left(1-a^2x^2\right)} - \frac{\sin^{-1}(ax)^2}{4ac^3\left(1-a^2x^2\right)^{3/2}} - \frac{9\sin^{-1}(ax)^2}{8ac^3\sqrt{1-a^2x^2}} + \frac{x\sin^{-1}(ax)^3}{4c^3\left(1-a^2x^2\right)^2} + \frac{3x\sin^{-1}(ax)^3}{8c^3\left(1-a^2x^2\right)}$$

$$= -\frac{1}{4ac^3\sqrt{1-a^2x^2}} + \frac{x\sin^{-1}(ax)}{4c^3\left(1-a^2x^2\right)} - \frac{\sin^{-1}(ax)^2}{4ac^3\left(1-a^2x^2\right)^{3/2}} - \frac{9\sin^{-1}(ax)^2}{8ac^3\sqrt{1-a^2x^2}} + \frac{x\sin^{-1}(ax)}{4c^3\left(1-a^2x^2\right.}$$

$$= -\frac{1}{4ac^3\sqrt{1-a^2x^2}} + \frac{x\sin^{-1}(ax)}{4c^3\left(1-a^2x^2\right)} - \frac{\sin^{-1}(ax)^2}{4ac^3\left(1-a^2x^2\right)^{3/2}} - \frac{9\sin^{-1}(ax)^2}{8ac^3\sqrt{1-a^2x^2}} + \frac{x\sin^{-1}(ax)}{4c^3\left(1-a^2x^2\right.}$$

$$= -\frac{1}{4ac^3\sqrt{1-a^2x^2}} + \frac{x\sin^{-1}(ax)}{4c^3\left(1-a^2x^2\right)} - \frac{\sin^{-1}(ax)^2}{4ac^3\left(1-a^2x^2\right)^{3/2}} - \frac{9\sin^{-1}(ax)^2}{8ac^3\sqrt{1-a^2x^2}} + \frac{x\sin^{-1}(ax)}{4c^3\left(1-a^2x^2\right.}$$

$$= -\frac{1}{4ac^3\sqrt{1-a^2x^2}} + \frac{x\sin^{-1}(ax)}{4c^3\left(1-a^2x^2\right)} - \frac{\sin^{-1}(ax)^2}{4ac^3\left(1-a^2x^2\right)^{3/2}} - \frac{9\sin^{-1}(ax)^2}{8ac^3\sqrt{1-a^2x^2}} + \frac{x\sin^{-1}(ax)}{4c^3\left(1-a^2x^2\right.}$$

$$= -\frac{1}{4ac^3\sqrt{1-a^2x^2}} + \frac{x\sin^{-1}(ax)}{4c^3\left(1-a^2x^2\right)} - \frac{\sin^{-1}(ax)^2}{4ac^3\left(1-a^2x^2\right)^{3/2}} - \frac{9\sin^{-1}(ax)^2}{8ac^3\sqrt{1-a^2x^2}} + \frac{x\sin^{-1}(ax)}{4c^3\left(1-a^2x^2\right.}$$

Mathematica [B] time = 12.52, size = 1544, normalized size = 3.39

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcSin[a*x]^3/(c - a^2*c*x^2)^3,x]
```

```
[Out] -(((1 + 5*ArcSin[a*x]^2)/4 - (5*(ArcSin[a*x]*(Log[1 - I*E^(I*ArcSin[a*x])]
- Log[1 + I*E^(I*ArcSin[a*x])]) + I*(PolyLog[2, (-I)*E^(I*ArcSin[a*x])] - P
olyLog[2, I*E^(I*ArcSin[a*x])])))/2 - (3*((Pi^3*Log[Cot[(Pi/2 - ArcSin[a*x]
)/2]])/8 + (3*Pi^2*((Pi/2 - ArcSin[a*x])*(Log[1 - E^(I*(Pi/2 - ArcSin[a*x])
)] - Log[1 + E^(I*(Pi/2 - ArcSin[a*x]))]) + I*(PolyLog[2, -E^(I*(Pi/2 - Arc
Sin[a*x]))] - PolyLog[2, E^(I*(Pi/2 - ArcSin[a*x]))])))/4 - (3*Pi*((Pi/2 -
ArcSin[a*x])^2*(Log[1 - E^(I*(Pi/2 - ArcSin[a*x]))] - Log[1 + E^(I*(Pi/2 -
ArcSin[a*x]))]) + (2*I)*(Pi/2 - ArcSin[a*x])*(PolyLog[2, -E^(I*(Pi/2 - ArcS
in[a*x]))] - PolyLog[2, E^(I*(Pi/2 - ArcSin[a*x]))]) + 2*(-PolyLog[3, -E^(I
*(Pi/2 - ArcSin[a*x]))] + PolyLog[3, E^(I*(Pi/2 - ArcSin[a*x]))])))/2 + 8*(
(I/64)*(Pi/2 - ArcSin[a*x])^4 + (I/4)*(Pi/2 + (-1/2*Pi + ArcSin[a*x])/2)^4
```

```
- ((Pi/2 - ArcSin[a*x])^3*Log[1 + E^(I*(Pi/2 - ArcSin[a*x]))])/8 - (Pi^3*(I
*(Pi/2 + (-1/2*Pi + ArcSin[a*x])/2) - Log[1 + E^((2*I)*(Pi/2 + (-1/2*Pi + A
rcSin[a*x])/2))]))/8 - (Pi/2 + (-1/2*Pi + ArcSin[a*x])/2)^3*Log[1 + E^((2*I
)*(Pi/2 + (-1/2*Pi + ArcSin[a*x])/2))] + ((3*I)/8)*(Pi/2 - ArcSin[a*x])^2*P
olyLog[2, -E^(I*(Pi/2 - ArcSin[a*x]))] + (3*Pi^2*((I/2)*(Pi/2 + (-1/2*Pi +
ArcSin[a*x])/2)^2 - (Pi/2 + (-1/2*Pi + ArcSin[a*x])/2)*Log[1 + E^((2*I)*(Pi
/2 + (-1/2*Pi + ArcSin[a*x])/2))] + (I/2)*PolyLog[2, -E^((2*I)*(Pi/2 + (-1/
2*Pi + ArcSin[a*x])/2))]))/4 + ((3*I)/2)*(Pi/2 + (-1/2*Pi + ArcSin[a*x])/2)
^2*PolyLog[2, -E^((2*I)*(Pi/2 + (-1/2*Pi + ArcSin[a*x])/2))] - (3*(Pi/2 - A
rcSin[a*x])*PolyLog[3, -E^(I*(Pi/2 - ArcSin[a*x]))])/4 - (3*Pi*((I/3)*(Pi/2
 + (-1/2*Pi + ArcSin[a*x])/2)^3 - (Pi/2 + (-1/2*Pi + ArcSin[a*x])/2)^2*Log[
1 + E^((2*I)*(Pi/2 + (-1/2*Pi + ArcSin[a*x])/2))] + I*(Pi/2 + (-1/2*Pi + Ar
cSin[a*x])/2)*PolyLog[2, -E^((2*I)*(Pi/2 + (-1/2*Pi + ArcSin[a*x])/2))] - P
olyLog[3, -E^((2*I)*(Pi/2 + (-1/2*Pi + ArcSin[a*x])/2))]/2))/2 - (3*(Pi/2 +
 (-1/2*Pi + ArcSin[a*x])/2)*PolyLog[3, -E^((2*I)*(Pi/2 + (-1/2*Pi + ArcSin[
a*x])/2))])/2 - ((3*I)/4)*PolyLog[4, -E^(I*(Pi/2 - ArcSin[a*x]))] - ((3*I)/
4)*PolyLog[4, -E^((2*I)*(Pi/2 + (-1/2*Pi + ArcSin[a*x])/2))])))/8 - ArcSin[
a*x]^3/(16*(Cos[ArcSin[a*x]/2] - Sin[ArcSin[a*x]/2])^4) - (2*ArcSin[a*x] -
ArcSin[a*x]^2 + 3*ArcSin[a*x]^3)/(16*(Cos[ArcSin[a*x]/2] - Sin[ArcSin[a*x]/
2])^2) + (ArcSin[a*x]^2*Sin[ArcSin[a*x]/2])/(8*(Cos[ArcSin[a*x]/2] - Sin[Ar
cSin[a*x]/2])^3) + ArcSin[a*x]^3/(16*(Cos[ArcSin[a*x]/2] + Sin[ArcSin[a*x]/
2])^4) - (ArcSin[a*x]^2*Sin[ArcSin[a*x]/2])/(8*(Cos[ArcSin[a*x]/2] + Sin[Ar
cSin[a*x]/2])^3) - (-2*ArcSin[a*x] - ArcSin[a*x]^2 - 3*ArcSin[a*x]^3)/(16*(
Cos[ArcSin[a*x]/2] + Sin[ArcSin[a*x]/2])^2) - (-Sin[ArcSin[a*x]/2] - 5*ArcS
in[a*x]^2*Sin[ArcSin[a*x]/2])/(4*(Cos[ArcSin[a*x]/2] - Sin[ArcSin[a*x]/2]))
 - (Sin[ArcSin[a*x]/2] + 5*ArcSin[a*x]^2*Sin[ArcSin[a*x]/2])/(4*(Cos[ArcSin
[a*x]/2] + Sin[ArcSin[a*x]/2]))))/(a*c^3))
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\arcsin(ax)^3}{a^6c^3x^6 - 3\,a^4c^3x^4 + 3\,a^2c^3x^2 - c^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/(-a^2*c*x^2+c)^3,x, algorithm="fricas")
```

```
[Out] integral(-arcsin(a*x)^3/(a^6*c^3*x^6 - 3*a^4*c^3*x^4 + 3*a^2*c^3*x^2 - c^3)
, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\arcsin(ax)^3}{\left(a^2cx^2 - c\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/(-a^2*c*x^2+c)^3,x, algorithm="giac")
```

```
[Out] integrate(-arcsin(a*x)^3/(a^2*c*x^2 - c)^3, x)
```

maple [A] time = 0.34, size = 726, normalized size = 1.60

$$-\frac{3a^2\arcsin(ax)^3x^3}{8\left(a^4x^4-2a^2x^2+1\right)c^3}+\frac{9a\arcsin(ax)^2\sqrt{-a^2x^2+1}\,x^2}{8\left(a^4x^4-2a^2x^2+1\right)c^3}-\frac{a^2\arcsin(ax)\,x^3}{4\left(a^4x^4-2a^2x^2+1\right)c^3}+\frac{a\,x^2\sqrt{-a^2x^2+1}}{4\left(a^4x^4-2a^2x^2+1\right)c^3}+\frac{5}{8\left(a\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^3/(-a^2*c*x^2+c)^3,x)
```

```
[Out] -3/8*a^2/(a^4*x^4-2*a^2*x^2+1)/c^3*arcsin(a*x)^3*x^3+9/8*a/(a^4*x^4-2*a^2*x
^2+1)/c^3*arcsin(a*x)^2*(-a^2*x^2+1)^(1/2)*x^2-1/4*a^2/(a^4*x^4-2*a^2*x^2+1
)/c^3*arcsin(a*x)*x^3+1/4*a/(a^4*x^4-2*a^2*x^2+1)/c^3*x^2*(-a^2*x^2+1)^(1/2
)+5/8/(a^4*x^4-2*a^2*x^2+1)/c^3*arcsin(a*x)^3*x-11/8/a/(a^4*x^4-2*a^2*x^2+1
)/c^3*arcsin(a*x)^2*(-a^2*x^2+1)^(1/2)+1/4/(a^4*x^4-2*a^2*x^2+1)/c^3*arcsin
(a*x)*x-1/4/a/(a^4*x^4-2*a^2*x^2+1)/c^3*(-a^2*x^2+1)^(1/2)+3/8/a/c^3*arcsin
(a*x)^3*ln(1-I*(I*a*x+(-a^2*x^2+1)^(1/2)))+9/4*I*polylog(4,I*(I*a*x+(-a^2*x
^2+1)^(1/2)))/a/c^3+9/4*arcsin(a*x)*polylog(3,I*(I*a*x+(-a^2*x^2+1)^(1/2)))
/a/c^3-9/8*I*arcsin(a*x)^2*polylog(2,I*(I*a*x+(-a^2*x^2+1)^(1/2)))/a/c^3-3/
8/a/c^3*arcsin(a*x)^3*ln(1+I*(I*a*x+(-a^2*x^2+1)^(1/2)))-5/2*I/a/c^3*dilog(
1-I*(I*a*x+(-a^2*x^2+1)^(1/2)))-9/4*arcsin(a*x)*polylog(3,-I*(I*a*x+(-a^2*x
^2+1)^(1/2)))/a/c^3-9/4*I*polylog(4,-I*(I*a*x+(-a^2*x^2+1)^(1/2)))/a/c^3-5/
2/a/c^3*arcsin(a*x)*ln(1+I*(I*a*x+(-a^2*x^2+1)^(1/2)))+5/2/a/c^3*arcsin(a*x
)*ln(1-I*(I*a*x+(-a^2*x^2+1)^(1/2)))+5/2*I/a/c^3*dilog(1+I*(I*a*x+(-a^2*x^2
+1)^(1/2)))+9/8*I*arcsin(a*x)^2*polylog(2,-I*(I*a*x+(-a^2*x^2+1)^(1/2)))/a/
c^3
```

maxima [A] time = 1.04, size = 78, normalized size = 0.17

$$-\frac{1}{16}\left(\frac{2\left(3\,a^{2}x^{3}-5\,x\right)}{a^{4}c^{3}x^{4}-2\,a^{2}c^{3}x^{2}+c^{3}}-\frac{3\,\log\left(ax+1\right)}{ac^{3}}+\frac{3\,\log\left(ax-1\right)}{ac^{3}}\right)\arcsin\left(ax\right)^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/(-a^2*c*x^2+c)^3,x, algorithm="maxima")
```

```
[Out] -1/16*(2*(3*a^2*x^3 - 5*x)/(a^4*c^3*x^4 - 2*a^2*c^3*x^2 + c^3) - 3*log(a*x
+ 1)/(a*c^3) + 3*log(a*x - 1)/(a*c^3))*arcsin(a*x)^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\mathrm{asin}\left(a\,x\right)^3}{\left(c-a^2\,c\,x^2\right)^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^3/(c - a^2*c*x^2)^3,x)
```

```
[Out] int(asin(a*x)^3/(c - a^2*c*x^2)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\int \frac{\operatorname{asin}^{3}{\left(ax \right)}}{a^{6}x^{6}-3a^{4}x^{4}+3a^{2}x^{2}-1}\, dx}{c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**3/(-a**2*c*x**2+c)**3,x)
```

```
[Out] -Integral(asin(a*x)**3/(a**6*x**6 - 3*a**4*x**4 + 3*a**2*x**2 - 1), x)/c**3
```

3.295 $\int \left(c-a^2cx^2\right)^{5/2}\sin^{-1}(ax)^3\,dx$

Optimal. Leaf size=533

$$\frac{865ac^2x^2\sqrt{c-a^2cx^2}}{2304\sqrt{1-a^2x^2}}-\frac{c^2\left(1-a^2x^2\right)^{5/2}\sqrt{c-a^2cx^2}}{216a}-\frac{15ac^2x^2\sqrt{c-a^2cx^2}\sin^{-1}(ax)^2}{32\sqrt{1-a^2x^2}}+\frac{5}{16}c^2x\sqrt{c-a^2cx^2}\sin^{-1}(ax)^3$$

```
[Out] 5/24*c*x*(-a^2*c*x^2+c)^(3/2)*arcsin(a*x)^3+1/6*x*(-a^2*c*x^2+c)^(5/2)*arcs
in(a*x)^3-1/216*c^2*(-a^2*x^2+1)^(5/2)*(-a^2*c*x^2+c)^(1/2)/a-245/384*c^2*x
*arcsin(a*x)*(-a^2*c*x^2+c)^(1/2)-65/576*c^2*x*(-a^2*x^2+1)*arcsin(a*x)*(-a
^2*c*x^2+c)^(1/2)-1/36*c^2*x*(-a^2*x^2+1)^2*arcsin(a*x)*(-a^2*c*x^2+c)^(1/2
)+5/32*c^2*(-a^2*x^2+1)^(3/2)*arcsin(a*x)^2*(-a^2*c*x^2+c)^(1/2)/a+1/12*c^2
*(-a^2*x^2+1)^(5/2)*arcsin(a*x)^2*(-a^2*c*x^2+c)^(1/2)/a+5/16*c^2*x*arcsin(
a*x)^3*(-a^2*c*x^2+c)^(1/2)+865/2304*a*c^2*x^2*(-a^2*c*x^2+c)^(1/2)/(-a^2*x
^2+1)^(1/2)-65/2304*a^3*c^2*x^4*(-a^2*c*x^2+c)^(1/2)/(-a^2*x^2+1)^(1/2)+115
/768*c^2*arcsin(a*x)^2*(-a^2*c*x^2+c)^(1/2)/a/(-a^2*x^2+1)^(1/2)-15/32*a*c^
2*x^2*arcsin(a*x)^2*(-a^2*c*x^2+c)^(1/2)/(-a^2*x^2+1)^(1/2)+5/64*c^2*arcsin
(a*x)^4*(-a^2*c*x^2+c)^(1/2)/a/(-a^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.55, antiderivative size = 533, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 9, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.409, Rules used = {4649, 4647, 4641, 4627, 4707, 30, 4677, 14, 261}

$$-\frac{65a^3c^2x^4\sqrt{c-a^2cx^2}}{2304\sqrt{1-a^2x^2}}+\frac{865ac^2x^2\sqrt{c-a^2cx^2}}{2304\sqrt{1-a^2x^2}}-\frac{c^2\left(1-a^2x^2\right)^{5/2}\sqrt{c-a^2cx^2}}{216a}-\frac{15ac^2x^2\sqrt{c-a^2cx^2}\sin^{-1}(ax)^2}{32\sqrt{1-a^2x^2}}+\frac{5}{16}c^2$$

Antiderivative was successfully verified.

```
[In] Int[(c - a^2*c*x^2)^(5/2)*ArcSin[a*x]^3,x]
```

```
[Out] (865*a*c^2*x^2*Sqrt[c - a^2*c*x^2])/(2304*Sqrt[1 - a^2*x^2]) - (65*a^3*c^2*
x^4*Sqrt[c - a^2*c*x^2])/(2304*Sqrt[1 - a^2*x^2]) - (c^2*(1 - a^2*x^2)^(5/2
)*Sqrt[c - a^2*c*x^2])/(216*a) - (245*c^2*x*Sqrt[c - a^2*c*x^2]*ArcSin[a*x]
)/384 - (65*c^2*x*(1 - a^2*x^2)*Sqrt[c - a^2*c*x^2]*ArcSin[a*x])/576 - (c^2
*x*(1 - a^2*x^2)^2*Sqrt[c - a^2*c*x^2]*ArcSin[a*x])/36 + (115*c^2*Sqrt[c -
a^2*c*x^2]*ArcSin[a*x]^2)/(768*a*Sqrt[1 - a^2*x^2]) - (15*a*c^2*x^2*Sqrt[c
- a^2*c*x^2]*ArcSin[a*x]^2)/(32*Sqrt[1 - a^2*x^2]) + (5*c^2*(1 - a^2*x^2)^(
3/2)*Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^2)/(32*a) + (c^2*(1 - a^2*x^2)^(5/2)*S
qrt[c - a^2*c*x^2]*ArcSin[a*x]^2)/(12*a) + (5*c^2*x*Sqrt[c - a^2*c*x^2]*Arc
Sin[a*x]^3)/16 + (5*c*x*(c - a^2*c*x^2)^(3/2)*ArcSin[a*x]^3)/24 + (x*(c - a
^2*c*x^2)^(5/2)*ArcSin[a*x]^3)/6 + (5*c^2*Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^4
)/(64*a*Sqrt[1 - a^2*x^2])
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
```

```
NeQ[p, -1]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int \left(c-a^2cx^2\right)^{5/2} \sin^{-1}(ax)^3\,dx = \frac{1}{6}x\left(c-a^2cx^2\right)^{5/2}\sin^{-1}(ax)^3+\frac{1}{6}(5c)\int\left(c-a^2cx^2\right)^{3/2}\sin^{-1}(ax)^3\,dx-\frac{\left(ac^2\sqrt{c-\right.}{}$$

$$=\frac{c^2\left(1-a^2x^2\right)^{5/2}\sqrt{c-a^2cx^2}\sin^{-1}(ax)^2}{12a}+\frac{5}{24}cx\left(c-a^2cx^2\right)^{3/2}\sin^{-1}(ax)^3+\frac{1}{6}x\left(c\right.$$

$$=-\frac{1}{36}c^2x\left(1-a^2x^2\right)^2\sqrt{c-a^2cx^2}\sin^{-1}(ax)+\frac{5c^2\left(1-a^2x^2\right)^{3/2}\sqrt{c-a^2cx^2}\sin^{-1}(a}{32a}$$

$$=-\frac{c^2\left(1-a^2x^2\right)^{5/2}\sqrt{c-a^2cx^2}}{216a}-\frac{65}{576}c^2x\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}\sin^{-1}(ax)-\frac{1}{36}c^2$$

$$=-\frac{c^2\left(1-a^2x^2\right)^{5/2}\sqrt{c-a^2cx^2}}{216a}-\frac{245}{384}c^2x\sqrt{c-a^2cx^2}\sin^{-1}(ax)-\frac{65}{576}c^2x\left(1-a^2x^2\right.$$

$$=\frac{865ac^2x^2\sqrt{c-a^2cx^2}}{2304\sqrt{1-a^2x^2}}-\frac{65a^3c^2x^4\sqrt{c-a^2cx^2}}{2304\sqrt{1-a^2x^2}}-\frac{c^2\left(1-a^2x^2\right)^{5/2}\sqrt{c-a^2cx^2}}{216a}-\frac{24}{38}$$

Mathematica [A] time = 0.88, size = 179, normalized size = 0.34

$$\frac{c^2\sqrt{c-a^2cx^2}\left(4320\sin^{-1}(ax)^4+288\left(45\sin\left(2\sin^{-1}(ax)\right)+9\sin\left(4\sin^{-1}(ax)\right)+\sin\left(6\sin^{-1}(ax)\right)\right)\sin^{-1}(ax)^3-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - a^2*c*x^2)^(5/2)*ArcSin[a*x]^3,x]
```

```
[Out] (c^2*Sqrt[c - a^2*c*x^2]*(4320*ArcSin[a*x]^4 - 9720*Cos[2*ArcSin[a*x]] - 24
3*Cos[4*ArcSin[a*x]] - 8*Cos[6*ArcSin[a*x]] + 72*ArcSin[a*x]^2*(270*Cos[2*A
rcSin[a*x]] + 27*Cos[4*ArcSin[a*x]] + 2*Cos[6*ArcSin[a*x]]) + 288*ArcSin[a*
x]^3*(45*Sin[2*ArcSin[a*x]] + 9*Sin[4*ArcSin[a*x]] + Sin[6*ArcSin[a*x]]) -
12*ArcSin[a*x]*(1620*Sin[2*ArcSin[a*x]] + 81*Sin[4*ArcSin[a*x]] + 4*Sin[6*A
rcSin[a*x]])))/(55296*a*Sqrt[1 - a^2*x^2])
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a^4c^2x^4-2\,a^2c^2x^2+c^2\right)\sqrt{-a^2cx^2+c}\,\arcsin\left(ax\right)^3,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(5/2)*arcsin(a*x)^3,x, algorithm="fricas")
```

```
[Out] integral((a^4*c^2*x^4 - 2*a^2*c^2*x^2 + c^2)*sqrt(-a^2*c*x^2 + c)*arcsin(a*
x)^3, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(5/2)*arcsin(a*x)^3,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.34, size = 699, normalized size = 1.31

$$-\frac{5\sqrt{-c\left(a^{2}x^{2}-1\right)}\,\sqrt{-a^{2}x^{2}+1}\,\arcsin\left(ax\right)^{4}c^{2}}{64a\left(a^{2}x^{2}-1\right)}+\frac{\sqrt{-c\left(a^{2}x^{2}-1\right)}\,\left(-32i\sqrt{-a^{2}x^{2}+1}\,x^{6}a^{6}+32x^{7}a^{7}+48i\sqrt{-a^{2}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)^(5/2)*arcsin(a*x)^3,x)
```

```
[Out] -5/64*(-c*(a^2*x^2-1))^(1/2)*(-a^2*x^2+1)^(1/2)/a/(a^2*x^2-1)*arcsin(a*x)^4
*c^2+1/13824*(-c*(a^2*x^2-1))^(1/2)*(-32*I*(-a^2*x^2+1)^(1/2)*x^6*a^6+32*x^
7*a^7+48*I*(-a^2*x^2+1)^(1/2)*x^4*a^4-64*a^5*x^5-18*I*(-a^2*x^2+1)^(1/2)*x^
2*a^2+38*a^3*x^3+I*(-a^2*x^2+1)^(1/2)-6*a*x)*(18*I*arcsin(a*x)^2+36*arcsin(
a*x)^3-I-6*arcsin(a*x))*c^2/a/(a^2*x^2-1)+15/512*(-c*(a^2*x^2-1))^(1/2)*(2*
I*(-a^2*x^2+1)^(1/2)*x^2*a^2+2*a^3*x^3-I*(-a^2*x^2+1)^(1/2)-2*a*x)*(-6*I*ar
csin(a*x)^2+4*arcsin(a*x)^3+3*I-6*arcsin(a*x))*c^2/a/(a^2*x^2-1)-1/110592*(
-c*(a^2*x^2-1))^(1/2)*(I*x^2*a^2-a*x*(-a^2*x^2+1)^(1/2)-I)*(2088*I*arcsin(a
*x)^2+2304*arcsin(a*x)^3-251*I-924*arcsin(a*x))*cos(5*arcsin(a*x))*c^2/a/(a
^2*x^2-1)+5/110592*(-c*(a^2*x^2-1))^(1/2)*(I*(-a^2*x^2+1)^(1/2)*x*a+a^2*x^2
-1)*(360*I*arcsin(a*x)^2+576*arcsin(a*x)^3-47*I-204*arcsin(a*x))*sin(5*arcs
in(a*x))*c^2/a/(a^2*x^2-1)-3/4096*(-c*(a^2*x^2-1))^(1/2)*(I*x^2*a^2-a*x*(-a
^2*x^2+1)^(1/2)-I)*(264*I*arcsin(a*x)^2+128*arcsin(a*x)^3-123*I-228*arcsin(
a*x))*cos(3*arcsin(a*x))*c^2/a/(a^2*x^2-1)+9/4096*(-c*(a^2*x^2-1))^(1/2)*(I
*(-a^2*x^2+1)^(1/2)*x*a+a^2*x^2-1)*(72*I*arcsin(a*x)^2+64*arcsin(a*x)^3-39*
I-84*arcsin(a*x))*sin(3*arcsin(a*x))*c^2/a/(a^2*x^2-1)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(-a^{2}cx^{2}+c\right)^{\frac{5}{2}}\arcsin\left(ax\right)^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(5/2)*arcsin(a*x)^3,x, algorithm="maxima")
```

```
[Out] integrate((-a^2*c*x^2 + c)^(5/2)*arcsin(a*x)^3, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\mathrm{asin}\left(a\,x\right)^{3}\,{\left(c-a^{2}\,c\,x^{2}\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^3*(c - a^2*c*x^2)^(5/2),x)
```

```
[Out] int(asin(a*x)^3*(c - a^2*c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)**(5/2)*asin(a*x)**3,x)
```

```
[Out] Timed out
```

3.296 $\int \left(c-a^2cx^2\right)^{3/2}\sin^{-1}(ax)^3\,dx$

Optimal. Leaf size=365

$$\frac{51acx^2\sqrt{c-a^2cx^2}}{128\sqrt{1-a^2x^2}}-\frac{9acx^2\sqrt{c-a^2cx^2}\sin^{-1}(ax)^2}{16\sqrt{1-a^2x^2}}+\frac{1}{4}x\left(c-a^2cx^2\right)^{3/2}\sin^{-1}(ax)^3+\frac{3}{8}cx\sqrt{c-a^2cx^2}\sin^{-1}(ax)^3-\frac{45}{64}cx$$

```
[Out] 1/4*x*(-a^2*c*x^2+c)^(3/2)*arcsin(a*x)^3-45/64*c*x*arcsin(a*x)*(-a^2*c*x^2+
c)^(1/2)-3/32*c*x*(-a^2*x^2+1)*arcsin(a*x)*(-a^2*c*x^2+c)^(1/2)+3/16*c*(-a^
2*x^2+1)^(3/2)*arcsin(a*x)^2*(-a^2*c*x^2+c)^(1/2)/a+3/8*c*x*arcsin(a*x)^3*(
-a^2*c*x^2+c)^(1/2)+51/128*a*c*x^2*(-a^2*c*x^2+c)^(1/2)/(-a^2*x^2+1)^(1/2)-
3/128*a^3*c*x^4*(-a^2*c*x^2+c)^(1/2)/(-a^2*x^2+1)^(1/2)+27/128*c*arcsin(a*x
)^2*(-a^2*c*x^2+c)^(1/2)/a/(-a^2*x^2+1)^(1/2)-9/16*a*c*x^2*arcsin(a*x)^2*(-
a^2*c*x^2+c)^(1/2)/(-a^2*x^2+1)^(1/2)+3/32*c*arcsin(a*x)^4*(-a^2*c*x^2+c)^(
1/2)/a/(-a^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.32, antiderivative size = 365, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 8, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.364, Rules used = {4649, 4647, 4641, 4627, 4707, 30, 4677, 14}

$$-\frac{3a^3cx^4\sqrt{c-a^2cx^2}}{128\sqrt{1-a^2x^2}}+\frac{51acx^2\sqrt{c-a^2cx^2}}{128\sqrt{1-a^2x^2}}-\frac{9acx^2\sqrt{c-a^2cx^2}\sin^{-1}(ax)^2}{16\sqrt{1-a^2x^2}}+\frac{1}{4}x\left(c-a^2cx^2\right)^{3/2}\sin^{-1}(ax)^3+\frac{3}{8}cx\sqrt{c-a^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c - a^2*c*x^2)^(3/2)*ArcSin[a*x]^3,x]
```

```
[Out] (51*a*c*x^2*Sqrt[c - a^2*c*x^2])/(128*Sqrt[1 - a^2*x^2]) - (3*a^3*c*x^4*Sqr
t[c - a^2*c*x^2])/(128*Sqrt[1 - a^2*x^2]) - (45*c*x*Sqrt[c - a^2*c*x^2]*Arc
Sin[a*x])/64 - (3*c*x*(1 - a^2*x^2)*Sqrt[c - a^2*c*x^2]*ArcSin[a*x])/32 + (
27*c*Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^2)/(128*a*Sqrt[1 - a^2*x^2]) - (9*a*c*
x^2*Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^2)/(16*Sqrt[1 - a^2*x^2]) + (3*c*(1 - a
^2*x^2)^(3/2)*Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^2)/(16*a) + (3*c*x*Sqrt[c - a
^2*c*x^2]*ArcSin[a*x]^3)/8 + (x*(c - a^2*c*x^2)^(3/2)*ArcSin[a*x]^3)/4 + (3
*c*Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^4)/(32*a*Sqrt[1 - a^2*x^2])
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
```

```
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int \left(c-a^2cx^2\right)^{3/2} \sin^{-1}(ax)^3 \, dx = \frac{1}{4}x\left(c-a^2cx^2\right)^{3/2} \sin^{-1}(ax)^3 + \frac{1}{4}(3c)\int \sqrt{c-a^2cx^2} \sin^{-1}(ax)^3 \, dx - \frac{\left(3ac\sqrt{c-a^2\right.}{}$$

$$= \frac{3c\left(1-a^2x^2\right)^{3/2} \sqrt{c-a^2cx^2} \sin^{-1}(ax)^2}{16a} + \frac{3}{8}cx\sqrt{c-a^2cx^2} \sin^{-1}(ax)^3 + \frac{1}{4}x\left(c-a\right.$$

$$= -\frac{3}{32}cx\left(1-a^2x^2\right)\sqrt{c-a^2cx^2} \sin^{-1}(ax) - \frac{9acx^2\sqrt{c-a^2cx^2} \sin^{-1}(ax)^2}{16\sqrt{1-a^2x^2}} + \frac{3c\left(1-\right.}{}$$

$$= -\frac{45}{64}cx\sqrt{c-a^2cx^2} \sin^{-1}(ax) - \frac{3}{32}cx\left(1-a^2x^2\right)\sqrt{c-a^2cx^2} \sin^{-1}(ax) - \frac{9acx^2\sqrt{c}}{1}$$

$$= \frac{51acx^2\sqrt{c-a^2cx^2}}{128\sqrt{1-a^2x^2}} - \frac{3a^3cx^4\sqrt{c-a^2cx^2}}{128\sqrt{1-a^2x^2}} - \frac{45}{64}cx\sqrt{c-a^2cx^2} \sin^{-1}(ax) - \frac{3}{32}cx\left(1\right.$$

Mathematica [A] time = 0.35, size = 138, normalized size = 0.38

$$\frac{c\sqrt{c-a^2cx^2}\left(96\sin^{-1}(ax)^4 + 32\left(8\sin\left(2\sin^{-1}(ax)\right) + \sin\left(4\sin^{-1}(ax)\right)\right)\sin^{-1}(ax)^3 - 12\left(32\sin\left(2\sin^{-1}(ax)\right) + \right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - a^2*c*x^2)^(3/2)*ArcSin[a*x]^3,x]
```

```
[Out] (c*Sqrt[c - a^2*c*x^2]*(96*ArcSin[a*x]^4 + 24*ArcSin[a*x]^2*(16*Cos[2*ArcSi
n[a*x]] + Cos[4*ArcSin[a*x]]) - 3*(64*Cos[2*ArcSin[a*x]] + Cos[4*ArcSin[a*x
]]) + 32*ArcSin[a*x]^3*(8*Sin[2*ArcSin[a*x]] + Sin[4*ArcSin[a*x]]) - 12*Arc
Sin[a*x]*(32*Sin[2*ArcSin[a*x]] + Sin[4*ArcSin[a*x]])))/(1024*a*Sqrt[1 - a^
2*x^2])
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(a^2cx^2-c\right)\sqrt{-a^2cx^2+c}\arcsin\left(ax\right)^3, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(3/2)*arcsin(a*x)^3,x, algorithm="fricas")
```

```
[Out] integral(-(a^2*c*x^2 - c)*sqrt(-a^2*c*x^2 + c)*arcsin(a*x)^3, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(3/2)*arcsin(a*x)^3,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.23, size = 474, normalized size = 1.30

$$-\frac{3\sqrt{-c\left(a^2x^2-1\right)}\sqrt{-a^2x^2+1}\arcsin\left(ax\right)^4 c}{32a\left(a^2x^2-1\right)} - \frac{\sqrt{-c\left(a^2x^2-1\right)}\left(-8i\sqrt{-a^2x^2+1}\,x^4a^4 + 8a^5x^5 + 8i\sqrt{-a^2x^2+1}\,x\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)^(3/2)*arcsin(a*x)^3,x)
```

```
[Out] -3/32*(-c*(a^2*x^2-1))^(1/2)*(-a^2*x^2+1)^(1/2)/a/(a^2*x^2-1)*arcsin(a*x)^4
*c-1/2048*(-c*(a^2*x^2-1))^(1/2)*(-8*I*(-a^2*x^2+1)^(1/2)*x^4*a^4+8*a^5*x^5
+8*I*(-a^2*x^2+1)^(1/2)*x^2*a^2-12*a^3*x^3-I*(-a^2*x^2+1)^(1/2)+4*a*x)*(24*
I*arcsin(a*x)^2+32*arcsin(a*x)^3-3*I-12*arcsin(a*x))*c/a/(a^2*x^2-1)+1/32*(
-c*(a^2*x^2-1))^(1/2)*(2*I*(-a^2*x^2+1)^(1/2)*x^2*a^2+2*a^3*x^3-I*(-a^2*x^2
+1)^(1/2)-2*a*x)*(-6*I*arcsin(a*x)^2+4*arcsin(a*x)^3+3*I-6*arcsin(a*x))*c/a
/(a^2*x^2-1)-1/2048*(-c*(a^2*x^2-1))^(1/2)*(I*x^2*a^2-a*x*(-a^2*x^2+1)^(1/2
)-I)*(408*I*arcsin(a*x)^2+224*arcsin(a*x)^3-195*I-372*arcsin(a*x))*cos(3*ar
csin(a*x))*c/a/(a^2*x^2-1)+9/2048*(-c*(a^2*x^2-1))^(1/2)*(I*(-a^2*x^2+1)^(1
/2)*x*a+a^2*x^2-1)*(40*I*arcsin(a*x)^2+32*arcsin(a*x)^3-21*I-44*arcsin(a*x)
)*sin(3*arcsin(a*x))*c/a/(a^2*x^2-1)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-a^2cx^2+c\right)^{\frac{3}{2}} \arcsin\left(ax\right)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(3/2)*arcsin(a*x)^3,x, algorithm="maxima")
```

```
[Out] integrate((-a^2*c*x^2 + c)^(3/2)*arcsin(a*x)^3, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \mathrm{asin}\left(a\,x\right)^3\,{\left(c-a^2\,c\,x^2\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^3*(c - a^2*c*x^2)^(3/2),x)
```

```
[Out] int(asin(a*x)^3*(c - a^2*c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(- c \left(a x - 1\right) \left(a x + 1\right)\right)^{\frac{3}{2}} \operatorname{asin}^{3}{\left(a x \right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)**(3/2)*asin(a*x)**3,x)
```

```
[Out] Integral((-c*(a*x - 1)*(a*x + 1))**(3/2)*asin(a*x)**3, x)
```

3.297 $\int \sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^3\,dx$

Optimal. Leaf size=215

$$\frac{3ax^2\sqrt{c-a^2cx^2}}{8\sqrt{1-a^2x^2}}+\frac{\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^4}{8a\sqrt{1-a^2x^2}}+\frac{1}{2}x\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^3-\frac{3ax^2\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^2}{4\sqrt{1-a^2x^2}}+\frac{3\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^2}{8a\sqrt{1-a^2x^2}}$$

```
[Out] -3/4*x*arcsin(a*x)*(-a^2*c*x^2+c)^(1/2)+1/2*x*arcsin(a*x)^3*(-a^2*c*x^2+c)^
(1/2)+3/8*a*x^2*(-a^2*c*x^2+c)^(1/2)/(-a^2*x^2+1)^(1/2)+3/8*arcsin(a*x)^2*(
-a^2*c*x^2+c)^(1/2)/a/(-a^2*x^2+1)^(1/2)-3/4*a*x^2*arcsin(a*x)^2*(-a^2*c*x^
2+c)^(1/2)/(-a^2*x^2+1)^(1/2)+1/8*arcsin(a*x)^4*(-a^2*c*x^2+c)^(1/2)/a/(-a^
2*x^2+1)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 215, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = {4647, 4641, 4627, 4707, 30}

$$\frac{3ax^2\sqrt{c-a^2cx^2}}{8\sqrt{1-a^2x^2}}+\frac{\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^4}{8a\sqrt{1-a^2x^2}}+\frac{1}{2}x\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^3-\frac{3ax^2\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^2}{4\sqrt{1-a^2x^2}}+\frac{3\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^2}{8a\sqrt{1-a^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^3,x]
```

```
[Out] (3*a*x^2*Sqrt[c - a^2*c*x^2])/(8*Sqrt[1 - a^2*x^2]) - (3*x*Sqrt[c - a^2*c*x
^2]*ArcSin[a*x])/4 + (3*Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^2)/(8*a*Sqrt[1 - a^
2*x^2]) - (3*a*x^2*Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^2)/(4*Sqrt[1 - a^2*x^2])
 + (x*Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^3)/2 + (Sqrt[c - a^2*c*x^2]*ArcSin[a*
x]^4)/(8*a*Sqrt[1 - a^2*x^2])
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int \sqrt{c-a^2cx^2}\sin^{-1}(ax)^3\,dx = \frac{1}{2}x\sqrt{c-a^2cx^2}\sin^{-1}(ax)^3 + \frac{\sqrt{c-a^2cx^2}\int\frac{\sin^{-1}(ax)^3}{\sqrt{1-a^2x^2}}dx}{2\sqrt{1-a^2x^2}} - \frac{\left(3a\sqrt{c-a^2cx^2}\right)\int x\,\mathrm{si}}{2\sqrt{1-a^2x^2}}$$

$$= -\frac{3ax^2\sqrt{c-a^2cx^2}\sin^{-1}(ax)^2}{4\sqrt{1-a^2x^2}} + \frac{1}{2}x\sqrt{c-a^2cx^2}\sin^{-1}(ax)^3 + \frac{\sqrt{c-a^2cx^2}\sin^{-1}(}{8a\sqrt{1-a^2x^2}}$$

$$= -\frac{3}{4}x\sqrt{c-a^2cx^2}\sin^{-1}(ax) - \frac{3ax^2\sqrt{c-a^2cx^2}\sin^{-1}(ax)^2}{4\sqrt{1-a^2x^2}} + \frac{1}{2}x\sqrt{c-a^2cx^2}\sin^{-1}$$

$$= \frac{3ax^2\sqrt{c-a^2cx^2}}{8\sqrt{1-a^2x^2}} - \frac{3}{4}x\sqrt{c-a^2cx^2}\sin^{-1}(ax) + \frac{3\sqrt{c-a^2cx^2}\sin^{-1}(ax)^2}{8a\sqrt{1-a^2x^2}} - \frac{3ax^2}{}$$

Mathematica [A] time = 0.07, size = 114, normalized size = 0.53

$$\frac{\sqrt{c-a^2cx^2}\left(3a^2x^2+4ax\sqrt{1-a^2x^2}\sin^{-1}(ax)^3+\left(3-6a^2x^2\right)\sin^{-1}(ax)^2-6ax\sqrt{1-a^2x^2}\sin^{-1}(ax)+\sin^{-1}(ax\right.}{8a\sqrt{1-a^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^3,x]
```

```
[Out] (Sqrt[c - a^2*c*x^2]*(3*a^2*x^2 - 6*a*x*Sqrt[1 - a^2*x^2]*ArcSin[a*x] + (3
- 6*a^2*x^2)*ArcSin[a*x]^2 + 4*a*x*Sqrt[1 - a^2*x^2]*ArcSin[a*x]^3 + ArcSin
[a*x]^4))/(8*a*Sqrt[1 - a^2*x^2])
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\sqrt{-a^2cx^2+c}\,\arcsin\left(ax\right)^3, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(1/2)*arcsin(a*x)^3,x, algorithm="fricas")
```

```
[Out] integral(sqrt(-a^2*c*x^2 + c)*arcsin(a*x)^3, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(1/2)*arcsin(a*x)^3,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [C] time = 0.21, size = 260, normalized size = 1.21

$$-\frac{\sqrt{-c\left(a^{2}x^{2}-1\right)}\,\sqrt{-a^{2}x^{2}+1}\,\arcsin\left(ax\right)^{4}}{8a\left(a^{2}x^{2}-1\right)}+\frac{\sqrt{-c\left(a^{2}x^{2}-1\right)}\,\left(-2i\sqrt{-a^{2}x^{2}+1}\,x^{2}a^{2}+2a^{3}x^{3}+i\sqrt{-a^{2}x^{2}+1}\,-2a\right.}{32a\left(a^{2}x^{2}-1\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)^(1/2)*arcsin(a*x)^3,x)
```

```
[Out] -1/8*(-c*(a^2*x^2-1))^(1/2)*(-a^2*x^2+1)^(1/2)/a/(a^2*x^2-1)*arcsin(a*x)^4+
1/32*(-c*(a^2*x^2-1))^(1/2)*(-2*I*(-a^2*x^2+1)^(1/2)*x^2*a^2+2*a^3*x^3+I*(-
a^2*x^2+1)^(1/2)-2*a*x)*(6*I*arcsin(a*x)^2+4*arcsin(a*x)^3-3*I-6*arcsin(a*x
))/a/(a^2*x^2-1)+1/32*(-c*(a^2*x^2-1))^(1/2)*(2*I*(-a^2*x^2+1)^(1/2)*x^2*a^
2+2*a^3*x^3-I*(-a^2*x^2+1)^(1/2)-2*a*x)*(-6*I*arcsin(a*x)^2+4*arcsin(a*x)^3
+3*I-6*arcsin(a*x))/a/(a^2*x^2-1)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\sqrt{-a^{2}cx^{2}+c}\,\arcsin\left(ax\right)^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(1/2)*arcsin(a*x)^3,x, algorithm="maxima")
```

```
[Out] integrate(sqrt(-a^2*c*x^2 + c)*arcsin(a*x)^3, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\mathrm{asin}\left(a\,x\right)^{3}\,\sqrt{c-a^{2}\,c\,x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^3*(c - a^2*c*x^2)^(1/2),x)
```

```
[Out] int(asin(a*x)^3*(c - a^2*c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\sqrt{-c\left(ax-1\right)\left(ax+1\right)}\,\mathrm{asin}^{3}\left(ax\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)**(1/2)*asin(a*x)**3,x)
```

```
[Out] Integral(sqrt(-c*(a*x - 1)*(a*x + 1))*asin(a*x)**3, x)
```

3.298 $\int \frac{\sin^{-1}(ax)^3}{\sqrt{c-a^2cx^2}}\,dx$

Optimal. Leaf size=42

$$\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^4}{4a\sqrt{c-a^2cx^2}}$$

```
[Out] 1/4*arcsin(a*x)^4*(-a^2*x^2+1)^(1/2)/a/(-a^2*c*x^2+c)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {4643, 4641}

$$\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^4}{4a\sqrt{c-a^2cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a*x]^3/Sqrt[c - a^2*c*x^2],x]
```

```
[Out] (Sqrt[1 - a^2*x^2]*ArcSin[a*x]^4)/(4*a*Sqrt[c - a^2*c*x^2])
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4643

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcSin[c*x])^n
/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e
, 0] && !GtQ[d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\sin^{-1}(ax)^3}{\sqrt{c-a^2cx^2}}\,dx &= \frac{\sqrt{1-a^2x^2}\int \frac{\sin^{-1}(ax)^3}{\sqrt{1-a^2x^2}}\,dx}{\sqrt{c-a^2cx^2}}\\ &= \frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^4}{4a\sqrt{c-a^2cx^2}}\end{aligned}$$

Mathematica [A] time = 0.05, size = 42, normalized size = 1.00

$$\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^4}{4a\sqrt{c-a^2cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a*x]^3/Sqrt[c - a^2*c*x^2],x]
```

```
[Out] (Sqrt[1 - a^2*x^2]*ArcSin[a*x]^4)/(4*a*Sqrt[c - a^2*c*x^2])
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-a^2cx^2+c}\,\arcsin(ax)^3}{a^2cx^2-c},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/(-a^2*c*x^2+c)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-a^2*c*x^2 + c)*arcsin(a*x)^3/(a^2*c*x^2 - c), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^3}{\sqrt{-a^2cx^2+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/(-a^2*c*x^2+c)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(arcsin(a*x)^3/sqrt(-a^2*c*x^2 + c), x)
```

maple [A] time = 0.05, size = 52, normalized size = 1.24

$$-\frac{\sqrt{-c\left(a^2x^2-1\right)}\,\sqrt{-a^2x^2+1}\,\arcsin(ax)^4}{4ac\left(a^2x^2-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^3/(-a^2*c*x^2+c)^(1/2),x)
```

```
[Out] -1/4*(-c*(a^2*x^2-1))^(1/2)*(-a^2*x^2+1)^(1/2)/a/c/(a^2*x^2-1)*arcsin(a*x)^
4
```

maxima [A] time = 0.48, size = 14, normalized size = 0.33

$$\frac{\arcsin(ax)^4}{4\,a\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/(-a^2*c*x^2+c)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*arcsin(a*x)^4/(a*sqrt(c))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\mathrm{asin}(a\,x)^3}{\sqrt{c-a^2\,c\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^3/(c - a^2*c*x^2)^(1/2),x)
```

```
[Out] int(asin(a*x)^3/(c - a^2*c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\mathrm{asin}^3(ax)}{\sqrt{-c(ax-1)(ax+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**3/(-a**2*c*x**2+c)**(1/2),x)
```

```
[Out] Integral(asin(a*x)**3/sqrt(-c*(a*x - 1)*(a*x + 1)), x)
```

3.299 $\int \frac{\sin^{-1}(ax)^3}{\left(c-a^2cx^2\right)^{3/2}} dx$

Optimal. Leaf size=238

$$-\frac{3i\sqrt{1-a^2x^2}\,\sin^{-1}(ax)\mathrm{Li}_2\left(-e^{2i\sin^{-1}(ax)}\right)}{ac\sqrt{c-a^2cx^2}}+\frac{3\sqrt{1-a^2x^2}\,\mathrm{Li}_3\left(-e^{2i\sin^{-1}(ax)}\right)}{2ac\sqrt{c-a^2cx^2}}+\frac{x\sin^{-1}(ax)^3}{c\sqrt{c-a^2cx^2}}-\frac{i\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{ac\sqrt{c-a^2cx^2}}$$

```
[Out] x*arcsin(a*x)^3/c/(-a^2*c*x^2+c)^(1/2)-I*arcsin(a*x)^3*(-a^2*x^2+1)^(1/2)/a
/c/(-a^2*c*x^2+c)^(1/2)+3*arcsin(a*x)^2*ln(1+(I*a*x+(-a^2*x^2+1)^(1/2))^2)*
(-a^2*x^2+1)^(1/2)/a/c/(-a^2*c*x^2+c)^(1/2)-3*I*arcsin(a*x)*polylog(2,-(I*a
*x+(-a^2*x^2+1)^(1/2))^2)*(-a^2*x^2+1)^(1/2)/a/c/(-a^2*c*x^2+c)^(1/2)+3/2*p
olylog(3,-(I*a*x+(-a^2*x^2+1)^(1/2))^2)*(-a^2*x^2+1)^(1/2)/a/c/(-a^2*c*x^2+
c)^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 238, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.318, Rules used = {4653, 4675, 3719, 2190, 2531, 2282, 6589}

$$-\frac{3i\sqrt{1-a^2x^2}\,\sin^{-1}(ax)\mathrm{PolyLog}\left(2,-e^{2i\sin^{-1}(ax)}\right)}{ac\sqrt{c-a^2cx^2}}+\frac{3\sqrt{1-a^2x^2}\,\mathrm{PolyLog}\left(3,-e^{2i\sin^{-1}(ax)}\right)}{2ac\sqrt{c-a^2cx^2}}+\frac{x\sin^{-1}(ax)^3}{c\sqrt{c-a^2cx^2}}-\frac{i\sqrt{1-}}{a}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a*x]^3/(c - a^2*c*x^2)^(3/2),x]
```

```
[Out] (x*ArcSin[a*x]^3)/(c*Sqrt[c - a^2*c*x^2]) - (I*Sqrt[1 - a^2*x^2]*ArcSin[a*x
]^3)/(a*c*Sqrt[c - a^2*c*x^2]) + (3*Sqrt[1 - a^2*x^2]*ArcSin[a*x]^2*Log[1 +
 E^((2*I)*ArcSin[a*x])])/(a*c*Sqrt[c - a^2*c*x^2]) - ((3*I)*Sqrt[1 - a^2*x^
2]*ArcSin[a*x]*PolyLog[2, -E^((2*I)*ArcSin[a*x])])/(a*c*Sqrt[c - a^2*c*x^2]
) + (3*Sqrt[1 - a^2*x^2]*PolyLog[3, -E^((2*I)*ArcSin[a*x])])/(2*a*c*Sqrt[c
- a^2*c*x^2])
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4653

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n*Sqrt[1 - c^2*x^2])/(d*Sqrt[d + e*x^2]), Int[(x*(a + b*ArcSin[c*x])^(n
 - 1))/(1 - c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e,
 0] && GtQ[n, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\sin^{-1}(ax)^3}{\left(c-a^2cx^2\right)^{3/2}}\,dx = \frac{x\sin^{-1}(ax)^3}{c\sqrt{c-a^2cx^2}} - \frac{\left(3a\sqrt{1-a^2x^2}\right)\int \frac{x\sin^{-1}(ax)^2}{1-a^2x^2}\,dx}{c\sqrt{c-a^2cx^2}}$$

$$= \frac{x\sin^{-1}(ax)^3}{c\sqrt{c-a^2cx^2}} - \frac{\left(3\sqrt{1-a^2x^2}\right)\text{Subst}\left(\int x^2\tan(x)\,dx, x, \sin^{-1}(ax)\right)}{ac\sqrt{c-a^2cx^2}}$$

$$= \frac{x\sin^{-1}(ax)^3}{c\sqrt{c-a^2cx^2}} - \frac{i\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{ac\sqrt{c-a^2cx^2}} + \frac{\left(6i\sqrt{1-a^2x^2}\right)\text{Subst}\left(\int \frac{e^{2ix}x^2}{1+e^{2ix}}\,dx, x, \sin^{-1}(ax)\right)}{ac\sqrt{c-a^2cx^2}}$$

$$= \frac{x\sin^{-1}(ax)^3}{c\sqrt{c-a^2cx^2}} - \frac{i\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{ac\sqrt{c-a^2cx^2}} + \frac{3\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2\log\left(1+e^{2i\sin^{-1}(ax)}\right)}{ac\sqrt{c-a^2cx^2}} - \frac{(6\cdots}{\cdots}$$

$$= \frac{x\sin^{-1}(ax)^3}{c\sqrt{c-a^2cx^2}} - \frac{i\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{ac\sqrt{c-a^2cx^2}} + \frac{3\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2\log\left(1+e^{2i\sin^{-1}(ax)}\right)}{ac\sqrt{c-a^2cx^2}} - \frac{3i\cdots}{\cdots}$$

$$= \frac{x\sin^{-1}(ax)^3}{c\sqrt{c-a^2cx^2}} - \frac{i\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{ac\sqrt{c-a^2cx^2}} + \frac{3\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2\log\left(1+e^{2i\sin^{-1}(ax)}\right)}{ac\sqrt{c-a^2cx^2}} - \frac{3i\cdots}{\cdots}$$

$$= \frac{x\sin^{-1}(ax)^3}{c\sqrt{c-a^2cx^2}} - \frac{i\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{ac\sqrt{c-a^2cx^2}} + \frac{3\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^2\log\left(1+e^{2i\sin^{-1}(ax)}\right)}{ac\sqrt{c-a^2cx^2}} - \frac{3i\cdots}{\cdots}$$

Mathematica [A] time = 0.28, size = 157, normalized size = 0.66

$$\frac{-6i\sqrt{1-a^2x^2}\,\sin^{-1}(ax)\text{Li}_2\left(-e^{2i\sin^{-1}(ax)}\right) + 3\sqrt{1-a^2x^2}\,\text{Li}_3\left(-e^{2i\sin^{-1}(ax)}\right) + 2\sin^{-1}(ax)^2\left(\left(ax - i\sqrt{1-a^2x^2}\right)\sin^{-1}\cdots\right.}{2ac\sqrt{c-a^2cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a*x]^3/(c - a^2*c*x^2)^(3/2),x]
```

```
[Out] (2*ArcSin[a*x]^2*((a*x - I*Sqrt[1 - a^2*x^2])*ArcSin[a*x] + 3*Sqrt[1 - a^2*
x^2]*Log[1 + E^((2*I)*ArcSin[a*x])]) - (6*I)*Sqrt[1 - a^2*x^2]*ArcSin[a*x]*
PolyLog[2, -E^((2*I)*ArcSin[a*x])] + 3*Sqrt[1 - a^2*x^2]*PolyLog[3, -E^((2*
I)*ArcSin[a*x])])/(2*a*c*Sqrt[c - a^2*c*x^2])
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-a^2cx^2+c}\,\arcsin\left(ax\right)^3}{a^4c^2x^4-2\,a^2c^2x^2+c^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/(-a^2*c*x^2+c)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-a^2*c*x^2 + c)*arcsin(a*x)^3/(a^4*c^2*x^4 - 2*a^2*c^2*x^2 +
c^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin\left(ax\right)^3}{\left(-a^2cx^2+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/(-a^2*c*x^2+c)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(arcsin(a*x)^3/(-a^2*c*x^2 + c)^(3/2), x)
```

maple [A] time = 0.21, size = 203, normalized size = 0.85

$$-\frac{\sqrt{-c\left(a^2x^2-1\right)}\,\left(i\sqrt{-a^2x^2+1}+ax\right)\arcsin\left(ax\right)^3}{a\,c^2\left(a^2x^2-1\right)}-\frac{\sqrt{-c\left(a^2x^2-1\right)}\,\sqrt{-a^2x^2+1}\,\left(-4i\arcsin\left(ax\right)^3+6\,\text{arcsir}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^3/(-a^2*c*x^2+c)^(3/2),x)
```

```
[Out] -(-c*(a^2*x^2-1))^(1/2)*(I*(-a^2*x^2+1)^(1/2)+a*x)*arcsin(a*x)^3/a/c^2/(a^2
*x^2-1)-1/2*(-c*(a^2*x^2-1))^(1/2)*(-a^2*x^2+1)^(1/2)*(-4*I*arcsin(a*x)^3+6
*arcsin(a*x)^2*ln(1+(I*a*x+(-a^2*x^2+1)^(1/2))^2)-6*I*arcsin(a*x)*polylog(2
,-(I*a*x+(-a^2*x^2+1)^(1/2))^2)+3*polylog(3,-(I*a*x+(-a^2*x^2+1)^(1/2))^2))
/a/c^2/(a^2*x^2-1)
```

maxima [A] time = 1.40, size = 49, normalized size = 0.21

$$\frac{x\arcsin\left(ax\right)^3}{\sqrt{-a^2cx^2+c}\,c}-\frac{3\,\arcsin\left(ax\right)^2\log\left(x^2-\frac{1}{a^2}\right)}{2\,ac^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/(-a^2*c*x^2+c)^(3/2),x, algorithm="maxima")
```

```
[Out] x*arcsin(a*x)^3/(sqrt(-a^2*c*x^2 + c)*c) - 3/2*arcsin(a*x)^2*log(x^2 - 1/a^
2)/(a*c^(3/2))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\mathrm{asin}\left(a\,x\right)^3}{{\left(c-a^2\,c\,x^2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^3/(c - a^2*c*x^2)^(3/2),x)
```

```
[Out] int(asin(a*x)^3/(c - a^2*c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}^3(ax)}{(-c(ax-1)(ax+1))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**3/(-a**2*c*x**2+c)**(3/2),x)
```

```
[Out] Integral(asin(a*x)**3/(-c*(a*x - 1)*(a*x + 1))**(3/2), x)
```

3.300 $\int \frac{\sin^{-1}(ax)^3}{\left(c-a^2cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=388

$$-\frac{2i\sqrt{1-a^2x^2}\,\sin^{-1}(ax)\mathrm{Li}_2\left(-e^{2i\sin^{-1}(ax)}\right)}{ac^2\sqrt{c-a^2cx^2}}+\frac{\sqrt{1-a^2x^2}\,\mathrm{Li}_3\left(-e^{2i\sin^{-1}(ax)}\right)}{ac^2\sqrt{c-a^2cx^2}}+\frac{\sqrt{1-a^2x^2}\,\log\left(1-a^2x^2\right)}{2ac^2\sqrt{c-a^2cx^2}}+\frac{2x\sin^{-1}(}{3c^2\sqrt{c-a}}$$

```
[Out] 1/3*x*arcsin(a*x)^3/c/(-a^2*c*x^2+c)^(3/2)+x*arcsin(a*x)/c^2/(-a^2*c*x^2+c)
^(1/2)+2/3*x*arcsin(a*x)^3/c^2/(-a^2*c*x^2+c)^(1/2)-1/2*arcsin(a*x)^2/a/c^2
/(-a^2*x^2+1)^(1/2)/(-a^2*c*x^2+c)^(1/2)-2/3*I*arcsin(a*x)^3*(-a^2*x^2+1)^(
1/2)/a/c^2/(-a^2*c*x^2+c)^(1/2)+2*arcsin(a*x)^2*ln(1+(I*a*x+(-a^2*x^2+1)^(1
/2))^2)*(-a^2*x^2+1)^(1/2)/a/c^2/(-a^2*c*x^2+c)^(1/2)+1/2*ln(-a^2*x^2+1)*(-
a^2*x^2+1)^(1/2)/a/c^2/(-a^2*c*x^2+c)^(1/2)-2*I*arcsin(a*x)*polylog(2,-(I*a
*x+(-a^2*x^2+1)^(1/2))^2)*(-a^2*x^2+1)^(1/2)/a/c^2/(-a^2*c*x^2+c)^(1/2)+pol
ylog(3,-(I*a*x+(-a^2*x^2+1)^(1/2))^2)*(-a^2*x^2+1)^(1/2)/a/c^2/(-a^2*c*x^2+
c)^(1/2)
```

Rubi [A] time = 0.31, antiderivative size = 388, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 11, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {4655, 4653, 4675, 3719, 2190, 2531, 2282, 6589, 4677, 4651, 260}

$$-\frac{2i\sqrt{1-a^2x^2}\,\sin^{-1}(ax)\mathrm{PolyLog}\left(2,-e^{2i\sin^{-1}(ax)}\right)}{ac^2\sqrt{c-a^2cx^2}}+\frac{\sqrt{1-a^2x^2}\,\mathrm{PolyLog}\left(3,-e^{2i\sin^{-1}(ax)}\right)}{ac^2\sqrt{c-a^2cx^2}}+\frac{\sqrt{1-a^2x^2}\,\log\left(1-a\right.}{2ac^2\sqrt{c-a^2cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a*x]^3/(c - a^2*c*x^2)^(5/2),x]
```

```
[Out] (x*ArcSin[a*x])/(c^2*Sqrt[c - a^2*c*x^2]) - ArcSin[a*x]^2/(2*a*c^2*Sqrt[1 -
 a^2*x^2]*Sqrt[c - a^2*c*x^2]) + (x*ArcSin[a*x]^3)/(3*c*(c - a^2*c*x^2)^(3/
2)) + (2*x*ArcSin[a*x]^3)/(3*c^2*Sqrt[c - a^2*c*x^2]) - (((2*I)/3)*Sqrt[1 -
 a^2*x^2]*ArcSin[a*x]^3)/(a*c^2*Sqrt[c - a^2*c*x^2]) + (2*Sqrt[1 - a^2*x^2]
*ArcSin[a*x]^2*Log[1 + E^((2*I)*ArcSin[a*x])])/(a*c^2*Sqrt[c - a^2*c*x^2])
+ (Sqrt[1 - a^2*x^2]*Log[1 - a^2*x^2])/(2*a*c^2*Sqrt[c - a^2*c*x^2]) - ((2*
I)*Sqrt[1 - a^2*x^2]*ArcSin[a*x]*PolyLog[2, -E^((2*I)*ArcSin[a*x])])/(a*c^2
*Sqrt[c - a^2*c*x^2]) + (Sqrt[1 - a^2*x^2]*PolyLog[3, -E^((2*I)*ArcSin[a*x]
)])/(a*c^2*Sqrt[c - a^2*c*x^2])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
```

```
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4653

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n*Sqrt[1 - c^2*x^2])/(d*Sqrt[d + e*x^2]), Int[(x*(a + b*ArcSin[c*x])^(n
 - 1))/(1 - c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e,
 0] && GtQ[n, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\sin^{-1}(ax)^3}{\left(c-a^2cx^2\right)^{5/2}}\,dx = \frac{x\sin^{-1}(ax)^3}{3c\left(c-a^2cx^2\right)^{3/2}} + \frac{2\int \frac{\sin^{-1}(ax)^3}{\left(c-a^2cx^2\right)^{3/2}}\,dx}{3c} - \frac{\left(a\sqrt{1-a^2x^2}\right)\int \frac{x\sin^{-1}(ax)^2}{\left(1-a^2x^2\right)^2}\,dx}{c^2\sqrt{c-a^2cx^2}}$$

$$= -\frac{\sin^{-1}(ax)^2}{2ac^2\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}} + \frac{x\sin^{-1}(ax)^3}{3c\left(c-a^2cx^2\right)^{3/2}} + \frac{2x\sin^{-1}(ax)^3}{3c^2\sqrt{c-a^2cx^2}} + \frac{\sqrt{1-a^2x^2}\int \frac{\sin^{-1}}{(1-a^2}}{c^2\sqrt{c-a^2cx}}$$

$$= \frac{x\sin^{-1}(ax)}{c^2\sqrt{c-a^2cx^2}} - \frac{\sin^{-1}(ax)^2}{2ac^2\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}} + \frac{x\sin^{-1}(ax)^3}{3c\left(c-a^2cx^2\right)^{3/2}} + \frac{2x\sin^{-1}(ax)^3}{3c^2\sqrt{c-a^2cx^2}} - \frac{(2}{}$$

$$= \frac{x\sin^{-1}(ax)}{c^2\sqrt{c-a^2cx^2}} - \frac{\sin^{-1}(ax)^2}{2ac^2\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}} + \frac{x\sin^{-1}(ax)^3}{3c\left(c-a^2cx^2\right)^{3/2}} + \frac{2x\sin^{-1}(ax)^3}{3c^2\sqrt{c-a^2cx^2}} - \frac{2i}{}$$

$$= \frac{x\sin^{-1}(ax)}{c^2\sqrt{c-a^2cx^2}} - \frac{\sin^{-1}(ax)^2}{2ac^2\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}} + \frac{x\sin^{-1}(ax)^3}{3c\left(c-a^2cx^2\right)^{3/2}} + \frac{2x\sin^{-1}(ax)^3}{3c^2\sqrt{c-a^2cx^2}} - \frac{2i}{}$$

$$= \frac{x\sin^{-1}(ax)}{c^2\sqrt{c-a^2cx^2}} - \frac{\sin^{-1}(ax)^2}{2ac^2\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}} + \frac{x\sin^{-1}(ax)^3}{3c\left(c-a^2cx^2\right)^{3/2}} + \frac{2x\sin^{-1}(ax)^3}{3c^2\sqrt{c-a^2cx^2}} - \frac{2i}{}$$

$$= \frac{x\sin^{-1}(ax)}{c^2\sqrt{c-a^2cx^2}} - \frac{\sin^{-1}(ax)^2}{2ac^2\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}} + \frac{x\sin^{-1}(ax)^3}{3c\left(c-a^2cx^2\right)^{3/2}} + \frac{2x\sin^{-1}(ax)^3}{3c^2\sqrt{c-a^2cx^2}} - \frac{2i}{}$$

$$= \frac{x\sin^{-1}(ax)}{c^2\sqrt{c-a^2cx^2}} - \frac{\sin^{-1}(ax)^2}{2ac^2\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}} + \frac{x\sin^{-1}(ax)^3}{3c\left(c-a^2cx^2\right)^{3/2}} + \frac{2x\sin^{-1}(ax)^3}{3c^2\sqrt{c-a^2cx^2}} - \frac{2i}{}$$

Mathematica [A] time = 0.63, size = 211, normalized size = 0.54

$$\frac{\left(1-a^2x^2\right)^{3/2}\left(3\log\left(1-a^2x^2\right) + \frac{4ax\sin^{-1}(ax)^3}{\sqrt{1-a^2x^2}} + \frac{2ax\sin^{-1}(ax)^3}{\left(1-a^2x^2\right)^{3/2}} + \frac{3\sin^{-1}(ax)^2}{a^2x^2-1} + \frac{6ax\sin^{-1}(ax)}{\sqrt{1-a^2x^2}} - 12i\sin^{-1}(ax)\mathrm{Li}_2\left(-e^{2i\sin}\right.\right.}{6ac\left(c-a^2cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a*x]^3/(c - a^2*c*x^2)^(5/2),x]
```

```
[Out] ((1 - a^2*x^2)^(3/2)*((6*a*x*ArcSin[a*x])/Sqrt[1 - a^2*x^2] + (3*ArcSin[a*x
]^2)/(-1 + a^2*x^2) - (4*I)*ArcSin[a*x]^3 + (2*a*x*ArcSin[a*x]^3)/(1 - a^2*
x^2)^(3/2) + (4*a*x*ArcSin[a*x]^3)/Sqrt[1 - a^2*x^2] + 12*ArcSin[a*x]^2*Log
[1 + E^((2*I)*ArcSin[a*x])] + 3*Log[1 - a^2*x^2] - (12*I)*ArcSin[a*x]*PolyL
og[2, -E^((2*I)*ArcSin[a*x])] + 6*PolyLog[3, -E^((2*I)*ArcSin[a*x])]))/(6*a
*c*(c - a^2*c*x^2)^(3/2))
```

fricas [F] time = 0.50, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{-a^2cx^2+c}\,\arcsin(ax)^3}{a^6c^3x^6 - 3\,a^4c^3x^4 + 3\,a^2c^3x^2 - c^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/(-a^2*c*x^2+c)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-a^2*c*x^2 + c)*arcsin(a*x)^3/(a^6*c^3*x^6 - 3*a^4*c^3*x^4 +
 3*a^2*c^3*x^2 - c^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^3}{\left(-a^2cx^2+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/(-a^2*c*x^2+c)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(arcsin(a*x)^3/(-a^2*c*x^2 + c)^(5/2), x)
```

maple [A] time = 0.30, size = 661, normalized size = 1.70

$$-\frac{\sqrt{-c\left(a^2x^2-1\right)}\left(2i\sqrt{-a^2x^2+1}\,x^2a^2+2a^3x^3-2i\sqrt{-a^2x^2+1}-3ax\right)\arcsin(ax)\left(-6i\arcsin(ax)\,x^4a^4-6\,\mathrm{arcsi}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^3/(-a^2*c*x^2+c)^(5/2),x)
```

```
[Out] -1/6*(-c*(a^2*x^2-1))^(1/2)*(2*I*(-a^2*x^2+1)^(1/2)*x^2*a^2+2*a^3*x^3-2*I*(
-a^2*x^2+1)^(1/2)-3*a*x)*arcsin(a*x)*(-6*I*arcsin(a*x)*x^4*a^4-6*arcsin(a*x
)*(-a^2*x^2+1)^(1/2)*x^3*a^3+6*I*(-a^2*x^2+1)^(1/2)*x^3*a^3-6*a^4*x^4+6*arc
sin(a*x)^2*x^2*a^2+12*I*arcsin(a*x)*x^2*a^2+9*arcsin(a*x)*(-a^2*x^2+1)^(1/2
)*x*a-6*I*(-a^2*x^2+1)^(1/2)*x*a+18*a^2*x^2-8*arcsin(a*x)^2-6*I*arcsin(a*x)
-12)/c^3/(3*a^6*x^6-10*a^4*x^4+11*a^2*x^2-4)/a+2*(-c*(a^2*x^2-1))^(1/2)*(-a
^2*x^2+1)^(1/2)/a/c^3/(a^2*x^2-1)*ln(I*a*x+(-a^2*x^2+1)^(1/2))-(-c*(a^2*x^2
-1))^(1/2)*(-a^2*x^2+1)^(1/2)/a/c^3/(a^2*x^2-1)*ln(1+(I*a*x+(-a^2*x^2+1)^(1
/2))^2)+4/3*I*(-a^2*x^2+1)^(1/2)*(-c*(a^2*x^2-1))^(1/2)/a/c^3/(a^2*x^2-1)*a
rcsin(a*x)^3-2*(-c*(a^2*x^2-1))^(1/2)*(-a^2*x^2+1)^(1/2)/a/c^3/(a^2*x^2-1)*
arcsin(a*x)^2*ln(1+(I*a*x+(-a^2*x^2+1)^(1/2))^2)+2*I*(-a^2*x^2+1)^(1/2)*(-c
*(a^2*x^2-1))^(1/2)/a/c^3/(a^2*x^2-1)*arcsin(a*x)*polylog(2,-(I*a*x+(-a^2*x
^2+1)^(1/2))^2)-(-c*(a^2*x^2-1))^(1/2)*(-a^2*x^2+1)^(1/2)/a/c^3/(a^2*x^2-1)
*polylog(3,-(I*a*x+(-a^2*x^2+1)^(1/2))^2)
```

maxima [A] time = 0.84, size = 106, normalized size = 0.27

$$\frac{1}{2}a\left(\frac{1}{a^4c^{\frac{5}{2}}x^2-a^2c^{\frac{5}{2}}}+\frac{2\log(ax+1)}{a^2c^{\frac{5}{2}}}+\frac{2\log(ax-1)}{a^2c^{\frac{5}{2}}}\right)\arcsin(ax)^2+\frac{1}{3}\left(\frac{2x}{\sqrt{-a^2cx^2+c}\,c^2}+\frac{x}{\left(-a^2cx^2+c\right)^{\frac{3}{2}}c}\right)\mathrm{arcsi}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/(-a^2*c*x^2+c)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/2*a*(1/(a^4*c^(5/2)*x^2 - a^2*c^(5/2)) + 2*log(a*x + 1)/(a^2*c^(5/2)) + 2
*log(a*x - 1)/(a^2*c^(5/2)))*arcsin(a*x)^2 + 1/3*(2*x/(sqrt(-a^2*c*x^2 + c)
*c^2) + x/((-a^2*c*x^2 + c)^(3/2)*c))*arcsin(a*x)^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\mathrm{asin}(a\,x)^3}{\left(c-a^2\,c\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^3/(c - a^2*c*x^2)^(5/2),x)
```

```
[Out] int(asin(a*x)^3/(c - a^2*c*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}^{3}(ax)}{(-c(ax-1)(ax+1))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**3/(-a**2*c*x**2+c)**(5/2),x)
```

```
[Out] Integral(asin(a*x)**3/(-c*(a*x - 1)*(a*x + 1))**(5/2), x)
```

3.301 $\int \frac{\sin^{-1}(ax)^3}{(c-a^2cx^2)^{7/2}}\,dx$

Optimal. Leaf size=547

$$-\frac{8i\sqrt{1-a^2x^2}\,\sin^{-1}(ax)\mathrm{Li}_2\left(-e^{2i\sin^{-1}(ax)}\right)}{5ac^3\sqrt{c-a^2cx^2}}+\frac{4\sqrt{1-a^2x^2}\,\mathrm{Li}_3\left(-e^{2i\sin^{-1}(ax)}\right)}{5ac^3\sqrt{c-a^2cx^2}}-\frac{1}{20ac^3\sqrt{1-a^2x^2}\,\sqrt{c-a^2cx^2}}+\frac{\sqrt{1-a^2x}}{2ac^3}$$

```
[Out] 1/5*x*arcsin(a*x)^3/c/(-a^2*c*x^2+c)^(5/2)+4/15*x*arcsin(a*x)^3/c^2/(-a^2*c
*x^2+c)^(3/2)+x*arcsin(a*x)/c^3/(-a^2*c*x^2+c)^(1/2)+1/10*x*arcsin(a*x)/c^3
/(-a^2*x^2+1)/(-a^2*c*x^2+c)^(1/2)-3/20*arcsin(a*x)^2/a/c^3/(-a^2*x^2+1)^(3
/2)/(-a^2*c*x^2+c)^(1/2)+8/15*x*arcsin(a*x)^3/c^3/(-a^2*c*x^2+c)^(1/2)-1/20
/a/c^3/(-a^2*x^2+1)^(1/2)/(-a^2*c*x^2+c)^(1/2)-2/5*arcsin(a*x)^2/a/c^3/(-a^
2*x^2+1)^(1/2)/(-a^2*c*x^2+c)^(1/2)-8/15*I*arcsin(a*x)^3*(-a^2*x^2+1)^(1/2)
/a/c^3/(-a^2*c*x^2+c)^(1/2)+8/5*arcsin(a*x)^2*ln(1+(I*a*x+(-a^2*x^2+1)^(1/2
))^2)*(-a^2*x^2+1)^(1/2)/a/c^3/(-a^2*c*x^2+c)^(1/2)+1/2*ln(-a^2*x^2+1)*(-a^
2*x^2+1)^(1/2)/a/c^3/(-a^2*c*x^2+c)^(1/2)-8/5*I*arcsin(a*x)*polylog(2,-(I*a
*x+(-a^2*x^2+1)^(1/2))^2)*(-a^2*x^2+1)^(1/2)/a/c^3/(-a^2*c*x^2+c)^(1/2)+4/5
*polylog(3,-(I*a*x+(-a^2*x^2+1)^(1/2))^2)*(-a^2*x^2+1)^(1/2)/a/c^3/(-a^2*c*
x^2+c)^(1/2)
```

Rubi [A] time = 0.48, antiderivative size = 547, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 12, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.546, Rules used = {4655, 4653, 4675, 3719, 2190, 2531, 2282, 6589, 4677, 4651, 260, 261}

$$-\frac{8i\sqrt{1-a^2x^2}\,\sin^{-1}(ax)\mathrm{PolyLog}\left(2,-e^{2i\sin^{-1}(ax)}\right)}{5ac^3\sqrt{c-a^2cx^2}}+\frac{4\sqrt{1-a^2x^2}\,\mathrm{PolyLog}\left(3,-e^{2i\sin^{-1}(ax)}\right)}{5ac^3\sqrt{c-a^2cx^2}}-\frac{1}{20ac^3\sqrt{1-a^2x^2}\,\sqrt{c-a}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a*x]^3/(c - a^2*c*x^2)^(7/2),x]
```

```
[Out] -1/(20*a*c^3*Sqrt[1 - a^2*x^2]*Sqrt[c - a^2*c*x^2]) + (x*ArcSin[a*x])/(c^3*
Sqrt[c - a^2*c*x^2]) + (x*ArcSin[a*x])/(10*c^3*(1 - a^2*x^2)*Sqrt[c - a^2*c
*x^2]) - (3*ArcSin[a*x]^2)/(20*a*c^3*(1 - a^2*x^2)^(3/2)*Sqrt[c - a^2*c*x^2
]) - (2*ArcSin[a*x]^2)/(5*a*c^3*Sqrt[1 - a^2*x^2]*Sqrt[c - a^2*c*x^2]) + (x
*ArcSin[a*x]^3)/(5*c*(c - a^2*c*x^2)^(5/2)) + (4*x*ArcSin[a*x]^3)/(15*c^2*(
c - a^2*c*x^2)^(3/2)) + (8*x*ArcSin[a*x]^3)/(15*c^3*Sqrt[c - a^2*c*x^2]) -
(((8*I)/15)*Sqrt[1 - a^2*x^2]*ArcSin[a*x]^3)/(a*c^3*Sqrt[c - a^2*c*x^2]) +
(8*Sqrt[1 - a^2*x^2]*ArcSin[a*x]^2*Log[1 + E^((2*I)*ArcSin[a*x])])/(5*a*c^3
*Sqrt[c - a^2*c*x^2]) + (Sqrt[1 - a^2*x^2]*Log[1 - a^2*x^2])/(2*a*c^3*Sqrt[
c - a^2*c*x^2]) - (((8*I)/5)*Sqrt[1 - a^2*x^2]*ArcSin[a*x]*PolyLog[2, -E^((
2*I)*ArcSin[a*x])])/(a*c^3*Sqrt[c - a^2*c*x^2]) + (4*Sqrt[1 - a^2*x^2]*Poly
Log[3, -E^((2*I)*ArcSin[a*x])])/(5*a*c^3*Sqrt[c - a^2*c*x^2])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4653

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n*Sqrt[1 - c^2*x^2])/(d*Sqrt[d + e*x^2]), Int[(x*(a + b*ArcSin[c*x])^(n
 - 1))/(1 - c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e,
 0] && GtQ[n, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
```

```
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\sin^{-1}(ax)^3}{\left(c-a^2cx^2\right)^{7/2}}\,dx = \frac{x\sin^{-1}(ax)^3}{5c\left(c-a^2cx^2\right)^{5/2}}+\frac{4\int \frac{\sin^{-1}(ax)^3}{\left(c-a^2cx^2\right)^{5/2}}\,dx}{5c}-\frac{\left(3a\sqrt{1-a^2x^2}\right)\int \frac{x\sin^{-1}(ax)^2}{\left(1-a^2x^2\right)^3}\,dx}{5c^3\sqrt{c-a^2cx^2}}$$

$$= -\frac{3\sin^{-1}(ax)^2}{20ac^3\left(1-a^2x^2\right)^{3/2}\sqrt{c-a^2cx^2}}+\frac{x\sin^{-1}(ax)^3}{5c\left(c-a^2cx^2\right)^{5/2}}+\frac{4x\sin^{-1}(ax)^3}{15c^2\left(c-a^2cx^2\right)^{3/2}}+\frac{8\int \frac{\sin^{-1}(ax)^3}{\left(c-a^2cx^2\right)^{3/2}}}{15c^2}$$

$$= \frac{x\sin^{-1}(ax)}{10c^3\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}}-\frac{3\sin^{-1}(ax)^2}{20ac^3\left(1-a^2x^2\right)^{3/2}\sqrt{c-a^2cx^2}}-\frac{2\sin^{-1}(ax)^2}{5ac^3\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}}$$

$$= -\frac{1}{20ac^3\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}}+\frac{x\sin^{-1}(ax)}{c^3\sqrt{c-a^2cx^2}}+\frac{x\sin^{-1}(ax)}{10c^3\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}}-\frac{3}{20ac^3(1-}$$

$$= -\frac{1}{20ac^3\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}}+\frac{x\sin^{-1}(ax)}{c^3\sqrt{c-a^2cx^2}}+\frac{x\sin^{-1}(ax)}{10c^3\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}}-\frac{3}{20ac^3(1-}$$

$$= -\frac{1}{20ac^3\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}}+\frac{x\sin^{-1}(ax)}{c^3\sqrt{c-a^2cx^2}}+\frac{x\sin^{-1}(ax)}{10c^3\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}}-\frac{3}{20ac^3(1-}$$

$$= -\frac{1}{20ac^3\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}}+\frac{x\sin^{-1}(ax)}{c^3\sqrt{c-a^2cx^2}}+\frac{x\sin^{-1}(ax)}{10c^3\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}}-\frac{3}{20ac^3(1-}$$

$$= -\frac{1}{20ac^3\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}}+\frac{x\sin^{-1}(ax)}{c^3\sqrt{c-a^2cx^2}}+\frac{x\sin^{-1}(ax)}{10c^3\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}}-\frac{3}{20ac^3(1-}$$

$$= -\frac{1}{20ac^3\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}}+\frac{x\sin^{-1}(ax)}{c^3\sqrt{c-a^2cx^2}}+\frac{x\sin^{-1}(ax)}{10c^3\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}}-\frac{3}{20ac^3(1-}$$

Mathematica [A] time = 0.84, size = 319, normalized size = 0.58

$$-96i\sqrt{1-a^2x^2}\,\sin^{-1}(ax)\mathrm{Li}_2\left(-e^{2i\sin^{-1}(ax)}\right)+48\sqrt{1-a^2x^2}\,\mathrm{Li}_3\left(-e^{2i\sin^{-1}(ax)}\right)-\frac{3}{\sqrt{1-a^2x^2}}+30\sqrt{1-a^2x^2}\,\log\left(1-\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a*x]^3/(c - a^2*c*x^2)^(7/2),x]
```

```
[Out] (-3/Sqrt[1 - a^2*x^2] + 60*a*x*ArcSin[a*x] + (6*a*x*ArcSin[a*x])/(1 - a^2*x
^2) - (9*ArcSin[a*x]^2)/(1 - a^2*x^2)^(3/2) - (24*ArcSin[a*x]^2)/Sqrt[1 - a
^2*x^2] + 32*a*x*ArcSin[a*x]^3 + (16*a*x*ArcSin[a*x]^3)/(1 - a^2*x^2) - (32
*I)*Sqrt[1 - a^2*x^2]*ArcSin[a*x]^3 + (12*a*x*ArcSin[a*x]^3)/(-1 + a^2*x^2)
^2 + 96*Sqrt[1 - a^2*x^2]*ArcSin[a*x]^2*Log[1 + E^((2*I)*ArcSin[a*x])] + 30
*Sqrt[1 - a^2*x^2]*Log[1 - a^2*x^2] - (96*I)*Sqrt[1 - a^2*x^2]*ArcSin[a*x]*
PolyLog[2, -E^((2*I)*ArcSin[a*x])] + 48*Sqrt[1 - a^2*x^2]*PolyLog[3, -E^((2
*I)*ArcSin[a*x])])/(60*a*c^3*Sqrt[c - a^2*c*x^2])
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{-a^2cx^2+c}\,\arcsin(ax)^3}{a^8c^4x^8-4\,a^6c^4x^6+6\,a^4c^4x^4-4\,a^2c^4x^2+c^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/(-a^2*c*x^2+c)^(7/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-a^2*c*x^2 + c)*arcsin(a*x)^3/(a^8*c^4*x^8 - 4*a^6*c^4*x^6 +
6*a^4*c^4*x^4 - 4*a^2*c^4*x^2 + c^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\arcsin(ax)^3}{\left(-a^2cx^2+c\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/(-a^2*c*x^2+c)^(7/2),x, algorithm="giac")
```

```
[Out] integrate(arcsin(a*x)^3/(-a^2*c*x^2 + c)^(7/2), x)
```

maple [A] time = 0.40, size = 1017, normalized size = 1.86

$$-\frac{\sqrt{-c\left(a^2x^2-1\right)}\,\left(8a^5x^5-20a^3x^3+8i\sqrt{-a^2x^2+1}\,x^4a^4+15ax-16i\sqrt{-a^2x^2+1}\,x^2a^2+8i\sqrt{-a^2x^2+1}\right)\left(24i\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^3/(-a^2*c*x^2+c)^(7/2),x)
```

```
[Out] -1/60*(-c*(a^2*x^2-1))^(1/2)*(8*a^5*x^5-20*a^3*x^3+8*I*(-a^2*x^2+1)^(1/2)*x
^4*a^4+15*a*x-16*I*(-a^2*x^2+1)^(1/2)*x^2*a^2+8*I*(-a^2*x^2+1)^(1/2))*(192*
arcsin(a*x)*x^8*a^8-852*arcsin(a*x)*x^6*a^6-380*arcsin(a*x)^3*x^2*a^2+24*I*
x^8*a^8-96*I*x^6*a^6+144*I*x^4*a^4-96*I*x^2*a^2+756*I*(-a^2*x^2+1)^(1/2)*ar
csin(a*x)*x^5*a^5-936*I*(-a^2*x^2+1)^(1/2)*arcsin(a*x)*x^3*a^3+372*I*(-a^2*
x^2+1)^(1/2)*arcsin(a*x)*x*a+192*(-a^2*x^2+1)^(1/2)*arcsin(a*x)^2*x^7*a^7-7
44*(-a^2*x^2+1)^(1/2)*arcsin(a*x)^2*x^5*a^5+1368*I*arcsin(a*x)^2*x^4*a^4-98
4*I*arcsin(a*x)^2*x^2*a^2+192*I*arcsin(a*x)^2*x^8*a^8-840*I*arcsin(a*x)^2*x
```

```
^6*a^6+264*I*arcsin(a*x)^2-192*I*(-a^2*x^2+1)^(1/2)*arcsin(a*x)*x^7*a^7+24*
I+256*arcsin(a*x)^3+480*arcsin(a*x)+1590*a^4*x^4*arcsin(a*x)+160*a^4*x^4*ar
csin(a*x)^3-45*a*x*(-a^2*x^2+1)^(1/2)+105*a^3*x^3*(-a^2*x^2+1)^(1/2)-1410*a
^2*x^2*arcsin(a*x)+24*(-a^2*x^2+1)^(1/2)*x^7*a^7+1020*arcsin(a*x)^2*(-a^2*x
^2+1)^(1/2)*x^3*a^3-495*arcsin(a*x)^2*(-a^2*x^2+1)^(1/2)*x*a-84*(-a^2*x^2+1
)^(1/2)*a^5*x^5)/c^4/(40*a^10*x^10-215*a^8*x^8+469*a^6*x^6-517*a^4*x^4+287*
a^2*x^2-64)/a+2*(-c*(a^2*x^2-1))^(1/2)*(-a^2*x^2+1)^(1/2)/a/c^4/(a^2*x^2-1)
*ln(I*a*x+(-a^2*x^2+1)^(1/2))-(-c*(a^2*x^2-1))^(1/2)*(-a^2*x^2+1)^(1/2)/a/c
^4/(a^2*x^2-1)*ln(1+(I*a*x+(-a^2*x^2+1)^(1/2))^2)+16/15*I*(-a^2*x^2+1)^(1/2
)*(-c*(a^2*x^2-1))^(1/2)/a/c^4/(a^2*x^2-1)*arcsin(a*x)^3-8/5*(-c*(a^2*x^2-1
))^(1/2)*(-a^2*x^2+1)^(1/2)/a/c^4/(a^2*x^2-1)*arcsin(a*x)^2*ln(1+(I*a*x+(-a
^2*x^2+1)^(1/2))^2)+8/5*I*(-a^2*x^2+1)^(1/2)*(-c*(a^2*x^2-1))^(1/2)/a/c^4/(
a^2*x^2-1)*arcsin(a*x)*polylog(2,-(I*a*x+(-a^2*x^2+1)^(1/2))^2)-4/5*(-c*(a^
2*x^2-1))^(1/2)*(-a^2*x^2+1)^(1/2)/a/c^4/(a^2*x^2-1)*polylog(3,-(I*a*x+(-a^
2*x^2+1)^(1/2))^2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^3}{\left(-a^2cx^2+c\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/(-a^2*c*x^2+c)^(7/2),x, algorithm="maxima")
[Out] integrate(arcsin(a*x)^3/(-a^2*c*x^2 + c)^(7/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\operatorname{asin}(a\,x)^3}{\left(c-a^2\,c\,x^2\right)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^3/(c - a^2*c*x^2)^(7/2),x)
[Out] int(asin(a*x)^3/(c - a^2*c*x^2)^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}^3(ax)}{\left(-c(ax-1)(ax+1)\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**3/(-a**2*c*x**2+c)**(7/2),x)
[Out] Integral(asin(a*x)**3/(-c*(a*x - 1)*(a*x + 1))**(7/2), x)
```

3.302 $\int \frac{x^m \sin^{-1}(ax)^3}{\sqrt{1-a^2x^2}} dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{x^m \sin^{-1}(ax)^3}{\sqrt{1-a^2x^2}}, x\right)$$

```
[Out] Unintegrable(x^m*arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m \sin^{-1}(ax)^3}{\sqrt{1-a^2x^2}} dx$$

Verification is Not applicable to the result.

```
[In] Int[(x^m*ArcSin[a*x]^3)/Sqrt[1 - a^2*x^2],x]
[Out] Defer[Int][(x^m*ArcSin[a*x]^3)/Sqrt[1 - a^2*x^2], x]
```

Rubi steps

$$\int \frac{x^m \sin^{-1}(ax)^3}{\sqrt{1-a^2x^2}} dx = \int \frac{x^m \sin^{-1}(ax)^3}{\sqrt{1-a^2x^2}} dx$$

Mathematica [A] time = 0.92, size = 0, normalized size = 0.00

$$\int \frac{x^m \sin^{-1}(ax)^3}{\sqrt{1-a^2x^2}} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(x^m*ArcSin[a*x]^3)/Sqrt[1 - a^2*x^2],x]
[Out] Integrate[(x^m*ArcSin[a*x]^3)/Sqrt[1 - a^2*x^2], x]
```

fricas [A] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-a^2x^2+1}\,x^m \arcsin(ax)^3}{a^2x^2-1}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
[Out] integral(-sqrt(-a^2*x^2 + 1)*x^m*arcsin(a*x)^3/(a^2*x^2 - 1), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m \arcsin(ax)^3}{\sqrt{-a^2x^2+1}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
[Out] integrate(x^m*arcsin(a*x)^3/sqrt(-a^2*x^2 + 1), x)
```

maple [A] time = 0.70, size = 0, normalized size = 0.00

$$\int \frac{x^m \arcsin(ax)^3}{\sqrt{-a^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] int(x^m*arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m \arcsin(ax)^3}{\sqrt{-a^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(x^m*arcsin(a*x)^3/sqrt(-a^2*x^2 + 1), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{x^m \operatorname{asin}(a\,x)^3}{\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*asin(a*x)^3)/(1 - a^2*x^2)^(1/2),x)
```

```
[Out] int((x^m*asin(a*x)^3)/(1 - a^2*x^2)^(1/2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m \operatorname{asin}^3(ax)}{\sqrt{-(ax-1)(ax+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*asin(a*x)**3/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(x**m*asin(a*x)**3/sqrt(-(a*x - 1)*(a*x + 1)), x)
```

3.303 $\int \frac{x^4 \sin^{-1}(ax)^3}{\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=191

$$\frac{3\sin^{-1}(ax)^4}{32a^5}-\frac{45\sin^{-1}(ax)^2}{128a^5}-\frac{45x^2}{128a^3}+\frac{9x^2\sin^{-1}(ax)^2}{16a^3}-\frac{x^3\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{4a^2}+\frac{3x^3\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{32a^2}-\frac{3x\sqrt{}}{}$$

```
[Out] -45/128*x^2/a^3-3/128*x^4/a-45/128*arcsin(a*x)^2/a^5+9/16*x^2*arcsin(a*x)^2
/a^3+3/16*x^4*arcsin(a*x)^2/a+3/32*arcsin(a*x)^4/a^5+45/64*x*arcsin(a*x)*(-
a^2*x^2+1)^(1/2)/a^4+3/32*x^3*arcsin(a*x)*(-a^2*x^2+1)^(1/2)/a^2-3/8*x*arcs
in(a*x)^3*(-a^2*x^2+1)^(1/2)/a^4-1/4*x^3*arcsin(a*x)^3*(-a^2*x^2+1)^(1/2)/a
^2
```

Rubi [A] time = 0.47, antiderivative size = 191, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {4707, 4641, 4627, 30}

$$-\frac{45x^2}{128a^3}-\frac{x^3\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{4a^2}+\frac{3x^3\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{32a^2}+\frac{9x^2\sin^{-1}(ax)^2}{16a^3}-\frac{3x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{8a^4}+\frac{45x\sqrt{}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*ArcSin[a*x]^3)/Sqrt[1 - a^2*x^2],x]
```

```
[Out] (-45*x^2)/(128*a^3) - (3*x^4)/(128*a) + (45*x*Sqrt[1 - a^2*x^2]*ArcSin[a*x]
)/(64*a^4) + (3*x^3*Sqrt[1 - a^2*x^2]*ArcSin[a*x])/(32*a^2) - (45*ArcSin[a*
x]^2)/(128*a^5) + (9*x^2*ArcSin[a*x]^2)/(16*a^3) + (3*x^4*ArcSin[a*x]^2)/(1
6*a) - (3*x*Sqrt[1 - a^2*x^2]*ArcSin[a*x]^3)/(8*a^4) - (x^3*Sqrt[1 - a^2*x^
2]*ArcSin[a*x]^3)/(4*a^2) + (3*ArcSin[a*x]^4)/(32*a^5)
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^4 \sin^{-1}(ax)^3}{\sqrt{1-a^2x^2}}\,dx = -\frac{x^3\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{4a^2} + \frac{3\int \frac{x^2\sin^{-1}(ax)^3}{\sqrt{1-a^2x^2}}dx}{4a^2} + \frac{3\int x^3\sin^{-1}(ax)^2\,dx}{4a}$$

$$= \frac{3x^4\sin^{-1}(ax)^2}{16a} - \frac{3x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{8a^4} - \frac{x^3\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{4a^2} - \frac{3}{8}\int \frac{x^4\sin^{-1}(ax)}{\sqrt{1-a^2x^2}}\,d$$

$$= \frac{3x^3\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{32a^2} + \frac{9x^2\sin^{-1}(ax)^2}{16a^3} + \frac{3x^4\sin^{-1}(ax)^2}{16a} - \frac{3x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{8a^4} - x$$

$$= -\frac{3x^4}{128a} + \frac{45x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{64a^4} + \frac{3x^3\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{32a^2} + \frac{9x^2\sin^{-1}(ax)^2}{16a^3} + \frac{3x^4\sin^-}{16a}$$

$$= -\frac{45x^2}{128a^3} - \frac{3x^4}{128a} + \frac{45x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{64a^4} + \frac{3x^3\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{32a^2} - \frac{45\sin^{-1}(ax)^2}{128a^5} + \frac{9}{}$$

Mathematica [A] time = 0.07, size = 125, normalized size = 0.65

$$\frac{-3a^2x^2\left(a^2x^2+15\right) - 16ax\sqrt{1-a^2x^2}\left(2a^2x^2+3\right)\sin^{-1}(ax)^3 + 6ax\sqrt{1-a^2x^2}\left(2a^2x^2+15\right)\sin^{-1}(ax) + 3\left(8a^4x^4\right.}{128a^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*ArcSin[a*x]^3)/Sqrt[1 - a^2*x^2],x]
```

```
[Out] (-3*a^2*x^2*(15 + a^2*x^2) + 6*a*x*Sqrt[1 - a^2*x^2]*(15 + 2*a^2*x^2)*ArcSi
n[a*x] + 3*(-15 + 24*a^2*x^2 + 8*a^4*x^4)*ArcSin[a*x]^2 - 16*a*x*Sqrt[1 - a
^2*x^2]*(3 + 2*a^2*x^2)*ArcSin[a*x]^3 + 12*ArcSin[a*x]^4)/(128*a^5)
```

fricas [A] time = 0.46, size = 111, normalized size = 0.58

$$-\frac{3\,a^4x^4 + 45\,a^2x^2 - 12\,\arcsin(ax)^4 - 3\left(8\,a^4x^4 + 24\,a^2x^2 - 15\right)\arcsin(ax)^2 + 2\,\sqrt{-a^2x^2+1}\left(8\left(2\,a^3x^3 + 3\,ax\right)\mathrm{ar}\right.}{128\,a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/128*(3*a^4*x^4 + 45*a^2*x^2 - 12*arcsin(a*x)^4 - 3*(8*a^4*x^4 + 24*a^2*x
^2 - 15)*arcsin(a*x)^2 + 2*sqrt(-a^2*x^2 + 1)*(8*(2*a^3*x^3 + 3*a*x)*arcsin
(a*x)^3 - 3*(2*a^3*x^3 + 15*a*x)*arcsin(a*x)))/a^5
```

giac [A] time = 0.56, size = 192, normalized size = 1.01

$$\frac{\left(-a^2x^2+1\right)^{\frac{3}{2}}x\arcsin(ax)^3}{4\,a^4} - \frac{5\,\sqrt{-a^2x^2+1}\,x\arcsin(ax)^3}{8\,a^4} - \frac{3\left(-a^2x^2+1\right)^{\frac{3}{2}}x\arcsin(ax)}{32\,a^4} + \frac{3\left(a^2x^2-1\right)^2\arcsin(ax)}{16\,a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*(-a^2*x^2 + 1)^(3/2)*x*arcsin(a*x)^3/a^4 - 5/8*sqrt(-a^2*x^2 + 1)*x*arc
sin(a*x)^3/a^4 - 3/32*(-a^2*x^2 + 1)^(3/2)*x*arcsin(a*x)/a^4 + 3/16*(a^2*x^
2 - 1)^2*arcsin(a*x)^2/a^5 + 3/32*arcsin(a*x)^4/a^5 + 51/64*sqrt(-a^2*x^2 +
 1)*x*arcsin(a*x)/a^4 + 15/16*(a^2*x^2 - 1)*arcsin(a*x)^2/a^5 - 3/128*(a^2*
x^2 - 1)^2/a^5 + 51/128*arcsin(a*x)^2/a^5 - 51/128*(a^2*x^2 - 1)/a^5 - 195/
1024/a^5
```

maple [A] time = 0.13, size = 159, normalized size = 0.83

$$-32\arcsin(ax)^3\sqrt{-a^2x^2+1}\,x^3a^3+24a^4x^4\arcsin(ax)^2+12\arcsin(ax)\sqrt{-a^2x^2+1}\,x^3a^3-3a^4x^4-48\arcsin$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] 1/128*(-32*arcsin(a*x)^3*(-a^2*x^2+1)^(1/2)*x^3*a^3+24*a^4*x^4*arcsin(a*x)^
2+12*arcsin(a*x)*(-a^2*x^2+1)^(1/2)*x^3*a^3-3*a^4*x^4-48*arcsin(a*x)^3*(-a^
2*x^2+1)^(1/2)*x*a+72*arcsin(a*x)^2*x^2*a^2+12*arcsin(a*x)^4+90*arcsin(a*x)
*(-a^2*x^2+1)^(1/2)*x*a-45*a^2*x^2-45*arcsin(a*x)^2)/a^5
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4\arcsin(ax)^3}{\sqrt{-a^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(x^4*arcsin(a*x)^3/sqrt(-a^2*x^2 + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^4\,\mathrm{asin}(a\,x)^3}{\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*asin(a*x)^3)/(1 - a^2*x^2)^(1/2),x)
```

```
[Out] int((x^4*asin(a*x)^3)/(1 - a^2*x^2)^(1/2), x)
```

sympy [A] time = 5.93, size = 185, normalized size = 0.97

$$\begin{cases} \frac{3x^4\operatorname{asin}^2(ax)}{16a}-\frac{3x^4}{128a}-\frac{x^3\sqrt{-a^2x^2+1}\operatorname{asin}^3(ax)}{4a^2}+\frac{3x^3\sqrt{-a^2x^2+1}\operatorname{asin}(ax)}{32a^2}+\frac{9x^2\operatorname{asin}^2(ax)}{16a^3}-\frac{45x^2}{128a^3}-\frac{3x\sqrt{-a^2x^2+1}\operatorname{asin}^3(ax)}{8a^4}+\frac{45x}{} \\ 0 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*asin(a*x)**3/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Piecewise((3*x**4*asin(a*x)**2/(16*a) - 3*x**4/(128*a) - x**3*sqrt(-a**2*x*
*2 + 1)*asin(a*x)**3/(4*a**2) + 3*x**3*sqrt(-a**2*x**2 + 1)*asin(a*x)/(32*a
**2) + 9*x**2*asin(a*x)**2/(16*a**3) - 45*x**2/(128*a**3) - 3*x*sqrt(-a**2*
x**2 + 1)*asin(a*x)**3/(8*a**4) + 45*x*sqrt(-a**2*x**2 + 1)*asin(a*x)/(64*a
**4) + 3*asin(a*x)**4/(32*a**5) - 45*asin(a*x)**2/(128*a**5), Ne(a, 0)), (0
, True))
```

3.304 $\int \frac{x^3 \sin^{-1}(ax)^3}{\sqrt{1-a^2x^2}} dx$

Optimal. Leaf size=157

$$-\frac{40x}{9a^3}+\frac{2x\sin^{-1}(ax)^2}{a^3}-\frac{x^2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{3a^2}+\frac{2x^2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{9a^2}-\frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{3a^4}+\frac{40\sqrt{1-a^2x^2}}{9a^4}$$

```
[Out] -40/9*x/a^3-2/27*x^3/a+2*x*arcsin(a*x)^2/a^3+1/3*x^3*arcsin(a*x)^2/a+40/9*a
rcsin(a*x)*(-a^2*x^2+1)^(1/2)/a^4+2/9*x^2*arcsin(a*x)*(-a^2*x^2+1)^(1/2)/a^
2-2/3*arcsin(a*x)^3*(-a^2*x^2+1)^(1/2)/a^4-1/3*x^2*arcsin(a*x)^3*(-a^2*x^2+
1)^(1/2)/a^2
```

Rubi [A] time = 0.32, antiderivative size = 157, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {4707, 4677, 4619, 8, 4627, 30}

$$-\frac{x^2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{3a^2}+\frac{2x^2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{9a^2}-\frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{3a^4}+\frac{40\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{9a^4}-\frac{40x}{9a^3}+\frac{2x\,\mathrm{s}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*ArcSin[a*x]^3)/Sqrt[1 - a^2*x^2],x]
```

```
[Out] (-40*x)/(9*a^3) - (2*x^3)/(27*a) + (40*Sqrt[1 - a^2*x^2]*ArcSin[a*x])/(9*a^
4) + (2*x^2*Sqrt[1 - a^2*x^2]*ArcSin[a*x])/(9*a^2) + (2*x*ArcSin[a*x]^2)/a^
3 + (x^3*ArcSin[a*x]^2)/(3*a) - (2*Sqrt[1 - a^2*x^2]*ArcSin[a*x]^3)/(3*a^4)
 - (x^2*Sqrt[1 - a^2*x^2]*ArcSin[a*x]^3)/(3*a^2)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^3 \sin^{-1}(ax)^3}{\sqrt{1-a^2x^2}}\,dx = -\frac{x^2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{3a^2} + \frac{2\int \frac{x\sin^{-1}(ax)^3}{\sqrt{1-a^2x^2}}\,dx}{3a^2} + \frac{\int x^2\sin^{-1}(ax)^2\,dx}{a}$$

$$= \frac{x^3\sin^{-1}(ax)^2}{3a} - \frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{3a^4} - \frac{x^2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{3a^2} - \frac{2}{3}\int \frac{x^3\sin^{-1}(ax)}{\sqrt{1-a^2x^2}}\,$$

$$= \frac{2x^2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{9a^2} + \frac{2x\sin^{-1}(ax)^2}{a^3} + \frac{x^3\sin^{-1}(ax)^2}{3a} - \frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{3a^4} - $$

$$= -\frac{2x^3}{27a} + \frac{40\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{9a^4} + \frac{2x^2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{9a^2} + \frac{2x\sin^{-1}(ax)^2}{a^3} + \frac{x^3\sin^{-1}(}{3a}$$

$$= -\frac{40x}{9a^3} - \frac{2x^3}{27a} + \frac{40\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{9a^4} + \frac{2x^2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{9a^2} + \frac{2x\sin^{-1}(ax)^2}{a^3} + $$

Mathematica [A] time = 0.07, size = 100, normalized size = 0.64

$$\frac{-2ax\left(a^2x^2+60\right)-9\sqrt{1-a^2x^2}\left(a^2x^2+2\right)\sin^{-1}(ax)^3+9ax\left(a^2x^2+6\right)\sin^{-1}(ax)^2+6\sqrt{1-a^2x^2}\left(a^2x^2+20\right)\mathrm{s}}{27a^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*ArcSin[a*x]^3)/Sqrt[1 - a^2*x^2],x]
```

```
[Out] (-2*a*x*(60 + a^2*x^2) + 6*Sqrt[1 - a^2*x^2]*(20 + a^2*x^2)*ArcSin[a*x] + 9
*a*x*(6 + a^2*x^2)*ArcSin[a*x]^2 - 9*Sqrt[1 - a^2*x^2]*(2 + a^2*x^2)*ArcSin
[a*x]^3)/(27*a^4)
```

fricas [A] time = 0.43, size = 85, normalized size = 0.54

$$-\frac{2\,a^3x^3-9\left(a^3x^3+6\,ax\right)\arcsin(ax)^2+120\,ax+3\sqrt{-a^2x^2+1}\left(3\left(a^2x^2+2\right)\arcsin(ax)^3-2\left(a^2x^2+20\right)\mathrm{arcs}\right.}{27\,a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/27*(2*a^3*x^3 - 9*(a^3*x^3 + 6*a*x)*arcsin(a*x)^2 + 120*a*x + 3*sqrt(-a^
2*x^2 + 1)*(3*(a^2*x^2 + 2)*arcsin(a*x)^3 - 2*(a^2*x^2 + 20)*arcsin(a*x)))/
a^4
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.12, size = 180, normalized size = 1.15

$$-\frac{\left(9a^4x^4\arcsin(ax)^3+9\arcsin(ax)^3x^2a^2+9\arcsin(ax)^2\sqrt{-a^2x^2+1}\,x^3a^3-6a^4x^4\arcsin(ax)-114a^2x^2\arcsin\cdots\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] -1/27/a^4*(9*a^4*x^4*arcsin(a*x)^3+9*arcsin(a*x)^3*x^2*a^2+9*arcsin(a*x)^2*
(-a^2*x^2+1)^(1/2)*x^3*a^3-6*a^4*x^4*arcsin(a*x)-114*a^2*x^2*arcsin(a*x)-2*
a^3*x^3*(-a^2*x^2+1)^(1/2)-18*arcsin(a*x)^3+54*arcsin(a*x)^2*(-a^2*x^2+1)^(
1/2)*x*a+120*arcsin(a*x)-120*a*x*(-a^2*x^2+1)^(1/2))*(-a^2*x^2+1)^(1/2)/(a^
2*x^2-1)
```

maxima [A] time = 0.52, size = 131, normalized size = 0.83

$$-\frac{1}{3}\left(\frac{\sqrt{-a^2x^2+1}\,x^2}{a^2}+\frac{2\sqrt{-a^2x^2+1}}{a^4}\right)\arcsin(ax)^3+\frac{2}{27}a\left(\frac{3\left(\sqrt{-a^2x^2+1}\,x^2+\frac{20\sqrt{-a^2x^2+1}}{a^2}\right)\arcsin(ax)}{a^3}-\frac{a^2x^3+6\cdots}{a^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/3*(sqrt(-a^2*x^2 + 1)*x^2/a^2 + 2*sqrt(-a^2*x^2 + 1)/a^4)*arcsin(a*x)^3
+ 2/27*a*(3*(sqrt(-a^2*x^2 + 1)*x^2 + 20*sqrt(-a^2*x^2 + 1)/a^2)*arcsin(a*x
)/a^3 - (a^2*x^3 + 60*x)/a^4) + 1/3*(a^2*x^3 + 6*x)*arcsin(a*x)^2/a^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^3\,\mathrm{asin}(a\,x)^3}{\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*asin(a*x)^3)/(1 - a^2*x^2)^(1/2),x)
```

```
[Out] int((x^3*asin(a*x)^3)/(1 - a^2*x^2)^(1/2), x)
```

sympy [A] time = 3.26, size = 148, normalized size = 0.94

$$\begin{cases}\frac{x^3\operatorname{asin}^2(ax)}{3a}-\frac{2x^3}{27a}-\frac{x^2\sqrt{-a^2x^2+1}\operatorname{asin}^3(ax)}{3a^2}+\frac{2x^2\sqrt{-a^2x^2+1}\operatorname{asin}(ax)}{9a^2}+\frac{2x\operatorname{asin}^2(ax)}{a^3}-\frac{40x}{9a^3}-\frac{2\sqrt{-a^2x^2+1}\operatorname{asin}^3(ax)}{3a^4}+\frac{40\sqrt{-a^2x^2+1}\operatorname{a}\cdots}{9a^4}\\ 0\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*asin(a*x)**3/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Piecewise((x**3*asin(a*x)**2/(3*a) - 2*x**3/(27*a) - x**2*sqrt(-a**2*x**2 +
 1)*asin(a*x)**3/(3*a**2) + 2*x**2*sqrt(-a**2*x**2 + 1)*asin(a*x)/(9*a**2)
+ 2*x*asin(a*x)**2/a**3 - 40*x/(9*a**3) - 2*sqrt(-a**2*x**2 + 1)*asin(a*x)*
*3/(3*a**4) + 40*sqrt(-a**2*x**2 + 1)*asin(a*x)/(9*a**4), Ne(a, 0)), (0, Tr
ue))
```

3.305 $\int \frac{x^2 \sin^{-1}(ax)^3}{\sqrt{1-a^2x^2}} \, dx$

Optimal. Leaf size=107

$$\frac{\sin^{-1}(ax)^4}{8a^3}-\frac{3\sin^{-1}(ax)^2}{8a^3}-\frac{x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{2a^2}+\frac{3x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{4a^2}-\frac{3x^2}{8a}+\frac{3x^2\sin^{-1}(ax)^2}{4a}$$

```
[Out] -3/8*x^2/a-3/8*arcsin(a*x)^2/a^3+3/4*x^2*arcsin(a*x)^2/a+1/8*arcsin(a*x)^4/
a^3+3/4*x*arcsin(a*x)*(-a^2*x^2+1)^(1/2)/a^2-1/2*x*arcsin(a*x)^3*(-a^2*x^2+
1)^(1/2)/a^2
```

Rubi [A] time = 0.21, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {4707, 4641, 4627, 30}

$$-\frac{x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{2a^2}+\frac{3x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{4a^2}+\frac{\sin^{-1}(ax)^4}{8a^3}-\frac{3\sin^{-1}(ax)^2}{8a^3}-\frac{3x^2}{8a}+\frac{3x^2\sin^{-1}(ax)^2}{4a}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*ArcSin[a*x]^3)/Sqrt[1 - a^2*x^2],x]
```

```
[Out] (-3*x^2)/(8*a) + (3*x*Sqrt[1 - a^2*x^2]*ArcSin[a*x])/(4*a^2) - (3*ArcSin[a*
x]^2)/(8*a^3) + (3*x^2*ArcSin[a*x]^2)/(4*a) - (x*Sqrt[1 - a^2*x^2]*ArcSin[a
*x]^3)/(2*a^2) + ArcSin[a*x]^4/(8*a^3)
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int \frac{x^2 \sin^{-1}(ax)^3}{\sqrt{1-a^2x^2}}\,dx = -\frac{x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{2a^2} + \frac{\int \frac{\sin^{-1}(ax)^3}{\sqrt{1-a^2x^2}}\,dx}{2a^2} + \frac{3\int x\sin^{-1}(ax)^2\,dx}{2a}$$
$$= \frac{3x^2\sin^{-1}(ax)^2}{4a} - \frac{x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{2a^2} + \frac{\sin^{-1}(ax)^4}{8a^3} - \frac{3}{2}\int \frac{x^2\sin^{-1}(ax)}{\sqrt{1-a^2x^2}}\,dx$$
$$= \frac{3x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{4a^2} + \frac{3x^2\sin^{-1}(ax)^2}{4a} - \frac{x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{2a^2} + \frac{\sin^{-1}(ax)^4}{8a^3} - \frac{3\int \frac{\sin^{-1}}{\sqrt{1-}}}{4}$$
$$= -\frac{3x^2}{8a} + \frac{3x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{4a^2} - \frac{3\sin^{-1}(ax)^2}{8a^3} + \frac{3x^2\sin^{-1}(ax)^2}{4a} - \frac{x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{2a^2}$$

Mathematica [A] time = 0.03, size = 85, normalized size = 0.79

$$\frac{-3a^2x^2 - 4ax\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3 + \left(6a^2x^2-3\right)\sin^{-1}(ax)^2 + 6ax\sqrt{1-a^2x^2}\,\sin^{-1}(ax) + \sin^{-1}(ax)^4}{8a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*ArcSin[a*x]^3)/Sqrt[1 - a^2*x^2],x]
```

```
[Out] (-3*a^2*x^2 + 6*a*x*Sqrt[1 - a^2*x^2]*ArcSin[a*x] + (-3 + 6*a^2*x^2)*ArcSin
[a*x]^2 - 4*a*x*Sqrt[1 - a^2*x^2]*ArcSin[a*x]^3 + ArcSin[a*x]^4)/(8*a^3)
```

fricas [A] time = 0.46, size = 73, normalized size = 0.68

$$-\frac{3\,a^2x^2 - \arcsin(ax)^4 - 3\left(2\,a^2x^2-1\right)\arcsin(ax)^2 + 2\left(2\,ax\arcsin(ax)^3 - 3\,ax\arcsin(ax)\right)\sqrt{-a^2x^2+1}}{8\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/8*(3*a^2*x^2 - arcsin(a*x)^4 - 3*(2*a^2*x^2 - 1)*arcsin(a*x)^2 + 2*(2*a*
x*arcsin(a*x)^3 - 3*a*x*arcsin(a*x))*sqrt(-a^2*x^2 + 1))/a^3
```

giac [A] time = 0.43, size = 108, normalized size = 1.01

$$-\frac{\sqrt{-a^2x^2+1}\,x\arcsin(ax)^3}{2\,a^2} + \frac{\arcsin(ax)^4}{8\,a^3} + \frac{3\,\sqrt{-a^2x^2+1}\,x\arcsin(ax)}{4\,a^2} + \frac{3\left(a^2x^2-1\right)\arcsin(ax)^2}{4\,a^3} + \frac{3\,\arcsin(ax)^2}{8\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(-a^2*x^2 + 1)*x*arcsin(a*x)^3/a^2 + 1/8*arcsin(a*x)^4/a^3 + 3/4*s
qrt(-a^2*x^2 + 1)*x*arcsin(a*x)/a^2 + 3/4*(a^2*x^2 - 1)*arcsin(a*x)^2/a^3 +
 3/8*arcsin(a*x)^2/a^3 - 3/8*(a^2*x^2 - 1)/a^3 - 3/16/a^3
```

maple [A] time = 0.14, size = 85, normalized size = 0.79

$$\frac{-4\arcsin(ax)^3\sqrt{-a^2x^2+1}\;xa + 6\arcsin(ax)^2 x^2a^2 + \arcsin(ax)^4 + 6\arcsin(ax)\sqrt{-a^2x^2+1}\;xa - 3a^2x^2 - 3\,\mathrm{ar}}{8a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] 1/8*(-4*arcsin(a*x)^3*(-a^2*x^2+1)^(1/2)*x*a+6*arcsin(a*x)^2*x^2*a^2+arcsin
(a*x)^4+6*arcsin(a*x)*(-a^2*x^2+1)^(1/2)*x*a-3*a^2*x^2-3*arcsin(a*x)^2)/a^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2 \arcsin(ax)^3}{\sqrt{-a^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(x^2*arcsin(a*x)^3/sqrt(-a^2*x^2 + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^2\,\mathrm{asin}(a\,x)^3}{\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*asin(a*x)^3)/(1 - a^2*x^2)^(1/2),x)
```

```
[Out] int((x^2*asin(a*x)^3)/(1 - a^2*x^2)^(1/2), x)
```

sympy [A] time = 2.04, size = 100, normalized size = 0.93

$$\begin{cases} \frac{3x^2\,\mathrm{asin}^2(ax)}{4a} - \frac{3x^2}{8a} - \frac{x\sqrt{-a^2x^2+1}\,\mathrm{asin}^3(ax)}{2a^2} + \frac{3x\sqrt{-a^2x^2+1}\,\mathrm{asin}(ax)}{4a^2} + \frac{\mathrm{asin}^4(ax)}{8a^3} - \frac{3\,\mathrm{asin}^2(ax)}{8a^3} & \text{for } a \neq 0 \\ 0 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*asin(a*x)**3/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Piecewise((3*x**2*asin(a*x)**2/(4*a) - 3*x**2/(8*a) - x*sqrt(-a**2*x**2 + 1
)*asin(a*x)**3/(2*a**2) + 3*x*sqrt(-a**2*x**2 + 1)*asin(a*x)/(4*a**2) + asi
n(a*x)**4/(8*a**3) - 3*asin(a*x)**2/(8*a**3), Ne(a, 0)), (0, True))
```

3.306 $\int \frac{x \sin^{-1}(ax)^3}{\sqrt{1-a^2x^2}} \, dx$

Optimal. Leaf size=67

$$-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{a^2}+\frac{6\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{a^2}-\frac{6x}{a}+\frac{3x\sin^{-1}(ax)^2}{a}$$

```
[Out] -6*x/a+3*x*arcsin(a*x)^2/a+6*arcsin(a*x)*(-a^2*x^2+1)^(1/2)/a^2-arcsin(a*x)
^3*(-a^2*x^2+1)^(1/2)/a^2
```

Rubi [A] time = 0.11, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$, Rules used = $\{4677, 4619, 8\}$

$$-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{a^2}+\frac{6\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{a^2}-\frac{6x}{a}+\frac{3x\sin^{-1}(ax)^2}{a}$$

Antiderivative was successfully verified.

```
[In] Int[(x*ArcSin[a*x]^3)/Sqrt[1 - a^2*x^2],x]
```

```
[Out] (-6*x)/a + (6*Sqrt[1 - a^2*x^2]*ArcSin[a*x])/a^2 + (3*x*ArcSin[a*x]^2)/a -
(Sqrt[1 - a^2*x^2]*ArcSin[a*x]^3)/a^2
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{x \sin^{-1}(ax)^3}{\sqrt{1-a^2x^2}} \, dx &= -\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{a^2}+\frac{3\int \sin^{-1}(ax)^2 \, dx}{a}\\
&= \frac{3x\sin^{-1}(ax)^2}{a}-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{a^2}-6\int \frac{x\sin^{-1}(ax)}{\sqrt{1-a^2x^2}} \, dx\\
&= \frac{6\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{a^2}+\frac{3x\sin^{-1}(ax)^2}{a}-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{a^2}-\frac{6\int 1 \, dx}{a}\\
&= -\frac{6x}{a}+\frac{6\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}{a^2}+\frac{3x\sin^{-1}(ax)^2}{a}-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{a^2}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 61, normalized size = 0.91

$$\frac{-\sqrt{1-a^2x^2}\sin^{-1}(ax)^3+6\sqrt{1-a^2x^2}\sin^{-1}(ax)-6ax+3ax\sin^{-1}(ax)^2}{a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*ArcSin[a*x]^3)/Sqrt[1 - a^2*x^2],x]
```

```
[Out] (-6*a*x + 6*Sqrt[1 - a^2*x^2]*ArcSin[a*x] + 3*a*x*ArcSin[a*x]^2 - Sqrt[1 -
a^2*x^2]*ArcSin[a*x]^3)/a^2
```

fricas [A] time = 0.48, size = 46, normalized size = 0.69

$$\frac{3\,ax\arcsin\left(ax\right)^2-6\,ax-\sqrt{-a^2x^2+1}\left(\arcsin\left(ax\right)^3-6\,\arcsin\left(ax\right)\right)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] (3*a*x*arcsin(a*x)^2 - 6*a*x - sqrt(-a^2*x^2 + 1)*(arcsin(a*x)^3 - 6*arcsin
(a*x)))/a^2
```

giac [A] time = 0.58, size = 62, normalized size = 0.93

$$-\frac{\sqrt{-a^2x^2+1}\arcsin\left(ax\right)^3}{a^2}+\frac{3\left(x\arcsin\left(ax\right)^2-2\,x+\frac{2\,\sqrt{-a^2x^2+1}\,\arcsin(ax)}{a}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] -sqrt(-a^2*x^2 + 1)*arcsin(a*x)^3/a^2 + 3*(x*arcsin(a*x)^2 - 2*x + 2*sqrt(-
a^2*x^2 + 1)*arcsin(a*x)/a)/a
```

maple [A] time = 0.10, size = 107, normalized size = 1.60

$$-\frac{\sqrt{-a^2x^2+1}\,\left(\arcsin\left(ax\right)^3x^2a^2-\arcsin\left(ax\right)^3+3\arcsin\left(ax\right)^2\sqrt{-a^2x^2+1}\,xa-6a^2x^2\arcsin\left(ax\right)+6\arcsin\right.}{a^2\left(a^2x^2-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] -1/a^2*(-a^2*x^2+1)^(1/2)/(a^2*x^2-1)*(arcsin(a*x)^3*x^2*a^2-arcsin(a*x)^3+
3*arcsin(a*x)^2*(-a^2*x^2+1)^(1/2)*x*a-6*a^2*x^2*arcsin(a*x)+6*arcsin(a*x)-
6*a*x*(-a^2*x^2+1)^(1/2))
```

maxima [A] time = 0.43, size = 64, normalized size = 0.96

$$\frac{3\,x\arcsin\left(ax\right)^2}{a}-\frac{\sqrt{-a^2x^2+1}\,\arcsin\left(ax\right)^3}{a^2}-\frac{6\left(x-\frac{\sqrt{-a^2x^2+1}\,\arcsin(ax)}{a}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] 3*x*arcsin(a*x)^2/a - sqrt(-a^2*x^2 + 1)*arcsin(a*x)^3/a^2 - 6*(x - sqrt(-a
^2*x^2 + 1)*arcsin(a*x)/a)/a
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x \operatorname{asin}(a x)^3}{\sqrt{1-a^2 x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*asin(a*x)^3)/(1 - a^2*x^2)^(1/2),x)
```

```
[Out] int((x*asin(a*x)^3)/(1 - a^2*x^2)^(1/2), x)
```

sympy [A] time = 1.10, size = 61, normalized size = 0.91

$$\begin{cases} \frac{3x \operatorname{asin}^2(ax)}{a} - \frac{6x}{a} - \frac{\sqrt{-a^2x^2+1}\,\operatorname{asin}^3(ax)}{a^2} + \frac{6\sqrt{-a^2x^2+1}\,\operatorname{asin}(ax)}{a^2} & \text{for } a \neq 0 \\ 0 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*asin(a*x)**3/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Piecewise((3*x*asin(a*x)**2/a - 6*x/a - sqrt(-a**2*x**2 + 1)*asin(a*x)**3/a
**2 + 6*sqrt(-a**2*x**2 + 1)*asin(a*x)/a**2, Ne(a, 0)), (0, True))
```

3.307 $\int \frac{\sin^{-1}(ax)^3}{\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=13

$$\frac{\sin^{-1}(ax)^4}{4a}$$

```
[Out] 1/4*arcsin(a*x)^4/a
```

Rubi [A] time = 0.03, antiderivative size = 13, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.048$, Rules used = {4641}

$$\frac{\sin^{-1}(ax)^4}{4a}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a*x]^3/Sqrt[1 - a^2*x^2],x]
```

```
[Out] ArcSin[a*x]^4/(4*a)
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{\sin^{-1}(ax)^3}{\sqrt{1-a^2x^2}}\,dx = \frac{\sin^{-1}(ax)^4}{4a}$$

Mathematica [A] time = 0.00, size = 13, normalized size = 1.00

$$\frac{\sin^{-1}(ax)^4}{4a}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a*x]^3/Sqrt[1 - a^2*x^2],x]
```

```
[Out] ArcSin[a*x]^4/(4*a)
```

fricas [A] time = 0.43, size = 11, normalized size = 0.85

$$\frac{\arcsin\left(ax\right)^4}{4\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/4*arcsin(a*x)^4/a
```

giac [A] time = 1.38, size = 11, normalized size = 0.85

$$\frac{\arcsin\left(ax\right)^4}{4\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*arcsin(a*x)^4/a
```

maple [A] time = 0.01, size = 12, normalized size = 0.92

$$\frac{\arcsin(ax)^4}{4a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] 1/4*arcsin(a*x)^4/a
```

maxima [A] time = 0.42, size = 11, normalized size = 0.85

$$\frac{\arcsin(ax)^4}{4\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*arcsin(a*x)^4/a
```

mupad [B] time = 0.15, size = 11, normalized size = 0.85

$$\frac{\mathrm{asin}\left(a\,x\right)^4}{4\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^3/(1 - a^2*x^2)^(1/2),x)
```

```
[Out] asin(a*x)^4/(4*a)
```

sympy [A] time = 0.63, size = 10, normalized size = 0.77

$$\begin{cases} \frac{\operatorname{asin}^{4}{\left(ax \right)}}{4a} & \text{for}\: a \neq 0 \\ 0 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**3/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Piecewise((asin(a*x)**4/(4*a), Ne(a, 0)), (0, True))
```

3.308 $\int \frac{\sin^{-1}(ax)^3}{x\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=138

$$3i\sin^{-1}(ax)^2\mathrm{Li}_2\left(-e^{i\sin^{-1}(ax)}\right)-3i\sin^{-1}(ax)^2\mathrm{Li}_2\left(e^{i\sin^{-1}(ax)}\right)-6\sin^{-1}(ax)\mathrm{Li}_3\left(-e^{i\sin^{-1}(ax)}\right)+6\sin^{-1}(ax)\mathrm{Li}_3\left(e^{i\sin^{-1}\right.$$

```
[Out] -2*arcsin(a*x)^3*arctanh(I*a*x+(-a^2*x^2+1)^(1/2))+3*I*arcsin(a*x)^2*polylo
g(2,-I*a*x-(-a^2*x^2+1)^(1/2))-3*I*arcsin(a*x)^2*polylog(2,I*a*x+(-a^2*x^2+
1)^(1/2))-6*arcsin(a*x)*polylog(3,-I*a*x-(-a^2*x^2+1)^(1/2))+6*arcsin(a*x)*
polylog(3,I*a*x+(-a^2*x^2+1)^(1/2))-6*I*polylog(4,-I*a*x-(-a^2*x^2+1)^(1/2)
)+6*I*polylog(4,I*a*x+(-a^2*x^2+1)^(1/2))
```

Rubi [A] time = 0.16, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {4709, 4183, 2531, 6609, 2282, 6589}

$$3i\sin^{-1}(ax)^2\text{PolyLog}\left(2,-e^{i\sin^{-1}(ax)}\right)-3i\sin^{-1}(ax)^2\text{PolyLog}\left(2,e^{i\sin^{-1}(ax)}\right)-6\sin^{-1}(ax)\text{PolyLog}\left(3,-e^{i\sin^{-1}(ax)}\right.$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a*x]^3/(x*Sqrt[1 - a^2*x^2]),x]
```

```
[Out] -2*ArcSin[a*x]^3*ArcTanh[E^(I*ArcSin[a*x])] + (3*I)*ArcSin[a*x]^2*PolyLog[2
, -E^(I*ArcSin[a*x])] - (3*I)*ArcSin[a*x]^2*PolyLog[2, E^(I*ArcSin[a*x])] -
 6*ArcSin[a*x]*PolyLog[3, -E^(I*ArcSin[a*x])] + 6*ArcSin[a*x]*PolyLog[3, E^
(I*ArcSin[a*x])] - (6*I)*PolyLog[4, -E^(I*ArcSin[a*x])] + (6*I)*PolyLog[4,
E^(I*ArcSin[a*x])]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{\sin^{-1}(ax)^3}{x\sqrt{1-a^2x^2}}\,dx = \text{Subst}\left(\int x^3\csc(x)\,dx, x, \sin^{-1}(ax)\right)$$
$$= -2\sin^{-1}(ax)^3\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right) - 3\,\text{Subst}\left(\int x^2\log\left(1-e^{ix}\right)dx, x, \sin^{-1}(ax)\right) + 3\,\text{Subst}\Big($$
$$= -2\sin^{-1}(ax)^3\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right) + 3i\sin^{-1}(ax)^2\text{Li}_2\left(-e^{i\sin^{-1}(ax)}\right) - 3i\sin^{-1}(ax)^2\text{Li}_2\left(e^{i\sin^{-1}(a}\right.$$
$$= -2\sin^{-1}(ax)^3\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right) + 3i\sin^{-1}(ax)^2\text{Li}_2\left(-e^{i\sin^{-1}(ax)}\right) - 3i\sin^{-1}(ax)^2\text{Li}_2\left(e^{i\sin^{-1}(a}\right.$$
$$= -2\sin^{-1}(ax)^3\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right) + 3i\sin^{-1}(ax)^2\text{Li}_2\left(-e^{i\sin^{-1}(ax)}\right) - 3i\sin^{-1}(ax)^2\text{Li}_2\left(e^{i\sin^{-1}(a}\right.$$
$$= -2\sin^{-1}(ax)^3\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right) + 3i\sin^{-1}(ax)^2\text{Li}_2\left(-e^{i\sin^{-1}(ax)}\right) - 3i\sin^{-1}(ax)^2\text{Li}_2\left(e^{i\sin^{-1}(a}\right.$$

Mathematica [A] time = 0.16, size = 180, normalized size = 1.30

$$-\frac{1}{8}i\left(-24\sin^{-1}(ax)^2\text{Li}_2\left(e^{-i\sin^{-1}(ax)}\right) - 24\sin^{-1}(ax)^2\text{Li}_2\left(-e^{i\sin^{-1}(ax)}\right) + 48i\sin^{-1}(ax)\text{Li}_3\left(e^{-i\sin^{-1}(ax)}\right) - 48i\sin^{-1}(a\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcSin[a*x]^3/(x*Sqrt[1 - a^2*x^2]),x]
```

```
[Out] (-1/8*I)*(Pi^4 - 2*ArcSin[a*x]^4 + (8*I)*ArcSin[a*x]^3*Log[1 - E^((-I)*ArcS
in[a*x])] - (8*I)*ArcSin[a*x]^3*Log[1 + E^(I*ArcSin[a*x])] - 24*ArcSin[a*x]
^2*PolyLog[2, E^((-I)*ArcSin[a*x])] - 24*ArcSin[a*x]^2*PolyLog[2, -E^(I*Arc
Sin[a*x])] + (48*I)*ArcSin[a*x]*PolyLog[3, E^((-I)*ArcSin[a*x])] - (48*I)*A
rcSin[a*x]*PolyLog[3, -E^(I*ArcSin[a*x])] + 48*PolyLog[4, E^((-I)*ArcSin[a*
x])] + 48*PolyLog[4, -E^(I*ArcSin[a*x])])
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-a^2x^2+1}\,\arcsin(ax)^3}{a^2x^3-x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/x/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-a^2*x^2 + 1)*arcsin(a*x)^3/(a^2*x^3 - x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^3}{\sqrt{-a^2x^2+1}\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/x/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(arcsin(a*x)^3/(sqrt(-a^2*x^2 + 1)*x), x)
```

maple [A] time = 0.13, size = 221, normalized size = 1.60

$$-\arcsin(ax)^3\ln\left(1+iax+\sqrt{-a^2x^2+1}\right)+\arcsin(ax)^3\ln\left(1-iax-\sqrt{-a^2x^2+1}\right)-6\arcsin(ax)\,\mathrm{polylog}\left(3,-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^3/x/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] -arcsin(a*x)^3*ln(1+I*a*x+(-a^2*x^2+1)^(1/2))+arcsin(a*x)^3*ln(1-I*a*x-(-a^
2*x^2+1)^(1/2))-6*arcsin(a*x)*polylog(3,-I*a*x-(-a^2*x^2+1)^(1/2))+6*arcsin
(a*x)*polylog(3,I*a*x+(-a^2*x^2+1)^(1/2))+3*I*arcsin(a*x)^2*polylog(2,-I*a*
x-(-a^2*x^2+1)^(1/2))-3*I*arcsin(a*x)^2*polylog(2,I*a*x+(-a^2*x^2+1)^(1/2))
-6*I*polylog(4,-I*a*x-(-a^2*x^2+1)^(1/2))+6*I*polylog(4,I*a*x+(-a^2*x^2+1)^
(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^3}{\sqrt{-a^2x^2+1}\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/x/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(arcsin(a*x)^3/(sqrt(-a^2*x^2 + 1)*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\mathrm{asin}(a\,x)^3}{x\,\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^3/(x*(1 - a^2*x^2)^(1/2)),x)
```

```
[Out] int(asin(a*x)^3/(x*(1 - a^2*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\mathrm{asin}^3(ax)}{x\sqrt{-(ax-1)(ax+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**3/x/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(asin(a*x)**3/(x*sqrt(-(a*x - 1)*(a*x + 1))), x)
```

3.309 $\int \frac{\sin^{-1}(ax)^3}{x^2\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=99

$$-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{x}-3ia\sin^{-1}(ax)\text{Li}_2\left(e^{2i\sin^{-1}(ax)}\right)+\frac{3}{2}a\text{Li}_3\left(e^{2i\sin^{-1}(ax)}\right)-ia\sin^{-1}(ax)^3+3a\sin^{-1}(ax)^2\log\left(1-e\right.$$

```
[Out] -I*a*arcsin(a*x)^3+3*a*arcsin(a*x)^2*ln(1-(I*a*x+(-a^2*x^2+1)^(1/2))^2)-3*I
*a*arcsin(a*x)*polylog(2,(I*a*x+(-a^2*x^2+1)^(1/2))^2)+3/2*a*polylog(3,(I*a
*x+(-a^2*x^2+1)^(1/2))^2)-arcsin(a*x)^3*(-a^2*x^2+1)^(1/2)/x
```

Rubi [A] time = 0.18, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {4681, 4625, 3717, 2190, 2531, 2282, 6589}

$$-3ia\sin^{-1}(ax)\text{PolyLog}\left(2,e^{2i\sin^{-1}(ax)}\right)+\frac{3}{2}a\text{PolyLog}\left(3,e^{2i\sin^{-1}(ax)}\right)-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{x}-ia\sin^{-1}(ax)^3+3a\sin^{-}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a*x]^3/(x^2*Sqrt[1 - a^2*x^2]),x]
```

```
[Out] (-I)*a*ArcSin[a*x]^3 - (Sqrt[1 - a^2*x^2]*ArcSin[a*x]^3)/x + 3*a*ArcSin[a*x
]^2*Log[1 - E^((2*I)*ArcSin[a*x])] - (3*I)*a*ArcSin[a*x]*PolyLog[2, E^((2*I
)*ArcSin[a*x])] + (3*a*PolyLog[3, E^((2*I)*ArcSin[a*x])])/2
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4681

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^F
racPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c
^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d,
 e, f, m, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] &
& NeQ[m, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sin^{-1}(ax)^3}{x^2\sqrt{1-a^2x^2}}\,dx &= -\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{x}+(3a)\int \frac{\sin^{-1}(ax)^2}{x}\,dx\\
&= -\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{x}+(3a)\,\text{Subst}\left(\int x^2\cot(x)\,dx,x,\sin^{-1}(ax)\right)\\
&= -ia\sin^{-1}(ax)^3-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{x}-(6ia)\,\text{Subst}\left(\int \frac{e^{2ix}x^2}{1-e^{2ix}}\,dx,x,\sin^{-1}(ax)\right)\\
&= -ia\sin^{-1}(ax)^3-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{x}+3a\sin^{-1}(ax)^2\log\left(1-e^{2i\sin^{-1}(ax)}\right)-(6a)\,\text{Subst}\\
&= -ia\sin^{-1}(ax)^3-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{x}+3a\sin^{-1}(ax)^2\log\left(1-e^{2i\sin^{-1}(ax)}\right)-3ia\sin^{-1}(a\\
&= -ia\sin^{-1}(ax)^3-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{x}+3a\sin^{-1}(ax)^2\log\left(1-e^{2i\sin^{-1}(ax)}\right)-3ia\sin^{-1}(a\\
&= -ia\sin^{-1}(ax)^3-\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{x}+3a\sin^{-1}(ax)^2\log\left(1-e^{2i\sin^{-1}(ax)}\right)-3ia\sin^{-1}(a
\end{aligned}$$

Mathematica [A] time = 0.24, size = 108, normalized size = 1.09

$$\frac{1}{8}a\left(-\frac{8\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{ax}+24i\sin^{-1}(ax)\text{Li}_2\left(e^{-2i\sin^{-1}(ax)}\right)+12\text{Li}_3\left(e^{-2i\sin^{-1}(ax)}\right)+8i\sin^{-1}(ax)^3+24\sin^{-1}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcSin[a*x]^3/(x^2*Sqrt[1 - a^2*x^2]),x]
```

```
[Out] (a*((-I)*Pi^3 + (8*I)*ArcSin[a*x]^3 - (8*Sqrt[1 - a^2*x^2]*ArcSin[a*x]^3)/(
a*x) + 24*ArcSin[a*x]^2*Log[1 - E^((-2*I)*ArcSin[a*x])] + (24*I)*ArcSin[a*x
]*PolyLog[2, E^((-2*I)*ArcSin[a*x])] + 12*PolyLog[3, E^((-2*I)*ArcSin[a*x])
]))/8
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-a^2x^2+1}\,\arcsin(ax)^3}{a^2x^4-x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/x^2/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-a^2*x^2 + 1)*arcsin(a*x)^3/(a^2*x^4 - x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^3}{\sqrt{-a^2x^2+1}\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/x^2/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(arcsin(a*x)^3/(sqrt(-a^2*x^2 + 1)*x^2), x)
```

maple [A] time = 0.23, size = 208, normalized size = 2.10

$$\frac{\left(iax-\sqrt{-a^2x^2+1}\right)\arcsin(ax)^3}{x}-2i\arcsin(ax)^3\,a+3\ln\left(1-iax-\sqrt{-a^2x^2+1}\right)\arcsin(ax)^2\,a-6i\operatorname{polylog}\left(2,ia\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^3/x^2/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] (I*a*x-(-a^2*x^2+1)^(1/2))/x*arcsin(a*x)^3-2*I*arcsin(a*x)^3*a+3*ln(1-I*a*x
-(-a^2*x^2+1)^(1/2))*arcsin(a*x)^2*a-6*I*polylog(2,I*a*x+(-a^2*x^2+1)^(1/2)
)*arcsin(a*x)*a+3*ln(1+I*a*x+(-a^2*x^2+1)^(1/2))*arcsin(a*x)^2*a-6*I*polylo
g(2,-I*a*x-(-a^2*x^2+1)^(1/2))*arcsin(a*x)*a+6*polylog(3,-I*a*x-(-a^2*x^2+1
)^(1/2))*a+6*polylog(3,I*a*x+(-a^2*x^2+1)^(1/2))*a
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\frac{3}{8}\left(x^2\arctan\left(ax,\sqrt{ax+1}\sqrt{-ax+1}\right)^2+8\int\frac{\sqrt{ax+1}\sqrt{-ax+1}\,ax^2\arctan\left(ax,\sqrt{ax+1}\sqrt{-ax+1}\right)+3\left(a^2x^3-x\right)\arctan\left(ax,\sqrt{ax+1}\sqrt{-ax+1}\right)}{4\left(a^2x^2-1\right)}\right.}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/x^2/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] (3*a^3*x*integrate(x*arctan2(a*x, sqrt(a*x + 1)*sqrt(-a*x + 1))^2, x) - sqr
t(a*x + 1)*sqrt(-a*x + 1)*arctan2(a*x, sqrt(a*x + 1)*sqrt(-a*x + 1))^3)/x
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\mathrm{asin}(a\,x)^3}{x^2\,\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^3/(x^2*(1 - a^2*x^2)^(1/2)),x)
```

```
[Out] int(asin(a*x)^3/(x^2*(1 - a^2*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}^3(ax)}{x^2\sqrt{-(ax-1)(ax+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**3/x**2/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(asin(a*x)**3/(x**2*sqrt(-(a*x - 1)*(a*x + 1))), x)
```

3.310 $\int \frac{\sin^{-1}(ax)^3}{x^3\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=264

$$\frac{3}{2}ia^2\sin^{-1}(ax)^2\text{Li}_2\left(-e^{i\sin^{-1}(ax)}\right)-\frac{3}{2}ia^2\sin^{-1}(ax)^2\text{Li}_2\left(e^{i\sin^{-1}(ax)}\right)-3a^2\sin^{-1}(ax)\text{Li}_3\left(-e^{i\sin^{-1}(ax)}\right)+3a^2\sin^{-1}(ax)\text{I}$$

```
[Out] -3/2*a*arcsin(a*x)^2/x-6*a^2*arcsin(a*x)*arctanh(I*a*x+(-a^2*x^2+1)^(1/2))-
a^2*arcsin(a*x)^3*arctanh(I*a*x+(-a^2*x^2+1)^(1/2))+3*I*a^2*polylog(2,-I*a*
x-(-a^2*x^2+1)^(1/2))+3/2*I*a^2*arcsin(a*x)^2*polylog(2,-I*a*x-(-a^2*x^2+1)
^(1/2))-3*I*a^2*polylog(2,I*a*x+(-a^2*x^2+1)^(1/2))-3/2*I*a^2*arcsin(a*x)^2
*polylog(2,I*a*x+(-a^2*x^2+1)^(1/2))-3*a^2*arcsin(a*x)*polylog(3,-I*a*x-(-a
^2*x^2+1)^(1/2))+3*a^2*arcsin(a*x)*polylog(3,I*a*x+(-a^2*x^2+1)^(1/2))-3*I*
a^2*polylog(4,-I*a*x-(-a^2*x^2+1)^(1/2))+3*I*a^2*polylog(4,I*a*x+(-a^2*x^2+
1)^(1/2))-1/2*arcsin(a*x)^3*(-a^2*x^2+1)^(1/2)/x^2
```

Rubi [A] time = 0.36, antiderivative size = 264, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 10, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.417, Rules used = {4701, 4709, 4183, 2531, 6609, 2282, 6589, 4627, 2279, 2391}

$$\frac{3}{2}ia^2\sin^{-1}(ax)^2\text{PolyLog}\left(2,-e^{i\sin^{-1}(ax)}\right)-\frac{3}{2}ia^2\sin^{-1}(ax)^2\text{PolyLog}\left(2,e^{i\sin^{-1}(ax)}\right)-3a^2\sin^{-1}(ax)\text{PolyLog}\left(3,-e^{i}\right.$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a*x]^3/(x^3*Sqrt[1 - a^2*x^2]),x]
```

```
[Out] (-3*a*ArcSin[a*x]^2)/(2*x) - (Sqrt[1 - a^2*x^2]*ArcSin[a*x]^3)/(2*x^2) - 6*
a^2*ArcSin[a*x]*ArcTanh[E^(I*ArcSin[a*x])] - a^2*ArcSin[a*x]^3*ArcTanh[E^(I
*ArcSin[a*x])] + (3*I)*a^2*PolyLog[2, -E^(I*ArcSin[a*x])] + ((3*I)/2)*a^2*A
rcSin[a*x]^2*PolyLog[2, -E^(I*ArcSin[a*x])] - (3*I)*a^2*PolyLog[2, E^(I*Arc
Sin[a*x])] - ((3*I)/2)*a^2*ArcSin[a*x]^2*PolyLog[2, E^(I*ArcSin[a*x])] - 3*
a^2*ArcSin[a*x]*PolyLog[3, -E^(I*ArcSin[a*x])] + 3*a^2*ArcSin[a*x]*PolyLog[
3, E^(I*ArcSin[a*x])] - (3*I)*a^2*PolyLog[4, -E^(I*ArcSin[a*x])] + (3*I)*a^
2*PolyLog[4, E^(I*ArcSin[a*x])]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
```

```
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{\sin^{-1}(ax)^3}{x^3\sqrt{1-a^2x^2}}\,dx = -\frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{2x^2} + \frac{1}{2}(3a)\int \frac{\sin^{-1}(ax)^2}{x^2}\,dx + \frac{1}{2}a^2\int \frac{\sin^{-1}(ax)^3}{x\sqrt{1-a^2x^2}}\,dx$$

$$= -\frac{3a\sin^{-1}(ax)^2}{2x} - \frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{2x^2} + \frac{1}{2}a^2\,\text{Subst}\left(\int x^3\csc(x)\,dx, x, \sin^{-1}(ax)\right) + (3$$

$$= -\frac{3a\sin^{-1}(ax)^2}{2x} - \frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{2x^2} - a^2\sin^{-1}(ax)^3\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right) - \frac{1}{2}\left(3a^2\right)\text{Su}$$

$$= -\frac{3a\sin^{-1}(ax)^2}{2x} - \frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{2x^2} - 6a^2\sin^{-1}(ax)\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right) - a^2\sin^{-1}(a$$

$$= -\frac{3a\sin^{-1}(ax)^2}{2x} - \frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{2x^2} - 6a^2\sin^{-1}(ax)\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right) - a^2\sin^{-1}(a$$

$$= -\frac{3a\sin^{-1}(ax)^2}{2x} - \frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{2x^2} - 6a^2\sin^{-1}(ax)\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right) - a^2\sin^{-1}(a$$

$$= -\frac{3a\sin^{-1}(ax)^2}{2x} - \frac{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^3}{2x^2} - 6a^2\sin^{-1}(ax)\tanh^{-1}\left(e^{i\sin^{-1}(ax)}\right) - a^2\sin^{-1}(a$$

Mathematica [A] time = 5.04, size = 317, normalized size = 1.20

$$\frac{1}{16}a^2\left(24i\sin^{-1}(ax)^2\text{Li}_2\left(e^{-i\sin^{-1}(ax)}\right) + 48\sin^{-1}(ax)\text{Li}_3\left(e^{-i\sin^{-1}(ax)}\right) - 48\sin^{-1}(ax)\text{Li}_3\left(-e^{i\sin^{-1}(ax)}\right) + 24i\left(\sin^{-}\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcSin[a*x]^3/(x^3*Sqrt[1 - a^2*x^2]),x]
```

```
[Out] (a^2*((-I)*Pi^4 + (2*I)*ArcSin[a*x]^4 - 12*ArcSin[a*x]^2*Cot[ArcSin[a*x]/2]
 - 2*ArcSin[a*x]^3*Csc[ArcSin[a*x]/2]^2 + 8*ArcSin[a*x]^3*Log[1 - E^((-I)*A
rcSin[a*x])] + 48*ArcSin[a*x]*Log[1 - E^(I*ArcSin[a*x])] - 48*ArcSin[a*x]*L
og[1 + E^(I*ArcSin[a*x])] - 8*ArcSin[a*x]^3*Log[1 + E^(I*ArcSin[a*x])] + (2
4*I)*ArcSin[a*x]^2*PolyLog[2, E^((-I)*ArcSin[a*x])] + (24*I)*(2 + ArcSin[a*
x]^2)*PolyLog[2, -E^(I*ArcSin[a*x])] - (48*I)*PolyLog[2, E^(I*ArcSin[a*x])]
 + 48*ArcSin[a*x]*PolyLog[3, E^((-I)*ArcSin[a*x])] - 48*ArcSin[a*x]*PolyLog
[3, -E^(I*ArcSin[a*x])] - (48*I)*PolyLog[4, E^((-I)*ArcSin[a*x])] - (48*I)*
PolyLog[4, -E^(I*ArcSin[a*x])] + 2*ArcSin[a*x]^3*Sec[ArcSin[a*x]/2]^2 - 12*
ArcSin[a*x]^2*Tan[ArcSin[a*x]/2]))/16
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-a^2x^2+1}\,\arcsin(ax)^3}{a^2x^5-x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/x^3/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-a^2*x^2 + 1)*arcsin(a*x)^3/(a^2*x^5 - x^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^3}{\sqrt{-a^2x^2+1}\,x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^3/x^3/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

[Out] integrate(arcsin(a*x)^3/(sqrt(-a^2*x^2 + 1)*x^3), x)

maple [A] time = 0.35, size = 428, normalized size = 1.62

$$-\frac{\sqrt{-a^{2}x^{2}+1}\ \arcsin\left(ax\right)^{2}\left(a^{2}x^{2}\arcsin\left(ax\right)-3ax\sqrt{-a^{2}x^{2}+1}\ -\arcsin\left(ax\right)\right)}{2\left(a^{2}x^{2}-1\right)x^{2}}-\frac{\ln\left(1+iax+\sqrt{-a^{2}x^{2}+1}\right)\operatorname{arcsir}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(arcsin(a*x)^3/x^3/(-a^2*x^2+1)^(1/2),x)

[Out] -1/2*(-a^2*x^2+1)^(1/2)/(a^2*x^2-1)/x^2*arcsin(a*x)^2*(a^2*x^2*arcsin(a*x)-3*a*x*(-a^2*x^2+1)^(1/2)-arcsin(a*x))-1/2*ln(1+I*a*x+(-a^2*x^2+1)^(1/2))*arcsin(a*x)^3*a^2+1/2*ln(1-I*a*x-(-a^2*x^2+1)^(1/2))*arcsin(a*x)^3*a^2-3*a^2*arcsin(a*x)*ln(1+I*a*x+(-a^2*x^2+1)^(1/2))+3/2*I*a^2*arcsin(a*x)^2*polylog(2,-I*a*x-(-a^2*x^2+1)^(1/2))-3*a^2*arcsin(a*x)*polylog(3,-I*a*x-(-a^2*x^2+1)^(1/2))+3*a^2*arcsin(a*x)*ln(1-I*a*x-(-a^2*x^2+1)^(1/2))-3/2*I*a^2*arcsin(a*x)^2*polylog(2,I*a*x+(-a^2*x^2+1)^(1/2))+3*a^2*arcsin(a*x)*polylog(3,I*a*x+(-a^2*x^2+1)^(1/2))+3*I*a^2*polylog(2,-I*a*x-(-a^2*x^2+1)^(1/2))-3*I*a^2*polylog(4,-I*a*x-(-a^2*x^2+1)^(1/2))-3*I*a^2*polylog(2,I*a*x+(-a^2*x^2+1)^(1/2))+3*I*a^2*polylog(4,I*a*x+(-a^2*x^2+1)^(1/2))

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin\left(ax\right)^{3}}{\sqrt{-a^{2}x^{2}+1}\,x^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(arcsin(a*x)^3/x^3/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")

[Out] integrate(arcsin(a*x)^3/(sqrt(-a^2*x^2 + 1)*x^3), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\operatorname{asin}\left(a\,x\right)^{3}}{x^{3}\,\sqrt{1-a^{2}\,x^{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(asin(a*x)^3/(x^3*(1 - a^2*x^2)^(1/2)),x)

[Out] int(asin(a*x)^3/(x^3*(1 - a^2*x^2)^(1/2)), x)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}^{3}\left(ax\right)}{x^{3}\sqrt{-\left(ax-1\right)\left(ax+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(asin(a*x)**3/x**3/(-a**2*x**2+1)**(1/2),x)

[Out] Integral(asin(a*x)**3/(x**3*sqrt(-(a*x - 1)*(a*x + 1))), x)

3.311 $\int \frac{\left(c-a^2cx^2\right)^3}{\sin^{-1}(ax)}\,dx$

Optimal. Leaf size=67

$$\frac{35c^3\text{Ci}\left(\sin^{-1}(ax)\right)}{64a}+\frac{21c^3\text{Ci}\left(3\sin^{-1}(ax)\right)}{64a}+\frac{7c^3\text{Ci}\left(5\sin^{-1}(ax)\right)}{64a}+\frac{c^3\text{Ci}\left(7\sin^{-1}(ax)\right)}{64a}$$

```
[Out] 35/64*c^3*Ci(arcsin(a*x))/a+21/64*c^3*Ci(3*arcsin(a*x))/a+7/64*c^3*Ci(5*arc
sin(a*x))/a+1/64*c^3*Ci(7*arcsin(a*x))/a
```

Rubi [A] time = 0.11, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.150, Rules used = {4661, 3312, 3302}

$$\frac{35c^3\text{CosIntegral}\left(\sin^{-1}(ax)\right)}{64a}+\frac{21c^3\text{CosIntegral}\left(3\sin^{-1}(ax)\right)}{64a}+\frac{7c^3\text{CosIntegral}\left(5\sin^{-1}(ax)\right)}{64a}+\frac{c^3\text{CosIntegra}}{6}$$

Antiderivative was successfully verified.

```
[In] Int[(c - a^2*c*x^2)^3/ArcSin[a*x],x]
```

```
[Out] (35*c^3*CosIntegral[ArcSin[a*x]])/(64*a) + (21*c^3*CosIntegral[3*ArcSin[a*x
]])/(64*a) + (7*c^3*CosIntegral[5*ArcSin[a*x]])/(64*a) + (c^3*CosIntegral[7
*ArcSin[a*x]])/(64*a)
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 4661

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[d^p/c, Subst[Int[(a + b*x)^n*Cos[x]^(2*p + 1), x], x, ArcS
in[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IGtQ[2
*p, 0] && (IntegerQ[p] || GtQ[d, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(c-a^2cx^2\right)^3}{\sin^{-1}(ax)}\,dx &= \frac{c^3\,\text{Subst}\left(\int \frac{\cos^7(x)}{x}\,dx,x,\sin^{-1}(ax)\right)}{a}\\
&= \frac{c^3\,\text{Subst}\left(\int \left(\frac{35\cos(x)}{64x}+\frac{21\cos(3x)}{64x}+\frac{7\cos(5x)}{64x}+\frac{\cos(7x)}{64x}\right)dx,x,\sin^{-1}(ax)\right)}{a}\\
&= \frac{c^3\,\text{Subst}\left(\int \frac{\cos(7x)}{x}\,dx,x,\sin^{-1}(ax)\right)}{64a}+\frac{\left(7c^3\right)\text{Subst}\left(\int \frac{\cos(5x)}{x}\,dx,x,\sin^{-1}(ax)\right)}{64a}+\frac{\left(21c^3\right)\text{S}}{}\\
&= \frac{35c^3\text{Ci}\left(\sin^{-1}(ax)\right)}{64a}+\frac{21c^3\text{Ci}\left(3\sin^{-1}(ax)\right)}{64a}+\frac{7c^3\text{Ci}\left(5\sin^{-1}(ax)\right)}{64a}+\frac{c^3\text{Ci}\left(7\sin^{-1}(ax)\right)}{64a}
\end{aligned}$$

Mathematica [A] time = 0.15, size = 43, normalized size = 0.64

$$\frac{c^3\left(35\text{Ci}\left(\sin^{-1}(ax)\right)+21\text{Ci}\left(3\sin^{-1}(ax)\right)+7\text{Ci}\left(5\sin^{-1}(ax)\right)+\text{Ci}\left(7\sin^{-1}(ax)\right)\right)}{64a}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - a^2*c*x^2)^3/ArcSin[a*x],x]
```

```
[Out] (c^3*(35*CosIntegral[ArcSin[a*x]] + 21*CosIntegral[3*ArcSin[a*x]] + 7*CosIn
tegral[5*ArcSin[a*x]] + CosIntegral[7*ArcSin[a*x]]))/(64*a)
```

fricas [F] time = 0.41, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{a^6c^3x^6-3\,a^4c^3x^4+3\,a^2c^3x^2-c^3}{\arcsin(ax)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^3/arcsin(a*x),x, algorithm="fricas")
```

```
[Out] integral(-(a^6*c^3*x^6 - 3*a^4*c^3*x^4 + 3*a^2*c^3*x^2 - c^3)/arcsin(a*x),
x)
```

giac [A] time = 0.44, size = 59, normalized size = 0.88

$$\frac{c^3\,\text{Ci}\,(7\,\arcsin(ax))}{64\,a}+\frac{7\,c^3\,\text{Ci}\,(5\,\arcsin(ax))}{64\,a}+\frac{21\,c^3\,\text{Ci}\,(3\,\arcsin(ax))}{64\,a}+\frac{35\,c^3\,\text{Ci}\,(\arcsin(ax))}{64\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^3/arcsin(a*x),x, algorithm="giac")
```

```
[Out] 1/64*c^3*cos_integral(7*arcsin(a*x))/a + 7/64*c^3*cos_integral(5*arcsin(a*x
))/a + 21/64*c^3*cos_integral(3*arcsin(a*x))/a + 35/64*c^3*cos_integral(arc
sin(a*x))/a
```

maple [A] time = 0.12, size = 42, normalized size = 0.63

$$\frac{c^3\,(35\,\text{Ci}\,(\arcsin(ax))+21\,\text{Ci}\,(3\arcsin(ax))+7\,\text{Ci}\,(5\arcsin(ax))+\text{Ci}\,(7\arcsin(ax)))}{64a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)^3/arcsin(a*x),x)
```

```
[Out] 1/64/a*c^3*(35*Ci(arcsin(a*x))+21*Ci(3*arcsin(a*x))+7*Ci(5*arcsin(a*x))+Ci(
7*arcsin(a*x)))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{\left(a^2cx^2-c\right)^3}{\arcsin(ax)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^3/arcsin(a*x),x, algorithm="maxima")
```

```
[Out] -integrate((a^2*c*x^2 - c)^3/arcsin(a*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{\left(c-a^2\,c\,x^2\right)^3}{\mathrm{asin}(a\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - a^2*c*x^2)^3/asin(a*x),x)
```

```
[Out] int((c - a^2*c*x^2)^3/asin(a*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-c^{3}\left(\int\frac{3a^{2}x^{2}}{\operatorname{asin}(ax)}\,dx+\int\left(-\frac{3a^{4}x^{4}}{\operatorname{asin}(ax)}\right)dx+\int\frac{a^{6}x^{6}}{\operatorname{asin}(ax)}\,dx+\int\left(-\frac{1}{\operatorname{asin}(ax)}\right)dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)**3/asin(a*x),x)
```

```
[Out] -c**3*(Integral(3*a**2*x**2/asin(a*x), x) + Integral(-3*a**4*x**4/asin(a*x)
, x) + Integral(a**6*x**6/asin(a*x), x) + Integral(-1/asin(a*x), x))
```

3.312 $\int \frac{(c-a^2cx^2)^2}{\sin^{-1}(ax)}\,dx$

Optimal. Leaf size=50

$$\frac{5c^2\text{Ci}\left(\sin^{-1}(ax)\right)}{8a}+\frac{5c^2\text{Ci}\left(3\sin^{-1}(ax)\right)}{16a}+\frac{c^2\text{Ci}\left(5\sin^{-1}(ax)\right)}{16a}$$

```
[Out] 5/8*c^2*Ci(arcsin(a*x))/a+5/16*c^2*Ci(3*arcsin(a*x))/a+1/16*c^2*Ci(5*arcsin
(a*x))/a
```

Rubi [A] time = 0.09, antiderivative size = 50, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.150$, Rules used = {4661, 3312, 3302}

$$\frac{5c^2\text{CosIntegral}\left(\sin^{-1}(ax)\right)}{8a}+\frac{5c^2\text{CosIntegral}\left(3\sin^{-1}(ax)\right)}{16a}+\frac{c^2\text{CosIntegral}\left(5\sin^{-1}(ax)\right)}{16a}$$

Antiderivative was successfully verified.

```
[In] Int[(c - a^2*c*x^2)^2/ArcSin[a*x],x]
```

```
[Out] (5*c^2*CosIntegral[ArcSin[a*x]])/(8*a) + (5*c^2*CosIntegral[3*ArcSin[a*x]])
/(16*a) + (c^2*CosIntegral[5*ArcSin[a*x]])/(16*a)
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 4661

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[d^p/c, Subst[Int[(a + b*x)^n*Cos[x]^(2*p + 1), x], x, ArcS
in[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IGtQ[2
*p, 0] && (IntegerQ[p] || GtQ[d, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(c-a^2cx^2)^2}{\sin^{-1}(ax)}\,dx &= \frac{c^2\,\text{Subst}\left(\int \frac{\cos^5(x)}{x}\,dx,x,\sin^{-1}(ax)\right)}{a}\\
&= \frac{c^2\,\text{Subst}\left(\int \left(\frac{5\cos(x)}{8x}+\frac{5\cos(3x)}{16x}+\frac{\cos(5x)}{16x}\right)dx,x,\sin^{-1}(ax)\right)}{a}\\
&= \frac{c^2\,\text{Subst}\left(\int \frac{\cos(5x)}{x}\,dx,x,\sin^{-1}(ax)\right)}{16a}+\frac{\left(5c^2\right)\text{Subst}\left(\int \frac{\cos(3x)}{x}\,dx,x,\sin^{-1}(ax)\right)}{16a}+\frac{\left(5c^2\right)\text{Subst}}{}\\
&= \frac{5c^2\text{Ci}\left(\sin^{-1}(ax)\right)}{8a}+\frac{5c^2\text{Ci}\left(3\sin^{-1}(ax)\right)}{16a}+\frac{c^2\text{Ci}\left(5\sin^{-1}(ax)\right)}{16a}
\end{aligned}$$

Mathematica [A] time = 0.09, size = 34, normalized size = 0.68

$$\frac{c^2 \left(10\text{Ci}\left(\sin^{-1}(ax)\right)+5\text{Ci}\left(3\sin^{-1}(ax)\right)+\text{Ci}\left(5\sin^{-1}(ax)\right)\right)}{16a}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - a^2*c*x^2)^2/ArcSin[a*x],x]
```

```
[Out] (c^2*(10*CosIntegral[ArcSin[a*x]] + 5*CosIntegral[3*ArcSin[a*x]] + CosInteg
ral[5*ArcSin[a*x]]))/(16*a)
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{a^4c^2x^4-2\,a^2c^2x^2+c^2}{\arcsin\left(ax\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^2/arcsin(a*x),x, algorithm="fricas")
```

```
[Out] integral((a^4*c^2*x^4 - 2*a^2*c^2*x^2 + c^2)/arcsin(a*x), x)
```

giac [A] time = 0.35, size = 44, normalized size = 0.88

$$\frac{c^2\,\text{Ci}\left(5\ \arcsin\left(ax\right)\right)}{16\,a}+\frac{5\,c^2\,\text{Ci}\left(3\ \arcsin\left(ax\right)\right)}{16\,a}+\frac{5\,c^2\,\text{Ci}\left(\arcsin\left(ax\right)\right)}{8\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^2/arcsin(a*x),x, algorithm="giac")
```

```
[Out] 1/16*c^2*cos_integral(5*arcsin(a*x))/a + 5/16*c^2*cos_integral(3*arcsin(a*x
))/a + 5/8*c^2*cos_integral(arcsin(a*x))/a
```

maple [A] time = 0.06, size = 33, normalized size = 0.66

$$\frac{c^2\left(10\,\text{Ci}\left(\arcsin\left(ax\right)\right)+5\,\text{Ci}\left(3\arcsin\left(ax\right)\right)+\text{Ci}\left(5\arcsin\left(ax\right)\right)\right)}{16a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)^2/arcsin(a*x),x)
```

```
[Out] 1/16/a*c^2*(10*Ci(arcsin(a*x))+5*Ci(3*arcsin(a*x))+Ci(5*arcsin(a*x)))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a^2cx^2-c\right)^2}{\arcsin\left(ax\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^2/arcsin(a*x),x, algorithm="maxima")
```

```
[Out] integrate((a^2*c*x^2 - c)^2/arcsin(a*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\left(c-a^2\,c\,x^2\right)^2}{\mathrm{asin}\left(a\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - a^2*c*x^2)^2/asin(a*x),x)
```

```
[Out] int((c - a^2*c*x^2)^2/asin(a*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$c^2\left(\int\left(-\frac{2a^2x^2}{\operatorname{asin}(ax)}\right)dx+\int\frac{a^4x^4}{\operatorname{asin}(ax)}\,dx+\int\frac{1}{\operatorname{asin}(ax)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)**2/asin(a*x),x)
```

```
[Out] c**2*(Integral(-2*a**2*x**2/asin(a*x), x) + Integral(a**4*x**4/asin(a*x), x
) + Integral(1/asin(a*x), x))
```

3.313 $\int \frac{c-a^2cx^2}{\sin^{-1}(ax)}\,dx$

Optimal. Leaf size=29

$$\frac{3c\,\text{Ci}\left(\sin^{-1}(ax)\right)}{4a}+\frac{c\,\text{Ci}\left(3\sin^{-1}(ax)\right)}{4a}$$

```
[Out] 3/4*c*Ci(arcsin(a*x))/a+1/4*c*Ci(3*arcsin(a*x))/a
```

Rubi [A] time = 0.06, antiderivative size = 29, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {4661, 3312, 3302}

$$\frac{3c\,\text{CosIntegral}\left(\sin^{-1}(ax)\right)}{4a}+\frac{c\,\text{CosIntegral}\left(3\sin^{-1}(ax)\right)}{4a}$$

Antiderivative was successfully verified.

```
[In] Int[(c - a^2*c*x^2)/ArcSin[a*x],x]
```

```
[Out] (3*c*CosIntegral[ArcSin[a*x]])/(4*a) + (c*CosIntegral[3*ArcSin[a*x]])/(4*a)
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 4661

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[d^p/c, Subst[Int[(a + b*x)^n*Cos[x]^(2*p + 1), x], x, ArcS
in[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IGtQ[2
*p, 0] && (IntegerQ[p] || GtQ[d, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{c-a^2cx^2}{\sin^{-1}(ax)}\,dx &= \frac{c\,\text{Subst}\left(\int \frac{\cos^3(x)}{x}\,dx,x,\sin^{-1}(ax)\right)}{a}\\
&= \frac{c\,\text{Subst}\left(\int \left(\frac{3\cos(x)}{4x}+\frac{\cos(3x)}{4x}\right)dx,x,\sin^{-1}(ax)\right)}{a}\\
&= \frac{c\,\text{Subst}\left(\int \frac{\cos(3x)}{x}\,dx,x,\sin^{-1}(ax)\right)}{4a}+\frac{(3c)\,\text{Subst}\left(\int \frac{\cos(x)}{x}\,dx,x,\sin^{-1}(ax)\right)}{4a}\\
&= \frac{3c\,\text{Ci}\left(\sin^{-1}(ax)\right)}{4a}+\frac{c\,\text{Ci}\left(3\sin^{-1}(ax)\right)}{4a}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 23, normalized size = 0.79

$$\frac{c\left(3\text{Ci}\left(\sin^{-1}(ax)\right)+\text{Ci}\left(3\sin^{-1}(ax)\right)\right)}{4a}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - a^2*c*x^2)/ArcSin[a*x],x]
[Out] (c*(3*CosIntegral[ArcSin[a*x]] + CosIntegral[3*ArcSin[a*x]]))/(4*a)
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{a^2cx^2-c}{\arcsin(ax)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)/arcsin(a*x),x, algorithm="fricas")
[Out] integral(-(a^2*c*x^2 - c)/arcsin(a*x), x)
```

giac [A] time = 0.36, size = 25, normalized size = 0.86

$$\frac{c\,\text{Ci}(3\,\arcsin(ax))}{4\,a}+\frac{3\,c\,\text{Ci}(\arcsin(ax))}{4\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)/arcsin(a*x),x, algorithm="giac")
[Out] 1/4*c*cos_integral(3*arcsin(a*x))/a + 3/4*c*cos_integral(arcsin(a*x))/a
```

maple [A] time = 0.06, size = 22, normalized size = 0.76

$$\frac{c\,(3\,\text{Ci}(\arcsin(ax))+\text{Ci}(3\arcsin(ax)))}{4a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)/arcsin(a*x),x)
[Out] 1/4/a*c*(3*Ci(arcsin(a*x))+Ci(3*arcsin(a*x)))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{a^2cx^2-c}{\arcsin(ax)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)/arcsin(a*x),x, algorithm="maxima")
[Out] -integrate((a^2*c*x^2 - c)/arcsin(a*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int\frac{c-a^2\,c\,x^2}{\mathrm{asin}(a\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - a^2*c*x^2)/asin(a*x),x)
```

```
[Out] int((c - a^2*c*x^2)/asin(a*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-c\left(\int \frac{a^2x^2}{\operatorname{asin}(ax)}\,dx + \int \left(-\frac{1}{\operatorname{asin}(ax)}\right)dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)/asin(a*x),x)
[Out] -c*(Integral(a**2*x**2/asin(a*x), x) + Integral(-1/asin(a*x), x))
```

3.314 $\int \frac{1}{(c-a^2cx^2)\sin^{-1}(ax)}\,dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{1}{(c-a^2cx^2)\sin^{-1}(ax)},x\right)$$

```
[Out] Unintegrable(1/(-a^2*c*x^2+c)/arcsin(a*x),x)
```

Rubi [A] time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(c-a^2cx^2)\sin^{-1}(ax)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c - a^2*c*x^2)*ArcSin[a*x]),x]
[Out] Defer[Int][1/((c - a^2*c*x^2)*ArcSin[a*x]), x]
```

Rubi steps

$$\int \frac{1}{(c-a^2cx^2)\sin^{-1}(ax)}\,dx=\int \frac{1}{(c-a^2cx^2)\sin^{-1}(ax)}\,dx$$

Mathematica [A] time = 2.72, size = 0, normalized size = 0.00

$$\int \frac{1}{(c-a^2cx^2)\sin^{-1}(ax)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c - a^2*c*x^2)*ArcSin[a*x]),x]
[Out] Integrate[1/((c - a^2*c*x^2)*ArcSin[a*x]), x]
```

fricas [A] time = 0.63, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{1}{(a^2cx^2-c)\arcsin(ax)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)/arcsin(a*x),x, algorithm="fricas")
[Out] integral(-1/((a^2*c*x^2 - c)*arcsin(a*x)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{1}{(a^2cx^2-c)\arcsin(ax)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)/arcsin(a*x),x, algorithm="giac")
[Out] integrate(-1/((a^2*c*x^2 - c)*arcsin(a*x)), x)
```

maple [A] time = 0.13, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-a^{2} c\, x^{2}+c \right) \arcsin \left(a x \right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-a^2*c*x^2+c)/arcsin(a*x),x)
[Out] int(1/(-a^2*c*x^2+c)/arcsin(a*x),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{1}{{\left(a^{2} c x^{2} - c\right)} \arcsin\left(a x\right)}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)/arcsin(a*x),x, algorithm="maxima")
[Out] -integrate(1/((a^2*c*x^2 - c)*arcsin(a*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\mathrm{asin}\left(a\,x\right)\,\left(c-a^2\,c\,x^2\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(asin(a*x)*(c - a^2*c*x^2)),x)
[Out] int(1/(asin(a*x)*(c - a^2*c*x^2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$- \frac{\int \frac{1}{a^{2} x^{2} \operatorname{asin}{\left (a x \right)} - \operatorname{asin}{\left (a x \right)}}\, dx}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a**2*c*x**2+c)/asin(a*x),x)
[Out] -Integral(1/(a**2*x**2*asin(a*x) - asin(a*x)), x)/c
```

3.315 $\int \frac{1}{(c-a^2cx^2)^2 \sin^{-1}(ax)} \, dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{1}{(c-a^2cx^2)^2 \sin^{-1}(ax)}, x\right)$$

```
[Out] Unintegrable(1/(-a^2*c*x^2+c)^2/arcsin(a*x),x)
```

Rubi [A] time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(c-a^2cx^2)^2 \sin^{-1}(ax)} \, dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c - a^2*c*x^2)^2*ArcSin[a*x]),x]
[Out] Defer[Int][1/((c - a^2*c*x^2)^2*ArcSin[a*x]), x]
```

Rubi steps

$$\int \frac{1}{(c-a^2cx^2)^2 \sin^{-1}(ax)} \, dx = \int \frac{1}{(c-a^2cx^2)^2 \sin^{-1}(ax)} \, dx$$

Mathematica [A] time = 8.56, size = 0, normalized size = 0.00

$$\int \frac{1}{(c-a^2cx^2)^2 \sin^{-1}(ax)} \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c - a^2*c*x^2)^2*ArcSin[a*x]),x]
[Out] Integrate[1/((c - a^2*c*x^2)^2*ArcSin[a*x]), x]
```

fricas [A] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{(a^4c^2x^4 - 2\,a^2c^2x^2 + c^2) \arcsin(ax)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^2/arcsin(a*x),x, algorithm="fricas")
[Out] integral(1/((a^4*c^2*x^4 - 2*a^2*c^2*x^2 + c^2)*arcsin(a*x)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a^2cx^2 - c)^2 \arcsin(ax)} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^2/arcsin(a*x),x, algorithm="giac")
```

```
[Out] integrate(1/((a^2*c*x^2 - c)^2*arcsin(a*x)), x)
```

maple [A] time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-a^{2} c\,x^{2}+c\right)^{2} \arcsin\left(a x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-a^2*c*x^2+c)^2/arcsin(a*x),x)
[Out] int(1/(-a^2*c*x^2+c)^2/arcsin(a*x),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a^{2} c x^{2}-c\right)^{2} \arcsin\left(a x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^2/arcsin(a*x),x, algorithm="maxima")
[Out] integrate(1/((a^2*c*x^2 - c)^2*arcsin(a*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\mathrm{asin}\left(a\,x\right)\,{\left(c-a^2\,c\,x^2\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(asin(a*x)*(c - a^2*c*x^2)^2),x)
[Out] int(1/(asin(a*x)*(c - a^2*c*x^2)^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{1}{a^{4} x^{4} \operatorname{asin}{\left(a x \right)} - 2 a^{2} x^{2} \operatorname{asin}{\left(a x \right)} + \operatorname{asin}{\left(a x \right)}}\, dx}{c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a**2*c*x**2+c)**2/asin(a*x),x)
[Out] Integral(1/(a**4*x**4*asin(a*x) - 2*a**2*x**2*asin(a*x) + asin(a*x)), x)/c*
*2
```

3.316 $\int \frac{x^4\sqrt{1-c^2x^2}}{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=206

$$-\frac{\cos\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2(a+b\sin^{-1}(cx))}{b}\right)}{32bc^5}-\frac{\cos\left(\frac{4a}{b}\right)\text{Ci}\left(\frac{4(a+b\sin^{-1}(cx))}{b}\right)}{16bc^5}+\frac{\cos\left(\frac{6a}{b}\right)\text{Ci}\left(\frac{6(a+b\sin^{-1}(cx))}{b}\right)}{32bc^5}-\frac{\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2(a+b\sin^{-1}(cx)}{b}\right.}{32bc^5}$$

```
[Out] -1/32*Ci(2*(a+b*arcsin(c*x))/b)*cos(2*a/b)/b/c^5-1/16*Ci(4*(a+b*arcsin(c*x)
)/b)*cos(4*a/b)/b/c^5+1/32*Ci(6*(a+b*arcsin(c*x))/b)*cos(6*a/b)/b/c^5+1/16*
ln(a+b*arcsin(c*x))/b/c^5-1/32*Si(2*(a+b*arcsin(c*x))/b)*sin(2*a/b)/b/c^5-1
/16*Si(4*(a+b*arcsin(c*x))/b)*sin(4*a/b)/b/c^5+1/32*Si(6*(a+b*arcsin(c*x))/
b)*sin(6*a/b)/b/c^5
```

Rubi [A] time = 0.46, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {4723, 4406, 3303, 3299, 3302}

$$-\frac{\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{32bc^5}-\frac{\cos\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)}{16bc^5}+\frac{\cos\left(\frac{6a}{b}\right)\text{CosIntegral}\left(\frac{6a}{b}\right.}{32bc^5}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x]),x]
```

```
[Out] -(Cos[(2*a)/b]*CosIntegral[(2*a)/b + 2*ArcSin[c*x]])/(32*b*c^5) - (Cos[(4*a
)/b]*CosIntegral[(4*a)/b + 4*ArcSin[c*x]])/(16*b*c^5) + (Cos[(6*a)/b]*CosIn
tegral[(6*a)/b + 6*ArcSin[c*x]])/(32*b*c^5) + Log[a + b*ArcSin[c*x]]/(16*b*
c^5) - (Sin[(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c*x]])/(32*b*c^5) - (Si
n[(4*a)/b]*SinIntegral[(4*a)/b + 4*ArcSin[c*x]])/(16*b*c^5) + (Sin[(6*a)/b]
*SinIntegral[(6*a)/b + 6*ArcSin[c*x]])/(32*b*c^5)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x^4\sqrt{1-c^2x^2}}{a+b\sin^{-1}(cx)}\,dx = \frac{\text{Subst}\left(\int \frac{\cos^2(x)\sin^4(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c^5}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{1}{16(a+bx)} - \frac{\cos(2x)}{32(a+bx)} - \frac{\cos(4x)}{16(a+bx)} + \frac{\cos(6x)}{32(a+bx)}\right) dx, x, \sin^{-1}(cx)\right)}{c^5}$$
$$= \frac{\log\left(a+b\sin^{-1}(cx)\right)}{16bc^5} - \frac{\text{Subst}\left(\int \frac{\cos(2x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{32c^5} + \frac{\text{Subst}\left(\int \frac{\cos(6x)}{a+bx}\,dx, x, \sin^{-1}\right.}{32c^5}$$
$$= \frac{\log\left(a+b\sin^{-1}(cx)\right)}{16bc^5} - \frac{\cos\left(\frac{2a}{b}\right)\text{Subst}\left(\int \frac{\cos\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{32c^5} - \frac{\cos\left(\frac{4a}{b}\right)\text{Subs}}{}$$
$$= -\frac{\cos\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{32bc^5} - \frac{\cos\left(\frac{4a}{b}\right)\text{Ci}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)}{16bc^5} + \frac{\cos\left(\frac{6a}{b}\right)\text{Ci}\left(\frac{6a}{b}+\right.}{32bc^5}$$

Mathematica [A] time = 0.49, size = 152, normalized size = 0.74

$$-\frac{\cos\left(\frac{2a}{b}\right)\text{Ci}\left(2\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right) + 2\cos\left(\frac{4a}{b}\right)\text{Ci}\left(4\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right) - \cos\left(\frac{6a}{b}\right)\text{Ci}\left(6\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right) + \sin\left(\frac{2}{b}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x]),x]
```

```
[Out] -1/32*(Cos[(2*a)/b]*CosIntegral[2*(a/b + ArcSin[c*x])] + 2*Cos[(4*a)/b]*Cos
Integral[4*(a/b + ArcSin[c*x])] - Cos[(6*a)/b]*CosIntegral[6*(a/b + ArcSin[
c*x])] - 2*Log[a + b*ArcSin[c*x]] + Sin[(2*a)/b]*SinIntegral[2*(a/b + ArcSi
n[c*x])] + 2*Sin[(4*a)/b]*SinIntegral[4*(a/b + ArcSin[c*x])] - Sin[(6*a)/b]
*SinIntegral[6*(a/b + ArcSin[c*x])])/(b*c^5)
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}\,x^4}{b\arcsin(cx)+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*x^2 + 1)*x^4/(b*arcsin(c*x) + a), x)
```

giac [B] time = 0.42, size = 472, normalized size = 2.29

$$\frac{\cos\left(\frac{a}{b}\right)^6\text{Ci}\left(\frac{6a}{b}+6\arcsin(cx)\right)}{bc^5} + \frac{\cos\left(\frac{a}{b}\right)^5\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{6a}{b}+6\arcsin(cx)\right)}{bc^5} - \frac{3\cos\left(\frac{a}{b}\right)^4\text{Ci}\left(\frac{6a}{b}+6\arcsin(cx)\right)}{2bc^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] cos(a/b)^6*cos_integral(6*a/b + 6*arcsin(c*x))/(b*c^5) + cos(a/b)^5*sin(a/b
)*sin_integral(6*a/b + 6*arcsin(c*x))/(b*c^5) - 3/2*cos(a/b)^4*cos_integral
(6*a/b + 6*arcsin(c*x))/(b*c^5) - 1/2*cos(a/b)^4*cos_integral(4*a/b + 4*arc
sin(c*x))/(b*c^5) - cos(a/b)^3*sin(a/b)*sin_integral(6*a/b + 6*arcsin(c*x))
/(b*c^5) - 1/2*cos(a/b)^3*sin(a/b)*sin_integral(4*a/b + 4*arcsin(c*x))/(b*c
^5) + 9/16*cos(a/b)^2*cos_integral(6*a/b + 6*arcsin(c*x))/(b*c^5) + 1/2*cos
(a/b)^2*cos_integral(4*a/b + 4*arcsin(c*x))/(b*c^5) - 1/16*cos(a/b)^2*cos_i
ntegral(2*a/b + 2*arcsin(c*x))/(b*c^5) + 3/16*cos(a/b)*sin(a/b)*sin_integra
l(6*a/b + 6*arcsin(c*x))/(b*c^5) + 1/4*cos(a/b)*sin(a/b)*sin_integral(4*a/b
 + 4*arcsin(c*x))/(b*c^5) - 1/16*cos(a/b)*sin(a/b)*sin_integral(2*a/b + 2*a
rcsin(c*x))/(b*c^5) - 1/32*cos_integral(6*a/b + 6*arcsin(c*x))/(b*c^5) - 1/
16*cos_integral(4*a/b + 4*arcsin(c*x))/(b*c^5) + 1/32*cos_integral(2*a/b +
2*arcsin(c*x))/(b*c^5) + 1/16*log(b*arcsin(c*x) + a)/(b*c^5)
```

maple [A] time = 0.09, size = 193, normalized size = 0.94

$$-\frac{\mathrm{Si}\left(4\arcsin\left(cx\right)+\frac{4a}{b}\right)\sin\left(\frac{4a}{b}\right)}{16c^{5}b}-\frac{\mathrm{Ci}\left(4\arcsin\left(cx\right)+\frac{4a}{b}\right)\cos\left(\frac{4a}{b}\right)}{16c^{5}b}-\frac{\mathrm{Si}\left(2\arcsin\left(cx\right)+\frac{2a}{b}\right)\sin\left(\frac{2a}{b}\right)}{32c^{5}b}-\frac{\mathrm{Ci}\left(2\arcsin\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x)
```

```
[Out] -1/16/c^5/b*Si(4*arcsin(c*x)+4*a/b)*sin(4*a/b)-1/16/c^5/b*Ci(4*arcsin(c*x)+
4*a/b)*cos(4*a/b)-1/32/c^5/b*Si(2*arcsin(c*x)+2*a/b)*sin(2*a/b)-1/32/c^5/b*
Ci(2*arcsin(c*x)+2*a/b)*cos(2*a/b)+1/32/c^5/b*Si(6*arcsin(c*x)+6*a/b)*sin(6
*a/b)+1/32/c^5/b*Ci(6*arcsin(c*x)+6*a/b)*cos(6*a/b)+1/16*ln(a+b*arcsin(c*x)
)/b/c^5
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^{2}x^{2}+1}\,x^{4}}{b\arcsin\left(cx\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(-c^2*x^2 + 1)*x^4/(b*arcsin(c*x) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^{4}\,\sqrt{1-c^{2}\,x^{2}}}{a+b\,\mathrm{asin}\left(c\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(1 - c^2*x^2)^(1/2))/(a + b*asin(c*x)),x)
```

```
[Out] int((x^4*(1 - c^2*x^2)^(1/2))/(a + b*asin(c*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{4}\sqrt{-\left(cx-1\right)\left(cx+1\right)}}{a+b\,\mathrm{asin}\left(cx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(-c**2*x**2+1)**(1/2)/(a+b*asin(c*x)),x)
```

```
[Out] Integral(x**4*sqrt(-(c*x - 1)*(c*x + 1))/(a + b*asin(c*x)), x)
```

3.317 $\int \frac{x^3\sqrt{1-c^2x^2}}{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=183

$$-\frac{\sin\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{8bc^4}-\frac{\sin\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{16bc^4}+\frac{\sin\left(\frac{5a}{b}\right)\text{Ci}\left(\frac{5\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{16bc^4}+\frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{8bc^4}+$$

```
[Out] 1/8*cos(a/b)*Si((a+b*arcsin(c*x))/b)/b/c^4+1/16*cos(3*a/b)*Si(3*(a+b*arcsin
(c*x))/b)/b/c^4-1/16*cos(5*a/b)*Si(5*(a+b*arcsin(c*x))/b)/b/c^4-1/8*Ci((a+b
*arcsin(c*x))/b)*sin(a/b)/b/c^4-1/16*Ci(3*(a+b*arcsin(c*x))/b)*sin(3*a/b)/b
/c^4+1/16*Ci(5*(a+b*arcsin(c*x))/b)*sin(5*a/b)/b/c^4
```

Rubi [A] time = 0.43, antiderivative size = 179, normalized size of antiderivative = 0.98, number of steps used = 12, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {4723, 4406, 3303, 3299, 3302}

$$-\frac{\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{8bc^4}-\frac{\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)}{16bc^4}+\frac{\sin\left(\frac{5a}{b}\right)\text{CosIntegral}\left(\frac{5a}{b}+\right.}{16bc^4}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x]),x]
```

```
[Out] -(CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b])/(8*b*c^4) - (CosIntegral[(3*a)/b
 + 3*ArcSin[c*x]]*Sin[(3*a)/b])/(16*b*c^4) + (CosIntegral[(5*a)/b + 5*ArcSi
n[c*x]]*Sin[(5*a)/b])/(16*b*c^4) + (Cos[a/b]*SinIntegral[a/b + ArcSin[c*x]]
)/(8*b*c^4) + (Cos[(3*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c*x]])/(16*b*c^4
) - (Cos[(5*a)/b]*SinIntegral[(5*a)/b + 5*ArcSin[c*x]])/(16*b*c^4)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
```

```
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x^3\sqrt{1-c^2x^2}}{a+b\sin^{-1}(cx)}\,dx = \frac{\text{Subst}\left(\int \frac{\cos^2(x)\sin^3(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c^4}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{\sin(x)}{8(a+bx)} + \frac{\sin(3x)}{16(a+bx)} - \frac{\sin(5x)}{16(a+bx)}\right) dx, x, \sin^{-1}(cx)\right)}{c^4}$$
$$= \frac{\text{Subst}\left(\int \frac{\sin(3x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{16c^4} - \frac{\text{Subst}\left(\int \frac{\sin(5x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{16c^4} + \frac{\text{Subst}\left(\int \frac{\sin(x)}{a+bx}\,dx,\right.}{8c^4}$$
$$= \frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{8c^4} + \frac{\cos\left(\frac{3a}{b}\right)\text{Subst}\left(\int \frac{\sin\left(\frac{3a}{b}+3x\right)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{16c^4}$$
$$= -\frac{\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)\sin\left(\frac{a}{b}\right)}{8bc^4} - \frac{\text{Ci}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)\sin\left(\frac{3a}{b}\right)}{16bc^4} + \frac{\text{Ci}\left(\frac{5a}{b}+5\sin^{-1}(cx)\right)\sin}{16bc^4}$$

Mathematica [A] time = 0.37, size = 135, normalized size = 0.74

$$\frac{-2\sin\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right) - \sin\left(\frac{3a}{b}\right)\text{Ci}\left(3\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right) + \sin\left(\frac{5a}{b}\right)\text{Ci}\left(5\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right) + 2\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}\right.}{16bc^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x]),x]
```

```
[Out] (-2*CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b] - CosIntegral[3*(a/b + ArcSin[c
*x])]*Sin[(3*a)/b] + CosIntegral[5*(a/b + ArcSin[c*x])]*Sin[(5*a)/b] + 2*Co
s[a/b]*SinIntegral[a/b + ArcSin[c*x]] + Cos[(3*a)/b]*SinIntegral[3*(a/b + A
rcSin[c*x])] - Cos[(5*a)/b]*SinIntegral[5*(a/b + ArcSin[c*x])])/(16*b*c^4)
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}\,x^3}{b\arcsin(cx)+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*x^2 + 1)*x^3/(b*arcsin(c*x) + a), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.08, size = 138, normalized size = 0.75

$$\frac{\mathrm{Ci}\left(5\arcsin\left(cx\right)+\frac{5a}{b}\right)\sin\left(\frac{5a}{b}\right)-2\,\mathrm{Ci}\left(\arcsin\left(cx\right)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)+2\,\mathrm{Si}\left(\arcsin\left(cx\right)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)+\mathrm{Si}\left(3\arcsin\right.}{16c^4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x)
```

```
[Out] 1/16/c^4*(Ci(5*arcsin(c*x)+5*a/b)*sin(5*a/b)-2*Ci(arcsin(c*x)+a/b)*sin(a/b)
+2*Si(arcsin(c*x)+a/b)*cos(a/b)+Si(3*arcsin(c*x)+3*a/b)*cos(3*a/b)-Ci(3*arc
sin(c*x)+3*a/b)*sin(3*a/b)-Si(5*arcsin(c*x)+5*a/b)*cos(5*a/b))/b
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^2x^2+1}\,x^3}{b\arcsin\left(cx\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(-c^2*x^2 + 1)*x^3/(b*arcsin(c*x) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^3\,\sqrt{1-c^2\,x^2}}{a+b\,\mathrm{asin}\left(c\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(1 - c^2*x^2)^(1/2))/(a + b*asin(c*x)),x)
```

```
[Out] int((x^3*(1 - c^2*x^2)^(1/2))/(a + b*asin(c*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3\sqrt{-\left(cx-1\right)\left(cx+1\right)}}{a+b\,\mathrm{asin}\left(cx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(-c**2*x**2+1)**(1/2)/(a+b*asin(c*x)),x)
```

```
[Out] Integral(x**3*sqrt(-(c*x - 1)*(c*x + 1))/(a + b*asin(c*x)), x)
```

3.318 $\int \frac{x^2\sqrt{1-c^2x^2}}{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=82

$$-\frac{\cos\left(\frac{4a}{b}\right)\text{Ci}\left(\frac{4\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{8bc^3}-\frac{\sin\left(\frac{4a}{b}\right)\text{Si}\left(\frac{4\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{8bc^3}+\frac{\log\left(a+b\sin^{-1}(cx)\right)}{8bc^3}$$

```
[Out] -1/8*Ci(4*(a+b*arcsin(c*x))/b)*cos(4*a/b)/b/c^3+1/8*ln(a+b*arcsin(c*x))/b/c
^3-1/8*Si(4*(a+b*arcsin(c*x))/b)*sin(4*a/b)/b/c^3
```

Rubi [A] time = 0.25, antiderivative size = 82, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {4723, 4406, 3303, 3299, 3302}

$$-\frac{\cos\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)}{8bc^3}-\frac{\sin\left(\frac{4a}{b}\right)\text{Si}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)}{8bc^3}+\frac{\log\left(a+b\sin^{-1}(cx)\right)}{8bc^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x]),x]
```

```
[Out] -(Cos[(4*a)/b]*CosIntegral[(4*a)/b + 4*ArcSin[c*x]])/(8*b*c^3) + Log[a + b*
ArcSin[c*x]]/(8*b*c^3) - (Sin[(4*a)/b]*SinIntegral[(4*a)/b + 4*ArcSin[c*x]]
)/(8*b*c^3)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x^2\sqrt{1-c^2x^2}}{a+b\sin^{-1}(cx)}\,dx = \frac{\text{Subst}\left(\int \frac{\cos^2(x)\sin^2(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c^3}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{1}{8(a+bx)} - \frac{\cos(4x)}{8(a+bx)}\right)dx, x, \sin^{-1}(cx)\right)}{c^3}$$
$$= \frac{\log\left(a+b\sin^{-1}(cx)\right)}{8bc^3} - \frac{\text{Subst}\left(\int \frac{\cos(4x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{8c^3}$$
$$= \frac{\log\left(a+b\sin^{-1}(cx)\right)}{8bc^3} - \frac{\cos\left(\frac{4a}{b}\right)\text{Subst}\left(\int \frac{\cos\left(\frac{4a}{b}+4x\right)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{8c^3} - \frac{\sin\left(\frac{4a}{b}\right)\text{Subs}}{}$$
$$= -\frac{\cos\left(\frac{4a}{b}\right)\text{Ci}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)}{8bc^3} + \frac{\log\left(a+b\sin^{-1}(cx)\right)}{8bc^3} - \frac{\sin\left(\frac{4a}{b}\right)\text{Si}\left(\frac{4a}{b}+4\sin^{-1}(cx\right.}{8bc^3}$$

Mathematica [A] time = 0.20, size = 66, normalized size = 0.80

$$-\frac{\cos\left(\frac{4a}{b}\right)\text{Ci}\left(4\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+\sin\left(\frac{4a}{b}\right)\text{Si}\left(4\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)-\log\left(8\left(a+b\sin^{-1}(cx)\right)\right)}{8bc^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x]),x]
```

```
[Out] -1/8*(Cos[(4*a)/b]*CosIntegral[4*(a/b + ArcSin[c*x])] - Log[8*(a + b*ArcSin
[c*x])] + Sin[(4*a)/b]*SinIntegral[4*(a/b + ArcSin[c*x])])/(b*c^3)
```

fricas [F] time = 0.68, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{b\arcsin(cx)+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*x^2 + 1)*x^2/(b*arcsin(c*x) + a), x)
```

giac [B] time = 0.65, size = 169, normalized size = 2.06

$$-\frac{\cos\left(\frac{a}{b}\right)^4\text{Ci}\left(\frac{4a}{b}+4\arcsin(cx)\right)}{bc^3} - \frac{\cos\left(\frac{a}{b}\right)^3\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{4a}{b}+4\arcsin(cx)\right)}{bc^3} + \frac{\cos\left(\frac{a}{b}\right)^2\text{Ci}\left(\frac{4a}{b}+4\arcsin(cx)\right)}{bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] -cos(a/b)^4*cos_integral(4*a/b + 4*arcsin(c*x))/(b*c^3) - cos(a/b)^3*sin(a/
b)*sin_integral(4*a/b + 4*arcsin(c*x))/(b*c^3) + cos(a/b)^2*cos_integral(4*
a/b + 4*arcsin(c*x))/(b*c^3) + 1/2*cos(a/b)*sin(a/b)*sin_integral(4*a/b + 4
*arcsin(c*x))/(b*c^3) - 1/8*cos_integral(4*a/b + 4*arcsin(c*x))/(b*c^3) + 1
/8*log(b*arcsin(c*x) + a)/(b*c^3)
```

maple [A] time = 0.07, size = 77, normalized size = 0.94

$$-\frac{\mathrm{Si}\left(4\arcsin\left(cx\right)+\frac{4a}{b}\right)\sin\left(\frac{4a}{b}\right)}{8c^3b}-\frac{\mathrm{Ci}\left(4\arcsin\left(cx\right)+\frac{4a}{b}\right)\cos\left(\frac{4a}{b}\right)}{8c^3b}+\frac{\ln\left(a+b\arcsin\left(cx\right)\right)}{8b\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x)
```

```
[Out] -1/8/c^3/b*Si(4*arcsin(c*x)+4*a/b)*sin(4*a/b)-1/8/c^3/b*Ci(4*arcsin(c*x)+4*
a/b)*cos(4*a/b)+1/8*ln(a+b*arcsin(c*x))/b/c^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^2x^2+1}\,x^2}{b\arcsin\left(cx\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(-c^2*x^2 + 1)*x^2/(b*arcsin(c*x) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^2\,\sqrt{1-c^2\,x^2}}{a+b\,\mathrm{asin}\left(c\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(1 - c^2*x^2)^(1/2))/(a + b*asin(c*x)),x)
```

```
[Out] int((x^2*(1 - c^2*x^2)^(1/2))/(a + b*asin(c*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2\sqrt{-\left(cx-1\right)\left(cx+1\right)}}{a+b\,\mathrm{asin}\left(cx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(-c**2*x**2+1)**(1/2)/(a+b*asin(c*x)),x)
```

```
[Out] Integral(x**2*sqrt(-(c*x - 1)*(c*x + 1))/(a + b*asin(c*x)), x)
```

3.319 $\int \frac{x\sqrt{1-c^2x^2}}{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=121

$$-\frac{\sin\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{4bc^2}-\frac{\sin\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{4bc^2}+\frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{4bc^2}+\frac{\cos\left(\frac{3a}{b}\right)\text{Si}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{4bc^2}$$

```
[Out] 1/4*cos(a/b)*Si((a+b*arcsin(c*x))/b)/b/c^2+1/4*cos(3*a/b)*Si(3*(a+b*arcsin(
c*x))/b)/b/c^2-1/4*Ci((a+b*arcsin(c*x))/b)*sin(a/b)/b/c^2-1/4*Ci(3*(a+b*arc
sin(c*x))/b)*sin(3*a/b)/b/c^2
```

Rubi [A] time = 0.26, antiderivative size = 117, normalized size of antiderivative = 0.97, number of steps used = 9, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {4723, 4406, 3303, 3299, 3302}

$$-\frac{\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{4bc^2}-\frac{\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)}{4bc^2}+\frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{4bc^2}+\cdots$$

Antiderivative was successfully verified.

```
[In] Int[(x*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x]),x]
```

```
[Out] -(CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b])/(4*b*c^2) - (CosIntegral[(3*a)/b
 + 3*ArcSin[c*x]]*Sin[(3*a)/b])/(4*b*c^2) + (Cos[a/b]*SinIntegral[a/b + Arc
Sin[c*x]])/(4*b*c^2) + (Cos[(3*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c*x]])/
(4*b*c^2)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
```

```
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x\sqrt{1-c^2x^2}}{a+b\sin^{-1}(cx)}\,dx = \frac{\text{Subst}\left(\int \frac{\cos^2(x)\sin(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c^2}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{\sin(x)}{4(a+bx)}+\frac{\sin(3x)}{4(a+bx)}\right)dx, x, \sin^{-1}(cx)\right)}{c^2}$$
$$= \frac{\text{Subst}\left(\int \frac{\sin(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{4c^2}+\frac{\text{Subst}\left(\int \frac{\sin(3x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{4c^2}$$
$$= \frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{4c^2}+\frac{\cos\left(\frac{3a}{b}\right)\text{Subst}\left(\int \frac{\sin\left(\frac{3a}{b}+3x\right)}{a+bx}\,dx, x, \sin^{-1}(cx)\right.}{4c^2}$$
$$= -\frac{\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)\sin\left(\frac{a}{b}\right)}{4bc^2}-\frac{\text{Ci}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)\sin\left(\frac{3a}{b}\right)}{4bc^2}+\frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{4bc^2}$$

Mathematica [A] time = 0.24, size = 91, normalized size = 0.75

$$\frac{\sin\left(\frac{a}{b}\right)\left(-\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)-\sin\left(\frac{3a}{b}\right)\text{Ci}\left(3\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)+\cos\left(\frac{3a}{b}\right)\text{Si}\left(3\left(\frac{a}{b}+\right.\right.}{4bc^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x]),x]
```

```
[Out] (-(CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b]) - CosIntegral[3*(a/b + ArcSin[c
*x])]*Sin[(3*a)/b] + Cos[a/b]*SinIntegral[a/b + ArcSin[c*x]] + Cos[(3*a)/b]
*SinIntegral[3*(a/b + ArcSin[c*x])])/(4*b*c^2)
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}\,x}{b\arcsin(cx)+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*x^2 + 1)*x/(b*arcsin(c*x) + a), x)
```

giac [A] time = 0.91, size = 172, normalized size = 1.42

$$-\frac{\cos\left(\frac{a}{b}\right)^2\text{Ci}\left(\frac{3a}{b}+3\arcsin(cx)\right)\sin\left(\frac{a}{b}\right)}{bc^2}+\frac{\cos\left(\frac{a}{b}\right)^3\text{Si}\left(\frac{3a}{b}+3\arcsin(cx)\right)}{bc^2}+\frac{\text{Ci}\left(\frac{3a}{b}+3\arcsin(cx)\right)\sin\left(\frac{a}{b}\right)}{4bc^2}-\text{Ci}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] -cos(a/b)^2*cos_integral(3*a/b + 3*arcsin(c*x))*sin(a/b)/(b*c^2) + cos(a/b)
^3*sin_integral(3*a/b + 3*arcsin(c*x))/(b*c^2) + 1/4*cos_integral(3*a/b + 3
*arcsin(c*x))*sin(a/b)/(b*c^2) - 1/4*cos_integral(a/b + arcsin(c*x))*sin(a/
```

```
b)/(b*c^2) - 3/4*cos(a/b)*sin_integral(3*a/b + 3*arcsin(c*x))/(b*c^2) + 1/4
*cos(a/b)*sin_integral(a/b + arcsin(c*x))/(b*c^2)
```

maple [A] time = 0.07, size = 92, normalized size = 0.76

$$\frac{\mathrm{Si}\left(3\arcsin\left(cx\right)+\frac{3a}{b}\right)\cos\left(\frac{3a}{b}\right)-\mathrm{Ci}\left(3\arcsin\left(cx\right)+\frac{3a}{b}\right)\sin\left(\frac{3a}{b}\right)+\mathrm{Si}\left(\arcsin\left(cx\right)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)-\mathrm{Ci}\left(\arcsin\left(c\right.\right.}{4c^2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x)
```

```
[Out] 1/4/c^2*(Si(3*arcsin(c*x)+3*a/b)*cos(3*a/b)-Ci(3*arcsin(c*x)+3*a/b)*sin(3*a
/b)+Si(arcsin(c*x)+a/b)*cos(a/b)-Ci(arcsin(c*x)+a/b)*sin(a/b))/b
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^2x^2+1}\,x}{b\arcsin\left(cx\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(-c^2*x^2 + 1)*x/(b*arcsin(c*x) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x\,\sqrt{1-c^2\,x^2}}{a+b\,\mathrm{asin}\left(c\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(1 - c^2*x^2)^(1/2))/(a + b*asin(c*x)),x)
```

```
[Out] int((x*(1 - c^2*x^2)^(1/2))/(a + b*asin(c*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\sqrt{-\left(cx-1\right)\left(cx+1\right)}}{a+b\,\mathrm{asin}\left(cx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c**2*x**2+1)**(1/2)/(a+b*asin(c*x)),x)
```

```
[Out] Integral(x*sqrt(-(c*x - 1)*(c*x + 1))/(a + b*asin(c*x)), x)
```

3.320 $\int \frac{\sqrt{1-c^2x^2}}{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=82

$$\frac{\cos\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{2bc}+\frac{\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{2bc}+\frac{\log\left(a+b\sin^{-1}(cx)\right)}{2bc}$$

```
[Out] 1/2*Ci(2*(a+b*arcsin(c*x))/b)*cos(2*a/b)/b/c+1/2*ln(a+b*arcsin(c*x))/b/c+1/
2*Si(2*(a+b*arcsin(c*x))/b)*sin(2*a/b)/b/c
```

Rubi [A] time = 0.17, antiderivative size = 82, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {4661, 3312, 3303, 3299, 3302}

$$\frac{\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{2bc}+\frac{\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{2bc}+\frac{\log\left(a+b\sin^{-1}(cx)\right)}{2bc}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[1 - c^2*x^2]/(a + b*ArcSin[c*x]),x]
```

```
[Out] (Cos[(2*a)/b]*CosIntegral[(2*a)/b + 2*ArcSin[c*x]])/(2*b*c) + Log[a + b*Arc
Sin[c*x]]/(2*b*c) + (Sin[(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c*x]])/(2*
b*c)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 4661

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[d^p/c, Subst[Int[(a + b*x)^n*Cos[x]^(2*p + 1), x], x, ArcS
in[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IGtQ[2
*p, 0] && (IntegerQ[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{\sqrt{1-c^2x^2}}{a+b\sin^{-1}(cx)}\,dx = \frac{\text{Subst}\left(\int \frac{\cos^2(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{1}{2(a+bx)}+\frac{\cos(2x)}{2(a+bx)}\right)dx, x, \sin^{-1}(cx)\right)}{c}$$
$$= \frac{\log\left(a+b\sin^{-1}(cx)\right)}{2bc} + \frac{\text{Subst}\left(\int \frac{\cos(2x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{2c}$$
$$= \frac{\log\left(a+b\sin^{-1}(cx)\right)}{2bc} + \frac{\cos\left(\frac{2a}{b}\right)\text{Subst}\left(\int \frac{\cos\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{2c} + \frac{\sin\left(\frac{2a}{b}\right)\text{Subs}}{}$$
$$= \frac{\cos\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{2bc} + \frac{\log\left(a+b\sin^{-1}(cx)\right)}{2bc} + \frac{\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{2bc}$$

Mathematica [A] time = 0.18, size = 62, normalized size = 0.76

$$\frac{\cos\left(\frac{2a}{b}\right)\text{Ci}\left(2\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+\sin\left(\frac{2a}{b}\right)\text{Si}\left(2\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+\log\left(a+b\sin^{-1}(cx)\right)}{2bc}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[1 - c^2*x^2]/(a + b*ArcSin[c*x]),x]
```

```
[Out] (Cos[(2*a)/b]*CosIntegral[2*(a/b + ArcSin[c*x])] + Log[a + b*ArcSin[c*x]] +
 Sin[(2*a)/b]*SinIntegral[2*(a/b + ArcSin[c*x])])/(2*b*c)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [A] time = 0.50, size = 102, normalized size = 1.24

$$\frac{\cos\left(\frac{a}{b}\right)^2\text{Ci}\left(\frac{2a}{b}+2\arcsin(cx)\right)}{bc}+\frac{\cos\left(\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\arcsin(cx)\right)}{bc}-\frac{\text{Ci}\left(\frac{2a}{b}+2\arcsin(cx)\right)}{2bc}+\frac{\log(b\,\text{arc}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(c*x))/(b*c) + cos(a/b)*sin(a/b)*si
n_integral(2*a/b + 2*arcsin(c*x))/(b*c) - 1/2*cos_integral(2*a/b + 2*arcsin
(c*x))/(b*c) + 1/2*log(b*arcsin(c*x) + a)/(b*c)
```

maple [A] time = 0.08, size = 77, normalized size = 0.94

$$\frac{\text{Si}\left(2\arcsin(cx)+\frac{2a}{b}\right)\sin\left(\frac{2a}{b}\right)}{2cb}+\frac{\text{Ci}\left(2\arcsin(cx)+\frac{2a}{b}\right)\cos\left(\frac{2a}{b}\right)}{2cb}+\frac{\ln(a+b\arcsin(cx))}{2bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x)
```

```
[Out] 1/2/c/b*Si(2*arcsin(c*x)+2*a/b)*sin(2*a/b)+1/2/c/b*Ci(2*arcsin(c*x)+2*a/b)*
cos(2*a/b)+1/2*ln(a+b*arcsin(c*x))/b/c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^2x^2+1}}{b \arcsin (cx)+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(-c^2*x^2 + 1)/(b*arcsin(c*x) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{1-c^2\,x^2}}{a+b\,\mathrm{asin}\left(c\,x\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(1/2)/(a + b*asin(c*x)),x)
```

```
[Out] int((1 - c^2*x^2)^(1/2)/(a + b*asin(c*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-(cx-1)(cx+1)}}{a+b \operatorname{asin}(cx)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(1/2)/(a+b*asin(c*x)),x)
```

```
[Out] Integral(sqrt(-(c*x - 1)*(c*x + 1))/(a + b*asin(c*x)), x)
```

3.321 $\int \frac{\sqrt{1-c^2x^2}}{x\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=79

$$\operatorname{Int}\left(\frac{1}{x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)},x\right)+\frac{\sin\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{b}-\frac{\cos\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{b}$$

```
[Out] -cos(a/b)*Si((a+b*arcsin(c*x))/b)/b+Ci((a+b*arcsin(c*x))/b)*sin(a/b)/b+Unin
tegrable(1/x/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x)
```

Rubi [A] time = 0.40, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{1-c^2x^2}}{x\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[1 - c^2*x^2]/(x*(a + b*ArcSin[c*x])),x]
```

```
[Out] (CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b])/b - (Cos[a/b]*SinIntegral[a/b + A
rcSin[c*x]])/b + Defer[Int][1/(x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sqrt{1-c^2x^2}}{x\left(a+b\sin^{-1}(cx)\right)}\,dx &= \int \left(\frac{1}{x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}-\frac{c^2x}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\right)dx\\
&= -\left(c^2\int \frac{x}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx\right)+\int \frac{1}{x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx\\
&= \int \frac{1}{x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx-\operatorname{Subst}\left(\int \frac{\sin(x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)\\
&= -\left(\cos\left(\frac{a}{b}\right)\operatorname{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)\right)+\sin\left(\frac{a}{b}\right)\operatorname{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+x\right.}{a+bx}\right.\\
&= \frac{\operatorname{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)\sin\left(\frac{a}{b}\right)}{b}-\frac{\cos\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{b}+\int \frac{1}{x\sqrt{1-c^2x^2}\left(a+b\sin\right.}
\end{aligned}$$

Mathematica [A] time = 3.18, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{1-c^2x^2}}{x\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[1 - c^2*x^2]/(x*(a + b*ArcSin[c*x])),x]
```

```
[Out] Integrate[Sqrt[1 - c^2*x^2]/(x*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 1.24, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\sqrt{-c^2x^2+1}}{bx\arcsin(cx)+ax},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/x/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*x^2 + 1)/(b*x*arcsin(c*x) + a*x), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/x/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.50, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^{2} x^{2}+1}}{x \left(a +b \arcsin \left(c x \right)\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(1/2)/x/(a+b*arcsin(c*x)),x)
```

```
[Out] int((-c^2*x^2+1)^(1/2)/x/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^{2} x^{2} + 1}}{{\left(b \arcsin \left(c x\right) + a\right)} x}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/x/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(-c^2*x^2 + 1)/((b*arcsin(c*x) + a)*x), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{1-c^2\,x^2}}{x\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(1/2)/(x*(a + b*asin(c*x))),x)
```

```
[Out] int((1 - c^2*x^2)^(1/2)/(x*(a + b*asin(c*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{- \left(c x - 1\right) \left(c x + 1\right)}}{x \left(a + b \operatorname{asin}{\left(c x \right)}\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(1/2)/x/(a+b*asin(c*x)),x)
```

```
[Out] Integral(sqrt(-(c*x - 1)*(c*x + 1))/(x*(a + b*asin(c*x))), x)
```

3.322 $\int \frac{\sqrt{1-c^2x^2}}{x^2\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=47

$$\text{Int}\left(\frac{1}{x^2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)},x\right)-\frac{c\log\left(a+b\sin^{-1}(cx)\right)}{b}$$

```
[Out] -c*ln(a+b*arcsin(c*x))/b+Unintegrable(1/x^2/(a+b*arcsin(c*x))/(-c^2*x^2+1)^
(1/2),x)
```

Rubi [A] time = 0.30, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{1-c^2x^2}}{x^2\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[1 - c^2*x^2]/(x^2*(a + b*ArcSin[c*x])),x]
[Out] -((c*Log[a + b*ArcSin[c*x]])/b) + Defer[Int][1/(x^2*Sqrt[1 - c^2*x^2]*(a +
b*ArcSin[c*x])), x]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sqrt{1-c^2x^2}}{x^2\left(a+b\sin^{-1}(cx)\right)}\,dx &= \int \left(-\frac{c^2}{\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}+\frac{1}{x^2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}\right)dx \\
&= -\left(c^2\int \frac{1}{\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}\,dx\right)+\int \frac{1}{x^2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}\,dx \\
&= -\frac{c\log\left(a+b\sin^{-1}(cx)\right)}{b}+\int \frac{1}{x^2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}\,dx
\end{aligned}$$

Mathematica [A] time = 0.97, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{1-c^2x^2}}{x^2\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[1 - c^2*x^2]/(x^2*(a + b*ArcSin[c*x])),x]
[Out] Integrate[Sqrt[1 - c^2*x^2]/(x^2*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 2.36, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}}{bx^2\arcsin(cx)+ax^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/x^2/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral(sqrt(-c^2*x^2 + 1)/(b*x^2*arcsin(c*x) + a*x^2), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^2x^2+1}}{(b\arcsin(cx)+a)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/x^2/(a+b*arcsin(c*x)),x, algorithm="giac")
[Out] integrate(sqrt(-c^2*x^2 + 1)/((b*arcsin(c*x) + a)*x^2), x)
```

maple [A] time = 0.57, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^2x^2+1}}{x^2(a+b\arcsin(cx))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(1/2)/x^2/(a+b*arcsin(c*x)),x)
[Out] int((-c^2*x^2+1)^(1/2)/x^2/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^2x^2+1}}{(b\arcsin(cx)+a)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/x^2/(a+b*arcsin(c*x)),x, algorithm="maxima")
[Out] integrate(sqrt(-c^2*x^2 + 1)/((b*arcsin(c*x) + a)*x^2), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sqrt{1-c^2\,x^2}}{x^2\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(1/2)/(x^2*(a + b*asin(c*x))),x)
[Out] int((1 - c^2*x^2)^(1/2)/(x^2*(a + b*asin(c*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-(cx-1)(cx+1)}}{x^2(a+b\,\mathrm{asin}(cx))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(1/2)/x**2/(a+b*asin(c*x)),x)
[Out] Integral(sqrt(-(c*x - 1)*(c*x + 1))/(x**2*(a + b*asin(c*x))), x)
```

3.323 $\int \frac{\sqrt{1-c^2x^2}}{x^3\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\sqrt{1-c^2x^2}}{x^3\left(a+b\sin^{-1}(cx)\right)},x\right)$$

```
[Out] Unintegrable((-c^2*x^2+1)^(1/2)/x^3/(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.12, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{1-c^2x^2}}{x^3\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[1 - c^2*x^2]/(x^3*(a + b*ArcSin[c*x])),x]
[Out] Defer[Int][Sqrt[1 - c^2*x^2]/(x^3*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{\sqrt{1-c^2x^2}}{x^3\left(a+b\sin^{-1}(cx)\right)}\,dx=\int \frac{\sqrt{1-c^2x^2}}{x^3\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Mathematica [A] time = 6.02, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{1-c^2x^2}}{x^3\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[1 - c^2*x^2]/(x^3*(a + b*ArcSin[c*x])),x]
[Out] Integrate[Sqrt[1 - c^2*x^2]/(x^3*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 0.68, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}}{bx^3\arcsin(cx)+ax^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/x^3/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral(sqrt(-c^2*x^2 + 1)/(b*x^3*arcsin(c*x) + a*x^3), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/x^3/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 2.99, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^2x^2+1}}{x^3\left(a+b\arcsin\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(1/2)/x^3/(a+b*arcsin(c*x)),x)
[Out] int((-c^2*x^2+1)^(1/2)/x^3/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^2x^2+1}}{(b\arcsin\left(cx\right)+a)x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/x^3/(a+b*arcsin(c*x)),x, algorithm="maxima")
[Out] integrate(sqrt(-c^2*x^2 + 1)/((b*arcsin(c*x) + a)*x^3), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sqrt{1-c^2\,x^2}}{x^3\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(1/2)/(x^3*(a + b*asin(c*x))),x)
[Out] int((1 - c^2*x^2)^(1/2)/(x^3*(a + b*asin(c*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-\left(cx-1\right)\left(cx+1\right)}}{x^3\left(a+b\,\mathrm{asin}\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(1/2)/x**3/(a+b*asin(c*x)),x)
[Out] Integral(sqrt(-(c*x - 1)*(c*x + 1))/(x**3*(a + b*asin(c*x))), x)
```

3.324 $\int \frac{\sqrt{1-c^2x^2}}{x^4\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=31

$$\mathrm{Int}\left(\frac{\sqrt{1-c^2x^2}}{x^4\left(a+b\sin^{-1}(cx)\right)},x\right)$$

```
[Out] Unintegrable((-c^2*x^2+1)^(1/2)/x^4/(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.12, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{1-c^2x^2}}{x^4\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[1 - c^2*x^2]/(x^4*(a + b*ArcSin[c*x])),x]
[Out] Defer[Int][Sqrt[1 - c^2*x^2]/(x^4*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{\sqrt{1-c^2x^2}}{x^4\left(a+b\sin^{-1}(cx)\right)}\,dx=\int \frac{\sqrt{1-c^2x^2}}{x^4\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Mathematica [A] time = 0.87, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{1-c^2x^2}}{x^4\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[1 - c^2*x^2]/(x^4*(a + b*ArcSin[c*x])),x]
[Out] Integrate[Sqrt[1 - c^2*x^2]/(x^4*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 2.94, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{-c^2x^2+1}}{bx^4\arcsin(cx)+ax^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/x^4/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral(sqrt(-c^2*x^2 + 1)/(b*x^4*arcsin(c*x) + a*x^4), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^2x^2+1}}{(b\arcsin(cx)+a)x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/x^4/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] integrate(sqrt(-c^2*x^2 + 1)/((b*arcsin(c*x) + a)*x^4), x)
```

maple [A] time = 4.55, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^2x^2+1}}{x^4 (a+b \arcsin(cx))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(1/2)/x^4/(a+b*arcsin(c*x)),x)
[Out] int((-c^2*x^2+1)^(1/2)/x^4/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^2x^2+1}}{(b \arcsin(cx)+a)x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/x^4/(a+b*arcsin(c*x)),x, algorithm="maxima")
[Out] integrate(sqrt(-c^2*x^2 + 1)/((b*arcsin(c*x) + a)*x^4), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sqrt{1-c^2\,x^2}}{x^4\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(1/2)/(x^4*(a + b*asin(c*x))),x)
[Out] int((1 - c^2*x^2)^(1/2)/(x^4*(a + b*asin(c*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-(cx-1)(cx+1)}}{x^4 (a+b \operatorname{asin}(cx))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(1/2)/x**4/(a+b*asin(c*x)),x)
[Out] Integral(sqrt(-(c*x - 1)*(c*x + 1))/(x**4*(a + b*asin(c*x))), x)
```

3.325 $\int \frac{x^3(1-c^2x^2)^{3/2}}{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=245

$$-\frac{3\sin\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{64bc^4}-\frac{3\sin\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{64bc^4}+\frac{\sin\left(\frac{5a}{b}\right)\text{Ci}\left(\frac{5\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{64bc^4}+\frac{\sin\left(\frac{7a}{b}\right)\text{Ci}\left(\frac{7\left(a+b\sin^{-1}\right.}{b}\right.}{64bc^4}$$

```
[Out] 3/64*cos(a/b)*Si((a+b*arcsin(c*x))/b)/b/c^4+3/64*cos(3*a/b)*Si(3*(a+b*arcsi
n(c*x))/b)/b/c^4-1/64*cos(5*a/b)*Si(5*(a+b*arcsin(c*x))/b)/b/c^4-1/64*cos(7
*a/b)*Si(7*(a+b*arcsin(c*x))/b)/b/c^4-3/64*Ci((a+b*arcsin(c*x))/b)*sin(a/b)
/b/c^4-3/64*Ci(3*(a+b*arcsin(c*x))/b)*sin(3*a/b)/b/c^4+1/64*Ci(5*(a+b*arcsi
n(c*x))/b)*sin(5*a/b)/b/c^4+1/64*Ci(7*(a+b*arcsin(c*x))/b)*sin(7*a/b)/b/c^4
```

Rubi [A] time = 0.50, antiderivative size = 241, normalized size of antiderivative = 0.98, number of steps used = 15, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {4723, 4406, 3303, 3299, 3302}

$$-\frac{3\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{64bc^4}-\frac{3\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)}{64bc^4}+\frac{\sin\left(\frac{5a}{b}\right)\text{CosIntegral}\left(\frac{5a}{b}\right.}{64bc^4}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(1 - c^2*x^2)^(3/2))/(a + b*ArcSin[c*x]),x]
```

```
[Out] (-3*CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b])/(64*b*c^4) - (3*CosIntegral[(3
*a)/b + 3*ArcSin[c*x]]*Sin[(3*a)/b])/(64*b*c^4) + (CosIntegral[(5*a)/b + 5*
ArcSin[c*x]]*Sin[(5*a)/b])/(64*b*c^4) + (CosIntegral[(7*a)/b + 7*ArcSin[c*x
]]*Sin[(7*a)/b])/(64*b*c^4) + (3*Cos[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(
64*b*c^4) + (3*Cos[(3*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c*x]])/(64*b*c^4
) - (Cos[(5*a)/b]*SinIntegral[(5*a)/b + 5*ArcSin[c*x]])/(64*b*c^4) - (Cos[(
7*a)/b]*SinIntegral[(7*a)/b + 7*ArcSin[c*x]])/(64*b*c^4)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x^3\left(1-c^2x^2\right)^{3/2}}{a+b\sin^{-1}(cx)}\,dx = \frac{\text{Subst}\left(\int \frac{\cos^4(x)\sin^3(x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{c^4}$$

$$= \frac{\text{Subst}\left(\int \left(\frac{3\sin(x)}{64(a+bx)}+\frac{3\sin(3x)}{64(a+bx)}-\frac{\sin(5x)}{64(a+bx)}-\frac{\sin(7x)}{64(a+bx)}\right)dx,x,\sin^{-1}(cx)\right)}{c^4}$$

$$= -\frac{\text{Subst}\left(\int \frac{\sin(5x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{64c^4}-\frac{\text{Subst}\left(\int \frac{\sin(7x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{64c^4}+\frac{3\,\text{Subst}\left(\int \frac{\sin(x)}{a+bx}\right.}{64}$$

$$= \frac{\left(3\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{64c^4}+\frac{\left(3\cos\left(\frac{3a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{3a}{b}+3x\right)}{a+bx}\,dx,x,\text{si}\right.}{64c^4}$$

$$= -\frac{3\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)\sin\left(\frac{a}{b}\right)}{64bc^4}-\frac{3\text{Ci}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)\sin\left(\frac{3a}{b}\right)}{64bc^4}+\frac{\text{Ci}\left(\frac{5a}{b}+5\sin^{-1}(cx)\right)\text{s}}{64bc^4}$$

Mathematica [A] time = 0.82, size = 179, normalized size = 0.73

$$-3\sin\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)-3\sin\left(\frac{3a}{b}\right)\text{Ci}\left(3\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+\sin\left(\frac{5a}{b}\right)\text{Ci}\left(5\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+\sin\left(\frac{7a}{b}\right)\text{Ci}\left(7\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(1 - c^2*x^2)^(3/2))/(a + b*ArcSin[c*x]),x]
```

```
[Out] (-3*CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b] - 3*CosIntegral[3*(a/b + ArcSin
[c*x])]*Sin[(3*a)/b] + CosIntegral[5*(a/b + ArcSin[c*x])]*Sin[(5*a)/b] + Co
sIntegral[7*(a/b + ArcSin[c*x])]*Sin[(7*a)/b] + 3*Cos[a/b]*SinIntegral[a/b
+ ArcSin[c*x]] + 3*Cos[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c*x])] - Cos[(5
*a)/b]*SinIntegral[5*(a/b + ArcSin[c*x])] - Cos[(7*a)/b]*SinIntegral[7*(a/b
 + ArcSin[c*x])])/(64*b*c^4)
```

fricas [F] time = 1.30, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(c^2x^5-x^3\right)\sqrt{-c^2x^2+1}}{b\arcsin\left(cx\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral(-(c^2*x^5 - x^3)*sqrt(-c^2*x^2 + 1)/(b*arcsin(c*x) + a), x)
```

giac [B] time = 0.92, size = 614, normalized size = 2.51

$$\frac{\cos\left(\frac{a}{b}\right)^6\text{Ci}\left(\frac{7a}{b}+7\arcsin\left(cx\right)\right)\sin\left(\frac{a}{b}\right)}{bc^4}-\frac{\cos\left(\frac{a}{b}\right)^7\text{Si}\left(\frac{7a}{b}+7\arcsin\left(cx\right)\right)}{bc^4}-\frac{5\cos\left(\frac{a}{b}\right)^4\text{Ci}\left(\frac{7a}{b}+7\arcsin\left(cx\right)\right)\text{sin}}{4bc^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] cos(a/b)^6*cos_integral(7*a/b + 7*arcsin(c*x))*sin(a/b)/(b*c^4) - cos(a/b)^
7*sin_integral(7*a/b + 7*arcsin(c*x))/(b*c^4) - 5/4*cos(a/b)^4*cos_integral
(7*a/b + 7*arcsin(c*x))*sin(a/b)/(b*c^4) + 1/4*cos(a/b)^4*cos_integral(5*a/
b + 5*arcsin(c*x))*sin(a/b)/(b*c^4) + 7/4*cos(a/b)^5*sin_integral(7*a/b + 7
*arcsin(c*x))/(b*c^4) - 1/4*cos(a/b)^5*sin_integral(5*a/b + 5*arcsin(c*x))/
(b*c^4) + 3/8*cos(a/b)^2*cos_integral(7*a/b + 7*arcsin(c*x))*sin(a/b)/(b*c^
4) - 3/16*cos(a/b)^2*cos_integral(5*a/b + 5*arcsin(c*x))*sin(a/b)/(b*c^4) -
 3/16*cos(a/b)^2*cos_integral(3*a/b + 3*arcsin(c*x))*sin(a/b)/(b*c^4) - 7/8
*cos(a/b)^3*sin_integral(7*a/b + 7*arcsin(c*x))/(b*c^4) + 5/16*cos(a/b)^3*s
in_integral(5*a/b + 5*arcsin(c*x))/(b*c^4) + 3/16*cos(a/b)^3*sin_integral(3
*a/b + 3*arcsin(c*x))/(b*c^4) - 1/64*cos_integral(7*a/b + 7*arcsin(c*x))*si
n(a/b)/(b*c^4) + 1/64*cos_integral(5*a/b + 5*arcsin(c*x))*sin(a/b)/(b*c^4)
+ 3/64*cos_integral(3*a/b + 3*arcsin(c*x))*sin(a/b)/(b*c^4) - 3/64*cos_inte
gral(a/b + arcsin(c*x))*sin(a/b)/(b*c^4) + 7/64*cos(a/b)*sin_integral(7*a/b
 + 7*arcsin(c*x))/(b*c^4) - 5/64*cos(a/b)*sin_integral(5*a/b + 5*arcsin(c*x
))/(b*c^4) - 9/64*cos(a/b)*sin_integral(3*a/b + 3*arcsin(c*x))/(b*c^4) + 3/
64*cos(a/b)*sin_integral(a/b + arcsin(c*x))/(b*c^4)
```

maple [A] time = 0.09, size = 184, normalized size = 0.75

$$-\frac{\operatorname{Si}\left(5\arcsin(cx)+\frac{5a}{b}\right)\cos\left(\frac{5a}{b}\right)-\operatorname{Ci}\left(5\arcsin(cx)+\frac{5a}{b}\right)\sin\left(\frac{5a}{b}\right)-3\operatorname{Si}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)+3\operatorname{Ci}\left(\mathrm{arc}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x)
```

```
[Out] -1/64/c^4*(Si(5*arcsin(c*x)+5*a/b)*cos(5*a/b)-Ci(5*arcsin(c*x)+5*a/b)*sin(5
*a/b)-3*Si(arcsin(c*x)+a/b)*cos(a/b)+3*Ci(arcsin(c*x)+a/b)*sin(a/b)-3*Si(3*
arcsin(c*x)+3*a/b)*cos(3*a/b)+Si(7*arcsin(c*x)+7*a/b)*cos(7*a/b)-Ci(7*arcsi
n(c*x)+7*a/b)*sin(7*a/b)+3*Ci(3*arcsin(c*x)+3*a/b)*sin(3*a/b))/b
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}x^3}{b\arcsin(cx)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate((-c^2*x^2 + 1)^(3/2)*x^3/(b*arcsin(c*x) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\,{\left(1-c^2\,x^2\right)}^{3/2}}{a+b\,\mathrm{asin}\left(c\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(1 - c^2*x^2)^(3/2))/(a + b*asin(c*x)),x)
```

```
[Out] int((x^3*(1 - c^2*x^2)^(3/2))/(a + b*asin(c*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}}{a+b\operatorname{asin}(cx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(-c**2*x**2+1)**(3/2)/(a+b*asin(c*x)),x)
```

```
[Out] Integral(x**3*(-(c*x - 1)*(c*x + 1))**(3/2)/(a + b*asin(c*x)), x)
```

3.326 $\int \frac{x^2(1-c^2x^2)^{3/2}}{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=206

$$\frac{\cos\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2(a+b\sin^{-1}(cx))}{b}\right)}{32bc^3}-\frac{\cos\left(\frac{4a}{b}\right)\text{Ci}\left(\frac{4(a+b\sin^{-1}(cx))}{b}\right)}{16bc^3}-\frac{\cos\left(\frac{6a}{b}\right)\text{Ci}\left(\frac{6(a+b\sin^{-1}(cx))}{b}\right)}{32bc^3}+\frac{\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2(a+b\sin^{-1}(c}{b}\right.}{32bc^3}$$

```
[Out] 1/32*Ci(2*(a+b*arcsin(c*x))/b)*cos(2*a/b)/b/c^3-1/16*Ci(4*(a+b*arcsin(c*x))
/b)*cos(4*a/b)/b/c^3-1/32*Ci(6*(a+b*arcsin(c*x))/b)*cos(6*a/b)/b/c^3+1/16*l
n(a+b*arcsin(c*x))/b/c^3+1/32*Si(2*(a+b*arcsin(c*x))/b)*sin(2*a/b)/b/c^3-1/
16*Si(4*(a+b*arcsin(c*x))/b)*sin(4*a/b)/b/c^3-1/32*Si(6*(a+b*arcsin(c*x))/b
)*sin(6*a/b)/b/c^3
```

Rubi [A] time = 0.42, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {4723, 4406, 3303, 3299, 3302}

$$\frac{\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{32bc^3}-\frac{\cos\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)}{16bc^3}-\frac{\cos\left(\frac{6a}{b}\right)\text{CosIntegral}\left(\frac{6a}{b}\right.}{32bc^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(1 - c^2*x^2)^(3/2))/(a + b*ArcSin[c*x]),x]
```

```
[Out] (Cos[(2*a)/b]*CosIntegral[(2*a)/b + 2*ArcSin[c*x]])/(32*b*c^3) - (Cos[(4*a)
/b]*CosIntegral[(4*a)/b + 4*ArcSin[c*x]])/(16*b*c^3) - (Cos[(6*a)/b]*CosInt
egral[(6*a)/b + 6*ArcSin[c*x]])/(32*b*c^3) + Log[a + b*ArcSin[c*x]]/(16*b*c
^3) + (Sin[(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c*x]])/(32*b*c^3) - (Sin
[(4*a)/b]*SinIntegral[(4*a)/b + 4*ArcSin[c*x]])/(16*b*c^3) - (Sin[(6*a)/b]*
SinIntegral[(6*a)/b + 6*ArcSin[c*x]])/(32*b*c^3)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x^2\left(1-c^2x^2\right)^{3/2}}{a+b\sin^{-1}(cx)}\,dx = \frac{\text{Subst}\left(\int \frac{\cos^4(x)\sin^2(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c^3}$$

$$= \frac{\text{Subst}\left(\int \left(\frac{1}{16(a+bx)}+\frac{\cos(2x)}{32(a+bx)}-\frac{\cos(4x)}{16(a+bx)}-\frac{\cos(6x)}{32(a+bx)}\right)dx, x, \sin^{-1}(cx)\right)}{c^3}$$

$$= \frac{\log\left(a+b\sin^{-1}(cx)\right)}{16bc^3}+\frac{\text{Subst}\left(\int \frac{\cos(2x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{32c^3}-\frac{\text{Subst}\left(\int \frac{\cos(6x)}{a+bx}\,dx, x, \sin^{-1}(\right.}{32c^3}$$

$$= \frac{\log\left(a+b\sin^{-1}(cx)\right)}{16bc^3}+\frac{\cos\left(\frac{2a}{b}\right)\text{Subst}\left(\int \frac{\cos\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{32c^3}-\frac{\cos\left(\frac{4a}{b}\right)\text{Subst}\left(\right.}{}$$

$$= \frac{\cos\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{32bc^3}-\frac{\cos\left(\frac{4a}{b}\right)\text{Ci}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)}{16bc^3}-\frac{\cos\left(\frac{6a}{b}\right)\text{Ci}\left(\frac{6a}{b}+6\sin\right.}{32bc^3}$$

Mathematica [A] time = 0.67, size = 165, normalized size = 0.80

$$-\frac{-\cos\left(\frac{2a}{b}\right)\text{Ci}\left(2\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+2\cos\left(\frac{4a}{b}\right)\text{Ci}\left(4\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+\cos\left(\frac{6a}{b}\right)\text{Ci}\left(6\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)-\sin\left(\frac{2a}{b}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(1 - c^2*x^2)^(3/2))/(a + b*ArcSin[c*x]),x]
```

```
[Out] -1/32*(-(Cos[(2*a)/b]*CosIntegral[2*(a/b + ArcSin[c*x])]) + 2*Cos[(4*a)/b]*
CosIntegral[4*(a/b + ArcSin[c*x])] + Cos[(6*a)/b]*CosIntegral[6*(a/b + ArcS
in[c*x])] + 2*Log[a + b*ArcSin[c*x]] - 4*Log[8*(a + b*ArcSin[c*x])] - Sin[(
2*a)/b]*SinIntegral[2*(a/b + ArcSin[c*x])] + 2*Sin[(4*a)/b]*SinIntegral[4*(
a/b + ArcSin[c*x])] + Sin[(6*a)/b]*SinIntegral[6*(a/b + ArcSin[c*x])])/(b*c
^3)
```

fricas [F] time = 0.72, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(c^2x^4-x^2\right)\sqrt{-c^2x^2+1}}{b\arcsin(cx)+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral(-(c^2*x^4 - x^2)*sqrt(-c^2*x^2 + 1)/(b*arcsin(c*x) + a), x)
```

giac [B] time = 0.78, size = 473, normalized size = 2.30

$$-\frac{\cos\left(\frac{a}{b}\right)^6\text{Ci}\left(\frac{6a}{b}+6\arcsin(cx)\right)}{bc^3}-\frac{\cos\left(\frac{a}{b}\right)^5\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{6a}{b}+6\arcsin(cx)\right)}{bc^3}+\frac{3\cos\left(\frac{a}{b}\right)^4\text{Ci}\left(\frac{6a}{b}+6\arcsin(cx)\right)}{2bc^3}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] -cos(a/b)^6*cos_integral(6*a/b + 6*arcsin(c*x))/(b*c^3) - cos(a/b)^5*sin(a/
b)*sin_integral(6*a/b + 6*arcsin(c*x))/(b*c^3) + 3/2*cos(a/b)^4*cos_integra
l(6*a/b + 6*arcsin(c*x))/(b*c^3) - 1/2*cos(a/b)^4*cos_integral(4*a/b + 4*ar
csin(c*x))/(b*c^3) + cos(a/b)^3*sin(a/b)*sin_integral(6*a/b + 6*arcsin(c*x)
)/(b*c^3) - 1/2*cos(a/b)^3*sin(a/b)*sin_integral(4*a/b + 4*arcsin(c*x))/(b*
c^3) - 9/16*cos(a/b)^2*cos_integral(6*a/b + 6*arcsin(c*x))/(b*c^3) + 1/2*co
s(a/b)^2*cos_integral(4*a/b + 4*arcsin(c*x))/(b*c^3) + 1/16*cos(a/b)^2*cos_
integral(2*a/b + 2*arcsin(c*x))/(b*c^3) - 3/16*cos(a/b)*sin(a/b)*sin_integr
al(6*a/b + 6*arcsin(c*x))/(b*c^3) + 1/4*cos(a/b)*sin(a/b)*sin_integral(4*a/
b + 4*arcsin(c*x))/(b*c^3) + 1/16*cos(a/b)*sin(a/b)*sin_integral(2*a/b + 2*
arcsin(c*x))/(b*c^3) + 1/32*cos_integral(6*a/b + 6*arcsin(c*x))/(b*c^3) - 1
/16*cos_integral(4*a/b + 4*arcsin(c*x))/(b*c^3) - 1/32*cos_integral(2*a/b +
 2*arcsin(c*x))/(b*c^3) + 1/16*log(b*arcsin(c*x) + a)/(b*c^3)
```

maple [A] time = 0.10, size = 193, normalized size = 0.94

$$-\frac{\mathrm{Si}\left(4\arcsin(cx)+\frac{4a}{b}\right)\sin\left(\frac{4a}{b}\right)}{16c^3b}-\frac{\mathrm{Ci}\left(4\arcsin(cx)+\frac{4a}{b}\right)\cos\left(\frac{4a}{b}\right)}{16c^3b}+\frac{\mathrm{Si}\left(2\arcsin(cx)+\frac{2a}{b}\right)\sin\left(\frac{2a}{b}\right)}{32c^3b}+\frac{\mathrm{Ci}\left(2\arc\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x)
```

```
[Out] -1/16/c^3/b*Si(4*arcsin(c*x)+4*a/b)*sin(4*a/b)-1/16/c^3/b*Ci(4*arcsin(c*x)+
4*a/b)*cos(4*a/b)+1/32/c^3/b*Si(2*arcsin(c*x)+2*a/b)*sin(2*a/b)+1/32/c^3/b*
Ci(2*arcsin(c*x)+2*a/b)*cos(2*a/b)-1/32/c^3/b*Si(6*arcsin(c*x)+6*a/b)*sin(6
*a/b)-1/32/c^3/b*Ci(6*arcsin(c*x)+6*a/b)*cos(6*a/b)+1/16*ln(a+b*arcsin(c*x)
)/b/c^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}x^2}{b\arcsin(cx)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate((-c^2*x^2 + 1)^(3/2)*x^2/(b*arcsin(c*x) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2\left(1-c^2x^2\right)^{3/2}}{a+b\,\mathrm{asin}(c\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(1 - c^2*x^2)^(3/2))/(a + b*asin(c*x)),x)
```

```
[Out] int((x^2*(1 - c^2*x^2)^(3/2))/(a + b*asin(c*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2\left(-(cx-1)(cx+1)\right)^{\frac{3}{2}}}{a+b\,\mathrm{asin}(cx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(-c**2*x**2+1)**(3/2)/(a+b*asin(c*x)),x)
[Out] Integral(x**2*(-(c*x - 1)*(c*x + 1))**(3/2)/(a + b*asin(c*x)), x)
```

3.327 $\int \frac{x(1-c^2x^2)^{3/2}}{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=183

$$-\frac{\sin\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{8bc^2}-\frac{3\sin\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{16bc^2}-\frac{\sin\left(\frac{5a}{b}\right)\text{Ci}\left(\frac{5\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{16bc^2}+\frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{8bc^2}$$

```
[Out] 1/8*cos(a/b)*Si((a+b*arcsin(c*x))/b)/b/c^2+3/16*cos(3*a/b)*Si(3*(a+b*arcsin
(c*x))/b)/b/c^2+1/16*cos(5*a/b)*Si(5*(a+b*arcsin(c*x))/b)/b/c^2-1/8*Ci((a+b
*arcsin(c*x))/b)*sin(a/b)/b/c^2-3/16*Ci(3*(a+b*arcsin(c*x))/b)*sin(3*a/b)/b
/c^2-1/16*Ci(5*(a+b*arcsin(c*x))/b)*sin(5*a/b)/b/c^2
```

Rubi [A] time = 0.34, antiderivative size = 179, normalized size of antiderivative = 0.98, number of steps used = 12, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {4723, 4406, 3303, 3299, 3302}

$$-\frac{\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{8bc^2}-\frac{3\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)}{16bc^2}-\frac{\sin\left(\frac{5a}{b}\right)\text{CosIntegral}\left(\frac{5a}{b}+\right.}{16bc^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(1 - c^2*x^2)^(3/2))/(a + b*ArcSin[c*x]),x]
```

```
[Out] -(CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b])/(8*b*c^2) - (3*CosIntegral[(3*a)
/b + 3*ArcSin[c*x]]*Sin[(3*a)/b])/(16*b*c^2) - (CosIntegral[(5*a)/b + 5*Arc
Sin[c*x]]*Sin[(5*a)/b])/(16*b*c^2) + (Cos[a/b]*SinIntegral[a/b + ArcSin[c*x
]])/(8*b*c^2) + (3*Cos[(3*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c*x]])/(16*b
*c^2) + (Cos[(5*a)/b]*SinIntegral[(5*a)/b + 5*ArcSin[c*x]])/(16*b*c^2)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
```

```
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x\left(1-c^2x^2\right)^{3/2}}{a+b\sin^{-1}(cx)}\,dx = \frac{\text{Subst}\left(\int \frac{\cos^4(x)\sin(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c^2}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{\sin(x)}{8(a+bx)}+\frac{3\sin(3x)}{16(a+bx)}+\frac{\sin(5x)}{16(a+bx)}\right)dx, x, \sin^{-1}(cx)\right)}{c^2}$$
$$= \frac{\text{Subst}\left(\int \frac{\sin(5x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{16c^2}+\frac{\text{Subst}\left(\int \frac{\sin(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{8c^2}+\frac{3\,\text{Subst}\left(\int \frac{\sin(3x)}{a+bx}\,d\right.}{16c^2}$$
$$= \frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{8c^2}+\frac{\left(3\cos\left(\frac{3a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{3a}{b}+3x\right)}{a+bx}\,dx, x, \sin^{-1}\right.}{16c^2}$$
$$= -\frac{\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)\sin\left(\frac{a}{b}\right)}{8bc^2}-\frac{3\text{Ci}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)\sin\left(\frac{3a}{b}\right)}{16bc^2}-\frac{\text{Ci}\left(\frac{5a}{b}+5\sin^{-1}(cx)\right)\sin}{16bc^2}$$

Mathematica [A] time = 0.57, size = 136, normalized size = 0.74

$$\frac{-2\sin\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)-3\sin\left(\frac{3a}{b}\right)\text{Ci}\left(3\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)-\sin\left(\frac{5a}{b}\right)\text{Ci}\left(5\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+2\cos\left(\frac{a}{b}\right)\text{Si}\left(\right.}{16bc^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(1 - c^2*x^2)^(3/2))/(a + b*ArcSin[c*x]),x]
```

```
[Out] (-2*CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b] - 3*CosIntegral[3*(a/b + ArcSin
[c*x])]*Sin[(3*a)/b] - CosIntegral[5*(a/b + ArcSin[c*x])]*Sin[(5*a)/b] + 2*
Cos[a/b]*SinIntegral[a/b + ArcSin[c*x]] + 3*Cos[(3*a)/b]*SinIntegral[3*(a/b
 + ArcSin[c*x])] + Cos[(5*a)/b]*SinIntegral[5*(a/b + ArcSin[c*x])])/(16*b*c
^2)
```

fricas [F] time = 0.68, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(c^2x^3-x\right)\sqrt{-c^2x^2+1}}{b\arcsin(cx)+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral(-(c^2*x^3 - x)*sqrt(-c^2*x^2 + 1)/(b*arcsin(c*x) + a), x)
```

giac [B] time = 0.41, size = 360, normalized size = 1.97

$$-\frac{\cos\left(\frac{a}{b}\right)^4\text{Ci}\left(\frac{5a}{b}+5\arcsin(cx)\right)\sin\left(\frac{a}{b}\right)}{bc^2}+\frac{\cos\left(\frac{a}{b}\right)^5\text{Si}\left(\frac{5a}{b}+5\arcsin(cx)\right)}{bc^2}+\frac{3\cos\left(\frac{a}{b}\right)^2\text{Ci}\left(\frac{5a}{b}+5\arcsin(cx)\right)\text{s}}{4bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] -cos(a/b)^4*cos_integral(5*a/b + 5*arcsin(c*x))*sin(a/b)/(b*c^2) + cos(a/b)
^5*sin_integral(5*a/b + 5*arcsin(c*x))/(b*c^2) + 3/4*cos(a/b)^2*cos_integra
l(5*a/b + 5*arcsin(c*x))*sin(a/b)/(b*c^2) - 3/4*cos(a/b)^2*cos_integral(3*a
/b + 3*arcsin(c*x))*sin(a/b)/(b*c^2) - 5/4*cos(a/b)^3*sin_integral(5*a/b +
5*arcsin(c*x))/(b*c^2) + 3/4*cos(a/b)^3*sin_integral(3*a/b + 3*arcsin(c*x))
/(b*c^2) - 1/16*cos_integral(5*a/b + 5*arcsin(c*x))*sin(a/b)/(b*c^2) + 3/16
*cos_integral(3*a/b + 3*arcsin(c*x))*sin(a/b)/(b*c^2) - 1/8*cos_integral(a/
b + arcsin(c*x))*sin(a/b)/(b*c^2) + 5/16*cos(a/b)*sin_integral(5*a/b + 5*ar
csin(c*x))/(b*c^2) - 9/16*cos(a/b)*sin_integral(3*a/b + 3*arcsin(c*x))/(b*c
^2) + 1/8*cos(a/b)*sin_integral(a/b + arcsin(c*x))/(b*c^2)
```

maple [A] time = 0.07, size = 139, normalized size = 0.76

$$\frac{3\,\mathrm{Si}\left(3\arcsin\left(cx\right)+\frac{3a}{b}\right)\cos\left(\frac{3a}{b}\right)-3\,\mathrm{Ci}\left(3\arcsin\left(cx\right)+\frac{3a}{b}\right)\sin\left(\frac{3a}{b}\right)+2\,\mathrm{Si}\left(\arcsin\left(cx\right)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)-2\,\mathrm{Ci}\left(a\right.}{16c^2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x)
```

```
[Out] 1/16/c^2*(3*Si(3*arcsin(c*x)+3*a/b)*cos(3*a/b)-3*Ci(3*arcsin(c*x)+3*a/b)*si
n(3*a/b)+2*Si(arcsin(c*x)+a/b)*cos(a/b)-2*Ci(arcsin(c*x)+a/b)*sin(a/b)+Si(5
*arcsin(c*x)+5*a/b)*cos(5*a/b)-Ci(5*arcsin(c*x)+5*a/b)*sin(5*a/b))/b
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}x}{b\arcsin\left(cx\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate((-c^2*x^2 + 1)^(3/2)*x/(b*arcsin(c*x) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x\left(1-c^2\,x^2\right)^{3/2}}{a+b\,\mathrm{asin}\left(c\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(1 - c^2*x^2)^(3/2))/(a + b*asin(c*x)),x)
```

```
[Out] int((x*(1 - c^2*x^2)^(3/2))/(a + b*asin(c*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}}{a+b\,\mathrm{asin}\left(cx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c**2*x**2+1)**(3/2)/(a+b*asin(c*x)),x)
```

```
[Out] Integral(x*(-(c*x - 1)*(c*x + 1))**(3/2)/(a + b*asin(c*x)), x)
```

3.328 $\int \frac{\left(1-c^2x^2\right)^{3/2}}{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=144

$$\frac{\cos\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{2bc}+\frac{\cos\left(\frac{4a}{b}\right)\text{Ci}\left(\frac{4\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{8bc}+\frac{\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{2bc}+\frac{\sin\left(\frac{4a}{b}\right)\text{Si}\left(\frac{4\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{8bc}$$

```
[Out] 1/2*Ci(2*(a+b*arcsin(c*x))/b)*cos(2*a/b)/b/c+1/8*Ci(4*(a+b*arcsin(c*x))/b)*
cos(4*a/b)/b/c+3/8*ln(a+b*arcsin(c*x))/b/c+1/2*Si(2*(a+b*arcsin(c*x))/b)*si
n(2*a/b)/b/c+1/8*Si(4*(a+b*arcsin(c*x))/b)*sin(4*a/b)/b/c
```

Rubi [A] time = 0.24, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {4661, 3312, 3303, 3299, 3302}

$$\frac{\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{2bc}+\frac{\cos\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)}{8bc}+\frac{\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{2bc}$$

Antiderivative was successfully verified.

```
[In] Int[(1 - c^2*x^2)^(3/2)/(a + b*ArcSin[c*x]),x]
```

```
[Out] (Cos[(2*a)/b]*CosIntegral[(2*a)/b + 2*ArcSin[c*x]])/(2*b*c) + (Cos[(4*a)/b]
*CosIntegral[(4*a)/b + 4*ArcSin[c*x]])/(8*b*c) + (3*Log[a + b*ArcSin[c*x]])
/(8*b*c) + (Sin[(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c*x]])/(2*b*c) + (S
in[(4*a)/b]*SinIntegral[(4*a)/b + 4*ArcSin[c*x]])/(8*b*c)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 4661

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[d^p/c, Subst[Int[(a + b*x)^n*Cos[x]^(2*p + 1), x], x, ArcS
in[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IGtQ[2
*p, 0] && (IntegerQ[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{\left(1-c^2x^2\right)^{3/2}}{a+b\sin^{-1}(cx)}\,dx = \frac{\text{Subst}\left(\int \frac{\cos^4(x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{c}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{3}{8(a+bx)}+\frac{\cos(2x)}{2(a+bx)}+\frac{\cos(4x)}{8(a+bx)}\right)dx,x,\sin^{-1}(cx)\right)}{c}$$
$$= \frac{3\log\left(a+b\sin^{-1}(cx)\right)}{8bc}+\frac{\text{Subst}\left(\int \frac{\cos(4x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{8c}+\frac{\text{Subst}\left(\int \frac{\cos(2x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{2c}$$
$$= \frac{3\log\left(a+b\sin^{-1}(cx)\right)}{8bc}+\frac{\cos\left(\frac{2a}{b}\right)\text{Subst}\left(\int \frac{\cos\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{2c}+\frac{\cos\left(\frac{4a}{b}\right)\text{Subst}\ldots}{\ldots}$$
$$= \frac{\cos\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{2bc}+\frac{\cos\left(\frac{4a}{b}\right)\text{Ci}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)}{8bc}+\frac{3\log\left(a+b\sin^{-1}(c\ldots\right)}{8bc}$$

Mathematica [A] time = 0.37, size = 121, normalized size = 0.84

$$\frac{4\cos\left(\frac{2a}{b}\right)\text{Ci}\left(2\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+\cos\left(\frac{4a}{b}\right)\text{Ci}\left(4\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+4\sin\left(\frac{2a}{b}\right)\text{Si}\left(2\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+\sin\left(\frac{4a}{b}\right)\ldots}{8bc}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(1 - c^2*x^2)^(3/2)/(a + b*ArcSin[c*x]),x]
```

```
[Out] (4*Cos[(2*a)/b]*CosIntegral[2*(a/b + ArcSin[c*x])] + Cos[(4*a)/b]*CosIntegr
al[4*(a/b + ArcSin[c*x])] + 4*Log[a + b*ArcSin[c*x]] - Log[8*(a + b*ArcSin[
c*x])] + 4*Sin[(2*a)/b]*SinIntegral[2*(a/b + ArcSin[c*x])] + Sin[(4*a)/b]*S
inIntegral[4*(a/b + ArcSin[c*x])])/(8*b*c)
```

fricas [F] time = 0.52, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}}{b\arcsin(cx)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral((-c^2*x^2 + 1)^(3/2)/(b*arcsin(c*x) + a), x)
```

giac [A] time = 0.37, size = 252, normalized size = 1.75

$$\frac{\cos\left(\frac{a}{b}\right)^4\text{Ci}\left(\frac{4a}{b}+4\arcsin(cx)\right)}{bc}+\frac{\cos\left(\frac{a}{b}\right)^3\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{4a}{b}+4\arcsin(cx)\right)}{bc}-\frac{\cos\left(\frac{a}{b}\right)^2\text{Ci}\left(\frac{4a}{b}+4\arcsin(cx)\right)}{bc}+\ldots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] cos(a/b)^4*cos_integral(4*a/b + 4*arcsin(c*x))/(b*c) + cos(a/b)^3*sin(a/b)*
sin_integral(4*a/b + 4*arcsin(c*x))/(b*c) - cos(a/b)^2*cos_integral(4*a/b +
 4*arcsin(c*x))/(b*c) + cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(c*x))/(b*c
) - 1/2*cos(a/b)*sin(a/b)*sin_integral(4*a/b + 4*arcsin(c*x))/(b*c) + cos(a
```

```
/b)*sin(a/b)*sin_integral(2*a/b + 2*arcsin(c*x))/(b*c) + 1/8*cos_integral(4
*a/b + 4*arcsin(c*x))/(b*c) - 1/2*cos_integral(2*a/b + 2*arcsin(c*x))/(b*c)
 + 3/8*log(b*arcsin(c*x) + a)/(b*c)
```

maple [A] time = 0.09, size = 135, normalized size = 0.94

$$\frac{\mathrm{Si}\left(4\arcsin(cx)+\frac{4a}{b}\right)\sin\left(\frac{4a}{b}\right)}{8cb}+\frac{\mathrm{Ci}\left(4\arcsin(cx)+\frac{4a}{b}\right)\cos\left(\frac{4a}{b}\right)}{8cb}+\frac{\mathrm{Si}\left(2\arcsin(cx)+\frac{2a}{b}\right)\sin\left(\frac{2a}{b}\right)}{2cb}+\frac{\mathrm{Ci}\left(2\arcsin(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x)
```

```
[Out] 1/8/c/b*Si(4*arcsin(c*x)+4*a/b)*sin(4*a/b)+1/8/c/b*Ci(4*arcsin(c*x)+4*a/b)*
cos(4*a/b)+1/2/c/b*Si(2*arcsin(c*x)+2*a/b)*sin(2*a/b)+1/2/c/b*Ci(2*arcsin(c
*x)+2*a/b)*cos(2*a/b)+3/8*ln(a+b*arcsin(c*x))/b/c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}}{b\arcsin(cx)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate((-c^2*x^2 + 1)^(3/2)/(b*arcsin(c*x) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(1-c^2\,x^2\right)^{3/2}}{a+b\,\mathrm{asin}\left(c\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(3/2)/(a + b*asin(c*x)),x)
```

```
[Out] int((1 - c^2*x^2)^(3/2)/(a + b*asin(c*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}}{a+b\,\mathrm{asin}\left(cx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(3/2)/(a+b*asin(c*x)),x)
```

```
[Out] Integral((-(c*x - 1)*(c*x + 1))**(3/2)/(a + b*asin(c*x)), x)
```

3.329 $\int \frac{\left(1-c^2x^2\right)^{3/2}}{x\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=140

$$\text{Int}\left(\frac{1}{x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)},x\right)+\frac{5\sin\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{4b}+\frac{\sin\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{4b}-\frac{5\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+\right.}{}\right)}{4b}$$

```
[Out] -5/4*cos(a/b)*Si((a+b*arcsin(c*x))/b)/b-1/4*cos(3*a/b)*Si(3*(a+b*arcsin(c*x
))/b)/b+5/4*Ci((a+b*arcsin(c*x))/b)*sin(a/b)/b+1/4*Ci(3*(a+b*arcsin(c*x))/b
)*sin(3*a/b)/b+Unintegrable(1/x/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x)
```

Rubi [A] time = 0.75, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(1-c^2x^2\right)^{3/2}}{x\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(1 - c^2*x^2)^(3/2)/(x*(a + b*ArcSin[c*x])),x]
```

```
[Out] (5*CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b])/(4*b) + (CosIntegral[(3*a)/b +
3*ArcSin[c*x]]*Sin[(3*a)/b])/(4*b) - (5*Cos[a/b]*SinIntegral[a/b + ArcSin[c
*x]])/(4*b) - (Cos[(3*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c*x]])/(4*b) + D
efer[Int][1/(x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{\left(1-c^2x^2\right)^{3/2}}{x\left(a+b\sin^{-1}(cx)\right)}\,dx=\int\left(\frac{1}{x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}-\frac{2c^2x}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}+\frac{c^4x^{}}{\sqrt{1-c^2x^2}\left(a+\right.}\right.$$

$$=-\left(\left(2c^2\right)\int\frac{x}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx\right)+c^4\int\frac{x^3}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,d$$

$$=-\left(2\,\text{Subst}\left(\int\frac{\sin(x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)\right)+\int\frac{1}{x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx+\text{S}$$

$$=-\left(\left(2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int\frac{\sin\left(\frac{a}{b}+x\right)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)\right)+\left(2\sin\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int\frac{\text{co}}{}\right.$$

$$=\frac{2\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)\sin\left(\frac{a}{b}\right)}{b}-\frac{2\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{b}-\frac{1}{4}\text{Subst}\left(\int\frac{\sin(3x)}{a+bx}\right.$$

$$=\frac{2\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)\sin\left(\frac{a}{b}\right)}{b}-\frac{2\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{b}+\frac{1}{4}\left(3\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\right.$$

$$=\frac{5\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)\sin\left(\frac{a}{b}\right)}{4b}+\frac{\text{Ci}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)\sin\left(\frac{3a}{b}\right)}{4b}-\frac{5\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\text{si}\right.}{4b}$$

Mathematica [A] time = 3.34, size = 0, normalized size = 0.00

$$\int \frac{\left(1-c^2x^2\right)^{3/2}}{x\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(1 - c^2*x^2)^(3/2)/(x*(a + b*ArcSin[c*x])),x]
```

```
[Out] Integrate[(1 - c^2*x^2)^(3/2)/(x*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 1.33, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}}{bx\arcsin\left(cx\right)+ax},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/x/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral((-c^2*x^2 + 1)^(3/2)/(b*x*arcsin(c*x) + a*x), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/x/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.62, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}}{x\left(a+b\arcsin\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(3/2)/x/(a+b*arcsin(c*x)),x)
```

```
[Out] int((-c^2*x^2+1)^(3/2)/x/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}}{\left(b\arcsin\left(cx\right)+a\right)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/x/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate((-c^2*x^2 + 1)^(3/2)/((b*arcsin(c*x) + a)*x), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(1-c^2\,x^2\right)}^{3/2}}{x\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(3/2)/(x*(a + b*asin(c*x))),x)
```

```
[Out] int((1 - c^2*x^2)^(3/2)/(x*(a + b*asin(c*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}}{x\left(a+b\,\mathrm{asin}\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(3/2)/x/(a+b*asin(c*x)),x)
```

```
[Out] Integral((-(c*x - 1)*(c*x + 1))**(3/2)/(x*(a + b*asin(c*x))), x)
```

3.330 $\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^2\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=107

$$\text{Int}\left(\frac{1}{x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)},x\right)-\frac{c\cos\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{2b}-\frac{c\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{2b}-\frac{3c\log\left(a+b\right.}{2b}$$

```
[Out] -1/2*c*Ci(2*(a+b*arcsin(c*x))/b)*cos(2*a/b)/b-3/2*c*ln(a+b*arcsin(c*x))/b-1
/2*c*Si(2*(a+b*arcsin(c*x))/b)*sin(2*a/b)/b+Unintegrable(1/x^2/(a+b*arcsin(
c*x))/(-c^2*x^2+1)^(1/2),x)
```

Rubi [A] time = 0.58, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^2\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(1 - c^2*x^2)^(3/2)/(x^2*(a + b*ArcSin[c*x])),x]
```

```
[Out] -(c*Cos[(2*a)/b]*CosIntegral[(2*a)/b + 2*ArcSin[c*x]])/(2*b) - (3*c*Log[a +
 b*ArcSin[c*x]])/(2*b) - (c*Sin[(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c*x
]])/(2*b) + Defer[Int][1/(x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^2\left(a+b\sin^{-1}(cx)\right)}\,dx &= \int \left(-\frac{2c^2}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}+\frac{1}{x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}+\frac{c^4x}{\sqrt{1-c^2x^2}\left(a+\right.}\right.\\
&= -\left(\left(2c^2\right)\int \frac{1}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx\right)+c^4\int \frac{x^2}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx\ -\\
&= -\frac{2c\log\left(a+b\sin^{-1}(cx)\right)}{b}+c\,\text{Subst}\left(\int \frac{\sin^2(x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)+\int \frac{}{x^2\sqrt{1-c^2x^2}\ (}\\
&= -\frac{2c\log\left(a+b\sin^{-1}(cx)\right)}{b}+c\,\text{Subst}\left(\int \left(\frac{1}{2(a+bx)}-\frac{\cos(2x)}{2(a+bx)}\right)dx,x,\sin^{-1}(cx)\right)+\\
&= -\frac{3c\log\left(a+b\sin^{-1}(cx)\right)}{2b}-\frac{1}{2}c\,\text{Subst}\left(\int \frac{\cos(2x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)+\int \frac{}{x^2\sqrt{1-c^2x^2}}\\
&= -\frac{3c\log\left(a+b\sin^{-1}(cx)\right)}{2b}-\frac{1}{2}\left(c\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx,x,\sin^{-1}(cx)\right.\\
&= -\frac{c\cos\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{2b}-\frac{3c\log\left(a+b\sin^{-1}(cx)\right)}{2b}-\frac{c\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\text{s}\right.}{2b}
\end{aligned}$$

Mathematica [A] time = 1.32, size = 0, normalized size = 0.00

$$\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^2\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(1 - c^2*x^2)^(3/2)/(x^2*(a + b*ArcSin[c*x])),x]
[Out] Integrate[(1 - c^2*x^2)^(3/2)/(x^2*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}}{bx^2\arcsin\left(cx\right)+ax^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/x^2/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral((-c^2*x^2 + 1)^(3/2)/(b*x^2*arcsin(c*x) + a*x^2), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}}{\left(b\arcsin\left(cx\right)+a\right)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/x^2/(a+b*arcsin(c*x)),x, algorithm="giac")
[Out] integrate((-c^2*x^2 + 1)^(3/2)/((b*arcsin(c*x) + a)*x^2), x)
```

maple [A] time = 0.52, size = 0, normalized size = 0.00

$$\int\frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}}{x^2\left(a+b\arcsin\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(3/2)/x^2/(a+b*arcsin(c*x)),x)
[Out] int((-c^2*x^2+1)^(3/2)/x^2/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}}{\left(b\arcsin\left(cx\right)+a\right)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/x^2/(a+b*arcsin(c*x)),x, algorithm="maxima")
[Out] integrate((-c^2*x^2 + 1)^(3/2)/((b*arcsin(c*x) + a)*x^2), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{\left(1-c^2\,x^2\right)^{3/2}}{x^2\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(3/2)/(x^2*(a + b*asin(c*x))),x)
[Out] int((1 - c^2*x^2)^(3/2)/(x^2*(a + b*asin(c*x))), x)
```

sympy [**A**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(-(cx-1)(cx+1))^{\frac{3}{2}}}{x^2(a+b\,\mathrm{asin}\,(cx))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(3/2)/x**2/(a+b*asin(c*x)),x)
```

```
[Out] Integral((-(c*x - 1)*(c*x + 1))**(3/2)/(x**2*(a + b*asin(c*x))), x)
```

3.331 $\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^3\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=31

$$\mathrm{Int}\left(\frac{\left(1-c^2x^2\right)^{3/2}}{x^3\left(a+b\sin^{-1}(cx)\right)},x\right)$$

```
[Out] Unintegrable((-c^2*x^2+1)^(3/2)/x^3/(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^3\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(1 - c^2*x^2)^(3/2)/(x^3*(a + b*ArcSin[c*x])),x]
[Out] Defer[Int][(1 - c^2*x^2)^(3/2)/(x^3*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^3\left(a+b\sin^{-1}(cx)\right)}\,dx=\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^3\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Mathematica [A] time = 5.74, size = 0, normalized size = 0.00

$$\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^3\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(1 - c^2*x^2)^(3/2)/(x^3*(a + b*ArcSin[c*x])),x]
[Out] Integrate[(1 - c^2*x^2)^(3/2)/(x^3*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 0.54, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}}{bx^3\arcsin(cx)+ax^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/x^3/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral((-c^2*x^2 + 1)^(3/2)/(b*x^3*arcsin(c*x) + a*x^3), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/x^3/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 3.14, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^{2} x^{2}+1\right)^{\frac{3}{2}}}{x^{3} \left(a +b \arcsin \left(c x \right)\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(3/2)/x^3/(a+b*arcsin(c*x)),x)
```

```
[Out] int((-c^2*x^2+1)^(3/2)/x^3/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{{\left(-c^{2} x^{2} + 1\right)}^{\frac{3}{2}}}{{\left(b \arcsin\left(c x\right) + a\right)} x^{3}}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/x^3/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate((-c^2*x^2 + 1)^(3/2)/((b*arcsin(c*x) + a)*x^3), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{{\left(1-c^2\,x^2\right)}^{3/2}}{x^3\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(3/2)/(x^3*(a + b*asin(c*x))),x)
```

```
[Out] int((1 - c^2*x^2)^(3/2)/(x^3*(a + b*asin(c*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(- \left(c x - 1\right) \left(c x + 1\right)\right)^{\frac{3}{2}}}{x^{3} \left(a + b \operatorname{asin}{\left(c x \right)}\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(3/2)/x**3/(a+b*asin(c*x)),x)
```

```
[Out] Integral((-(c*x - 1)*(c*x + 1))**(3/2)/(x**3*(a + b*asin(c*x))), x)
```

3.332 $\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^4\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=31

$$\mathrm{Int}\left(\frac{\left(1-c^2x^2\right)^{3/2}}{x^4\left(a+b\sin^{-1}(cx)\right)},x\right)$$

```
[Out] Unintegrable((-c^2*x^2+1)^(3/2)/x^4/(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^4\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(1 - c^2*x^2)^(3/2)/(x^4*(a + b*ArcSin[c*x])),x]
[Out] Defer[Int][(1 - c^2*x^2)^(3/2)/(x^4*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^4\left(a+b\sin^{-1}(cx)\right)}\,dx=\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^4\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Mathematica [A] time = 0.86, size = 0, normalized size = 0.00

$$\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^4\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(1 - c^2*x^2)^(3/2)/(x^4*(a + b*ArcSin[c*x])),x]
[Out] Integrate[(1 - c^2*x^2)^(3/2)/(x^4*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 1.84, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}}{bx^4\arcsin\left(cx\right)+ax^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/x^4/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral((-c^2*x^2 + 1)^(3/2)/(b*x^4*arcsin(c*x) + a*x^4), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}}{\left(b\arcsin\left(cx\right)+a\right)x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/x^4/(a+b*arcsin(c*x)),x, algorithm="giac")
[Out] integrate((-c^2*x^2 + 1)^(3/2)/((b*arcsin(c*x) + a)*x^4), x)
```

maple [A] time = 3.86, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}}{x^4\left(a+b\arcsin\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(3/2)/x^4/(a+b*arcsin(c*x)),x)
[Out] int((-c^2*x^2+1)^(3/2)/x^4/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}}{\left(b\arcsin\left(cx\right)+a\right)x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/x^4/(a+b*arcsin(c*x)),x, algorithm="maxima")
[Out] integrate((-c^2*x^2 + 1)^(3/2)/((b*arcsin(c*x) + a)*x^4), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(1-c^2\,x^2\right)^{3/2}}{x^4\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(3/2)/(x^4*(a + b*asin(c*x))),x)
[Out] int((1 - c^2*x^2)^(3/2)/(x^4*(a + b*asin(c*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}}{x^4\left(a+b\,\mathrm{asin}\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(3/2)/x**4/(a+b*asin(c*x)),x)
[Out] Integral((-(c*x - 1)*(c*x + 1))**(3/2)/(x**4*(a + b*asin(c*x))), x)
```

3.333 $\int \frac{x^3(1-c^2x^2)^{5/2}}{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=245

$$-\frac{3\sin\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{128bc^4}-\frac{\sin\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{32bc^4}+\frac{3\sin\left(\frac{7a}{b}\right)\text{Ci}\left(\frac{7\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{256bc^4}+\frac{\sin\left(\frac{9a}{b}\right)\text{Ci}\left(\frac{9\left(a+b\sin^{-1}\right.}{b}\right.}{256bc^4}$$

```
[Out] 3/128*cos(a/b)*Si((a+b*arcsin(c*x))/b)/b/c^4+1/32*cos(3*a/b)*Si(3*(a+b*arcs
in(c*x))/b)/b/c^4-3/256*cos(7*a/b)*Si(7*(a+b*arcsin(c*x))/b)/b/c^4-1/256*co
s(9*a/b)*Si(9*(a+b*arcsin(c*x))/b)/b/c^4-3/128*Ci((a+b*arcsin(c*x))/b)*sin(
a/b)/b/c^4-1/32*Ci(3*(a+b*arcsin(c*x))/b)*sin(3*a/b)/b/c^4+3/256*Ci(7*(a+b*
arcsin(c*x))/b)*sin(7*a/b)/b/c^4+1/256*Ci(9*(a+b*arcsin(c*x))/b)*sin(9*a/b)
/b/c^4
```

Rubi [A] time = 0.51, antiderivative size = 241, normalized size of antiderivative = 0.98, number of steps used = 15, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {4723, 4406, 3303, 3299, 3302}

$$-\frac{3\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{128bc^4}-\frac{\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)}{32bc^4}+\frac{3\sin\left(\frac{7a}{b}\right)\text{CosIntegral}\left(\frac{7a}{b}\right.}{256bc^4}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(1 - c^2*x^2)^(5/2))/(a + b*ArcSin[c*x]),x]
```

```
[Out] (-3*CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b])/(128*b*c^4) - (CosIntegral[(3*
a)/b + 3*ArcSin[c*x]]*Sin[(3*a)/b])/(32*b*c^4) + (3*CosIntegral[(7*a)/b + 7
*ArcSin[c*x]]*Sin[(7*a)/b])/(256*b*c^4) + (CosIntegral[(9*a)/b + 9*ArcSin[c
*x]]*Sin[(9*a)/b])/(256*b*c^4) + (3*Cos[a/b]*SinIntegral[a/b + ArcSin[c*x]]
)/(128*b*c^4) + (Cos[(3*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c*x]])/(32*b*c
^4) - (3*Cos[(7*a)/b]*SinIntegral[(7*a)/b + 7*ArcSin[c*x]])/(256*b*c^4) - (
Cos[(9*a)/b]*SinIntegral[(9*a)/b + 9*ArcSin[c*x]])/(256*b*c^4)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x^3\left(1-c^2x^2\right)^{5/2}}{a+b\sin^{-1}(cx)}\,dx = \frac{\text{Subst}\left(\int \frac{\cos^6(x)\sin^3(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c^4}$$

$$= \frac{\text{Subst}\left(\int \left(\frac{3\sin(x)}{128(a+bx)}+\frac{\sin(3x)}{32(a+bx)}-\frac{3\sin(7x)}{256(a+bx)}-\frac{\sin(9x)}{256(a+bx)}\right)dx, x, \sin^{-1}(cx)\right)}{c^4}$$

$$= -\frac{\text{Subst}\left(\int \frac{\sin(9x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{256c^4} - \frac{3\,\text{Subst}\left(\int \frac{\sin(7x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{256c^4} + \frac{3\,\text{Subst}\left(\int \frac{\sin(}{a+b}\right.}{1}$$

$$= \frac{\left(3\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{128c^4} + \frac{\cos\left(\frac{3a}{b}\right)\text{Subst}\left(\int \frac{\sin\left(\frac{3a}{b}+3x\right)}{a+bx}\,dx, x, \sin^{-1}\right.}{32c^4}$$

$$= -\frac{3\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)\sin\left(\frac{a}{b}\right)}{128bc^4} - \frac{\text{Ci}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)\sin\left(\frac{3a}{b}\right)}{32bc^4} + \frac{3\text{Ci}\left(\frac{7a}{b}+7\sin^{-1}(cx)\right)\text{s}}{256bc^4}$$

Mathematica [A] time = 1.27, size = 180, normalized size = 0.73

$$\frac{-6\sin\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)-8\sin\left(\frac{3a}{b}\right)\text{Ci}\left(3\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+3\sin\left(\frac{7a}{b}\right)\text{Ci}\left(7\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+\sin\left(\frac{9a}{b}\right)\text{Ci}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(1 - c^2*x^2)^(5/2))/(a + b*ArcSin[c*x]),x]
```

```
[Out] (-6*CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b] - 8*CosIntegral[3*(a/b + ArcSin
[c*x])]*Sin[(3*a)/b] + 3*CosIntegral[7*(a/b + ArcSin[c*x])]*Sin[(7*a)/b] +
CosIntegral[9*(a/b + ArcSin[c*x])]*Sin[(9*a)/b] + 6*Cos[a/b]*SinIntegral[a/
b + ArcSin[c*x]] + 8*Cos[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c*x])] - 3*Co
s[(7*a)/b]*SinIntegral[7*(a/b + ArcSin[c*x])] - Cos[(9*a)/b]*SinIntegral[9*
(a/b + ArcSin[c*x])])/(256*b*c^4)
```

fricas [F] time = 0.79, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(c^4x^7-2\,c^2x^5+x^3\right)\sqrt{-c^2x^2+1}}{b\arcsin(cx)+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral((c^4*x^7 - 2*c^2*x^5 + x^3)*sqrt(-c^2*x^2 + 1)/(b*arcsin(c*x) + a)
, x)
```

giac [B] time = 0.51, size = 746, normalized size = 3.04

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] cos(a/b)^8*cos_integral(9*a/b + 9*arcsin(c*x))*sin(a/b)/(b*c^4) - cos(a/b)^
9*sin_integral(9*a/b + 9*arcsin(c*x))/(b*c^4) - 7/4*cos(a/b)^6*cos_integral
(9*a/b + 9*arcsin(c*x))*sin(a/b)/(b*c^4) + 3/4*cos(a/b)^6*cos_integral(7*a/
b + 7*arcsin(c*x))*sin(a/b)/(b*c^4) + 9/4*cos(a/b)^7*sin_integral(9*a/b + 9
*arcsin(c*x))/(b*c^4) - 3/4*cos(a/b)^7*sin_integral(7*a/b + 7*arcsin(c*x))/
(b*c^4) + 15/16*cos(a/b)^4*cos_integral(9*a/b + 9*arcsin(c*x))*sin(a/b)/(b*
c^4) - 15/16*cos(a/b)^4*cos_integral(7*a/b + 7*arcsin(c*x))*sin(a/b)/(b*c^4
) - 27/16*cos(a/b)^5*sin_integral(9*a/b + 9*arcsin(c*x))/(b*c^4) + 21/16*co
s(a/b)^5*sin_integral(7*a/b + 7*arcsin(c*x))/(b*c^4) - 5/32*cos(a/b)^2*cos_
integral(9*a/b + 9*arcsin(c*x))*sin(a/b)/(b*c^4) + 9/32*cos(a/b)^2*cos_inte
gral(7*a/b + 7*arcsin(c*x))*sin(a/b)/(b*c^4) - 1/8*cos(a/b)^2*cos_integral(
3*a/b + 3*arcsin(c*x))*sin(a/b)/(b*c^4) + 15/32*cos(a/b)^3*sin_integral(9*a
/b + 9*arcsin(c*x))/(b*c^4) - 21/32*cos(a/b)^3*sin_integral(7*a/b + 7*arcsi
n(c*x))/(b*c^4) + 1/8*cos(a/b)^3*sin_integral(3*a/b + 3*arcsin(c*x))/(b*c^4
) + 1/256*cos_integral(9*a/b + 9*arcsin(c*x))*sin(a/b)/(b*c^4) - 3/256*cos_
integral(7*a/b + 7*arcsin(c*x))*sin(a/b)/(b*c^4) + 1/32*cos_integral(3*a/b
+ 3*arcsin(c*x))*sin(a/b)/(b*c^4) - 3/128*cos_integral(a/b + arcsin(c*x))*s
in(a/b)/(b*c^4) - 9/256*cos(a/b)*sin_integral(9*a/b + 9*arcsin(c*x))/(b*c^4
) + 21/256*cos(a/b)*sin_integral(7*a/b + 7*arcsin(c*x))/(b*c^4) - 3/32*cos(
a/b)*sin_integral(3*a/b + 3*arcsin(c*x))/(b*c^4) + 3/128*cos(a/b)*sin_integ
ral(a/b + arcsin(c*x))/(b*c^4)
```

maple [A] time = 0.08, size = 185, normalized size = 0.76

$$6\,\mathrm{Si}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)-6\,\mathrm{Ci}\left(\arcsin(cx)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)+8\,\mathrm{Si}\left(3\arcsin(cx)+\frac{3a}{b}\right)\cos\left(\frac{3a}{b}\right)-\mathrm{Si}\left(9\arcsin\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x)
```

```
[Out] 1/256/c^4*(6*Si(arcsin(c*x)+a/b)*cos(a/b)-6*Ci(arcsin(c*x)+a/b)*sin(a/b)+8*
Si(3*arcsin(c*x)+3*a/b)*cos(3*a/b)-Si(9*arcsin(c*x)+9*a/b)*cos(9*a/b)+Ci(9*
arcsin(c*x)+9*a/b)*sin(9*a/b)-8*Ci(3*arcsin(c*x)+3*a/b)*sin(3*a/b)-3*Si(7*a
rcsin(c*x)+7*a/b)*cos(7*a/b)+3*Ci(7*arcsin(c*x)+7*a/b)*sin(7*a/b))/b
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{5}{2}}x^3}{b\arcsin(cx)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate((-c^2*x^2 + 1)^(5/2)*x^3/(b*arcsin(c*x) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\,\left(1-c^2\,x^2\right)^{5/2}}{a+b\,\mathrm{asin}\left(c\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(1 - c^2*x^2)^(5/2))/(a + b*asin(c*x)),x)
```

```
[Out] int((x^3*(1 - c^2*x^2)^(5/2))/(a + b*asin(c*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3 \left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}}{a+b\,\mathrm{asin}\left(cx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(-c**2*x**2+1)**(5/2)/(a+b*asin(c*x)),x)
```

```
[Out] Integral(x**3*(-(c*x - 1)*(c*x + 1))**(5/2)/(a + b*asin(c*x)), x)
```

3.334 $\int \frac{x^2\left(1-c^2x^2\right)^{5/2}}{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=268

$$\frac{\cos\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{32bc^3}-\frac{\cos\left(\frac{4a}{b}\right)\text{Ci}\left(\frac{4\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{32bc^3}-\frac{\cos\left(\frac{6a}{b}\right)\text{Ci}\left(\frac{6\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{32bc^3}-\frac{\cos\left(\frac{8a}{b}\right)\text{Ci}\left(\frac{8\left(a+b\sin^{-1}(\right.}{b}\right.}{128bc^3}$$

```
[Out] 1/32*Ci(2*(a+b*arcsin(c*x))/b)*cos(2*a/b)/b/c^3-1/32*Ci(4*(a+b*arcsin(c*x))
/b)*cos(4*a/b)/b/c^3-1/32*Ci(6*(a+b*arcsin(c*x))/b)*cos(6*a/b)/b/c^3-1/128*
Ci(8*(a+b*arcsin(c*x))/b)*cos(8*a/b)/b/c^3+5/128*ln(a+b*arcsin(c*x))/b/c^3+
1/32*Si(2*(a+b*arcsin(c*x))/b)*sin(2*a/b)/b/c^3-1/32*Si(4*(a+b*arcsin(c*x))
/b)*sin(4*a/b)/b/c^3-1/32*Si(6*(a+b*arcsin(c*x))/b)*sin(6*a/b)/b/c^3-1/128*
Si(8*(a+b*arcsin(c*x))/b)*sin(8*a/b)/b/c^3
```

Rubi [A] time = 0.53, antiderivative size = 268, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {4723, 4406, 3303, 3299, 3302}

$$\frac{\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{32bc^3}-\frac{\cos\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)}{32bc^3}-\frac{\cos\left(\frac{6a}{b}\right)\text{CosIntegral}\left(\frac{6a}{b}\right.}{32bc^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(1 - c^2*x^2)^(5/2))/(a + b*ArcSin[c*x]),x]
```

```
[Out] (Cos[(2*a)/b]*CosIntegral[(2*a)/b + 2*ArcSin[c*x]])/(32*b*c^3) - (Cos[(4*a)
/b]*CosIntegral[(4*a)/b + 4*ArcSin[c*x]])/(32*b*c^3) - (Cos[(6*a)/b]*CosInt
egral[(6*a)/b + 6*ArcSin[c*x]])/(32*b*c^3) - (Cos[(8*a)/b]*CosIntegral[(8*a
)/b + 8*ArcSin[c*x]])/(128*b*c^3) + (5*Log[a + b*ArcSin[c*x]])/(128*b*c^3)
+ (Sin[(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c*x]])/(32*b*c^3) - (Sin[(4*
a)/b]*SinIntegral[(4*a)/b + 4*ArcSin[c*x]])/(32*b*c^3) - (Sin[(6*a)/b]*SinI
ntegral[(6*a)/b + 6*ArcSin[c*x]])/(32*b*c^3) - (Sin[(8*a)/b]*SinIntegral[(8
*a)/b + 8*ArcSin[c*x]])/(128*b*c^3)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
```

```
tQ[p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x^2\left(1-c^2x^2\right)^{5/2}}{a+b\sin^{-1}(cx)}\,dx = \frac{\text{Subst}\left(\int \frac{\cos^6(x)\sin^2(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c^3}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{5}{128(a+bx)}+\frac{\cos(2x)}{32(a+bx)}-\frac{\cos(4x)}{32(a+bx)}-\frac{\cos(6x)}{32(a+bx)}-\frac{\cos(8x)}{128(a+bx)}\right) dx, x, \sin^{-1}(cx)\right)}{c^3}$$
$$= \frac{5\log\left(a+b\sin^{-1}(cx)\right)}{128bc^3} - \frac{\text{Subst}\left(\int \frac{\cos(8x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{128c^3} + \frac{\text{Subst}\left(\int \frac{\cos(2x)}{a+bx}\,dx, x, \sin^{-1}\right.}{32c^3}$$
$$= \frac{5\log\left(a+b\sin^{-1}(cx)\right)}{128bc^3} + \frac{\cos\left(\frac{2a}{b}\right)\text{Subst}\left(\int \frac{\cos\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{32c^3} - \frac{\cos\left(\frac{4a}{b}\right)\text{Subst}}{}$$
$$= \frac{\cos\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{32bc^3} - \frac{\cos\left(\frac{4a}{b}\right)\text{Ci}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)}{32bc^3} - \frac{\cos\left(\frac{6a}{b}\right)\text{Ci}\left(\frac{6a}{b}+6\sin\right.}{32bc^3}$$

Mathematica [A] time = 1.14, size = 209, normalized size = 0.78

$$-\frac{-4\cos\left(\frac{2a}{b}\right)\text{Ci}\left(2\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+4\cos\left(\frac{4a}{b}\right)\text{Ci}\left(4\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+4\cos\left(\frac{6a}{b}\right)\text{Ci}\left(6\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+\cos}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(1 - c^2*x^2)^(5/2))/(a + b*ArcSin[c*x]),x]
```

```
[Out] -1/128*(-4*Cos[(2*a)/b]*CosIntegral[2*(a/b + ArcSin[c*x])] + 4*Cos[(4*a)/b]
*CosIntegral[4*(a/b + ArcSin[c*x])] + 4*Cos[(6*a)/b]*CosIntegral[6*(a/b + A
rcSin[c*x])] + Cos[(8*a)/b]*CosIntegral[8*(a/b + ArcSin[c*x])] + 11*Log[a +
 b*ArcSin[c*x]] - 16*Log[8*(a + b*ArcSin[c*x])] - 4*Sin[(2*a)/b]*SinIntegra
l[2*(a/b + ArcSin[c*x])] + 4*Sin[(4*a)/b]*SinIntegral[4*(a/b + ArcSin[c*x])
] + 4*Sin[(6*a)/b]*SinIntegral[6*(a/b + ArcSin[c*x])] + Sin[(8*a)/b]*SinInt
egral[8*(a/b + ArcSin[c*x])])/(b*c^3)
```

fricas [F] time = 0.53, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(c^4x^6-2\,c^2x^4+x^2\right)\sqrt{-c^2x^2+1}}{b\arcsin(cx)+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral((c^4*x^6 - 2*c^2*x^4 + x^2)*sqrt(-c^2*x^2 + 1)/(b*arcsin(c*x) + a)
, x)
```

giac [B] time = 0.59, size = 757, normalized size = 2.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] -cos(a/b)^8*cos_integral(8*a/b + 8*arcsin(c*x))/(b*c^3) - cos(a/b)^7*sin(a/
b)*sin_integral(8*a/b + 8*arcsin(c*x))/(b*c^3) + 2*cos(a/b)^6*cos_integral(
8*a/b + 8*arcsin(c*x))/(b*c^3) - cos(a/b)^6*cos_integral(6*a/b + 6*arcsin(c
*x))/(b*c^3) + 3/2*cos(a/b)^5*sin(a/b)*sin_integral(8*a/b + 8*arcsin(c*x))/
(b*c^3) - cos(a/b)^5*sin(a/b)*sin_integral(6*a/b + 6*arcsin(c*x))/(b*c^3) -
 5/4*cos(a/b)^4*cos_integral(8*a/b + 8*arcsin(c*x))/(b*c^3) + 3/2*cos(a/b)^
4*cos_integral(6*a/b + 6*arcsin(c*x))/(b*c^3) - 1/4*cos(a/b)^4*cos_integral
(4*a/b + 4*arcsin(c*x))/(b*c^3) - 5/8*cos(a/b)^3*sin(a/b)*sin_integral(8*a/
b + 8*arcsin(c*x))/(b*c^3) + cos(a/b)^3*sin(a/b)*sin_integral(6*a/b + 6*arc
sin(c*x))/(b*c^3) - 1/4*cos(a/b)^3*sin(a/b)*sin_integral(4*a/b + 4*arcsin(c
*x))/(b*c^3) + 1/4*cos(a/b)^2*cos_integral(8*a/b + 8*arcsin(c*x))/(b*c^3) -
 9/16*cos(a/b)^2*cos_integral(6*a/b + 6*arcsin(c*x))/(b*c^3) + 1/4*cos(a/b)
^2*cos_integral(4*a/b + 4*arcsin(c*x))/(b*c^3) + 1/16*cos(a/b)^2*cos_integr
al(2*a/b + 2*arcsin(c*x))/(b*c^3) + 1/16*cos(a/b)*sin(a/b)*sin_integral(8*a
/b + 8*arcsin(c*x))/(b*c^3) - 3/16*cos(a/b)*sin(a/b)*sin_integral(6*a/b + 6
*arcsin(c*x))/(b*c^3) + 1/8*cos(a/b)*sin(a/b)*sin_integral(4*a/b + 4*arcsin
(c*x))/(b*c^3) + 1/16*cos(a/b)*sin(a/b)*sin_integral(2*a/b + 2*arcsin(c*x))
/(b*c^3) - 1/128*cos_integral(8*a/b + 8*arcsin(c*x))/(b*c^3) + 1/32*cos_int
egral(6*a/b + 6*arcsin(c*x))/(b*c^3) - 1/32*cos_integral(4*a/b + 4*arcsin(c
*x))/(b*c^3) - 1/32*cos_integral(2*a/b + 2*arcsin(c*x))/(b*c^3) + 5/128*log
(b*arcsin(c*x) + a)/(b*c^3)
```

maple [A] time = 0.08, size = 251, normalized size = 0.94

$$-\frac{\mathrm{Ci}\left(4\arcsin\left(cx\right)+\frac{4a}{b}\right)\cos\left(\frac{4a}{b}\right)}{32c^3b}+\frac{\mathrm{Si}\left(2\arcsin\left(cx\right)+\frac{2a}{b}\right)\sin\left(\frac{2a}{b}\right)}{32c^3b}-\frac{\mathrm{Si}\left(8\arcsin\left(cx\right)+\frac{8a}{b}\right)\sin\left(\frac{8a}{b}\right)}{128c^3b}-\frac{\mathrm{Ci}\left(8\,\mathrm{arc}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x)
```

```
[Out] -1/32/c^3/b*Ci(4*arcsin(c*x)+4*a/b)*cos(4*a/b)+1/32/c^3/b*Si(2*arcsin(c*x)+
2*a/b)*sin(2*a/b)-1/128/c^3/b*Si(8*arcsin(c*x)+8*a/b)*sin(8*a/b)-1/128/c^3/
b*Ci(8*arcsin(c*x)+8*a/b)*cos(8*a/b)+1/32/c^3/b*Ci(2*arcsin(c*x)+2*a/b)*cos
(2*a/b)-1/32/c^3/b*Si(6*arcsin(c*x)+6*a/b)*sin(6*a/b)-1/32/c^3/b*Ci(6*arcsi
n(c*x)+6*a/b)*cos(6*a/b)-1/32/c^3/b*Si(4*arcsin(c*x)+4*a/b)*sin(4*a/b)+5/12
8*ln(a+b*arcsin(c*x))/b/c^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{5}{2}}x^2}{b\arcsin\left(cx\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate((-c^2*x^2 + 1)^(5/2)*x^2/(b*arcsin(c*x) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2\,{\left(1-c^2\,x^2\right)}^{5/2}}{a+b\,\mathrm{asin}\left(c\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(1 - c^2*x^2)^(5/2))/(a + b*asin(c*x)),x)
```

```
[Out] int((x^2*(1 - c^2*x^2)^(5/2))/(a + b*asin(c*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2 (-(cx-1)(cx+1))^{\frac{5}{2}}}{a+b\operatorname{asin}(cx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(-c**2*x**2+1)**(5/2)/(a+b*asin(c*x)),x)
```

```
[Out] Integral(x**2*(-(c*x - 1)*(c*x + 1))**(5/2)/(a + b*asin(c*x)), x)
```

3.335 $\int \frac{x\left(1-c^2x^2\right)^{5/2}}{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=245

$$-\frac{5\sin\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{64bc^2}-\frac{9\sin\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{64bc^2}-\frac{5\sin\left(\frac{5a}{b}\right)\text{Ci}\left(\frac{5\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{64bc^2}-\frac{\sin\left(\frac{7a}{b}\right)\text{Ci}\left(\frac{7\left(a+b\sin^{-1}\right.}{b}\right.}{64bc^2}$$

```
[Out] 5/64*cos(a/b)*Si((a+b*arcsin(c*x))/b)/b/c^2+9/64*cos(3*a/b)*Si(3*(a+b*arcsi
n(c*x))/b)/b/c^2+5/64*cos(5*a/b)*Si(5*(a+b*arcsin(c*x))/b)/b/c^2+1/64*cos(7
*a/b)*Si(7*(a+b*arcsin(c*x))/b)/b/c^2-5/64*Ci((a+b*arcsin(c*x))/b)*sin(a/b)
/b/c^2-9/64*Ci(3*(a+b*arcsin(c*x))/b)*sin(3*a/b)/b/c^2-5/64*Ci(5*(a+b*arcsi
n(c*x))/b)*sin(5*a/b)/b/c^2-1/64*Ci(7*(a+b*arcsin(c*x))/b)*sin(7*a/b)/b/c^2
```

Rubi [A] time = 0.45, antiderivative size = 241, normalized size of antiderivative = 0.98, number of steps used = 15, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {4723, 4406, 3303, 3299, 3302}

$$-\frac{5\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{64bc^2}-\frac{9\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)}{64bc^2}-\frac{5\sin\left(\frac{5a}{b}\right)\text{CosIntegral}\left(\right.}{64bc^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(1 - c^2*x^2)^(5/2))/(a + b*ArcSin[c*x]),x]
```

```
[Out] (-5*CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b])/(64*b*c^2) - (9*CosIntegral[(3
*a)/b + 3*ArcSin[c*x]]*Sin[(3*a)/b])/(64*b*c^2) - (5*CosIntegral[(5*a)/b +
5*ArcSin[c*x]]*Sin[(5*a)/b])/(64*b*c^2) - (CosIntegral[(7*a)/b + 7*ArcSin[c
*x]]*Sin[(7*a)/b])/(64*b*c^2) + (5*Cos[a/b]*SinIntegral[a/b + ArcSin[c*x]])
/(64*b*c^2) + (9*Cos[(3*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c*x]])/(64*b*c
^2) + (5*Cos[(5*a)/b]*SinIntegral[(5*a)/b + 5*ArcSin[c*x]])/(64*b*c^2) + (C
os[(7*a)/b]*SinIntegral[(7*a)/b + 7*ArcSin[c*x]])/(64*b*c^2)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x\left(1-c^2x^2\right)^{5/2}}{a+b\sin^{-1}(cx)}\,dx = \frac{\text{Subst}\left(\int \frac{\cos^6(x)\sin(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c^2}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{5\sin(x)}{64(a+bx)}+\frac{9\sin(3x)}{64(a+bx)}+\frac{5\sin(5x)}{64(a+bx)}+\frac{\sin(7x)}{64(a+bx)}\right)dx, x, \sin^{-1}(cx)\right)}{c^2}$$
$$= \frac{\text{Subst}\left(\int \frac{\sin(7x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{64c^2}+\frac{5\,\text{Subst}\left(\int \frac{\sin(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{64c^2}+\frac{5\,\text{Subst}\left(\int \frac{\sin(5x)}{a+bx}\right.}{64}$$
$$= \frac{\left(5\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{64c^2}+\frac{\left(9\cos\left(\frac{3a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{3a}{b}+3x\right)}{a+bx}\,dx, x, \text{si}\right.}{64c^2}$$
$$= -\frac{5\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)\sin\left(\frac{a}{b}\right)}{64bc^2}-\frac{9\text{Ci}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)\sin\left(\frac{3a}{b}\right)}{64bc^2}-\frac{5\text{Ci}\left(\frac{5a}{b}+5\sin^{-1}(cx)\right)\text{s}}{64bc^2}$$

Mathematica [A] time = 1.16, size = 180, normalized size = 0.73

$$\frac{-5\sin\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)-9\sin\left(\frac{3a}{b}\right)\text{Ci}\left(3\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)-5\sin\left(\frac{5a}{b}\right)\text{Ci}\left(5\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)-\sin\left(\frac{7a}{b}\right)\text{Ci}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(1 - c^2*x^2)^(5/2))/(a + b*ArcSin[c*x]),x]
```

```
[Out] (-5*CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b] - 9*CosIntegral[3*(a/b + ArcSin
[c*x])]*Sin[(3*a)/b] - 5*CosIntegral[5*(a/b + ArcSin[c*x])]*Sin[(5*a)/b] -
CosIntegral[7*(a/b + ArcSin[c*x])]*Sin[(7*a)/b] + 5*Cos[a/b]*SinIntegral[a/
b + ArcSin[c*x]] + 9*Cos[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c*x])] + 5*Co
s[(5*a)/b]*SinIntegral[5*(a/b + ArcSin[c*x])] + Cos[(7*a)/b]*SinIntegral[7*
(a/b + ArcSin[c*x])])/(64*b*c^2)
```

fricas [F] time = 1.08, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(c^4x^5-2\,c^2x^3+x\right)\sqrt{-c^2x^2+1}}{b\arcsin(cx)+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral((c^4*x^5 - 2*c^2*x^3 + x)*sqrt(-c^2*x^2 + 1)/(b*arcsin(c*x) + a),
x)
```

giac [B] time = 0.83, size = 614, normalized size = 2.51

$$-\frac{\cos\left(\frac{a}{b}\right)^6\text{Ci}\left(\frac{7a}{b}+7\arcsin(cx)\right)\sin\left(\frac{a}{b}\right)}{bc^2}+\frac{\cos\left(\frac{a}{b}\right)^7\text{Si}\left(\frac{7a}{b}+7\arcsin(cx)\right)}{bc^2}+\frac{5\cos\left(\frac{a}{b}\right)^4\text{Ci}\left(\frac{7a}{b}+7\arcsin(cx)\right)\text{s}}{4\,bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] -cos(a/b)^6*cos_integral(7*a/b + 7*arcsin(c*x))*sin(a/b)/(b*c^2) + cos(a/b)
^7*sin_integral(7*a/b + 7*arcsin(c*x))/(b*c^2) + 5/4*cos(a/b)^4*cos_integra
l(7*a/b + 7*arcsin(c*x))*sin(a/b)/(b*c^2) - 5/4*cos(a/b)^4*cos_integral(5*a
/b + 5*arcsin(c*x))*sin(a/b)/(b*c^2) - 7/4*cos(a/b)^5*sin_integral(7*a/b +
7*arcsin(c*x))/(b*c^2) + 5/4*cos(a/b)^5*sin_integral(5*a/b + 5*arcsin(c*x))
/(b*c^2) - 3/8*cos(a/b)^2*cos_integral(7*a/b + 7*arcsin(c*x))*sin(a/b)/(b*c
^2) + 15/16*cos(a/b)^2*cos_integral(5*a/b + 5*arcsin(c*x))*sin(a/b)/(b*c^2)
 - 9/16*cos(a/b)^2*cos_integral(3*a/b + 3*arcsin(c*x))*sin(a/b)/(b*c^2) + 7
/8*cos(a/b)^3*sin_integral(7*a/b + 7*arcsin(c*x))/(b*c^2) - 25/16*cos(a/b)^
3*sin_integral(5*a/b + 5*arcsin(c*x))/(b*c^2) + 9/16*cos(a/b)^3*sin_integra
l(3*a/b + 3*arcsin(c*x))/(b*c^2) + 1/64*cos_integral(7*a/b + 7*arcsin(c*x))
*sin(a/b)/(b*c^2) - 5/64*cos_integral(5*a/b + 5*arcsin(c*x))*sin(a/b)/(b*c^
2) + 9/64*cos_integral(3*a/b + 3*arcsin(c*x))*sin(a/b)/(b*c^2) - 5/64*cos_i
ntegral(a/b + arcsin(c*x))*sin(a/b)/(b*c^2) - 7/64*cos(a/b)*sin_integral(7*
a/b + 7*arcsin(c*x))/(b*c^2) + 25/64*cos(a/b)*sin_integral(5*a/b + 5*arcsin
(c*x))/(b*c^2) - 27/64*cos(a/b)*sin_integral(3*a/b + 3*arcsin(c*x))/(b*c^2)
 + 5/64*cos(a/b)*sin_integral(a/b + arcsin(c*x))/(b*c^2)
```

maple [A] time = 0.08, size = 185, normalized size = 0.76

$$\frac{9\,\mathrm{Si}\left(3\arcsin(cx)+\frac{3a}{b}\right)\cos\left(\frac{3a}{b}\right)-9\,\mathrm{Ci}\left(3\arcsin(cx)+\frac{3a}{b}\right)\sin\left(\frac{3a}{b}\right)+5\,\mathrm{Si}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)-5\,\mathrm{Ci}\left(\mathrm{ar}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x)
```

```
[Out] 1/64/c^2*(9*Si(3*arcsin(c*x)+3*a/b)*cos(3*a/b)-9*Ci(3*arcsin(c*x)+3*a/b)*si
n(3*a/b)+5*Si(arcsin(c*x)+a/b)*cos(a/b)-5*Ci(arcsin(c*x)+a/b)*sin(a/b)+Si(7
*arcsin(c*x)+7*a/b)*cos(7*a/b)-Ci(7*arcsin(c*x)+7*a/b)*sin(7*a/b)+5*Si(5*ar
csin(c*x)+5*a/b)*cos(5*a/b)-5*Ci(5*arcsin(c*x)+5*a/b)*sin(5*a/b))/b
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{5}{2}}x}{b\arcsin(cx)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate((-c^2*x^2 + 1)^(5/2)*x/(b*arcsin(c*x) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x\left(1-c^2\,x^2\right)^{5/2}}{a+b\,\mathrm{asin}\left(c\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(1 - c^2*x^2)^(5/2))/(a + b*asin(c*x)),x)
```

```
[Out] int((x*(1 - c^2*x^2)^(5/2))/(a + b*asin(c*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}}{a+b\,\mathrm{asin}\left(cx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c**2*x**2+1)**(5/2)/(a+b*asin(c*x)),x)
```

```
[Out] Integral(x*(-(c*x - 1)*(c*x + 1))**(5/2)/(a + b*asin(c*x)), x)
```

3.336 $\int \frac{(1-c^2x^2)^{5/2}}{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=206

$$\frac{15\cos\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2(a+b\sin^{-1}(cx))}{b}\right)}{32bc}+\frac{3\cos\left(\frac{4a}{b}\right)\text{Ci}\left(\frac{4(a+b\sin^{-1}(cx))}{b}\right)}{16bc}+\frac{\cos\left(\frac{6a}{b}\right)\text{Ci}\left(\frac{6(a+b\sin^{-1}(cx))}{b}\right)}{32bc}+\frac{15\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2(a\cdot}{}\right.}{32bc}$$

```
[Out] 15/32*Ci(2*(a+b*arcsin(c*x))/b)*cos(2*a/b)/b/c+3/16*Ci(4*(a+b*arcsin(c*x))/
b)*cos(4*a/b)/b/c+1/32*Ci(6*(a+b*arcsin(c*x))/b)*cos(6*a/b)/b/c+5/16*ln(a+b
*arcsin(c*x))/b/c+15/32*Si(2*(a+b*arcsin(c*x))/b)*sin(2*a/b)/b/c+3/16*Si(4*
(a+b*arcsin(c*x))/b)*sin(4*a/b)/b/c+1/32*Si(6*(a+b*arcsin(c*x))/b)*sin(6*a/
b)/b/c
```

Rubi [A] time = 0.32, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {4661, 3312, 3303, 3299, 3302}

$$\frac{15\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{32bc}+\frac{3\cos\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)}{16bc}+\frac{\cos\left(\frac{6a}{b}\right)\text{CosIntegra}}{32}$$

Antiderivative was successfully verified.

```
[In] Int[(1 - c^2*x^2)^(5/2)/(a + b*ArcSin[c*x]),x]
```

```
[Out] (15*Cos[(2*a)/b]*CosIntegral[(2*a)/b + 2*ArcSin[c*x]])/(32*b*c) + (3*Cos[(4
*a)/b]*CosIntegral[(4*a)/b + 4*ArcSin[c*x]])/(16*b*c) + (Cos[(6*a)/b]*CosIn
tegral[(6*a)/b + 6*ArcSin[c*x]])/(32*b*c) + (5*Log[a + b*ArcSin[c*x]])/(16*
b*c) + (15*Sin[(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c*x]])/(32*b*c) + (3
*Sin[(4*a)/b]*SinIntegral[(4*a)/b + 4*ArcSin[c*x]])/(16*b*c) + (Sin[(6*a)/b
]*SinIntegral[(6*a)/b + 6*ArcSin[c*x]])/(32*b*c)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 4661

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[d^p/c, Subst[Int[(a + b*x)^n*Cos[x]^(2*p + 1), x], x, ArcS
in[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IGtQ[2
*p, 0] && (IntegerQ[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{\left(1-c^2x^2\right)^{5/2}}{a+b\sin^{-1}(cx)}\,dx = \frac{\text{Subst}\left(\int \frac{\cos^6(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c}$$

$$= \frac{\text{Subst}\left(\int \left(\frac{5}{16(a+bx)}+\frac{15\cos(2x)}{32(a+bx)}+\frac{3\cos(4x)}{16(a+bx)}+\frac{\cos(6x)}{32(a+bx)}\right)dx, x, \sin^{-1}(cx)\right)}{c}$$

$$= \frac{5\log\left(a+b\sin^{-1}(cx)\right)}{16bc}+\frac{\text{Subst}\left(\int \frac{\cos(6x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{32c}+\frac{3\,\text{Subst}\left(\int \frac{\cos(4x)}{a+bx}\,dx, x, \sin\right.}{16c}$$

$$= \frac{5\log\left(a+b\sin^{-1}(cx)\right)}{16bc}+\frac{\left(15\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{32c}+\frac{\left(3\cos\left(\frac{4a}{b}\right.\right.}{}$$

$$= \frac{15\cos\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{32bc}+\frac{3\cos\left(\frac{4a}{b}\right)\text{Ci}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)}{16bc}+\frac{\cos\left(\frac{6a}{b}\right)\text{Ci}\left(\frac{6a}{b}+\right.}{32bc}$$

Mathematica [A] time = 0.90, size = 165, normalized size = 0.80

$$\frac{15\cos\left(\frac{2a}{b}\right)\text{Ci}\left(2\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+6\cos\left(\frac{4a}{b}\right)\text{Ci}\left(4\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+\cos\left(\frac{6a}{b}\right)\text{Ci}\left(6\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+15\sin\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - c^2*x^2)^(5/2)/(a + b*ArcSin[c*x]),x]
```

```
[Out] (15*Cos[(2*a)/b]*CosIntegral[2*(a/b + ArcSin[c*x])] + 6*Cos[(4*a)/b]*CosInt
egral[4*(a/b + ArcSin[c*x])] + Cos[(6*a)/b]*CosIntegral[6*(a/b + ArcSin[c*x
])] + 18*Log[a + b*ArcSin[c*x]] - 8*Log[8*(a + b*ArcSin[c*x])] + 15*Sin[(2*
a)/b]*SinIntegral[2*(a/b + ArcSin[c*x])] + 6*Sin[(4*a)/b]*SinIntegral[4*(a/
b + ArcSin[c*x])] + Sin[(6*a)/b]*SinIntegral[6*(a/b + ArcSin[c*x])])/(32*b*
c)
```

fricas [F] time = 2.06, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(c^4x^4-2\,c^2x^2+1\right)\sqrt{-c^2x^2+1}}{b\arcsin(cx)+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral((c^4*x^4 - 2*c^2*x^2 + 1)*sqrt(-c^2*x^2 + 1)/(b*arcsin(c*x) + a),
x)
```

giac [B] time = 0.69, size = 472, normalized size = 2.29

$$\frac{\cos\left(\frac{a}{b}\right)^6\text{Ci}\left(\frac{6a}{b}+6\arcsin(cx)\right)}{bc}+\frac{\cos\left(\frac{a}{b}\right)^5\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{6a}{b}+6\arcsin(cx)\right)}{bc}-\frac{3\cos\left(\frac{a}{b}\right)^4\text{Ci}\left(\frac{6a}{b}+6\arcsin(cx)\right)}{2bc}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] cos(a/b)^6*cos_integral(6*a/b + 6*arcsin(c*x))/(b*c) + cos(a/b)^5*sin(a/b)*
sin_integral(6*a/b + 6*arcsin(c*x))/(b*c) - 3/2*cos(a/b)^4*cos_integral(6*a
/b + 6*arcsin(c*x))/(b*c) + 3/2*cos(a/b)^4*cos_integral(4*a/b + 4*arcsin(c*
x))/(b*c) - cos(a/b)^3*sin(a/b)*sin_integral(6*a/b + 6*arcsin(c*x))/(b*c) +
 3/2*cos(a/b)^3*sin(a/b)*sin_integral(4*a/b + 4*arcsin(c*x))/(b*c) + 9/16*c
os(a/b)^2*cos_integral(6*a/b + 6*arcsin(c*x))/(b*c) - 3/2*cos(a/b)^2*cos_in
tegral(4*a/b + 4*arcsin(c*x))/(b*c) + 15/16*cos(a/b)^2*cos_integral(2*a/b +
 2*arcsin(c*x))/(b*c) + 3/16*cos(a/b)*sin(a/b)*sin_integral(6*a/b + 6*arcsi
n(c*x))/(b*c) - 3/4*cos(a/b)*sin(a/b)*sin_integral(4*a/b + 4*arcsin(c*x))/(
b*c) + 15/16*cos(a/b)*sin(a/b)*sin_integral(2*a/b + 2*arcsin(c*x))/(b*c) -
1/32*cos_integral(6*a/b + 6*arcsin(c*x))/(b*c) + 3/16*cos_integral(4*a/b +
4*arcsin(c*x))/(b*c) - 15/32*cos_integral(2*a/b + 2*arcsin(c*x))/(b*c) + 5/
16*log(b*arcsin(c*x) + a)/(b*c)
```

maple [A] time = 0.08, size = 193, normalized size = 0.94

$$\frac{\mathrm{Si}\left(6\arcsin(cx)+\frac{6a}{b}\right)\sin\left(\frac{6a}{b}\right)}{32cb}+\frac{\mathrm{Ci}\left(6\arcsin(cx)+\frac{6a}{b}\right)\cos\left(\frac{6a}{b}\right)}{32cb}+\frac{3\,\mathrm{Si}\left(4\arcsin(cx)+\frac{4a}{b}\right)\sin\left(\frac{4a}{b}\right)}{16cb}+\frac{3\,\mathrm{Ci}\left(4\mathrm{a}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x)
```

```
[Out] 1/32/c/b*Si(6*arcsin(c*x)+6*a/b)*sin(6*a/b)+1/32/c/b*Ci(6*arcsin(c*x)+6*a/b
)*cos(6*a/b)+3/16/c/b*Si(4*arcsin(c*x)+4*a/b)*sin(4*a/b)+3/16/c/b*Ci(4*arcs
in(c*x)+4*a/b)*cos(4*a/b)+15/32/c/b*Si(2*arcsin(c*x)+2*a/b)*sin(2*a/b)+15/3
2/c/b*Ci(2*arcsin(c*x)+2*a/b)*cos(2*a/b)+5/16*ln(a+b*arcsin(c*x))/b/c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{5}{2}}}{b\arcsin(cx)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate((-c^2*x^2 + 1)^(5/2)/(b*arcsin(c*x) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(1-c^2\,x^2\right)^{5/2}}{a+b\,\mathrm{asin}\left(c\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(5/2)/(a + b*asin(c*x)),x)
```

```
[Out] int((1 - c^2*x^2)^(5/2)/(a + b*asin(c*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}}{a+b\,\mathrm{asin}\left(cx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(5/2)/(a+b*asin(c*x)),x)
```

```
[Out] Integral((-(c*x - 1)*(c*x + 1))**(5/2)/(a + b*asin(c*x)), x)
```

3.337 $\int \frac{(1-c^2x^2)^{5/2}}{x(a+b\sin^{-1}(cx))}\,dx$

Optimal. Leaf size=196

$$\text{Int}\left(\frac{1}{x\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)},x\right)+\frac{11\sin\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{8b}+\frac{7\sin\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{16b}+\frac{\sin\left(\frac{5a}{b}\right)\text{Ci}\left(\frac{5(a}{}\right.}{16b}$$

```
[Out] -11/8*cos(a/b)*Si((a+b*arcsin(c*x))/b)/b-7/16*cos(3*a/b)*Si(3*(a+b*arcsin(c
*x))/b)/b-1/16*cos(5*a/b)*Si(5*(a+b*arcsin(c*x))/b)/b+11/8*Ci((a+b*arcsin(c
*x))/b)*sin(a/b)/b+7/16*Ci(3*(a+b*arcsin(c*x))/b)*sin(3*a/b)/b+1/16*Ci(5*(a
+b*arcsin(c*x))/b)*sin(5*a/b)/b+Unintegrable(1/x/(a+b*arcsin(c*x))/(-c^2*x^
2+1)^(1/2),x)
```

Rubi [A] time = 1.15, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(1-c^2x^2)^{5/2}}{x\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(1 - c^2*x^2)^(5/2)/(x*(a + b*ArcSin[c*x])),x]
```

```
[Out] (11*CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b])/(8*b) + (7*CosIntegral[(3*a)/b
 + 3*ArcSin[c*x]]*Sin[(3*a)/b])/(16*b) + (CosIntegral[(5*a)/b + 5*ArcSin[c*
x]]*Sin[(5*a)/b])/(16*b) - (11*Cos[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(8*
b) - (7*Cos[(3*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c*x]])/(16*b) - (Cos[(5
*a)/b]*SinIntegral[(5*a)/b + 5*ArcSin[c*x]])/(16*b) + Defer[Int][1/(x*Sqrt[
1 - c^2*x^2]*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\begin{aligned}
\int \frac{(1-c^2x^2)^{5/2}}{x\left(a+b\sin^{-1}(cx)\right)}\,dx &= \int \left(\frac{1}{x\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}-\frac{3c^2x}{\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}+\frac{3c^4x^3}{\sqrt{1-c^2x^2}\,\left(a+b\text{s}\right.}\right.\\
&= -\left(\left(3c^2\right)\int \frac{x}{\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}\,dx\right)+\left(3c^4\right)\int \frac{x^3}{\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}\,d\\
&= -\left(3\,\text{Subst}\left(\int \frac{\sin(x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)\right)+3\,\text{Subst}\left(\int \frac{\sin^3(x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)+\int\\
&= 3\,\text{Subst}\left(\int \left(\frac{3\sin(x)}{4(a+bx)}-\frac{\sin(3x)}{4(a+bx)}\right)dx,x,\sin^{-1}(cx)\right)-\left(3\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}\right.}{a+}\right.\\
&= \frac{3\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)\sin\left(\frac{a}{b}\right)}{b}-\frac{3\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{b}-\frac{1}{16}\text{Subst}\left(\int \frac{\sin(5x)}{a+bx}\,dx\right.\\
&= \frac{3\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)\sin\left(\frac{a}{b}\right)}{b}-\frac{3\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{b}-\frac{1}{8}\left(5\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int\right.\\
&= \frac{11\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)\sin\left(\frac{a}{b}\right)}{8b}+\frac{7\text{Ci}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)\sin\left(\frac{3a}{b}\right)}{16b}+\frac{\text{Ci}\left(\frac{5a}{b}+5\sin^{-1}(cx\right.}{16b}
\end{aligned}$$

Mathematica [A] time = 3.57, size = 0, normalized size = 0.00

$$\int \frac{\left(1-c^2x^2\right)^{5/2}}{x\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(1 - c^2*x^2)^(5/2)/(x*(a + b*ArcSin[c*x])),x]
```

```
[Out] Integrate[(1 - c^2*x^2)^(5/2)/(x*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 1.00, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(c^4x^4-2\,c^2x^2+1\right)\sqrt{-c^2x^2+1}}{bx\arcsin\left(cx\right)+ax},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/x/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral((c^4*x^4 - 2*c^2*x^2 + 1)*sqrt(-c^2*x^2 + 1)/(b*x*arcsin(c*x) + a*
x), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/x/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.72, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{5}{2}}}{x\left(a+b\arcsin\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(5/2)/x/(a+b*arcsin(c*x)),x)
```

```
[Out] int((-c^2*x^2+1)^(5/2)/x/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{5}{2}}}{\left(b\arcsin\left(cx\right)+a\right)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/x/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate((-c^2*x^2 + 1)^(5/2)/((b*arcsin(c*x) + a)*x), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(1-c^2\,x^2\right)^{5/2}}{x\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(5/2)/(x*(a + b*asin(c*x))),x)
```

```
[Out] int((1 - c^2*x^2)^(5/2)/(x*(a + b*asin(c*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}}{x\left(a+b\operatorname{asin}\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(5/2)/x/(a+b*asin(c*x)),x)
```

```
[Out] Integral((-(c*x - 1)*(c*x + 1))**(5/2)/(x*(a + b*asin(c*x))), x)
```

3.338 $\int \frac{(1-c^2x^2)^{5/2}}{x^2(a+b\sin^{-1}(cx))}\,dx$

Optimal. Leaf size=161

$$\text{Int}\left(\frac{1}{x^2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)},x\right)-\frac{c\cos\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{b}-\frac{c\cos\left(\frac{4a}{b}\right)\text{Ci}\left(\frac{4\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{8b}-\frac{c\sin\left(\frac{2a}{b}\right)}{}$$

```
[Out] -c*Ci(2*(a+b*arcsin(c*x))/b)*cos(2*a/b)/b-1/8*c*Ci(4*(a+b*arcsin(c*x))/b)*c
os(4*a/b)/b-15/8*c*ln(a+b*arcsin(c*x))/b-c*Si(2*(a+b*arcsin(c*x))/b)*sin(2*
a/b)/b-1/8*c*Si(4*(a+b*arcsin(c*x))/b)*sin(4*a/b)/b+Unintegrable(1/x^2/(a+b
*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x)
```

Rubi [A] time = 0.93, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(1-c^2x^2\right)^{5/2}}{x^2\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(1 - c^2*x^2)^(5/2)/(x^2*(a + b*ArcSin[c*x])),x]
```

```
[Out] -((c*Cos[(2*a)/b]*CosIntegral[(2*a)/b + 2*ArcSin[c*x]])/b) - (c*Cos[(4*a)/b
]*CosIntegral[(4*a)/b + 4*ArcSin[c*x]])/(8*b) - (15*c*Log[a + b*ArcSin[c*x]
])/(8*b) - (c*Sin[(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c*x]])/b - (c*Sin
[(4*a)/b]*SinIntegral[(4*a)/b + 4*ArcSin[c*x]])/(8*b) + Defer[Int][1/(x^2*S
qrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(1-c^2x^2\right)^{5/2}}{x^2\left(a+b\sin^{-1}(cx)\right)}\,dx &= \int \left(-\frac{3c^2}{\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}+\frac{1}{x^2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}+\frac{}{\sqrt{1-c^2x^2}\,(}\right.\\
&= -\left(\left(3c^2\right)\int \frac{1}{\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}\,dx\right)+\left(3c^4\right)\int \frac{x^2}{\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx\right.}\\
&= -\frac{3c\log\left(a+b\sin^{-1}(cx)\right)}{b}-c\,\text{Subst}\left(\int \frac{\sin^4(x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)+(3c)\,\text{Subst}\left(\int\right.\\
&= -\frac{3c\log\left(a+b\sin^{-1}(cx)\right)}{b}-c\,\text{Subst}\left(\int\left(\frac{3}{8(a+bx)}-\frac{\cos(2x)}{2(a+bx)}+\frac{\cos(4x)}{8(a+bx)}\right)dx,\right.\\
&= -\frac{15c\log\left(a+b\sin^{-1}(cx)\right)}{8b}-\frac{1}{8}c\,\text{Subst}\left(\int\frac{\cos(4x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)+\frac{1}{2}c\,\text{Subst}\left(\right.\\
&= -\frac{15c\log\left(a+b\sin^{-1}(cx)\right)}{8b}+\frac{1}{2}\left(c\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int\frac{\cos\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx,x,\sin^{-1}\right.\\
&= -\frac{c\cos\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{b}-\frac{c\cos\left(\frac{4a}{b}\right)\text{Ci}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)}{8b}-\frac{15c\log\left(a\right.}{}
\end{aligned}$$

Mathematica [A] time = 1.43, size = 0, normalized size = 0.00

$$\int \frac{\left(1-c^2x^2\right)^{5/2}}{x^2\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(1 - c^2*x^2)^(5/2)/(x^2*(a + b*ArcSin[c*x])),x]
```

```
[Out] Integrate[(1 - c^2*x^2)^(5/2)/(x^2*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 1.15, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(c^4x^4-2\,c^2x^2+1\right)\sqrt{-c^2x^2+1}}{bx^2\arcsin\left(cx\right)+ax^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/x^2/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral((c^4*x^4 - 2*c^2*x^2 + 1)*sqrt(-c^2*x^2 + 1)/(b*x^2*arcsin(c*x) +
a*x^2), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{5}{2}}}{(b\arcsin\left(cx\right)+a)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/x^2/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] integrate((-c^2*x^2 + 1)^(5/2)/((b*arcsin(c*x) + a)*x^2), x)
```

maple [A] time = 0.61, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{5}{2}}}{x^2\left(a+b\arcsin\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(5/2)/x^2/(a+b*arcsin(c*x)),x)
```

```
[Out] int((-c^2*x^2+1)^(5/2)/x^2/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{5}{2}}}{(b\arcsin\left(cx\right)+a)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/x^2/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate((-c^2*x^2 + 1)^(5/2)/((b*arcsin(c*x) + a)*x^2), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(1-c^2\,x^2\right)^{5/2}}{x^2\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(5/2)/(x^2*(a + b*asin(c*x))),x)
```

```
[Out] int((1 - c^2*x^2)^(5/2)/(x^2*(a + b*asin(c*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}}{x^{2}\left(a+b\operatorname{asin}\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(5/2)/x**2/(a+b*asin(c*x)),x)
```

```
[Out] Integral((-(c*x - 1)*(c*x + 1))**(5/2)/(x**2*(a + b*asin(c*x))), x)
```

3.339 $\int \frac{(1-c^2x^2)^{5/2}}{x^3(a+b\sin^{-1}(cx))}\,dx$

Optimal. Leaf size=31

$$\mathrm{Int}\left(\frac{(1-c^2x^2)^{5/2}}{x^3\,(a+b\sin^{-1}(cx))},x\right)$$

```
[Out] Unintegrable((-c^2*x^2+1)^(5/2)/x^3/(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(1-c^2x^2)^{5/2}}{x^3\,(a+b\sin^{-1}(cx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(1 - c^2*x^2)^(5/2)/(x^3*(a + b*ArcSin[c*x])),x]
[Out] Defer[Int][(1 - c^2*x^2)^(5/2)/(x^3*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{(1-c^2x^2)^{5/2}}{x^3\,(a+b\sin^{-1}(cx))}\,dx = \int \frac{(1-c^2x^2)^{5/2}}{x^3\,(a+b\sin^{-1}(cx))}\,dx$$

Mathematica [A] time = 5.98, size = 0, normalized size = 0.00

$$\int \frac{(1-c^2x^2)^{5/2}}{x^3\,(a+b\sin^{-1}(cx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(1 - c^2*x^2)^(5/2)/(x^3*(a + b*ArcSin[c*x])),x]
[Out] Integrate[(1 - c^2*x^2)^(5/2)/(x^3*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 3.64, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{(c^4x^4-2\,c^2x^2+1)\sqrt{-c^2x^2+1}}{bx^3\arcsin(cx)+ax^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/x^3/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral((c^4*x^4 - 2*c^2*x^2 + 1)*sqrt(-c^2*x^2 + 1)/(b*x^3*arcsin(c*x) + a*x^3), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/x^3/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 3.29, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^{2}x^{2}+1\right)^{\frac{5}{2}}}{x^{3}\left(a+b\arcsin\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(5/2)/x^3/(a+b*arcsin(c*x)),x)
```

```
[Out] int((-c^2*x^2+1)^(5/2)/x^3/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^{2}x^{2}+1\right)^{\frac{5}{2}}}{(b\arcsin\left(cx\right)+a)x^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/x^3/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate((-c^2*x^2 + 1)^(5/2)/((b*arcsin(c*x) + a)*x^3), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(1-c^{2}\,x^{2}\right)^{5/2}}{x^{3}\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(5/2)/(x^3*(a + b*asin(c*x))),x)
```

```
[Out] int((1 - c^2*x^2)^(5/2)/(x^3*(a + b*asin(c*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}}{x^{3}\left(a+b\,\mathrm{asin}\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(5/2)/x**3/(a+b*asin(c*x)),x)
```

```
[Out] Integral((-(c*x - 1)*(c*x + 1))**(5/2)/(x**3*(a + b*asin(c*x))), x)
```

3.340 $\int \frac{\left(1-c^2x^2\right)^{5/2}}{x^4\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=31

$$\operatorname{Int}\left(\frac{\left(1-c^2x^2\right)^{5/2}}{x^4\left(a+b\sin^{-1}(cx)\right)},x\right)$$

```
[Out] Unintegrable((-c^2*x^2+1)^(5/2)/x^4/(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(1-c^2x^2\right)^{5/2}}{x^4\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(1 - c^2*x^2)^(5/2)/(x^4*(a + b*ArcSin[c*x])),x]
[Out] Defer[Int][(1 - c^2*x^2)^(5/2)/(x^4*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{\left(1-c^2x^2\right)^{5/2}}{x^4\left(a+b\sin^{-1}(cx)\right)}\,dx=\int \frac{\left(1-c^2x^2\right)^{5/2}}{x^4\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Mathematica [A] time = 0.98, size = 0, normalized size = 0.00

$$\int \frac{\left(1-c^2x^2\right)^{5/2}}{x^4\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(1 - c^2*x^2)^(5/2)/(x^4*(a + b*ArcSin[c*x])),x]
[Out] Integrate[(1 - c^2*x^2)^(5/2)/(x^4*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 1.05, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\left(c^4x^4-2\,c^2x^2+1\right)\sqrt{-c^2x^2+1}}{bx^4\arcsin\left(cx\right)+ax^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/x^4/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral((c^4*x^4 - 2*c^2*x^2 + 1)*sqrt(-c^2*x^2 + 1)/(b*x^4*arcsin(c*x) + a*x^4), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{5}{2}}}{\left(b\arcsin\left(cx\right)+a\right)x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/x^4/(a+b*arcsin(c*x)),x, algorithm="giac")
[Out] integrate((-c^2*x^2 + 1)^(5/2)/((b*arcsin(c*x) + a)*x^4), x)
```

maple [A] time = 4.43, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{5}{2}}}{x^4\left(a+b\arcsin\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(5/2)/x^4/(a+b*arcsin(c*x)),x)
[Out] int((-c^2*x^2+1)^(5/2)/x^4/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{5}{2}}}{\left(b\arcsin\left(cx\right)+a\right)x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/x^4/(a+b*arcsin(c*x)),x, algorithm="maxima")
[Out] integrate((-c^2*x^2 + 1)^(5/2)/((b*arcsin(c*x) + a)*x^4), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(1-c^2\,x^2\right)^{5/2}}{x^4\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(5/2)/(x^4*(a + b*asin(c*x))),x)
[Out] int((1 - c^2*x^2)^(5/2)/(x^4*(a + b*asin(c*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}}{x^4\left(a+b\,\mathrm{asin}\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(5/2)/x**4/(a+b*asin(c*x)),x)
[Out] Integral((-(c*x - 1)*(c*x + 1))**(5/2)/(x**4*(a + b*asin(c*x))), x)
```

3.341 $\int \frac{x^4}{\sqrt{1-a^2x^2}\sin^{-1}(ax)}\,dx$

Optimal. Leaf size=41

$$-\frac{\text{Ci}\left(2\sin^{-1}(ax)\right)}{2a^5}+\frac{\text{Ci}\left(4\sin^{-1}(ax)\right)}{8a^5}+\frac{3\log\left(\sin^{-1}(ax)\right)}{8a^5}$$

```
[Out] -1/2*Ci(2*arcsin(a*x))/a^5+1/8*Ci(4*arcsin(a*x))/a^5+3/8*ln(arcsin(a*x))/a^
5
```

Rubi [A] time = 0.16, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {4723, 3312, 3302}

$$-\frac{\text{CosIntegral}\left(2\sin^{-1}(ax)\right)}{2a^5}+\frac{\text{CosIntegral}\left(4\sin^{-1}(ax)\right)}{8a^5}+\frac{3\log\left(\sin^{-1}(ax)\right)}{8a^5}$$

Antiderivative was successfully verified.

```
[In] Int[x^4/(Sqrt[1 - a^2*x^2]*ArcSin[a*x]),x]
```

```
[Out] -CosIntegral[2*ArcSin[a*x]]/(2*a^5) + CosIntegral[4*ArcSin[a*x]]/(8*a^5) +
(3*Log[ArcSin[a*x]])/(8*a^5)
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{x^4}{\sqrt{1-a^2x^2}\sin^{-1}(ax)}\,dx &= \frac{\text{Subst}\left(\int \frac{\sin^4(x)}{x}\,dx,x,\sin^{-1}(ax)\right)}{a^5}\\
&= \frac{\text{Subst}\left(\int \left(\frac{3}{8x}-\frac{\cos(2x)}{2x}+\frac{\cos(4x)}{8x}\right)dx,x,\sin^{-1}(ax)\right)}{a^5}\\
&= \frac{3\log\left(\sin^{-1}(ax)\right)}{8a^5}+\frac{\text{Subst}\left(\int \frac{\cos(4x)}{x}\,dx,x,\sin^{-1}(ax)\right)}{8a^5}-\frac{\text{Subst}\left(\int \frac{\cos(2x)}{x}\,dx,x,\sin^{-1}\right.}{2a^5}\\
&= -\frac{\text{Ci}\left(2\sin^{-1}(ax)\right)}{2a^5}+\frac{\text{Ci}\left(4\sin^{-1}(ax)\right)}{8a^5}+\frac{3\log\left(\sin^{-1}(ax)\right)}{8a^5}
\end{aligned}$$

Mathematica [A] time = 0.08, size = 31, normalized size = 0.76

$$\frac{-4\text{Ci}\left(2\sin^{-1}(ax)\right)+\text{Ci}\left(4\sin^{-1}(ax)\right)+3\log\left(\sin^{-1}(ax)\right)}{8a^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4/(Sqrt[1 - a^2*x^2]*ArcSin[a*x]),x]
```

```
[Out] (-4*CosIntegral[2*ArcSin[a*x]] + CosIntegral[4*ArcSin[a*x]] + 3*Log[ArcSin[
a*x]])/(8*a^5)
```

fricas [F] time = 0.58, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-a^2x^2+1}\,x^4}{\left(a^2x^2-1\right)\arcsin\left(ax\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-a^2*x^2 + 1)*x^4/((a^2*x^2 - 1)*arcsin(a*x)), x)
```

giac [A] time = 0.89, size = 35, normalized size = 0.85

$$\frac{\text{Ci}\left(4\arcsin\left(ax\right)\right)}{8\,a^5}-\frac{\text{Ci}\left(2\arcsin\left(ax\right)\right)}{2\,a^5}+\frac{3\log\left(\arcsin\left(ax\right)\right)}{8\,a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] 1/8*cos_integral(4*arcsin(a*x))/a^5 - 1/2*cos_integral(2*arcsin(a*x))/a^5 +
 3/8*log(arcsin(a*x))/a^5
```

maple [A] time = 0.15, size = 36, normalized size = 0.88

$$-\frac{\text{Ci}\left(2\arcsin\left(ax\right)\right)}{2a^5}+\frac{\text{Ci}\left(4\arcsin\left(ax\right)\right)}{8a^5}+\frac{3\ln\left(\arcsin\left(ax\right)\right)}{8a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] -1/2*Ci(2*arcsin(a*x))/a^5+1/8*Ci(4*arcsin(a*x))/a^5+3/8*ln(arcsin(a*x))/a^
5
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{x^4}{\sqrt{-a^2x^2+1}\arcsin\left(ax\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(x^4/(sqrt(-a^2*x^2 + 1)*arcsin(a*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int\frac{x^4}{\mathrm{asin}\left(a\,x\right)\,\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4/(asin(a*x)*(1 - a^2*x^2)^(1/2)),x)
```

```
[Out] int(x^4/(asin(a*x)*(1 - a^2*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4}{\sqrt{-(ax-1)(ax+1)}\,\operatorname{asin}(ax)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4/asin(a*x)/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(x**4/(sqrt(-(a*x - 1)*(a*x + 1))*asin(a*x)), x)
```

3.342 $\int \frac{x^3}{\sqrt{1-a^2x^2}\sin^{-1}(ax)}\,dx$

Optimal. Leaf size=27

$$\frac{3\mathrm{Si}\left(\sin^{-1}(ax)\right)}{4a^4}-\frac{\mathrm{Si}\left(3\sin^{-1}(ax)\right)}{4a^4}$$

```
[Out] 3/4*Si(arcsin(a*x))/a^4-1/4*Si(3*arcsin(a*x))/a^4
```

Rubi [A] time = 0.15, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = {4723, 3312, 3299}

$$\frac{3\mathrm{Si}\left(\sin^{-1}(ax)\right)}{4a^4}-\frac{\mathrm{Si}\left(3\sin^{-1}(ax)\right)}{4a^4}$$

Antiderivative was successfully verified.

```
[In] Int[x^3/(Sqrt[1 - a^2*x^2]*ArcSin[a*x]),x]
```

```
[Out] (3*SinIntegral[ArcSin[a*x]])/(4*a^4) - SinIntegral[3*ArcSin[a*x]]/(4*a^4)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{x^3}{\sqrt{1-a^2x^2}\sin^{-1}(ax)}\,dx &= \frac{\mathrm{Subst}\left(\int \frac{\sin^3(x)}{x}\,dx,x,\sin^{-1}(ax)\right)}{a^4}\\
&= \frac{\mathrm{Subst}\left(\int \left(\frac{3\sin(x)}{4x}-\frac{\sin(3x)}{4x}\right)dx,x,\sin^{-1}(ax)\right)}{a^4}\\
&= -\frac{\mathrm{Subst}\left(\int \frac{\sin(3x)}{x}\,dx,x,\sin^{-1}(ax)\right)}{4a^4}+\frac{3\,\mathrm{Subst}\left(\int \frac{\sin(x)}{x}\,dx,x,\sin^{-1}(ax)\right)}{4a^4}\\
&= \frac{3\mathrm{Si}\left(\sin^{-1}(ax)\right)}{4a^4}-\frac{\mathrm{Si}\left(3\sin^{-1}(ax)\right)}{4a^4}
\end{aligned}$$

Mathematica [A] time = 0.07, size = 24, normalized size = 0.89

$$\frac{3\mathrm{Si}\left(\sin^{-1}(ax)\right)-\mathrm{Si}\left(3\sin^{-1}(ax)\right)}{4a^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3/(Sqrt[1 - a^2*x^2]*ArcSin[a*x]),x]
```

```
[Out] (3*SinIntegral[ArcSin[a*x]] - SinIntegral[3*ArcSin[a*x]])/(4*a^4)
```

fricas [F] time = 0.57, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-a^2x^2+1}\,x^3}{\left(a^2x^2-1\right)\arcsin\left(ax\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-a^2*x^2 + 1)*x^3/((a^2*x^2 - 1)*arcsin(a*x)), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.13, size = 21, normalized size = 0.78

$$-\frac{\mathrm{Si}\left(3\arcsin\left(ax\right)\right)-3\,\mathrm{Si}\left(\arcsin\left(ax\right)\right)}{4a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] -1/4*(Si(3*arcsin(a*x))-3*Si(arcsin(a*x)))/a^4
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3}{\sqrt{-a^2x^2+1}\,\arcsin\left(ax\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(x^3/(sqrt(-a^2*x^2 + 1)*arcsin(a*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{x^3}{\mathrm{asin}\left(a\,x\right)\,\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3/(asin(a*x)*(1 - a^2*x^2)^(1/2)),x)
```

```
[Out] int(x^3/(asin(a*x)*(1 - a^2*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3}{\sqrt{-(ax-1)(ax+1)}\ \mathrm{asin}(ax)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3/asin(a*x)/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(x**3/(sqrt(-(a*x - 1)*(a*x + 1))*asin(a*x)), x)
```

3.343 $\int \frac{x^2}{\sqrt{1-a^2x^2}\sin^{-1}(ax)}\,dx$

Optimal. Leaf size=27

$$\frac{\log\left(\sin^{-1}(ax)\right)}{2a^3}-\frac{\text{Ci}\left(2\sin^{-1}(ax)\right)}{2a^3}$$

```
[Out] -1/2*Ci(2*arcsin(a*x))/a^3+1/2*ln(arcsin(a*x))/a^3
```

Rubi [A] time = 0.14, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {4723, 3312, 3302}

$$\frac{\log\left(\sin^{-1}(ax)\right)}{2a^3}-\frac{\text{CosIntegral}\left(2\sin^{-1}(ax)\right)}{2a^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2/(Sqrt[1 - a^2*x^2]*ArcSin[a*x]),x]
```

```
[Out] -CosIntegral[2*ArcSin[a*x]]/(2*a^3) + Log[ArcSin[a*x]]/(2*a^3)
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{x^2}{\sqrt{1-a^2x^2}\sin^{-1}(ax)}\,dx &= \frac{\text{Subst}\left(\int \frac{\sin^2(x)}{x}\,dx,x,\sin^{-1}(ax)\right)}{a^3}\\
&= \frac{\text{Subst}\left(\int \left(\frac{1}{2x}-\frac{\cos(2x)}{2x}\right)dx,x,\sin^{-1}(ax)\right)}{a^3}\\
&= \frac{\log\left(\sin^{-1}(ax)\right)}{2a^3}-\frac{\text{Subst}\left(\int \frac{\cos(2x)}{x}\,dx,x,\sin^{-1}(ax)\right)}{2a^3}\\
&= -\frac{\text{Ci}\left(2\sin^{-1}(ax)\right)}{2a^3}+\frac{\log\left(\sin^{-1}(ax)\right)}{2a^3}
\end{aligned}$$

Mathematica [A] time = 0.07, size = 22, normalized size = 0.81

$$\frac{\log\left(\sin^{-1}(ax)\right)-\text{Ci}\left(2\sin^{-1}(ax)\right)}{2a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2/(Sqrt[1 - a^2*x^2]*ArcSin[a*x]),x]
[Out] (-CosIntegral[2*ArcSin[a*x]] + Log[ArcSin[a*x]])/(2*a^3)
```

fricas [F] time = 1.77, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-a^2x^2+1}\,x^2}{\left(a^2x^2-1\right)\arcsin\left(ax\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
[Out] integral(-sqrt(-a^2*x^2 + 1)*x^2/((a^2*x^2 - 1)*arcsin(a*x)), x)
```

giac [A] time = 0.35, size = 23, normalized size = 0.85

$$-\frac{\text{Ci}\left(2\arcsin\left(ax\right)\right)}{2a^3}+\frac{\log\left(\arcsin\left(ax\right)\right)}{2a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
[Out] -1/2*cos_integral(2*arcsin(a*x))/a^3 + 1/2*log(arcsin(a*x))/a^3
```

maple [A] time = 0.10, size = 24, normalized size = 0.89

$$-\frac{\text{Ci}\left(2\arcsin\left(ax\right)\right)}{2a^3}+\frac{\ln\left(\arcsin\left(ax\right)\right)}{2a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x)
[Out] -1/2*Ci(2*arcsin(a*x))/a^3+1/2*ln(arcsin(a*x))/a^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{x^2}{\sqrt{-a^2x^2+1}\,\arcsin\left(ax\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
[Out] integrate(x^2/(sqrt(-a^2*x^2 + 1)*arcsin(a*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.04

$$\int\frac{x^2}{\text{asin}\left(a\,x\right)\,\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/(asin(a*x)*(1 - a^2*x^2)^(1/2)),x)
```

```
[Out] int(x^2/(asin(a*x)*(1 - a^2*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\sqrt{-(ax-1)(ax+1)}\,\operatorname{asin}(ax)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2/asin(a*x)/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(x**2/(sqrt(-(a*x - 1)*(a*x + 1))*asin(a*x)), x)
```

3.344 $\int \frac{x^2}{\sqrt{1-a^2x^2} \sin^{-1}(ax)} dx$

Optimal. Leaf size=27

$$\frac{\log\left(\sin^{-1}(ax)\right)}{2a^3} - \frac{\text{Ci}\left(2\sin^{-1}(ax)\right)}{2a^3}$$

```
[Out] -1/2*Ci(2*arcsin(a*x))/a^3+1/2*ln(arcsin(a*x))/a^3
```

Rubi [A] time = 0.13, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {4723, 3312, 3302}

$$\frac{\log\left(\sin^{-1}(ax)\right)}{2a^3} - \frac{\text{CosIntegral}\left(2\sin^{-1}(ax)\right)}{2a^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2/(Sqrt[1 - a^2*x^2]*ArcSin[a*x]),x]
```

```
[Out] -CosIntegral[2*ArcSin[a*x]]/(2*a^3) + Log[ArcSin[a*x]]/(2*a^3)
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{x^2}{\sqrt{1-a^2x^2}\sin^{-1}(ax)} dx &= \frac{\text{Subst}\left(\int \frac{\sin^2(x)}{x} dx, x, \sin^{-1}(ax)\right)}{a^3}\\
&= \frac{\text{Subst}\left(\int \left(\frac{1}{2x} - \frac{\cos(2x)}{2x}\right) dx, x, \sin^{-1}(ax)\right)}{a^3}\\
&= \frac{\log\left(\sin^{-1}(ax)\right)}{2a^3} - \frac{\text{Subst}\left(\int \frac{\cos(2x)}{x} dx, x, \sin^{-1}(ax)\right)}{2a^3}\\
&= -\frac{\text{Ci}\left(2\sin^{-1}(ax)\right)}{2a^3} + \frac{\log\left(\sin^{-1}(ax)\right)}{2a^3}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 22, normalized size = 0.81

$$\frac{\log\left(\sin^{-1}(ax)\right) - \text{Ci}\left(2\sin^{-1}(ax)\right)}{2a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2/(Sqrt[1 - a^2*x^2]*ArcSin[a*x]),x]
[Out] (-CosIntegral[2*ArcSin[a*x]] + Log[ArcSin[a*x]])/(2*a^3)
```

fricas [F] time = 2.06, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-a^2x^2+1}\,x^2}{\left(a^2x^2-1\right)\arcsin(ax)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
[Out] integral(-sqrt(-a^2*x^2 + 1)*x^2/((a^2*x^2 - 1)*arcsin(a*x)), x)
```

giac [A] time = 0.55, size = 23, normalized size = 0.85

$$-\frac{\text{Ci}(2\arcsin(ax))}{2a^3} + \frac{\log(\arcsin(ax))}{2a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
[Out] -1/2*cos_integral(2*arcsin(a*x))/a^3 + 1/2*log(arcsin(a*x))/a^3
```

maple [A] time = 0.00, size = 24, normalized size = 0.89

$$-\frac{\text{Ci}(2\arcsin(ax))}{2a^3} + \frac{\ln(\arcsin(ax))}{2a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x)
[Out] -1/2*Ci(2*arcsin(a*x))/a^3+1/2*ln(arcsin(a*x))/a^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\sqrt{-a^2x^2+1}\,\arcsin(ax)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
[Out] integrate(x^2/(sqrt(-a^2*x^2 + 1)*arcsin(a*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{x^2}{\text{asin}(a\,x)\,\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/(asin(a*x)*(1 - a^2*x^2)^(1/2)),x)
```

```
[Out] int(x^2/(asin(a*x)*(1 - a^2*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\sqrt{-\left(ax-1\right)\left(ax+1\right)}\,\operatorname{asin}\left(ax\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2/asin(a*x)/(-a**2*x**2+1)**(1/2),x)
[Out] Integral(x**2/(sqrt(-(a*x - 1)*(a*x + 1))*asin(a*x)), x)
```

3.345 $\int \frac{x}{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}\,dx$

Optimal. Leaf size=9

$$\frac{\operatorname{Si}\left(\sin^{-1}(ax)\right)}{a^2}$$

```
[Out] Si(arcsin(a*x))/a^2
```

Rubi [A] time = 0.08, antiderivative size = 9, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {4723, 3299}

$$\frac{\operatorname{Si}\left(\sin^{-1}(ax)\right)}{a^2}$$

Antiderivative was successfully verified.

```
[In] Int[x/(Sqrt[1 - a^2*x^2]*ArcSin[a*x]),x]
```

```
[Out] SinIntegral[ArcSin[a*x]]/a^2
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\begin{aligned} \int \frac{x}{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}\,dx &= \frac{\operatorname{Subst}\left(\int \frac{\sin(x)}{x}\,dx, x, \sin^{-1}(ax)\right)}{a^2} \\ &= \frac{\operatorname{Si}\left(\sin^{-1}(ax)\right)}{a^2} \end{aligned}$$

Mathematica [A] time = 0.06, size = 9, normalized size = 1.00

$$\frac{\operatorname{Si}\left(\sin^{-1}(ax)\right)}{a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/(Sqrt[1 - a^2*x^2]*ArcSin[a*x]),x]
```

```
[Out] SinIntegral[ArcSin[a*x]]/a^2
```

fricas [F] time = 0.70, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(-\frac{\sqrt{-a^2x^2+1}\,x}{\left(a^2x^2-1\right)\arcsin(ax)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-a^2*x^2 + 1)*x/((a^2*x^2 - 1)*arcsin(a*x)), x)
```

giac [A] time = 0.77, size = 9, normalized size = 1.00

$$\frac{\mathrm{Si}\left(\arcsin\left(ax\right)\right)}{a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] sin_integral(arcsin(a*x))/a^2
```

maple [A] time = 0.07, size = 10, normalized size = 1.11

$$\frac{\mathrm{Si}\left(\arcsin\left(ax\right)\right)}{a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] Si(arcsin(a*x))/a^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\sqrt{-a^{2}x^{2}+1}\arcsin\left(ax\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(x/(sqrt(-a^2*x^2 + 1)*arcsin(a*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.11

$$\int \frac{x}{\mathrm{asin}\left(a\,x\right)\,\sqrt{1-a^{2}\,x^{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(asin(a*x)*(1 - a^2*x^2)^(1/2)),x)
```

```
[Out] int(x/(asin(a*x)*(1 - a^2*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\sqrt{-\left(ax-1\right)\left(ax+1\right)}\,\mathrm{asin}\left(ax\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/asin(a*x)/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(x/(sqrt(-(a*x - 1)*(a*x + 1))*asin(a*x)), x)
```

3.346 $\int \frac{1}{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}\,dx$

Optimal. Leaf size=9

$$\frac{\log\left(\sin^{-1}(ax)\right)}{a}$$

```
[Out] ln(arcsin(a*x))/a
```

Rubi [A] time = 0.03, antiderivative size = 9, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {4639}

$$\frac{\log\left(\sin^{-1}(ax)\right)}{a}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[1 - a^2*x^2]*ArcSin[a*x]),x]
[Out] Log[ArcSin[a*x]]/a
```

Rule 4639

```
Int[1/(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*Sqrt[(d_) + (e_.)*(x_)^2]), x_Sym
bol] :> Simp[Log[a + b*ArcSin[c*x]]/(b*c*Sqrt[d]), x] /; FreeQ[{a, b, c, d,
 e}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0]
```

Rubi steps

$$\int \frac{1}{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}\,dx=\frac{\log\left(\sin^{-1}(ax)\right)}{a}$$

Mathematica [A] time = 0.02, size = 9, normalized size = 1.00

$$\frac{\log\left(\sin^{-1}(ax)\right)}{a}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[1 - a^2*x^2]*ArcSin[a*x]),x]
[Out] Log[ArcSin[a*x]]/a
```

fricas [A] time = 2.44, size = 11, normalized size = 1.22

$$\frac{\log\left(-\arcsin\left(ax\right)\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
[Out] log(-arcsin(a*x))/a
```

giac [A] time = 0.58, size = 10, normalized size = 1.11

$$\frac{\log\left(|\arcsin\left(ax\right)|\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] log(abs(arcsin(a*x)))/a
```

maple [A] time = 0.01, size = 10, normalized size = 1.11

$$\frac{\ln(\arcsin(ax))}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] ln(arcsin(a*x))/a
```

maxima [A] time = 0.43, size = 9, normalized size = 1.00

$$\frac{\log(\arcsin(ax))}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] log(arcsin(a*x))/a
```

mupad [B] time = 0.15, size = 9, normalized size = 1.00

$$\frac{\ln(\mathrm{asin}(a\,x))}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(asin(a*x)*(1 - a^2*x^2)^(1/2)),x)
```

```
[Out] log(asin(a*x))/a
```

sympy [A] time = 0.41, size = 7, normalized size = 0.78

$$\frac{\log(\mathrm{asin}(ax))}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/asin(a*x)/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] log(asin(a*x))/a
```

3.347 $\int \frac{1}{x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}\,dx$

Optimal. Leaf size=27

$$\mathrm{Int}\left(\frac{1}{x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)},x\right)$$

```
[Out] Unintegrable(1/x/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(x*Sqrt[1 - a^2*x^2]*ArcSin[a*x]),x]
[Out] Defer[Int][1/(x*Sqrt[1 - a^2*x^2]*ArcSin[a*x]), x]
```

Rubi steps

$$\int \frac{1}{x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}\,dx=\int \frac{1}{x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}\,dx$$

Mathematica [A] time = 1.29, size = 0, normalized size = 0.00

$$\int \frac{1}{x\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(x*Sqrt[1 - a^2*x^2]*ArcSin[a*x]),x]
[Out] Integrate[1/(x*Sqrt[1 - a^2*x^2]*ArcSin[a*x]), x]
```

fricas [A] time = 1.00, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{-a^2x^2+1}}{\left(a^2x^3-x\right)\arcsin\left(ax\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
[Out] integral(-sqrt(-a^2*x^2 + 1)/((a^2*x^3 - x)*arcsin(a*x)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{-a^2x^2+1}\,x\arcsin\left(ax\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
[Out] integrate(1/(sqrt(-a^2*x^2 + 1)*x*arcsin(a*x)), x)
```

maple [A] time = 0.15, size = 0, normalized size = 0.00

$$\int \frac{1}{x \arcsin(ax)\sqrt{-a^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] int(1/x/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{-a^2x^2+1}\,x \arcsin(ax)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/(sqrt(-a^2*x^2 + 1)*x*arcsin(a*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{x\,\mathrm{asin}(a\,x)\,\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x*asin(a*x)*(1 - a^2*x^2)^(1/2)),x)
```

```
[Out] int(1/(x*asin(a*x)*(1 - a^2*x^2)^(1/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x\sqrt{-(ax-1)(ax+1)}\,\mathrm{asin}(ax)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/asin(a*x)/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(1/(x*sqrt(-(a*x - 1)*(a*x + 1))*asin(a*x)), x)
```

3.348 $\int \frac{1}{x^2\sqrt{1-a^2x^2}\sin^{-1}(ax)}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{1}{x^2\sqrt{1-a^2x^2}\sin^{-1}(ax)},x\right)$$

```
[Out] Unintegrable(1/x^2/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{x^2\sqrt{1-a^2x^2}\sin^{-1}(ax)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(x^2*Sqrt[1 - a^2*x^2]*ArcSin[a*x]),x]
[Out] Defer[Int][1/(x^2*Sqrt[1 - a^2*x^2]*ArcSin[a*x]), x]
```

Rubi steps

$$\int \frac{1}{x^2\sqrt{1-a^2x^2}\sin^{-1}(ax)}\,dx = \int \frac{1}{x^2\sqrt{1-a^2x^2}\sin^{-1}(ax)}\,dx$$

Mathematica [A] time = 0.12, size = 0, normalized size = 0.00

$$\int \frac{1}{x^2\sqrt{1-a^2x^2}\sin^{-1}(ax)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(x^2*Sqrt[1 - a^2*x^2]*ArcSin[a*x]),x]
[Out] Integrate[1/(x^2*Sqrt[1 - a^2*x^2]*ArcSin[a*x]), x]
```

fricas [A] time = 0.64, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-a^2x^2+1}}{\left(a^2x^4-x^2\right)\arcsin(ax)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
[Out] integral(-sqrt(-a^2*x^2 + 1)/((a^2*x^4 - x^2)*arcsin(a*x)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{-a^2x^2+1}\,x^2\arcsin(ax)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
[Out] integrate(1/(sqrt(-a^2*x^2 + 1)*x^2*arcsin(a*x)), x)
```

maple [A] time = 0.29, size = 0, normalized size = 0.00

$$\int \frac{1}{x^{2} \arcsin \left(a x\right) \sqrt{-a^{2} x^{2}+1}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x^2/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x)
[Out] int(1/x^2/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{-a^{2} x^{2}+1}\, x^{2} \arcsin \left(a x\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
[Out] integrate(1/(sqrt(-a^2*x^2 + 1)*x^2*arcsin(a*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{x^{2}\, \mathrm{asin}\left(a\, x\right)\, \sqrt{1-a^{2}\, x^{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x^2*asin(a*x)*(1 - a^2*x^2)^(1/2)),x)
[Out] int(1/(x^2*asin(a*x)*(1 - a^2*x^2)^(1/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x^{2} \sqrt{-\left(a x-1\right) \left(a x+1\right)}\, \mathrm{asin}\left(a x\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x**2/asin(a*x)/(-a**2*x**2+1)**(1/2),x)
[Out] Integral(1/(x**2*sqrt(-(a*x - 1)*(a*x + 1))*asin(a*x)), x)
```

3.349 $\int \frac{x^5}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=183

$$-\frac{5\sin\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{8bc^6}+\frac{5\sin\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{16bc^6}-\frac{\sin\left(\frac{5a}{b}\right)\text{Ci}\left(\frac{5\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{16bc^6}+\frac{5\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{8bc^6}$$

```
[Out] 5/8*cos(a/b)*Si((a+b*arcsin(c*x))/b)/b/c^6-5/16*cos(3*a/b)*Si(3*(a+b*arcsin
(c*x))/b)/b/c^6+1/16*cos(5*a/b)*Si(5*(a+b*arcsin(c*x))/b)/b/c^6-5/8*Ci((a+b
*arcsin(c*x))/b)*sin(a/b)/b/c^6+5/16*Ci(3*(a+b*arcsin(c*x))/b)*sin(3*a/b)/b
/c^6-1/16*Ci(5*(a+b*arcsin(c*x))/b)*sin(5*a/b)/b/c^6
```

Rubi [A] time = 0.37, antiderivative size = 179, normalized size of antiderivative = 0.98, number of steps used = 12, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {4723, 3312, 3303, 3299, 3302}

$$-\frac{5\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{8bc^6}+\frac{5\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)}{16bc^6}-\frac{\sin\left(\frac{5a}{b}\right)\text{CosIntegral}\left(\frac{5a}{b}+\right.}{16bc^6}$$

Antiderivative was successfully verified.

```
[In] Int[x^5/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])),x]
```

```
[Out] (-5*CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b])/(8*b*c^6) + (5*CosIntegral[(3*
a)/b + 3*ArcSin[c*x]]*Sin[(3*a)/b])/(16*b*c^6) - (CosIntegral[(5*a)/b + 5*A
rcSin[c*x]]*Sin[(5*a)/b])/(16*b*c^6) + (5*Cos[a/b]*SinIntegral[a/b + ArcSin
[c*x]])/(8*b*c^6) - (5*Cos[(3*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c*x]])/(
16*b*c^6) + (Cos[(5*a)/b]*SinIntegral[(5*a)/b + 5*ArcSin[c*x]])/(16*b*c^6)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
```

```
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x^5}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^5(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c^6}$$

$$= \frac{\text{Subst}\left(\int \left(\frac{5\sin(x)}{8(a+bx)} - \frac{5\sin(3x)}{16(a+bx)} + \frac{\sin(5x)}{16(a+bx)}\right)dx, x, \sin^{-1}(cx)\right)}{c^6}$$

$$= \frac{\text{Subst}\left(\int \frac{\sin(5x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{16c^6} - \frac{5\,\text{Subst}\left(\int \frac{\sin(3x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{16c^6} + \cdots$$

$$= \frac{\left(5\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{8c^6} - \frac{\left(5\cos\left(\frac{3a}{b}\right)\right)\text{Subst}\left(\int \cdots\right.}{16\cdots}$$

$$= -\frac{5\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)\sin\left(\frac{a}{b}\right)}{8bc^6} + \frac{5\text{Ci}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)\sin\left(\frac{3a}{b}\right)}{16bc^6} - \frac{\text{Ci}\left(\frac{5a}{b}\cdots\right.}{\cdots}$$

Mathematica [A] time = 0.36, size = 136, normalized size = 0.74

$$-\frac{10\sin\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right) - 5\sin\left(\frac{3a}{b}\right)\text{Ci}\left(3\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right) + \sin\left(\frac{5a}{b}\right)\text{Ci}\left(5\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right) - 10\cos\left(\frac{a}{b}\cdots\right.}{16bc^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^5/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])),x]
```

```
[Out] -1/16*(10*CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b] - 5*CosIntegral[3*(a/b +
ArcSin[c*x])]*Sin[(3*a)/b] + CosIntegral[5*(a/b + ArcSin[c*x])]*Sin[(5*a)/b
] - 10*Cos[a/b]*SinIntegral[a/b + ArcSin[c*x]] + 5*Cos[(3*a)/b]*SinIntegral
[3*(a/b + ArcSin[c*x])] - Cos[(5*a)/b]*SinIntegral[5*(a/b + ArcSin[c*x])])/
(b*c^6)
```

fricas [F] time = 1.13, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}\,x^5}{ac^2x^2 + \left(bc^2x^2-b\right)\arcsin(cx) - a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*x^2 + 1)*x^5/(a*c^2*x^2 + (b*c^2*x^2 - b)*arcsin(c*x) -
 a), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.09, size = 139, normalized size = 0.76

$$\frac{\mathrm{Si}\left(5\arcsin\left(cx\right)+\frac{5a}{b}\right)\cos\left(\frac{5a}{b}\right)-\mathrm{Ci}\left(5\arcsin\left(cx\right)+\frac{5a}{b}\right)\sin\left(\frac{5a}{b}\right)-5\,\mathrm{Si}\left(3\arcsin\left(cx\right)+\frac{3a}{b}\right)\cos\left(\frac{3a}{b}\right)+5\,\mathrm{Ci}\left(3\mathrm{ar}\right.}{16c^{6}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] 1/16/c^6*(Si(5*arcsin(c*x)+5*a/b)*cos(5*a/b)-Ci(5*arcsin(c*x)+5*a/b)*sin(5*
a/b)-5*Si(3*arcsin(c*x)+3*a/b)*cos(3*a/b)+5*Ci(3*arcsin(c*x)+3*a/b)*sin(3*a
/b)+10*Si(arcsin(c*x)+a/b)*cos(a/b)-10*Ci(arcsin(c*x)+a/b)*sin(a/b))/b
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{5}}{\sqrt{-c^{2}x^{2}+1}\,\left(b\arcsin\left(cx\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(x^5/(sqrt(-c^2*x^2 + 1)*(b*arcsin(c*x) + a)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{5}}{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\sqrt{1-c^{2}\,x^{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5/((a + b*asin(c*x))*(1 - c^2*x^2)^(1/2)),x)
```

```
[Out] int(x^5/((a + b*asin(c*x))*(1 - c^2*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{5}}{\sqrt{-\left(cx-1\right)\left(cx+1\right)}\,\left(a+b\,\mathrm{asin}\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5/(a+b*asin(c*x))/(-c**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(x**5/(sqrt(-(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))), x)
```

3.350 $\int \frac{x^4}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=144

$$-\frac{\cos\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{2bc^5}+\frac{\cos\left(\frac{4a}{b}\right)\text{Ci}\left(\frac{4\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{8bc^5}-\frac{\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{2bc^5}+\frac{\sin\left(\frac{4a}{b}\right)\text{Si}\left(\frac{4\left(a+b\sin^{-1}(\right.\right.}{b}\right.}{8bc^5}$$

```
[Out] -1/2*Ci(2*(a+b*arcsin(c*x))/b)*cos(2*a/b)/b/c^5+1/8*Ci(4*(a+b*arcsin(c*x))/
b)*cos(4*a/b)/b/c^5+3/8*ln(a+b*arcsin(c*x))/b/c^5-1/2*Si(2*(a+b*arcsin(c*x)
)/b)*sin(2*a/b)/b/c^5+1/8*Si(4*(a+b*arcsin(c*x))/b)*sin(4*a/b)/b/c^5
```

Rubi [A] time = 0.33, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {4723, 3312, 3303, 3299, 3302}

$$-\frac{\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{2bc^5}+\frac{\cos\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)}{8bc^5}-\frac{\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\sin^{-1}\right.}{2bc^5}$$

Antiderivative was successfully verified.

```
[In] Int[x^4/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])),x]
```

```
[Out] -(Cos[(2*a)/b]*CosIntegral[(2*a)/b + 2*ArcSin[c*x]])/(2*b*c^5) + (Cos[(4*a)
/b]*CosIntegral[(4*a)/b + 4*ArcSin[c*x]])/(8*b*c^5) + (3*Log[a + b*ArcSin[c
*x]])/(8*b*c^5) - (Sin[(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c*x]])/(2*b*
c^5) + (Sin[(4*a)/b]*SinIntegral[(4*a)/b + 4*ArcSin[c*x]])/(8*b*c^5)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
```

```
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x^4}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^4(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c^5}$$

$$= \frac{\text{Subst}\left(\int \left(\frac{3}{8(a+bx)} - \frac{\cos(2x)}{2(a+bx)} + \frac{\cos(4x)}{8(a+bx)}\right)dx, x, \sin^{-1}(cx)\right)}{c^5}$$

$$= \frac{3\log\left(a+b\sin^{-1}(cx)\right)}{8bc^5} + \frac{\text{Subst}\left(\int \frac{\cos(4x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{8c^5} - \frac{\text{Subst}\left(\int \frac{\cos(2x}{a+bx}\right.}{}$$

$$= \frac{3\log\left(a+b\sin^{-1}(cx)\right)}{8bc^5} - \frac{\cos\left(\frac{2a}{b}\right)\text{Subst}\left(\int \frac{\cos\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{2c^5} + \frac{\text{co}}{}$$

$$= -\frac{\cos\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{2bc^5} + \frac{\cos\left(\frac{4a}{b}\right)\text{Ci}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)}{8bc^5} + \frac{3\log\left(a\right.}{}$$

Mathematica [A] time = 0.26, size = 108, normalized size = 0.75

$$\frac{-4\cos\left(\frac{2a}{b}\right)\text{Ci}\left(2\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+\cos\left(\frac{4a}{b}\right)\text{Ci}\left(4\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)-4\sin\left(\frac{2a}{b}\right)\text{Si}\left(2\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+\sin\left(\frac{4a}{b}\right)}{8bc^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])),x]
```

```
[Out] (-4*Cos[(2*a)/b]*CosIntegral[2*(a/b + ArcSin[c*x])] + Cos[(4*a)/b]*CosInteg
ral[4*(a/b + ArcSin[c*x])] + 3*Log[a + b*ArcSin[c*x]] - 4*Sin[(2*a)/b]*SinI
ntegral[2*(a/b + ArcSin[c*x])] + Sin[(4*a)/b]*SinIntegral[4*(a/b + ArcSin[c
*x])])/(8*b*c^5)
```

fricas [F] time = 0.57, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}\,x^4}{ac^2x^2+\left(bc^2x^2-b\right)\arcsin(cx)-a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*x^2 + 1)*x^4/(a*c^2*x^2 + (b*c^2*x^2 - b)*arcsin(c*x) -
 a), x)
```

giac [A] time = 0.45, size = 254, normalized size = 1.76

$$\frac{\cos\left(\frac{a}{b}\right)^4\text{Ci}\left(\frac{4a}{b}+4\arcsin(cx)\right)}{bc^5} + \frac{\cos\left(\frac{a}{b}\right)^3\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{4a}{b}+4\arcsin(cx)\right)}{bc^5} - \frac{\cos\left(\frac{a}{b}\right)^2\text{Ci}\left(\frac{4a}{b}+4\arcsin(cx)\right)}{bc^5} - \frac{\text{cos}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] cos(a/b)^4*cos_integral(4*a/b + 4*arcsin(c*x))/(b*c^5) + cos(a/b)^3*sin(a/b
)*sin_integral(4*a/b + 4*arcsin(c*x))/(b*c^5) - cos(a/b)^2*cos_integral(4*a
```

```
/b + 4*arcsin(c*x))/(b*c^5) - cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(c*x)
)/(b*c^5) - 1/2*cos(a/b)*sin(a/b)*sin_integral(4*a/b + 4*arcsin(c*x))/(b*c^
5) - cos(a/b)*sin(a/b)*sin_integral(2*a/b + 2*arcsin(c*x))/(b*c^5) + 1/8*co
s_integral(4*a/b + 4*arcsin(c*x))/(b*c^5) + 1/2*cos_integral(2*a/b + 2*arcs
in(c*x))/(b*c^5) + 3/8*log(b*arcsin(c*x) + a)/(b*c^5)
```

maple [A] time = 0.09, size = 135, normalized size = 0.94

$$\frac{\mathrm{Si}\left(4\arcsin(cx)+\frac{4a}{b}\right)\sin\left(\frac{4a}{b}\right)}{8c^5b}+\frac{\mathrm{Ci}\left(4\arcsin(cx)+\frac{4a}{b}\right)\cos\left(\frac{4a}{b}\right)}{8c^5b}-\frac{\mathrm{Si}\left(2\arcsin(cx)+\frac{2a}{b}\right)\sin\left(\frac{2a}{b}\right)}{2c^5b}-\frac{\mathrm{Ci}\left(2\arcsi\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] 1/8/c^5/b*Si(4*arcsin(c*x)+4*a/b)*sin(4*a/b)+1/8/c^5/b*Ci(4*arcsin(c*x)+4*a
/b)*cos(4*a/b)-1/2/c^5/b*Si(2*arcsin(c*x)+2*a/b)*sin(2*a/b)-1/2/c^5/b*Ci(2*
arcsin(c*x)+2*a/b)*cos(2*a/b)+3/8*ln(a+b*arcsin(c*x))/b/c^5
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4}{\sqrt{-c^2x^2+1}\,(b\arcsin(cx)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(x^4/(sqrt(-c^2*x^2 + 1)*(b*arcsin(c*x) + a)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^4}{(a+b\,\mathrm{asin}(c\,x))\,\sqrt{1-c^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4/((a + b*asin(c*x))*(1 - c^2*x^2)^(1/2)),x)
```

```
[Out] int(x^4/((a + b*asin(c*x))*(1 - c^2*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4}{\sqrt{-(cx-1)(cx+1)}\,(a+b\,\mathrm{asin}(cx))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4/(a+b*asin(c*x))/(-c**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(x**4/(sqrt(-(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))), x)
```

3.351 $\int \frac{x^3}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=121

$$-\frac{3\sin\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{4bc^4}+\frac{\sin\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{4bc^4}+\frac{3\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{4bc^4}-\frac{\cos\left(\frac{3a}{b}\right)\text{Si}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{4bc^4}$$

```
[Out] 3/4*cos(a/b)*Si((a+b*arcsin(c*x))/b)/b/c^4-1/4*cos(3*a/b)*Si(3*(a+b*arcsin(
c*x))/b)/b/c^4-3/4*Ci((a+b*arcsin(c*x))/b)*sin(a/b)/b/c^4+1/4*Ci(3*(a+b*arc
sin(c*x))/b)*sin(3*a/b)/b/c^4
```

Rubi [A] time = 0.31, antiderivative size = 117, normalized size of antiderivative = 0.97, number of steps used = 9, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {4723, 3312, 3303, 3299, 3302}

$$-\frac{3\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{4bc^4}+\frac{\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)}{4bc^4}+\frac{3\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{4bc^4}-$$

Antiderivative was successfully verified.

```
[In] Int[x^3/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])),x]
```

```
[Out] (-3*CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b])/(4*b*c^4) + (CosIntegral[(3*a)
/b + 3*ArcSin[c*x]]*Sin[(3*a)/b])/(4*b*c^4) + (3*Cos[a/b]*SinIntegral[a/b +
 ArcSin[c*x]])/(4*b*c^4) - (Cos[(3*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c*x
]])/(4*b*c^4)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
```

```
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x^3}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}dx = \frac{\text{Subst}\left(\int \frac{\sin^3(x)}{a+bx}dx, x, \sin^{-1}(cx)\right)}{c^4}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{3\sin(x)}{4(a+bx)} - \frac{\sin(3x)}{4(a+bx)}\right)dx, x, \sin^{-1}(cx)\right)}{c^4}$$
$$= -\frac{\text{Subst}\left(\int \frac{\sin(3x)}{a+bx}dx, x, \sin^{-1}(cx)\right)}{4c^4} + \frac{3\,\text{Subst}\left(\int \frac{\sin(x)}{a+bx}dx, x, \sin^{-1}(cx)\right)}{4c^4}$$
$$= \frac{\left(3\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{a+bx}dx, x, \sin^{-1}(cx)\right)}{4c^4} - \frac{\cos\left(\frac{3a}{b}\right)\text{Subst}\left(\int \frac{\sin\left(\frac{3a}{b}\right.}{a+b}\right.}{4c^4}$$
$$= -\frac{3\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)\sin\left(\frac{a}{b}\right)}{4bc^4} + \frac{\text{Ci}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)\sin\left(\frac{3a}{b}\right)}{4bc^4} + \frac{3\cos\left(\frac{a}{b}\right.}{}$$

Mathematica [A] time = 0.22, size = 92, normalized size = 0.76

$$-\frac{3\sin\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right) - \sin\left(\frac{3a}{b}\right)\text{Ci}\left(3\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right) - 3\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right) + \cos\left(\frac{3a}{b}\right)\text{Si}\left(3\right.}{4bc^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])),x]
```

```
[Out] -1/4*(3*CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b] - CosIntegral[3*(a/b + ArcS
in[c*x])]*Sin[(3*a)/b] - 3*Cos[a/b]*SinIntegral[a/b + ArcSin[c*x]] + Cos[(3
*a)/b]*SinIntegral[3*(a/b + ArcSin[c*x])])/(b*c^4)
```

fricas [F] time = 0.65, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}\,x^3}{ac^2x^2+\left(bc^2x^2-b\right)\arcsin(cx)-a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*x^2 + 1)*x^3/(a*c^2*x^2 + (b*c^2*x^2 - b)*arcsin(c*x) -
 a), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.08, size = 93, normalized size = 0.77

$$\frac{\operatorname{Ci}\left(3\arcsin\left(cx\right)+\frac{3a}{b}\right)\sin\left(\frac{3a}{b}\right)+3\operatorname{Si}\left(\arcsin\left(cx\right)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)-3\operatorname{Ci}\left(\arcsin\left(cx\right)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)-\operatorname{Si}\left(3\arcsin\left(cx\right)\right.}{4c^4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] 1/4/c^4*(Ci(3*arcsin(c*x)+3*a/b)*sin(3*a/b)+3*Si(arcsin(c*x)+a/b)*cos(a/b)-
3*Ci(arcsin(c*x)+a/b)*sin(a/b)-Si(3*arcsin(c*x)+3*a/b)*cos(3*a/b))/b
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3}{\sqrt{-c^2x^2+1}\,(b\arcsin\left(cx\right)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(x^3/(sqrt(-c^2*x^2 + 1)*(b*arcsin(c*x) + a)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^3}{(a+b\,\mathrm{asin}\,(c\,x))\,\sqrt{1-c^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3/((a + b*asin(c*x))*(1 - c^2*x^2)^(1/2)),x)
```

```
[Out] int(x^3/((a + b*asin(c*x))*(1 - c^2*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3}{\sqrt{-(cx-1)(cx+1)}\,(a+b\,\mathrm{asin}\,(cx))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3/(a+b*asin(c*x))/(-c**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(x**3/(sqrt(-(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))), x)
```

3.352 $\int \frac{x^2}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=82

$$-\frac{\cos\left(\frac{2a}{b}\right)\operatorname{Ci}\left(\frac{2\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{2bc^3}-\frac{\sin\left(\frac{2a}{b}\right)\operatorname{Si}\left(\frac{2\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{2bc^3}+\frac{\log\left(a+b\sin^{-1}(cx)\right)}{2bc^3}$$

```
[Out] -1/2*Ci(2*(a+b*arcsin(c*x))/b)*cos(2*a/b)/b/c^3+1/2*ln(a+b*arcsin(c*x))/b/c
^3-1/2*Si(2*(a+b*arcsin(c*x))/b)*sin(2*a/b)/b/c^3
```

Rubi [A] time = 0.25, antiderivative size = 82, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {4723, 3312, 3303, 3299, 3302}

$$-\frac{\cos\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{2bc^3}-\frac{\sin\left(\frac{2a}{b}\right)\operatorname{Si}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{2bc^3}+\frac{\log\left(a+b\sin^{-1}(cx)\right)}{2bc^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])),x]
```

```
[Out] -(Cos[(2*a)/b]*CosIntegral[(2*a)/b + 2*ArcSin[c*x]])/(2*b*c^3) + Log[a + b*
ArcSin[c*x]]/(2*b*c^3) - (Sin[(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c*x]]
)/(2*b*c^3)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x^2}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx = \frac{\text{Subst}\left(\int \frac{\sin^2(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c^3}$$

$$= \frac{\text{Subst}\left(\int \left(\frac{1}{2(a+bx)} - \frac{\cos(2x)}{2(a+bx)}\right) dx, x, \sin^{-1}(cx)\right)}{c^3}$$

$$= \frac{\log\left(a+b\sin^{-1}(cx)\right)}{2bc^3} - \frac{\text{Subst}\left(\int \frac{\cos(2x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{2c^3}$$

$$= \frac{\log\left(a+b\sin^{-1}(cx)\right)}{2bc^3} - \frac{\cos\left(\frac{2a}{b}\right)\text{Subst}\left(\int \frac{\cos\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{2c^3} - \text{sin} (\ldots$$

$$= -\frac{\cos\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{2bc^3} + \frac{\log\left(a+b\sin^{-1}(cx)\right)}{2bc^3} - \frac{\sin\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+\ldots\right.}{2bc^3}$$

Mathematica [A] time = 0.18, size = 64, normalized size = 0.78

$$-\frac{\cos\left(\frac{2a}{b}\right)\text{Ci}\left(2\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right) + \sin\left(\frac{2a}{b}\right)\text{Si}\left(2\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right) - \log\left(a+b\sin^{-1}(cx)\right)}{2bc^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])),x]
```

```
[Out] -1/2*(Cos[(2*a)/b]*CosIntegral[2*(a/b + ArcSin[c*x])] - Log[a + b*ArcSin[c*
x]] + Sin[(2*a)/b]*SinIntegral[2*(a/b + ArcSin[c*x])])/(b*c^3)
```

fricas [F] time = 0.50, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}\,x^2}{ac^2x^2+\left(bc^2x^2-b\right)\arcsin(cx)-a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*x^2 + 1)*x^2/(a*c^2*x^2 + (b*c^2*x^2 - b)*arcsin(c*x) -
 a), x)
```

giac [A] time = 0.43, size = 104, normalized size = 1.27

$$-\frac{\cos\left(\frac{a}{b}\right)^2\text{Ci}\left(\frac{2a}{b}+2\arcsin(cx)\right)}{bc^3} - \frac{\cos\left(\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\arcsin(cx)\right)}{bc^3} + \frac{\text{Ci}\left(\frac{2a}{b}+2\arcsin(cx)\right)}{2bc^3} + \frac{\log(b\,\text{arcsi}\ldots}{2b\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] -cos(a/b)^2*cos_integral(2*a/b + 2*arcsin(c*x))/(b*c^3) - cos(a/b)*sin(a/b)
*sin_integral(2*a/b + 2*arcsin(c*x))/(b*c^3) + 1/2*cos_integral(2*a/b + 2*a
rcsin(c*x))/(b*c^3) + 1/2*log(b*arcsin(c*x) + a)/(b*c^3)
```

maple [A] time = 0.10, size = 77, normalized size = 0.94

$$-\frac{\text{Si}\left(2\arcsin(cx)+\frac{2a}{b}\right)\sin\left(\frac{2a}{b}\right)}{2c^3b} - \frac{\text{Ci}\left(2\arcsin(cx)+\frac{2a}{b}\right)\cos\left(\frac{2a}{b}\right)}{2c^3b} + \frac{\ln(a+b\arcsin(cx))}{2b\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] -1/2/c^3/b*Si(2*arcsin(c*x)+2*a/b)*sin(2*a/b)-1/2/c^3/b*Ci(2*arcsin(c*x)+2*
a/b)*cos(2*a/b)+1/2*ln(a+b*arcsin(c*x))/b/c^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\sqrt{-c^2x^2+1}\,(b\arcsin(cx)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(x^2/(sqrt(-c^2*x^2 + 1)*(b*arcsin(c*x) + a)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^2}{(a+b\,\mathrm{asin}\,(c\,x))\,\sqrt{1-c^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/((a + b*asin(c*x))*(1 - c^2*x^2)^(1/2)),x)
```

```
[Out] int(x^2/((a + b*asin(c*x))*(1 - c^2*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\sqrt{-(cx-1)(cx+1)}\,(a+b\,\mathrm{asin}\,(cx))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2/(a+b*asin(c*x))/(-c**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(x**2/(sqrt(-(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))), x)
```

3.353 $\int \frac{x}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=54

$$\frac{\cos\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{bc^2}-\frac{\sin\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{bc^2}$$

```
[Out] cos(a/b)*Si((a+b*arcsin(c*x))/b)/b/c^2-Ci((a+b*arcsin(c*x))/b)*sin(a/b)/b/c
^2
```

Rubi [A] time = 0.15, antiderivative size = 50, normalized size of antiderivative = 0.93, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {4723, 3303, 3299, 3302}

$$\frac{\cos\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc^2}-\frac{\sin\left(\frac{a}{b}\right)\operatorname{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc^2}$$

Antiderivative was successfully verified.

```
[In] Int[x/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])),x]
```

```
[Out] -((CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b])/(b*c^2)) + (Cos[a/b]*SinIntegra
l[a/b + ArcSin[c*x]])/(b*c^2)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx = \frac{\text{Subst}\left(\int \frac{\sin(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c^2}$$

$$= \frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c^2} - \frac{\sin\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+x\right)}{a+bx}\,dx\right.}{c^2}$$

$$= -\frac{\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)\sin\left(\frac{a}{b}\right)}{bc^2} + \frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc^2}$$

Mathematica [A] time = 0.11, size = 45, normalized size = 0.83

$$\frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right) - \sin\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])),x]
```

```
[Out] (-(CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b]) + Cos[a/b]*SinIntegral[a/b + Ar
cSin[c*x]])/(b*c^2)
```

fricas [F] time = 0.65, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}\,x}{ac^2x^2 + \left(bc^2x^2 - b\right)\arcsin(cx) - a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*x^2 + 1)*x/(a*c^2*x^2 + (b*c^2*x^2 - b)*arcsin(c*x) - a
), x)
```

giac [A] time = 0.36, size = 50, normalized size = 0.93

$$-\frac{\text{Ci}\left(\frac{a}{b}+\arcsin(cx)\right)\sin\left(\frac{a}{b}\right)}{bc^2} + \frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\arcsin(cx)\right)}{bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] -cos_integral(a/b + arcsin(c*x))*sin(a/b)/(b*c^2) + cos(a/b)*sin_integral(a
/b + arcsin(c*x))/(b*c^2)
```

maple [A] time = 0.08, size = 46, normalized size = 0.85

$$\frac{\text{Si}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right) - \text{Ci}\left(\arcsin(cx)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)}{c^2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] 1/c^2*(Si(arcsin(c*x)+a/b)*cos(a/b)-Ci(arcsin(c*x)+a/b)*sin(a/b))/b
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\sqrt{-c^2x^2+1}\,(b\arcsin(cx)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(x/(sqrt(-c^2*x^2 + 1)*(b*arcsin(c*x) + a)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{x}{(a + b \operatorname{asin}(c\, x))\, \sqrt{1 - c^2\, x^2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/((a + b*asin(c*x))*(1 - c^2*x^2)^(1/2)),x)
```

```
[Out] int(x/((a + b*asin(c*x))*(1 - c^2*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\sqrt{-(cx-1)(cx+1)}\, (a + b \operatorname{asin}(cx))}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*asin(c*x))/(-c**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(x/(sqrt(-(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))), x)
```

3.354 $\int \frac{1}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=16

$$\frac{\log\left(a+b\sin^{-1}(cx)\right)}{bc}$$

```
[Out] ln(a+b*arcsin(c*x))/b/c
```

Rubi [A] time = 0.05, antiderivative size = 16, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {4639}

$$\frac{\log\left(a+b\sin^{-1}(cx)\right)}{bc}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])),x]
```

```
[Out] Log[a + b*ArcSin[c*x]]/(b*c)
```

Rule 4639

```
Int[1/(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*Sqrt[(d_) + (e_.)*(x_)^2]), x_Sym
bol] :> Simp[Log[a + b*ArcSin[c*x]]/(b*c*Sqrt[d]), x] /; FreeQ[{a, b, c, d,
 e}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0]
```

Rubi steps

$$\int \frac{1}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx=\frac{\log\left(a+b\sin^{-1}(cx)\right)}{bc}$$

Mathematica [A] time = 0.05, size = 16, normalized size = 1.00

$$\frac{\log\left(a+b\sin^{-1}(cx)\right)}{bc}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])),x]
```

```
[Out] Log[a + b*ArcSin[c*x]]/(b*c)
```

fricas [A] time = 0.60, size = 19, normalized size = 1.19

$$\frac{\log\left(-b\arcsin\left(cx\right)-a\right)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] log(-b*arcsin(c*x) - a)/(b*c)
```

giac [A] time = 0.40, size = 17, normalized size = 1.06

$$\frac{\log\left(|b\arcsin\left(cx\right)+a|\right)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] log(abs(b*arcsin(c*x) + a))/(b*c)
```

maple [A] time = 0.01, size = 17, normalized size = 1.06

$$\frac{\ln (a + b \arcsin (cx))}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] ln(a+b*arcsin(c*x))/b/c
```

maxima [A] time = 0.41, size = 16, normalized size = 1.00

$$\frac{\log (b \arcsin (cx) + a)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] log(b*arcsin(c*x) + a)/(b*c)
```

mupad [B] time = 0.18, size = 16, normalized size = 1.00

$$\frac{\ln (a + b \operatorname{asin} (c\,x))}{b\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*asin(c*x))*(1 - c^2*x^2)^(1/2)),x)
```

```
[Out] log(a + b*asin(c*x))/(b*c)
```

sympy [A] time = 1.27, size = 42, normalized size = 2.62

$$\begin{cases} \frac{x}{a} & \text{for}\: b = 0 \wedge c = 0 \\ \frac{\begin{cases} - \frac{i \operatorname{acosh}{(cx)}}{c} & \text{for}\: \left|{c^{2} x^{2}}\right| > 1 \\ \frac{\operatorname{asin}{(cx)}}{c} & \text{otherwise} \end{cases}}{a} & \text{for}\: b = 0 \\ \frac{x}{a} & \text{for}\: c = 0 \\ \frac{\log{\left(\frac{a}{b} + \operatorname{asin}{(cx)} \right)}}{bc} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(c*x))/(-c**2*x**2+1)**(1/2),x)
```

```
[Out] Piecewise((x/a, Eq(b, 0) & Eq(c, 0)), (Piecewise((-I*acosh(c*x)/c, Abs(c**2
*x**2) > 1), (asin(c*x)/c, True))/a, Eq(b, 0)), (x/a, Eq(c, 0)), (log(a/b +
 asin(c*x))/(b*c), True))
```

3.355 $\int \frac{1}{x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=31

$$\mathrm{Int}\left(\frac{1}{x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)},x\right)$$

[Out] Unintegrable(1/x/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x)

Rubi [A] time = 0.12, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

[In] Int[1/(x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])),x]

[Out] Defer[Int][1/(x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])), x]

Rubi steps

$$\int \frac{1}{x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx=\int \frac{1}{x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Mathematica [A] time = 2.87, size = 0, normalized size = 0.00

$$\int \frac{1}{x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

[In] Integrate[1/(x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])),x]

[Out] Integrate[1/(x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])), x]

fricas [A] time = 0.53, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{-c^2x^2+1}}{ac^2x^3-ax+\left(bc^2x^3-bx\right)\arcsin(cx)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/x/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="fricas")

[Out] integral(-sqrt(-c^2*x^2 + 1)/(a*c^2*x^3 - a*x + (b*c^2*x^3 - b*x)*arcsin(c*x)), x)

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/x/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="giac")

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.16, size = 0, normalized size = 0.00

$$\int \frac{1}{x\left(a+b\arcsin\left(cx\right)\right)\sqrt{-c^{2}x^{2}+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x)
[Out] int(1/x/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{-c^{2}x^{2}+1}\,(b\arcsin\left(cx\right)+a)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="maxima")
[Out] integrate(1/(sqrt(-c^2*x^2 + 1)*(b*arcsin(c*x) + a)*x), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{x\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\sqrt{1-c^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x*(a + b*asin(c*x))*(1 - c^2*x^2)^(1/2)),x)
[Out] int(1/(x*(a + b*asin(c*x))*(1 - c^2*x^2)^(1/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x\sqrt{-\left(cx-1\right)\left(cx+1\right)}\,\left(a+b\,\mathrm{asin}\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+b*asin(c*x))/(-c**2*x**2+1)**(1/2),x)
[Out] Integral(1/(x*sqrt(-(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))), x)
```

3.356 $\int \frac{1}{x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)},x\right)$$

```
[Out] Unintegrable(1/x^2/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x)
```

Rubi [A] time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])),x]
[Out] Defer[Int][1/(x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{1}{x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx=\int \frac{1}{x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Mathematica [A] time = 0.08, size = 0, normalized size = 0.00

$$\int \frac{1}{x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])),x]
[Out] Integrate[1/(x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 0.67, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}}{ac^2x^4-ax^2+\left(bc^2x^4-bx^2\right)\arcsin(cx)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="fricas")
[Out] integral(-sqrt(-c^2*x^2 + 1)/(a*c^2*x^4 - a*x^2 + (b*c^2*x^4 - b*x^2)*arcsi
n(c*x)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{-c^2x^2+1}\,(b\arcsin(cx)+a)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="giac")
[Out] integrate(1/(sqrt(-c^2*x^2 + 1)*(b*arcsin(c*x) + a)*x^2), x)
```

maple [A] time = 0.12, size = 0, normalized size = 0.00

$$\int \frac{1}{x^2 (a + b \arcsin(cx)) \sqrt{-c^2x^2 + 1}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x^2/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x)
[Out] int(1/x^2/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{-c^2x^2 + 1}\,(b \arcsin(cx) + a)x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(a+b*arcsin(c*x))/(-c^2*x^2+1)^(1/2),x, algorithm="maxima")
[Out] integrate(1/(sqrt(-c^2*x^2 + 1)*(b*arcsin(c*x) + a)*x^2), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{x^2\ (a + b\,\mathrm{asin}(c\,x))\ \sqrt{1 - c^2\,x^2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x^2*(a + b*asin(c*x))*(1 - c^2*x^2)^(1/2)),x)
[Out] int(1/(x^2*(a + b*asin(c*x))*(1 - c^2*x^2)^(1/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x^2\sqrt{-(cx-1)(cx+1)}\ (a + b\,\mathrm{asin}(cx))}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x**2/(a+b*asin(c*x))/(-c**2*x**2+1)**(1/2),x)
[Out] Integral(1/(x**2*sqrt(-(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))), x)
```

3.357 $\int \frac{x^2}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{x^2}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)},x\right)$$

```
[Out] Unintegrable(x^2/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^2}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[x^2/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])),x]
[Out] Defer[Int][x^2/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{x^2}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}\,dx=\int \frac{x^2}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Mathematica [A] time = 3.89, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x^2/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])),x]
[Out] Integrate[x^2/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{ac^4x^4-2\,ac^2x^2+\left(bc^4x^4-2\,bc^2x^2+b\right)\arcsin(cx)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral(sqrt(-c^2*x^2 + 1)*x^2/(a*c^4*x^4 - 2*a*c^2*x^2 + (b*c^4*x^4 - 2*b
*c^2*x^2 + b)*arcsin(c*x) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\left(-c^2x^2+1\right)^{\frac{3}{2}}\left(b\arcsin(cx)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
[Out] integrate(x^2/((-c^2*x^2 + 1)^(3/2)*(b*arcsin(c*x) + a)), x)
```

maple [A] time = 0.56, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\left(-c^2x^2+1\right)^{\frac{3}{2}}\left(a+b\arcsin\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x)
[Out] int(x^2/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\left(-c^2x^2+1\right)^{\frac{3}{2}}\left(b\arcsin\left(cx\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
[Out] integrate(x^2/((-c^2*x^2 + 1)^(3/2)*(b*arcsin(c*x) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x^2}{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(1-c^2\,x^2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/((a + b*asin(c*x))*(1 - c^2*x^2)^(3/2)),x)
[Out] int(x^2/((a + b*asin(c*x))*(1 - c^2*x^2)^(3/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}\left(a+b\,\mathrm{asin}\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2/(-c**2*x**2+1)**(3/2)/(a+b*asin(c*x)),x)
[Out] Integral(x**2/((-(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))), x)
```

3.358 $\int \frac{x}{(1-c^2x^2)^{3/2}(a+b\sin^{-1}(cx))}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{x}{(1-c^2x^2)^{3/2}\,(a+b\sin^{-1}(cx))},x\right)$$

```
[Out] Unintegrable(x/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.10, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x}{(1-c^2x^2)^{3/2}\,(a+b\sin^{-1}(cx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[x/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])),x]
```

```
[Out] Defer[Int][x/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{x}{(1-c^2x^2)^{3/2}\,(a+b\sin^{-1}(cx))}\,dx = \int \frac{x}{(1-c^2x^2)^{3/2}\,(a+b\sin^{-1}(cx))}\,dx$$

Mathematica [A] time = 10.68, size = 0, normalized size = 0.00

$$\int \frac{x}{(1-c^2x^2)^{3/2}\,(a+b\sin^{-1}(cx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])),x]
```

```
[Out] Integrate[x/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 0.65, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}\,x}{ac^4x^4-2\,ac^2x^2+(bc^4x^4-2\,bc^2x^2+b)\arcsin(cx)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*x^2 + 1)*x/(a*c^4*x^4 - 2*a*c^2*x^2 + (b*c^4*x^4 - 2*b*c
^2*x^2 + b)*arcsin(c*x) + a), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.40, size = 0, normalized size = 0.00

$$\int \frac{x}{\left(-c^2x^2+1\right)^{\frac{3}{2}} \left(a+b\arcsin\left(cx\right)\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x)
[Out] int(x/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\left(-c^2x^2+1\right)^{\frac{3}{2}} \left(b\arcsin\left(cx\right)+a\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
[Out] integrate(x/((-c^2*x^2 + 1)^(3/2)*(b*arcsin(c*x) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x}{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(1-c^2\,x^2\right)}^{3/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/((a + b*asin(c*x))*(1 - c^2*x^2)^(3/2)),x)
[Out] int(x/((a + b*asin(c*x))*(1 - c^2*x^2)^(3/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}} \left(a+b\,\mathrm{asin}\left(cx\right)\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-c**2*x**2+1)**(3/2)/(a+b*asin(c*x)),x)
[Out] Integral(x/((-(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))), x)
```

3.359 $\int \frac{1}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=28

$$\text{Int}\left(\frac{1}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)},x\right)$$

```
[Out] Unintegrable(1/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])),x]
```

```
[Out] Defer[Int][1/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{1}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}\,dx=\int \frac{1}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Mathematica [A] time = 0.10, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])),x]
```

```
[Out] Integrate[1/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 1.13, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}}{ac^4x^4-2\,ac^2x^2+\left(bc^4x^4-2\,bc^2x^2+b\right)\arcsin\left(cx\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*x^2 + 1)/(a*c^4*x^4 - 2*a*c^2*x^2 + (b*c^4*x^4 - 2*b*c^2
*x^2 + b)*arcsin(c*x) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-c^2x^2+1\right)^{\frac{3}{2}}\left(b\arcsin\left(cx\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
[Out] integrate(1/((-c^2*x^2 + 1)^(3/2)*(b*arcsin(c*x) + a)), x)
```

maple [A] time = 0.25, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-c^{2} x^{2}+1\right)^{\frac{3}{2}} \left(a +b \arcsin \left(c x \right)\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x)
[Out] int(1/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{{\left(-c^{2} x^{2} + 1\right)}^{\frac{3}{2}} {\left(b \arcsin\left(c x\right) + a\right)}}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
[Out] integrate(1/((-c^2*x^2 + 1)^(3/2)*(b*arcsin(c*x) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(1-c^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*asin(c*x))*(1 - c^2*x^2)^(3/2)),x)
[Out] int(1/((a + b*asin(c*x))*(1 - c^2*x^2)^(3/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(- \left(c x - 1\right) \left(c x + 1\right)\right)^{\frac{3}{2}} \left(a + b \operatorname{asin}{\left(c x \right)}\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c**2*x**2+1)**(3/2)/(a+b*asin(c*x)),x)
[Out] Integral(1/((-(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))), x)
```

3.360 $\int \frac{1}{x(1-c^2x^2)^{3/2}(a+b\sin^{-1}(cx))}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)},x\right)$$

```
[Out] Unintegrable(1/x/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(x*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])),x]
[Out] Defer[Int][1/(x*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{1}{x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}\,dx=\int \frac{1}{x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Mathematica [A] time = 2.83, size = 0, normalized size = 0.00

$$\int \frac{1}{x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(x*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])),x]
[Out] Integrate[1/(x*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}}{ac^4x^5-2\,ac^2x^3+ax+\left(bc^4x^5-2\,bc^2x^3+bx\right)\arcsin\left(cx\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral(sqrt(-c^2*x^2 + 1)/(a*c^4*x^5 - 2*a*c^2*x^3 + a*x + (b*c^4*x^5 - 2
*b*c^2*x^3 + b*x)*arcsin(c*x)), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 2.62, size = 0, normalized size = 0.00

$$\int \frac{1}{x\left(-c^{2}x^{2}+1\right)^{\frac{3}{2}}\left(a+b\arcsin\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x)
```

```
[Out] int(1/x/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-c^{2}x^{2}+1\right)^{\frac{3}{2}}\left(b\arcsin\left(cx\right)+a\right)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate(1/((-c^2*x^2 + 1)^(3/2)*(b*arcsin(c*x) + a)*x), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{x\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(1-c^2\,x^2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x*(a + b*asin(c*x))*(1 - c^2*x^2)^(3/2)),x)
```

```
[Out] int(1/(x*(a + b*asin(c*x))*(1 - c^2*x^2)^(3/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}\left(a+b\,\mathrm{asin}\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(-c**2*x**2+1)**(3/2)/(a+b*asin(c*x)),x)
```

```
[Out] Integral(1/(x*(-(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))), x)
```

3.361 $\int \frac{1}{x^2(1-c^2x^2)^{3/2}(a+b\sin^{-1}(cx))} dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{x^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)},x\right)$$

[Out] Unintegrable(1/x^2/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x)

Rubi [A] time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{x^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)} dx$$

Verification is Not applicable to the result.

[In] Int[1/(x^2*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])),x]

[Out] Defer[Int][1/(x^2*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])), x]

Rubi steps

$$\int \frac{1}{x^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)} dx = \int \frac{1}{x^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)} dx$$

Mathematica [A] time = 2.02, size = 0, normalized size = 0.00

$$\int \frac{1}{x^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)} dx$$

Verification is Not applicable to the result.

[In] Integrate[1/(x^2*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])),x]

[Out] Integrate[1/(x^2*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])), x]

fricas [A] time = 0.39, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}}{ac^4x^6-2\,ac^2x^4+ax^2+\left(bc^4x^6-2\,bc^2x^4+bx^2\right)\arcsin(cx)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/x^2/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")

[Out] integral(sqrt(-c^2*x^2 + 1)/(a*c^4*x^6 - 2*a*c^2*x^4 + a*x^2 + (b*c^4*x^6 - 2*b*c^2*x^4 + b*x^2)*arcsin(c*x)), x)

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-c^2x^2+1\right)^{\frac{3}{2}}\left(b\arcsin(cx)+a\right)x^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
[Out] integrate(1/((-c^2*x^2 + 1)^(3/2)*(b*arcsin(c*x) + a)*x^2), x)
```

maple [A] time = 0.63, size = 0, normalized size = 0.00

$$\int \frac{1}{x^{2} \left(-c^{2} x^{2}+1\right)^{\frac{3}{2}} \left(a +b \arcsin \left(c x \right)\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x^2/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x)
[Out] int(1/x^2/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{{\left(-c^{2} x^{2} + 1\right)}^{\frac{3}{2}} {\left(b \arcsin\left(c x\right) + a\right)} x^{2}}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
[Out] integrate(1/((-c^2*x^2 + 1)^(3/2)*(b*arcsin(c*x) + a)*x^2), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{x^2\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(1-c^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x^2*(a + b*asin(c*x))*(1 - c^2*x^2)^(3/2)),x)
[Out] int(1/(x^2*(a + b*asin(c*x))*(1 - c^2*x^2)^(3/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x^{2} \left(- \left(c x - 1\right) \left(c x + 1\right)\right)^{\frac{3}{2}} \left(a + b \operatorname{asin}{\left(c x \right)}\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x**2/(-c**2*x**2+1)**(3/2)/(a+b*asin(c*x)),x)
[Out] Integral(1/(x**2*(-(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))), x)
```

3.362 $\int \frac{x^2}{(1-c^2x^2)^{5/2}(a+b\sin^{-1}(cx))}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{x^2}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)},x\right)$$

[Out] Unintegrable(x^2/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x)

Rubi [A] time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^2}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

[In] Int[x^2/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])),x]

[Out] Defer[Int][x^2/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])), x]

Rubi steps

$$\int \frac{x^2}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx=\int \frac{x^2}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Mathematica [A] time = 4.73, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

[In] Integrate[x^2/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])),x]

[Out] Integrate[x^2/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])), x]

fricas [A] time = 0.40, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}\,x^2}{ac^6x^6-3\,ac^4x^4+3\,ac^2x^2+\left(bc^6x^6-3\,bc^4x^4+3\,bc^2x^2-b\right)\arcsin(cx)-a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^2/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")

[Out] integral(-sqrt(-c^2*x^2 + 1)*x^2/(a*c^6*x^6 - 3*a*c^4*x^4 + 3*a*c^2*x^2 + (b*c^6*x^6 - 3*b*c^4*x^4 + 3*b*c^2*x^2 - b)*arcsin(c*x) - a), x)

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\left(-c^2x^2+1\right)^{\frac{5}{2}}(b\arcsin(cx)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] integrate(x^2/((-c^2*x^2 + 1)^(5/2)*(b*arcsin(c*x) + a)), x)
```

maple [A] time = 2.80, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\left(-c^2x^2+1\right)^{\frac{5}{2}}\left(a+b\arcsin\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x)
```

```
[Out] int(x^2/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\left(-c^2x^2+1\right)^{\frac{5}{2}}\left(b\arcsin\left(cx\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate(x^2/((-c^2*x^2 + 1)^(5/2)*(b*arcsin(c*x) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x^2}{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(1-c^2\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/((a + b*asin(c*x))*(1 - c^2*x^2)^(5/2)),x)
```

```
[Out] int(x^2/((a + b*asin(c*x))*(1 - c^2*x^2)^(5/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}\left(a+b\,\mathrm{asin}\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2/(-c**2*x**2+1)**(5/2)/(a+b*asin(c*x)),x)
```

```
[Out] Integral(x**2/((-(c*x - 1)*(c*x + 1))**(5/2)*(a + b*asin(c*x))), x)
```

3.363 $\int \frac{x}{(1-c^2x^2)^{5/2}(a+b\sin^{-1}(cx))}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{x}{(1-c^2x^2)^{5/2}\left(a+b\sin^{-1}(cx)\right)},x\right)$$

```
[Out] Unintegrable(x/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x}{(1-c^2x^2)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[x/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])),x]
[Out] Defer[Int][x/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{x}{(1-c^2x^2)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx=\int \frac{x}{(1-c^2x^2)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Mathematica [A] time = 26.80, size = 0, normalized size = 0.00

$$\int \frac{x}{(1-c^2x^2)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])),x]
[Out] Integrate[x/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 0.64, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}\,x}{ac^6x^6-3\,ac^4x^4+3\,ac^2x^2+\left(bc^6x^6-3\,bc^4x^4+3\,bc^2x^2-b\right)\arcsin(cx)-a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral(-sqrt(-c^2*x^2 + 1)*x/(a*c^6*x^6 - 3*a*c^4*x^4 + 3*a*c^2*x^2 + (b*
c^6*x^6 - 3*b*c^4*x^4 + 3*b*c^2*x^2 - b)*arcsin(c*x) - a), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 2.45, size = 0, normalized size = 0.00

$$\int \frac{x}{\left(-c^2x^2+1\right)^{\frac{5}{2}}\left(a+b\arcsin\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x)
[Out] int(x/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\left(-c^2x^2+1\right)^{\frac{5}{2}}\left(b\arcsin\left(cx\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
[Out] integrate(x/((-c^2*x^2 + 1)^(5/2)*(b*arcsin(c*x) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x}{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(1-c^2\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/((a + b*asin(c*x))*(1 - c^2*x^2)^(5/2)),x)
[Out] int(x/((a + b*asin(c*x))*(1 - c^2*x^2)^(5/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}\left(a+b\,\mathrm{asin}\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-c**2*x**2+1)**(5/2)/(a+b*asin(c*x)),x)
[Out] Integral(x/((-(c*x - 1)*(c*x + 1))**(5/2)*(a + b*asin(c*x))), x)
```

3.364 $\int \frac{1}{(1-c^2x^2)^{5/2}(a+b\sin^{-1}(cx))}\,dx$

Optimal. Leaf size=28

$$\text{Int}\left(\frac{1}{(1-c^2x^2)^{5/2}\left(a+b\sin^{-1}(cx)\right)},x\right)$$

```
[Out] Unintegrable(1/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(1-c^2x^2)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])),x]
[Out] Defer[Int][1/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{1}{(1-c^2x^2)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx=\int \frac{1}{(1-c^2x^2)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Mathematica [A] time = 0.11, size = 0, normalized size = 0.00

$$\int \frac{1}{(1-c^2x^2)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])),x]
[Out] Integrate[1/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 1.63, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}}{ac^6x^6-3\,ac^4x^4+3\,ac^2x^2+\left(bc^6x^6-3\,bc^4x^4+3\,bc^2x^2-b\right)\arcsin(cx)-a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral(-sqrt(-c^2*x^2 + 1)/(a*c^6*x^6 - 3*a*c^4*x^4 + 3*a*c^2*x^2 + (b*c^
6*x^6 - 3*b*c^4*x^4 + 3*b*c^2*x^2 - b)*arcsin(c*x) - a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-c^2x^2+1\right)^{\frac{5}{2}}(b\arcsin(cx)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] integrate(1/((-c^2*x^2 + 1)^(5/2)*(b*arcsin(c*x) + a)), x)
```

maple [A] time = 1.88, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-c^{2} x^{2}+1\right)^{\frac{5}{2}} \left(a +b \arcsin \left(c x \right)\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x)
```

```
[Out] int(1/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{{\left(-c^{2} x^{2} + 1\right)}^{\frac{5}{2}} {\left(b \arcsin \left(c x\right) + a\right)}}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate(1/((-c^2*x^2 + 1)^(5/2)*(b*arcsin(c*x) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(1-c^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*asin(c*x))*(1 - c^2*x^2)^(5/2)),x)
```

```
[Out] int(1/((a + b*asin(c*x))*(1 - c^2*x^2)^(5/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(- \left(c x - 1\right) \left(c x + 1\right)\right)^{\frac{5}{2}} \left(a + b \operatorname{asin}{\left(c x \right)}\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c**2*x**2+1)**(5/2)/(a+b*asin(c*x)),x)
```

```
[Out] Integral(1/((-(c*x - 1)*(c*x + 1))**(5/2)*(a + b*asin(c*x))), x)
```

3.365 $\int \frac{1}{x\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{x\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)},x\right)$$

```
[Out] Unintegrable(1/x/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{x\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(x*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])),x]
[Out] Defer[Int][1/(x*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{1}{x\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx=\int \frac{1}{x\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Mathematica [A] time = 6.34, size = 0, normalized size = 0.00

$$\int \frac{1}{x\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(x*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])),x]
[Out] Integrate[1/(x*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 2.10, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}}{ac^6x^7-3\,ac^4x^5+3\,ac^2x^3-ax+\left(bc^6x^7-3\,bc^4x^5+3\,bc^2x^3-bx\right)\arcsin(cx)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral(-sqrt(-c^2*x^2 + 1)/(a*c^6*x^7 - 3*a*c^4*x^5 + 3*a*c^2*x^3 - a*x +
 (b*c^6*x^7 - 3*b*c^4*x^5 + 3*b*c^2*x^3 - b*x)*arcsin(c*x)), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 5.46, size = 0, normalized size = 0.00

$$\int \frac{1}{x\left(-c^{2}x^{2}+1\right)^{\frac{5}{2}}\left(a+b\arcsin\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x)
```

```
[Out] int(1/x/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-c^{2}x^{2}+1\right)^{\frac{5}{2}}\left(b\arcsin\left(cx\right)+a\right)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate(1/((-c^2*x^2 + 1)^(5/2)*(b*arcsin(c*x) + a)*x), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{x\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(1-c^2\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x*(a + b*asin(c*x))*(1 - c^2*x^2)^(5/2)),x)
```

```
[Out] int(1/(x*(a + b*asin(c*x))*(1 - c^2*x^2)^(5/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}\left(a+b\,\mathrm{asin}\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(-c**2*x**2+1)**(5/2)/(a+b*asin(c*x)),x)
```

```
[Out] Integral(1/(x*(-(c*x - 1)*(c*x + 1))**(5/2)*(a + b*asin(c*x))), x)
```

3.366 $\int \frac{1}{x^2(1-c^2x^2)^{5/2}(a+b\sin^{-1}(cx))}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{x^2\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)},x\right)$$

```
[Out] Unintegrable(1/x^2/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{x^2\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(x^2*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])),x]
[Out] Defer[Int][1/(x^2*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{1}{x^2\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx=\int \frac{1}{x^2\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Mathematica [A] time = 6.52, size = 0, normalized size = 0.00

$$\int \frac{1}{x^2\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(x^2*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])),x]
[Out] Integrate[1/(x^2*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}}{ac^6x^8-3\,ac^4x^6+3\,ac^2x^4-ax^2+\left(bc^6x^8-3\,bc^4x^6+3\,bc^2x^4-bx^2\right)\arcsin(cx)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral(-sqrt(-c^2*x^2 + 1)/(a*c^6*x^8 - 3*a*c^4*x^6 + 3*a*c^2*x^4 - a*x^2
 + (b*c^6*x^8 - 3*b*c^4*x^6 + 3*b*c^2*x^4 - b*x^2)*arcsin(c*x)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-c^2x^2+1\right)^{\frac{5}{2}}\left(b\arcsin(cx)+a\right)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
[Out] integrate(1/((-c^2*x^2 + 1)^(5/2)*(b*arcsin(c*x) + a)*x^2), x)
```

maple [A] time = 5.64, size = 0, normalized size = 0.00

$$\int \frac{1}{x^2\left(-c^2x^2+1\right)^{\frac{5}{2}}\left(a+b\arcsin\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x^2/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x)
[Out] int(1/x^2/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-c^2x^2+1\right)^{\frac{5}{2}}\left(b\arcsin\left(cx\right)+a\right)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
[Out] integrate(1/((-c^2*x^2 + 1)^(5/2)*(b*arcsin(c*x) + a)*x^2), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{x^2\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(1-c^2\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x^2*(a + b*asin(c*x))*(1 - c^2*x^2)^(5/2)),x)
[Out] int(1/(x^2*(a + b*asin(c*x))*(1 - c^2*x^2)^(5/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x^2\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}\left(a+b\,\mathrm{asin}\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x**2/(-c**2*x**2+1)**(5/2)/(a+b*asin(c*x)),x)
[Out] Integral(1/(x**2*(-(c*x - 1)*(c*x + 1))**(5/2)*(a + b*asin(c*x))), x)
```

3.367 $\int \frac{x^m\left(1-c^2x^2\right)^{5/2}}{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=31

$$\mathrm{Int}\left(\frac{\left(1-c^2x^2\right)^{5/2}x^m}{a+b\sin^{-1}(cx)},x\right)$$

[Out] Unintegrable(x^m*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x)

Rubi [A] time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m\left(1-c^2x^2\right)^{5/2}}{a+b\sin^{-1}(cx)}\,dx$$

Verification is Not applicable to the result.

[In] Int[(x^m*(1 - c^2*x^2)^(5/2))/(a + b*ArcSin[c*x]),x]

[Out] Defer[Int][(x^m*(1 - c^2*x^2)^(5/2))/(a + b*ArcSin[c*x]), x]

Rubi steps

$$\int \frac{x^m\left(1-c^2x^2\right)^{5/2}}{a+b\sin^{-1}(cx)}\,dx=\int \frac{x^m\left(1-c^2x^2\right)^{5/2}}{a+b\sin^{-1}(cx)}\,dx$$

Mathematica [A] time = 1.04, size = 0, normalized size = 0.00

$$\int \frac{x^m\left(1-c^2x^2\right)^{5/2}}{a+b\sin^{-1}(cx)}\,dx$$

Verification is Not applicable to the result.

[In] Integrate[(x^m*(1 - c^2*x^2)^(5/2))/(a + b*ArcSin[c*x]),x]

[Out] Integrate[(x^m*(1 - c^2*x^2)^(5/2))/(a + b*ArcSin[c*x]), x]

fricas [A] time = 0.41, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(c^4x^4-2\,c^2x^2+1\right)\sqrt{-c^2x^2+1}\,x^m}{b\arcsin\left(cx\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^m*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")

[Out] integral((c^4*x^4 - 2*c^2*x^2 + 1)*sqrt(-c^2*x^2 + 1)*x^m/(b*arcsin(c*x) + a), x)

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^m*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="giac")

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 1.52, size = 0, normalized size = 0.00

$$\int \frac{x^m \left(-c^2 x^2+1\right)^{\frac{5}{2}}}{a+b \arcsin \left(c x\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x)
[Out] int(x^m*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2 x^2+1\right)^{\frac{5}{2}} x^m}{b \arcsin \left(c x\right)+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
[Out] integrate((-c^2*x^2 + 1)^(5/2)*x^m/(b*arcsin(c*x) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x^m \left(1-c^2 x^2\right)^{5/2}}{a+b \operatorname{asin}\left(c x\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*(1 - c^2*x^2)^(5/2))/(a + b*asin(c*x)),x)
[Out] int((x^m*(1 - c^2*x^2)^(5/2))/(a + b*asin(c*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(-c**2*x**2+1)**(5/2)/(a+b*asin(c*x)),x)
[Out] Timed out
```

3.368 $\int \frac{x^m\left(1-c^2x^2\right)^{3/2}}{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\left(1-c^2x^2\right)^{3/2}x^m}{a+b\sin^{-1}(cx)},x\right)$$

```
[Out] Unintegrable(x^m*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m\left(1-c^2x^2\right)^{3/2}}{a+b\sin^{-1}(cx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(x^m*(1 - c^2*x^2)^(3/2))/(a + b*ArcSin[c*x]),x]
[Out] Defer[Int][(x^m*(1 - c^2*x^2)^(3/2))/(a + b*ArcSin[c*x]), x]
```

Rubi steps

$$\int \frac{x^m\left(1-c^2x^2\right)^{3/2}}{a+b\sin^{-1}(cx)}\,dx=\int \frac{x^m\left(1-c^2x^2\right)^{3/2}}{a+b\sin^{-1}(cx)}\,dx$$

Mathematica [A] time = 0.56, size = 0, normalized size = 0.00

$$\int \frac{x^m\left(1-c^2x^2\right)^{3/2}}{a+b\sin^{-1}(cx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(x^m*(1 - c^2*x^2)^(3/2))/(a + b*ArcSin[c*x]),x]
[Out] Integrate[(x^m*(1 - c^2*x^2)^(3/2))/(a + b*ArcSin[c*x]), x]
```

fricas [A] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(c^2x^2-1\right)\sqrt{-c^2x^2+1}\,x^m}{b\arcsin(cx)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral(-(c^2*x^2 - 1)*sqrt(-c^2*x^2 + 1)*x^m/(b*arcsin(c*x) + a), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 1.30, size = 0, normalized size = 0.00

$$\int \frac{x^{m} \left(-c^{2} x^{2}+1\right)^{\frac{3}{2}}}{a+b \arcsin \left(c x\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x)
```

```
[Out] int(x^m*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^{2} x^{2}+1\right)^{\frac{3}{2}} x^{m}}{b \arcsin \left(c x\right)+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate((-c^2*x^2 + 1)^(3/2)*x^m/(b*arcsin(c*x) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x^m\,{\left(1-c^2\,x^2\right)}^{3/2}}{a+b\,\mathrm{asin}\left(c\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*(1 - c^2*x^2)^(3/2))/(a + b*asin(c*x)),x)
```

```
[Out] int((x^m*(1 - c^2*x^2)^(3/2))/(a + b*asin(c*x)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{m} \left(- \left(c x - 1\right) \left(c x + 1\right)\right)^{\frac{3}{2}}}{a + b \operatorname{asin}{\left(c x \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(-c**2*x**2+1)**(3/2)/(a+b*asin(c*x)),x)
```

```
[Out] Integral(x**m*(-(c*x - 1)*(c*x + 1))**(3/2)/(a + b*asin(c*x)), x)
```

3.369 $\int \frac{x^m\sqrt{1-c^2x^2}}{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\sqrt{1-c^2x^2}\,x^m}{a+b\sin^{-1}(cx)},x\right)$$

```
[Out] Unintegrable(x^m*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.11, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m\sqrt{1-c^2x^2}}{a+b\sin^{-1}(cx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(x^m*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x]),x]
[Out] Defer[Int][(x^m*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x]), x]
```

Rubi steps

$$\int \frac{x^m\sqrt{1-c^2x^2}}{a+b\sin^{-1}(cx)}\,dx = \int \frac{x^m\sqrt{1-c^2x^2}}{a+b\sin^{-1}(cx)}\,dx$$

Mathematica [A] time = 0.09, size = 0, normalized size = 0.00

$$\int \frac{x^m\sqrt{1-c^2x^2}}{a+b\sin^{-1}(cx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(x^m*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x]),x]
[Out] Integrate[(x^m*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x]), x]
```

fricas [A] time = 0.41, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}\,x^m}{b\arcsin(cx)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral(sqrt(-c^2*x^2 + 1)*x^m/(b*arcsin(c*x) + a), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [**A**] time = 0.84, size = 0, normalized size = 0.00

$$\int \frac{x^m \sqrt{-c^2 x^2+1}}{a+b \arcsin(cx)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x)
[Out] int(x^m*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x)
```

maxima [**A**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^2 x^2+1}\, x^m}{b \arcsin(cx)+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
[Out] integrate(sqrt(-c^2*x^2 + 1)*x^m/(b*arcsin(c*x) + a), x)
```

mupad [**A**] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x^m \sqrt{1-c^2 x^2}}{a+b \operatorname{asin}(c\, x)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*(1 - c^2*x^2)^(1/2))/(a + b*asin(c*x)),x)
[Out] int((x^m*(1 - c^2*x^2)^(1/2))/(a + b*asin(c*x)), x)
```

sympy [**A**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m \sqrt{-(cx-1)(cx+1)}}{a+b \operatorname{asin}(cx)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(-c**2*x**2+1)**(1/2)/(a+b*asin(c*x)),x)
[Out] Integral(x**m*sqrt(-(c*x - 1)*(c*x + 1))/(a + b*asin(c*x)), x)
```

3.370 $\int \frac{x^m}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{x^m}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)},x\right)$$

```
[Out] Unintegrable(x^m/(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.12, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[x^m/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])),x]
[Out] Defer[Int][x^m/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{x^m}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx=\int \frac{x^m}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Mathematica [A] time = 0.66, size = 0, normalized size = 0.00

$$\int \frac{x^m}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x^m/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])),x]
[Out] Integrate[x^m/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}\,x^m}{ac^2x^2+\left(bc^2x^2-b\right)\arcsin(cx)-a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral(-sqrt(-c^2*x^2 + 1)*x^m/(a*c^2*x^2 + (b*c^2*x^2 - b)*arcsin(c*x) -
 a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m}{\sqrt{-c^2x^2+1}\,(b\arcsin(cx)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
[Out] integrate(x^m/(sqrt(-c^2*x^2 + 1)*(b*arcsin(c*x) + a)), x)
```

maple [A] time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{x^m}{\sqrt{-c^2x^2+1}\;(a+b\arcsin(cx))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m/(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x)
[Out] int(x^m/(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m}{\sqrt{-c^2x^2+1}\,(b\arcsin(cx)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
[Out] integrate(x^m/(sqrt(-c^2*x^2 + 1)*(b*arcsin(c*x) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x^m}{(a+b\,\mathrm{asin}(c\,x))\,\sqrt{1-c^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m/((a + b*asin(c*x))*(1 - c^2*x^2)^(1/2)),x)
[Out] int(x^m/((a + b*asin(c*x))*(1 - c^2*x^2)^(1/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m}{\sqrt{-(cx-1)(cx+1)}\;(a+b\,\mathrm{asin}(cx))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m/(-c**2*x**2+1)**(1/2)/(a+b*asin(c*x)),x)
[Out] Integral(x**m/(sqrt(-(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))), x)
```

3.371 $\int \frac{x^m}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{x^m}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)},x\right)$$

```
[Out] Unintegrable(x^m/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[x^m/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])),x]
[Out] Defer[Int][x^m/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{x^m}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}\,dx=\int \frac{x^m}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Mathematica [A] time = 1.25, size = 0, normalized size = 0.00

$$\int \frac{x^m}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x^m/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])),x]
[Out] Integrate[x^m/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}\,x^m}{ac^4x^4-2\,ac^2x^2+\left(bc^4x^4-2\,bc^2x^2+b\right)\arcsin\left(cx\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral(sqrt(-c^2*x^2 + 1)*x^m/(a*c^4*x^4 - 2*a*c^2*x^2 + (b*c^4*x^4 - 2*b
*c^2*x^2 + b)*arcsin(c*x) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m}{\left(-c^2x^2+1\right)^{\frac{3}{2}}\left(b\arcsin\left(cx\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] integrate(x^m/((-c^2*x^2 + 1)^(3/2)*(b*arcsin(c*x) + a)), x)
```

maple [A] time = 0.66, size = 0, normalized size = 0.00

$$\int \frac{x^{m}}{\left(-c^{2} x^{2}+1\right)^{\frac{3}{2}} \left(a+b \arcsin \left(c x\right)\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x)
```

```
[Out] int(x^m/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{m}}{\left(-c^{2} x^{2}+1\right)^{\frac{3}{2}} \left(b \arcsin \left(c x\right)+a\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate(x^m/((-c^2*x^2 + 1)^(3/2)*(b*arcsin(c*x) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x^{m}}{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(1-c^2\,x^2\right)}^{3/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m/((a + b*asin(c*x))*(1 - c^2*x^2)^(3/2)),x)
```

```
[Out] int(x^m/((a + b*asin(c*x))*(1 - c^2*x^2)^(3/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{m}}{\left(- \left(c x - 1\right) \left(c x + 1\right)\right)^{\frac{3}{2}} \left(a + b \operatorname{asin}{\left(c x \right)}\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m/(-c**2*x**2+1)**(3/2)/(a+b*asin(c*x)),x)
```

```
[Out] Integral(x**m/((-(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))), x)
```

3.372 $\int \frac{x^m}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{x^m}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)},x\right)$$

```
[Out] Unintegrable(x^m/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[x^m/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])),x]
[Out] Defer[Int][x^m/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{x^m}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx=\int \frac{x^m}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Mathematica [A] time = 1.86, size = 0, normalized size = 0.00

$$\int \frac{x^m}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x^m/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])),x]
[Out] Integrate[x^m/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}\,x^m}{ac^6x^6-3\,ac^4x^4+3\,ac^2x^2+\left(bc^6x^6-3\,bc^4x^4+3\,bc^2x^2-b\right)\arcsin\left(cx\right)-a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral(-sqrt(-c^2*x^2 + 1)*x^m/(a*c^6*x^6 - 3*a*c^4*x^4 + 3*a*c^2*x^2 + (
b*c^6*x^6 - 3*b*c^4*x^4 + 3*b*c^2*x^2 - b)*arcsin(c*x) - a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m}{\left(-c^2x^2+1\right)^{\frac{5}{2}}\left(b\arcsin\left(cx\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
[Out] integrate(x^m/((-c^2*x^2 + 1)^(5/2)*(b*arcsin(c*x) + a)), x)
```

maple [A] time = 0.88, size = 0, normalized size = 0.00

$$\int \frac{x^{m}}{\left(-c^{2} x^{2}+1\right)^{\frac{5}{2}} \left(a +b \arcsin \left(c x \right)\right)}d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x)
[Out] int(x^m/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{m}}{{\left(-c^{2} x^{2}+1\right)}^{\frac{5}{2}} {\left(b \arcsin \left(c x\right)+a\right)}}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
[Out] integrate(x^m/((-c^2*x^2 + 1)^(5/2)*(b*arcsin(c*x) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x^m}{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(1-c^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m/((a + b*asin(c*x))*(1 - c^2*x^2)^(5/2)),x)
[Out] int(x^m/((a + b*asin(c*x))*(1 - c^2*x^2)^(5/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{m}}{\left(- \left(c x - 1\right) \left(c x + 1\right)\right)^{\frac{5}{2}} \left(a + b \operatorname{asin}{\left(c x \right)}\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m/(-c**2*x**2+1)**(5/2)/(a+b*asin(c*x)),x)
[Out] Integral(x**m/((-(c*x - 1)*(c*x + 1))**(5/2)*(a + b*asin(c*x))), x)
```

3.373 $\int \frac{x^m}{\sqrt{1-a^2x^2} \sin^{-1}(ax)} dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{x^m}{\sqrt{1-a^2x^2} \sin^{-1}(ax)}, x\right)$$

```
[Out] Unintegrable(x^m/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m}{\sqrt{1-a^2x^2} \sin^{-1}(ax)} dx$$

Verification is Not applicable to the result.

```
[In] Int[x^m/(Sqrt[1 - a^2*x^2]*ArcSin[a*x]),x]
```

```
[Out] Defer[Int][x^m/(Sqrt[1 - a^2*x^2]*ArcSin[a*x]), x]
```

Rubi steps

$$\int \frac{x^m}{\sqrt{1-a^2x^2} \sin^{-1}(ax)} dx = \int \frac{x^m}{\sqrt{1-a^2x^2} \sin^{-1}(ax)} dx$$

Mathematica [A] time = 0.38, size = 0, normalized size = 0.00

$$\int \frac{x^m}{\sqrt{1-a^2x^2} \sin^{-1}(ax)} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x^m/(Sqrt[1 - a^2*x^2]*ArcSin[a*x]),x]
```

```
[Out] Integrate[x^m/(Sqrt[1 - a^2*x^2]*ArcSin[a*x]), x]
```

fricas [A] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-a^2x^2+1}\, x^m}{(a^2x^2-1) \arcsin(ax)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-a^2*x^2 + 1)*x^m/((a^2*x^2 - 1)*arcsin(a*x)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m}{\sqrt{-a^2x^2+1} \arcsin(ax)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(x^m/(sqrt(-a^2*x^2 + 1)*arcsin(a*x)), x)
```

maple [A] time = 0.25, size = 0, normalized size = 0.00

$$\int \frac{x^{m}}{\arcsin \left(a x\right) \sqrt{-a^{2} x^{2}+1}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x)
[Out] int(x^m/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{m}}{\sqrt{-a^{2} x^{2}+1}\, \arcsin \left(a x\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/arcsin(a*x)/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
[Out] integrate(x^m/(sqrt(-a^2*x^2 + 1)*arcsin(a*x)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{x^m}{\mathrm{asin}\left(a\,x\right)\,\sqrt{1-a^2\,x^2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m/(asin(a*x)*(1 - a^2*x^2)^(1/2)),x)
[Out] int(x^m/(asin(a*x)*(1 - a^2*x^2)^(1/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{m}}{\sqrt{- \left(a x - 1\right) \left(a x + 1\right)} \operatorname{asin}{\left(a x \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m/asin(a*x)/(-a**2*x**2+1)**(1/2),x)
[Out] Integral(x**m/(sqrt(-(a*x - 1)*(a*x + 1))*asin(a*x)), x)
```

3.374 $\int \frac{(c-a^2cx^2)^3}{\sin^{-1}(ax)^2}\,dx$

Optimal. Leaf size=95

$$-\frac{c^3\left(1-a^2x^2\right)^{7/2}}{a\sin^{-1}(ax)}-\frac{35c^3\text{Si}\left(\sin^{-1}(ax)\right)}{64a}-\frac{63c^3\text{Si}\left(3\sin^{-1}(ax)\right)}{64a}-\frac{35c^3\text{Si}\left(5\sin^{-1}(ax)\right)}{64a}-\frac{7c^3\text{Si}\left(7\sin^{-1}(ax)\right)}{64a}$$

```
[Out] -c^3*(-a^2*x^2+1)^(7/2)/a/arcsin(a*x)-35/64*c^3*Si(arcsin(a*x))/a-63/64*c^3
*Si(3*arcsin(a*x))/a-35/64*c^3*Si(5*arcsin(a*x))/a-7/64*c^3*Si(7*arcsin(a*x
))/a
```

Rubi [A] time = 0.17, antiderivative size = 95, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {4659, 4723, 4406, 3299}

$$-\frac{c^3\left(1-a^2x^2\right)^{7/2}}{a\sin^{-1}(ax)}-\frac{35c^3\text{Si}\left(\sin^{-1}(ax)\right)}{64a}-\frac{63c^3\text{Si}\left(3\sin^{-1}(ax)\right)}{64a}-\frac{35c^3\text{Si}\left(5\sin^{-1}(ax)\right)}{64a}-\frac{7c^3\text{Si}\left(7\sin^{-1}(ax)\right)}{64a}$$

Antiderivative was successfully verified.

```
[In] Int[(c - a^2*c*x^2)^3/ArcSin[a*x]^2,x]
```

```
[Out] -((c^3*(1 - a^2*x^2)^(7/2))/(a*ArcSin[a*x])) - (35*c^3*SinIntegral[ArcSin[a
*x]])/(64*a) - (63*c^3*SinIntegral[3*ArcSin[a*x]])/(64*a) - (35*c^3*SinInte
gral[5*ArcSin[a*x]])/(64*a) - (7*c^3*SinIntegral[7*ArcSin[a*x]])/(64*a)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4659

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[(Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*(a + b*ArcSin[c*x])^(n + 1
))/(b*c*(n + 1)), x] + Dist[(c*(2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[
p])/(b*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a
 + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^
2*d + e, 0] && LtQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{(c-a^2cx^2)^3}{\sin^{-1}(ax)^2}\,dx = -\frac{c^3(1-a^2x^2)^{7/2}}{a\sin^{-1}(ax)} - (7ac^3)\int \frac{x(1-a^2x^2)^{5/2}}{\sin^{-1}(ax)}\,dx$$
$$= -\frac{c^3(1-a^2x^2)^{7/2}}{a\sin^{-1}(ax)} - \frac{(7c^3)\,\text{Subst}\left(\int \frac{\cos^6(x)\sin(x)}{x}\,dx, x, \sin^{-1}(ax)\right)}{a}$$
$$= -\frac{c^3(1-a^2x^2)^{7/2}}{a\sin^{-1}(ax)} - \frac{(7c^3)\,\text{Subst}\left(\int \left(\frac{5\sin(x)}{64x}+\frac{9\sin(3x)}{64x}+\frac{5\sin(5x)}{64x}+\frac{\sin(7x)}{64x}\right)dx, x, \sin^{-1}(ax)\right)}{a}$$
$$= -\frac{c^3(1-a^2x^2)^{7/2}}{a\sin^{-1}(ax)} - \frac{(7c^3)\,\text{Subst}\left(\int \frac{\sin(7x)}{x}\,dx, x, \sin^{-1}(ax)\right)}{64a} - \frac{(35c^3)\,\text{Subst}\left(\int \frac{\sin(x)}{x}\,dx, x, \sin\right.}{64a}$$
$$= -\frac{c^3(1-a^2x^2)^{7/2}}{a\sin^{-1}(ax)} - \frac{35c^3\text{Si}(\sin^{-1}(ax))}{64a} - \frac{63c^3\text{Si}(3\sin^{-1}(ax))}{64a} - \frac{35c^3\text{Si}(5\sin^{-1}(ax))}{64a} - \frac{7c^3}{}$$

Mathematica [A] time = 0.60, size = 83, normalized size = 0.87

$$-\frac{c^3\left(64(1-a^2x^2)^{7/2}+35\sin^{-1}(ax)\text{Si}(\sin^{-1}(ax))+63\sin^{-1}(ax)\text{Si}(3\sin^{-1}(ax))+35\sin^{-1}(ax)\text{Si}(5\sin^{-1}(ax))+\right.}{64a\sin^{-1}(ax)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - a^2*c*x^2)^3/ArcSin[a*x]^2,x]
```

```
[Out] -1/64*(c^3*(64*(1 - a^2*x^2)^(7/2) + 35*ArcSin[a*x]*SinIntegral[ArcSin[a*x]
] + 63*ArcSin[a*x]*SinIntegral[3*ArcSin[a*x]] + 35*ArcSin[a*x]*SinIntegral[
5*ArcSin[a*x]] + 7*ArcSin[a*x]*SinIntegral[7*ArcSin[a*x]]))/(a*ArcSin[a*x])
```

fricas [F] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{a^6c^3x^6-3\,a^4c^3x^4+3\,a^2c^3x^2-c^3}{\arcsin(ax)^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^3/arcsin(a*x)^2,x, algorithm="fricas")
```

```
[Out] integral(-(a^6*c^3*x^6 - 3*a^4*c^3*x^4 + 3*a^2*c^3*x^2 - c^3)/arcsin(a*x)^2
, x)
```

giac [A] time = 0.47, size = 95, normalized size = 1.00

$$\frac{(a^2x^2-1)^3\sqrt{-a^2x^2+1}\,c^3}{a\arcsin(ax)} - \frac{7\,c^3\,\text{Si}(7\arcsin(ax))}{64\,a} - \frac{35\,c^3\,\text{Si}(5\arcsin(ax))}{64\,a} - \frac{63\,c^3\,\text{Si}(3\arcsin(ax))}{64\,a} - \frac{35\,c^3\,\text{Si}(\text{arcs}}{64\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^3/arcsin(a*x)^2,x, algorithm="giac")
```

```
[Out] (a^2*x^2 - 1)^3*sqrt(-a^2*x^2 + 1)*c^3/(a*arcsin(a*x)) - 7/64*c^3*sin_integ
ral(7*arcsin(a*x))/a - 35/64*c^3*sin_integral(5*arcsin(a*x))/a - 63/64*c^3*
sin_integral(3*arcsin(a*x))/a - 35/64*c^3*sin_integral(arcsin(a*x))/a
```

maple [A] time = 0.17, size = 105, normalized size = 1.11

$$-\frac{c^3\left(35\,\text{Si}(\arcsin(ax))\arcsin(ax)+63\,\text{Si}(3\arcsin(ax))\arcsin(ax)+35\,\text{Si}(5\arcsin(ax))\arcsin(ax)+7\,\text{Si}(7\right.}{64a\,\text{arcs}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)^3/arcsin(a*x)^2,x)
```

```
[Out] -1/64/a*c^3*(35*Si(arcsin(a*x))*arcsin(a*x)+63*Si(3*arcsin(a*x))*arcsin(a*x
)+35*Si(5*arcsin(a*x))*arcsin(a*x)+7*Si(7*arcsin(a*x))*arcsin(a*x)+35*(-a^2
*x^2+1)^(1/2)+cos(7*arcsin(a*x))+21*cos(3*arcsin(a*x))+7*cos(5*arcsin(a*x))
)/arcsin(a*x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{7\,a\arctan\left(ax,\sqrt{ax+1}\,\sqrt{-ax+1}\right)\int\frac{\left(a^5c^3x^5-2\,a^3c^3x^3+ac^3x\right)\sqrt{ax+1}\,\sqrt{-ax+1}}{\arctan\left(ax,\sqrt{ax+1}\,\sqrt{-ax+1}\right)}\,dx-\left(a^6c^3x^6-3\,a^4c^3x^4+3\,a^2c^3x^2-c^3\right.}{a\arctan\left(ax,\sqrt{ax+1}\,\sqrt{-ax+1}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^3/arcsin(a*x)^2,x, algorithm="maxima")
```

```
[Out] -(a*arctan2(a*x, sqrt(a*x + 1)*sqrt(-a*x + 1))*integrate(7*(a^5*c^3*x^5 - 2
*a^3*c^3*x^3 + a*c^3*x)*sqrt(a*x + 1)*sqrt(-a*x + 1)/arctan2(a*x, sqrt(a*x
+ 1)*sqrt(-a*x + 1)), x) - (a^6*c^3*x^6 - 3*a^4*c^3*x^4 + 3*a^2*c^3*x^2 - c
^3)*sqrt(a*x + 1)*sqrt(-a*x + 1))/(a*arctan2(a*x, sqrt(a*x + 1)*sqrt(-a*x +
 1)))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{{\left(c-a^2\,c\,x^2\right)}^3}{{\mathrm{asin}\left(a\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - a^2*c*x^2)^3/asin(a*x)^2,x)
```

```
[Out] int((c - a^2*c*x^2)^3/asin(a*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-c^3\left(\int\frac{3a^2x^2}{\mathrm{asin}^2\,(ax)}\,dx+\int\left(-\frac{3a^4x^4}{\mathrm{asin}^2\,(ax)}\right)dx+\int\frac{a^6x^6}{\mathrm{asin}^2\,(ax)}\,dx+\int\left(-\frac{1}{\mathrm{asin}^2\,(ax)}\right)dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)**3/asin(a*x)**2,x)
```

```
[Out] -c**3*(Integral(3*a**2*x**2/asin(a*x)**2, x) + Integral(-3*a**4*x**4/asin(a
*x)**2, x) + Integral(a**6*x**6/asin(a*x)**2, x) + Integral(-1/asin(a*x)**2
, x))
```

3.375 $\int \frac{(c-a^2cx^2)^2}{\sin^{-1}(ax)^2}\,dx$

Optimal. Leaf size=78

$$-\frac{c^2\left(1-a^2x^2\right)^{5/2}}{a\sin^{-1}(ax)}-\frac{5c^2\text{Si}\left(\sin^{-1}(ax)\right)}{8a}-\frac{15c^2\text{Si}\left(3\sin^{-1}(ax)\right)}{16a}-\frac{5c^2\text{Si}\left(5\sin^{-1}(ax)\right)}{16a}$$

```
[Out] -c^2*(-a^2*x^2+1)^(5/2)/a/arcsin(a*x)-5/8*c^2*Si(arcsin(a*x))/a-15/16*c^2*S
i(3*arcsin(a*x))/a-5/16*c^2*Si(5*arcsin(a*x))/a
```

Rubi [A] time = 0.16, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {4659, 4723, 4406, 3299}

$$-\frac{c^2\left(1-a^2x^2\right)^{5/2}}{a\sin^{-1}(ax)}-\frac{5c^2\text{Si}\left(\sin^{-1}(ax)\right)}{8a}-\frac{15c^2\text{Si}\left(3\sin^{-1}(ax)\right)}{16a}-\frac{5c^2\text{Si}\left(5\sin^{-1}(ax)\right)}{16a}$$

Antiderivative was successfully verified.

```
[In] Int[(c - a^2*c*x^2)^2/ArcSin[a*x]^2,x]
```

```
[Out] -((c^2*(1 - a^2*x^2)^(5/2))/(a*ArcSin[a*x])) - (5*c^2*SinIntegral[ArcSin[a*
x]])/(8*a) - (15*c^2*SinIntegral[3*ArcSin[a*x]])/(16*a) - (5*c^2*SinIntegra
l[5*ArcSin[a*x]])/(16*a)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4659

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[(Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*(a + b*ArcSin[c*x])^(n + 1
))/(b*c*(n + 1)), x] + Dist[(c*(2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[
p])/(b*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a
 + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^
2*d + e, 0] && LtQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{\left(c-a^2cx^2\right)^2}{\sin^{-1}(ax)^2}\,dx = -\frac{c^2\left(1-a^2x^2\right)^{5/2}}{a\sin^{-1}(ax)} - \left(5ac^2\right)\int \frac{x\left(1-a^2x^2\right)^{3/2}}{\sin^{-1}(ax)}\,dx$$
$$= -\frac{c^2\left(1-a^2x^2\right)^{5/2}}{a\sin^{-1}(ax)} - \frac{\left(5c^2\right)\text{Subst}\left(\int \frac{\cos^4(x)\sin(x)}{x}\,dx, x, \sin^{-1}(ax)\right)}{a}$$
$$= -\frac{c^2\left(1-a^2x^2\right)^{5/2}}{a\sin^{-1}(ax)} - \frac{\left(5c^2\right)\text{Subst}\left(\int \left(\frac{\sin(x)}{8x}+\frac{3\sin(3x)}{16x}+\frac{\sin(5x)}{16x}\right)dx, x, \sin^{-1}(ax)\right)}{a}$$
$$= -\frac{c^2\left(1-a^2x^2\right)^{5/2}}{a\sin^{-1}(ax)} - \frac{\left(5c^2\right)\text{Subst}\left(\int \frac{\sin(5x)}{x}\,dx, x, \sin^{-1}(ax)\right)}{16a} - \frac{\left(5c^2\right)\text{Subst}\left(\int \frac{\sin(x)}{x}\,dx, x, s\right.}{8a}$$
$$= -\frac{c^2\left(1-a^2x^2\right)^{5/2}}{a\sin^{-1}(ax)} - \frac{5c^2\text{Si}\left(\sin^{-1}(ax)\right)}{8a} - \frac{15c^2\text{Si}\left(3\sin^{-1}(ax)\right)}{16a} - \frac{5c^2\text{Si}\left(5\sin^{-1}(ax)\right)}{16a}$$

Mathematica [A] time = 0.48, size = 70, normalized size = 0.90

$$-\frac{c^2\left(16\left(1-a^2x^2\right)^{5/2}+10\sin^{-1}(ax)\text{Si}\left(\sin^{-1}(ax)\right)+15\sin^{-1}(ax)\text{Si}\left(3\sin^{-1}(ax)\right)+5\sin^{-1}(ax)\text{Si}\left(5\sin^{-1}(ax)\right)\right.}{16a\sin^{-1}(ax)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - a^2*c*x^2)^2/ArcSin[a*x]^2,x]
```

```
[Out] -1/16*(c^2*(16*(1 - a^2*x^2)^(5/2) + 10*ArcSin[a*x]*SinIntegral[ArcSin[a*x]
] + 15*ArcSin[a*x]*SinIntegral[3*ArcSin[a*x]] + 5*ArcSin[a*x]*SinIntegral[5
*ArcSin[a*x]]))/(a*ArcSin[a*x])
```

fricas [F] time = 0.40, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{a^4c^2x^4 - 2\,a^2c^2x^2 + c^2}{\arcsin\left(ax\right)^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^2/arcsin(a*x)^2,x, algorithm="fricas")
```

```
[Out] integral((a^4*c^2*x^4 - 2*a^2*c^2*x^2 + c^2)/arcsin(a*x)^2, x)
```

giac [A] time = 0.43, size = 81, normalized size = 1.04

$$-\frac{\left(a^2x^2-1\right)^2\sqrt{-a^2x^2+1}\,c^2}{a\arcsin\left(ax\right)} - \frac{5\,c^2\,\text{Si}\left(5\,\arcsin\left(ax\right)\right)}{16\,a} - \frac{15\,c^2\,\text{Si}\left(3\,\arcsin\left(ax\right)\right)}{16\,a} - \frac{5\,c^2\,\text{Si}\left(\arcsin\left(ax\right)\right)}{8\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^2/arcsin(a*x)^2,x, algorithm="giac")
```

```
[Out] -(a^2*x^2 - 1)^2*sqrt(-a^2*x^2 + 1)*c^2/(a*arcsin(a*x)) - 5/16*c^2*sin_inte
gral(5*arcsin(a*x))/a - 15/16*c^2*sin_integral(3*arcsin(a*x))/a - 5/8*c^2*s
in_integral(arcsin(a*x))/a
```

maple [A] time = 0.09, size = 83, normalized size = 1.06

$$-\frac{c^2\left(10\,\text{Si}\left(\arcsin\left(ax\right)\right)\arcsin\left(ax\right)+15\,\text{Si}\left(3\arcsin\left(ax\right)\right)\arcsin\left(ax\right)+5\,\text{Si}\left(5\arcsin\left(ax\right)\right)\arcsin\left(ax\right)+10\sqrt{-}\right.}{16a\arcsin\left(ax\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)^2/arcsin(a*x)^2,x)
```

```
[Out] -1/16/a*c^2*(10*Si(arcsin(a*x))*arcsin(a*x)+15*Si(3*arcsin(a*x))*arcsin(a*x
)+5*Si(5*arcsin(a*x))*arcsin(a*x)+10*(-a^2*x^2+1)^(1/2)+5*cos(3*arcsin(a*x)
)+cos(5*arcsin(a*x)))/arcsin(a*x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{5\,a\arctan\left(ax,\sqrt{ax+1}\,\sqrt{-ax+1}\right)\int\frac{\left(a^3c^2x^3-ac^2x\right)\sqrt{ax+1}\,\sqrt{-ax+1}}{\arctan\left(ax,\sqrt{ax+1}\,\sqrt{-ax+1}\right)}\,dx-\left(a^4c^2x^4-2\,a^2c^2x^2+c^2\right)\sqrt{ax+1}\,\sqrt{-ax+1}}{a\arctan\left(ax,\sqrt{ax+1}\,\sqrt{-ax+1}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^2/arcsin(a*x)^2,x, algorithm="maxima")
```

```
[Out] (a*arctan2(a*x, sqrt(a*x + 1)*sqrt(-a*x + 1))*integrate(5*(a^3*c^2*x^3 - a*
c^2*x)*sqrt(a*x + 1)*sqrt(-a*x + 1)/arctan2(a*x, sqrt(a*x + 1)*sqrt(-a*x +
1)), x) - (a^4*c^2*x^4 - 2*a^2*c^2*x^2 + c^2)*sqrt(a*x + 1)*sqrt(-a*x + 1))
/(a*arctan2(a*x, sqrt(a*x + 1)*sqrt(-a*x + 1)))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{\left(c-a^2\,c\,x^2\right)^2}{\mathrm{asin}\left(a\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - a^2*c*x^2)^2/asin(a*x)^2,x)
```

```
[Out] int((c - a^2*c*x^2)^2/asin(a*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$c^2\left(\int\left(-\frac{2a^2x^2}{\operatorname{asin}^2(ax)}\right)dx+\int\frac{a^4x^4}{\operatorname{asin}^2(ax)}\,dx+\int\frac{1}{\operatorname{asin}^2(ax)}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)**2/asin(a*x)**2,x)
```

```
[Out] c**2*(Integral(-2*a**2*x**2/asin(a*x)**2, x) + Integral(a**4*x**4/asin(a*x)
**2, x) + Integral(asin(a*x)**(-2), x))
```

3.376 $\int \frac{c-a^2cx^2}{\sin^{-1}(ax)^2} \, dx$

Optimal. Leaf size=55

$$-\frac{c\left(1-a^2x^2\right)^{3/2}}{a\sin^{-1}(ax)}-\frac{3c\text{Si}\left(\sin^{-1}(ax)\right)}{4a}-\frac{3c\text{Si}\left(3\sin^{-1}(ax)\right)}{4a}$$

```
[Out] -c*(-a^2*x^2+1)^(3/2)/a/arcsin(a*x)-3/4*c*Si(arcsin(a*x))/a-3/4*c*Si(3*arcs
in(a*x))/a
```

Rubi [A] time = 0.12, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {4659, 4723, 4406, 3299}

$$-\frac{c\left(1-a^2x^2\right)^{3/2}}{a\sin^{-1}(ax)}-\frac{3c\text{Si}\left(\sin^{-1}(ax)\right)}{4a}-\frac{3c\text{Si}\left(3\sin^{-1}(ax)\right)}{4a}$$

Antiderivative was successfully verified.

```
[In] Int[(c - a^2*c*x^2)/ArcSin[a*x]^2,x]
```

```
[Out] -((c*(1 - a^2*x^2)^(3/2))/(a*ArcSin[a*x])) - (3*c*SinIntegral[ArcSin[a*x]])
/(4*a) - (3*c*SinIntegral[3*ArcSin[a*x]])/(4*a)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4659

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[(Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*(a + b*ArcSin[c*x])^(n + 1
))/(b*c*(n + 1)), x] + Dist[(c*(2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[
p])/(b*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a
 + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^
2*d + e, 0] && LtQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{c-a^2cx^2}{\sin^{-1}(ax)^2}\,dx = -\frac{c\left(1-a^2x^2\right)^{3/2}}{a\sin^{-1}(ax)} - (3ac)\int \frac{x\sqrt{1-a^2x^2}}{\sin^{-1}(ax)}\,dx$$
$$= -\frac{c\left(1-a^2x^2\right)^{3/2}}{a\sin^{-1}(ax)} - \frac{(3c)\,\text{Subst}\left(\int \frac{\cos^2(x)\sin(x)}{x}\,dx, x, \sin^{-1}(ax)\right)}{a}$$
$$= -\frac{c\left(1-a^2x^2\right)^{3/2}}{a\sin^{-1}(ax)} - \frac{(3c)\,\text{Subst}\left(\int \left(\frac{\sin(x)}{4x}+\frac{\sin(3x)}{4x}\right)dx, x, \sin^{-1}(ax)\right)}{a}$$
$$= -\frac{c\left(1-a^2x^2\right)^{3/2}}{a\sin^{-1}(ax)} - \frac{(3c)\,\text{Subst}\left(\int \frac{\sin(x)}{x}\,dx, x, \sin^{-1}(ax)\right)}{4a} - \frac{(3c)\,\text{Subst}\left(\int \frac{\sin(3x)}{x}\,dx, x, \sin^{-1}(ax)\right)}{4a}$$
$$= -\frac{c\left(1-a^2x^2\right)^{3/2}}{a\sin^{-1}(ax)} - \frac{3c\text{Si}\left(\sin^{-1}(ax)\right)}{4a} - \frac{3c\text{Si}\left(3\sin^{-1}(ax)\right)}{4a}$$

Mathematica [A] time = 0.14, size = 55, normalized size = 1.00

$$-\frac{c\left(4\left(1-a^2x^2\right)^{3/2}+3\sin^{-1}(ax)\text{Si}\left(\sin^{-1}(ax)\right)+3\sin^{-1}(ax)\text{Si}\left(3\sin^{-1}(ax)\right)\right)}{4a\sin^{-1}(ax)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c - a^2*c*x^2)/ArcSin[a*x]^2,x]
```

```
[Out] -1/4*(c*(4*(1 - a^2*x^2)^(3/2) + 3*ArcSin[a*x]*SinIntegral[ArcSin[a*x]] + 3
*ArcSin[a*x]*SinIntegral[3*ArcSin[a*x]]))/(a*ArcSin[a*x])
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{a^2cx^2-c}{\arcsin(ax)^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)/arcsin(a*x)^2,x, algorithm="fricas")
```

```
[Out] integral(-(a^2*c*x^2 - c)/arcsin(a*x)^2, x)
```

giac [A] time = 0.44, size = 49, normalized size = 0.89

$$-\frac{3\,c\,\text{Si}\left(3\,\arcsin(ax)\right)}{4\,a} - \frac{3\,c\,\text{Si}\left(\arcsin(ax)\right)}{4\,a} - \frac{\left(-a^2x^2+1\right)^{\frac{3}{2}}c}{a\arcsin(ax)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)/arcsin(a*x)^2,x, algorithm="giac")
```

```
[Out] -3/4*c*sin_integral(3*arcsin(a*x))/a - 3/4*c*sin_integral(arcsin(a*x))/a -
(-a^2*x^2 + 1)^(3/2)*c/(a*arcsin(a*x))
```

maple [A] time = 0.08, size = 59, normalized size = 1.07

$$-\frac{c\left(3\,\text{Si}\left(\arcsin(ax)\right)\arcsin(ax)+3\,\text{Si}\left(3\arcsin(ax)\right)\arcsin(ax)+3\sqrt{-a^2x^2+1}+\cos\left(3\arcsin(ax)\right)\right)}{4a\arcsin(ax)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)/arcsin(a*x)^2,x)
```

```
[Out] -1/4/a*c*(3*Si(arcsin(a*x))*arcsin(a*x)+3*Si(3*arcsin(a*x))*arcsin(a*x)+3*(
-a^2*x^2+1)^(1/2)+cos(3*arcsin(a*x)))/arcsin(a*x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{3\,a^2c\arctan\left(ax,\sqrt{ax+1}\,\sqrt{-ax+1}\right)\int\frac{\sqrt{ax+1}\,\sqrt{-ax+1}\,x}{\arctan\left(ax,\sqrt{ax+1}\,\sqrt{-ax+1}\right)}\,dx-\left(a^2cx^2-c\right)\sqrt{ax+1}\,\sqrt{-ax+1}}{a\arctan\left(ax,\sqrt{ax+1}\,\sqrt{-ax+1}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)/arcsin(a*x)^2,x, algorithm="maxima")
```

```
[Out] -(3*a^2*c*arctan2(a*x, sqrt(a*x + 1)*sqrt(-a*x + 1))*integrate(sqrt(a*x + 1
)*sqrt(-a*x + 1)*x/arctan2(a*x, sqrt(a*x + 1)*sqrt(-a*x + 1)), x) - (a^2*c*
x^2 - c)*sqrt(a*x + 1)*sqrt(-a*x + 1))/(a*arctan2(a*x, sqrt(a*x + 1)*sqrt(-
a*x + 1)))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int\frac{c-a^2\,c\,x^2}{{\mathrm{asin}\left(a\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - a^2*c*x^2)/asin(a*x)^2,x)
```

```
[Out] int((c - a^2*c*x^2)/asin(a*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-c\left(\int\frac{a^2x^2}{\mathrm{asin}^2\,(ax)}\,dx+\int\left(-\frac{1}{\mathrm{asin}^2\,(ax)}\right)dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)/asin(a*x)**2,x)
```

```
[Out] -c*(Integral(a**2*x**2/asin(a*x)**2, x) + Integral(-1/asin(a*x)**2, x))
```

3.377 $\int \frac{1}{(c-a^2cx^2)\sin^{-1}(ax)^2}\,dx$

Optimal. Leaf size=59

$$\frac{a\text{Int}\left(\frac{x}{(1-a^2x^2)^{3/2}\sin^{-1}(ax)},x\right)}{c}-\frac{1}{ac\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}$$

```
[Out] -1/a/c/arcsin(a*x)/(-a^2*x^2+1)^(1/2)+a*Unintegrable(x/(-a^2*x^2+1)^(3/2)/a
rcsin(a*x),x)/c
```

Rubi [A] time = 0.10, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(c-a^2cx^2)\sin^{-1}(ax)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c - a^2*c*x^2)*ArcSin[a*x]^2),x]
```

```
[Out] -(1/(a*c*Sqrt[1 - a^2*x^2]*ArcSin[a*x])) + (a*Defer[Int][x/((1 - a^2*x^2)^(
3/2)*ArcSin[a*x]), x])/c
```

Rubi steps

$$\int \frac{1}{(c-a^2cx^2)\sin^{-1}(ax)^2}\,dx=-\frac{1}{ac\sqrt{1-a^2x^2}\,\sin^{-1}(ax)}+\frac{a\int \frac{x}{(1-a^2x^2)^{3/2}\sin^{-1}(ax)}\,dx}{c}$$

Mathematica [A] time = 4.07, size = 0, normalized size = 0.00

$$\int \frac{1}{(c-a^2cx^2)\sin^{-1}(ax)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c - a^2*c*x^2)*ArcSin[a*x]^2),x]
```

```
[Out] Integrate[1/((c - a^2*c*x^2)*ArcSin[a*x]^2), x]
```

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{1}{(a^2cx^2-c)\arcsin(ax)^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)/arcsin(a*x)^2,x, algorithm="fricas")
```

```
[Out] integral(-1/((a^2*c*x^2 - c)*arcsin(a*x)^2), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{1}{(a^2cx^2-c)\arcsin(ax)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)/arcsin(a*x)^2,x, algorithm="giac")
```

```
[Out] integrate(-1/((a^2*c*x^2 - c)*arcsin(a*x)^2), x)
```

maple [A] time = 0.14, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-a^{2} c\, x^{2}+c \right) \arcsin \left(a x \right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-a^2*c*x^2+c)/arcsin(a*x)^2,x)
```

```
[Out] int(1/(-a^2*c*x^2+c)/arcsin(a*x)^2,x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)/arcsin(a*x)^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{1}{\mathrm{asin}\left(a\,x\right)^2\,\left(c-a^2\,c\,x^2\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(asin(a*x)^2*(c - a^2*c*x^2)),x)
```

```
[Out] int(1/(asin(a*x)^2*(c - a^2*c*x^2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$- \frac{\int \frac{1}{a^{2} x^{2} \operatorname{asin}^{2}{\left(a x \right)} - \operatorname{asin}^{2}{\left(a x \right)}}\, dx}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a**2*c*x**2+c)/asin(a*x)**2,x)
```

```
[Out] -Integral(1/(a**2*x**2*asin(a*x)**2 - asin(a*x)**2), x)/c
```

3.378 $\int \frac{1}{\left(c-a^2cx^2\right)^2 \sin^{-1}(ax)^2} dx$

Optimal. Leaf size=60

$$\frac{3a\text{Int}\left(\frac{x}{\left(1-a^2x^2\right)^{5/2}\sin^{-1}(ax)},x\right)}{c^2}-\frac{1}{ac^2\left(1-a^2x^2\right)^{3/2}\sin^{-1}(ax)}$$

```
[Out] -1/a/c^2/(-a^2*x^2+1)^(3/2)/arcsin(a*x)+3*a*Unintegrable(x/(-a^2*x^2+1)^(5/
2)/arcsin(a*x),x)/c^2
```

Rubi [A] time = 0.10, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\left(c-a^2cx^2\right)^2 \sin^{-1}(ax)^2} dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c - a^2*c*x^2)^2*ArcSin[a*x]^2),x]
```

```
[Out] -(1/(a*c^2*(1 - a^2*x^2)^(3/2)*ArcSin[a*x])) + (3*a*Defer[Int][x/((1 - a^2*
x^2)^(5/2)*ArcSin[a*x]), x])/c^2
```

Rubi steps

$$\int \frac{1}{\left(c-a^2cx^2\right)^2 \sin^{-1}(ax)^2} dx=-\frac{1}{ac^2\left(1-a^2x^2\right)^{3/2}\sin^{-1}(ax)}+\frac{(3a)\int \frac{x}{\left(1-a^2x^2\right)^{5/2}\sin^{-1}(ax)}dx}{c^2}$$

Mathematica [A] time = 15.50, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(c-a^2cx^2\right)^2 \sin^{-1}(ax)^2} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c - a^2*c*x^2)^2*ArcSin[a*x]^2),x]
```

```
[Out] Integrate[1/((c - a^2*c*x^2)^2*ArcSin[a*x]^2), x]
```

fricas [A] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{\left(a^4c^2x^4-2\,a^2c^2x^2+c^2\right)\arcsin\left(ax\right)^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^2/arcsin(a*x)^2,x, algorithm="fricas")
```

```
[Out] integral(1/((a^4*c^2*x^4 - 2*a^2*c^2*x^2 + c^2)*arcsin(a*x)^2), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a^2cx^2-c\right)^2 \arcsin\left(ax\right)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^2/arcsin(a*x)^2,x, algorithm="giac")
```

```
[Out] integrate(1/((a^2*c*x^2 - c)^2*arcsin(a*x)^2), x)
```

maple [A] time = 0.51, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-a^{2} c \,x^{2}+c \right)^{2} \arcsin \left(a x \right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-a^2*c*x^2+c)^2/arcsin(a*x)^2,x)
```

```
[Out] int(1/(-a^2*c*x^2+c)^2/arcsin(a*x)^2,x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^2/arcsin(a*x)^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{1}{\mathrm{asin}\left(a\,x\right)^2\,{\left(c-a^2\,c\,x^2\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(asin(a*x)^2*(c - a^2*c*x^2)^2),x)
```

```
[Out] int(1/(asin(a*x)^2*(c - a^2*c*x^2)^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{1}{a^{4} x^{4} \operatorname{asin}^{2}{\left(a x \right)} - 2 a^{2} x^{2} \operatorname{asin}^{2}{\left(a x \right)} + \operatorname{asin}^{2}{\left(a x \right)}}\, dx}{c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a**2*c*x**2+c)**2/asin(a*x)**2,x)
```

```
[Out] Integral(1/(a**4*x**4*asin(a*x)**2 - 2*a**2*x**2*asin(a*x)**2 + asin(a*x)**
2), x)/c**2
```

3.379 $\int \left(\frac{1}{(1-x^2)\sin^{-1}(x)^2} - \frac{x}{(1-x^2)^{3/2}\sin^{-1}(x)} \right) dx$

Optimal. Leaf size=17

$$-\frac{1}{\sqrt{1-x^2}\sin^{-1}(x)}$$

```
[Out] -1/arcsin(x)/(-x^2+1)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 17, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.030, Rules used = {4659}

$$-\frac{1}{\sqrt{1-x^2}\sin^{-1}(x)}$$

Antiderivative was successfully verified.

```
[In] Int[1/((1 - x^2)*ArcSin[x]^2) - x/((1 - x^2)^(3/2)*ArcSin[x]),x]
```

```
[Out] -(1/(Sqrt[1 - x^2]*ArcSin[x]))
```

Rule 4659

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[(Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*(a + b*ArcSin[c*x])^(n + 1
))/(b*c*(n + 1)), x] + Dist[(c*(2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[
p])/(b*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a
 + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^
2*d + e, 0] && LtQ[n, -1]
```

Rubi steps

$$\begin{aligned} \int \left(\frac{1}{(1-x^2)\sin^{-1}(x)^2} - \frac{x}{(1-x^2)^{3/2}\sin^{-1}(x)} \right) dx &= \int \frac{1}{(1-x^2)\sin^{-1}(x)^2}\,dx - \int \frac{x}{(1-x^2)^{3/2}\sin^{-1}(x)}\,dx \\ &= -\frac{1}{\sqrt{1-x^2}\sin^{-1}(x)} \end{aligned}$$

Mathematica [A] time = 0.17, size = 17, normalized size = 1.00

$$-\frac{1}{\sqrt{1-x^2}\sin^{-1}(x)}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((1 - x^2)*ArcSin[x]^2) - x/((1 - x^2)^(3/2)*ArcSin[x]),x]
```

```
[Out] -(1/(Sqrt[1 - x^2]*ArcSin[x]))
```

fricas [A] time = 0.39, size = 21, normalized size = 1.24

$$\frac{\sqrt{-x^2+1}}{(x^2-1)\arcsin(x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-x^2+1)/arcsin(x)^2-x/(-x^2+1)^(3/2)/arcsin(x),x, algorithm="f
ricas")
```

```
[Out] sqrt(-x^2 + 1)/((x^2 - 1)*arcsin(x))
```

giac [B] time = 0.65, size = 70, normalized size = 4.12

$$\frac{1}{\frac{x^2 \arcsin(x)}{\left(\sqrt{-x^2+1}+1\right)^2} - \arcsin(x)} + \frac{x^2}{\left(\frac{x^2 \arcsin(x)}{\left(\sqrt{-x^2+1}+1\right)^2} - \arcsin(x)\right)\left(\sqrt{-x^2+1}+1\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-x^2+1)/arcsin(x)^2-x/(-x^2+1)^(3/2)/arcsin(x),x, algorithm="g
iac")
```

```
[Out] 1/(x^2*arcsin(x)/(sqrt(-x^2 + 1) + 1)^2 - arcsin(x)) + x^2/((x^2*arcsin(x)/
(sqrt(-x^2 + 1) + 1)^2 - arcsin(x))*(sqrt(-x^2 + 1) + 1)^2)
```

maple [F] time = 2.29, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-x^2+1\right)\arcsin(x)^2} - \frac{x}{\left(-x^2+1\right)^{\frac{3}{2}} \arcsin(x)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-x^2+1)/arcsin(x)^2-x/(-x^2+1)^(3/2)/arcsin(x),x)
```

```
[Out] int(1/(-x^2+1)/arcsin(x)^2-x/(-x^2+1)^(3/2)/arcsin(x),x)
```

maxima [B] time = 1.71, size = 37, normalized size = 2.18

$$\frac{\sqrt{x+1}\,\sqrt{-x+1}}{\left(x^2-1\right)\arctan\left(x, \sqrt{x+1}\,\sqrt{-x+1}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-x^2+1)/arcsin(x)^2-x/(-x^2+1)^(3/2)/arcsin(x),x, algorithm="m
axima")
```

```
[Out] sqrt(x + 1)*sqrt(-x + 1)/((x^2 - 1)*arctan2(x, sqrt(x + 1)*sqrt(-x + 1)))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.06

$$-\int \frac{1}{\mathrm{asin}(x)^2\,\left(x^2-1\right)} + \frac{x}{\mathrm{asin}(x)\,\left(1-x^2\right)^{3/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(- 1/(asin(x)^2*(x^2 - 1)) - x/(asin(x)*(1 - x^2)^(3/2)),x)
```

```
[Out] -int(1/(asin(x)^2*(x^2 - 1)) + x/(asin(x)*(1 - x^2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x-1)\,(x+1)\left(x \,\mathrm{asin}\,(x) - \sqrt{1-x^2}\right)}{\left(-(x-1)\,(x+1)\right)^{\frac{5}{2}}\,\mathrm{asin}^2\,(x)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-x**2+1)/asin(x)**2-x/(-x**2+1)**(3/2)/asin(x),x)
```

```
[Out] Integral((x - 1)*(x + 1)*(x*asin(x) - sqrt(1 - x**2))/((-(x - 1)*(x + 1))**
(5/2)*asin(x)**2), x)
```

3.380 $\int \frac{x^m \sqrt{1-c^2x^2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=31

$$\mathrm{Int}\left(\frac{\sqrt{1-c^2x^2}\,x^m}{\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

```
[Out] Unintegrable(x^m*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x))^2,x)
```

Rubi [A] time = 0.11, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m \sqrt{1-c^2x^2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(x^m*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x])^2,x]
[Out] Defer[Int][(x^m*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x])^2, x]
```

Rubi steps

$$\int \frac{x^m \sqrt{1-c^2x^2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx = \int \frac{x^m \sqrt{1-c^2x^2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Mathematica [A] time = 0.56, size = 0, normalized size = 0.00

$$\int \frac{x^m \sqrt{1-c^2x^2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(x^m*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x])^2,x]
[Out] Integrate[(x^m*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x])^2, x]
```

fricas [A] time = 0.53, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{-c^2x^2+1}\,x^m}{b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
[Out] integral(sqrt(-c^2*x^2 + 1)*x^m/(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^
2), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.93, size = 0, normalized size = 0.00

$$\int \frac{x^{m}\sqrt{-c^{2}x^{2}+1}}{\left(a+b\arcsin\left(cx\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] int(x^m*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\left(c^{2}x^{2}-1\right)x^{m}-\frac{\left(b^{2}c\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abc\right)\left(c^{2}m\int\frac{x^{m+2}}{bx\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+ax}\,dx+2\,c^{2}\int\frac{x^{m+2}}{bx\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+ax}\,dx-m\int \cdots\right)}{bc}}{b^{2}c\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] ((c^2*x^2 - 1)*x^m - (b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*
b*c)*integrate(((c^2*m + 2*c^2)*x^2 - m)*x^m/(b^2*c*x*arctan2(c*x, sqrt(c*x
 + 1)*sqrt(-c*x + 1)) + a*b*c*x), x))/(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqr
t(-c*x + 1)) + a*b*c)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x^{m}\,\sqrt{1-c^{2}\,x^{2}}}{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*(1 - c^2*x^2)^(1/2))/(a + b*asin(c*x))^2,x)
```

```
[Out] int((x^m*(1 - c^2*x^2)^(1/2))/(a + b*asin(c*x))^2, x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{m}\sqrt{-\left(cx-1\right)\left(cx+1\right)}}{\left(a+b\,\mathrm{asin}\left(cx\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(-c**2*x**2+1)**(1/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(x**m*sqrt(-(c*x - 1)*(c*x + 1))/(a + b*asin(c*x))**2, x)
```

3.381 $\int \frac{x^3\sqrt{1-c^2x^2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=214

$$\frac{\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{8b^2c^4}+\frac{3\cos\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{16b^2c^4}-\frac{5\cos\left(\frac{5a}{b}\right)\text{Ci}\left(\frac{5\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{16b^2c^4}+\frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{8b^2c^4}+$$

```
[Out] -x^3*(-c^2*x^2+1)/b/c/(a+b*arcsin(c*x))+1/8*Ci((a+b*arcsin(c*x))/b)*cos(a/b
)/b^2/c^4+3/16*Ci(3*(a+b*arcsin(c*x))/b)*cos(3*a/b)/b^2/c^4-5/16*Ci(5*(a+b*
arcsin(c*x))/b)*cos(5*a/b)/b^2/c^4+1/8*Si((a+b*arcsin(c*x))/b)*sin(a/b)/b^2
/c^4+3/16*Si(3*(a+b*arcsin(c*x))/b)*sin(3*a/b)/b^2/c^4-5/16*Si(5*(a+b*arcsi
n(c*x))/b)*sin(5*a/b)/b^2/c^4
```

Rubi [A] time = 0.63, antiderivative size = 210, normalized size of antiderivative = 0.98, number of steps used = 22, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {4721, 4635, 4406, 3303, 3299, 3302}

$$\frac{\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{8b^2c^4}+\frac{3\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)}{16b^2c^4}-\frac{5\cos\left(\frac{5a}{b}\right)\text{CosIntegral}\left(\frac{5a}{b}+\right.}{16b^2c^4}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -((x^3*(1 - c^2*x^2))/(b*c*(a + b*ArcSin[c*x]))) + (Cos[a/b]*CosIntegral[a/
b + ArcSin[c*x]])/(8*b^2*c^4) + (3*Cos[(3*a)/b]*CosIntegral[(3*a)/b + 3*Arc
Sin[c*x]])/(16*b^2*c^4) - (5*Cos[(5*a)/b]*CosIntegral[(5*a)/b + 5*ArcSin[c*
x]])/(16*b^2*c^4) + (Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(8*b^2*c^4) +
 (3*Sin[(3*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c*x]])/(16*b^2*c^4) - (5*Si
n[(5*a)/b]*SinIntegral[(5*a)/b + 5*ArcSin[c*x]])/(16*b^2*c^4)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^m*Sqrt[1 - c^2*x^2]*(d + e*x^2)^p
*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (-Dist[(f*m*d^IntPart[p]*
(d + e*x^2)^FracPart[p])/(b*c*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1), x], x] + Dist
[(c*(m + 2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(b*f*(n + 1)*(1 - c
^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcS
in[c*x])^(n + 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e,
 0] && LtQ[n, -1] && IGtQ[m, -3] && IGtQ[2*p, 0]
```

Rubi steps

$$\int \frac{x^3\sqrt{1-c^2x^2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx = -\frac{x^3\left(1-c^2x^2\right)}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{3\int \frac{x^2}{a+b\sin^{-1}(cx)}\,dx}{bc}-\frac{(5c)\int \frac{x^4}{a+b\sin^{-1}(cx)}\,dx}{b}$$

$$= -\frac{x^3\left(1-c^2x^2\right)}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{3\,\mathrm{Subst}\left(\int \frac{\cos(x)\sin^2(x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{bc^4}-\frac{5\,\mathrm{Subst}\left(\int \frac{\cos(x)}{a+}\right.}{}$$

$$= -\frac{x^3\left(1-c^2x^2\right)}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{3\,\mathrm{Subst}\left(\int \left(\frac{\cos(x)}{4(a+bx)}-\frac{\cos(3x)}{4(a+bx)}\right)dx,x,\sin^{-1}(cx)\right)}{bc^4}-\frac{5\,\mathrm{Subst}\left(\right.}{}$$

$$= -\frac{x^3\left(1-c^2x^2\right)}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{5\,\mathrm{Subst}\left(\int \frac{\cos(5x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{16bc^4}-\frac{5\,\mathrm{Subst}\left(\int \frac{\cos(x)}{a+bx}\,dx,x\right.}{8bc^4}$$

$$= -\frac{x^3\left(1-c^2x^2\right)}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{\left(5\cos\left(\frac{a}{b}\right)\right)\mathrm{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+x\right)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{8bc^4}+\frac{\left(3\cos\left(\frac{a}{b}\right.\right.}{}$$

$$= -\frac{x^3\left(1-c^2x^2\right)}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{\cos\left(\frac{a}{b}\right)\mathrm{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{8b^2c^4}+\frac{3\cos\left(\frac{3a}{b}\right)\mathrm{Ci}\left(\frac{3a}{b}+3\sin^{-1}(c\right.}{16b^2c^4}$$

Mathematica [A] time = 0.58, size = 175, normalized size = 0.82

$$\frac{\frac{16bc^5x^5}{a+b\sin^{-1}(cx)}-\frac{16bc^3x^3}{a+b\sin^{-1}(cx)}+2\cos\left(\frac{a}{b}\right)\mathrm{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)+3\cos\left(\frac{3a}{b}\right)\mathrm{Ci}\left(3\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)-5\cos\left(\frac{5a}{b}\right)\mathrm{Ci}\left(5\left(\right.\right.}{1}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] ((-16*b*c^3*x^3)/(a + b*ArcSin[c*x]) + (16*b*c^5*x^5)/(a + b*ArcSin[c*x]) +
 2*Cos[a/b]*CosIntegral[a/b + ArcSin[c*x]] + 3*Cos[(3*a)/b]*CosIntegral[3*(
a/b + ArcSin[c*x])] - 5*Cos[(5*a)/b]*CosIntegral[5*(a/b + ArcSin[c*x])] + 2
*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]] + 3*Sin[(3*a)/b]*SinIntegral[3*(a/
b + ArcSin[c*x])] - 5*Sin[(5*a)/b]*SinIntegral[5*(a/b + ArcSin[c*x])])/(16*
b^2*c^4)
```

fricas [F] time = 0.53, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}\,x^3}{b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*x^2 + 1)*x^3/(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^
2), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.09, size = 340, normalized size = 1.59

$$-\frac{5\arcsin(cx)\operatorname{Si}\left(5\arcsin(cx)+\frac{5a}{b}\right)\sin\left(\frac{5a}{b}\right)b+5\arcsin(cx)\operatorname{Ci}\left(5\arcsin(cx)+\frac{5a}{b}\right)\cos\left(\frac{5a}{b}\right)b-2\arcsin(cx)\operatorname{S}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] -1/16/c^4*(5*arcsin(c*x)*Si(5*arcsin(c*x)+5*a/b)*sin(5*a/b)*b+5*arcsin(c*x)
*Ci(5*arcsin(c*x)+5*a/b)*cos(5*a/b)*b-2*arcsin(c*x)*Si(arcsin(c*x)+a/b)*sin
(a/b)*b-2*arcsin(c*x)*Ci(arcsin(c*x)+a/b)*cos(a/b)*b-3*arcsin(c*x)*Si(3*arc
sin(c*x)+3*a/b)*sin(3*a/b)*b-3*arcsin(c*x)*Ci(3*arcsin(c*x)+3*a/b)*cos(3*a/
b)*b+5*Si(5*arcsin(c*x)+5*a/b)*sin(5*a/b)*a+5*Ci(5*arcsin(c*x)+5*a/b)*cos(5
*a/b)*a-2*Si(arcsin(c*x)+a/b)*sin(a/b)*a-2*Ci(arcsin(c*x)+a/b)*cos(a/b)*a-3
*Si(3*arcsin(c*x)+3*a/b)*sin(3*a/b)*a-3*Ci(3*arcsin(c*x)+3*a/b)*cos(3*a/b)*
a+2*x*b*c-sin(5*arcsin(c*x))*b+sin(3*arcsin(c*x))*b)/(a+b*arcsin(c*x))/b^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{c^2x^5-x^3-\frac{\left(b^2c\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+abc\right)\left(5c^2\int\frac{x^4}{b\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+a}\,dx-3\int\frac{x^2}{b\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+a}\,dx\right)}{bc}}{b^2c\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] (c^2*x^5 - x^3 - (b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c)
*integrate((5*c^2*x^4 - 3*x^2)/(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x
+ 1)) + a*b*c), x))/(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b
*c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{x^3\sqrt{1-c^2\,x^2}}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(1 - c^2*x^2)^(1/2))/(a + b*asin(c*x))^2,x)
```

```
[Out] int((x^3*(1 - c^2*x^2)^(1/2))/(a + b*asin(c*x))^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3\sqrt{-(cx-1)(cx+1)}}{(a+b\,\mathrm{asin}\,(cx))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(-c**2*x**2+1)**(1/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(x**3*sqrt(-(c*x - 1)*(c*x + 1))/(a + b*asin(c*x))**2, x)
```

3.382 $\int \frac{x^2\sqrt{1-c^2x^2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=94

$$-\frac{\sin\left(\frac{4a}{b}\right)\operatorname{Ci}\left(\frac{4\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{2b^2c^3}+\frac{\cos\left(\frac{4a}{b}\right)\operatorname{Si}\left(\frac{4\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{2b^2c^3}-\frac{x^2\left(1-c^2x^2\right)}{bc\left(a+b\sin^{-1}(cx)\right)}$$

```
[Out] -x^2*(-c^2*x^2+1)/b/c/(a+b*arcsin(c*x))+1/2*cos(4*a/b)*Si(4*(a+b*arcsin(c*x
))/b)/b^2/c^3-1/2*Ci(4*(a+b*arcsin(c*x))/b)*sin(4*a/b)/b^2/c^3
```

Rubi [A] time = 0.47, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {4721, 4635, 4406, 12, 3303, 3299, 3302}

$$-\frac{\sin\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)}{2b^2c^3}+\frac{\cos\left(\frac{4a}{b}\right)\operatorname{Si}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)}{2b^2c^3}-\frac{x^2\left(1-c^2x^2\right)}{bc\left(a+b\sin^{-1}(cx)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -((x^2*(1 - c^2*x^2))/(b*c*(a + b*ArcSin[c*x]))) - (CosIntegral[(4*a)/b + 4
*ArcSin[c*x]]*Sin[(4*a)/b])/(2*b^2*c^3) + (Cos[(4*a)/b]*SinIntegral[(4*a)/b
 + 4*ArcSin[c*x]])/(2*b^2*c^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^m*Sqrt[1 - c^2*x^2]*(d + e*x^2)^p
*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (-Dist[(f*m*d^IntPart[p]*
(d + e*x^2)^FracPart[p])/(b*c*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1), x], x] + Dist
[(c*(m + 2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(b*f*(n + 1)*(1 - c
^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcS
in[c*x])^(n + 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e,
 0] && LtQ[n, -1] && IGtQ[m, -3] && IGtQ[2*p, 0]
```

Rubi steps

$$\int \frac{x^2\sqrt{1-c^2x^2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx = -\frac{x^2\left(1-c^2x^2\right)}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{2\int \frac{x}{a+b\sin^{-1}(cx)}\,dx}{bc}-\frac{(4c)\int \frac{x^3}{a+b\sin^{-1}(cx)}\,dx}{b}$$

$$= -\frac{x^2\left(1-c^2x^2\right)}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{2\,\mathrm{Subst}\left(\int \frac{\cos(x)\sin(x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{bc^3}-\frac{4\,\mathrm{Subst}\left(\int \frac{\cos(x)\,\mathrm{s}}{a+b}\right.}{}$$

$$= -\frac{x^2\left(1-c^2x^2\right)}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{2\,\mathrm{Subst}\left(\int \frac{\sin(2x)}{2(a+bx)}\,dx,x,\sin^{-1}(cx)\right)}{bc^3}-\frac{4\,\mathrm{Subst}\left(\int \left(\frac{\sin(2x)}{4(a+bx)}-\right.\right.}{}$$

$$= -\frac{x^2\left(1-c^2x^2\right)}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{\mathrm{Subst}\left(\int \frac{\sin(4x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{2bc^3}$$

$$= -\frac{x^2\left(1-c^2x^2\right)}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{\cos\left(\frac{4a}{b}\right)\mathrm{Subst}\left(\int \frac{\sin\left(\frac{4a}{b}+4x\right)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{2bc^3}-\frac{\sin\left(\frac{4a}{b}\right)\mathrm{Su}}{}$$

$$= -\frac{x^2\left(1-c^2x^2\right)}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{\mathrm{Ci}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)\sin\left(\frac{4a}{b}\right)}{2b^2c^3}+\frac{\cos\left(\frac{4a}{b}\right)\mathrm{Si}\left(\frac{4a}{b}+4\sin^{-1}(c\right.}{2b^2c^3}$$

Mathematica [A] time = 0.35, size = 82, normalized size = 0.87

$$\frac{\frac{2bc^2x^2\left(c^2x^2-1\right)}{a+b\sin^{-1}(cx)}-\sin\left(\frac{4a}{b}\right)\mathrm{Ci}\left(4\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+\cos\left(\frac{4a}{b}\right)\mathrm{Si}\left(4\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)}{2b^2c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] ((2*b*c^2*x^2*(-1 + c^2*x^2))/(a + b*ArcSin[c*x]) - CosIntegral[4*(a/b + Ar
cSin[c*x])]*Sin[(4*a)/b] + Cos[(4*a)/b]*SinIntegral[4*(a/b + ArcSin[c*x])])
/(2*b^2*c^3)
```

fricas [F] time = 0.54, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*x^2 + 1)*x^2/(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^
2), x)
```

giac [B] time = 0.59, size = 563, normalized size = 5.99

$$-\frac{4\,b\arcsin\left(cx\right)\cos\left(\frac{a}{b}\right)^{3}\operatorname{Ci}\left(\frac{4\,a}{b}+4\,\arcsin\left(cx\right)\right)\sin\left(\frac{a}{b}\right)}{b^{3}c^{3}\arcsin\left(cx\right)+ab^{2}c^{3}}+\frac{4\,b\arcsin\left(cx\right)\cos\left(\frac{a}{b}\right)^{4}\operatorname{Si}\left(\frac{4\,a}{b}+4\,\arcsin\left(cx\right)\right)}{b^{3}c^{3}\arcsin\left(cx\right)+ab^{2}c^{3}}-\frac{4\,a\cos}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] -4*b*arcsin(c*x)*cos(a/b)^3*cos_integral(4*a/b + 4*arcsin(c*x))*sin(a/b)/(b
^3*c^3*arcsin(c*x) + a*b^2*c^3) + 4*b*arcsin(c*x)*cos(a/b)^4*sin_integral(4
*a/b + 4*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 4*a*cos(a/b)^3*co
s_integral(4*a/b + 4*arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3
) + 4*a*cos(a/b)^4*sin_integral(4*a/b + 4*arcsin(c*x))/(b^3*c^3*arcsin(c*x)
 + a*b^2*c^3) + 2*b*arcsin(c*x)*cos(a/b)*cos_integral(4*a/b + 4*arcsin(c*x)
)*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 4*b*arcsin(c*x)*cos(a/b)^2*s
in_integral(4*a/b + 4*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 2*a*
cos(a/b)*cos_integral(4*a/b + 4*arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x)
+ a*b^2*c^3) - 4*a*cos(a/b)^2*sin_integral(4*a/b + 4*arcsin(c*x))/(b^3*c^3*
arcsin(c*x) + a*b^2*c^3) + (c^2*x^2 - 1)^2*b/(b^3*c^3*arcsin(c*x) + a*b^2*c
^3) + 1/2*b*arcsin(c*x)*sin_integral(4*a/b + 4*arcsin(c*x))/(b^3*c^3*arcsin
(c*x) + a*b^2*c^3) + (c^2*x^2 - 1)*b/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 1/
2*a*sin_integral(4*a/b + 4*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3)
```

maple [A] time = 0.07, size = 136, normalized size = 1.45

$$\frac{4\arcsin\left(cx\right)\operatorname{Si}\left(4\arcsin\left(cx\right)+\frac{4a}{b}\right)\cos\left(\frac{4a}{b}\right)b-4\arcsin\left(cx\right)\operatorname{Ci}\left(4\arcsin\left(cx\right)+\frac{4a}{b}\right)\sin\left(\frac{4a}{b}\right)b+4\operatorname{Si}\left(4\arcsin\left(c\right.\right.}{8c^{3}\left(a+b\arcsin\left(cx\right)\right)b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/8/c^3*(4*arcsin(c*x)*Si(4*arcsin(c*x)+4*a/b)*cos(4*a/b)*b-4*arcsin(c*x)*C
i(4*arcsin(c*x)+4*a/b)*sin(4*a/b)*b+4*Si(4*arcsin(c*x)+4*a/b)*cos(4*a/b)*a-
4*Ci(4*arcsin(c*x)+4*a/b)*sin(4*a/b)*a+cos(4*arcsin(c*x))*b-b)/(a+b*arcsin(
c*x))/b^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{c^{2}x^{4}-x^{2}-2\left(b^{2}c\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abc\right)\int\frac{2\,c^{2}x^{3}-x}{b^{2}c\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abc}\,dx}{b^{2}c\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] (c^2*x^4 - x^2 - (b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c)
*integrate(2*(2*c^2*x^3 - x)/(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x +
1)) + a*b*c), x))/(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c
)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^2\,\sqrt{1-c^2\,x^2}}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(1 - c^2*x^2)^(1/2))/(a + b*asin(c*x))^2,x)
```

```
[Out] int((x^2*(1 - c^2*x^2)^(1/2))/(a + b*asin(c*x))^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{2} \sqrt{-\left(cx-1\right)\left(cx+1\right)}}{\left(a+b\operatorname{asin}\left(cx\right)\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(-c**2*x**2+1)**(1/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(x**2*sqrt(-(c*x - 1)*(c*x + 1))/(a + b*asin(c*x))**2, x)
```

3.383 $\int \frac{x\sqrt{1-c^2x^2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=150

$$\frac{\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{4b^2c^2}+\frac{3\cos\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{4b^2c^2}+\frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{4b^2c^2}+\frac{3\sin\left(\frac{3a}{b}\right)\text{Si}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{4b^2c^2}-\ldots$$

[Out] -x*(-c^2*x^2+1)/b/c/(a+b*arcsin(c*x))+1/4*Ci((a+b*arcsin(c*x))/b)*cos(a/b)/b^2/c^2+3/4*Ci(3*(a+b*arcsin(c*x))/b)*cos(3*a/b)/b^2/c^2+1/4*Si((a+b*arcsin(c*x))/b)*sin(a/b)/b^2/c^2+3/4*Si(3*(a+b*arcsin(c*x))/b)*sin(3*a/b)/b^2/c^2

Rubi [A] time = 0.37, antiderivative size = 198, normalized size of antiderivative = 1.32, number of steps used = 14, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.269, Rules used = {4721, 4623, 3303, 3299, 3302, 4635, 4406}

$$-\frac{3\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{4b^2c^2}+\frac{3\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)}{4b^2c^2}+\frac{\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{b^2c^2}\ldots$$

Antiderivative was successfully verified.

[In] Int[(x*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x])^2,x]

[Out] -((x*(1 - c^2*x^2))/(b*c*(a + b*ArcSin[c*x]))) - (3*Cos[a/b]*CosIntegral[a/b + ArcSin[c*x]])/(4*b^2*c^2) + (3*Cos[(3*a)/b]*CosIntegral[(3*a)/b + 3*ArcSin[c*x]])/(4*b^2*c^2) + (Cos[a/b]*CosIntegral[(a + b*ArcSin[c*x])/b])/(b^2*c^2) - (3*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(4*b^2*c^2) + (3*Sin[(3*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c*x]])/(4*b^2*c^2) + (Sin[a/b]*SinIntegral[(a + b*ArcSin[c*x])/b])/(b^2*c^2)

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinIntegral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosIntegral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) - c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] && NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^m*Sqrt[1 - c^2*x^2]*(d + e*x^2)^p
*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (-Dist[(f*m*d^IntPart[p]*
(d + e*x^2)^FracPart[p])/(b*c*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1), x], x] + Dist
[(c*(m + 2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(b*f*(n + 1)*(1 - c
^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcS
in[c*x])^(n + 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e,
 0] && LtQ[n, -1] && IGtQ[m, -3] && IGtQ[2*p, 0]
```

Rubi steps

$$\int \frac{x\sqrt{1-c^2x^2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx = -\frac{x\left(1-c^2x^2\right)}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{\int \frac{1}{a+b\sin^{-1}(cx)}\,dx}{bc} - \frac{(3c)\int \frac{x^2}{a+b\sin^{-1}(cx)}\,dx}{b}$$

$$= -\frac{x\left(1-c^2x^2\right)}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{\operatorname{Subst}\left(\int \frac{\cos\left(\frac{a}{b}-\frac{x}{b}\right)}{x}\,dx, x, a+b\sin^{-1}(cx)\right)}{b^2c^2} - \frac{3\operatorname{Subst}\left(\int \frac{\cos(\ldots}{\ldots}\right.}{\ldots}$$

$$= -\frac{x\left(1-c^2x^2\right)}{bc\left(a+b\sin^{-1}(cx)\right)} - \frac{3\operatorname{Subst}\left(\int \left(\frac{\cos(x)}{4(a+bx)}-\frac{\cos(3x)}{4(a+bx)}\right)dx, x, \sin^{-1}(cx)\right)}{bc^2} + \frac{\cos\left(\frac{a}{b}\right)\operatorname{S}\ldots}{\ldots}$$

$$= -\frac{x\left(1-c^2x^2\right)}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{\cos\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{b^2c^2} + \frac{\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{b^2c^2} - \frac{3\operatorname{Sub}\ldots}{\ldots}$$

$$= -\frac{x\left(1-c^2x^2\right)}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{\cos\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{b^2c^2} + \frac{\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{b^2c^2} - \frac{\left(3\cos\ldots\right.}{\ldots}$$

$$= -\frac{x\left(1-c^2x^2\right)}{bc\left(a+b\sin^{-1}(cx)\right)} - \frac{3\cos\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{4b^2c^2} + \frac{3\cos\left(\frac{3a}{b}\right)\operatorname{Ci}\left(\frac{3a}{b}+3\sin^{-1}(\ldots\right)}{4b^2c^2}$$

Mathematica [A] time = 0.32, size = 125, normalized size = 0.83

$$\frac{\frac{4bc^3x^3}{a+b\sin^{-1}(cx)} + \cos\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right) + 3\cos\left(\frac{3a}{b}\right)\operatorname{Ci}\left(3\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right) + \sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right) + 3\sin\ldots}{4b^2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] ((-4*b*c*x)/(a + b*ArcSin[c*x]) + (4*b*c^3*x^3)/(a + b*ArcSin[c*x]) + Cos[a
/b]*CosIntegral[a/b + ArcSin[c*x]] + 3*Cos[(3*a)/b]*CosIntegral[3*(a/b + Ar
cSin[c*x])] + Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]] + 3*Sin[(3*a)/b]*SinI
ntegral[3*(a/b + ArcSin[c*x])])/(4*b^2*c^2)
```

fricas [F] time = 0.57, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}\,x}{b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*x^2 + 1)*x/(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)
, x)
```

giac [B] time = 0.71, size = 608, normalized size = 4.05

$$\frac{3\,b\arcsin(cx)\cos\left(\frac{a}{b}\right)^3\operatorname{Ci}\left(\frac{3\,a}{b}+3\,\arcsin(cx)\right)}{b^3c^2\arcsin(cx)+ab^2c^2}+\frac{3\,b\arcsin(cx)\cos\left(\frac{a}{b}\right)^2\sin\left(\frac{a}{b}\right)\operatorname{Si}\left(\frac{3\,a}{b}+3\,\arcsin(cx)\right)}{b^3c^2\arcsin(cx)+ab^2c^2}+\frac{3\,a\cos(}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] 3*b*arcsin(c*x)*cos(a/b)^3*cos_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^2*arc
sin(c*x) + a*b^2*c^2) + 3*b*arcsin(c*x)*cos(a/b)^2*sin(a/b)*sin_integral(3*
a/b + 3*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 3*a*cos(a/b)^3*cos
_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 3*a*co
s(a/b)^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^2*arcsin(c*x)
+ a*b^2*c^2) + (c^2*x^2 - 1)*b*c*x/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) - 9/4*
b*arcsin(c*x)*cos(a/b)*cos_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^2*arcsin(
c*x) + a*b^2*c^2) + 1/4*b*arcsin(c*x)*cos(a/b)*cos_integral(a/b + arcsin(c*
x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) - 3/4*b*arcsin(c*x)*sin(a/b)*sin_inte
gral(3*a/b + 3*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 1/4*b*arcsi
n(c*x)*sin(a/b)*sin_integral(a/b + arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^
2*c^2) - 9/4*a*cos(a/b)*cos_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^2*arcsin
(c*x) + a*b^2*c^2) + 1/4*a*cos(a/b)*cos_integral(a/b + arcsin(c*x))/(b^3*c^
2*arcsin(c*x) + a*b^2*c^2) - 3/4*a*sin(a/b)*sin_integral(3*a/b + 3*arcsin(c
*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 1/4*a*sin(a/b)*sin_integral(a/b +
arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2)
```

maple [A] time = 0.07, size = 223, normalized size = 1.49

$$3\arcsin(cx)\operatorname{Si}\left(3\arcsin(cx)+\frac{3a}{b}\right)\sin\left(\frac{3a}{b}\right)b+3\arcsin(cx)\operatorname{Ci}\left(3\arcsin(cx)+\frac{3a}{b}\right)\cos\left(\frac{3a}{b}\right)b+\arcsin(cx)\operatorname{Si}(a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/4/c^2*(3*arcsin(c*x)*Si(3*arcsin(c*x)+3*a/b)*sin(3*a/b)*b+3*arcsin(c*x)*C
i(3*arcsin(c*x)+3*a/b)*cos(3*a/b)*b+arcsin(c*x)*Si(arcsin(c*x)+a/b)*sin(a/b
)*b+arcsin(c*x)*Ci(arcsin(c*x)+a/b)*cos(a/b)*b+3*Si(3*arcsin(c*x)+3*a/b)*si
n(3*a/b)*a+3*Ci(3*arcsin(c*x)+3*a/b)*cos(3*a/b)*a+Si(arcsin(c*x)+a/b)*sin(a
/b)*a+Ci(arcsin(c*x)+a/b)*cos(a/b)*a-x*b*c-sin(3*arcsin(c*x))*b)/(a+b*arcsi
n(c*x))/b^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{c^2x^3 - x - \frac{\left(b^2c\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)+abc\right)\left(3\,c^2\int \frac{x^2}{b\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)+a}\,dx - \int \frac{1}{b\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)+a}\,dx\right)}{bc}}{b^2c\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)+abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] (c^2*x^3 - (b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c)*integ
rate((3*c^2*x^2 - 1)/(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*
b*c), x) - x)/(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x\,\sqrt{1-c^2\,x^2}}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(1 - c^2*x^2)^(1/2))/(a + b*asin(c*x))^2,x)
```

```
[Out] int((x*(1 - c^2*x^2)^(1/2))/(a + b*asin(c*x))^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\sqrt{-\left(cx-1\right)\left(cx+1\right)}}{\left(a+b\,\mathrm{asin}\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c**2*x**2+1)**(1/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(x*sqrt(-(c*x - 1)*(c*x + 1))/(a + b*asin(c*x))**2, x)
```

3.384 $\int \frac{\sqrt{1-c^2x^2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=86

$$\frac{\sin\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{b^2c}-\frac{\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{b^2c}-\frac{1-c^2x^2}{bc\left(a+b\sin^{-1}(cx)\right)}$$

```
[Out] (c^2*x^2-1)/b/c/(a+b*arcsin(c*x))-cos(2*a/b)*Si(2*(a+b*arcsin(c*x))/b)/b^2/
c+Ci(2*(a+b*arcsin(c*x))/b)*sin(2*a/b)/b^2/c
```

Rubi [A] time = 0.16, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.280, Rules used = {4659, 4635, 4406, 12, 3303, 3299, 3302}

$$\frac{\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{b^2c}-\frac{\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{b^2c}-\frac{1-c^2x^2}{bc\left(a+b\sin^{-1}(cx)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[1 - c^2*x^2]/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -((1 - c^2*x^2)/(b*c*(a + b*ArcSin[c*x]))) + (CosIntegral[(2*a)/b + 2*ArcSi
n[c*x]]*Sin[(2*a)/b])/(b^2*c) - (Cos[(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSi
n[c*x]])/(b^2*c)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4659

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[(Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*(a + b*ArcSin[c*x])^(n + 1
))/(b*c*(n + 1)), x] + Dist[(c*(2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[
p])/(b*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a
 + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^
2*d + e, 0] && LtQ[n, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{\sqrt{1-c^2x^2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx &= -\frac{1-c^2x^2}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{(2c)\int\frac{x}{a+b\sin^{-1}(cx)}\,dx}{b}\\ &= -\frac{1-c^2x^2}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{2\,\mathrm{Subst}\left(\int\frac{\cos(x)\sin(x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{bc}\\ &= -\frac{1-c^2x^2}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{2\,\mathrm{Subst}\left(\int\frac{\sin(2x)}{2(a+bx)}\,dx,x,\sin^{-1}(cx)\right)}{bc}\\ &= -\frac{1-c^2x^2}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{\mathrm{Subst}\left(\int\frac{\sin(2x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{bc}\\ &= -\frac{1-c^2x^2}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{\cos\left(\frac{2a}{b}\right)\mathrm{Subst}\left(\int\frac{\sin\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{bc}+\frac{\sin\left(\frac{2a}{b}\right)\mathrm{Su}}{}\\ &= -\frac{1-c^2x^2}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{\mathrm{Ci}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)\sin\left(\frac{2a}{b}\right)}{b^2c}-\frac{\cos\left(\frac{2a}{b}\right)\mathrm{Si}\left(\frac{2a}{b}+2\sin^{-1}(\right.}{b^2c}\end{aligned}$$

Mathematica [A] time = 0.22, size = 72, normalized size = 0.84

$$\frac{\frac{b\left(c^2x^2-1\right)}{a+b\sin^{-1}(cx)}+\sin\left(\frac{2a}{b}\right)\mathrm{Ci}\left(2\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)-\cos\left(\frac{2a}{b}\right)\mathrm{Si}\left(2\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)}{b^2c}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[1 - c^2*x^2]/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] ((b*(-1 + c^2*x^2))/(a + b*ArcSin[c*x]) + CosIntegral[2*(a/b + ArcSin[c*x])
]*Sin[(2*a)/b] - Cos[(2*a)/b]*SinIntegral[2*(a/b + ArcSin[c*x])])/(b^2*c)
```

fricas [F] time = 0.50, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{-c^2x^2+1}}{b^2\arcsin\left(cx\right)^2+2\,ab\arcsin\left(cx\right)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*x^2 + 1)/(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2),
x)
```

giac [B] time = 1.04, size = 290, normalized size = 3.37

$$\frac{2\,b\arcsin\left(cx\right)\cos\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{2\,a}{b}+2\,\arcsin\left(cx\right)\right)\sin\left(\frac{a}{b}\right)}{b^{3}c\arcsin\left(cx\right)+ab^{2}c}-\frac{2\,b\arcsin\left(cx\right)\cos\left(\frac{a}{b}\right)^{2}\operatorname{Si}\left(\frac{2\,a}{b}+2\,\arcsin\left(cx\right)\right)}{b^{3}c\arcsin\left(cx\right)+ab^{2}c}+\frac{2\,a\cos\left(\frac{a}{b}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] 2*b*arcsin(c*x)*cos(a/b)*cos_integral(2*a/b + 2*arcsin(c*x))*sin(a/b)/(b^3*
c*arcsin(c*x) + a*b^2*c) - 2*b*arcsin(c*x)*cos(a/b)^2*sin_integral(2*a/b +
2*arcsin(c*x))/(b^3*c*arcsin(c*x) + a*b^2*c) + 2*a*cos(a/b)*cos_integral(2*
a/b + 2*arcsin(c*x))*sin(a/b)/(b^3*c*arcsin(c*x) + a*b^2*c) - 2*a*cos(a/b)^
2*sin_integral(2*a/b + 2*arcsin(c*x))/(b^3*c*arcsin(c*x) + a*b^2*c) + b*arc
sin(c*x)*sin_integral(2*a/b + 2*arcsin(c*x))/(b^3*c*arcsin(c*x) + a*b^2*c)
+ (c^2*x^2 - 1)*b/(b^3*c*arcsin(c*x) + a*b^2*c) + a*sin_integral(2*a/b + 2*
arcsin(c*x))/(b^3*c*arcsin(c*x) + a*b^2*c)
```

maple [A] time = 0.09, size = 134, normalized size = 1.56

$$-\frac{2\operatorname{Si}\left(2\arcsin\left(cx\right)+\frac{2a}{b}\right)\cos\left(\frac{2a}{b}\right)\arcsin\left(cx\right)b-2\operatorname{Ci}\left(2\arcsin\left(cx\right)+\frac{2a}{b}\right)\sin\left(\frac{2a}{b}\right)\arcsin\left(cx\right)b+2\operatorname{Si}\left(2\arcsin\left(\right.\right.}{2c\,b^{2}\left(a+b\arcsin\left(cx\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] -1/2/c*(2*Si(2*arcsin(c*x)+2*a/b)*cos(2*a/b)*arcsin(c*x)*b-2*Ci(2*arcsin(c*
x)+2*a/b)*sin(2*a/b)*arcsin(c*x)*b+2*Si(2*arcsin(c*x)+2*a/b)*cos(2*a/b)*a-2
*Ci(2*arcsin(c*x)+2*a/b)*sin(2*a/b)*a+cos(2*arcsin(c*x))*b+b)/b^2/(a+b*arcs
in(c*x))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{c^{2}x^{2}-\frac{2\left(b^{2}c^{2}\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abc^{2}\right)\int\frac{x}{b\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+a}\,dx}{b}-1}{b^{2}c\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] (c^2*x^2 - 2*(b^2*c^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c^2)
*integrate(x/(b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b), x) - 1
)/(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{1-c^2\,x^2}}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(1/2)/(a + b*asin(c*x))^2,x)
```

```
[Out] int((1 - c^2*x^2)^(1/2)/(a + b*asin(c*x))^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-\left(cx-1\right)\left(cx+1\right)}}{\left(a+b\operatorname{asin}\left(cx\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(1/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(sqrt(-(c*x - 1)*(c*x + 1))/(a + b*asin(c*x))**2, x)
```

3.385 $\int \frac{\sqrt{1-c^2x^2}}{x(a+b\sin^{-1}(cx))^2}\,dx$

Optimal. Leaf size=105

$$-\frac{\text{Int}\left(\frac{1}{x^2(a+b\sin^{-1}(cx))},x\right)}{bc}-\frac{\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{b^2}-\frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{b^2}-\frac{1-c^2x^2}{bcx\left(a+b\sin^{-1}(cx)\right)}$$

```
[Out] (c^2*x^2-1)/b/c/x/(a+b*arcsin(c*x))-Ci((a+b*arcsin(c*x))/b)*cos(a/b)/b^2-Si
((a+b*arcsin(c*x))/b)*sin(a/b)/b^2-Unintegrable(1/x^2/(a+b*arcsin(c*x)),x)/
b/c
```

Rubi [A] time = 0.20, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{1-c^2x^2}}{x\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[1 - c^2*x^2]/(x*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] -((1 - c^2*x^2)/(b*c*x*(a + b*ArcSin[c*x]))) - (Cos[a/b]*CosIntegral[(a + b
*ArcSin[c*x])/b])/b^2 - (Sin[a/b]*SinIntegral[(a + b*ArcSin[c*x])/b])/b^2 -
 Defer[Int][1/(x^2*(a + b*ArcSin[c*x])), x]/(b*c)
```

Rubi steps

$$\begin{aligned}
\int \frac{\sqrt{1-c^2x^2}}{x\left(a+b\sin^{-1}(cx)\right)^2}\,dx &= -\frac{1-c^2x^2}{bcx\left(a+b\sin^{-1}(cx)\right)}-\frac{\int \frac{1}{x^2\left(a+b\sin^{-1}(cx)\right)}\,dx}{bc}-\frac{c\int \frac{1}{a+b\sin^{-1}(cx)}\,dx}{b}\\
&= -\frac{1-c^2x^2}{bcx\left(a+b\sin^{-1}(cx)\right)}-\frac{\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}-\frac{x}{b}\right)}{x}\,dx,x,a+b\sin^{-1}(cx)\right)}{b^2}-\frac{\int \frac{1}{x^2\left(a+b\sin^{-1}(cx)\right)}}{bc}\\
&= -\frac{1-c^2x^2}{bcx\left(a+b\sin^{-1}(cx)\right)}-\frac{\int \frac{1}{x^2\left(a+b\sin^{-1}(cx)\right)}\,dx}{bc}-\frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\cos\left(\frac{x}{b}\right)}{x}\,dx,x,a+b\sin\right.}{b^2}\\
&= -\frac{1-c^2x^2}{bcx\left(a+b\sin^{-1}(cx)\right)}-\frac{\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{b^2}-\frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{b^2}-\frac{\int}{x^2(a}
\end{aligned}$$

Mathematica [A] time = 11.11, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{1-c^2x^2}}{x\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[1 - c^2*x^2]/(x*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] Integrate[Sqrt[1 - c^2*x^2]/(x*(a + b*ArcSin[c*x])^2), x]
```

fricas [**A**] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}}{b^2x\arcsin(cx)^2+2\,abx\arcsin(cx)+a^2x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/x/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*x^2 + 1)/(b^2*x*arcsin(c*x)^2 + 2*a*b*x*arcsin(c*x) + a^
2*x), x)
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/x/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [**A**] time = 0.84, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^2x^2+1}}{x\left(a+b\arcsin(cx)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(1/2)/x/(a+b*arcsin(c*x))^2,x)
```

```
[Out] int((-c^2*x^2+1)^(1/2)/x/(a+b*arcsin(c*x))^2,x)
```

maxima [**A**] time = 0.00, size = 0, normalized size = 0.00

$$\frac{c^2x^2-\frac{\left(b^2cx\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx\right)\left(c^2\int\frac{x^2}{bx^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+ax^2}\,dx+\int\frac{1}{\left(b\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+a\right)x^2}\,dx\right)}{bc}-1}{b^2cx\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/x/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] (c^2*x^2 - (b^2*c*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*x)*i
ntegrate((c^2*x^2 + 1)/(b^2*c*x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)
) + a*b*c*x^2), x) - 1)/(b^2*c*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))
 + a*b*c*x)
```

mupad [**A**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{1-c^2\,x^2}}{x\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(1/2)/(x*(a + b*asin(c*x))^2),x)
```

```
[Out] int((1 - c^2*x^2)^(1/2)/(x*(a + b*asin(c*x))^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-\left(cx-1\right)\left(cx+1\right)}}{x\left(a+b\operatorname{asin}\left(cx\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(1/2)/x/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(sqrt(-(c*x - 1)*(c*x + 1))/(x*(a + b*asin(c*x))**2), x)
```

3.386 $\int \frac{\sqrt{1-c^2x^2}}{x^2\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=57

$$-\frac{2\text{Int}\left(\frac{1}{x^3\left(a+b\sin^{-1}(cx)\right)},x\right)}{bc}-\frac{1-c^2x^2}{bcx^2\left(a+b\sin^{-1}(cx)\right)}$$

```
[Out] (c^2*x^2-1)/b/c/x^2/(a+b*arcsin(c*x))-2*Unintegrable(1/x^3/(a+b*arcsin(c*x)
),x)/b/c
```

Rubi [A] time = 0.15, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{1-c^2x^2}}{x^2\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[1 - c^2*x^2]/(x^2*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] -((1 - c^2*x^2)/(b*c*x^2*(a + b*ArcSin[c*x]))) - (2*Defer[Int][1/(x^3*(a +
b*ArcSin[c*x])), x])/(b*c)
```

Rubi steps

$$\int \frac{\sqrt{1-c^2x^2}}{x^2\left(a+b\sin^{-1}(cx)\right)^2}\,dx=-\frac{1-c^2x^2}{bcx^2\left(a+b\sin^{-1}(cx)\right)}-\frac{2\int \frac{1}{x^3\left(a+b\sin^{-1}(cx)\right)}\,dx}{bc}$$

Mathematica [A] time = 2.49, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{1-c^2x^2}}{x^2\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[1 - c^2*x^2]/(x^2*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] Integrate[Sqrt[1 - c^2*x^2]/(x^2*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}}{b^2x^2\arcsin(cx)^2+2\,abx^2\arcsin(cx)+a^2x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/x^2/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*x^2 + 1)/(b^2*x^2*arcsin(c*x)^2 + 2*a*b*x^2*arcsin(c*x)
+ a^2*x^2), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^2x^2+1}}{(b\arcsin(cx)+a)^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/x^2/(a+b*arcsin(c*x))^2,x, algorithm="giac")
[Out] integrate(sqrt(-c^2*x^2 + 1)/((b*arcsin(c*x) + a)^2*x^2), x)
```

maple [A] time = 0.75, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^2x^2+1}}{x^2\left(a+b\arcsin(cx)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(1/2)/x^2/(a+b*arcsin(c*x))^2,x)
[Out] int((-c^2*x^2+1)^(1/2)/x^2/(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{c^2x^2-\frac{2\left(b^2cx^2\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+abcx^2\right)\int\frac{1}{\left(b\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+a\right)x^3}\,dx}{bc}-1}{b^2cx^2\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+abcx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/x^2/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
[Out] (c^2*x^2 - 2*(b^2*c*x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*
x^2)*integrate(1/(b^2*c*x^3*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*
b*c*x^3), x) - 1)/(b^2*c*x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a
*b*c*x^2)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sqrt{1-c^2\,x^2}}{x^2\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(1/2)/(x^2*(a + b*asin(c*x))^2),x)
[Out] int((1 - c^2*x^2)^(1/2)/(x^2*(a + b*asin(c*x))^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-\left(cx-1\right)\left(cx+1\right)}}{x^2\left(a+b\,\mathrm{asin}\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(1/2)/x**2/(a+b*asin(c*x))**2,x)
[Out] Integral(sqrt(-(c*x - 1)*(c*x + 1))/(x**2*(a + b*asin(c*x))**2), x)
```

3.387 $\int \frac{\sqrt{1-c^2x^2}}{x^3\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\sqrt{1-c^2x^2}}{x^3\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

```
[Out] Unintegrable((-c^2*x^2+1)^(1/2)/x^3/(a+b*arcsin(c*x))^2,x)
```

Rubi [A] time = 0.12, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{1-c^2x^2}}{x^3\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[1 - c^2*x^2]/(x^3*(a + b*ArcSin[c*x])^2),x]
[Out] Defer[Int][Sqrt[1 - c^2*x^2]/(x^3*(a + b*ArcSin[c*x])^2), x]
```

Rubi steps

$$\int \frac{\sqrt{1-c^2x^2}}{x^3\left(a+b\sin^{-1}(cx)\right)^2}\,dx=\int \frac{\sqrt{1-c^2x^2}}{x^3\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Mathematica [A] time = 17.46, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{1-c^2x^2}}{x^3\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[1 - c^2*x^2]/(x^3*(a + b*ArcSin[c*x])^2),x]
[Out] Integrate[Sqrt[1 - c^2*x^2]/(x^3*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.59, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}}{b^2x^3\arcsin(cx)^2+2\,abx^3\arcsin(cx)+a^2x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/x^3/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
[Out] integral(sqrt(-c^2*x^2 + 1)/(b^2*x^3*arcsin(c*x)^2 + 2*a*b*x^3*arcsin(c*x)
+ a^2*x^3), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/x^3/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 4.55, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^2x^2+1}}{x^3\left(a+b\arcsin\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(1/2)/x^3/(a+b*arcsin(c*x))^2,x)
```

```
[Out] int((-c^2*x^2+1)^(1/2)/x^3/(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{c^2x^2+\frac{\left(b^2cx^3\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx^3\right)\left(c^2\int\frac{x^2}{bx^4\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+ax^4}\,dx-3\int\frac{1}{bx^4\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+ax^4}\,dx\right)}{bc}-1}{b^2cx^3\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/x^3/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] (c^2*x^2 + (b^2*c*x^3*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*x^
3)*integrate((c^2*x^2 - 3)/(b^2*c*x^4*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x
+ 1)) + a*b*c*x^4), x) - 1)/(b^2*c*x^3*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x
 + 1)) + a*b*c*x^3)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sqrt{1-c^2\,x^2}}{x^3\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(1/2)/(x^3*(a + b*asin(c*x))^2),x)
```

```
[Out] int((1 - c^2*x^2)^(1/2)/(x^3*(a + b*asin(c*x))^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-\left(cx-1\right)\left(cx+1\right)}}{x^3\left(a+b\,\mathrm{asin}\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(1/2)/x**3/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(sqrt(-(c*x - 1)*(c*x + 1))/(x**3*(a + b*asin(c*x))**2), x)
```

3.388 $\int \frac{\sqrt{1-c^2x^2}}{x^4\left(a+b\sin^{-1}(cx)\right)^2} dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\sqrt{1-c^2x^2}}{x^4\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

```
[Out] Unintegrable((-c^2*x^2+1)^(1/2)/x^4/(a+b*arcsin(c*x))^2,x)
```

Rubi [A] time = 0.12, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{1-c^2x^2}}{x^4\left(a+b\sin^{-1}(cx)\right)^2} dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[1 - c^2*x^2]/(x^4*(a + b*ArcSin[c*x])^2),x]
[Out] Defer[Int][Sqrt[1 - c^2*x^2]/(x^4*(a + b*ArcSin[c*x])^2), x]
```

Rubi steps

$$\int \frac{\sqrt{1-c^2x^2}}{x^4\left(a+b\sin^{-1}(cx)\right)^2} dx = \int \frac{\sqrt{1-c^2x^2}}{x^4\left(a+b\sin^{-1}(cx)\right)^2} dx$$

Mathematica [A] time = 3.99, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{1-c^2x^2}}{x^4\left(a+b\sin^{-1}(cx)\right)^2} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[1 - c^2*x^2]/(x^4*(a + b*ArcSin[c*x])^2),x]
[Out] Integrate[Sqrt[1 - c^2*x^2]/(x^4*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}}{b^2x^4\arcsin(cx)^2+2\,abx^4\arcsin(cx)+a^2x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/x^4/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
[Out] integral(sqrt(-c^2*x^2 + 1)/(b^2*x^4*arcsin(c*x)^2 + 2*a*b*x^4*arcsin(c*x)
+ a^2*x^4), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^2x^2+1}}{\left(b\arcsin(cx)+a\right)^2x^4} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/x^4/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] integrate(sqrt(-c^2*x^2 + 1)/((b*arcsin(c*x) + a)^2*x^4), x)
```

maple [A] time = 6.53, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^2x^2+1}}{x^4\left(a+b\arcsin\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(1/2)/x^4/(a+b*arcsin(c*x))^2,x)
```

```
[Out] int((-c^2*x^2+1)^(1/2)/x^4/(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{c^2x^2+2\left(b^2cx^4\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx^4\right)\int\frac{c^2x^2-2}{b^2cx^5\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx^5}\,dx-1}{b^2cx^4\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(1/2)/x^4/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] (c^2*x^2 + (b^2*c*x^4*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*x^
4)*integrate(2*(c^2*x^2 - 2)/(b^2*c*x^5*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*
x + 1)) + a*b*c*x^5), x) - 1)/(b^2*c*x^4*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c
*x + 1)) + a*b*c*x^4)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sqrt{1-c^2\,x^2}}{x^4\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(1/2)/(x^4*(a + b*asin(c*x))^2),x)
```

```
[Out] int((1 - c^2*x^2)^(1/2)/(x^4*(a + b*asin(c*x))^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-\left(cx-1\right)\left(cx+1\right)}}{x^4\left(a+b\,\mathrm{asin}\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(1/2)/x**4/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(sqrt(-(c*x - 1)*(c*x + 1))/(x**4*(a + b*asin(c*x))**2), x)
```

3.389 $\int \frac{x^m(1-c^2x^2)^{3/2}}{(a+b\sin^{-1}(cx))^2} dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{(1-c^2x^2)^{3/2}x^m}{(a+b\sin^{-1}(cx))^2},x\right)$$

```
[Out] Unintegrable(x^m*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

Rubi [A] time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m(1-c^2x^2)^{3/2}}{(a+b\sin^{-1}(cx))^2} dx$$

Verification is Not applicable to the result.

```
[In] Int[(x^m*(1 - c^2*x^2)^(3/2))/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] Defer[Int][(x^m*(1 - c^2*x^2)^(3/2))/(a + b*ArcSin[c*x])^2, x]
```

Rubi steps

$$\int \frac{x^m(1-c^2x^2)^{3/2}}{(a+b\sin^{-1}(cx))^2} dx = \int \frac{x^m(1-c^2x^2)^{3/2}}{(a+b\sin^{-1}(cx))^2} dx$$

Mathematica [A] time = 0.62, size = 0, normalized size = 0.00

$$\int \frac{x^m(1-c^2x^2)^{3/2}}{(a+b\sin^{-1}(cx))^2} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(x^m*(1 - c^2*x^2)^(3/2))/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] Integrate[(x^m*(1 - c^2*x^2)^(3/2))/(a + b*ArcSin[c*x])^2, x]
```

fricas [A] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{(c^2x^2-1)\sqrt{-c^2x^2+1}\,x^m}{b^2\arcsin(cx)^2+2ab\arcsin(cx)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral(-(c^2*x^2 - 1)*sqrt(-c^2*x^2 + 1)*x^m/(b^2*arcsin(c*x)^2 + 2*a*b*a
rcsin(c*x) + a^2), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 1.37, size = 0, normalized size = 0.00

$$\int \frac{x^{m} \left(-c^{2} x^{2}+1\right)^{\frac{3}{2}}}{\left(a+b \arcsin \left(c x\right)\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] int(x^m*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\left(c^{4} x^{4}-2 c^{2} x^{2}+1\right) x^{m}-\frac{\left(c^{4} m \int \frac{x^{m+4}}{b x \arctan\left(c x, \sqrt{c x+1} \sqrt{-c x+1}\right)+a x}\, dx+4 c^{4} \int \frac{x^{m+4}}{b x \arctan\left(c x, \sqrt{c x+1} \sqrt{-c x+1}\right)+a x}\, dx-2 c^{2} m \int \frac{x^{m+2}}{b x \arctan\left(c x, \sqrt{c x+1} \sqrt{-c x+1}\right)-}}{}}{b^{2} c \arctan\left(c x, \sqrt{c x+1} \sqrt{-c x}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] -((c^4*x^4 - 2*c^2*x^2 + 1)*x^m - (b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c
*x + 1)) + a*b*c)*integrate(((c^4*m + 4*c^4)*x^4 - 2*(c^2*m + 2*c^2)*x^2 +
m)*x^m/(b^2*c*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*x), x))/
(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x^m\,{\left(1-c^2\,x^2\right)}^{3/2}}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*(1 - c^2*x^2)^(3/2))/(a + b*asin(c*x))^2,x)
```

```
[Out] int((x^m*(1 - c^2*x^2)^(3/2))/(a + b*asin(c*x))^2, x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{m} \left(- \left(c x - 1\right) \left(c x + 1\right)\right)^{\frac{3}{2}}}{\left(a + b \operatorname{asin}{\left(c x \right)}\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(-c**2*x**2+1)**(3/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(x**m*(-(c*x - 1)*(c*x + 1))**(3/2)/(a + b*asin(c*x))**2, x)
```

3.390 $\int \frac{x^3\left(1-c^2x^2\right)^{3/2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=278

$$\frac{3\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{64b^2c^4}+\frac{9\cos\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{64b^2c^4}-\frac{5\cos\left(\frac{5a}{b}\right)\text{Ci}\left(\frac{5\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{64b^2c^4}-\frac{7\cos\left(\frac{7a}{b}\right)\text{Ci}\left(\frac{7\left(a+b\sin\right.}{b}\right.}{64b^2c^4}$$

```
[Out] -x^3*(-c^2*x^2+1)^2/b/c/(a+b*arcsin(c*x))+3/64*Ci((a+b*arcsin(c*x))/b)*cos(
a/b)/b^2/c^4+9/64*Ci(3*(a+b*arcsin(c*x))/b)*cos(3*a/b)/b^2/c^4-5/64*Ci(5*(a
+b*arcsin(c*x))/b)*cos(5*a/b)/b^2/c^4-7/64*Ci(7*(a+b*arcsin(c*x))/b)*cos(7*
a/b)/b^2/c^4+3/64*Si((a+b*arcsin(c*x))/b)*sin(a/b)/b^2/c^4+9/64*Si(3*(a+b*a
rcsin(c*x))/b)*sin(3*a/b)/b^2/c^4-5/64*Si(5*(a+b*arcsin(c*x))/b)*sin(5*a/b)
/b^2/c^4-7/64*Si(7*(a+b*arcsin(c*x))/b)*sin(7*a/b)/b^2/c^4
```

Rubi [A] time = 0.89, antiderivative size = 274, normalized size of antiderivative = 0.99, number of steps used = 28, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {4721, 4723, 4406, 3303, 3299, 3302}

$$\frac{3\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{64b^2c^4}+\frac{9\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)}{64b^2c^4}-\frac{5\cos\left(\frac{5a}{b}\right)\text{CosIntegral}\left(\frac{5}{\right.}}{64b^2c^4}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(1 - c^2*x^2)^(3/2))/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -((x^3*(1 - c^2*x^2)^2)/(b*c*(a + b*ArcSin[c*x]))) + (3*Cos[a/b]*CosIntegra
l[a/b + ArcSin[c*x]])/(64*b^2*c^4) + (9*Cos[(3*a)/b]*CosIntegral[(3*a)/b +
3*ArcSin[c*x]])/(64*b^2*c^4) - (5*Cos[(5*a)/b]*CosIntegral[(5*a)/b + 5*ArcS
in[c*x]])/(64*b^2*c^4) - (7*Cos[(7*a)/b]*CosIntegral[(7*a)/b + 7*ArcSin[c*x
]])/(64*b^2*c^4) + (3*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(64*b^2*c^4)
 + (9*Sin[(3*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c*x]])/(64*b^2*c^4) - (5*
Sin[(5*a)/b]*SinIntegral[(5*a)/b + 5*ArcSin[c*x]])/(64*b^2*c^4) - (7*Sin[(7
*a)/b]*SinIntegral[(7*a)/b + 7*ArcSin[c*x]])/(64*b^2*c^4)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
```

```
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^m*Sqrt[1 - c^2*x^2]*(d + e*x^2)^p
*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (-Dist[(f*m*d^IntPart[p]*
(d + e*x^2)^FracPart[p])/(b*c*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1), x], x] + Dist
[(c*(m + 2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(b*f*(n + 1)*(1 - c
^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcS
in[c*x])^(n + 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e,
 0] && LtQ[n, -1] && IGtQ[m, -3] && IGtQ[2*p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x^3\left(1-c^2x^2\right)^{3/2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx = -\frac{x^3\left(1-c^2x^2\right)^2}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{3\int \frac{x^2\left(1-c^2x^2\right)}{a+b\sin^{-1}(cx)}\,dx}{bc} - \frac{(7c)\int \frac{x^4\left(1-c^2x^2\right)}{a+b\sin^{-1}(cx)}\,dx}{b}$$

$$= -\frac{x^3\left(1-c^2x^2\right)^2}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{3\,\text{Subst}\left(\int \frac{\cos^3(x)\sin^2(x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{bc^4} - \frac{7\,\text{Subst}\left(\int \frac{\cos^3(x)\,\text{si}}{a+b}\right.}{b}$$

$$= -\frac{x^3\left(1-c^2x^2\right)^2}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{3\,\text{Subst}\left(\int\left(\frac{\cos(x)}{8(a+bx)}-\frac{\cos(3x)}{16(a+bx)}-\frac{\cos(5x)}{16(a+bx)}\right)dx,x,\sin^{-1}(cx)\right)}{bc^4} - \frac{7}{}$$

$$= -\frac{x^3\left(1-c^2x^2\right)^2}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{7\,\text{Subst}\left(\int \frac{\cos(5x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{64bc^4} - \frac{7\,\text{Subst}\left(\int \frac{\cos(7x)}{a+bx}\,dx,x,\right.}{64bc^4}$$

$$= -\frac{x^3\left(1-c^2x^2\right)^2}{bc\left(a+b\sin^{-1}(cx)\right)} - \frac{\left(21\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+x\right)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{64bc^4} + \frac{\left(3\cos\left(\frac{a}{b}\right)\right)}{}$$

$$= -\frac{x^3\left(1-c^2x^2\right)^2}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{3\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{64b^2c^4} + \frac{9\cos\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)}{64b^2c^4}$$

Mathematica [A] time = 1.22, size = 399, normalized size = 1.44

$$-\frac{-3\cos\left(\frac{a}{b}\right)\left(a+b\sin^{-1}(cx)\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)-9\cos\left(\frac{3a}{b}\right)\left(a+b\sin^{-1}(cx)\right)\text{Ci}\left(3\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+5a\cos\left(\frac{5a}{b}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(1 - c^2*x^2)^(3/2))/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -1/64*(64*b*c^3*x^3 - 128*b*c^5*x^5 + 64*b*c^7*x^7 - 3*(a + b*ArcSin[c*x])*
Cos[a/b]*CosIntegral[a/b + ArcSin[c*x]] - 9*(a + b*ArcSin[c*x])*Cos[(3*a)/b
]*CosIntegral[3*(a/b + ArcSin[c*x])] + 5*a*Cos[(5*a)/b]*CosIntegral[5*(a/b
+ ArcSin[c*x])] + 5*b*ArcSin[c*x]*Cos[(5*a)/b]*CosIntegral[5*(a/b + ArcSin[
c*x])] + 7*a*Cos[(7*a)/b]*CosIntegral[7*(a/b + ArcSin[c*x])] + 7*b*ArcSin[c
*x]*Cos[(7*a)/b]*CosIntegral[7*(a/b + ArcSin[c*x])] - 3*a*Sin[a/b]*SinInteg
ral[a/b + ArcSin[c*x]] - 3*b*ArcSin[c*x]*Sin[a/b]*SinIntegral[a/b + ArcSin[
c*x]] - 9*a*Sin[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c*x])] - 9*b*ArcSin[c*
x]*Sin[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c*x])] + 5*a*Sin[(5*a)/b]*SinIn
tegral[5*(a/b + ArcSin[c*x])] + 5*b*ArcSin[c*x]*Sin[(5*a)/b]*SinIntegral[5*
(a/b + ArcSin[c*x])] + 7*a*Sin[(7*a)/b]*SinIntegral[7*(a/b + ArcSin[c*x])]
+ 7*b*ArcSin[c*x]*Sin[(7*a)/b]*SinIntegral[7*(a/b + ArcSin[c*x])])/(b^2*c^4
*(a + b*ArcSin[c*x]))
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(c^2x^5 - x^3\right)\sqrt{-c^2x^2 + 1}}{b^2 \arcsin(cx)^2 + 2\,ab \arcsin(cx) + a^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral(-(c^2*x^5 - x^3)*sqrt(-c^2*x^2 + 1)/(b^2*arcsin(c*x)^2 + 2*a*b*arc
sin(c*x) + a^2), x)
```

giac [B] time = 1.12, size = 2065, normalized size = 7.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] -7*b*arcsin(c*x)*cos(a/b)^7*cos_integral(7*a/b + 7*arcsin(c*x))/(b^3*c^4*ar
csin(c*x) + a*b^2*c^4) - 7*b*arcsin(c*x)*cos(a/b)^6*sin(a/b)*sin_integral(7
*a/b + 7*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - 7*a*cos(a/b)^7*co
s_integral(7*a/b + 7*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - 7*a*c
os(a/b)^6*sin(a/b)*sin_integral(7*a/b + 7*arcsin(c*x))/(b^3*c^4*arcsin(c*x)
 + a*b^2*c^4) + 49/4*b*arcsin(c*x)*cos(a/b)^5*cos_integral(7*a/b + 7*arcsin
(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - 5/4*b*arcsin(c*x)*cos(a/b)^5*cos
_integral(5*a/b + 5*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) + 35/4*b
*arcsin(c*x)*cos(a/b)^4*sin(a/b)*sin_integral(7*a/b + 7*arcsin(c*x))/(b^3*c
^4*arcsin(c*x) + a*b^2*c^4) - 5/4*b*arcsin(c*x)*cos(a/b)^4*sin(a/b)*sin_int
egral(5*a/b + 5*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) + 49/4*a*cos
(a/b)^5*cos_integral(7*a/b + 7*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^
4) - 5/4*a*cos(a/b)^5*cos_integral(5*a/b + 5*arcsin(c*x))/(b^3*c^4*arcsin(c
*x) + a*b^2*c^4) + 35/4*a*cos(a/b)^4*sin(a/b)*sin_integral(7*a/b + 7*arcsin
(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - 5/4*a*cos(a/b)^4*sin(a/b)*sin_in
tegral(5*a/b + 5*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - (c^2*x^2
- 1)^3*b*c*x/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - 49/8*b*arcsin(c*x)*cos(a/b
)^3*cos_integral(7*a/b + 7*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) +
 25/16*b*arcsin(c*x)*cos(a/b)^3*cos_integral(5*a/b + 5*arcsin(c*x))/(b^3*c^
4*arcsin(c*x) + a*b^2*c^4) + 9/16*b*arcsin(c*x)*cos(a/b)^3*cos_integral(3*a
/b + 3*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - 21/8*b*arcsin(c*x)*
cos(a/b)^2*sin(a/b)*sin_integral(7*a/b + 7*arcsin(c*x))/(b^3*c^4*arcsin(c*x
) + a*b^2*c^4) + 15/16*b*arcsin(c*x)*cos(a/b)^2*sin(a/b)*sin_integral(5*a/b
 + 5*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) + 9/16*b*arcsin(c*x)*co
s(a/b)^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^4*arcsin(c*x)
+ a*b^2*c^4) - (c^2*x^2 - 1)^2*b*c*x/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - 49
/8*a*cos(a/b)^3*cos_integral(7*a/b + 7*arcsin(c*x))/(b^3*c^4*arcsin(c*x) +
```

```
a*b^2*c^4) + 25/16*a*cos(a/b)^3*cos_integral(5*a/b + 5*arcsin(c*x))/(b^3*c^
4*arcsin(c*x) + a*b^2*c^4) + 9/16*a*cos(a/b)^3*cos_integral(3*a/b + 3*arcsi
n(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - 21/8*a*cos(a/b)^2*sin(a/b)*sin_
integral(7*a/b + 7*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) + 15/16*a
*cos(a/b)^2*sin(a/b)*sin_integral(5*a/b + 5*arcsin(c*x))/(b^3*c^4*arcsin(c*
x) + a*b^2*c^4) + 9/16*a*cos(a/b)^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(
c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) + 49/64*b*arcsin(c*x)*cos(a/b)*cos_
integral(7*a/b + 7*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - 25/64*b
*arcsin(c*x)*cos(a/b)*cos_integral(5*a/b + 5*arcsin(c*x))/(b^3*c^4*arcsin(c
*x) + a*b^2*c^4) - 27/64*b*arcsin(c*x)*cos(a/b)*cos_integral(3*a/b + 3*arcs
in(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) + 3/64*b*arcsin(c*x)*cos(a/b)*co
s_integral(a/b + arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) + 7/64*b*ar
csin(c*x)*sin(a/b)*sin_integral(7*a/b + 7*arcsin(c*x))/(b^3*c^4*arcsin(c*x)
 + a*b^2*c^4) - 5/64*b*arcsin(c*x)*sin(a/b)*sin_integral(5*a/b + 5*arcsin(c
*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - 9/64*b*arcsin(c*x)*sin(a/b)*sin_in
tegral(3*a/b + 3*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) + 3/64*b*ar
csin(c*x)*sin(a/b)*sin_integral(a/b + arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a
*b^2*c^4) + 49/64*a*cos(a/b)*cos_integral(7*a/b + 7*arcsin(c*x))/(b^3*c^4*a
rcsin(c*x) + a*b^2*c^4) - 25/64*a*cos(a/b)*cos_integral(5*a/b + 5*arcsin(c*
x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - 27/64*a*cos(a/b)*cos_integral(3*a/b
 + 3*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) + 3/64*a*cos(a/b)*cos_i
ntegral(a/b + arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) + 7/64*a*sin(a
/b)*sin_integral(7*a/b + 7*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) -
 5/64*a*sin(a/b)*sin_integral(5*a/b + 5*arcsin(c*x))/(b^3*c^4*arcsin(c*x) +
 a*b^2*c^4) - 9/64*a*sin(a/b)*sin_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^4*
arcsin(c*x) + a*b^2*c^4) + 3/64*a*sin(a/b)*sin_integral(a/b + arcsin(c*x))/
(b^3*c^4*arcsin(c*x) + a*b^2*c^4)
```

maple [A] time = 0.09, size = 455, normalized size = 1.64

$$-\frac{7\arcsin(cx)\operatorname{Ci}\left(7\arcsin(cx)+\frac{7a}{b}\right)\cos\left(\frac{7a}{b}\right)b-9\arcsin(cx)\operatorname{Si}\left(3\arcsin(cx)+\frac{3a}{b}\right)\sin\left(\frac{3a}{b}\right)b-9\arcsin(cx)\operatorname{C}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] -1/64/c^4*(7*arcsin(c*x)*Ci(7*arcsin(c*x)+7*a/b)*cos(7*a/b)*b-9*arcsin(c*x)
*Si(3*arcsin(c*x)+3*a/b)*sin(3*a/b)*b-9*arcsin(c*x)*Ci(3*arcsin(c*x)+3*a/b)
*cos(3*a/b)*b+5*arcsin(c*x)*Si(5*arcsin(c*x)+5*a/b)*sin(5*a/b)*b+5*arcsin(c
*x)*Ci(5*arcsin(c*x)+5*a/b)*cos(5*a/b)*b-3*arcsin(c*x)*Si(arcsin(c*x)+a/b)*
sin(a/b)*b-3*arcsin(c*x)*Ci(arcsin(c*x)+a/b)*cos(a/b)*b+7*arcsin(c*x)*Si(7*
arcsin(c*x)+7*a/b)*sin(7*a/b)*b+7*Ci(7*arcsin(c*x)+7*a/b)*cos(7*a/b)*a-9*Si
(3*arcsin(c*x)+3*a/b)*sin(3*a/b)*a-9*Ci(3*arcsin(c*x)+3*a/b)*cos(3*a/b)*a+5
*Si(5*arcsin(c*x)+5*a/b)*sin(5*a/b)*a+5*Ci(5*arcsin(c*x)+5*a/b)*cos(5*a/b)*
a-3*Si(arcsin(c*x)+a/b)*sin(a/b)*a-3*Ci(arcsin(c*x)+a/b)*cos(a/b)*a+7*Si(7*
arcsin(c*x)+7*a/b)*sin(7*a/b)*a+3*x*b*c-sin(7*arcsin(c*x))*b+3*sin(3*arcsin
(c*x))*b-sin(5*arcsin(c*x))*b)/(a+b*arcsin(c*x))/b^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{c^4x^7-2c^2x^5+x^3-\frac{\left(7c^4\int\frac{x^6}{b\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+a}\,dx-10c^2\int\frac{x^4}{b\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+a}\,dx+3\int\frac{x^2}{b\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+a}\,dx\right)\left(b^2c\,\mathrm{ar}\right.}{bc}}{b^2c\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] -(c^4*x^7 - 2*c^2*x^5 + x^3 - (b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x +
 1)) + a*b*c)*integrate((7*c^4*x^6 - 10*c^2*x^4 + 3*x^2)/(b^2*c*arctan2(c*x
```

```
, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c), x))/(b^2*c*arctan2(c*x, sqrt(c*x
+ 1)*sqrt(-c*x + 1)) + a*b*c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3 \left(1 - c^2 x^2\right)^{3/2}}{\left(a + b \operatorname{asin}\left(c x\right)\right)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(1 - c^2*x^2)^(3/2))/(a + b*asin(c*x))^2,x)
```

```
[Out] int((x^3*(1 - c^2*x^2)^(3/2))/(a + b*asin(c*x))^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3 \left(-\left(cx - 1\right)\left(cx + 1\right)\right)^{\frac{3}{2}}}{\left(a + b \operatorname{asin}\left(cx\right)\right)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(-c**2*x**2+1)**(3/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(x**3*(-(c*x - 1)*(c*x + 1))**(3/2)/(a + b*asin(c*x))**2, x)
```

3.391 $\int \frac{x^2(1-c^2x^2)^{3/2}}{(a+b\sin^{-1}(cx))^2}\,dx$

Optimal. Leaf size=220

$$\frac{\sin\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2(a+b\sin^{-1}(cx))}{b}\right)}{16b^2c^3}-\frac{\sin\left(\frac{4a}{b}\right)\text{Ci}\left(\frac{4(a+b\sin^{-1}(cx))}{b}\right)}{4b^2c^3}-\frac{3\sin\left(\frac{6a}{b}\right)\text{Ci}\left(\frac{6(a+b\sin^{-1}(cx))}{b}\right)}{16b^2c^3}-\frac{\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2(a+b\sin^{-1}(cx))}{b}\right)}{16b^2c^3}$$

```
[Out] -x^2*(-c^2*x^2+1)^2/b/c/(a+b*arcsin(c*x))-1/16*cos(2*a/b)*Si(2*(a+b*arcsin(
c*x))/b)/b^2/c^3+1/4*cos(4*a/b)*Si(4*(a+b*arcsin(c*x))/b)/b^2/c^3+3/16*cos(
6*a/b)*Si(6*(a+b*arcsin(c*x))/b)/b^2/c^3+1/16*Ci(2*(a+b*arcsin(c*x))/b)*sin
(2*a/b)/b^2/c^3-1/4*Ci(4*(a+b*arcsin(c*x))/b)*sin(4*a/b)/b^2/c^3-3/16*Ci(6*
(a+b*arcsin(c*x))/b)*sin(6*a/b)/b^2/c^3
```

Rubi [A] time = 0.64, antiderivative size = 220, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {4721, 4723, 4406, 3303, 3299, 3302}

$$\frac{\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{16b^2c^3}-\frac{\sin\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)}{4b^2c^3}-\frac{3\sin\left(\frac{6a}{b}\right)\text{CosIntegral}\left(\frac{6a}{b}+\right.}{16b^2c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(1 - c^2*x^2)^(3/2))/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -((x^2*(1 - c^2*x^2)^2)/(b*c*(a + b*ArcSin[c*x]))) + (CosIntegral[(2*a)/b +
 2*ArcSin[c*x]]*Sin[(2*a)/b])/(16*b^2*c^3) - (CosIntegral[(4*a)/b + 4*ArcSi
n[c*x]]*Sin[(4*a)/b])/(4*b^2*c^3) - (3*CosIntegral[(6*a)/b + 6*ArcSin[c*x]]
*Sin[(6*a)/b])/(16*b^2*c^3) - (Cos[(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[
c*x]])/(16*b^2*c^3) + (Cos[(4*a)/b]*SinIntegral[(4*a)/b + 4*ArcSin[c*x]])/(
4*b^2*c^3) + (3*Cos[(6*a)/b]*SinIntegral[(6*a)/b + 6*ArcSin[c*x]])/(16*b^2*
c^3)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
```

```
tQ[p, 0]
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^m*Sqrt[1 - c^2*x^2]*(d + e*x^2)^p
*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (-Dist[(f*m*d^IntPart[p]*
(d + e*x^2)^FracPart[p])/(b*c*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1), x], x] + Dist
[(c*(m + 2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(b*f*(n + 1)*(1 - c
^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcS
in[c*x])^(n + 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e,
 0] && LtQ[n, -1] && IGtQ[m, -3] && IGtQ[2*p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x^2\left(1-c^2x^2\right)^{3/2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx = -\frac{x^2\left(1-c^2x^2\right)^2}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{2\int \frac{x\left(1-c^2x^2\right)}{a+b\sin^{-1}(cx)}\,dx}{bc} - \frac{(6c)\int \frac{x^3\left(1-c^2x^2\right)}{a+b\sin^{-1}(cx)}\,dx}{b}$$

$$= -\frac{x^2\left(1-c^2x^2\right)^2}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{2\,\text{Subst}\left(\int \frac{\cos^3(x)\sin(x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{bc^3} - \frac{6\,\text{Subst}\left(\int \frac{\cos^3(x}{a\cdot}\right.}{}$$

$$= -\frac{x^2\left(1-c^2x^2\right)^2}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{2\,\text{Subst}\left(\int\left(\frac{\sin(2x)}{4(a+bx)}+\frac{\sin(4x)}{8(a+bx)}\right)dx,x,\sin^{-1}(cx)\right)}{bc^3} - \frac{6\,\text{Subst}\left(\right.}{}$$

$$= -\frac{x^2\left(1-c^2x^2\right)^2}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{3\,\text{Subst}\left(\int \frac{\sin(6x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{16bc^3} + \frac{\text{Subst}\left(\int \frac{\sin(4x)}{a+bx}\,dx,x,\right.}{4bc^3}$$

$$= -\frac{x^2\left(1-c^2x^2\right)^2}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{\cos\left(\frac{2a}{b}\right)\text{Subst}\left(\int \frac{\sin\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{2bc^3} - \frac{\left(9\cos\left(\frac{2a}{b}\right)\right.}{}$$

$$= -\frac{x^2\left(1-c^2x^2\right)^2}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)\sin\left(\frac{2a}{b}\right)}{16b^2c^3} - \frac{\text{Ci}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)\sin\left(\right.}{4b^2c^3}$$

Mathematica [A] time = 0.86, size = 306, normalized size = 1.39

$$-\frac{-\sin\left(\frac{2a}{b}\right)\left(a+b\sin^{-1}(cx)\right)\text{Ci}\left(2\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+4\sin\left(\frac{4a}{b}\right)\left(a+b\sin^{-1}(cx)\right)\text{Ci}\left(4\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+3a\,\text{s}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(1 - c^2*x^2)^(3/2))/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -1/16*(16*b*c^2*x^2 - 32*b*c^4*x^4 + 16*b*c^6*x^6 - (a + b*ArcSin[c*x])*Cos
Integral[2*(a/b + ArcSin[c*x])]*Sin[(2*a)/b] + 4*(a + b*ArcSin[c*x])*CosInt
egral[4*(a/b + ArcSin[c*x])]*Sin[(4*a)/b] + 3*a*CosIntegral[6*(a/b + ArcSin
[c*x])]*Sin[(6*a)/b] + 3*b*ArcSin[c*x]*CosIntegral[6*(a/b + ArcSin[c*x])]*S
in[(6*a)/b] + a*Cos[(2*a)/b]*SinIntegral[2*(a/b + ArcSin[c*x])] + b*ArcSin[
c*x]*Cos[(2*a)/b]*SinIntegral[2*(a/b + ArcSin[c*x])] - 4*a*Cos[(4*a)/b]*Sin
Integral[4*(a/b + ArcSin[c*x])] - 4*b*ArcSin[c*x]*Cos[(4*a)/b]*SinIntegral[
4*(a/b + ArcSin[c*x])] - 3*a*Cos[(6*a)/b]*SinIntegral[6*(a/b + ArcSin[c*x])
] - 3*b*ArcSin[c*x]*Cos[(6*a)/b]*SinIntegral[6*(a/b + ArcSin[c*x])])/(b^2*c
^3*(a + b*ArcSin[c*x]))
```

fricas [F] time = 0.50, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(c^2x^4-x^2\right)\sqrt{-c^2x^2+1}}{b^2\arcsin\left(cx\right)^2+2\,ab\arcsin\left(cx\right)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral(-(c^2*x^4 - x^2)*sqrt(-c^2*x^2 + 1)/(b^2*arcsin(c*x)^2 + 2*a*b*arc
sin(c*x) + a^2), x)
```

giac [B] time = 0.69, size = 1553, normalized size = 7.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] -6*b*arcsin(c*x)*cos(a/b)^5*cos_integral(6*a/b + 6*arcsin(c*x))*sin(a/b)/(b
^3*c^3*arcsin(c*x) + a*b^2*c^3) + 6*b*arcsin(c*x)*cos(a/b)^6*sin_integral(6
*a/b + 6*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 6*a*cos(a/b)^5*co
s_integral(6*a/b + 6*arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3
) + 6*a*cos(a/b)^6*sin_integral(6*a/b + 6*arcsin(c*x))/(b^3*c^3*arcsin(c*x)
 + a*b^2*c^3) + 6*b*arcsin(c*x)*cos(a/b)^3*cos_integral(6*a/b + 6*arcsin(c*
x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 2*b*arcsin(c*x)*cos(a/b)^3
*cos_integral(4*a/b + 4*arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*
c^3) - 9*b*arcsin(c*x)*cos(a/b)^4*sin_integral(6*a/b + 6*arcsin(c*x))/(b^3*
c^3*arcsin(c*x) + a*b^2*c^3) + 2*b*arcsin(c*x)*cos(a/b)^4*sin_integral(4*a/
b + 4*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 6*a*cos(a/b)^3*cos_i
ntegral(6*a/b + 6*arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) -
 2*a*cos(a/b)^3*cos_integral(4*a/b + 4*arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsi
n(c*x) + a*b^2*c^3) - 9*a*cos(a/b)^4*sin_integral(6*a/b + 6*arcsin(c*x))/(b
^3*c^3*arcsin(c*x) + a*b^2*c^3) + 2*a*cos(a/b)^4*sin_integral(4*a/b + 4*arc
sin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 9/8*b*arcsin(c*x)*cos(a/b)*co
s_integral(6*a/b + 6*arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3
) + b*arcsin(c*x)*cos(a/b)*cos_integral(4*a/b + 4*arcsin(c*x))*sin(a/b)/(b^
3*c^3*arcsin(c*x) + a*b^2*c^3) + 1/8*b*arcsin(c*x)*cos(a/b)*cos_integral(2*
a/b + 2*arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 27/8*b*ar
csin(c*x)*cos(a/b)^2*sin_integral(6*a/b + 6*arcsin(c*x))/(b^3*c^3*arcsin(c*
x) + a*b^2*c^3) - 2*b*arcsin(c*x)*cos(a/b)^2*sin_integral(4*a/b + 4*arcsin(
c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 1/8*b*arcsin(c*x)*cos(a/b)^2*sin_
integral(2*a/b + 2*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - (c^2*x^
2 - 1)^3*b/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 9/8*a*cos(a/b)*cos_integral(
6*a/b + 6*arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + a*cos(a
/b)*cos_integral(4*a/b + 4*arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b
^2*c^3) + 1/8*a*cos(a/b)*cos_integral(2*a/b + 2*arcsin(c*x))*sin(a/b)/(b^3*
c^3*arcsin(c*x) + a*b^2*c^3) + 27/8*a*cos(a/b)^2*sin_integral(6*a/b + 6*arc
sin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 2*a*cos(a/b)^2*sin_integral(4
```

```
*a/b + 4*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 1/8*a*cos(a/b)^2*
sin_integral(2*a/b + 2*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - (c^
2*x^2 - 1)^2*b/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 3/16*b*arcsin(c*x)*sin_i
ntegral(6*a/b + 6*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 1/4*b*ar
csin(c*x)*sin_integral(4*a/b + 4*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*
c^3) + 1/16*b*arcsin(c*x)*sin_integral(2*a/b + 2*arcsin(c*x))/(b^3*c^3*arcs
in(c*x) + a*b^2*c^3) - 3/16*a*sin_integral(6*a/b + 6*arcsin(c*x))/(b^3*c^3*
arcsin(c*x) + a*b^2*c^3) + 1/4*a*sin_integral(4*a/b + 4*arcsin(c*x))/(b^3*c
^3*arcsin(c*x) + a*b^2*c^3) + 1/16*a*sin_integral(2*a/b + 2*arcsin(c*x))/(b
^3*c^3*arcsin(c*x) + a*b^2*c^3)
```

maple [A] time = 0.10, size = 364, normalized size = 1.65

$$\frac{8\arcsin(cx)\operatorname{Si}\left(4\arcsin(cx)+\frac{4a}{b}\right)\cos\left(\frac{4a}{b}\right)b-8\arcsin(cx)\operatorname{Ci}\left(4\arcsin(cx)+\frac{4a}{b}\right)\sin\left(\frac{4a}{b}\right)b-2\operatorname{Si}\left(2\arcsin\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/32/c^3*(8*arcsin(c*x)*Si(4*arcsin(c*x)+4*a/b)*cos(4*a/b)*b-8*arcsin(c*x)*
Ci(4*arcsin(c*x)+4*a/b)*sin(4*a/b)*b-2*Si(2*arcsin(c*x)+2*a/b)*cos(2*a/b)*a
rcsin(c*x)*b+2*Ci(2*arcsin(c*x)+2*a/b)*sin(2*a/b)*arcsin(c*x)*b+6*arcsin(c*
x)*Si(6*arcsin(c*x)+6*a/b)*cos(6*a/b)*b-6*arcsin(c*x)*Ci(6*arcsin(c*x)+6*a/
b)*sin(6*a/b)*b+8*Si(4*arcsin(c*x)+4*a/b)*cos(4*a/b)*a-8*Ci(4*arcsin(c*x)+4
*a/b)*sin(4*a/b)*a-2*Si(2*arcsin(c*x)+2*a/b)*cos(2*a/b)*a+2*Ci(2*arcsin(c*x
)+2*a/b)*sin(2*a/b)*a+6*Si(6*arcsin(c*x)+6*a/b)*cos(6*a/b)*a-6*Ci(6*arcsin(
c*x)+6*a/b)*sin(6*a/b)*a+2*cos(4*arcsin(c*x))*b-cos(2*arcsin(c*x))*b+cos(6*
arcsin(c*x))*b-2*b)/(a+b*arcsin(c*x))/b^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{c^4x^6-2\,c^2x^4+x^2-2\left(b^2c\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abc\right)\int\frac{3\,c^4x^5-4\,c^2x^3+x}{b^2c\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abc}\,dx}{b^2c\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] -(c^4*x^6 - 2*c^2*x^4 + x^2 - (b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x +
 1)) + a*b*c)*integrate(2*(3*c^4*x^5 - 4*c^2*x^3 + x)/(b^2*c*arctan2(c*x, s
qrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c), x))/(b^2*c*arctan2(c*x, sqrt(c*x + 1
)*sqrt(-c*x + 1)) + a*b*c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{x^2\left(1-c^2x^2\right)^{3/2}}{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(1 - c^2*x^2)^(3/2))/(a + b*asin(c*x))^2,x)
```

```
[Out] int((x^2*(1 - c^2*x^2)^(3/2))/(a + b*asin(c*x))^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{x^2\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}}{\left(a+b\,\mathrm{asin}\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(-c**2*x**2+1)**(3/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(x**2*(-(c*x - 1)*(c*x + 1))**(3/2)/(a + b*asin(c*x))**2, x)
```

3.392 $\int \frac{x\left(1-c^2x^2\right)^{3/2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=214

$$\frac{\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{8b^2c^2}+\frac{9\cos\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{16b^2c^2}+\frac{5\cos\left(\frac{5a}{b}\right)\text{Ci}\left(\frac{5\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{16b^2c^2}+\frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{8b^2c^2}$$

```
[Out] -x*(-c^2*x^2+1)^2/b/c/(a+b*arcsin(c*x))+1/8*Ci((a+b*arcsin(c*x))/b)*cos(a/b
)/b^2/c^2+9/16*Ci(3*(a+b*arcsin(c*x))/b)*cos(3*a/b)/b^2/c^2+5/16*Ci(5*(a+b*
arcsin(c*x))/b)*cos(5*a/b)/b^2/c^2+1/8*Si((a+b*arcsin(c*x))/b)*sin(a/b)/b^2
/c^2+9/16*Si(3*(a+b*arcsin(c*x))/b)*sin(3*a/b)/b^2/c^2+5/16*Si(5*(a+b*arcsi
n(c*x))/b)*sin(5*a/b)/b^2/c^2
```

Rubi [A] time = 0.67, antiderivative size = 210, normalized size of antiderivative = 0.98, number of steps used = 22, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {4721, 4661, 3312, 3303, 3299, 3302, 4723, 4406}

$$\frac{\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{8b^2c^2}+\frac{9\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)}{16b^2c^2}+\frac{5\cos\left(\frac{5a}{b}\right)\text{CosIntegral}\left(\frac{5a}{b}\right.}{16b^2c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(1 - c^2*x^2)^(3/2))/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -((x*(1 - c^2*x^2)^2)/(b*c*(a + b*ArcSin[c*x]))) + (Cos[a/b]*CosIntegral[a/
b + ArcSin[c*x]])/(8*b^2*c^2) + (9*Cos[(3*a)/b]*CosIntegral[(3*a)/b + 3*Arc
Sin[c*x]])/(16*b^2*c^2) + (5*Cos[(5*a)/b]*CosIntegral[(5*a)/b + 5*ArcSin[c*
x]])/(16*b^2*c^2) + (Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(8*b^2*c^2) +
 (9*Sin[(3*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c*x]])/(16*b^2*c^2) + (5*Si
n[(5*a)/b]*SinIntegral[(5*a)/b + 5*ArcSin[c*x]])/(16*b^2*c^2)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4661

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[d^p/c, Subst[Int[(a + b*x)^n*Cos[x]^(2*p + 1), x], x, ArcS
in[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IGtQ[2
*p, 0] && (IntegerQ[p] || GtQ[d, 0])
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^m*Sqrt[1 - c^2*x^2]*(d + e*x^2)^p
*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (-Dist[(f*m*d^IntPart[p]*
(d + e*x^2)^FracPart[p])/(b*c*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1), x], x] + Dist
[(c*(m + 2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(b*f*(n + 1)*(1 - c
^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcS
in[c*x])^(n + 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e,
 0] && LtQ[n, -1] && IGtQ[m, -3] && IGtQ[2*p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x\left(1-c^2x^2\right)^{3/2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx = -\frac{x\left(1-c^2x^2\right)^2}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{\int \frac{1-c^2x^2}{a+b\sin^{-1}(cx)}\,dx}{bc}-\frac{(5c)\int \frac{x^2\left(1-c^2x^2\right)}{a+b\sin^{-1}(cx)}\,dx}{b}$$

$$= -\frac{x\left(1-c^2x^2\right)^2}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{\text{Subst}\left(\int \frac{\cos^3(x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{bc^2}-\frac{5\,\text{Subst}\left(\int \frac{\cos^3(x)\sin^2(x)}{a+bx}\,dx\right.}{bc^2}$$

$$= -\frac{x\left(1-c^2x^2\right)^2}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{\text{Subst}\left(\int \left(\frac{3\cos(x)}{4(a+bx)}+\frac{\cos(3x)}{4(a+bx)}\right)dx,x,\sin^{-1}(cx)\right)}{bc^2}-\frac{5\,\text{Subst}\left(\int \left(\right.\right.}{}$$

$$= -\frac{x\left(1-c^2x^2\right)^2}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{\text{Subst}\left(\int \frac{\cos(3x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{4bc^2}+\frac{5\,\text{Subst}\left(\int \frac{\cos(3x)}{a+bx}\,dx,x,\right.}{16bc^2}$$

$$= -\frac{x\left(1-c^2x^2\right)^2}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{\left(5\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+x\right)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{8bc^2}+\frac{\left(3\cos\left(\frac{a}{b}\right)\right)}{}$$

$$= -\frac{x\left(1-c^2x^2\right)^2}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{8b^2c^2}+\frac{9\cos\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)}{16b^2c^2}$$

Mathematica [A] time = 0.57, size = 295, normalized size = 1.38

$$\frac{2\cos\left(\frac{a}{b}\right)\left(a+b\sin^{-1}(cx)\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)+9\cos\left(\frac{3a}{b}\right)\left(a+b\sin^{-1}(cx)\right)\text{Ci}\left(3\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+5a\cos\left(\frac{5a}{b}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(1 - c^2*x^2)^(3/2))/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (-16*b*c*x + 32*b*c^3*x^3 - 16*b*c^5*x^5 + 2*(a + b*ArcSin[c*x])*Cos[a/b]*C
osIntegral[a/b + ArcSin[c*x]] + 9*(a + b*ArcSin[c*x])*Cos[(3*a)/b]*CosInteg
ral[3*(a/b + ArcSin[c*x])] + 5*a*Cos[(5*a)/b]*CosIntegral[5*(a/b + ArcSin[c
*x])] + 5*b*ArcSin[c*x]*Cos[(5*a)/b]*CosIntegral[5*(a/b + ArcSin[c*x])] + 2
*a*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]] + 2*b*ArcSin[c*x]*Sin[a/b]*SinIn
tegral[a/b + ArcSin[c*x]] + 9*a*Sin[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c*
x])] + 9*b*ArcSin[c*x]*Sin[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c*x])] + 5*
a*Sin[(5*a)/b]*SinIntegral[5*(a/b + ArcSin[c*x])] + 5*b*ArcSin[c*x]*Sin[(5*
a)/b]*SinIntegral[5*(a/b + ArcSin[c*x])])/(16*b^2*c^2*(a + b*ArcSin[c*x]))
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(c^2x^3-x\right)\sqrt{-c^2x^2+1}}{b^2\arcsin\left(cx\right)^2+2\,ab\arcsin\left(cx\right)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral(-(c^2*x^3 - x)*sqrt(-c^2*x^2 + 1)/(b^2*arcsin(c*x)^2 + 2*a*b*arcsi
n(c*x) + a^2), x)
```

giac [B] time = 1.11, size = 1215, normalized size = 5.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] 5*b*arcsin(c*x)*cos(a/b)^5*cos_integral(5*a/b + 5*arcsin(c*x))/(b^3*c^2*arc
sin(c*x) + a*b^2*c^2) + 5*b*arcsin(c*x)*cos(a/b)^4*sin(a/b)*sin_integral(5*
a/b + 5*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 5*a*cos(a/b)^5*cos
_integral(5*a/b + 5*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 5*a*co
s(a/b)^4*sin(a/b)*sin_integral(5*a/b + 5*arcsin(c*x))/(b^3*c^2*arcsin(c*x)
+ a*b^2*c^2) - 25/4*b*arcsin(c*x)*cos(a/b)^3*cos_integral(5*a/b + 5*arcsin(
c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 9/4*b*arcsin(c*x)*cos(a/b)^3*cos_
integral(3*a/b + 3*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) - 15/4*b*
arcsin(c*x)*cos(a/b)^2*sin(a/b)*sin_integral(5*a/b + 5*arcsin(c*x))/(b^3*c^
2*arcsin(c*x) + a*b^2*c^2) + 9/4*b*arcsin(c*x)*cos(a/b)^2*sin(a/b)*sin_inte
gral(3*a/b + 3*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) - (c^2*x^2 -
1)^2*b*c*x/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) - 25/4*a*cos(a/b)^3*cos_integr
al(5*a/b + 5*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 9/4*a*cos(a/b
)^3*cos_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) -
 15/4*a*cos(a/b)^2*sin(a/b)*sin_integral(5*a/b + 5*arcsin(c*x))/(b^3*c^2*ar
csin(c*x) + a*b^2*c^2) + 9/4*a*cos(a/b)^2*sin(a/b)*sin_integral(3*a/b + 3*a
rcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 25/16*b*arcsin(c*x)*cos(a/b
)*cos_integral(5*a/b + 5*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) - 2
7/16*b*arcsin(c*x)*cos(a/b)*cos_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^2*ar
csin(c*x) + a*b^2*c^2) + 1/8*b*arcsin(c*x)*cos(a/b)*cos_integral(a/b + arcs
in(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 5/16*b*arcsin(c*x)*sin(a/b)*si
```

```
n_integral(5*a/b + 5*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) - 9/16*
b*arcsin(c*x)*sin(a/b)*sin_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^2*arcsin(
c*x) + a*b^2*c^2) + 1/8*b*arcsin(c*x)*sin(a/b)*sin_integral(a/b + arcsin(c*
x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 25/16*a*cos(a/b)*cos_integral(5*a/b
 + 5*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) - 27/16*a*cos(a/b)*cos_
integral(3*a/b + 3*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 1/8*a*c
os(a/b)*cos_integral(a/b + arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) +
 5/16*a*sin(a/b)*sin_integral(5*a/b + 5*arcsin(c*x))/(b^3*c^2*arcsin(c*x) +
 a*b^2*c^2) - 9/16*a*sin(a/b)*sin_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^2*
arcsin(c*x) + a*b^2*c^2) + 1/8*a*sin(a/b)*sin_integral(a/b + arcsin(c*x))/(
b^3*c^2*arcsin(c*x) + a*b^2*c^2)
```

maple [A] time = 0.08, size = 341, normalized size = 1.59

$$9\arcsin(cx)\,\mathrm{Si}\left(3\arcsin(cx)+\frac{3a}{b}\right)\sin\left(\frac{3a}{b}\right)b+9\arcsin(cx)\,\mathrm{Ci}\left(3\arcsin(cx)+\frac{3a}{b}\right)\cos\left(\frac{3a}{b}\right)b+2\arcsin(cx)\,\mathrm{Si}\left(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/16/c^2*(9*arcsin(c*x)*Si(3*arcsin(c*x)+3*a/b)*sin(3*a/b)*b+9*arcsin(c*x)*
Ci(3*arcsin(c*x)+3*a/b)*cos(3*a/b)*b+2*arcsin(c*x)*Si(arcsin(c*x)+a/b)*sin(
a/b)*b+2*arcsin(c*x)*Ci(arcsin(c*x)+a/b)*cos(a/b)*b+5*arcsin(c*x)*Si(5*arcs
in(c*x)+5*a/b)*sin(5*a/b)*b+5*arcsin(c*x)*Ci(5*arcsin(c*x)+5*a/b)*cos(5*a/b
)*b+9*Si(3*arcsin(c*x)+3*a/b)*sin(3*a/b)*a+9*Ci(3*arcsin(c*x)+3*a/b)*cos(3*
a/b)*a+2*Si(arcsin(c*x)+a/b)*sin(a/b)*a+2*Ci(arcsin(c*x)+a/b)*cos(a/b)*a+5*
Si(5*arcsin(c*x)+5*a/b)*sin(5*a/b)*a+5*Ci(5*arcsin(c*x)+5*a/b)*cos(5*a/b)*a
-2*x*b*c-3*sin(3*arcsin(c*x))*b-sin(5*arcsin(c*x))*b)/(a+b*arcsin(c*x))/b^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{c^4x^5-2c^2x^3+x-\frac{\left(5c^4\int\frac{x^4}{b\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+a}\,dx-6c^2\int\frac{x^2}{b\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+a}\,dx+\int\frac{1}{b\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+a}\,dx\right)\left(b^2c\arctan\right.}{bc}}{b^2c\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] -(c^4*x^5 - 2*c^2*x^3 - (b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) +
 a*b*c)*integrate((5*c^4*x^4 - 6*c^2*x^2 + 1)/(b^2*c*arctan2(c*x, sqrt(c*x
+ 1)*sqrt(-c*x + 1)) + a*b*c), x) + x)/(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sq
rt(-c*x + 1)) + a*b*c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{x\left(1-c^2x^2\right)^{3/2}}{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(1 - c^2*x^2)^(3/2))/(a + b*asin(c*x))^2,x)
```

```
[Out] int((x*(1 - c^2*x^2)^(3/2))/(a + b*asin(c*x))^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{x\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}}{\left(a+b\,\mathrm{asin}\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c**2*x**2+1)**(3/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(x*(-(c*x - 1)*(c*x + 1))**(3/2)/(a + b*asin(c*x))**2, x)
```

3.393 $\int \frac{(1-c^2x^2)^{3/2}}{(a+b\sin^{-1}(cx))^2}\,dx$

Optimal. Leaf size=150

$$\frac{\sin\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2(a+b\sin^{-1}(cx))}{b}\right)}{b^2c}+\frac{\sin\left(\frac{4a}{b}\right)\text{Ci}\left(\frac{4(a+b\sin^{-1}(cx))}{b}\right)}{2b^2c}-\frac{\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2(a+b\sin^{-1}(cx))}{b}\right)}{b^2c}-\frac{\cos\left(\frac{4a}{b}\right)\text{Si}\left(\frac{4(a+b\sin^{-1}(cx))}{b}\right)}{2b^2c}$$

```
[Out] -(-c^2*x^2+1)^2/b/c/(a+b*arcsin(c*x))-cos(2*a/b)*Si(2*(a+b*arcsin(c*x))/b)/
b^2/c-1/2*cos(4*a/b)*Si(4*(a+b*arcsin(c*x))/b)/b^2/c+Ci(2*(a+b*arcsin(c*x))
/b)*sin(2*a/b)/b^2/c+1/2*Ci(4*(a+b*arcsin(c*x))/b)*sin(4*a/b)/b^2/c
```

Rubi [A] time = 0.27, antiderivative size = 150, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {4659, 4723, 4406, 3303, 3299, 3302}

$$\frac{\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{b^2c}+\frac{\sin\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)}{2b^2c}-\frac{\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{b^2c}$$

Antiderivative was successfully verified.

```
[In] Int[(1 - c^2*x^2)^(3/2)/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -((1 - c^2*x^2)^2/(b*c*(a + b*ArcSin[c*x]))) + (CosIntegral[(2*a)/b + 2*Arc
Sin[c*x]]*Sin[(2*a)/b])/(b^2*c) + (CosIntegral[(4*a)/b + 4*ArcSin[c*x]]*Sin
[(4*a)/b])/(2*b^2*c) - (Cos[(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c*x]])/
(b^2*c) - (Cos[(4*a)/b]*SinIntegral[(4*a)/b + 4*ArcSin[c*x]])/(2*b^2*c)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4659

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[(Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*(a + b*ArcSin[c*x])^(n + 1
```

```
))/(b*c*(n + 1)), x] + Dist[(c*(2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[
p])/(b*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a
 + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^
2*d + e, 0] && LtQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(1-c^2x^2\right)^{3/2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx &= -\frac{\left(1-c^2x^2\right)^2}{bc\left(a+b\sin^{-1}(cx)\right)} - \frac{(4c)\int \frac{x\left(1-c^2x^2\right)}{a+b\sin^{-1}(cx)}\,dx}{b}\\
&= -\frac{\left(1-c^2x^2\right)^2}{bc\left(a+b\sin^{-1}(cx)\right)} - \frac{4\,\text{Subst}\left(\int \frac{\cos^3(x)\sin(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{bc}\\
&= -\frac{\left(1-c^2x^2\right)^2}{bc\left(a+b\sin^{-1}(cx)\right)} - \frac{4\,\text{Subst}\left(\int \left(\frac{\sin(2x)}{4(a+bx)}+\frac{\sin(4x)}{8(a+bx)}\right)dx, x, \sin^{-1}(cx)\right)}{bc}\\
&= -\frac{\left(1-c^2x^2\right)^2}{bc\left(a+b\sin^{-1}(cx)\right)} - \frac{\text{Subst}\left(\int \frac{\sin(4x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{2bc} - \frac{\text{Subst}\left(\int \frac{\sin(2x)}{a+bx}\,dx, x, s\right.}{bc}\\
&= -\frac{\left(1-c^2x^2\right)^2}{bc\left(a+b\sin^{-1}(cx)\right)} - \frac{\cos\left(\frac{2a}{b}\right)\text{Subst}\left(\int \frac{\sin\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{bc} - \frac{\cos\left(\frac{4a}{b}\right)\text{Su}}{}\\
&= -\frac{\left(1-c^2x^2\right)^2}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)\sin\left(\frac{2a}{b}\right)}{b^2c} + \frac{\text{Ci}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)\sin(}{2b^2c}
\end{aligned}$$

Mathematica [A] time = 0.64, size = 122, normalized size = 0.81

$$\frac{-\frac{2b\left(c^2x^2-1\right)^2}{a+b\sin^{-1}(cx)} + 2\sin\left(\frac{2a}{b}\right)\text{Ci}\left(2\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right) + \sin\left(\frac{4a}{b}\right)\text{Ci}\left(4\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right) - 2\cos\left(\frac{2a}{b}\right)\text{Si}\left(2\left(\frac{a}{b}+\sin^{-1}(\right.\right.}{2b^2c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - c^2*x^2)^(3/2)/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] ((-2*b*(-1 + c^2*x^2)^2)/(a + b*ArcSin[c*x]) + 2*CosIntegral[2*(a/b + ArcSi
n[c*x])]*Sin[(2*a)/b] + CosIntegral[4*(a/b + ArcSin[c*x])]*Sin[(4*a)/b] - 2
*Cos[(2*a)/b]*SinIntegral[2*(a/b + ArcSin[c*x])] - Cos[(4*a)/b]*SinIntegral
[4*(a/b + ArcSin[c*x])])/(2*b^2*c)
```

fricas [F] time = 0.40, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}}{b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral((-c^2*x^2 + 1)^(3/2)/(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)
, x)
```

giac [B] time = 1.47, size = 747, normalized size = 4.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] 4*b*arcsin(c*x)*cos(a/b)^3*cos_integral(4*a/b + 4*arcsin(c*x))*sin(a/b)/(b^
3*c*arcsin(c*x) + a*b^2*c) - 4*b*arcsin(c*x)*cos(a/b)^4*sin_integral(4*a/b
+ 4*arcsin(c*x))/(b^3*c*arcsin(c*x) + a*b^2*c) + 4*a*cos(a/b)^3*cos_integra
l(4*a/b + 4*arcsin(c*x))*sin(a/b)/(b^3*c*arcsin(c*x) + a*b^2*c) - 4*a*cos(a
/b)^4*sin_integral(4*a/b + 4*arcsin(c*x))/(b^3*c*arcsin(c*x) + a*b^2*c) - 2
*b*arcsin(c*x)*cos(a/b)*cos_integral(4*a/b + 4*arcsin(c*x))*sin(a/b)/(b^3*c
*arcsin(c*x) + a*b^2*c) + 2*b*arcsin(c*x)*cos(a/b)*cos_integral(2*a/b + 2*a
rcsin(c*x))*sin(a/b)/(b^3*c*arcsin(c*x) + a*b^2*c) + 4*b*arcsin(c*x)*cos(a/
b)^2*sin_integral(4*a/b + 4*arcsin(c*x))/(b^3*c*arcsin(c*x) + a*b^2*c) - 2*
b*arcsin(c*x)*cos(a/b)^2*sin_integral(2*a/b + 2*arcsin(c*x))/(b^3*c*arcsin(
c*x) + a*b^2*c) - 2*a*cos(a/b)*cos_integral(4*a/b + 4*arcsin(c*x))*sin(a/b)
/(b^3*c*arcsin(c*x) + a*b^2*c) + 2*a*cos(a/b)*cos_integral(2*a/b + 2*arcsin
(c*x))*sin(a/b)/(b^3*c*arcsin(c*x) + a*b^2*c) + 4*a*cos(a/b)^2*sin_integral
(4*a/b + 4*arcsin(c*x))/(b^3*c*arcsin(c*x) + a*b^2*c) - 2*a*cos(a/b)^2*sin_
integral(2*a/b + 2*arcsin(c*x))/(b^3*c*arcsin(c*x) + a*b^2*c) - (c^2*x^2 -
1)^2*b/(b^3*c*arcsin(c*x) + a*b^2*c) - 1/2*b*arcsin(c*x)*sin_integral(4*a/b
 + 4*arcsin(c*x))/(b^3*c*arcsin(c*x) + a*b^2*c) + b*arcsin(c*x)*sin_integra
l(2*a/b + 2*arcsin(c*x))/(b^3*c*arcsin(c*x) + a*b^2*c) - 1/2*a*sin_integral
(4*a/b + 4*arcsin(c*x))/(b^3*c*arcsin(c*x) + a*b^2*c) + a*sin_integral(2*a/
b + 2*arcsin(c*x))/(b^3*c*arcsin(c*x) + a*b^2*c)
```

maple [A] time = 0.10, size = 250, normalized size = 1.67

$$-\frac{4 \arcsin(cx) \operatorname{Si}\left(4 \arcsin(cx) + \frac{4a}{b}\right) \cos\left(\frac{4a}{b}\right) b - 4 \arcsin(cx) \operatorname{Ci}\left(4 \arcsin(cx) + \frac{4a}{b}\right) \sin\left(\frac{4a}{b}\right) b + 8 \operatorname{Si}\left(2 \arcsin(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] -1/8/c*(4*arcsin(c*x)*Si(4*arcsin(c*x)+4*a/b)*cos(4*a/b)*b-4*arcsin(c*x)*Ci
(4*arcsin(c*x)+4*a/b)*sin(4*a/b)*b+8*Si(2*arcsin(c*x)+2*a/b)*cos(2*a/b)*arc
sin(c*x)*b-8*Ci(2*arcsin(c*x)+2*a/b)*sin(2*a/b)*arcsin(c*x)*b+4*Si(4*arcsin
(c*x)+4*a/b)*cos(4*a/b)*a-4*Ci(4*arcsin(c*x)+4*a/b)*sin(4*a/b)*a+8*Si(2*arc
sin(c*x)+2*a/b)*cos(2*a/b)*a-8*Ci(2*arcsin(c*x)+2*a/b)*sin(2*a/b)*a+cos(4*a
rcsin(c*x))*b+4*cos(2*arcsin(c*x))*b+3*b)/(a+b*arcsin(c*x))/b^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{c^4x^4 - 2\,c^2x^2 - 4\left(b^2c \arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right) + abc\right)\int \frac{c^3x^3 - cx}{b^2 \arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right) + ab}\,dx + 1}{b^2c \arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right) + abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] -(c^4*x^4 - 2*c^2*x^2 - (b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) +
 a*b*c)*integrate(4*(c^3*x^3 - c*x)/(b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c
*x + 1)) + a*b), x) + 1)/(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))
+ a*b*c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(1-c^2\,x^2\right)^{3/2}}{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(3/2)/(a + b*asin(c*x))^2,x)
```

```
[Out] int((1 - c^2*x^2)^(3/2)/(a + b*asin(c*x))^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}}{\left(a+b\,\mathrm{asin}\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(3/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral((-(c*x - 1)*(c*x + 1))**(3/2)/(a + b*asin(c*x))**2, x)
```

3.394 $\int \frac{\left(1-c^2x^2\right)^{3/2}}{x\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=177

$$-\frac{\text{Int}\left(\frac{1-c^2x^2}{x^2\left(a+b\sin^{-1}(cx)\right)},x\right)}{bc}-\frac{9\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{4b^2}-\frac{3\cos\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{4b^2}-\frac{9\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{4b^2}-\frac{3\,\text{si}}{}$$

```
[Out] -(-c^2*x^2+1)^2/b/c/x/(a+b*arcsin(c*x))-9/4*Ci((a+b*arcsin(c*x))/b)*cos(a/b
)/b^2-3/4*Ci(3*(a+b*arcsin(c*x))/b)*cos(3*a/b)/b^2-9/4*Si((a+b*arcsin(c*x))
/b)*sin(a/b)/b^2-3/4*Si(3*(a+b*arcsin(c*x))/b)*sin(3*a/b)/b^2-Unintegrable(
(-c^2*x^2+1)/x^2/(a+b*arcsin(c*x)),x)/b/c
```

Rubi [A] time = 0.40, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(1-c^2x^2\right)^{3/2}}{x\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(1 - c^2*x^2)^(3/2)/(x*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] -((1 - c^2*x^2)^2/(b*c*x*(a + b*ArcSin[c*x]))) - (9*Cos[a/b]*CosIntegral[a/
b + ArcSin[c*x]])/(4*b^2) - (3*Cos[(3*a)/b]*CosIntegral[(3*a)/b + 3*ArcSin[
c*x]])/(4*b^2) - (9*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(4*b^2) - (3*S
in[(3*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c*x]])/(4*b^2) - Defer[Int][(1 -
 c^2*x^2)/(x^2*(a + b*ArcSin[c*x])), x]/(b*c)
```

Rubi steps

$$\int \frac{\left(1-c^2x^2\right)^{3/2}}{x\left(a+b\sin^{-1}(cx)\right)^2}\,dx=-\frac{\left(1-c^2x^2\right)^2}{bcx\left(a+b\sin^{-1}(cx)\right)}-\frac{\int \frac{1-c^2x^2}{x^2\left(a+b\sin^{-1}(cx)\right)}\,dx}{bc}-\frac{(3c)\int \frac{1-c^2x^2}{a+b\sin^{-1}(cx)}\,dx}{b}$$

$$=-\frac{\left(1-c^2x^2\right)^2}{bcx\left(a+b\sin^{-1}(cx)\right)}-\frac{3\,\text{Subst}\left(\int \frac{\cos^3(x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{b}-\frac{\int \frac{1-c^2x^2}{x^2\left(a+b\sin^{-1}(cx)\right)}\,dx}{bc}$$

$$=-\frac{\left(1-c^2x^2\right)^2}{bcx\left(a+b\sin^{-1}(cx)\right)}-\frac{3\,\text{Subst}\left(\int \left(\frac{3\cos(x)}{4(a+bx)}+\frac{\cos(3x)}{4(a+bx)}\right)dx,x,\sin^{-1}(cx)\right)}{b}-\frac{\int \frac{1-c}{x^2(a+b\,\text{si}}}{b}$$

$$=-\frac{\left(1-c^2x^2\right)^2}{bcx\left(a+b\sin^{-1}(cx)\right)}-\frac{3\,\text{Subst}\left(\int \frac{\cos(3x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{4b}-\frac{9\,\text{Subst}\left(\int \frac{\cos(x)}{a+bx}\,dx,x\right.}{4b}$$

$$=-\frac{\left(1-c^2x^2\right)^2}{bcx\left(a+b\sin^{-1}(cx)\right)}-\frac{\int \frac{1-c^2x^2}{x^2\left(a+b\sin^{-1}(cx)\right)}\,dx}{bc}-\frac{\left(9\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+x\right)}{a+bx}\,dx,x,\text{s}\right.}{4b}$$

$$=-\frac{\left(1-c^2x^2\right)^2}{bcx\left(a+b\sin^{-1}(cx)\right)}-\frac{9\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{4b^2}-\frac{3\cos\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3a}{b}+3\sin^{-1}(c\right.}{4b^2}$$

Mathematica [A] time = 11.13, size = 0, normalized size = 0.00

$$\int \frac{\left(1-c^2x^2\right)^{3/2}}{x\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(1 - c^2*x^2)^(3/2)/(x*(a + b*ArcSin[c*x])^2),x]
[Out] Integrate[(1 - c^2*x^2)^(3/2)/(x*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.40, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}}{b^2x\arcsin\left(cx\right)^2+2\,abx\arcsin\left(cx\right)+a^2x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/x/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
[Out] integral((-c^2*x^2 + 1)^(3/2)/(b^2*x*arcsin(c*x)^2 + 2*a*b*x*arcsin(c*x) +
a^2*x), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/x/(a+b*arcsin(c*x))^2,x, algorithm="giac")
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.80, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}}{x\left(a+b\arcsin\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(3/2)/x/(a+b*arcsin(c*x))^2,x)
[Out] int((-c^2*x^2+1)^(3/2)/x/(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{c^4x^4-2\,c^2x^2-\frac{\left(b^2cx\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx\right)\left(3\,c^4\int\frac{x^4}{bx^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+ax^2}\,dx-2\,c^2\int\frac{x^2}{bx^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+ax^2}\,d}{bc}}{b^2cx\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/x/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
[Out] -(c^4*x^4 - 2*c^2*x^2 - (b^2*c*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))
 + a*b*c*x)*integrate((3*c^4*x^4 - 2*c^2*x^2 - 1)/(b^2*c*x^2*arctan2(c*x, s
```

```
qrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*x^2), x) + 1)/(b^2*c*x*arctan2(c*x, sq
rt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(1-c^2 x^2\right)^{3/2}}{x \left(a+b \operatorname{asin}\left(c x\right)\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(3/2)/(x*(a + b*asin(c*x))^2),x)
[Out] int((1 - c^2*x^2)^(3/2)/(x*(a + b*asin(c*x))^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}}{x \left(a+b \operatorname{asin}\left(cx\right)\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(3/2)/x/(a+b*asin(c*x))**2,x)
[Out] Integral((-(c*x - 1)*(c*x + 1))**(3/2)/(x*(a + b*asin(c*x))**2), x)
```

3.395 $\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^2\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=102

$$-\frac{2c\text{Int}\left(\frac{1-c^2x^2}{x\left(a+b\sin^{-1}(cx)\right)},x\right)}{b}-\frac{2\text{Int}\left(\frac{1-c^2x^2}{x^3\left(a+b\sin^{-1}(cx)\right)},x\right)}{bc}-\frac{\left(1-c^2x^2\right)^2}{bcx^2\left(a+b\sin^{-1}(cx)\right)}$$

```
[Out] -(-c^2*x^2+1)^2/b/c/x^2/(a+b*arcsin(c*x))-2*Unintegrable((-c^2*x^2+1)/x^3/(
a+b*arcsin(c*x)),x)/b/c-2*c*Unintegrable((-c^2*x^2+1)/x/(a+b*arcsin(c*x)),x
)/b
```

Rubi [A] time = 0.25, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^2\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(1 - c^2*x^2)^(3/2)/(x^2*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] -((1 - c^2*x^2)^2/(b*c*x^2*(a + b*ArcSin[c*x]))) - (2*Defer[Int][(1 - c^2*x
^2)/(x^3*(a + b*ArcSin[c*x])), x])/(b*c) - (2*c*Defer[Int][(1 - c^2*x^2)/(x
*(a + b*ArcSin[c*x])), x])/b
```

Rubi steps

$$\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^2\left(a+b\sin^{-1}(cx)\right)^2}\,dx=-\frac{\left(1-c^2x^2\right)^2}{bcx^2\left(a+b\sin^{-1}(cx)\right)}-\frac{2\int \frac{1-c^2x^2}{x^3\left(a+b\sin^{-1}(cx)\right)}\,dx}{bc}-\frac{(2c)\int \frac{1-c^2x^2}{x\left(a+b\sin^{-1}(cx)\right)}\,dx}{b}$$

Mathematica [A] time = 4.62, size = 0, normalized size = 0.00

$$\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^2\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(1 - c^2*x^2)^(3/2)/(x^2*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] Integrate[(1 - c^2*x^2)^(3/2)/(x^2*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.54, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}}{b^2x^2\arcsin(cx)^2+2\,abx^2\arcsin(cx)+a^2x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/x^2/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral((-c^2*x^2 + 1)^(3/2)/(b^2*x^2*arcsin(c*x)^2 + 2*a*b*x^2*arcsin(c*x
) + a^2*x^2), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}}{\left(b\arcsin\left(cx\right)+a\right)^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/x^2/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] integrate((-c^2*x^2 + 1)^(3/2)/((b*arcsin(c*x) + a)^2*x^2), x)
```

maple [A] time = 0.66, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}}{x^2\left(a+b\arcsin\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(3/2)/x^2/(a+b*arcsin(c*x))^2,x)
```

```
[Out] int((-c^2*x^2+1)^(3/2)/x^2/(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{c^4x^4-2\,c^2x^2-2\left(b^2cx^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx^2\right)\int \frac{c^4x^4-1}{b^2cx^3\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx^3}\,dx+1}{b^2cx^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/x^2/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] -(c^4*x^4 - 2*c^2*x^2 - (b^2*c*x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1
)) + a*b*c*x^2)*integrate(2*(c^4*x^4 - 1)/(b^2*c*x^3*arctan2(c*x, sqrt(c*x
+ 1)*sqrt(-c*x + 1)) + a*b*c*x^3), x) + 1)/(b^2*c*x^2*arctan2(c*x, sqrt(c*x
 + 1)*sqrt(-c*x + 1)) + a*b*c*x^2)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(1-c^2\,x^2\right)}^{3/2}}{x^2\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(3/2)/(x^2*(a + b*asin(c*x))^2),x)
```

```
[Out] int((1 - c^2*x^2)^(3/2)/(x^2*(a + b*asin(c*x))^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}}{x^2\left(a+b\,\mathrm{asin}\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(3/2)/x**2/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral((-(c*x - 1)*(c*x + 1))**(3/2)/(x**2*(a + b*asin(c*x))**2), x)
```

3.396 $\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^3\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\left(1-c^2x^2\right)^{3/2}}{x^3\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

```
[Out] Unintegrable((-c^2*x^2+1)^(3/2)/x^3/(a+b*arcsin(c*x))^2,x)
```

Rubi [A] time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^3\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(1 - c^2*x^2)^(3/2)/(x^3*(a + b*ArcSin[c*x])^2),x]
[Out] Defer[Int][(1 - c^2*x^2)^(3/2)/(x^3*(a + b*ArcSin[c*x])^2), x]
```

Rubi steps

$$\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^3\left(a+b\sin^{-1}(cx)\right)^2}\,dx=\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^3\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Mathematica [A] time = 17.39, size = 0, normalized size = 0.00

$$\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^3\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(1 - c^2*x^2)^(3/2)/(x^3*(a + b*ArcSin[c*x])^2),x]
[Out] Integrate[(1 - c^2*x^2)^(3/2)/(x^3*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}}{b^2x^3\arcsin(cx)^2+2\,abx^3\arcsin(cx)+a^2x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/x^3/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
[Out] integral((-c^2*x^2 + 1)^(3/2)/(b^2*x^3*arcsin(c*x)^2 + 2*a*b*x^3*arcsin(c*x
) + a^2*x^3), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/x^3/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 1.82, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}}{x^3\left(a+b\arcsin\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(3/2)/x^3/(a+b*arcsin(c*x))^2,x)
```

```
[Out] int((-c^2*x^2+1)^(3/2)/x^3/(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{c^4x^4-2\,c^2x^2-\frac{\left(b^2cx^3\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx^3\right)\left(c^4\int\frac{x^4}{bx^4\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+ax^4}\,dx+2\,c^2\int\frac{x^2}{bx^4\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+ax^4}\,dx-3}{bc}}{b^2cx^3\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/x^3/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] -(c^4*x^4 - 2*c^2*x^2 - (b^2*c*x^3*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1
)) + a*b*c*x^3)*integrate((c^4*x^4 + 2*c^2*x^2 - 3)/(b^2*c*x^4*arctan2(c*x,
 sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*x^4), x) + 1)/(b^2*c*x^3*arctan2(c*x
, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*x^3)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{{\left(1-c^2\,x^2\right)}^{3/2}}{x^3\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(3/2)/(x^3*(a + b*asin(c*x))^2),x)
```

```
[Out] int((1 - c^2*x^2)^(3/2)/(x^3*(a + b*asin(c*x))^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}}{x^3\left(a+b\,\mathrm{asin}\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(3/2)/x**3/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral((-(c*x - 1)*(c*x + 1))**(3/2)/(x**3*(a + b*asin(c*x))**2), x)
```

3.397 $\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^4\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=69

$$-\frac{4\text{Int}\left(\frac{1-c^2x^2}{x^5\left(a+b\sin^{-1}(cx)\right)},x\right)}{bc}-\frac{\left(1-c^2x^2\right)^2}{bcx^4\left(a+b\sin^{-1}(cx)\right)}$$

```
[Out] -(-c^2*x^2+1)^2/b/c/x^4/(a+b*arcsin(c*x))-4*Unintegrable((-c^2*x^2+1)/x^5/(
a+b*arcsin(c*x)),x)/b/c
```

Rubi [A] time = 0.20, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^4\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(1 - c^2*x^2)^(3/2)/(x^4*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] -((1 - c^2*x^2)^2/(b*c*x^4*(a + b*ArcSin[c*x]))) - (4*Defer[Int][(1 - c^2*x
^2)/(x^5*(a + b*ArcSin[c*x])), x])/(b*c)
```

Rubi steps

$$\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^4\left(a+b\sin^{-1}(cx)\right)^2}\,dx=-\frac{\left(1-c^2x^2\right)^2}{bcx^4\left(a+b\sin^{-1}(cx)\right)}-\frac{4\int \frac{1-c^2x^2}{x^5\left(a+b\sin^{-1}(cx)\right)}\,dx}{bc}$$

Mathematica [A] time = 2.97, size = 0, normalized size = 0.00

$$\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^4\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(1 - c^2*x^2)^(3/2)/(x^4*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] Integrate[(1 - c^2*x^2)^(3/2)/(x^4*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}}{b^2x^4\arcsin(cx)^2+2\,abx^4\arcsin(cx)+a^2x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/x^4/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral((-c^2*x^2 + 1)^(3/2)/(b^2*x^4*arcsin(c*x)^2 + 2*a*b*x^4*arcsin(c*x
) + a^2*x^4), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}}{\left(b \arcsin\left(cx\right)+a\right)^2 x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/x^4/(a+b*arcsin(c*x))^2,x, algorithm="giac")
[Out] integrate((-c^2*x^2 + 1)^(3/2)/((b*arcsin(c*x) + a)^2*x^4), x)
```

maple [A] time = 5.81, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}}{x^4\left(a+b \arcsin\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(3/2)/x^4/(a+b*arcsin(c*x))^2,x)
[Out] int((-c^2*x^2+1)^(3/2)/x^4/(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{c^4x^4-2\,c^2x^2-4\left(b^2cx^4 \arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx^4\right)\int \frac{c^2x^2-1}{b^2cx^5 \arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx^5}\,dx+1}{b^2cx^4 \arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(3/2)/x^4/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
[Out] -(c^4*x^4 - 2*c^2*x^2 - (b^2*c*x^4*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1
)) + a*b*c*x^4)*integrate(4*(c^2*x^2 - 1)/(b^2*c*x^5*arctan2(c*x, sqrt(c*x
+ 1)*sqrt(-c*x + 1)) + a*b*c*x^5), x) + 1)/(b^2*c*x^4*arctan2(c*x, sqrt(c*x
 + 1)*sqrt(-c*x + 1)) + a*b*c*x^4)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(1-c^2\,x^2\right)}^{3/2}}{x^4\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(3/2)/(x^4*(a + b*asin(c*x))^2),x)
[Out] int((1 - c^2*x^2)^(3/2)/(x^4*(a + b*asin(c*x))^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}}{x^4\left(a+b \operatorname{asin}\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(3/2)/x**4/(a+b*asin(c*x))**2,x)
[Out] Integral((-(c*x - 1)*(c*x + 1))**(3/2)/(x**4*(a + b*asin(c*x))**2), x)
```

3.398 $\int \frac{x^m\left(1-c^2x^2\right)^{5/2}}{\left(a+b\sin^{-1}(cx)\right)^2} dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\left(1-c^2x^2\right)^{5/2}x^m}{\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

[Out] Unintegrable(x^m*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)

Rubi [A] time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m\left(1-c^2x^2\right)^{5/2}}{\left(a+b\sin^{-1}(cx)\right)^2} dx$$

Verification is Not applicable to the result.

[In] Int[(x^m*(1 - c^2*x^2)^(5/2))/(a + b*ArcSin[c*x])^2,x]

[Out] Defer[Int][(x^m*(1 - c^2*x^2)^(5/2))/(a + b*ArcSin[c*x])^2, x]

Rubi steps

$$\int \frac{x^m\left(1-c^2x^2\right)^{5/2}}{\left(a+b\sin^{-1}(cx)\right)^2} dx = \int \frac{x^m\left(1-c^2x^2\right)^{5/2}}{\left(a+b\sin^{-1}(cx)\right)^2} dx$$

Mathematica [A] time = 0.65, size = 0, normalized size = 0.00

$$\int \frac{x^m\left(1-c^2x^2\right)^{5/2}}{\left(a+b\sin^{-1}(cx)\right)^2} dx$$

Verification is Not applicable to the result.

[In] Integrate[(x^m*(1 - c^2*x^2)^(5/2))/(a + b*ArcSin[c*x])^2,x]

[Out] Integrate[(x^m*(1 - c^2*x^2)^(5/2))/(a + b*ArcSin[c*x])^2, x]

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(c^4x^4-2\,c^2x^2+1\right)\sqrt{-c^2x^2+1}\,x^m}{b^2\arcsin\left(cx\right)^2+2\,ab\arcsin\left(cx\right)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^m*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")

[Out] integral((c^4*x^4 - 2*c^2*x^2 + 1)*sqrt(-c^2*x^2 + 1)*x^m/(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2), x)

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 1.60, size = 0, normalized size = 0.00

$$\int \frac{x^m \left(-c^2x^2+1\right)^{\frac{5}{2}}}{\left(a+b\arcsin\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] int(x^m*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x^m\,{\left(1-c^2\,x^2\right)}^{5/2}}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*(1 - c^2*x^2)^(5/2))/(a + b*asin(c*x))^2,x)
```

```
[Out] int((x^m*(1 - c^2*x^2)^(5/2))/(a + b*asin(c*x))^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(-c**2*x**2+1)**(5/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Timed out
```

3.399 $\int \frac{x^3(1-c^2x^2)^{5/2}}{(a+b\sin^{-1}(cx))^2}\,dx$

Optimal. Leaf size=278

$$\frac{3\cos\left(\frac{a}{b}\right)\mathrm{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{128b^2c^4}+\frac{3\cos\left(\frac{3a}{b}\right)\mathrm{Ci}\left(\frac{3(a+b\sin^{-1}(cx))}{b}\right)}{32b^2c^4}-\frac{21\cos\left(\frac{7a}{b}\right)\mathrm{Ci}\left(\frac{7(a+b\sin^{-1}(cx))}{b}\right)}{256b^2c^4}-\frac{9\cos\left(\frac{9a}{b}\right)\mathrm{Ci}\left(\frac{9(a+b\mathrm{s}}{}\right.}{256b^2c^4}$$

```
[Out] -x^3*(-c^2*x^2+1)^3/b/c/(a+b*arcsin(c*x))+3/128*Ci((a+b*arcsin(c*x))/b)*cos
(a/b)/b^2/c^4+3/32*Ci(3*(a+b*arcsin(c*x))/b)*cos(3*a/b)/b^2/c^4-21/256*Ci(7
*(a+b*arcsin(c*x))/b)*cos(7*a/b)/b^2/c^4-9/256*Ci(9*(a+b*arcsin(c*x))/b)*co
s(9*a/b)/b^2/c^4+3/128*Si((a+b*arcsin(c*x))/b)*sin(a/b)/b^2/c^4+3/32*Si(3*(
a+b*arcsin(c*x))/b)*sin(3*a/b)/b^2/c^4-21/256*Si(7*(a+b*arcsin(c*x))/b)*sin
(7*a/b)/b^2/c^4-9/256*Si(9*(a+b*arcsin(c*x))/b)*sin(9*a/b)/b^2/c^4
```

Rubi [A] time = 1.15, antiderivative size = 274, normalized size of antiderivative = 0.99, number of steps used = 34, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {4721, 4723, 4406, 3303, 3299, 3302}

$$\frac{3\cos\left(\frac{a}{b}\right)\mathrm{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{128b^2c^4}+\frac{3\cos\left(\frac{3a}{b}\right)\mathrm{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)}{32b^2c^4}-\frac{21\cos\left(\frac{7a}{b}\right)\mathrm{CosIntegral}\left(\right.}{256b^2c^4}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(1 - c^2*x^2)^(5/2))/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -((x^3*(1 - c^2*x^2)^3)/(b*c*(a + b*ArcSin[c*x]))) + (3*Cos[a/b]*CosIntegra
l[a/b + ArcSin[c*x]])/(128*b^2*c^4) + (3*Cos[(3*a)/b]*CosIntegral[(3*a)/b +
 3*ArcSin[c*x]])/(32*b^2*c^4) - (21*Cos[(7*a)/b]*CosIntegral[(7*a)/b + 7*Ar
cSin[c*x]])/(256*b^2*c^4) - (9*Cos[(9*a)/b]*CosIntegral[(9*a)/b + 9*ArcSin[
c*x]])/(256*b^2*c^4) + (3*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(128*b^2
*c^4) + (3*Sin[(3*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c*x]])/(32*b^2*c^4)
- (21*Sin[(7*a)/b]*SinIntegral[(7*a)/b + 7*ArcSin[c*x]])/(256*b^2*c^4) - (9
*Sin[(9*a)/b]*SinIntegral[(9*a)/b + 9*ArcSin[c*x]])/(256*b^2*c^4)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
```

```
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^m*Sqrt[1 - c^2*x^2]*(d + e*x^2)^p
*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (-Dist[(f*m*d^IntPart[p]*
(d + e*x^2)^FracPart[p])/(b*c*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1), x], x] + Dist
[(c*(m + 2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(b*f*(n + 1)*(1 - c
^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcS
in[c*x])^(n + 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e,
 0] && LtQ[n, -1] && IGtQ[m, -3] && IGtQ[2*p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x^3\left(1-c^2x^2\right)^{5/2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx = -\frac{x^3\left(1-c^2x^2\right)^3}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{3\int \frac{x^2\left(1-c^2x^2\right)^2}{a+b\sin^{-1}(cx)}\,dx}{bc}-\frac{(9c)\int \frac{x^4\left(1-c^2x^2\right)^2}{a+b\sin^{-1}(cx)}\,dx}{b}$$

$$= -\frac{x^3\left(1-c^2x^2\right)^3}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{3\,\text{Subst}\left(\int \frac{\cos^5(x)\sin^2(x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{bc^4}-\frac{9\,\text{Subst}\left(\int \frac{\cos^5(x)\,\text{si}}{a+b}\right.}{b}$$

$$= -\frac{x^3\left(1-c^2x^2\right)^3}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{3\,\text{Subst}\left(\int\left(\frac{5\cos(x)}{64(a+bx)}-\frac{\cos(3x)}{64(a+bx)}-\frac{3\cos(5x)}{64(a+bx)}-\frac{\cos(7x)}{64(a+bx)}\right)dx,x,\sin\right.}{bc^4}$$

$$= -\frac{x^3\left(1-c^2x^2\right)^3}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{9\,\text{Subst}\left(\int \frac{\cos(7x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{256bc^4}-\frac{9\,\text{Subst}\left(\int \frac{\cos(9x)}{a+bx}\,dx,x,\right.}{256bc^4}$$

$$= -\frac{x^3\left(1-c^2x^2\right)^3}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{\left(27\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+x\right)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{128bc^4}+\frac{\left(15\cos\left(\frac{a}{b}\right)\right.}{}$$

$$= -\frac{x^3\left(1-c^2x^2\right)^3}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{3\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{128b^2c^4}+\frac{3\cos\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)}{32b^2c^4}$$

Mathematica [A] time = 1.73, size = 408, normalized size = 1.47

$$-\frac{-6\cos\left(\frac{a}{b}\right)\left(a+b\sin^{-1}(cx)\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)-24\cos\left(\frac{3a}{b}\right)\left(a+b\sin^{-1}(cx)\right)\text{Ci}\left(3\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+21a\cos\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(1 - c^2*x^2)^(5/2))/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -1/256*(256*b*c^3*x^3 - 768*b*c^5*x^5 + 768*b*c^7*x^7 - 256*b*c^9*x^9 - 6*(
a + b*ArcSin[c*x])*Cos[a/b]*CosIntegral[a/b + ArcSin[c*x]] - 24*(a + b*ArcS
in[c*x])*Cos[(3*a)/b]*CosIntegral[3*(a/b + ArcSin[c*x])] + 21*a*Cos[(7*a)/b
]*CosIntegral[7*(a/b + ArcSin[c*x])] + 21*b*ArcSin[c*x]*Cos[(7*a)/b]*CosInt
egral[7*(a/b + ArcSin[c*x])] + 9*a*Cos[(9*a)/b]*CosIntegral[9*(a/b + ArcSin
[c*x])] + 9*b*ArcSin[c*x]*Cos[(9*a)/b]*CosIntegral[9*(a/b + ArcSin[c*x])] -
 6*a*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]] - 6*b*ArcSin[c*x]*Sin[a/b]*Sin
Integral[a/b + ArcSin[c*x]] - 24*a*Sin[(3*a)/b]*SinIntegral[3*(a/b + ArcSin
[c*x])] - 24*b*ArcSin[c*x]*Sin[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c*x])]
+ 21*a*Sin[(7*a)/b]*SinIntegral[7*(a/b + ArcSin[c*x])] + 21*b*ArcSin[c*x]*S
in[(7*a)/b]*SinIntegral[7*(a/b + ArcSin[c*x])] + 9*a*Sin[(9*a)/b]*SinIntegr
al[9*(a/b + ArcSin[c*x])] + 9*b*ArcSin[c*x]*Sin[(9*a)/b]*SinIntegral[9*(a/b
 + ArcSin[c*x])])/(b^2*c^4*(a + b*ArcSin[c*x]))
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\left(c^{4} x^{7}-2 c^{2} x^{5}+x^{3}\right) \sqrt{-c^{2} x^{2}+1}}{b^{2} \arcsin\left(c x\right)^{2}+2 a b \arcsin\left(c x\right)+a^{2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral((c^4*x^7 - 2*c^2*x^5 + x^3)*sqrt(-c^2*x^2 + 1)/(b^2*arcsin(c*x)^2
+ 2*a*b*arcsin(c*x) + a^2), x)
```

giac [B] time = 0.66, size = 2479, normalized size = 8.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] -9*b*arcsin(c*x)*cos(a/b)^9*cos_integral(9*a/b + 9*arcsin(c*x))/(b^3*c^4*ar
csin(c*x) + a*b^2*c^4) - 9*b*arcsin(c*x)*cos(a/b)^8*sin(a/b)*sin_integral(9
*a/b + 9*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - 9*a*cos(a/b)^9*co
s_integral(9*a/b + 9*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - 9*a*c
os(a/b)^8*sin(a/b)*sin_integral(9*a/b + 9*arcsin(c*x))/(b^3*c^4*arcsin(c*x)
 + a*b^2*c^4) + 81/4*b*arcsin(c*x)*cos(a/b)^7*cos_integral(9*a/b + 9*arcsin
(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - 21/4*b*arcsin(c*x)*cos(a/b)^7*co
s_integral(7*a/b + 7*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) + 63/4*
b*arcsin(c*x)*cos(a/b)^6*sin(a/b)*sin_integral(9*a/b + 9*arcsin(c*x))/(b^3*
c^4*arcsin(c*x) + a*b^2*c^4) - 21/4*b*arcsin(c*x)*cos(a/b)^6*sin(a/b)*sin_i
ntegral(7*a/b + 7*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) + 81/4*a*c
os(a/b)^7*cos_integral(9*a/b + 9*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*
c^4) - 21/4*a*cos(a/b)^7*cos_integral(7*a/b + 7*arcsin(c*x))/(b^3*c^4*arcsi
n(c*x) + a*b^2*c^4) + 63/4*a*cos(a/b)^6*sin(a/b)*sin_integral(9*a/b + 9*arc
sin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - 21/4*a*cos(a/b)^6*sin(a/b)*si
n_integral(7*a/b + 7*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - 243/1
6*b*arcsin(c*x)*cos(a/b)^5*cos_integral(9*a/b + 9*arcsin(c*x))/(b^3*c^4*arc
sin(c*x) + a*b^2*c^4) + 147/16*b*arcsin(c*x)*cos(a/b)^5*cos_integral(7*a/b
+ 7*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - 135/16*b*arcsin(c*x)*c
os(a/b)^4*sin(a/b)*sin_integral(9*a/b + 9*arcsin(c*x))/(b^3*c^4*arcsin(c*x)
 + a*b^2*c^4) + 105/16*b*arcsin(c*x)*cos(a/b)^4*sin(a/b)*sin_integral(7*a/b
 + 7*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) + (c^2*x^2 - 1)^4*b*c*x
/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - 243/16*a*cos(a/b)^5*cos_integral(9*a/b
 + 9*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) + 147/16*a*cos(a/b)^5*c
os_integral(7*a/b + 7*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - 135/
16*a*cos(a/b)^4*sin(a/b)*sin_integral(9*a/b + 9*arcsin(c*x))/(b^3*c^4*arcsi
n(c*x) + a*b^2*c^4) + 105/16*a*cos(a/b)^4*sin(a/b)*sin_integral(7*a/b + 7*a
```

```
rcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) + (c^2*x^2 - 1)^3*b*c*x/(b^3*
c^4*arcsin(c*x) + a*b^2*c^4) + 135/32*b*arcsin(c*x)*cos(a/b)^3*cos_integral
(9*a/b + 9*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - 147/32*b*arcsin
(c*x)*cos(a/b)^3*cos_integral(7*a/b + 7*arcsin(c*x))/(b^3*c^4*arcsin(c*x) +
 a*b^2*c^4) + 3/8*b*arcsin(c*x)*cos(a/b)^3*cos_integral(3*a/b + 3*arcsin(c*
x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) + 45/32*b*arcsin(c*x)*cos(a/b)^2*sin(
a/b)*sin_integral(9*a/b + 9*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4)
- 63/32*b*arcsin(c*x)*cos(a/b)^2*sin(a/b)*sin_integral(7*a/b + 7*arcsin(c*x
))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) + 3/8*b*arcsin(c*x)*cos(a/b)^2*sin(a/b
)*sin_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) + 1
35/32*a*cos(a/b)^3*cos_integral(9*a/b + 9*arcsin(c*x))/(b^3*c^4*arcsin(c*x)
 + a*b^2*c^4) - 147/32*a*cos(a/b)^3*cos_integral(7*a/b + 7*arcsin(c*x))/(b^
3*c^4*arcsin(c*x) + a*b^2*c^4) + 3/8*a*cos(a/b)^3*cos_integral(3*a/b + 3*ar
csin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) + 45/32*a*cos(a/b)^2*sin(a/b)*
sin_integral(9*a/b + 9*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - 63/
32*a*cos(a/b)^2*sin(a/b)*sin_integral(7*a/b + 7*arcsin(c*x))/(b^3*c^4*arcsi
n(c*x) + a*b^2*c^4) + 3/8*a*cos(a/b)^2*sin(a/b)*sin_integral(3*a/b + 3*arcs
in(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - 81/256*b*arcsin(c*x)*cos(a/b)*
cos_integral(9*a/b + 9*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) + 147
/256*b*arcsin(c*x)*cos(a/b)*cos_integral(7*a/b + 7*arcsin(c*x))/(b^3*c^4*ar
csin(c*x) + a*b^2*c^4) - 9/32*b*arcsin(c*x)*cos(a/b)*cos_integral(3*a/b + 3
*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) + 3/128*b*arcsin(c*x)*cos(a
/b)*cos_integral(a/b + arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - 9/2
56*b*arcsin(c*x)*sin(a/b)*sin_integral(9*a/b + 9*arcsin(c*x))/(b^3*c^4*arcs
in(c*x) + a*b^2*c^4) + 21/256*b*arcsin(c*x)*sin(a/b)*sin_integral(7*a/b + 7
*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - 3/32*b*arcsin(c*x)*sin(a/
b)*sin_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) +
3/128*b*arcsin(c*x)*sin(a/b)*sin_integral(a/b + arcsin(c*x))/(b^3*c^4*arcsi
n(c*x) + a*b^2*c^4) - 81/256*a*cos(a/b)*cos_integral(9*a/b + 9*arcsin(c*x))
/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) + 147/256*a*cos(a/b)*cos_integral(7*a/b
+ 7*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) - 9/32*a*cos(a/b)*cos_in
tegral(3*a/b + 3*arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) + 3/128*a*c
os(a/b)*cos_integral(a/b + arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) -
 9/256*a*sin(a/b)*sin_integral(9*a/b + 9*arcsin(c*x))/(b^3*c^4*arcsin(c*x)
+ a*b^2*c^4) + 21/256*a*sin(a/b)*sin_integral(7*a/b + 7*arcsin(c*x))/(b^3*c
^4*arcsin(c*x) + a*b^2*c^4) - 3/32*a*sin(a/b)*sin_integral(3*a/b + 3*arcsin
(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4) + 3/128*a*sin(a/b)*sin_integral(a/
b + arcsin(c*x))/(b^3*c^4*arcsin(c*x) + a*b^2*c^4)
```

maple [A] time = 0.11, size = 454, normalized size = 1.63

$$\frac{6 \arcsin(cx) \operatorname{Si}\left(\arcsin(cx) + \frac{a}{b}\right) \sin\left(\frac{a}{b}\right) b + 6 \arcsin(cx) \operatorname{Ci}\left(\arcsin(cx) + \frac{a}{b}\right) \cos\left(\frac{a}{b}\right) b - 9 \arcsin(cx) \operatorname{Si}\left(9 \arcsi\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/256/c^4*(6*arcsin(c*x)*Si(arcsin(c*x)+a/b)*sin(a/b)*b+6*arcsin(c*x)*Ci(ar
csin(c*x)+a/b)*cos(a/b)*b-9*arcsin(c*x)*Si(9*arcsin(c*x)+9*a/b)*sin(9*a/b)*
b-9*arcsin(c*x)*Ci(9*arcsin(c*x)+9*a/b)*cos(9*a/b)*b+24*arcsin(c*x)*Si(3*ar
csin(c*x)+3*a/b)*sin(3*a/b)*b+24*arcsin(c*x)*Ci(3*arcsin(c*x)+3*a/b)*cos(3*
a/b)*b-21*arcsin(c*x)*Si(7*arcsin(c*x)+7*a/b)*sin(7*a/b)*b-21*arcsin(c*x)*C
i(7*arcsin(c*x)+7*a/b)*cos(7*a/b)*b+6*Si(arcsin(c*x)+a/b)*sin(a/b)*a+6*Ci(a
rcsin(c*x)+a/b)*cos(a/b)*a-9*Si(9*arcsin(c*x)+9*a/b)*sin(9*a/b)*a-9*Ci(9*ar
csin(c*x)+9*a/b)*cos(9*a/b)*a+24*Si(3*arcsin(c*x)+3*a/b)*sin(3*a/b)*a+24*Ci
(3*arcsin(c*x)+3*a/b)*cos(3*a/b)*a-21*Si(7*arcsin(c*x)+7*a/b)*sin(7*a/b)*a-
21*Ci(7*arcsin(c*x)+7*a/b)*cos(7*a/b)*a-6*x*b*c+sin(9*arcsin(c*x))*b-8*sin(
3*arcsin(c*x))*b+3*sin(7*arcsin(c*x))*b)/(a+b*arcsin(c*x))/b^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{c^6x^9 - 3\,c^4x^7 + 3\,c^2x^5 - x^3 - 3\left(b^2c\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right) + abc\right)\int \frac{3\,c^6x^8 - 7\,c^4x^6 + 5\,c^2x^4 - x^2}{b^2c\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right) + abc}\,dx}{b^2c\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right) + abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] (c^6*x^9 - 3*c^4*x^7 + 3*c^2*x^5 - x^3 - (b^2*c*arctan2(c*x, sqrt(c*x + 1)*
sqrt(-c*x + 1)) + a*b*c)*integrate(3*(3*c^6*x^8 - 7*c^4*x^6 + 5*c^2*x^4 - x
^2)/(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c), x))/(b^2*c*
arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\left(1-c^2x^2\right)^{5/2}}{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(1 - c^2*x^2)^(5/2))/(a + b*asin(c*x))^2,x)
```

```
[Out] int((x^3*(1 - c^2*x^2)^(5/2))/(a + b*asin(c*x))^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}}{\left(a+b\,\mathrm{asin}\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(-c**2*x**2+1)**(5/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(x**3*(-(c*x - 1)*(c*x + 1))**(5/2)/(a + b*asin(c*x))**2, x)
```

3.400 $\int \frac{x^2(1-c^2x^2)^{5/2}}{(a+b\sin^{-1}(cx))^2}\,dx$

Optimal. Leaf size=282

$$\frac{\sin\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2(a+b\sin^{-1}(cx))}{b}\right)}{16b^2c^3}-\frac{\sin\left(\frac{4a}{b}\right)\text{Ci}\left(\frac{4(a+b\sin^{-1}(cx))}{b}\right)}{8b^2c^3}-\frac{3\sin\left(\frac{6a}{b}\right)\text{Ci}\left(\frac{6(a+b\sin^{-1}(cx))}{b}\right)}{16b^2c^3}-\frac{\sin\left(\frac{8a}{b}\right)\text{Ci}\left(\frac{8(a+b\sin^{-1}(cx))}{b}\right)}{16b^2c^3}$$

```
[Out] -x^2*(-c^2*x^2+1)^3/b/c/(a+b*arcsin(c*x))-1/16*cos(2*a/b)*Si(2*(a+b*arcsin(
c*x))/b)/b^2/c^3+1/8*cos(4*a/b)*Si(4*(a+b*arcsin(c*x))/b)/b^2/c^3+3/16*cos(
6*a/b)*Si(6*(a+b*arcsin(c*x))/b)/b^2/c^3+1/16*cos(8*a/b)*Si(8*(a+b*arcsin(c
*x))/b)/b^2/c^3+1/16*Ci(2*(a+b*arcsin(c*x))/b)*sin(2*a/b)/b^2/c^3-1/8*Ci(4*
(a+b*arcsin(c*x))/b)*sin(4*a/b)/b^2/c^3-3/16*Ci(6*(a+b*arcsin(c*x))/b)*sin(
6*a/b)/b^2/c^3-1/16*Ci(8*(a+b*arcsin(c*x))/b)*sin(8*a/b)/b^2/c^3
```

Rubi [A] time = 0.93, antiderivative size = 282, normalized size of antiderivative = 1.00, number of steps used = 28, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {4721, 4723, 4406, 3303, 3299, 3302}

$$\frac{\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{16b^2c^3}-\frac{\sin\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)}{8b^2c^3}-\frac{3\sin\left(\frac{6a}{b}\right)\text{CosIntegral}\left(\frac{6a}{b}+\right.}{16b^2c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(1 - c^2*x^2)^(5/2))/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -((x^2*(1 - c^2*x^2)^3)/(b*c*(a + b*ArcSin[c*x]))) + (CosIntegral[(2*a)/b +
 2*ArcSin[c*x]]*Sin[(2*a)/b])/(16*b^2*c^3) - (CosIntegral[(4*a)/b + 4*ArcSi
n[c*x]]*Sin[(4*a)/b])/(8*b^2*c^3) - (3*CosIntegral[(6*a)/b + 6*ArcSin[c*x]]
*Sin[(6*a)/b])/(16*b^2*c^3) - (CosIntegral[(8*a)/b + 8*ArcSin[c*x]]*Sin[(8*
a)/b])/(16*b^2*c^3) - (Cos[(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c*x]])/(
16*b^2*c^3) + (Cos[(4*a)/b]*SinIntegral[(4*a)/b + 4*ArcSin[c*x]])/(8*b^2*c^
3) + (3*Cos[(6*a)/b]*SinIntegral[(6*a)/b + 6*ArcSin[c*x]])/(16*b^2*c^3) + (
Cos[(8*a)/b]*SinIntegral[(8*a)/b + 8*ArcSin[c*x]])/(16*b^2*c^3)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
```

```
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^m*Sqrt[1 - c^2*x^2]*(d + e*x^2)^p
*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (-Dist[(f*m*d^IntPart[p]*
(d + e*x^2)^FracPart[p])/(b*c*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1), x], x] + Dist
[(c*(m + 2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(b*f*(n + 1)*(1 - c
^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcS
in[c*x])^(n + 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e,
 0] && LtQ[n, -1] && IGtQ[m, -3] && IGtQ[2*p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x^2\left(1-c^2x^2\right)^{5/2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx = -\frac{x^2\left(1-c^2x^2\right)^3}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{2\int \frac{x\left(1-c^2x^2\right)^2}{a+b\sin^{-1}(cx)}\,dx}{bc}-\frac{(8c)\int \frac{x^3\left(1-c^2x^2\right)^2}{a+b\sin^{-1}(cx)}\,dx}{b}$$

$$= -\frac{x^2\left(1-c^2x^2\right)^3}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{2\,\text{Subst}\left(\int \frac{\cos^5(x)\sin(x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{bc^3}-\frac{8\,\text{Subst}\left(\int \frac{\cos^5(x}{a}\right.}{}$$

$$= -\frac{x^2\left(1-c^2x^2\right)^3}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{2\,\text{Subst}\left(\int \left(\frac{5\sin(2x)}{32(a+bx)}+\frac{\sin(4x)}{8(a+bx)}+\frac{\sin(6x)}{32(a+bx)}\right)dx,x,\sin^{-1}(cx)\right)}{bc^3}$$

$$= -\frac{x^2\left(1-c^2x^2\right)^3}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{\text{Subst}\left(\int \frac{\sin(6x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{16bc^3}+\frac{\text{Subst}\left(\int \frac{\sin(8x)}{a+bx}\,dx,x,s\right.}{16bc^3}$$

$$= -\frac{x^2\left(1-c^2x^2\right)^3}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{\left(5\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{16bc^3}-\frac{\left(3\cos\right.}{}$$

$$= -\frac{x^2\left(1-c^2x^2\right)^3}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{\text{Ci}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)\sin\left(\frac{2a}{b}\right)}{16b^2c^3}-\frac{\text{Ci}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)\sin\left(\right.}{8b^2c^3}$$

Mathematica [A] time = 1.22, size = 414, normalized size = 1.47

$$\frac{\sin\left(\frac{2a}{b}\right)\left(a+b\sin^{-1}(cx)\right)\text{Ci}\left(2\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)-2\sin\left(\frac{4a}{b}\right)\left(a+b\sin^{-1}(cx)\right)\text{Ci}\left(4\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)-3a\sin\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(1 - c^2*x^2)^(5/2))/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (-16*b*c^2*x^2 + 48*b*c^4*x^4 - 48*b*c^6*x^6 + 16*b*c^8*x^8 + (a + b*ArcSin
[c*x])*CosIntegral[2*(a/b + ArcSin[c*x])]*Sin[(2*a)/b] - 2*(a + b*ArcSin[c*
x])*CosIntegral[4*(a/b + ArcSin[c*x])]*Sin[(4*a)/b] - 3*a*CosIntegral[6*(a/
b + ArcSin[c*x])]*Sin[(6*a)/b] - 3*b*ArcSin[c*x]*CosIntegral[6*(a/b + ArcSi
n[c*x])]*Sin[(6*a)/b] - a*CosIntegral[8*(a/b + ArcSin[c*x])]*Sin[(8*a)/b] -
 b*ArcSin[c*x]*CosIntegral[8*(a/b + ArcSin[c*x])]*Sin[(8*a)/b] - a*Cos[(2*a
)/b]*SinIntegral[2*(a/b + ArcSin[c*x])] - b*ArcSin[c*x]*Cos[(2*a)/b]*SinInt
egral[2*(a/b + ArcSin[c*x])] + 2*a*Cos[(4*a)/b]*SinIntegral[4*(a/b + ArcSin
[c*x])] + 2*b*ArcSin[c*x]*Cos[(4*a)/b]*SinIntegral[4*(a/b + ArcSin[c*x])] +
 3*a*Cos[(6*a)/b]*SinIntegral[6*(a/b + ArcSin[c*x])] + 3*b*ArcSin[c*x]*Cos[
(6*a)/b]*SinIntegral[6*(a/b + ArcSin[c*x])] + a*Cos[(8*a)/b]*SinIntegral[8*
(a/b + ArcSin[c*x])] + b*ArcSin[c*x]*Cos[(8*a)/b]*SinIntegral[8*(a/b + ArcS
in[c*x])])/(16*b^2*c^3*(a + b*ArcSin[c*x]))
```

fricas [F] time = 0.40, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(c^4x^6 - 2\,c^2x^4 + x^2\right)\sqrt{-c^2x^2+1}}{b^2\arcsin\left(cx\right)^2 + 2\,ab\arcsin\left(cx\right) + a^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral((c^4*x^6 - 2*c^2*x^4 + x^2)*sqrt(-c^2*x^2 + 1)/(b^2*arcsin(c*x)^2
+ 2*a*b*arcsin(c*x) + a^2), x)
```

giac [B] time = 0.69, size = 2461, normalized size = 8.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] -8*b*arcsin(c*x)*cos(a/b)^7*cos_integral(8*a/b + 8*arcsin(c*x))*sin(a/b)/(b
^3*c^3*arcsin(c*x) + a*b^2*c^3) + 8*b*arcsin(c*x)*cos(a/b)^8*sin_integral(8
*a/b + 8*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 8*a*cos(a/b)^7*co
s_integral(8*a/b + 8*arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3
) + 8*a*cos(a/b)^8*sin_integral(8*a/b + 8*arcsin(c*x))/(b^3*c^3*arcsin(c*x)
 + a*b^2*c^3) + 12*b*arcsin(c*x)*cos(a/b)^5*cos_integral(8*a/b + 8*arcsin(c
*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 6*b*arcsin(c*x)*cos(a/b)^
5*cos_integral(6*a/b + 6*arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2
*c^3) - 16*b*arcsin(c*x)*cos(a/b)^6*sin_integral(8*a/b + 8*arcsin(c*x))/(b^
3*c^3*arcsin(c*x) + a*b^2*c^3) + 6*b*arcsin(c*x)*cos(a/b)^6*sin_integral(6*
a/b + 6*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 12*a*cos(a/b)^5*co
s_integral(8*a/b + 8*arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3
) - 6*a*cos(a/b)^5*cos_integral(6*a/b + 6*arcsin(c*x))*sin(a/b)/(b^3*c^3*ar
csin(c*x) + a*b^2*c^3) - 16*a*cos(a/b)^6*sin_integral(8*a/b + 8*arcsin(c*x)
)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 6*a*cos(a/b)^6*sin_integral(6*a/b + 6
*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 5*b*arcsin(c*x)*cos(a/b)^
3*cos_integral(8*a/b + 8*arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2
*c^3) + 6*b*arcsin(c*x)*cos(a/b)^3*cos_integral(6*a/b + 6*arcsin(c*x))*sin(
a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - b*arcsin(c*x)*cos(a/b)^3*cos_integ
ral(4*a/b + 4*arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 10*
b*arcsin(c*x)*cos(a/b)^4*sin_integral(8*a/b + 8*arcsin(c*x))/(b^3*c^3*arcsi
n(c*x) + a*b^2*c^3) - 9*b*arcsin(c*x)*cos(a/b)^4*sin_integral(6*a/b + 6*arc
sin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + b*arcsin(c*x)*cos(a/b)^4*sin_
integral(4*a/b + 4*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 5*a*cos
(a/b)^3*cos_integral(8*a/b + 8*arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) +
 a*b^2*c^3) + 6*a*cos(a/b)^3*cos_integral(6*a/b + 6*arcsin(c*x))*sin(a/b)/(
b^3*c^3*arcsin(c*x) + a*b^2*c^3) - a*cos(a/b)^3*cos_integral(4*a/b + 4*arcs
```

```
in(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 10*a*cos(a/b)^4*sin_i
ntegral(8*a/b + 8*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 9*a*cos(
a/b)^4*sin_integral(6*a/b + 6*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3
) + a*cos(a/b)^4*sin_integral(4*a/b + 4*arcsin(c*x))/(b^3*c^3*arcsin(c*x) +
 a*b^2*c^3) + (c^2*x^2 - 1)^4*b/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 1/2*b*a
rcsin(c*x)*cos(a/b)*cos_integral(8*a/b + 8*arcsin(c*x))*sin(a/b)/(b^3*c^3*a
rcsin(c*x) + a*b^2*c^3) - 9/8*b*arcsin(c*x)*cos(a/b)*cos_integral(6*a/b + 6
*arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 1/2*b*arcsin(c*x
)*cos(a/b)*cos_integral(4*a/b + 4*arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x
) + a*b^2*c^3) + 1/8*b*arcsin(c*x)*cos(a/b)*cos_integral(2*a/b + 2*arcsin(c
*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 2*b*arcsin(c*x)*cos(a/b)^
2*sin_integral(8*a/b + 8*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 2
7/8*b*arcsin(c*x)*cos(a/b)^2*sin_integral(6*a/b + 6*arcsin(c*x))/(b^3*c^3*a
rcsin(c*x) + a*b^2*c^3) - b*arcsin(c*x)*cos(a/b)^2*sin_integral(4*a/b + 4*a
rcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 1/8*b*arcsin(c*x)*cos(a/b)^
2*sin_integral(2*a/b + 2*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + (
c^2*x^2 - 1)^3*b/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 1/2*a*cos(a/b)*cos_int
egral(8*a/b + 8*arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 9
/8*a*cos(a/b)*cos_integral(6*a/b + 6*arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(
c*x) + a*b^2*c^3) + 1/2*a*cos(a/b)*cos_integral(4*a/b + 4*arcsin(c*x))*sin(
a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 1/8*a*cos(a/b)*cos_integral(2*a/b
+ 2*arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 2*a*cos(a/b)^
2*sin_integral(8*a/b + 8*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 2
7/8*a*cos(a/b)^2*sin_integral(6*a/b + 6*arcsin(c*x))/(b^3*c^3*arcsin(c*x) +
 a*b^2*c^3) - a*cos(a/b)^2*sin_integral(4*a/b + 4*arcsin(c*x))/(b^3*c^3*arc
sin(c*x) + a*b^2*c^3) - 1/8*a*cos(a/b)^2*sin_integral(2*a/b + 2*arcsin(c*x)
)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 1/16*b*arcsin(c*x)*sin_integral(8*a/b
 + 8*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 3/16*b*arcsin(c*x)*si
n_integral(6*a/b + 6*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 1/8*b
*arcsin(c*x)*sin_integral(4*a/b + 4*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b
^2*c^3) + 1/16*b*arcsin(c*x)*sin_integral(2*a/b + 2*arcsin(c*x))/(b^3*c^3*a
rcsin(c*x) + a*b^2*c^3) + 1/16*a*sin_integral(8*a/b + 8*arcsin(c*x))/(b^3*c
^3*arcsin(c*x) + a*b^2*c^3) - 3/16*a*sin_integral(6*a/b + 6*arcsin(c*x))/(b
^3*c^3*arcsin(c*x) + a*b^2*c^3) + 1/8*a*sin_integral(4*a/b + 4*arcsin(c*x))
/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 1/16*a*sin_integral(2*a/b + 2*arcsin(c
*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3)
```

maple [A] time = 0.09, size = 478, normalized size = 1.70

$$16 \arcsin(cx) \operatorname{Si}\left(4 \arcsin(cx) + \frac{4a}{b}\right) \cos\left(\frac{4a}{b}\right) b - 16 \arcsin(cx) \operatorname{Ci}\left(4 \arcsin(cx) + \frac{4a}{b}\right) \sin\left(\frac{4a}{b}\right) b + 8 \arcsin(c$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/128/c^3*(16*arcsin(c*x)*Si(4*arcsin(c*x)+4*a/b)*cos(4*a/b)*b-16*arcsin(c*
x)*Ci(4*arcsin(c*x)+4*a/b)*sin(4*a/b)*b+8*arcsin(c*x)*Si(8*arcsin(c*x)+8*a/
b)*cos(8*a/b)*b-8*arcsin(c*x)*Ci(8*arcsin(c*x)+8*a/b)*sin(8*a/b)*b-8*Si(2*a
rcsin(c*x)+2*a/b)*cos(2*a/b)*arcsin(c*x)*b+8*Ci(2*arcsin(c*x)+2*a/b)*sin(2*
a/b)*arcsin(c*x)*b+24*arcsin(c*x)*Si(6*arcsin(c*x)+6*a/b)*cos(6*a/b)*b-24*a
rcsin(c*x)*Ci(6*arcsin(c*x)+6*a/b)*sin(6*a/b)*b+16*Si(4*arcsin(c*x)+4*a/b)*
cos(4*a/b)*a-16*Ci(4*arcsin(c*x)+4*a/b)*sin(4*a/b)*a+8*Si(8*arcsin(c*x)+8*a
/b)*cos(8*a/b)*a-8*Ci(8*arcsin(c*x)+8*a/b)*sin(8*a/b)*a-8*Si(2*arcsin(c*x)+
2*a/b)*cos(2*a/b)*a+8*Ci(2*arcsin(c*x)+2*a/b)*sin(2*a/b)*a+24*Si(6*arcsin(c
*x)+6*a/b)*cos(6*a/b)*a-24*Ci(6*arcsin(c*x)+6*a/b)*sin(6*a/b)*a+4*cos(4*arc
sin(c*x))*b+cos(8*arcsin(c*x))*b-4*cos(2*arcsin(c*x))*b+4*cos(6*arcsin(c*x)
)*b-5*b)/(a+b*arcsin(c*x))/b^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{c^6x^8 - 3\,c^4x^6 + 3\,c^2x^4 - x^2 - 2\left(b^2c\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right) + abc\right)\int \frac{4\,c^6x^7 - 9\,c^4x^5 + 6\,c^2x^3 - x}{b^2c\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right) + abc}\,dx}{b^2c\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right) + abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] (c^6*x^8 - 3*c^4*x^6 + 3*c^2*x^4 - x^2 - (b^2*c*arctan2(c*x, sqrt(c*x + 1)*
sqrt(-c*x + 1)) + a*b*c)*integrate(2*(4*c^6*x^7 - 9*c^4*x^5 + 6*c^2*x^3 - x
)/(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c), x))/(b^2*c*ar
ctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2\left(1 - c^2\,x^2\right)^{5/2}}{\left(a + b\,\mathrm{asin}\left(c\,x\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(1 - c^2*x^2)^(5/2))/(a + b*asin(c*x))^2,x)
```

```
[Out] int((x^2*(1 - c^2*x^2)^(5/2))/(a + b*asin(c*x))^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}}{\left(a + b\,\mathrm{asin}\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(-c**2*x**2+1)**(5/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(x**2*(-(c*x - 1)*(c*x + 1))**(5/2)/(a + b*asin(c*x))**2, x)
```

3.401 $\int \frac{x(1-c^2x^2)^{5/2}}{(a+b\sin^{-1}(cx))^2}\,dx$

Optimal. Leaf size=276

$$\frac{5\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{64b^2c^2}+\frac{27\cos\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{64b^2c^2}+\frac{25\cos\left(\frac{5a}{b}\right)\text{Ci}\left(\frac{5\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{64b^2c^2}+\frac{7\cos\left(\frac{7a}{b}\right)\text{Ci}\left(\frac{7(a+}{}\right.}{64b^2c^2}$$

```
[Out] -x*(-c^2*x^2+1)^3/b/c/(a+b*arcsin(c*x))+5/64*Ci((a+b*arcsin(c*x))/b)*cos(a/
b)/b^2/c^2+27/64*Ci(3*(a+b*arcsin(c*x))/b)*cos(3*a/b)/b^2/c^2+25/64*Ci(5*(a
+b*arcsin(c*x))/b)*cos(5*a/b)/b^2/c^2+7/64*Ci(7*(a+b*arcsin(c*x))/b)*cos(7*
a/b)/b^2/c^2+5/64*Si((a+b*arcsin(c*x))/b)*sin(a/b)/b^2/c^2+27/64*Si(3*(a+b*
arcsin(c*x))/b)*sin(3*a/b)/b^2/c^2+25/64*Si(5*(a+b*arcsin(c*x))/b)*sin(5*a/
b)/b^2/c^2+7/64*Si(7*(a+b*arcsin(c*x))/b)*sin(7*a/b)/b^2/c^2
```

Rubi [A] time = 0.87, antiderivative size = 272, normalized size of antiderivative = 0.99, number of steps used = 28, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {4721, 4661, 3312, 3303, 3299, 3302, 4723, 4406}

$$\frac{5\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{64b^2c^2}+\frac{27\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)}{64b^2c^2}+\frac{25\cos\left(\frac{5a}{b}\right)\text{CosIntegral}}{64b^2c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(1 - c^2*x^2)^(5/2))/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -((x*(1 - c^2*x^2)^3)/(b*c*(a + b*ArcSin[c*x]))) + (5*Cos[a/b]*CosIntegral[
a/b + ArcSin[c*x]])/(64*b^2*c^2) + (27*Cos[(3*a)/b]*CosIntegral[(3*a)/b + 3
*ArcSin[c*x]])/(64*b^2*c^2) + (25*Cos[(5*a)/b]*CosIntegral[(5*a)/b + 5*ArcS
in[c*x]])/(64*b^2*c^2) + (7*Cos[(7*a)/b]*CosIntegral[(7*a)/b + 7*ArcSin[c*x
]])/(64*b^2*c^2) + (5*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(64*b^2*c^2)
 + (27*Sin[(3*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c*x]])/(64*b^2*c^2) + (2
5*Sin[(5*a)/b]*SinIntegral[(5*a)/b + 5*ArcSin[c*x]])/(64*b^2*c^2) + (7*Sin[
(7*a)/b]*SinIntegral[(7*a)/b + 7*ArcSin[c*x]])/(64*b^2*c^2)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
```

```
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4661

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[d^p/c, Subst[Int[(a + b*x)^n*Cos[x]^(2*p + 1), x], x, ArcS
in[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IGtQ[2
*p, 0] && (IntegerQ[p] || GtQ[d, 0])
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^m*Sqrt[1 - c^2*x^2]*(d + e*x^2)^p
*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (-Dist[(f*m*d^IntPart[p]*
(d + e*x^2)^FracPart[p])/(b*c*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1), x], x] + Dist
[(c*(m + 2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(b*f*(n + 1)*(1 - c
^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcS
in[c*x])^(n + 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e,
 0] && LtQ[n, -1] && IGtQ[m, -3] && IGtQ[2*p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x\left(1-c^2x^2\right)^{5/2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx = -\frac{x\left(1-c^2x^2\right)^3}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{\int \frac{\left(1-c^2x^2\right)^2}{a+b\sin^{-1}(cx)}\,dx}{bc} - \frac{(7c)\int \frac{x^2\left(1-c^2x^2\right)^2}{a+b\sin^{-1}(cx)}\,dx}{b}$$

$$= -\frac{x\left(1-c^2x^2\right)^3}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{\text{Subst}\left(\int \frac{\cos^5(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{bc^2} - \frac{7\,\text{Subst}\left(\int \frac{\cos^5(x)\sin^2(x)}{a+bx}\right.}{bc^2}$$

$$= -\frac{x\left(1-c^2x^2\right)^3}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{\text{Subst}\left(\int \left(\frac{5\cos(x)}{8(a+bx)} + \frac{5\cos(3x)}{16(a+bx)} + \frac{\cos(5x)}{16(a+bx)}\right)dx, x, \sin^{-1}(cx)\right)}{bc^2} -$$

$$= -\frac{x\left(1-c^2x^2\right)^3}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{\text{Subst}\left(\int \frac{\cos(5x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{16bc^2} + \frac{7\,\text{Subst}\left(\int \frac{\cos(3x)}{a+bx}\,dx, x\right.}{64bc^2}$$

$$= -\frac{x\left(1-c^2x^2\right)^3}{bc\left(a+b\sin^{-1}(cx)\right)} - \frac{\left(35\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+x\right)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{64bc^2} + \frac{\left(5\cos\left(\right.\right.}{}$$

$$= -\frac{x\left(1-c^2x^2\right)^3}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{5\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{64b^2c^2} + \frac{27\cos\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3a}{b}+3\sin^{-1}\right.}{64b^2c^2}$$

Mathematica [A] time = 1.09, size = 404, normalized size = 1.46

$$\frac{5\cos\left(\frac{a}{b}\right)\left(a+b\sin^{-1}(cx)\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right) + 27\cos\left(\frac{3a}{b}\right)\left(a+b\sin^{-1}(cx)\right)\text{Ci}\left(3\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right) + 25a\cos}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(1 - c^2*x^2)^(5/2))/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (-64*b*c*x + 192*b*c^3*x^3 - 192*b*c^5*x^5 + 64*b*c^7*x^7 + 5*(a + b*ArcSin
[c*x])*Cos[a/b]*CosIntegral[a/b + ArcSin[c*x]] + 27*(a + b*ArcSin[c*x])*Cos
[(3*a)/b]*CosIntegral[3*(a/b + ArcSin[c*x])] + 25*a*Cos[(5*a)/b]*CosIntegra
l[5*(a/b + ArcSin[c*x])] + 25*b*ArcSin[c*x]*Cos[(5*a)/b]*CosIntegral[5*(a/b
 + ArcSin[c*x])] + 7*a*Cos[(7*a)/b]*CosIntegral[7*(a/b + ArcSin[c*x])] + 7*
b*ArcSin[c*x]*Cos[(7*a)/b]*CosIntegral[7*(a/b + ArcSin[c*x])] + 5*a*Sin[a/b
]*SinIntegral[a/b + ArcSin[c*x]] + 5*b*ArcSin[c*x]*Sin[a/b]*SinIntegral[a/b
 + ArcSin[c*x]] + 27*a*Sin[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c*x])] + 27
*b*ArcSin[c*x]*Sin[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c*x])] + 25*a*Sin[(
5*a)/b]*SinIntegral[5*(a/b + ArcSin[c*x])] + 25*b*ArcSin[c*x]*Sin[(5*a)/b]*
SinIntegral[5*(a/b + ArcSin[c*x])] + 7*a*Sin[(7*a)/b]*SinIntegral[7*(a/b +
ArcSin[c*x])] + 7*b*ArcSin[c*x]*Sin[(7*a)/b]*SinIntegral[7*(a/b + ArcSin[c*
x])])/(64*b^2*c^2*(a + b*ArcSin[c*x]))
```

fricas [F] time = 0.41, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(c^4x^5 - 2\,c^2x^3 + x\right)\sqrt{-c^2x^2+1}}{b^2\arcsin(cx)^2 + 2\,ab\arcsin(cx) + a^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral((c^4*x^5 - 2*c^2*x^3 + x)*sqrt(-c^2*x^2 + 1)/(b^2*arcsin(c*x)^2 +
2*a*b*arcsin(c*x) + a^2), x)
```

giac [B] time = 1.27, size = 2026, normalized size = 7.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] 7*b*arcsin(c*x)*cos(a/b)^7*cos_integral(7*a/b + 7*arcsin(c*x))/(b^3*c^2*arc
sin(c*x) + a*b^2*c^2) + 7*b*arcsin(c*x)*cos(a/b)^6*sin(a/b)*sin_integral(7*
a/b + 7*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 7*a*cos(a/b)^7*cos
_integral(7*a/b + 7*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 7*a*co
s(a/b)^6*sin(a/b)*sin_integral(7*a/b + 7*arcsin(c*x))/(b^3*c^2*arcsin(c*x)
+ a*b^2*c^2) - 49/4*b*arcsin(c*x)*cos(a/b)^5*cos_integral(7*a/b + 7*arcsin(
c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 25/4*b*arcsin(c*x)*cos(a/b)^5*cos
_integral(5*a/b + 5*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) - 35/4*b
*arcsin(c*x)*cos(a/b)^4*sin(a/b)*sin_integral(7*a/b + 7*arcsin(c*x))/(b^3*c
^2*arcsin(c*x) + a*b^2*c^2) + 25/4*b*arcsin(c*x)*cos(a/b)^4*sin(a/b)*sin_in
tegral(5*a/b + 5*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) - 49/4*a*co
s(a/b)^5*cos_integral(7*a/b + 7*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c
^2) + 25/4*a*cos(a/b)^5*cos_integral(5*a/b + 5*arcsin(c*x))/(b^3*c^2*arcsin
(c*x) + a*b^2*c^2) - 35/4*a*cos(a/b)^4*sin(a/b)*sin_integral(7*a/b + 7*arcs
in(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 25/4*a*cos(a/b)^4*sin(a/b)*sin
_integral(5*a/b + 5*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + (c^2*x
^2 - 1)^3*b*c*x/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 49/8*b*arcsin(c*x)*cos(
a/b)^3*cos_integral(7*a/b + 7*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2
) - 125/16*b*arcsin(c*x)*cos(a/b)^3*cos_integral(5*a/b + 5*arcsin(c*x))/(b^
3*c^2*arcsin(c*x) + a*b^2*c^2) + 27/16*b*arcsin(c*x)*cos(a/b)^3*cos_integra
l(3*a/b + 3*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 21/8*b*arcsin(
c*x)*cos(a/b)^2*sin(a/b)*sin_integral(7*a/b + 7*arcsin(c*x))/(b^3*c^2*arcsi
n(c*x) + a*b^2*c^2) - 75/16*b*arcsin(c*x)*cos(a/b)^2*sin(a/b)*sin_integral(
5*a/b + 5*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 27/16*b*arcsin(c
*x)*cos(a/b)^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^2*arcsin
(c*x) + a*b^2*c^2) + 49/8*a*cos(a/b)^3*cos_integral(7*a/b + 7*arcsin(c*x))/
(b^3*c^2*arcsin(c*x) + a*b^2*c^2) - 125/16*a*cos(a/b)^3*cos_integral(5*a/b
+ 5*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 27/16*a*cos(a/b)^3*cos
_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 21/8*a
*cos(a/b)^2*sin(a/b)*sin_integral(7*a/b + 7*arcsin(c*x))/(b^3*c^2*arcsin(c*
x) + a*b^2*c^2) - 75/16*a*cos(a/b)^2*sin(a/b)*sin_integral(5*a/b + 5*arcsin
(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 27/16*a*cos(a/b)^2*sin(a/b)*sin_
integral(3*a/b + 3*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) - 49/64*b
*arcsin(c*x)*cos(a/b)*cos_integral(7*a/b + 7*arcsin(c*x))/(b^3*c^2*arcsin(c
*x) + a*b^2*c^2) + 125/64*b*arcsin(c*x)*cos(a/b)*cos_integral(5*a/b + 5*arc
sin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) - 81/64*b*arcsin(c*x)*cos(a/b)*
cos_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 5/6
4*b*arcsin(c*x)*cos(a/b)*cos_integral(a/b + arcsin(c*x))/(b^3*c^2*arcsin(c*
x) + a*b^2*c^2) - 7/64*b*arcsin(c*x)*sin(a/b)*sin_integral(7*a/b + 7*arcsin
(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 25/64*b*arcsin(c*x)*sin(a/b)*sin
_integral(5*a/b + 5*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) - 27/64*
b*arcsin(c*x)*sin(a/b)*sin_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^2*arcsin(
c*x) + a*b^2*c^2) + 5/64*b*arcsin(c*x)*sin(a/b)*sin_integral(a/b + arcsin(c
*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) - 49/64*a*cos(a/b)*cos_integral(7*a/
b + 7*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 125/64*a*cos(a/b)*co
s_integral(5*a/b + 5*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) - 81/64
*a*cos(a/b)*cos_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^
2*c^2) + 5/64*a*cos(a/b)*cos_integral(a/b + arcsin(c*x))/(b^3*c^2*arcsin(c*
x) + a*b^2*c^2) - 7/64*a*sin(a/b)*sin_integral(7*a/b + 7*arcsin(c*x))/(b^3*
c^2*arcsin(c*x) + a*b^2*c^2) + 25/64*a*sin(a/b)*sin_integral(5*a/b + 5*arcs
in(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) - 27/64*a*sin(a/b)*sin_integral(
3*a/b + 3*arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + 5/64*a*sin(a/b)*
sin_integral(a/b + arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2)
```

maple [A] time = 0.11, size = 455, normalized size = 1.65

$$\frac{27\arcsin(cx)\,\mathrm{Si}\left(3\arcsin(cx)+\frac{3a}{b}\right)\sin\left(\frac{3a}{b}\right)b+27\arcsin(cx)\,\mathrm{Ci}\left(3\arcsin(cx)+\frac{3a}{b}\right)\cos\left(\frac{3a}{b}\right)b+5\arcsin(c}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/64/c^2*(27*arcsin(c*x)*Si(3*arcsin(c*x)+3*a/b)*sin(3*a/b)*b+27*arcsin(c*x
)*Ci(3*arcsin(c*x)+3*a/b)*cos(3*a/b)*b+5*arcsin(c*x)*Si(arcsin(c*x)+a/b)*si
n(a/b)*b+5*arcsin(c*x)*Ci(arcsin(c*x)+a/b)*cos(a/b)*b+7*arcsin(c*x)*Si(7*ar
csin(c*x)+7*a/b)*sin(7*a/b)*b+7*arcsin(c*x)*Ci(7*arcsin(c*x)+7*a/b)*cos(7*a
/b)*b+25*arcsin(c*x)*Si(5*arcsin(c*x)+5*a/b)*sin(5*a/b)*b+25*arcsin(c*x)*Ci
(5*arcsin(c*x)+5*a/b)*cos(5*a/b)*b+27*Si(3*arcsin(c*x)+3*a/b)*sin(3*a/b)*a+
27*Ci(3*arcsin(c*x)+3*a/b)*cos(3*a/b)*a+5*Si(arcsin(c*x)+a/b)*sin(a/b)*a+5*
Ci(arcsin(c*x)+a/b)*cos(a/b)*a+7*Si(7*arcsin(c*x)+7*a/b)*sin(7*a/b)*a+7*Ci(
7*arcsin(c*x)+7*a/b)*cos(7*a/b)*a+25*Si(5*arcsin(c*x)+5*a/b)*sin(5*a/b)*a+2
5*Ci(5*arcsin(c*x)+5*a/b)*cos(5*a/b)*a-5*x*b*c-9*sin(3*arcsin(c*x))*b-sin(7
*arcsin(c*x))*b-5*sin(5*arcsin(c*x))*b)/(a+b*arcsin(c*x))/b^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{c^6x^7-3\,c^4x^5+3\,c^2x^3-x-\frac{\left(7\,c^6\int\frac{x^6}{b\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+a}\,dx-15\,c^4\int\frac{x^4}{b\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+a}\,dx+9\,c^2\int\frac{x^2}{b\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right.}}{bc}}{b^2c\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] (c^6*x^7 - 3*c^4*x^5 + 3*c^2*x^3 - (b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-
c*x + 1)) + a*b*c)*integrate((7*c^6*x^6 - 15*c^4*x^4 + 9*c^2*x^2 - 1)/(b^2*
c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c), x) - x)/(b^2*c*arcta
n2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x\,{\left(1-c^2\,x^2\right)}^{5/2}}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(1 - c^2*x^2)^(5/2))/(a + b*asin(c*x))^2,x)
```

```
[Out] int((x*(1 - c^2*x^2)^(5/2))/(a + b*asin(c*x))^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x \left(- \left(c x - 1\right) \left(c x + 1\right)\right)^{\frac{5}{2}}}{\left(a + b \operatorname{asin}{\left(c x \right)}\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c**2*x**2+1)**(5/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(x*(-(c*x - 1)*(c*x + 1))**(5/2)/(a + b*asin(c*x))**2, x)
```

3.402 $\int \frac{\left(1-c^2x^2\right)^{5/2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=217

$$\frac{15\sin\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{16b^2c}+\frac{3\sin\left(\frac{4a}{b}\right)\text{Ci}\left(\frac{4\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{4b^2c}+\frac{3\sin\left(\frac{6a}{b}\right)\text{Ci}\left(\frac{6\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{16b^2c}-\frac{15\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2\left(a+b\right.}{}\right.}{16b^2c}$$

```
[Out] -(-c^2*x^2+1)^3/b/c/(a+b*arcsin(c*x))-15/16*cos(2*a/b)*Si(2*(a+b*arcsin(c*x
))/b)/b^2/c-3/4*cos(4*a/b)*Si(4*(a+b*arcsin(c*x))/b)/b^2/c-3/16*cos(6*a/b)*
Si(6*(a+b*arcsin(c*x))/b)/b^2/c+15/16*Ci(2*(a+b*arcsin(c*x))/b)*sin(2*a/b)/
b^2/c+3/4*Ci(4*(a+b*arcsin(c*x))/b)*sin(4*a/b)/b^2/c+3/16*Ci(6*(a+b*arcsin(
c*x))/b)*sin(6*a/b)/b^2/c
```

Rubi [A] time = 0.40, antiderivative size = 217, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {4659, 4723, 4406, 3303, 3299, 3302}

$$\frac{15\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{16b^2c}+\frac{3\sin\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)}{4b^2c}+\frac{3\sin\left(\frac{6a}{b}\right)\text{CosIntegral}\left(\right.}{16b^2c}$$

Antiderivative was successfully verified.

```
[In] Int[(1 - c^2*x^2)^(5/2)/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -((1 - c^2*x^2)^3/(b*c*(a + b*ArcSin[c*x]))) + (15*CosIntegral[(2*a)/b + 2*
ArcSin[c*x]]*Sin[(2*a)/b])/(16*b^2*c) + (3*CosIntegral[(4*a)/b + 4*ArcSin[c
*x]]*Sin[(4*a)/b])/(4*b^2*c) + (3*CosIntegral[(6*a)/b + 6*ArcSin[c*x]]*Sin[
(6*a)/b])/(16*b^2*c) - (15*Cos[(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c*x]
])/(16*b^2*c) - (3*Cos[(4*a)/b]*SinIntegral[(4*a)/b + 4*ArcSin[c*x]])/(4*b^
2*c) - (3*Cos[(6*a)/b]*SinIntegral[(6*a)/b + 6*ArcSin[c*x]])/(16*b^2*c)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4659

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[(Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*(a + b*ArcSin[c*x])^(n + 1
))/(b*c*(n + 1)), x] + Dist[(c*(2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[
p])/(b*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a
 + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^
2*d + e, 0] && LtQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{\left(1-c^2x^2\right)^{5/2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx = -\frac{\left(1-c^2x^2\right)^3}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{(6c)\int \frac{x\left(1-c^2x^2\right)^2}{a+b\sin^{-1}(cx)}\,dx}{b}$$

$$= -\frac{\left(1-c^2x^2\right)^3}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{6\,\mathrm{Subst}\left(\int \frac{\cos^5(x)\sin(x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{bc}$$

$$= -\frac{\left(1-c^2x^2\right)^3}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{6\,\mathrm{Subst}\left(\int \left(\frac{5\sin(2x)}{32(a+bx)}+\frac{\sin(4x)}{8(a+bx)}+\frac{\sin(6x)}{32(a+bx)}\right)dx,x,\sin^{-1}(cx)\right)}{bc}$$

$$= -\frac{\left(1-c^2x^2\right)^3}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{3\,\mathrm{Subst}\left(\int \frac{\sin(6x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{16bc}-\frac{3\,\mathrm{Subst}\left(\int \frac{\sin(4x)}{a+bx}\,dx,\right.}{4bc}$$

$$= -\frac{\left(1-c^2x^2\right)^3}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{\left(15\cos\left(\frac{2a}{b}\right)\right)\mathrm{Subst}\left(\int \frac{\sin\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{16bc}-\frac{\left(3\cos\right.}{}$$

$$= -\frac{\left(1-c^2x^2\right)^3}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{15\mathrm{Ci}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)\sin\left(\frac{2a}{b}\right)}{16b^2c}+\frac{3\mathrm{Ci}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)\mathrm{s}}{4b^2c}$$

Mathematica [A] time = 0.92, size = 311, normalized size = 1.43

$$-\frac{-15\sin\left(\frac{2a}{b}\right)\left(a+b\sin^{-1}(cx)\right)\mathrm{Ci}\left(2\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)-12\sin\left(\frac{4a}{b}\right)\left(a+b\sin^{-1}(cx)\right)\mathrm{Ci}\left(4\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)-3}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - c^2*x^2)^(5/2)/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -1/16*(16*b - 48*b*c^2*x^2 + 48*b*c^4*x^4 - 16*b*c^6*x^6 - 15*(a + b*ArcSin
[c*x])*CosIntegral[2*(a/b + ArcSin[c*x])]*Sin[(2*a)/b] - 12*(a + b*ArcSin[c
*x])*CosIntegral[4*(a/b + ArcSin[c*x])]*Sin[(4*a)/b] - 3*a*CosIntegral[6*(a
/b + ArcSin[c*x])]*Sin[(6*a)/b] - 3*b*ArcSin[c*x]*CosIntegral[6*(a/b + ArcS
in[c*x])]*Sin[(6*a)/b] + 15*a*Cos[(2*a)/b]*SinIntegral[2*(a/b + ArcSin[c*x]
)] + 15*b*ArcSin[c*x]*Cos[(2*a)/b]*SinIntegral[2*(a/b + ArcSin[c*x])] + 12*
```

```
a*Cos[(4*a)/b]*SinIntegral[4*(a/b + ArcSin[c*x])] + 12*b*ArcSin[c*x]*Cos[(4
*a)/b]*SinIntegral[4*(a/b + ArcSin[c*x])] + 3*a*Cos[(6*a)/b]*SinIntegral[6*
(a/b + ArcSin[c*x])] + 3*b*ArcSin[c*x]*Cos[(6*a)/b]*SinIntegral[6*(a/b + Ar
cSin[c*x])])/(b^2*c*(a + b*ArcSin[c*x]))
```

fricas [F] time = 0.40, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(c^4x^4 - 2\,c^2x^2 + 1\right)\sqrt{-c^2x^2 + 1}}{b^2\arcsin\left(cx\right)^2 + 2\,ab\arcsin\left(cx\right) + a^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral((c^4*x^4 - 2*c^2*x^2 + 1)*sqrt(-c^2*x^2 + 1)/(b^2*arcsin(c*x)^2 +
2*a*b*arcsin(c*x) + a^2), x)
```

giac [B] time = 0.75, size = 1394, normalized size = 6.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] 6*b*arcsin(c*x)*cos(a/b)^5*cos_integral(6*a/b + 6*arcsin(c*x))*sin(a/b)/(b^
3*c*arcsin(c*x) + a*b^2*c) - 6*b*arcsin(c*x)*cos(a/b)^6*sin_integral(6*a/b
+ 6*arcsin(c*x))/(b^3*c*arcsin(c*x) + a*b^2*c) + 6*a*cos(a/b)^5*cos_integra
l(6*a/b + 6*arcsin(c*x))*sin(a/b)/(b^3*c*arcsin(c*x) + a*b^2*c) - 6*a*cos(a
/b)^6*sin_integral(6*a/b + 6*arcsin(c*x))/(b^3*c*arcsin(c*x) + a*b^2*c) - 6
*b*arcsin(c*x)*cos(a/b)^3*cos_integral(6*a/b + 6*arcsin(c*x))*sin(a/b)/(b^3
*c*arcsin(c*x) + a*b^2*c) + 6*b*arcsin(c*x)*cos(a/b)^3*cos_integral(4*a/b +
 4*arcsin(c*x))*sin(a/b)/(b^3*c*arcsin(c*x) + a*b^2*c) + 9*b*arcsin(c*x)*co
s(a/b)^4*sin_integral(6*a/b + 6*arcsin(c*x))/(b^3*c*arcsin(c*x) + a*b^2*c)
- 6*b*arcsin(c*x)*cos(a/b)^4*sin_integral(4*a/b + 4*arcsin(c*x))/(b^3*c*arc
sin(c*x) + a*b^2*c) - 6*a*cos(a/b)^3*cos_integral(6*a/b + 6*arcsin(c*x))*si
n(a/b)/(b^3*c*arcsin(c*x) + a*b^2*c) + 6*a*cos(a/b)^3*cos_integral(4*a/b +
4*arcsin(c*x))*sin(a/b)/(b^3*c*arcsin(c*x) + a*b^2*c) + 9*a*cos(a/b)^4*sin_
integral(6*a/b + 6*arcsin(c*x))/(b^3*c*arcsin(c*x) + a*b^2*c) - 6*a*cos(a/b
)^4*sin_integral(4*a/b + 4*arcsin(c*x))/(b^3*c*arcsin(c*x) + a*b^2*c) + 9/8
*b*arcsin(c*x)*cos(a/b)*cos_integral(6*a/b + 6*arcsin(c*x))*sin(a/b)/(b^3*c
*arcsin(c*x) + a*b^2*c) - 3*b*arcsin(c*x)*cos(a/b)*cos_integral(4*a/b + 4*a
rcsin(c*x))*sin(a/b)/(b^3*c*arcsin(c*x) + a*b^2*c) + 15/8*b*arcsin(c*x)*cos
(a/b)*cos_integral(2*a/b + 2*arcsin(c*x))*sin(a/b)/(b^3*c*arcsin(c*x) + a*b
^2*c) - 27/8*b*arcsin(c*x)*cos(a/b)^2*sin_integral(6*a/b + 6*arcsin(c*x))/(
b^3*c*arcsin(c*x) + a*b^2*c) + 6*b*arcsin(c*x)*cos(a/b)^2*sin_integral(4*a/
b + 4*arcsin(c*x))/(b^3*c*arcsin(c*x) + a*b^2*c) - 15/8*b*arcsin(c*x)*cos(a
/b)^2*sin_integral(2*a/b + 2*arcsin(c*x))/(b^3*c*arcsin(c*x) + a*b^2*c) + (
c^2*x^2 - 1)^3*b/(b^3*c*arcsin(c*x) + a*b^2*c) + 9/8*a*cos(a/b)*cos_integra
l(6*a/b + 6*arcsin(c*x))*sin(a/b)/(b^3*c*arcsin(c*x) + a*b^2*c) - 3*a*cos(a
/b)*cos_integral(4*a/b + 4*arcsin(c*x))*sin(a/b)/(b^3*c*arcsin(c*x) + a*b^2
*c) + 15/8*a*cos(a/b)*cos_integral(2*a/b + 2*arcsin(c*x))*sin(a/b)/(b^3*c*a
rcsin(c*x) + a*b^2*c) - 27/8*a*cos(a/b)^2*sin_integral(6*a/b + 6*arcsin(c*x
))/(b^3*c*arcsin(c*x) + a*b^2*c) + 6*a*cos(a/b)^2*sin_integral(4*a/b + 4*ar
csin(c*x))/(b^3*c*arcsin(c*x) + a*b^2*c) - 15/8*a*cos(a/b)^2*sin_integral(2
*a/b + 2*arcsin(c*x))/(b^3*c*arcsin(c*x) + a*b^2*c) + 3/16*b*arcsin(c*x)*si
n_integral(6*a/b + 6*arcsin(c*x))/(b^3*c*arcsin(c*x) + a*b^2*c) - 3/4*b*arc
sin(c*x)*sin_integral(4*a/b + 4*arcsin(c*x))/(b^3*c*arcsin(c*x) + a*b^2*c)
+ 15/16*b*arcsin(c*x)*sin_integral(2*a/b + 2*arcsin(c*x))/(b^3*c*arcsin(c*x
) + a*b^2*c) + 3/16*a*sin_integral(6*a/b + 6*arcsin(c*x))/(b^3*c*arcsin(c*x
) + a*b^2*c) - 3/4*a*sin_integral(4*a/b + 4*arcsin(c*x))/(b^3*c*arcsin(c*x)
```

```
 + a*b^2*c) + 15/16*a*sin_integral(2*a/b + 2*arcsin(c*x))/(b^3*c*arcsin(c*x
) + a*b^2*c)
```

maple [A] time = 0.10, size = 364, normalized size = 1.68

$$-\frac{6\arcsin(cx)\,\mathrm{Si}\left(6\arcsin(cx)+\frac{6a}{b}\right)\cos\left(\frac{6a}{b}\right)b-6\arcsin(cx)\,\mathrm{Ci}\left(6\arcsin(cx)+\frac{6a}{b}\right)\sin\left(\frac{6a}{b}\right)b+24\arcsin(c}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] -1/32/c*(6*arcsin(c*x)*Si(6*arcsin(c*x)+6*a/b)*cos(6*a/b)*b-6*arcsin(c*x)*C
i(6*arcsin(c*x)+6*a/b)*sin(6*a/b)*b+24*arcsin(c*x)*Si(4*arcsin(c*x)+4*a/b)*
cos(4*a/b)*b-24*arcsin(c*x)*Ci(4*arcsin(c*x)+4*a/b)*sin(4*a/b)*b+30*Si(2*ar
csin(c*x)+2*a/b)*cos(2*a/b)*arcsin(c*x)*b-30*Ci(2*arcsin(c*x)+2*a/b)*sin(2*
a/b)*arcsin(c*x)*b+6*Si(6*arcsin(c*x)+6*a/b)*cos(6*a/b)*a-6*Ci(6*arcsin(c*x
)+6*a/b)*sin(6*a/b)*a+24*Si(4*arcsin(c*x)+4*a/b)*cos(4*a/b)*a-24*Ci(4*arcsi
n(c*x)+4*a/b)*sin(4*a/b)*a+30*Si(2*arcsin(c*x)+2*a/b)*cos(2*a/b)*a-30*Ci(2*
arcsin(c*x)+2*a/b)*sin(2*a/b)*a+cos(6*arcsin(c*x))*b+6*cos(4*arcsin(c*x))*b
+15*cos(2*arcsin(c*x))*b+10*b)/(a+b*arcsin(c*x))/b^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{c^6x^6-3\,c^4x^4+3\,c^2x^2-6\left(b^2c\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abc\right)\int\frac{c^5x^5-2\,c^3x^3+cx}{b^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+ab}\,dx-1}{b^2c\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] (c^6*x^6 - 3*c^4*x^4 + 3*c^2*x^2 - (b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-
c*x + 1)) + a*b*c)*integrate(6*(c^5*x^5 - 2*c^3*x^3 + c*x)/(b^2*arctan2(c*x
, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b), x) - 1)/(b^2*c*arctan2(c*x, sqrt(c*
x + 1)*sqrt(-c*x + 1)) + a*b*c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{\left(1-c^2\,x^2\right)^{5/2}}{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(5/2)/(a + b*asin(c*x))^2,x)
```

```
[Out] int((1 - c^2*x^2)^(5/2)/(a + b*asin(c*x))^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}}{\left(a+b\,\mathrm{asin}\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(5/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral((-(c*x - 1)*(c*x + 1))**(5/2)/(a + b*asin(c*x))**2, x)
```

3.403 $\int \frac{\left(1-c^2x^2\right)^{5/2}}{x\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=235

$$-\frac{\mathrm{Int}\left(\frac{\left(1-c^2x^2\right)^2}{x^2\left(a+b\sin^{-1}(cx)\right)},x\right)}{bc}-\frac{25\cos\left(\frac{a}{b}\right)\mathrm{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{8b^2}-\frac{25\cos\left(\frac{3a}{b}\right)\mathrm{Ci}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{16b^2}-\frac{5\cos\left(\frac{5a}{b}\right)\mathrm{Ci}\left(\frac{5\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{16b^2}$$

```
[Out] -(-c^2*x^2+1)^3/b/c/x/(a+b*arcsin(c*x))-25/8*Ci((a+b*arcsin(c*x))/b)*cos(a/
b)/b^2-25/16*Ci(3*(a+b*arcsin(c*x))/b)*cos(3*a/b)/b^2-5/16*Ci(5*(a+b*arcsin
(c*x))/b)*cos(5*a/b)/b^2-25/8*Si((a+b*arcsin(c*x))/b)*sin(a/b)/b^2-25/16*Si
(3*(a+b*arcsin(c*x))/b)*sin(3*a/b)/b^2-5/16*Si(5*(a+b*arcsin(c*x))/b)*sin(5
*a/b)/b^2-Unintegrable((-c^2*x^2+1)^2/x^2/(a+b*arcsin(c*x)),x)/b/c
```

Rubi [A] time = 0.53, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(1-c^2x^2\right)^{5/2}}{x\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(1 - c^2*x^2)^(5/2)/(x*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] -((1 - c^2*x^2)^3/(b*c*x*(a + b*ArcSin[c*x]))) - (25*Cos[a/b]*CosIntegral[a
/b + ArcSin[c*x]])/(8*b^2) - (25*Cos[(3*a)/b]*CosIntegral[(3*a)/b + 3*ArcSi
n[c*x]])/(16*b^2) - (5*Cos[(5*a)/b]*CosIntegral[(5*a)/b + 5*ArcSin[c*x]])/(
16*b^2) - (25*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(8*b^2) - (25*Sin[(3
*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c*x]])/(16*b^2) - (5*Sin[(5*a)/b]*Sin
Integral[(5*a)/b + 5*ArcSin[c*x]])/(16*b^2) - Defer[Int][(1 - c^2*x^2)^2/(x
^2*(a + b*ArcSin[c*x])), x]/(b*c)
```

Rubi steps

$$\int \frac{(1-c^2x^2)^{5/2}}{x(a+b\sin^{-1}(cx))^2}\,dx = -\frac{(1-c^2x^2)^3}{bcx(a+b\sin^{-1}(cx))} - \frac{\int \frac{(1-c^2x^2)^2}{x^2(a+b\sin^{-1}(cx))}\,dx}{bc} - \frac{(5c)\int \frac{(1-c^2x^2)^2}{a+b\sin^{-1}(cx)}\,dx}{b}$$

$$= -\frac{(1-c^2x^2)^3}{bcx(a+b\sin^{-1}(cx))} - \frac{5\,\mathrm{Subst}\left(\int \frac{\cos^5(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{b} - \frac{\int \frac{(1-c^2x^2)^2}{x^2(a+b\sin^{-1}(cx))}\,dx}{bc}$$

$$= -\frac{(1-c^2x^2)^3}{bcx(a+b\sin^{-1}(cx))} - \frac{5\,\mathrm{Subst}\left(\int \left(\frac{5\cos(x)}{8(a+bx)} + \frac{5\cos(3x)}{16(a+bx)} + \frac{\cos(5x)}{16(a+bx)}\right) dx, x, \sin^{-1}(cx\right.}{b}$$

$$= -\frac{(1-c^2x^2)^3}{bcx(a+b\sin^{-1}(cx))} - \frac{5\,\mathrm{Subst}\left(\int \frac{\cos(5x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{16b} - \frac{25\,\mathrm{Subst}\left(\int \frac{\cos(3x)}{a+bx}\right.}{16}$$

$$= -\frac{(1-c^2x^2)^3}{bcx(a+b\sin^{-1}(cx))} - \frac{\int \frac{(1-c^2x^2)^2}{x^2(a+b\sin^{-1}(cx))}\,dx}{bc} - \frac{\left(25\cos\left(\frac{a}{b}\right)\right)\mathrm{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+x\right)}{a+bx}\,dx,\right.}{8b}$$

$$= -\frac{(1-c^2x^2)^3}{bcx(a+b\sin^{-1}(cx))} - \frac{25\cos\left(\frac{a}{b}\right)\mathrm{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{8b^2} - \frac{25\cos\left(\frac{3a}{b}\right)\mathrm{Ci}\left(\frac{3a}{b}+3\,\mathrm{s}\right.}{16b^2}$$

Mathematica [A] time = 14.12, size = 0, normalized size = 0.00

$$\int \frac{(1-c^2x^2)^{5/2}}{x(a+b\sin^{-1}(cx))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(1 - c^2*x^2)^(5/2)/(x*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] Integrate[(1 - c^2*x^2)^(5/2)/(x*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.42, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{(c^4x^4 - 2c^2x^2 + 1)\sqrt{-c^2x^2+1}}{b^2x\arcsin(cx)^2 + 2abx\arcsin(cx) + a^2x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/x/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral((c^4*x^4 - 2*c^2*x^2 + 1)*sqrt(-c^2*x^2 + 1)/(b^2*x*arcsin(c*x)^2
+ 2*a*b*x*arcsin(c*x) + a^2*x), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/x/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 1.02, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{5}{2}}}{x\left(a+b\arcsin\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(5/2)/x/(a+b*arcsin(c*x))^2,x)
```

```
[Out] int((-c^2*x^2+1)^(5/2)/x/(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{c^6x^6-3\,c^4x^4+3\,c^2x^2-\frac{\left(5\,c^6\int \frac{x^6}{bx^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+ax^2}\,dx-9\,c^4\int \frac{x^4}{bx^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+ax^2}\,dx+3\,c^2\int \frac{x^2}{bx^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right.}}{bc}}{b^2cx\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/x/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] (c^6*x^6 - 3*c^4*x^4 + 3*c^2*x^2 - (b^2*c*x*arctan2(c*x, sqrt(c*x + 1)*sqrt
(-c*x + 1)) + a*b*c*x)*integrate((5*c^6*x^6 - 9*c^4*x^4 + 3*c^2*x^2 + 1)/(b
^2*c*x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*x^2), x) - 1)/(
b^2*c*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(1-c^2\,x^2\right)}^{5/2}}{x\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(5/2)/(x*(a + b*asin(c*x))^2),x)
```

```
[Out] int((1 - c^2*x^2)^(5/2)/(x*(a + b*asin(c*x))^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}}{x\left(a+b\,\mathrm{asin}\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(5/2)/x/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral((-(c*x - 1)*(c*x + 1))**(5/2)/(x*(a + b*asin(c*x))**2), x)
```

3.404 $\int \frac{\left(1-c^2x^2\right)^{5/2}}{x^2\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=106

$$-\frac{4c\text{Int}\left(\frac{\left(1-c^2x^2\right)^2}{x\left(a+b\sin^{-1}(cx)\right)},x\right)}{b}-\frac{2\text{Int}\left(\frac{\left(1-c^2x^2\right)^2}{x^3\left(a+b\sin^{-1}(cx)\right)},x\right)}{bc}-\frac{\left(1-c^2x^2\right)^3}{bcx^2\left(a+b\sin^{-1}(cx)\right)}$$

```
[Out] -(-c^2*x^2+1)^3/b/c/x^2/(a+b*arcsin(c*x))-2*Unintegrable((-c^2*x^2+1)^2/x^3
/(a+b*arcsin(c*x)),x)/b/c-4*c*Unintegrable((-c^2*x^2+1)^2/x/(a+b*arcsin(c*x
)),x)/b
```

Rubi [A] time = 0.31, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(1-c^2x^2\right)^{5/2}}{x^2\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(1 - c^2*x^2)^(5/2)/(x^2*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] -((1 - c^2*x^2)^3/(b*c*x^2*(a + b*ArcSin[c*x]))) - (2*Defer[Int][(1 - c^2*x
^2)^2/(x^3*(a + b*ArcSin[c*x])), x])/(b*c) - (4*c*Defer[Int][(1 - c^2*x^2)^
2/(x*(a + b*ArcSin[c*x])), x])/b
```

Rubi steps

$$\int \frac{\left(1-c^2x^2\right)^{5/2}}{x^2\left(a+b\sin^{-1}(cx)\right)^2}\,dx=-\frac{\left(1-c^2x^2\right)^3}{bcx^2\left(a+b\sin^{-1}(cx)\right)}-\frac{2\int \frac{\left(1-c^2x^2\right)^2}{x^3\left(a+b\sin^{-1}(cx)\right)}\,dx}{bc}-\frac{(4c)\int \frac{\left(1-c^2x^2\right)^2}{x\left(a+b\sin^{-1}(cx)\right)}\,dx}{b}$$

Mathematica [A] time = 3.90, size = 0, normalized size = 0.00

$$\int \frac{\left(1-c^2x^2\right)^{5/2}}{x^2\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(1 - c^2*x^2)^(5/2)/(x^2*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] Integrate[(1 - c^2*x^2)^(5/2)/(x^2*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.39, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(c^4x^4-2\,c^2x^2+1\right)\sqrt{-c^2x^2+1}}{b^2x^2\arcsin\left(cx\right)^2+2\,abx^2\arcsin\left(cx\right)+a^2x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/x^2/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral((c^4*x^4 - 2*c^2*x^2 + 1)*sqrt(-c^2*x^2 + 1)/(b^2*x^2*arcsin(c*x)^
2 + 2*a*b*x^2*arcsin(c*x) + a^2*x^2), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{5}{2}}}{\left(b \arcsin\left(cx\right)+a\right)^2 x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/x^2/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] integrate((-c^2*x^2 + 1)^(5/2)/((b*arcsin(c*x) + a)^2*x^2), x)
```

maple [A] time = 0.85, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{5}{2}}}{x^2\left(a+b \arcsin\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(5/2)/x^2/(a+b*arcsin(c*x))^2,x)
```

```
[Out] int((-c^2*x^2+1)^(5/2)/x^2/(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{c^6x^6-3\,c^4x^4+3\,c^2x^2-2\left(b^2cx^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx^2\right)\int\frac{2\,c^6x^6-3\,c^4x^4+1}{b^2cx^3\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx^3}\,dx-}{b^2cx^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/x^2/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] (c^6*x^6 - 3*c^4*x^4 + 3*c^2*x^2 - (b^2*c*x^2*arctan2(c*x, sqrt(c*x + 1)*sq
rt(-c*x + 1)) + a*b*c*x^2)*integrate(2*(2*c^6*x^6 - 3*c^4*x^4 + 1)/(b^2*c*x
^3*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*x^3), x) - 1)/(b^2*c*
x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*x^2)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(1-c^2\,x^2\right)}^{5/2}}{x^2\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(5/2)/(x^2*(a + b*asin(c*x))^2),x)
```

```
[Out] int((1 - c^2*x^2)^(5/2)/(x^2*(a + b*asin(c*x))^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}}{x^2\left(a+b \operatorname{asin}\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(5/2)/x**2/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral((-(c*x - 1)*(c*x + 1))**(5/2)/(x**2*(a + b*asin(c*x))**2), x)
```

3.405 $\int \frac{(1-c^2x^2)^{5/2}}{x^3(a+b\sin^{-1}(cx))^2}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{(1-c^2x^2)^{5/2}}{x^3\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

```
[Out] Unintegrable((-c^2*x^2+1)^(5/2)/x^3/(a+b*arcsin(c*x))^2,x)
```

Rubi [A] time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(1-c^2x^2)^{5/2}}{x^3\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(1 - c^2*x^2)^(5/2)/(x^3*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] Defer[Int][(1 - c^2*x^2)^(5/2)/(x^3*(a + b*ArcSin[c*x])^2), x]
```

Rubi steps

$$\int \frac{(1-c^2x^2)^{5/2}}{x^3\left(a+b\sin^{-1}(cx)\right)^2}\,dx = \int \frac{(1-c^2x^2)^{5/2}}{x^3\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Mathematica [A] time = 18.02, size = 0, normalized size = 0.00

$$\int \frac{(1-c^2x^2)^{5/2}}{x^3\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(1 - c^2*x^2)^(5/2)/(x^3*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] Integrate[(1 - c^2*x^2)^(5/2)/(x^3*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.41, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(c^4x^4-2\,c^2x^2+1\right)\sqrt{-c^2x^2+1}}{b^2x^3\arcsin(cx)^2+2\,abx^3\arcsin(cx)+a^2x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/x^3/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral((c^4*x^4 - 2*c^2*x^2 + 1)*sqrt(-c^2*x^2 + 1)/(b^2*x^3*arcsin(c*x)^
2 + 2*a*b*x^3*arcsin(c*x) + a^2*x^3), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((-c^2*x^2+1)^(5/2)/x^3/(a+b*arcsin(c*x))^2,x, algorithm="giac")

[Out] Exception raised: TypeError >> An error occurred running a Giac command:INPUT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vecteur & l) Error: Bad Argument Value

maple [A] time = 5.25, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{5}{2}}}{x^3\left(a+b\arcsin\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((-c^2*x^2+1)^(5/2)/x^3/(a+b*arcsin(c*x))^2,x)

[Out] int((-c^2*x^2+1)^(5/2)/x^3/(a+b*arcsin(c*x))^2,x)

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{c^6x^6 - 3\,c^4x^4 + 3\,c^2x^2 - 3\left(b^2cx^3\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right) + abcx^3\right)\int \frac{c^6x^6 - c^4x^4 - c^2x^2 + 1}{b^2cx^4\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right) + abcx^4}\,dx - 1}{b^2cx^3\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right) + abcx^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((-c^2*x^2+1)^(5/2)/x^3/(a+b*arcsin(c*x))^2,x, algorithm="maxima")

[Out] (c^6*x^6 - 3*c^4*x^4 + 3*c^2*x^2 - (b^2*c*x^3*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*x^3)*integrate(3*(c^6*x^6 - c^4*x^4 - c^2*x^2 + 1)/(b^2*c*x^4*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*x^4), x) - 1)/(b^2*c*x^3*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*x^3)

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{{\left(1-c^2\,x^2\right)}^{5/2}}{x^3\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((1 - c^2*x^2)^(5/2)/(x^3*(a + b*asin(c*x))^2),x)

[Out] int((1 - c^2*x^2)^(5/2)/(x^3*(a + b*asin(c*x))^2), x)

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(cx - 1\right)\left(cx + 1\right)\right)^{\frac{5}{2}}}{x^3\left(a + b\,\mathrm{asin}\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((-c**2*x**2+1)**(5/2)/x**3/(a+b*asin(c*x))**2,x)

[Out] Integral((-(c*x - 1)*(c*x + 1))**(5/2)/(x**3*(a + b*asin(c*x))**2), x)

3.406 $\int \frac{\left(1-c^2x^2\right)^{5/2}}{x^4\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\left(1-c^2x^2\right)^{5/2}}{x^4\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

```
[Out] Unintegrable((-c^2*x^2+1)^(5/2)/x^4/(a+b*arcsin(c*x))^2,x)
```

Rubi [A] time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(1-c^2x^2\right)^{5/2}}{x^4\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(1 - c^2*x^2)^(5/2)/(x^4*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] Defer[Int][(1 - c^2*x^2)^(5/2)/(x^4*(a + b*ArcSin[c*x])^2), x]
```

Rubi steps

$$\int \frac{\left(1-c^2x^2\right)^{5/2}}{x^4\left(a+b\sin^{-1}(cx)\right)^2}\,dx=\int \frac{\left(1-c^2x^2\right)^{5/2}}{x^4\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Mathematica [A] time = 3.45, size = 0, normalized size = 0.00

$$\int \frac{\left(1-c^2x^2\right)^{5/2}}{x^4\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(1 - c^2*x^2)^(5/2)/(x^4*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] Integrate[(1 - c^2*x^2)^(5/2)/(x^4*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(c^4x^4-2\,c^2x^2+1\right)\sqrt{-c^2x^2+1}}{b^2x^4\arcsin\left(cx\right)^2+2\,abx^4\arcsin\left(cx\right)+a^2x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/x^4/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral((c^4*x^4 - 2*c^2*x^2 + 1)*sqrt(-c^2*x^2 + 1)/(b^2*x^4*arcsin(c*x)^
2 + 2*a*b*x^4*arcsin(c*x) + a^2*x^4), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2x^2+1\right)^{\frac{5}{2}}}{\left(b\arcsin\left(cx\right)+a\right)^2x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/x^4/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] integrate((-c^2*x^2 + 1)^(5/2)/((b*arcsin(c*x) + a)^2*x^4), x)
```

maple [A] time = 6.35, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^{2}x^{2}+1\right)^{\frac{5}{2}}}{x^{4}\left(a+b\arcsin\left(cx\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*x^2+1)^(5/2)/x^4/(a+b*arcsin(c*x))^2,x)
```

```
[Out] int((-c^2*x^2+1)^(5/2)/x^4/(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{c^{6}x^{6}-3\,c^{4}x^{4}+3\,c^{2}x^{2}-2\left(b^{2}cx^{4}\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx^{4}\right)\int\frac{c^{6}x^{6}-3\,c^{2}x^{2}+2}{b^{2}cx^{5}\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx^{5}}\,dx-1}{b^{2}cx^{4}\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*x^2+1)^(5/2)/x^4/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] (c^6*x^6 - 3*c^4*x^4 + 3*c^2*x^2 - (b^2*c*x^4*arctan2(c*x, sqrt(c*x + 1)*sq
rt(-c*x + 1)) + a*b*c*x^4)*integrate(2*(c^6*x^6 - 3*c^2*x^2 + 2)/(b^2*c*x^5
*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*x^5), x) - 1)/(b^2*c*x^
4*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*x^4)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{{\left(1-c^2\,x^2\right)}^{5/2}}{x^4\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1 - c^2*x^2)^(5/2)/(x^4*(a + b*asin(c*x))^2),x)
```

```
[Out] int((1 - c^2*x^2)^(5/2)/(x^4*(a + b*asin(c*x))^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}}{x^{4}\left(a+b\operatorname{asin}{\left(cx\right)}\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*x**2+1)**(5/2)/x**4/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral((-(c*x - 1)*(c*x + 1))**(5/2)/(x**4*(a + b*asin(c*x))**2), x)
```

3.407 $\int \frac{x^m}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=49

$$\frac{m\text{Int}\left(\frac{x^{m-1}}{a+b\sin^{-1}(cx)},x\right)}{bc}-\frac{x^m}{bc\left(a+b\sin^{-1}(cx)\right)}$$

```
[Out] -x^m/b/c/(a+b*arcsin(c*x))+m*Unintegrable(x^(-1+m)/(a+b*arcsin(c*x)),x)/b/c
```

Rubi [A] time = 0.16, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[x^m/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] -(x^m/(b*c*(a + b*ArcSin[c*x]))) + (m*Defer[Int][x^(-1 + m)/(a + b*ArcSin[c
*x]), x])/(b*c)
```

Rubi steps

$$\int \frac{x^m}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx=-\frac{x^m}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{m\int \frac{x^{-1+m}}{a+b\sin^{-1}(cx)}\,dx}{bc}$$

Mathematica [A] time = 0.69, size = 0, normalized size = 0.00

$$\int \frac{x^m}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x^m/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] Integrate[x^m/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}\,x^m}{a^2c^2x^2+\left(b^2c^2x^2-b^2\right)\arcsin(cx)^2-a^2+2\left(abc^2x^2-ab\right)\arcsin(cx)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*x^2 + 1)*x^m/(a^2*c^2*x^2 + (b^2*c^2*x^2 - b^2)*arcsin(
c*x)^2 - a^2 + 2*(a*b*c^2*x^2 - a*b)*arcsin(c*x)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m}{\sqrt{-c^2x^2+1}\,(b\arcsin(cx)+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(x^m/(sqrt(-c^2*x^2 + 1)*(b*arcsin(c*x) + a)^2), x)
```

maple [A] time = 0.29, size = 0, normalized size = 0.00

$$\int \frac{x^m}{(a+b\arcsin(cx))^2\sqrt{-c^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] int(x^m/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{-x^m + \frac{\left(b^2cm\arctan\left(cx, \sqrt{cx+1}\sqrt{-cx+1}\right)+abcm\right)\int \frac{x^m}{\left(b\arctan\left(cx, \sqrt{cx+1}\sqrt{-cx+1}\right)+a\right)x}\,dx}{bc}}{b^2c\arctan\left(cx, \sqrt{cx+1}\sqrt{-cx+1}\right)+abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] ((b^2*c*m*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*m)*integrate(x
^m/(b^2*c*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*x), x) - x^m
)/(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{x^m}{(a+b\,\mathrm{asin}(c\,x))^2\sqrt{1-c^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(1/2)),x)
```

```
[Out] int(x^m/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(1/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m}{\sqrt{-(cx-1)(cx+1)}\,(a+b\,\mathrm{asin}(cx))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m/(a+b*asin(c*x))**2/(-c**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(x**m/(sqrt(-(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**2), x)
```

3.408 $\int \frac{x^5}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=204

$$\frac{5\cos\left(\frac{a}{b}\right)\mathrm{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{8b^2c^6}-\frac{15\cos\left(\frac{3a}{b}\right)\mathrm{Ci}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{16b^2c^6}+\frac{5\cos\left(\frac{5a}{b}\right)\mathrm{Ci}\left(\frac{5\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{16b^2c^6}+\frac{5\sin\left(\frac{a}{b}\right)\mathrm{Si}\left(\frac{a+b\sin^{-1}}{b}\right.}{8b^2c^6}$$

```
[Out] -x^5/b/c/(a+b*arcsin(c*x))+5/8*Ci((a+b*arcsin(c*x))/b)*cos(a/b)/b^2/c^6-15/
16*Ci(3*(a+b*arcsin(c*x))/b)*cos(3*a/b)/b^2/c^6+5/16*Ci(5*(a+b*arcsin(c*x))
/b)*cos(5*a/b)/b^2/c^6+5/8*Si((a+b*arcsin(c*x))/b)*sin(a/b)/b^2/c^6-15/16*S
i(3*(a+b*arcsin(c*x))/b)*sin(3*a/b)/b^2/c^6+5/16*Si(5*(a+b*arcsin(c*x))/b)*
sin(5*a/b)/b^2/c^6
```

Rubi [A] time = 0.44, antiderivative size = 200, normalized size of antiderivative = 0.98, number of steps used = 13, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {4719, 4635, 4406, 3303, 3299, 3302}

$$\frac{5\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{8b^2c^6}-\frac{15\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)}{16b^2c^6}+\frac{5\cos\left(\frac{5a}{b}\right)\text{CosIntegral}\left(\right.}{16b^2c^6}$$

Antiderivative was successfully verified.

```
[In] Int[x^5/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] -(x^5/(b*c*(a + b*ArcSin[c*x]))) + (5*Cos[a/b]*CosIntegral[a/b + ArcSin[c*x
]])/(8*b^2*c^6) - (15*Cos[(3*a)/b]*CosIntegral[(3*a)/b + 3*ArcSin[c*x]])/(1
6*b^2*c^6) + (5*Cos[(5*a)/b]*CosIntegral[(5*a)/b + 5*ArcSin[c*x]])/(16*b^2*
c^6) + (5*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(8*b^2*c^6) - (15*Sin[(3
*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c*x]])/(16*b^2*c^6) + (5*Sin[(5*a)/b]
*SinIntegral[(5*a)/b + 5*ArcSin[c*x]])/(16*b^2*c^6)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rubi steps

$$\int \frac{x^5}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx = -\frac{x^5}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{5\int \frac{x^4}{a+b\sin^{-1}(cx)}\,dx}{bc}$$

$$= -\frac{x^5}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{5\,\text{Subst}\left(\int \frac{\cos(x)\sin^4(x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{bc^6}$$

$$= -\frac{x^5}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{5\,\text{Subst}\left(\int \left(\frac{\cos(x)}{8(a+bx)}-\frac{3\cos(3x)}{16(a+bx)}+\frac{\cos(5x)}{16(a+bx)}\right)dx,x,\sin^{-1}\right.}{bc^6}$$

$$= -\frac{x^5}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{5\,\text{Subst}\left(\int \frac{\cos(5x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{16bc^6}+\frac{5\,\text{Subst}\left(\int \frac{\cos}{a}\right.}{}$$

$$= -\frac{x^5}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{\left(5\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+x\right)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{8bc^6}-\frac{(1}{}$$

$$= -\frac{x^5}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{5\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{8b^2c^6}-\frac{15\cos\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3a}{b}+\right.}{16b^2c^6}$$

Mathematica [A] time = 0.41, size = 157, normalized size = 0.77

$$\frac{5\left(2\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)-3\cos\left(\frac{3a}{b}\right)\text{Ci}\left(3\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+\cos\left(\frac{5a}{b}\right)\text{Ci}\left(5\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+2\sin\left(\frac{a}{b}\right)\text{Si}\right.}{16b^2c^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^5/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] -(x^5/(b*c*(a + b*ArcSin[c*x]))) + (5*(2*Cos[a/b]*CosIntegral[a/b + ArcSin[
c*x]] - 3*Cos[(3*a)/b]*CosIntegral[3*(a/b + ArcSin[c*x])] + Cos[(5*a)/b]*Co
sIntegral[5*(a/b + ArcSin[c*x])] + 2*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]
] - 3*Sin[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c*x])] + Sin[(5*a)/b]*SinInt
egral[5*(a/b + ArcSin[c*x])]))/(16*b^2*c^6)
```

fricas [F] time = 0.41, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}\,x^5}{a^2c^2x^2+\left(b^2c^2x^2-b^2\right)\arcsin(cx)^2-a^2+2\left(abc^2x^2-ab\right)\arcsin(cx)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*x^2 + 1)*x^5/(a^2*c^2*x^2 + (b^2*c^2*x^2 - b^2)*arcsin(
c*x)^2 - a^2 + 2*(a*b*c^2*x^2 - a*b)*arcsin(c*x)), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.11, size = 341, normalized size = 1.67

$$\frac{5\arcsin(cx)\,\mathrm{Si}\left(5\arcsin(cx)+\frac{5a}{b}\right)\sin\left(\frac{5a}{b}\right)b+5\arcsin(cx)\,\mathrm{Ci}\left(5\arcsin(cx)+\frac{5a}{b}\right)\cos\left(\frac{5a}{b}\right)b-15\arcsin(cx}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] 1/16/c^6*(5*arcsin(c*x)*Si(5*arcsin(c*x)+5*a/b)*sin(5*a/b)*b+5*arcsin(c*x)*
Ci(5*arcsin(c*x)+5*a/b)*cos(5*a/b)*b-15*arcsin(c*x)*Si(3*arcsin(c*x)+3*a/b)
*sin(3*a/b)*b-15*arcsin(c*x)*Ci(3*arcsin(c*x)+3*a/b)*cos(3*a/b)*b+10*arcsin
(c*x)*Si(arcsin(c*x)+a/b)*sin(a/b)*b+10*arcsin(c*x)*Ci(arcsin(c*x)+a/b)*cos
(a/b)*b+5*Si(5*arcsin(c*x)+5*a/b)*sin(5*a/b)*a+5*Ci(5*arcsin(c*x)+5*a/b)*co
s(5*a/b)*a-15*Si(3*arcsin(c*x)+3*a/b)*sin(3*a/b)*a-15*Ci(3*arcsin(c*x)+3*a/
b)*cos(3*a/b)*a+10*Si(arcsin(c*x)+a/b)*sin(a/b)*a+10*Ci(arcsin(c*x)+a/b)*co
s(a/b)*a-10*x*b*c-sin(5*arcsin(c*x))*b+5*sin(3*arcsin(c*x))*b)/(a+b*arcsin(
c*x))/b^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{x^5-\frac{5\left(b^2c\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abc\right)\int\frac{x^4}{b\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+a}\,dx}{bc}}{b^2c\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] -(x^5 - 5*(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c)*integr
ate(x^4/(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c), x))/(b^
2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^5}{(a+b\,\mathrm{asin}\,(c\,x))^2\,\sqrt{1-c^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(1/2)),x)
```

```
[Out] int(x^5/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^5}{\sqrt{-\left(cx-1\right)\left(cx+1\right)}\,\left(a+b\operatorname{asin}\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5/(a+b*asin(c*x))**2/(-c**2*x**2+1)**(1/2),x)
[Out] Integral(x**5/(sqrt(-(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**2), x)
```

3.409 $\int \frac{x^4}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=141

$$-\frac{\sin\left(\frac{2a}{b}\right)\mathrm{Ci}\left(\frac{2\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{b^2c^5}+\frac{\sin\left(\frac{4a}{b}\right)\mathrm{Ci}\left(\frac{4\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{2b^2c^5}+\frac{\cos\left(\frac{2a}{b}\right)\mathrm{Si}\left(\frac{2\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{b^2c^5}-\frac{\cos\left(\frac{4a}{b}\right)\mathrm{Si}\left(\frac{4\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{2b^2c^5}$$

```
[Out] -x^4/b/c/(a+b*arcsin(c*x))+cos(2*a/b)*Si(2*(a+b*arcsin(c*x))/b)/b^2/c^5-1/2
*cos(4*a/b)*Si(4*(a+b*arcsin(c*x))/b)/b^2/c^5-Ci(2*(a+b*arcsin(c*x))/b)*sin
(2*a/b)/b^2/c^5+1/2*Ci(4*(a+b*arcsin(c*x))/b)*sin(4*a/b)/b^2/c^5
```

Rubi [A] time = 0.36, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {4719, 4635, 4406, 3303, 3299, 3302}

$$-\frac{\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{b^2c^5}+\frac{\sin\left(\frac{4a}{b}\right)\text{CosIntegral}\left(\frac{4a}{b}+4\sin^{-1}(cx)\right)}{2b^2c^5}+\frac{\cos\left(\frac{2a}{b}\right)\mathrm{Si}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{b^2c^5}$$

Antiderivative was successfully verified.

```
[In] Int[x^4/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] -(x^4/(b*c*(a + b*ArcSin[c*x]))) - (CosIntegral[(2*a)/b + 2*ArcSin[c*x]]*Si
n[(2*a)/b])/(b^2*c^5) + (CosIntegral[(4*a)/b + 4*ArcSin[c*x]]*Sin[(4*a)/b])
/(2*b^2*c^5) + (Cos[(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c*x]])/(b^2*c^5
) - (Cos[(4*a)/b]*SinIntegral[(4*a)/b + 4*ArcSin[c*x]])/(2*b^2*c^5)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
```

```
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rubi steps

$$\int \frac{x^4}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx = -\frac{x^4}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{4\int \frac{x^3}{a+b\sin^{-1}(cx)}\,dx}{bc}$$

$$= -\frac{x^4}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{4\,\mathrm{Subst}\left(\int \frac{\cos(x)\sin^3(x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{bc^5}$$

$$= -\frac{x^4}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{4\,\mathrm{Subst}\left(\int \left(\frac{\sin(2x)}{4(a+bx)}-\frac{\sin(4x)}{8(a+bx)}\right)dx,x,\sin^{-1}(cx)\right)}{bc^5}$$

$$= -\frac{x^4}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{\mathrm{Subst}\left(\int \frac{\sin(4x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{2bc^5}+\frac{\mathrm{Subst}\left(\int \frac{\sin(2x)}{a+bx}\right.}{b}$$

$$= -\frac{x^4}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{\cos\left(\frac{2a}{b}\right)\mathrm{Subst}\left(\int \frac{\sin\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{bc^5}-\frac{\cos}{}$$

$$= -\frac{x^4}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{\mathrm{Ci}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)\sin\left(\frac{2a}{b}\right)}{b^2c^5}+\frac{\mathrm{Ci}\left(\frac{4a}{b}+4\sin^{-1}(c\right.}{2b^2c^5}$$

Mathematica [A] time = 0.35, size = 117, normalized size = 0.83

$$\frac{-\frac{2bc^4x^4}{a+b\sin^{-1}(cx)}-2\sin\left(\frac{2a}{b}\right)\mathrm{Ci}\left(2\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+\sin\left(\frac{4a}{b}\right)\mathrm{Ci}\left(4\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+2\cos\left(\frac{2a}{b}\right)\mathrm{Si}\left(2\left(\frac{a}{b}+\sin^{-1}(cx\right.\right.}{2b^2c^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] ((-2*b*c^4*x^4)/(a + b*ArcSin[c*x]) - 2*CosIntegral[2*(a/b + ArcSin[c*x])]*
Sin[(2*a)/b] + CosIntegral[4*(a/b + ArcSin[c*x])]*Sin[(4*a)/b] + 2*Cos[(2*a
)/b]*SinIntegral[2*(a/b + ArcSin[c*x])] - Cos[(4*a)/b]*SinIntegral[4*(a/b +
 ArcSin[c*x])])/(2*b^2*c^5)
```

fricas [F] time = 0.40, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{-c^2x^2+1}\,x^4}{a^2c^2x^2+\left(b^2c^2x^2-b^2\right)\arcsin(cx)^2-a^2+2\left(abc^2x^2-ab\right)\arcsin(cx)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*x^2 + 1)*x^4/(a^2*c^2*x^2 + (b^2*c^2*x^2 - b^2)*arcsin(
c*x)^2 - a^2 + 2*(a*b*c^2*x^2 - a*b)*arcsin(c*x)), x)
```

giac [B] time = 0.90, size = 876, normalized size = 6.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] 4*b*arcsin(c*x)*cos(a/b)^3*cos_integral(4*a/b + 4*arcsin(c*x))*sin(a/b)/(b^
3*c^5*arcsin(c*x) + a*b^2*c^5) - 4*b*arcsin(c*x)*cos(a/b)^4*sin_integral(4*
a/b + 4*arcsin(c*x))/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) + 4*a*cos(a/b)^3*cos
_integral(4*a/b + 4*arcsin(c*x))*sin(a/b)/(b^3*c^5*arcsin(c*x) + a*b^2*c^5)
 - 4*a*cos(a/b)^4*sin_integral(4*a/b + 4*arcsin(c*x))/(b^3*c^5*arcsin(c*x)
+ a*b^2*c^5) - 2*b*arcsin(c*x)*cos(a/b)*cos_integral(4*a/b + 4*arcsin(c*x))
*sin(a/b)/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) - 2*b*arcsin(c*x)*cos(a/b)*cos_
integral(2*a/b + 2*arcsin(c*x))*sin(a/b)/(b^3*c^5*arcsin(c*x) + a*b^2*c^5)
+ 4*b*arcsin(c*x)*cos(a/b)^2*sin_integral(4*a/b + 4*arcsin(c*x))/(b^3*c^5*a
rcsin(c*x) + a*b^2*c^5) + 2*b*arcsin(c*x)*cos(a/b)^2*sin_integral(2*a/b + 2
*arcsin(c*x))/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) - 2*a*cos(a/b)*cos_integral
(4*a/b + 4*arcsin(c*x))*sin(a/b)/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) - 2*a*co
s(a/b)*cos_integral(2*a/b + 2*arcsin(c*x))*sin(a/b)/(b^3*c^5*arcsin(c*x) +
a*b^2*c^5) + 4*a*cos(a/b)^2*sin_integral(4*a/b + 4*arcsin(c*x))/(b^3*c^5*ar
csin(c*x) + a*b^2*c^5) + 2*a*cos(a/b)^2*sin_integral(2*a/b + 2*arcsin(c*x))
/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) - (c^2*x^2 - 1)^2*b/(b^3*c^5*arcsin(c*x)
 + a*b^2*c^5) - 1/2*b*arcsin(c*x)*sin_integral(4*a/b + 4*arcsin(c*x))/(b^3*
c^5*arcsin(c*x) + a*b^2*c^5) - b*arcsin(c*x)*sin_integral(2*a/b + 2*arcsin(
c*x))/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) - 2*(c^2*x^2 - 1)*b/(b^3*c^5*arcsin
(c*x) + a*b^2*c^5) - 1/2*a*sin_integral(4*a/b + 4*arcsin(c*x))/(b^3*c^5*arc
sin(c*x) + a*b^2*c^5) - a*sin_integral(2*a/b + 2*arcsin(c*x))/(b^3*c^5*arcs
in(c*x) + a*b^2*c^5) - b/(b^3*c^5*arcsin(c*x) + a*b^2*c^5)
```

maple [A] time = 0.11, size = 250, normalized size = 1.77

$$-\frac{4 \arcsin (cx) \operatorname{Si}\left(4 \arcsin (cx)+\frac{4a}{b}\right) \cos \left(\frac{4a}{b}\right) b-4 \arcsin (cx) \operatorname{Ci}\left(4 \arcsin (cx)+\frac{4a}{b}\right) \sin \left(\frac{4a}{b}\right) b-8 \operatorname{Si}\left(2 \arcsi\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] -1/8/c^5*(4*arcsin(c*x)*Si(4*arcsin(c*x)+4*a/b)*cos(4*a/b)*b-4*arcsin(c*x)*
Ci(4*arcsin(c*x)+4*a/b)*sin(4*a/b)*b-8*Si(2*arcsin(c*x)+2*a/b)*cos(2*a/b)*a
rcsin(c*x)*b+8*Ci(2*arcsin(c*x)+2*a/b)*sin(2*a/b)*arcsin(c*x)*b+4*Si(4*arcs
in(c*x)+4*a/b)*cos(4*a/b)*a-4*Ci(4*arcsin(c*x)+4*a/b)*sin(4*a/b)*a-8*Si(2*a
rcsin(c*x)+2*a/b)*cos(2*a/b)*a+8*Ci(2*arcsin(c*x)+2*a/b)*sin(2*a/b)*a+cos(4
*arcsin(c*x))*b-4*cos(2*arcsin(c*x))*b+3*b)/b^2/(a+b*arcsin(c*x))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{x^4-\frac{4\left(b^2c\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+abc\right)\int\frac{x^3}{b\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+a}\,dx}{bc}}{b^2c\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] -(x^4 - 4*(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c)*integr
ate(x^3/(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c), x))/(b^
2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^4}{(a + b \operatorname{asin}(c x))^2 \sqrt{1 - c^2 x^2}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(1/2)),x)
```

```
[Out] int(x^4/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4}{\sqrt{-(cx - 1)(cx + 1)} (a + b \operatorname{asin}(cx))^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4/(a+b*asin(c*x))**2/(-c**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(x**4/(sqrt(-(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**2), x)
```

3.410 $\int \frac{x^3}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=142

$$\frac{3\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{4b^2c^4}-\frac{3\cos\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{4b^2c^4}+\frac{3\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{4b^2c^4}-\frac{3\sin\left(\frac{3a}{b}\right)\text{Si}\left(\frac{3\left(a+b\sin^{-1}(cx\right.}{b}\right.}{4b^2c^4}$$

```
[Out] -x^3/b/c/(a+b*arcsin(c*x))+3/4*Ci((a+b*arcsin(c*x))/b)*cos(a/b)/b^2/c^4-3/4
*Ci(3*(a+b*arcsin(c*x))/b)*cos(3*a/b)/b^2/c^4+3/4*Si((a+b*arcsin(c*x))/b)*s
in(a/b)/b^2/c^4-3/4*Si(3*(a+b*arcsin(c*x))/b)*sin(3*a/b)/b^2/c^4
```

Rubi [A] time = 0.34, antiderivative size = 138, normalized size of antiderivative = 0.97, number of steps used = 10, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {4719, 4635, 4406, 3303, 3299, 3302}

$$\frac{3\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{4b^2c^4}-\frac{3\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)}{4b^2c^4}+\frac{3\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx\right.}{4b^2c^4}$$

Antiderivative was successfully verified.

```
[In] Int[x^3/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] -(x^3/(b*c*(a + b*ArcSin[c*x]))) + (3*Cos[a/b]*CosIntegral[a/b + ArcSin[c*x
]])/(4*b^2*c^4) - (3*Cos[(3*a)/b]*CosIntegral[(3*a)/b + 3*ArcSin[c*x]])/(4*
b^2*c^4) + (3*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(4*b^2*c^4) - (3*Sin
[(3*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c*x]])/(4*b^2*c^4)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
```

```
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rubi steps

$$\int \frac{x^3}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}dx = -\frac{x^3}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{3\int \frac{x^2}{a+b\sin^{-1}(cx)}dx}{bc}$$

$$= -\frac{x^3}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{3\,\mathrm{Subst}\left(\int \frac{\cos(x)\sin^2(x)}{a+bx}dx,x,\sin^{-1}(cx)\right)}{bc^4}$$

$$= -\frac{x^3}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{3\,\mathrm{Subst}\left(\int \left(\frac{\cos(x)}{4(a+bx)}-\frac{\cos(3x)}{4(a+bx)}\right)dx,x,\sin^{-1}(cx)\right)}{bc^4}$$

$$= -\frac{x^3}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{3\,\mathrm{Subst}\left(\int \frac{\cos(x)}{a+bx}dx,x,\sin^{-1}(cx)\right)}{4bc^4}-\frac{3\,\mathrm{Subst}\left(\int \frac{\cos}{a+}\right.}{}$$

$$= -\frac{x^3}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{\left(3\cos\left(\frac{a}{b}\right)\right)\mathrm{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+x\right)}{a+bx}dx,x,\sin^{-1}(cx)\right)}{4bc^4}-\frac{(3}{}$$

$$= -\frac{x^3}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{3\cos\left(\frac{a}{b}\right)\mathrm{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{4b^2c^4}-\frac{3\cos\left(\frac{3a}{b}\right)\mathrm{Ci}\left(\frac{3a}{b}+\right.}{4b^2c^4}$$

Mathematica [A] time = 0.33, size = 113, normalized size = 0.80

$$\frac{3\left(\cos\left(\frac{a}{b}\right)\mathrm{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)-\cos\left(\frac{3a}{b}\right)\mathrm{Ci}\left(3\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+\sin\left(\frac{a}{b}\right)\mathrm{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)-\sin\left(\frac{3a}{b}\right)\mathrm{Si}\left(3\left(\frac{a}{b}+\mathrm{s}\right.\right.\right.}{4b^2c^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] -(x^3/(b*c*(a + b*ArcSin[c*x]))) + (3*(Cos[a/b]*CosIntegral[a/b + ArcSin[c*
x]] - Cos[(3*a)/b]*CosIntegral[3*(a/b + ArcSin[c*x])] + Sin[a/b]*SinIntegra
l[a/b + ArcSin[c*x]] - Sin[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c*x])]))/(4
*b^2*c^4)
```

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{-c^2x^2+1}\,x^3}{a^2c^2x^2+\left(b^2c^2x^2-b^2\right)\arcsin(cx)^2-a^2+2\left(abc^2x^2-ab\right)\arcsin(cx)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*x^2 + 1)*x^3/(a^2*c^2*x^2 + (b^2*c^2*x^2 - b^2)*arcsin(
c*x)^2 - a^2 + 2*(a*b*c^2*x^2 - a*b)*arcsin(c*x)), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.11, size = 227, normalized size = 1.60

$$-\frac{3\arcsin(cx)\,\mathrm{Si}\left(3\arcsin(cx)+\frac{3a}{b}\right)\sin\left(\frac{3a}{b}\right)b+3\arcsin(cx)\,\mathrm{Ci}\left(3\arcsin(cx)+\frac{3a}{b}\right)\cos\left(\frac{3a}{b}\right)b-3\arcsin(cx}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] -1/4/c^4*(3*arcsin(c*x)*Si(3*arcsin(c*x)+3*a/b)*sin(3*a/b)*b+3*arcsin(c*x)*
Ci(3*arcsin(c*x)+3*a/b)*cos(3*a/b)*b-3*arcsin(c*x)*Si(arcsin(c*x)+a/b)*sin(
a/b)*b-3*arcsin(c*x)*Ci(arcsin(c*x)+a/b)*cos(a/b)*b+3*Si(3*arcsin(c*x)+3*a/
b)*sin(3*a/b)*a+3*Ci(3*arcsin(c*x)+3*a/b)*cos(3*a/b)*a-3*Si(arcsin(c*x)+a/b
)*sin(a/b)*a-3*Ci(arcsin(c*x)+a/b)*cos(a/b)*a+3*x*b*c-sin(3*arcsin(c*x))*b)
/(a+b*arcsin(c*x))/b^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{x^3-\frac{3\left(b^2c\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abc\right)\int\frac{x^2}{b\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+a}\,dx}{bc}}{b^2c\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] -(x^3 - 3*(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c)*integr
ate(x^2/(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c), x))/(b^
2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{x^3}{(a+b\,\mathrm{asin}(c\,x))^2\,\sqrt{1-c^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(1/2)),x)
```

```
[Out] int(x^3/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{x^3}{\sqrt{-(cx-1)(cx+1)}\,(a+b\,\mathrm{asin}(cx))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3/(a+b*asin(c*x))**2/(-c**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(x**3/(sqrt(-(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**2), x)
```

3.411 $\int \frac{x^2}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=79

$$-\frac{\sin\left(\frac{2a}{b}\right)\text{Ci}\left(\frac{2\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{b^2c^3}+\frac{\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{b^2c^3}-\frac{x^2}{bc\left(a+b\sin^{-1}(cx)\right)}$$

```
[Out] -x^2/b/c/(a+b*arcsin(c*x))+cos(2*a/b)*Si(2*(a+b*arcsin(c*x))/b)/b^2/c^3-Ci(
2*(a+b*arcsin(c*x))/b)*sin(2*a/b)/b^2/c^3
```

Rubi [A] time = 0.24, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {4719, 4635, 4406, 12, 3303, 3299, 3302}

$$-\frac{\sin\left(\frac{2a}{b}\right)\text{CosIntegral}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{b^2c^3}+\frac{\cos\left(\frac{2a}{b}\right)\text{Si}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)}{b^2c^3}-\frac{x^2}{bc\left(a+b\sin^{-1}(cx)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[x^2/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] -(x^2/(b*c*(a + b*ArcSin[c*x]))) - (CosIntegral[(2*a)/b + 2*ArcSin[c*x]]*Si
n[(2*a)/b])/(b^2*c^3) + (Cos[(2*a)/b]*SinIntegral[(2*a)/b + 2*ArcSin[c*x]])
/(b^2*c^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^2}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx &= -\frac{x^2}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{2\int \frac{x}{a+b\sin^{-1}(cx)}\,dx}{bc}\\
&= -\frac{x^2}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{2\,\mathrm{Subst}\left(\int \frac{\cos(x)\sin(x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{bc^3}\\
&= -\frac{x^2}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{2\,\mathrm{Subst}\left(\int \frac{\sin(2x)}{2(a+bx)}\,dx,x,\sin^{-1}(cx)\right)}{bc^3}\\
&= -\frac{x^2}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{\mathrm{Subst}\left(\int \frac{\sin(2x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{bc^3}\\
&= -\frac{x^2}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{\cos\left(\frac{2a}{b}\right)\mathrm{Subst}\left(\int \frac{\sin\left(\frac{2a}{b}+2x\right)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{bc^3}-\\
&= -\frac{x^2}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{\mathrm{Ci}\left(\frac{2a}{b}+2\sin^{-1}(cx)\right)\sin\left(\frac{2a}{b}\right)}{b^2c^3}+\frac{\cos\left(\frac{2a}{b}\right)\mathrm{Si}\left(\frac{2a}{b}\right.}{b^2}
\end{aligned}
$$

Mathematica [A] time = 0.18, size = 70, normalized size = 0.89

$$
\frac{-\frac{bc^2x^2}{a+b\sin^{-1}(cx)}-\sin\left(\frac{2a}{b}\right)\mathrm{Ci}\left(2\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+\cos\left(\frac{2a}{b}\right)\mathrm{Si}\left(2\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)}{b^2c^3}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2),x]
[Out] (-((b*c^2*x^2)/(a + b*ArcSin[c*x])) - CosIntegral[2*(a/b + ArcSin[c*x])]*Si
n[(2*a)/b] + Cos[(2*a)/b]*SinIntegral[2*(a/b + ArcSin[c*x])])/(b^2*c^3)
```

fricas [F] time = 0.40, size = 0, normalized size = 0.00

$$
\mathrm{integral}\left(-\frac{\sqrt{-c^2x^2+1}\,x^2}{a^2c^2x^2+\left(b^2c^2x^2-b^2\right)\arcsin(cx)^2-a^2+2\left(abc^2x^2-ab\right)\arcsin(cx)},x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="fricas")
```

[Out] integral(-sqrt(-c^2*x^2 + 1)*x^2/(a^2*c^2*x^2 + (b^2*c^2*x^2 - b^2)*arcsin(c*x)^2 - a^2 + 2*(a*b*c^2*x^2 - a*b)*arcsin(c*x)), x)

giac [B] time = 0.68, size = 346, normalized size = 4.38

$$-\frac{2\,b\arcsin(cx)\cos\left(\frac{a}{b}\right)\operatorname{Ci}\left(\frac{2\,a}{b}+2\,\arcsin(cx)\right)\sin\left(\frac{a}{b}\right)}{b^3c^3\arcsin(cx)+ab^2c^3}+\frac{2\,b\arcsin(cx)\cos\left(\frac{a}{b}\right)^2\operatorname{Si}\left(\frac{2\,a}{b}+2\,\arcsin(cx)\right)}{b^3c^3\arcsin(cx)+ab^2c^3}-\frac{2\,a\cos\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] -2*b*arcsin(c*x)*cos(a/b)*cos_integral(2*a/b + 2*arcsin(c*x))*sin(a/b)/(b^3
*c^3*arcsin(c*x) + a*b^2*c^3) + 2*b*arcsin(c*x)*cos(a/b)^2*sin_integral(2*a
/b + 2*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 2*a*cos(a/b)*cos_in
tegral(2*a/b + 2*arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) +
2*a*cos(a/b)^2*sin_integral(2*a/b + 2*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a
*b^2*c^3) - b*arcsin(c*x)*sin_integral(2*a/b + 2*arcsin(c*x))/(b^3*c^3*arcs
in(c*x) + a*b^2*c^3) - (c^2*x^2 - 1)*b/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) -
a*sin_integral(2*a/b + 2*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - b
/(b^3*c^3*arcsin(c*x) + a*b^2*c^3)
```

maple [A] time = 0.10, size = 136, normalized size = 1.72

$$\frac{2\operatorname{Si}\left(2\arcsin(cx)+\frac{2a}{b}\right)\cos\left(\frac{2a}{b}\right)\arcsin(cx)\,b-2\operatorname{Ci}\left(2\arcsin(cx)+\frac{2a}{b}\right)\sin\left(\frac{2a}{b}\right)\arcsin(cx)\,b+2\operatorname{Si}\left(2\arcsin(c\right.}{2c^3b^2\left(a+b\arcsin(cx)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] 1/2/c^3*(2*Si(2*arcsin(c*x)+2*a/b)*cos(2*a/b)*arcsin(c*x)*b-2*Ci(2*arcsin(c
*x)+2*a/b)*sin(2*a/b)*arcsin(c*x)*b+2*Si(2*arcsin(c*x)+2*a/b)*cos(2*a/b)*a-
2*Ci(2*arcsin(c*x)+2*a/b)*sin(2*a/b)*a+cos(2*arcsin(c*x))*b-b)/b^2/(a+b*arc
sin(c*x))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{x^2-\frac{2\left(b^2c\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abc\right)\int\frac{x}{b\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+a}\,dx}{bc}}{b^2c\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] -(x^2 - 2*(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c)*integr
ate(x/(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c), x))/(b^2*
c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{x^2}{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^2\,\sqrt{1-c^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(1/2)),x)
```

```
[Out] int(x^2/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\sqrt{-\left(cx-1\right)\left(cx+1\right)}\,\left(a+b\,\mathrm{asin}\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2/(a+b*asin(c*x))**2/(-c**2*x**2+1)**(1/2),x)
[Out] Integral(x**2/(sqrt(-(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**2), x)
```

3.412 $\int \frac{x}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=72

$$\frac{\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{b^2c^2}+\frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{b^2c^2}-\frac{x}{bc\left(a+b\sin^{-1}(cx)\right)}$$

```
[Out] -x/b/c/(a+b*arcsin(c*x))+Ci((a+b*arcsin(c*x))/b)*cos(a/b)/b^2/c^2+Si((a+b*a
rcsin(c*x))/b)*sin(a/b)/b^2/c^2
```

Rubi [A] time = 0.15, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {4719, 4623, 3303, 3299, 3302}

$$\frac{\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{b^2c^2}+\frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{b^2c^2}-\frac{x}{bc\left(a+b\sin^{-1}(cx)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[x/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] -(x/(b*c*(a + b*ArcSin[c*x]))) + (Cos[a/b]*CosIntegral[(a + b*ArcSin[c*x])/
b])/(b^2*c^2) + (Sin[a/b]*SinIntegral[(a + b*ArcSin[c*x])/b])/(b^2*c^2)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 4719

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^m*(a + b*ArcSin[c*x])^(n + 1))/(b
*c*Sqrt[d]*(n + 1)), x] - Dist[(f*m)/(b*c*Sqrt[d]*(n + 1)), Int[(f*x)^(m -
1)*(a + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] &
& EqQ[c^2*d + e, 0] && LtQ[n, -1] && GtQ[d, 0]
```

Rubi steps

$$\int \frac{x}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx = -\frac{x}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{\int \frac{1}{a+b\sin^{-1}(cx)}\,dx}{bc}$$

$$= -\frac{x}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}-\frac{x}{b}\right)}{x}\,dx, x, a+b\sin^{-1}(cx)\right)}{b^2c^2}$$

$$= -\frac{x}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\cos\left(\frac{x}{b}\right)}{x}\,dx, x, a+b\sin^{-1}(cx)\right)}{b^2c^2} +$$

$$= -\frac{x}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{b^2c^2} + \frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx}{b}\right.}{b^2c^2}$$

Mathematica [A] time = 0.13, size = 59, normalized size = 0.82

$$\frac{\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)+\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)-\frac{bcx}{a+b\sin^{-1}(cx)}}{b^2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] (-((b*c*x)/(a + b*ArcSin[c*x])) + Cos[a/b]*CosIntegral[a/b + ArcSin[c*x]] +
 Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(b^2*c^2)
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}\,x}{a^2c^2x^2+\left(b^2c^2x^2-b^2\right)\arcsin(cx)^2-a^2+2\left(abc^2x^2-ab\right)\arcsin(cx)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*x^2 + 1)*x/(a^2*c^2*x^2 + (b^2*c^2*x^2 - b^2)*arcsin(c*
x)^2 - a^2 + 2*(a*b*c^2*x^2 - a*b)*arcsin(c*x)), x)
```

giac [B] time = 0.50, size = 200, normalized size = 2.78

$$\frac{b\arcsin(cx)\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\arcsin(cx)\right)}{b^3c^2\arcsin(cx)+ab^2c^2}+\frac{b\arcsin(cx)\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\arcsin(cx)\right)}{b^3c^2\arcsin(cx)+ab^2c^2}-\frac{bcx}{b^3c^2\arcsin(cx)+ab^2c^2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] b*arcsin(c*x)*cos(a/b)*cos_integral(a/b + arcsin(c*x))/(b^3*c^2*arcsin(c*x)
 + a*b^2*c^2) + b*arcsin(c*x)*sin(a/b)*sin_integral(a/b + arcsin(c*x))/(b^3
*c^2*arcsin(c*x) + a*b^2*c^2) - b*c*x/(b^3*c^2*arcsin(c*x) + a*b^2*c^2) + a
*cos(a/b)*cos_integral(a/b + arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*c^2)
 + a*sin(a/b)*sin_integral(a/b + arcsin(c*x))/(b^3*c^2*arcsin(c*x) + a*b^2*
c^2)
```

maple [A] time = 0.09, size = 108, normalized size = 1.50

$$\frac{\arcsin(cx)\,\text{Si}\left(\arcsin(cx)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)b+\arcsin(cx)\,\text{Ci}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)b+\text{Si}\left(\arcsin(cx)+\frac{a}{b}\right)\sin}{c^2\left(a+b\arcsin(cx)\right)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] 1/c^2*(arcsin(c*x)*Si(arcsin(c*x)+a/b)*sin(a/b)*b+arcsin(c*x)*Ci(arcsin(c*x
)+a/b)*cos(a/b)*b+Si(arcsin(c*x)+a/b)*sin(a/b)*a+Ci(arcsin(c*x)+a/b)*cos(a/
b)*a-x*b*c)/(a+b*arcsin(c*x))/b^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{-x+\frac{\left(b^2c\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+abc\right)\int\frac{1}{b\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+a}\,dx}{bc}}{b^2c\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] ((b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c)*integrate(1/(b^
2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c), x) - x)/(b^2*c*arc
tan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{x}{(a+b\,\mathrm{asin}\,(c\,x))^2\,\sqrt{1-c^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(1/2)),x)
```

```
[Out] int(x/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{x}{\sqrt{-(cx-1)(cx+1)}\,(a+b\,\mathrm{asin}\,(cx))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*asin(c*x))**2/(-c**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(x/(sqrt(-(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**2), x)
```

3.413 $\int \frac{1}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=18

$$-\frac{1}{bc\left(a+b\sin^{-1}(cx)\right)}$$

```
[Out] -1/b/c/(a+b*arcsin(c*x))
```

Rubi [A] time = 0.04, antiderivative size = 18, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {4641}

$$-\frac{1}{bc\left(a+b\sin^{-1}(cx)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] -(1/(b*c*(a + b*ArcSin[c*x])))
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{1}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx = -\frac{1}{bc\left(a+b\sin^{-1}(cx)\right)}$$

Mathematica [A] time = 0.01, size = 18, normalized size = 1.00

$$-\frac{1}{bc\left(a+b\sin^{-1}(cx)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] -(1/(b*c*(a + b*ArcSin[c*x])))
```

fricas [A] time = 0.51, size = 18, normalized size = 1.00

$$-\frac{1}{b^2c\arcsin(cx)+abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/(b^2*c*arcsin(c*x) + a*b*c)
```

giac [A] time = 0.52, size = 18, normalized size = 1.00

$$-\frac{1}{b^2c\arcsin(cx)+abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] -1/(b^2*c*arcsin(c*x) + a*b*c)
```

maple [A] time = 0.01, size = 19, normalized size = 1.06

$$-\frac{1}{bc\left(a+b\arcsin\left(cx\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] -1/b/c/(a+b*arcsin(c*x))
```

maxima [A] time = 0.52, size = 18, normalized size = 1.00

$$-\frac{1}{\left(b\arcsin\left(cx\right)+a\right)bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/((b*arcsin(c*x) + a)*b*c)
```

mupad [B] time = 0.17, size = 18, normalized size = 1.00

$$-\frac{1}{c\,\mathrm{asin}\left(c\,x\right)\,b^2+a\,c\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(1/2)),x)
```

```
[Out] -1/(b^2*c*asin(c*x) + a*b*c)
```

sympy [A] time = 2.11, size = 53, normalized size = 2.94

$$\begin{cases} \frac{x}{a^{2}} & \text{for}\: b = 0 \wedge c = 0 \\ \frac{\begin{cases} - \frac{i \operatorname{acosh}{\left(c x \right)}}{c} & \text{for}\: \left|{c^{2} x^{2}}\right| > 1 \\ \frac{\operatorname{asin}{\left(c x \right)}}{c} & \text{otherwise} \end{cases}}{a^{2}} & \text{for}\: b = 0 \\ \frac{x}{a^{2}} & \text{for}\: c = 0 \\ - \frac{1}{a b c + b^{2} c \operatorname{asin}{\left(c x \right)}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(c*x))**2/(-c**2*x**2+1)**(1/2),x)
```

```
[Out] Piecewise((x/a**2, Eq(b, 0) & Eq(c, 0)), (Piecewise((-I*acosh(c*x)/c, Abs(c
**2*x**2) > 1), (asin(c*x)/c, True))/a**2, Eq(b, 0)), (x/a**2, Eq(c, 0)), (
-1/(a*b*c + b**2*c*asin(c*x)), True))
```

3.414 $\int \frac{1}{x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=47

$$-\frac{\mathrm{Int}\left(\frac{1}{x^2\left(a+b\sin^{-1}(cx)\right)},x\right)}{bc}-\frac{1}{bcx\left(a+b\sin^{-1}(cx)\right)}$$

```
[Out] -1/b/c/x/(a+b*arcsin(c*x))-Unintegrable(1/x^2/(a+b*arcsin(c*x)),x)/b/c
```

Rubi [A] time = 0.15, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] -(1/(b*c*x*(a + b*ArcSin[c*x]))) - Defer[Int][1/(x^2*(a + b*ArcSin[c*x])),
x]/(b*c)
```

Rubi steps

$$\int \frac{1}{x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx=-\frac{1}{bcx\left(a+b\sin^{-1}(cx)\right)}-\frac{\int \frac{1}{x^2\left(a+b\sin^{-1}(cx)\right)}\,dx}{bc}$$

Mathematica [A] time = 8.15, size = 0, normalized size = 0.00

$$\int \frac{1}{x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] Integrate[1/(x*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.41, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{-c^2x^2+1}}{a^2c^2x^3-a^2x+\left(b^2c^2x^3-b^2x\right)\arcsin(cx)^2+2\left(abc^2x^3-abx\right)\arcsin(cx)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*x^2 + 1)/(a^2*c^2*x^3 - a^2*x + (b^2*c^2*x^3 - b^2*x)*a
rcsin(c*x)^2 + 2*(a*b*c^2*x^3 - a*b*x)*arcsin(c*x)), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.19, size = 0, normalized size = 0.00

$$\int \frac{1}{x\left(a+b\arcsin\left(cx\right)\right)^{2}\sqrt{-c^{2}x^{2}+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] int(1/x/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\frac{\left(b^{2}cx\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+abcx\right)\int\frac{1}{\left(b\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+a\right)x^{2}}\,dx}{bc}+1}{b^{2}cx\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+abcx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] -((b^2*c*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*x)*integrate(
1/(b^2*c*x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*x^2), x) +
1)/(b^2*c*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{1}{x\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,\sqrt{1-c^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x*(a + b*asin(c*x))^2*(1 - c^2*x^2)^(1/2)),x)
```

```
[Out] int(1/(x*(a + b*asin(c*x))^2*(1 - c^2*x^2)^(1/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x\sqrt{-\left(cx-1\right)\left(cx+1\right)}\left(a+b\,\mathrm{asin}\left(cx\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+b*asin(c*x))**2/(-c**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(1/(x*sqrt(-(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**2), x)
```

3.415 $\int \frac{1}{x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=47

$$-\frac{2\text{Int}\left(\frac{1}{x^3\left(a+b\sin^{-1}(cx)\right)},x\right)}{bc}-\frac{1}{bcx^2\left(a+b\sin^{-1}(cx)\right)}$$

```
[Out] -1/b/c/x^2/(a+b*arcsin(c*x))-2*Unintegrable(1/x^3/(a+b*arcsin(c*x)),x)/b/c
```

Rubi [A] time = 0.15, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] -(1/(b*c*x^2*(a + b*ArcSin[c*x]))) - (2*Defer[Int][1/(x^3*(a + b*ArcSin[c*x
])), x])/(b*c)
```

Rubi steps

$$\int \frac{1}{x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx=-\frac{1}{bcx^2\left(a+b\sin^{-1}(cx)\right)}-\frac{2\int \frac{1}{x^3\left(a+b\sin^{-1}(cx)\right)}\,dx}{bc}$$

Mathematica [A] time = 1.39, size = 0, normalized size = 0.00

$$\int \frac{1}{x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] Integrate[1/(x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}}{a^2c^2x^4-a^2x^2+\left(b^2c^2x^4-b^2x^2\right)\arcsin\left(cx\right)^2+2\left(abc^2x^4-abx^2\right)\arcsin\left(cx\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="fricas
")
```

```
[Out] integral(-sqrt(-c^2*x^2 + 1)/(a^2*c^2*x^4 - a^2*x^2 + (b^2*c^2*x^4 - b^2*x^
2)*arcsin(c*x)^2 + 2*(a*b*c^2*x^4 - a*b*x^2)*arcsin(c*x)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{-c^2x^2+1}\,(b\arcsin(cx)+a)^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(-c^2*x^2 + 1)*(b*arcsin(c*x) + a)^2*x^2), x)
```

maple [A] time = 0.23, size = 0, normalized size = 0.00

$$\int \frac{1}{x^2\,(a+b\arcsin(cx))^2\,\sqrt{-c^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x^2/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x)
```

```
[Out] int(1/x^2/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\frac{2\left(b^2cx^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx^2\right)\int \frac{1}{\left(b\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+a\right)x^3}\,dx}{bc}+1}{b^2cx^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abcx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(a+b*arcsin(c*x))^2/(-c^2*x^2+1)^(1/2),x, algorithm="maxima
")
```

```
[Out] -(2*(b^2*c*x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*x^2)*inte
grate(1/(b^2*c*x^3*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*x^3),
 x) + 1)/(b^2*c*x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c*x^2)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{1}{x^2\,(a+b\,\mathrm{asin}(c\,x))^2\,\sqrt{1-c^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x^2*(a + b*asin(c*x))^2*(1 - c^2*x^2)^(1/2)),x)
```

```
[Out] int(1/(x^2*(a + b*asin(c*x))^2*(1 - c^2*x^2)^(1/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x^2\sqrt{-(cx-1)(cx+1)}\,(a+b\,\mathrm{asin}(cx))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x**2/(a+b*asin(c*x))**2/(-c**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(1/(x**2*sqrt(-(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**2), x)
```

3.416 $\int \frac{x^m}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{x^m}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

[Out] Unintegrable(x^m/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)

Rubi [A] time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

[In] Int[x^m/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2),x]

[Out] Defer[Int][x^m/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2), x]

Rubi steps

$$\int \frac{x^m}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx=\int \frac{x^m}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Mathematica [A] time = 1.24, size = 0, normalized size = 0.00

$$\int \frac{x^m}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

[In] Integrate[x^m/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2),x]

[Out] Integrate[x^m/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2), x]

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}\,x^m}{a^2c^4x^4-2\,a^2c^2x^2+\left(b^2c^4x^4-2\,b^2c^2x^2+b^2\right)\arcsin(cx)^2+a^2+2\left(abc^4x^4-2\,abc^2x^2+ab\right)\arcsin(c$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^m/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")

[Out] integral(sqrt(-c^2*x^2 + 1)*x^m/(a^2*c^4*x^4 - 2*a^2*c^2*x^2 + (b^2*c^4*x^4 - 2*b^2*c^2*x^2 + b^2)*arcsin(c*x)^2 + a^2 + 2*(a*b*c^4*x^4 - 2*a*b*c^2*x^2 + a*b)*arcsin(c*x)), x)

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m}{\left(-c^2x^2+1\right)^{\frac{3}{2}}\left(b\arcsin(cx)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
[Out] integrate(x^m/((-c^2*x^2 + 1)^(3/2)*(b*arcsin(c*x) + a)^2), x)
```

maple [A] time = 0.73, size = 0, normalized size = 0.00

$$\int \frac{x^{m}}{\left(-c^{2}x^{2}+1\right)^{\frac{3}{2}} \left(a+b \arcsin \left(c x\right)\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)
[Out] int(x^m/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x^m}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(1-c^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(3/2)),x)
[Out] int(x^m/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(3/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{m}}{\left(- \left(c x - 1\right) \left(c x + 1\right)\right)^{\frac{3}{2}} \left(a + b \operatorname{asin}{\left(c x \right)}\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m/(-c**2*x**2+1)**(3/2)/(a+b*asin(c*x))**2,x)
[Out] Integral(x**m/((-(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))**2), x)
```

3.417 $\int \frac{x^3}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{x^3}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

```
[Out] Unintegrable(x^3/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

Rubi [A] time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^3}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[x^3/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2),x]
[Out] Defer[Int][x^3/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2), x]
```

Rubi steps

$$\int \frac{x^3}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx=\int \frac{x^3}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Mathematica [A] time = 66.69, size = 0, normalized size = 0.00

$$\int \frac{x^3}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x^3/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2),x]
[Out] Integrate[x^3/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}\,x^3}{a^2c^4x^4-2\,a^2c^2x^2+\left(b^2c^4x^4-2\,b^2c^2x^2+b^2\right)\arcsin(cx)^2+a^2+2\left(abc^4x^4-2\,abc^2x^2+ab\right)\arcsin(c$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
[Out] integral(sqrt(-c^2*x^2 + 1)*x^3/(a^2*c^4*x^4 - 2*a^2*c^2*x^2 + (b^2*c^4*x^4
 - 2*b^2*c^2*x^2 + b^2)*arcsin(c*x)^2 + a^2 + 2*(a*b*c^4*x^4 - 2*a*b*c^2*x^
2 + a*b)*arcsin(c*x)), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.83, size = 0, normalized size = 0.00

$$\int \frac{x^{3}}{\left(-c^{2} x^{2}+1\right)^{\frac{3}{2}} \left(a +b \arcsin \left(c x \right)\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] int(x^3/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{x^3 - \frac{\left(abc^3x^2-abc+\left(b^2c^3x^2-b^2c\right)\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)\right)\left(c^2 \int \frac{x^4}{bc^4x^4\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)+ac^4x^4-2\,bc^2x^2\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)-2\,ac^2x^2+b\arctan}{bc}}{abc^3x^2-abc+\left(b^2c^3x^2-b^2c\right)\arctan}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] (x^3 - (a*b*c^3*x^2 - a*b*c + (b^2*c^3*x^2 - b^2*c)*arctan2(c*x, sqrt(c*x +
 1)*sqrt(-c*x + 1)))*integrate((c^2*x^4 - 3*x^2)/(a*b*c^5*x^4 - 2*a*b*c^3*x
^2 + a*b*c + (b^2*c^5*x^4 - 2*b^2*c^3*x^2 + b^2*c)*arctan2(c*x, sqrt(c*x +
1)*sqrt(-c*x + 1))), x))/(a*b*c^3*x^2 - a*b*c + (b^2*c^3*x^2 - b^2*c)*arcta
n2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x^3}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(1-c^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(3/2)),x)
```

```
[Out] int(x^3/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(3/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{3}}{\left(- \left(c x - 1\right) \left(c x + 1\right)\right)^{\frac{3}{2}} \left(a + b \operatorname{asin}{\left(c x \right)}\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3/(-c**2*x**2+1)**(3/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(x**3/((-(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))**2), x)
```

3.418 $\int \frac{x^2}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=69

$$\frac{2\text{Int}\left(\frac{x}{\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)},x\right)}{bc}-\frac{x^2}{bc\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}$$

```
[Out] -x^2/b/c/(-c^2*x^2+1)/(a+b*arcsin(c*x))+2*Unintegrable(x/(-c^2*x^2+1)^2/(a+
b*arcsin(c*x)),x)/b/c
```

Rubi [A] time = 0.20, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^2}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[x^2/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] -(x^2/(b*c*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))) + (2*Defer[Int][x/((1 - c^2*
x^2)^2*(a + b*ArcSin[c*x])), x])/(b*c)
```

Rubi steps

$$\int \frac{x^2}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx=-\frac{x^2}{bc\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}+\frac{2\int \frac{x}{\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}\,dx}{bc}$$

Mathematica [A] time = 8.57, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x^2/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] Integrate[x^2/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{a^2c^4x^4-2\,a^2c^2x^2+\left(b^2c^4x^4-2\,b^2c^2x^2+b^2\right)\arcsin\left(cx\right)^2+a^2+2\left(abc^4x^4-2\,abc^2x^2+ab\right)\arcsin\left(c\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*x^2 + 1)*x^2/(a^2*c^4*x^4 - 2*a^2*c^2*x^2 + (b^2*c^4*x^4
 - 2*b^2*c^2*x^2 + b^2)*arcsin(c*x)^2 + a^2 + 2*(a*b*c^4*x^4 - 2*a*b*c^2*x^
2 + a*b)*arcsin(c*x)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\left(-c^2x^2+1\right)^{\frac{3}{2}}(b\arcsin(cx)+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
[Out] integrate(x^2/((-c^2*x^2 + 1)^(3/2)*(b*arcsin(c*x) + a)^2), x)
```

maple [A] time = 0.67, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\left(-c^2x^2+1\right)^{\frac{3}{2}}(a+b\arcsin(cx))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)
[Out] int(x^2/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{x^2+\frac{2\left(abc^3x^2-abc+\left(b^2c^3x^2-b^2c\right)\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)\right)\int\frac{x}{(cx+1)^2(cx-1)^2\left(b\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+a\right)}\,dx}{bc}}{abc^3x^2-abc+\left(b^2c^3x^2-b^2c\right)\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
[Out] (x^2 + 2*(a*b*c^3*x^2 - a*b*c + (b^2*c^3*x^2 - b^2*c)*arctan2(c*x, sqrt(c*x
 + 1)*sqrt(-c*x + 1)))*integrate(x/(a*b*c^5*x^4 - 2*a*b*c^3*x^2 + a*b*c + (
b^2*c^5*x^4 - 2*b^2*c^3*x^2 + b^2*c)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x +
 1))), x))/(a*b*c^3*x^2 - a*b*c + (b^2*c^3*x^2 - b^2*c)*arctan2(c*x, sqrt(c
*x + 1)*sqrt(-c*x + 1)))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^2}{(a+b\,\mathrm{asin}(c\,x))^2\,\left(1-c^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(3/2)),x)
[Out] int(x^2/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(3/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{(-(cx-1)(cx+1))^{\frac{3}{2}}(a+b\,\mathrm{asin}(cx))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2/(-c**2*x**2+1)**(3/2)/(a+b*asin(c*x))**2,x)
[Out] Integral(x**2/((-(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))**2), x)
```

3.419 $\int \frac{x}{(1-c^2x^2)^{3/2}(a+b\sin^{-1}(cx))^2}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{x}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

```
[Out] Unintegrable(x/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[x/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2),x]
[Out] Defer[Int][x/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2), x]
```

Rubi steps

$$\int \frac{x}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx=\int \frac{x}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Mathematica [A] time = 68.24, size = 0, normalized size = 0.00

$$\int \frac{x}{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2),x]
[Out] Integrate[x/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}\,x}{a^2c^4x^4-2\,a^2c^2x^2+\left(b^2c^4x^4-2\,b^2c^2x^2+b^2\right)\arcsin(cx)^2+a^2+2\left(abc^4x^4-2\,abc^2x^2+ab\right)\arcsin(c\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
[Out] integral(sqrt(-c^2*x^2 + 1)*x/(a^2*c^4*x^4 - 2*a^2*c^2*x^2 + (b^2*c^4*x^4 -
 2*b^2*c^2*x^2 + b^2)*arcsin(c*x)^2 + a^2 + 2*(a*b*c^4*x^4 - 2*a*b*c^2*x^2
+ a*b)*arcsin(c*x)), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{x}{\left(-c^{2}x^{2}+1\right)^{\frac{3}{2}}\left(a+b\arcsin\left(cx\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] int(x/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{x+\frac{\left(abc^{3}x^{2}-abc+\left(b^{2}c^{3}x^{2}-b^{2}c\right)\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)\right)\left(c^{2}\int\frac{x^{2}}{bc^{4}x^{4}\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+ac^{4}x^{4}-2\,bc^{2}x^{2}\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)-2\,ac^{2}x^{2}+b\arctan\left(\right.}}{bc}}{abc^{3}x^{2}-abc+\left(b^{2}c^{3}x^{2}-b^{2}c\right)\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] ((a*b*c^3*x^2 - a*b*c + (b^2*c^3*x^2 - b^2*c)*arctan2(c*x, sqrt(c*x + 1)*sq
rt(-c*x + 1)))*integrate((c^2*x^2 + 1)/(a*b*c^5*x^4 - 2*a*b*c^3*x^2 + a*b*c
 + (b^2*c^5*x^4 - 2*b^2*c^3*x^2 + b^2*c)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c
*x + 1))), x) + x)/(a*b*c^3*x^2 - a*b*c + (b^2*c^3*x^2 - b^2*c)*arctan2(c*x
, sqrt(c*x + 1)*sqrt(-c*x + 1)))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(1-c^2\,x^2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(3/2)),x)
```

```
[Out] int(x/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(3/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}\left(a+b\operatorname{asin}\left(cx\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-c**2*x**2+1)**(3/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(x/((-(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))**2), x)
```

3.420 $\int \frac{1}{(1-c^2x^2)^{3/2}(a+b\sin^{-1}(cx))^2}\,dx$

Optimal. Leaf size=64

$$\frac{2c\text{Int}\left(\frac{x}{(1-c^2x^2)^2(a+b\sin^{-1}(cx))},x\right)}{b}-\frac{1}{bc(1-c^2x^2)(a+b\sin^{-1}(cx))}$$

```
[Out] -1/b/c/(-c^2*x^2+1)/(a+b*arcsin(c*x))+2*c*Unintegrable(x/(-c^2*x^2+1)^2/(a+
b*arcsin(c*x)),x)/b
```

Rubi [A] time = 0.11, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(1-c^2x^2)^{3/2}(a+b\sin^{-1}(cx))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] -(1/(b*c*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))) + (2*c*Defer[Int][x/((1 - c^2*
x^2)^2*(a + b*ArcSin[c*x])), x])/b
```

Rubi steps

$$\int \frac{1}{(1-c^2x^2)^{3/2}(a+b\sin^{-1}(cx))^2}\,dx=-\frac{1}{bc(1-c^2x^2)(a+b\sin^{-1}(cx))}+\frac{(2c)\int \frac{x}{(1-c^2x^2)^2(a+b\sin^{-1}(cx))}\,dx}{b}$$

Mathematica [A] time = 2.76, size = 0, normalized size = 0.00

$$\int \frac{1}{(1-c^2x^2)^{3/2}(a+b\sin^{-1}(cx))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] Integrate[1/((1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}}{a^2c^4x^4-2\,a^2c^2x^2+(b^2c^4x^4-2\,b^2c^2x^2+b^2)\arcsin(cx)^2+a^2+2\,(abc^4x^4-2\,abc^2x^2+ab)\arcsin(c$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*x^2 + 1)/(a^2*c^4*x^4 - 2*a^2*c^2*x^2 + (b^2*c^4*x^4 - 2
*b^2*c^2*x^2 + b^2)*arcsin(c*x)^2 + a^2 + 2*(a*b*c^4*x^4 - 2*a*b*c^2*x^2 +
a*b)*arcsin(c*x)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-c^2x^2+1\right)^{\frac{3}{2}}\left(b\arcsin\left(cx\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((-c^2*x^2 + 1)^(3/2)*(b*arcsin(c*x) + a)^2), x)
```

maple [A] time = 0.33, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-c^2x^2+1\right)^{\frac{3}{2}}\left(a+b\arcsin\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] int(1/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\frac{2\left(abc^4x^2-abc^2+\left(b^2c^4x^2-b^2c^2\right)\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)\right)\int \frac{x}{(cx+1)^2(cx-1)^2\left(b\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)+a\right)}\,dx}{b}+1}{abc^3x^2-abc+\left(b^2c^3x^2-b^2c\right)\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] (2*(a*b*c^4*x^2 - a*b*c^2 + (b^2*c^4*x^2 - b^2*c^2)*arctan2(c*x, sqrt(c*x +
 1)*sqrt(-c*x + 1)))*integrate(x/(a*b*c^4*x^4 - 2*a*b*c^2*x^2 + a*b + (b^2*
c^4*x^4 - 2*b^2*c^2*x^2 + b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))),
 x) + 1)/(a*b*c^3*x^2 - a*b*c + (b^2*c^3*x^2 - b^2*c)*arctan2(c*x, sqrt(c*x
 + 1)*sqrt(-c*x + 1)))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{1}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(1-c^2\,x^2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(3/2)),x)
```

```
[Out] int(1/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(3/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}\left(a+b\,\mathrm{asin}\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c**2*x**2+1)**(3/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(1/((-(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))**2), x)
```

3.421 $\int \frac{1}{x(1-c^2x^2)^{3/2}(a+b\sin^{-1}(cx))^2}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

```
[Out] Unintegrable(1/x/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

Rubi [A] time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(x*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2),x]
[Out] Defer[Int][1/(x*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2), x]
```

Rubi steps

$$\int \frac{1}{x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx=\int \frac{1}{x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Mathematica [A] time = 54.05, size = 0, normalized size = 0.00

$$\int \frac{1}{x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(x*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2),x]
[Out] Integrate[1/(x*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}}{a^2c^4x^5-2\,a^2c^2x^3+a^2x+\left(b^2c^4x^5-2\,b^2c^2x^3+b^2x\right)\arcsin\left(cx\right)^2+2\left(abc^4x^5-2\,abc^2x^3+abx\right)\text{arcsi}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
[Out] integral(sqrt(-c^2*x^2 + 1)/(a^2*c^4*x^5 - 2*a^2*c^2*x^3 + a^2*x + (b^2*c^4
*x^5 - 2*b^2*c^2*x^3 + b^2*x)*arcsin(c*x)^2 + 2*(a*b*c^4*x^5 - 2*a*b*c^2*x^
3 + a*b*x)*arcsin(c*x)), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 3.83, size = 0, normalized size = 0.00

$$\int \frac{1}{x\left(-c^{2}x^{2}+1\right)^{\frac{3}{2}}\left(a+b\arcsin\left(cx\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] int(1/x/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\frac{\left(abc^{3}x^{3}-abcx+\left(b^{2}c^{3}x^{3}-b^{2}cx\right)\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)\right)\left(3\,c^{2}\int\frac{x^{2}}{bc^{4}x^{6}\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+ac^{4}x^{6}-2\,bc^{2}x^{4}\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)-2\,ac^{2}x^{4}+bx^{2}\,\mathrm{arctan}}\right.}{bc}}{abc^{3}x^{3}-abcx+\left(b^{2}c^{3}x^{3}-b^{2}cx\right)\mathrm{ar}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] ((a*b*c^3*x^3 - a*b*c*x + (b^2*c^3*x^3 - b^2*c*x)*arctan2(c*x, sqrt(c*x + 1
)*sqrt(-c*x + 1)))*integrate((3*c^2*x^2 - 1)/(a*b*c^5*x^6 - 2*a*b*c^3*x^4 +
 a*b*c*x^2 + (b^2*c^5*x^6 - 2*b^2*c^3*x^4 + b^2*c*x^2)*arctan2(c*x, sqrt(c*
x + 1)*sqrt(-c*x + 1))), x) + 1)/(a*b*c^3*x^3 - a*b*c*x + (b^2*c^3*x^3 - b^
2*c*x)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{x\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(1-c^2\,x^2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x*(a + b*asin(c*x))^2*(1 - c^2*x^2)^(3/2)),x)
```

```
[Out] int(1/(x*(a + b*asin(c*x))^2*(1 - c^2*x^2)^(3/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{3}{2}}\left(a+b\,\mathrm{asin}\left(cx\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(-c**2*x**2+1)**(3/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(1/(x*(-(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))**2), x)
```

3.422 $\int \frac{1}{x^2(1-c^2x^2)^{3/2}(a+b\sin^{-1}(cx))^2}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{x^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

```
[Out] Unintegrable(1/x^2/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

Rubi [A] time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{x^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(x^2*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] Defer[Int][1/(x^2*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2), x]
```

Rubi steps

$$\int \frac{1}{x^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx=\int \frac{1}{x^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Mathematica [A] time = 36.38, size = 0, normalized size = 0.00

$$\int \frac{1}{x^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(x^2*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] Integrate[1/(x^2*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2x^2+1}}{a^2c^4x^6-2\,a^2c^2x^4+a^2x^2+\left(b^2c^4x^6-2\,b^2c^2x^4+b^2x^2\right)\arcsin\left(cx\right)^2+2\,\left(abc^4x^6-2\,abc^2x^4+abx^2\right)\text{ar}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas
")
```

```
[Out] integral(sqrt(-c^2*x^2 + 1)/(a^2*c^4*x^6 - 2*a^2*c^2*x^4 + a^2*x^2 + (b^2*c
^4*x^6 - 2*b^2*c^2*x^4 + b^2*x^2)*arcsin(c*x)^2 + 2*(a*b*c^4*x^6 - 2*a*b*c^
2*x^4 + a*b*x^2)*arcsin(c*x)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-c^2x^2+1\right)^{\frac{3}{2}}\left(b\arcsin\left(cx\right)+a\right)^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((-c^2*x^2 + 1)^(3/2)*(b*arcsin(c*x) + a)^2*x^2), x)
```

maple [A] time = 0.98, size = 0, normalized size = 0.00

$$\int \frac{1}{x^{2} \left(-c^{2} x^{2}+1\right)^{\frac{3}{2}} \left(a +b \arcsin \left(c x \right)\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x^2/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] int(1/x^2/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2\left(abc^{3}x^{4} - abcx^{2} + \left(b^{2}c^{3}x^{4} - b^{2}cx^{2}\right)\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)\right)\int \frac{2\,c^{2}x^{2}-1}{abc^{5}x^{7}-2\,abc^{3}x^{5}+abcx^{3}+\left(b^{2}c^{5}x^{7}-2\,b^{2}c^{3}x^{5}+b^{2}cx^{3}\right)\mathrm{arc}}}{abc^{3}x^{4} - abcx^{2} + \left(b^{2}c^{3}x^{4} - b^{2}cx^{2}\right)\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(-c^2*x^2+1)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima
")
```

```
[Out] ((a*b*c^3*x^4 - a*b*c*x^2 + (b^2*c^3*x^4 - b^2*c*x^2)*arctan2(c*x, sqrt(c*x
 + 1)*sqrt(-c*x + 1)))*integrate(2*(2*c^2*x^2 - 1)/(a*b*c^5*x^7 - 2*a*b*c^3
*x^5 + a*b*c*x^3 + (b^2*c^5*x^7 - 2*b^2*c^3*x^5 + b^2*c*x^3)*arctan2(c*x, s
qrt(c*x + 1)*sqrt(-c*x + 1))), x) + 1)/(a*b*c^3*x^4 - a*b*c*x^2 + (b^2*c^3*
x^4 - b^2*c*x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{x^2\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(1-c^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x^2*(a + b*asin(c*x))^2*(1 - c^2*x^2)^(3/2)),x)
```

```
[Out] int(1/(x^2*(a + b*asin(c*x))^2*(1 - c^2*x^2)^(3/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x^{2} \left(- \left(c x - 1\right) \left(c x + 1\right)\right)^{\frac{3}{2}} \left(a + b \operatorname{asin}{\left(c x \right)}\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x**2/(-c**2*x**2+1)**(3/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(1/(x**2*(-(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))**2), x)
```

3.423 $\int \frac{x^m}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{x^m}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

```
[Out] Unintegrable(x^m/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)
```

Rubi [A] time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[x^m/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2),x]
[Out] Defer[Int][x^m/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2), x]
```

Rubi steps

$$\int \frac{x^m}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx=\int \frac{x^m}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Mathematica [A] time = 2.02, size = 0, normalized size = 0.00

$$\int \frac{x^m}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x^m/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2),x]
[Out] Integrate[x^m/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}\,x^m}{a^2c^6x^6-3\,a^2c^4x^4+3\,a^2c^2x^2+\left(b^2c^6x^6-3\,b^2c^4x^4+3\,b^2c^2x^2-b^2\right)\arcsin(cx)^2-a^2+2\left(abc^6x^6-\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
[Out] integral(-sqrt(-c^2*x^2 + 1)*x^m/(a^2*c^6*x^6 - 3*a^2*c^4*x^4 + 3*a^2*c^2*x
^2 + (b^2*c^6*x^6 - 3*b^2*c^4*x^4 + 3*b^2*c^2*x^2 - b^2)*arcsin(c*x)^2 - a^
2 + 2*(a*b*c^6*x^6 - 3*a*b*c^4*x^4 + 3*a*b*c^2*x^2 - a*b)*arcsin(c*x)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m}{\left(-c^2x^2+1\right)^{\frac{5}{2}}\left(b\arcsin(cx)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] integrate(x^m/((-c^2*x^2 + 1)^(5/2)*(b*arcsin(c*x) + a)^2), x)
```

maple [A] time = 0.93, size = 0, normalized size = 0.00

$$\int \frac{x^{m}}{\left(-c^{2} x^{2}+1\right)^{\frac{5}{2}} \left(a +b \arcsin \left(c x \right)\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] int(x^m/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x^m}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(1-c^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(5/2)),x)
```

```
[Out] int(x^m/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(5/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{m}}{\left(- \left(c x - 1\right) \left(c x + 1\right)\right)^{\frac{5}{2}} \left(a + b \operatorname{asin}{\left(c x \right)}\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m/(-c**2*x**2+1)**(5/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(x**m/((-(c*x - 1)*(c*x + 1))**(5/2)*(a + b*asin(c*x))**2), x)
```

3.424 $\int \frac{x^3}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{x^3}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

```
[Out] Unintegrable(x^3/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)
```

Rubi [A] time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^3}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[x^3/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2),x]
[Out] Defer[Int][x^3/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2), x]
```

Rubi steps

$$\int \frac{x^3}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx=\int \frac{x^3}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Mathematica [A] time = 110.50, size = 0, normalized size = 0.00

$$\int \frac{x^3}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x^3/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2),x]
[Out] Integrate[x^3/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.67, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}\,x^3}{a^2c^6x^6-3\,a^2c^4x^4+3\,a^2c^2x^2+\left(b^2c^6x^6-3\,b^2c^4x^4+3\,b^2c^2x^2-b^2\right)\arcsin(cx)^2-a^2+2\left(abc^6x^6-\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
[Out] integral(-sqrt(-c^2*x^2 + 1)*x^3/(a^2*c^6*x^6 - 3*a^2*c^4*x^4 + 3*a^2*c^2*x
^2 + (b^2*c^6*x^6 - 3*b^2*c^4*x^4 + 3*b^2*c^2*x^2 - b^2)*arcsin(c*x)^2 - a^
2 + 2*(a*b*c^6*x^6 - 3*a*b*c^4*x^4 + 3*a*b*c^2*x^2 - a*b)*arcsin(c*x)), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [**A**] time = 4.56, size = 0, normalized size = 0.00

$$\int \frac{x^3}{\left(-c^2x^2+1\right)^{\frac{5}{2}} \left(a+b \arcsin \left(cx\right)\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] int(x^3/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)
```

maxima [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

mupad [**A**] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x^3}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(1-c^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(5/2)),x)
```

```
[Out] int(x^3/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(5/2)), x)
```

sympy [**A**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{3}}{\left(- \left(cx - 1\right) \left(cx + 1\right)\right)^{\frac{5}{2}} \left(a + b \operatorname{asin}{\left(cx \right)}\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3/(-c**2*x**2+1)**(5/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(x**3/((-(c*x - 1)*(c*x + 1))**(5/2)*(a + b*asin(c*x))**2), x)
```

3.425 $\int \frac{x^2}{(1-c^2x^2)^{5/2}(a+b\sin^{-1}(cx))^2}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{x^2}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

[Out] Unintegrable(x^2/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)

Rubi [A] time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^2}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

[In] Int[x^2/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2),x]

[Out] Defer[Int][x^2/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2), x]

Rubi steps

$$\int \frac{x^2}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx=\int \frac{x^2}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Mathematica [A] time = 12.82, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

[In] Integrate[x^2/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2),x]

[Out] Integrate[x^2/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2), x]

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}\,x^2}{a^2c^6x^6-3\,a^2c^4x^4+3\,a^2c^2x^2+\left(b^2c^6x^6-3\,b^2c^4x^4+3\,b^2c^2x^2-b^2\right)\arcsin(cx)^2-a^2+2\left(abc^6x^6-\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^2/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")

[Out] integral(-sqrt(-c^2*x^2 + 1)*x^2/(a^2*c^6*x^6 - 3*a^2*c^4*x^4 + 3*a^2*c^2*x^2 + (b^2*c^6*x^6 - 3*b^2*c^4*x^4 + 3*b^2*c^2*x^2 - b^2)*arcsin(c*x)^2 - a^2 + 2*(a*b*c^6*x^6 - 3*a*b*c^4*x^4 + 3*a*b*c^2*x^2 - a*b)*arcsin(c*x)), x)

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\left(-c^2x^2+1\right)^{\frac{5}{2}}\left(b\arcsin(cx)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] integrate(x^2/((-c^2*x^2 + 1)^(5/2)*(b*arcsin(c*x) + a)^2), x)
```

maple [A] time = 4.09, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\left(-c^2x^2+1\right)^{\frac{5}{2}}\left(a+b\arcsin\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] int(x^2/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{x^2 + 2\left(abc^5x^4 - 2\,abc^3x^2 + abc + \left(b^2c^5x^4 - 2\,b^2c^3x^2 + b^2c\right)\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)\right)\int \frac{}{abc^7x^6 - 3\,abc^5x^4 + 3\,ab}}{abc^5x^4 - 2\,abc^3x^2 + abc + \left(b^2c^5x^4 - 2\,b^2c^3x^2 + b^2c\right)\arctan\left(cx, \sqrt{cx}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] -(x^2 + (a*b*c^5*x^4 - 2*a*b*c^3*x^2 + a*b*c + (b^2*c^5*x^4 - 2*b^2*c^3*x^2
 + b^2*c)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*integrate(2*(c^2*x^3
+ x)/(a*b*c^7*x^6 - 3*a*b*c^5*x^4 + 3*a*b*c^3*x^2 - a*b*c + (b^2*c^7*x^6 -
3*b^2*c^5*x^4 + 3*b^2*c^3*x^2 - b^2*c)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x
 + 1))), x))/(a*b*c^5*x^4 - 2*a*b*c^3*x^2 + a*b*c + (b^2*c^5*x^4 - 2*b^2*c^
3*x^2 + b^2*c)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x^2}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(1-c^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(5/2)),x)
```

```
[Out] int(x^2/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(5/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{2}}{\left(- \left(cx - 1\right) \left(cx + 1\right)\right)^{\frac{5}{2}} \left(a + b\,\mathrm{asin}\left(cx\right)\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2/(-c**2*x**2+1)**(5/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(x**2/((-(c*x - 1)*(c*x + 1))**(5/2)*(a + b*asin(c*x))**2), x)
```

3.426 $\int \frac{x}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{x}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

```
[Out] Unintegrable(x/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[x/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2),x]
[Out] Defer[Int][x/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2), x]
```

Rubi steps

$$\int \frac{x}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx=\int \frac{x}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Mathematica [A] time = 113.71, size = 0, normalized size = 0.00

$$\int \frac{x}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2),x]
[Out] Integrate[x/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.60, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}\,x}{a^2c^6x^6-3\,a^2c^4x^4+3\,a^2c^2x^2+\left(b^2c^6x^6-3\,b^2c^4x^4+3\,b^2c^2x^2-b^2\right)\arcsin\left(cx\right)^2-a^2+2\left(abc^6x^6-\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
[Out] integral(-sqrt(-c^2*x^2 + 1)*x/(a^2*c^6*x^6 - 3*a^2*c^4*x^4 + 3*a^2*c^2*x^2
 + (b^2*c^6*x^6 - 3*b^2*c^4*x^4 + 3*b^2*c^2*x^2 - b^2)*arcsin(c*x)^2 - a^2
+ 2*(a*b*c^6*x^6 - 3*a*b*c^4*x^4 + 3*a*b*c^2*x^2 - a*b)*arcsin(c*x)), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 2.80, size = 0, normalized size = 0.00

$$\int \frac{x}{\left(-c^{2}x^{2}+1\right)^{\frac{5}{2}}\left(a+b\arcsin\left(cx\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] int(x/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(1-c^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(5/2)),x)
```

```
[Out] int(x/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(5/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}\left(a+b\operatorname{asin}\left(cx\right)\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-c**2*x**2+1)**(5/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(x/((-(c*x - 1)*(c*x + 1))**(5/2)*(a + b*asin(c*x))**2), x)
```

3.427 $\int \frac{1}{(1-c^2x^2)^{5/2}(a+b\sin^{-1}(cx))^2}\,dx$

Optimal. Leaf size=64

$$\frac{4c\text{Int}\left(\frac{x}{(1-c^2x^2)^3(a+b\sin^{-1}(cx))},x\right)}{b}-\frac{1}{bc\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}$$

```
[Out] -1/b/c/(-c^2*x^2+1)^2/(a+b*arcsin(c*x))+4*c*Unintegrable(x/(-c^2*x^2+1)^3/(
a+b*arcsin(c*x)),x)/b
```

Rubi [A] time = 0.11, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] -(1/(b*c*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x]))) + (4*c*Defer[Int][x/((1 - c^
2*x^2)^3*(a + b*ArcSin[c*x])), x])/b
```

Rubi steps

$$\int \frac{1}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx=-\frac{1}{bc\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}+\frac{(4c)\int \frac{x}{(1-c^2x^2)^3(a+b\sin^{-1}(cx))}\,dx}{b}$$

Mathematica [A] time = 4.44, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] Integrate[1/((1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}}{a^2c^6x^6-3\,a^2c^4x^4+3\,a^2c^2x^2+\left(b^2c^6x^6-3\,b^2c^4x^4+3\,b^2c^2x^2-b^2\right)\arcsin(cx)^2-a^2+2\left(abc^6x^6-\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-c^2*x^2 + 1)/(a^2*c^6*x^6 - 3*a^2*c^4*x^4 + 3*a^2*c^2*x^2 +
 (b^2*c^6*x^6 - 3*b^2*c^4*x^4 + 3*b^2*c^2*x^2 - b^2)*arcsin(c*x)^2 - a^2 +
2*(a*b*c^6*x^6 - 3*a*b*c^4*x^4 + 3*a*b*c^2*x^2 - a*b)*arcsin(c*x)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-c^2x^2+1\right)^{\frac{5}{2}}(b\arcsin(cx)+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
[Out] integrate(1/((-c^2*x^2 + 1)^(5/2)*(b*arcsin(c*x) + a)^2), x)
```

maple [A] time = 0.65, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-c^2x^2+1\right)^{\frac{5}{2}}(a+b\arcsin(cx))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)
[Out] int(1/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\frac{4\left(abc^6x^4-2\,abc^4x^2+abc^2+\left(b^2c^6x^4-2\,b^2c^4x^2+b^2c^2\right)\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)\right)\int \frac{x}{(cx+1)^3(cx-1)^3\left(b\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+a\right)}\,dx}{b}+1}{abc^5x^4-2\,abc^3x^2+abc+\left(b^2c^5x^4-2\,b^2c^3x^2+b^2c\right)\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
[Out] -(4*(a*b*c^6*x^4 - 2*a*b*c^4*x^2 + a*b*c^2 + (b^2*c^6*x^4 - 2*b^2*c^4*x^2 +
 b^2*c^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*integrate(x/(a*b*c^6*
x^6 - 3*a*b*c^4*x^4 + 3*a*b*c^2*x^2 - a*b + (b^2*c^6*x^6 - 3*b^2*c^4*x^4 +
3*b^2*c^2*x^2 - b^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))), x) + 1)/(
a*b*c^5*x^4 - 2*a*b*c^3*x^2 + a*b*c + (b^2*c^5*x^4 - 2*b^2*c^3*x^2 + b^2*c)
*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{1}{(a+b\,\mathrm{asin}(c\,x))^2\,\left(1-c^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(5/2)),x)
[Out] int(1/((a + b*asin(c*x))^2*(1 - c^2*x^2)^(5/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(-(cx-1)(cx+1))^{\frac{5}{2}}(a+b\,\mathrm{asin}(cx))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c**2*x**2+1)**(5/2)/(a+b*asin(c*x))**2,x)
[Out] Integral(1/((-(c*x - 1)*(c*x + 1))**(5/2)*(a + b*asin(c*x))**2), x)
```

3.428 $\int \frac{1}{x(1-c^2x^2)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{x\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

```
[Out] Unintegrable(1/x/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)
```

Rubi [A] time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{x\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(x*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2),x]
[Out] Defer[Int][1/(x*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2), x]
```

Rubi steps

$$\int \frac{1}{x\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx = \int \frac{1}{x\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Mathematica [A] time = 86.25, size = 0, normalized size = 0.00

$$\int \frac{1}{x\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(x*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2),x]
[Out] Integrate[1/(x*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.41, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}}{a^2c^6x^7-3\,a^2c^4x^5+3\,a^2c^2x^3-a^2x+\left(b^2c^6x^7-3\,b^2c^4x^5+3\,b^2c^2x^3-b^2x\right)\arcsin(cx)^2+2\left(abc^6x^7\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
[Out] integral(-sqrt(-c^2*x^2 + 1)/(a^2*c^6*x^7 - 3*a^2*c^4*x^5 + 3*a^2*c^2*x^3 -
 a^2*x + (b^2*c^6*x^7 - 3*b^2*c^4*x^5 + 3*b^2*c^2*x^3 - b^2*x)*arcsin(c*x)^
2 + 2*(a*b*c^6*x^7 - 3*a*b*c^4*x^5 + 3*a*b*c^2*x^3 - a*b*x)*arcsin(c*x)), x
)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 7.73, size = 0, normalized size = 0.00

$$\int \frac{1}{x\left(-c^{2}x^{2}+1\right)^{\frac{5}{2}}\left(a+b\arcsin\left(cx\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] int(1/x/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{x\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^2\,\left(1-c^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x*(a + b*asin(c*x))^2*(1 - c^2*x^2)^(5/2)),x)
```

```
[Out] int(1/(x*(a + b*asin(c*x))^2*(1 - c^2*x^2)^(5/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}\left(a+b\,\mathrm{asin}\left(cx\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(-c**2*x**2+1)**(5/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(1/(x*(-(c*x - 1)*(c*x + 1))**(5/2)*(a + b*asin(c*x))**2), x)
```

3.429 $\int \frac{1}{x^2(1-c^2x^2)^{5/2}(a+b\sin^{-1}(cx))^2}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{1}{x^2\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

[Out] Unintegrable(1/x^2/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)

Rubi [A] time = 0.13, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{x^2\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

[In] Int[1/(x^2*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2),x]

[Out] Defer[Int][1/(x^2*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2), x]

Rubi steps

$$\int \frac{1}{x^2\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx=\int \frac{1}{x^2\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Mathematica [A] time = 26.84, size = 0, normalized size = 0.00

$$\int \frac{1}{x^2\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

[In] Integrate[1/(x^2*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2),x]

[Out] Integrate[1/(x^2*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2), x]

fricas [A] time = 0.41, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-c^2x^2+1}}{a^2c^6x^8-3\,a^2c^4x^6+3\,a^2c^2x^4-a^2x^2+\left(b^2c^6x^8-3\,b^2c^4x^6+3\,b^2c^2x^4-b^2x^2\right)\arcsin(cx)^2+2\left(abc^6x\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/x^2/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")

[Out] integral(-sqrt(-c^2*x^2 + 1)/(a^2*c^6*x^8 - 3*a^2*c^4*x^6 + 3*a^2*c^2*x^4 - a^2*x^2 + (b^2*c^6*x^8 - 3*b^2*c^4*x^6 + 3*b^2*c^2*x^4 - b^2*x^2)*arcsin(c*x)^2 + 2*(a*b*c^6*x^8 - 3*a*b*c^4*x^6 + 3*a*b*c^2*x^4 - a*b*x^2)*arcsin(c*x)), x)

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-c^2x^2+1\right)^{\frac{5}{2}}(b\arcsin\left(cx\right)+a)^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((-c^2*x^2 + 1)^(5/2)*(b*arcsin(c*x) + a)^2*x^2), x)
```

maple [A] time = 8.15, size = 0, normalized size = 0.00

$$\int \frac{1}{x^2\left(-c^2x^2+1\right)^{\frac{5}{2}}\left(a+b\arcsin\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x^2/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] int(1/x^2/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{2\left(abc^5x^6-2\,abc^3x^4+abcx^2+\left(b^2c^5x^6-2\,b^2c^3x^4+b^2cx^2\right)\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)\right)\int\frac{}{abc^7x^9-3\,abc^5x^7+3\,abc}}{abc^5x^6-2\,abc^3x^4+abcx^2+\left(b^2c^5x^6-2\,b^2c^3x^4+b^2cx^2\right)\arctan\left(cx,\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(-c^2*x^2+1)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima
")
```

```
[Out] -((a*b*c^5*x^6 - 2*a*b*c^3*x^4 + a*b*c*x^2 + (b^2*c^5*x^6 - 2*b^2*c^3*x^4 +
 b^2*c*x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*integrate(2*(3*c^2*
x^2 - 1)/(a*b*c^7*x^9 - 3*a*b*c^5*x^7 + 3*a*b*c^3*x^5 - a*b*c*x^3 + (b^2*c^
7*x^9 - 3*b^2*c^5*x^7 + 3*b^2*c^3*x^5 - b^2*c*x^3)*arctan2(c*x, sqrt(c*x +
1)*sqrt(-c*x + 1))), x) + 1)/(a*b*c^5*x^6 - 2*a*b*c^3*x^4 + a*b*c*x^2 + (b^
2*c^5*x^6 - 2*b^2*c^3*x^4 + b^2*c*x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x
 + 1)))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{x^2\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(1-c^2\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x^2*(a + b*asin(c*x))^2*(1 - c^2*x^2)^(5/2)),x)
```

```
[Out] int(1/(x^2*(a + b*asin(c*x))^2*(1 - c^2*x^2)^(5/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x^2\left(-\left(cx-1\right)\left(cx+1\right)\right)^{\frac{5}{2}}\left(a+b\,\mathrm{asin}\left(cx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x**2/(-c**2*x**2+1)**(5/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(1/(x**2*(-(c*x - 1)*(c*x + 1))**(5/2)*(a + b*asin(c*x))**2), x)
```

3.430 $\int \frac{1}{\sqrt{1-a^2x^2}\sin^{-1}(ax)^3}\,dx$

Optimal. Leaf size=13

$$-\frac{1}{2a\sin^{-1}(ax)^2}$$

[Out] -1/2/a/arcsin(a*x)^2

Rubi [A] time = 0.03, antiderivative size = 13, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {4641}

$$-\frac{1}{2a\sin^{-1}(ax)^2}$$

Antiderivative was successfully verified.

[In] Int[1/(Sqrt[1 - a^2*x^2]*ArcSin[a*x]^3),x]

[Out] -1/(2*a*ArcSin[a*x]^2)

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{1}{\sqrt{1-a^2x^2}\sin^{-1}(ax)^3}\,dx = -\frac{1}{2a\sin^{-1}(ax)^2}$$

Mathematica [A] time = 0.00, size = 13, normalized size = 1.00

$$-\frac{1}{2a\sin^{-1}(ax)^2}$$

Antiderivative was successfully verified.

[In] Integrate[1/(Sqrt[1 - a^2*x^2]*ArcSin[a*x]^3),x]

[Out] -1/2*1/(a*ArcSin[a*x]^2)

fricas [A] time = 0.51, size = 11, normalized size = 0.85

$$-\frac{1}{2\,a\arcsin\left(ax\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")

[Out] -1/2/(a*arcsin(a*x)^2)

giac [A] time = 0.64, size = 11, normalized size = 0.85

$$-\frac{1}{2\,a\arcsin\left(ax\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] -1/2/(a*arcsin(a*x)^2)
```

maple [A] time = 0.01, size = 12, normalized size = 0.92

$$-\frac{1}{2a\arcsin\left(ax\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] -1/2/a/arcsin(a*x)^2
```

maxima [A] time = 0.43, size = 11, normalized size = 0.85

$$-\frac{1}{2\,a\arcsin\left(ax\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/arcsin(a*x)^3/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/2/(a*arcsin(a*x)^2)
```

mupad [B] time = 0.12, size = 11, normalized size = 0.85

$$-\frac{1}{2\,a\,\mathrm{asin}\left(a\,x\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(asin(a*x)^3*(1 - a^2*x^2)^(1/2)),x)
```

```
[Out] -1/(2*a*asin(a*x)^2)
```

sympy [A] time = 0.85, size = 12, normalized size = 0.92

$$-\frac{1}{2a\,\mathrm{asin}^{2}\left(ax\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/asin(a*x)**3/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] -1/(2*a*asin(a*x)**2)
```

3.431 $\int \frac{x^3(d-c^2dx^2)}{(a+b\sin^{-1}(cx))^{3/2}}\,dx$

Optimal. Leaf size=251

$$-\frac{\sqrt{3\pi}\,d\cos\left(\frac{6a}{b}\right)C\left(\frac{2\sqrt{\frac{3}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{8b^{3/2}c^4}+\frac{3\sqrt{\pi}\,d\cos\left(\frac{2a}{b}\right)C\left(\frac{2\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}\sqrt{\pi}}\right)}{8b^{3/2}c^4}+\frac{3\sqrt{\pi}\,d\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}\sqrt{\pi}}\right)}{8b^{3/2}c^4}$$

```
[Out] 3/8*d*cos(2*a/b)*FresnelC(2*(a+b*arcsin(c*x))^(1/2)/b^(1/2)/Pi^(1/2))*Pi^(1
/2)/b^(3/2)/c^4+3/8*d*FresnelS(2*(a+b*arcsin(c*x))^(1/2)/b^(1/2)/Pi^(1/2))*
sin(2*a/b)*Pi^(1/2)/b^(3/2)/c^4-1/8*d*cos(6*a/b)*FresnelC(2*3^(1/2)/Pi^(1/2
)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*3^(1/2)*Pi^(1/2)/b^(3/2)/c^4-1/8*d*Fresn
elS(2*3^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*sin(6*a/b)*3^(1/2)*
Pi^(1/2)/b^(3/2)/c^4-2*d*x^3*(-c^2*x^2+1)^(3/2)/b/c/(a+b*arcsin(c*x))^(1/2)
```

Rubi [A] time = 1.44, antiderivative size = 251, normalized size of antiderivative = 1.00, number of steps used = 27, number of rules used = 8, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.296, Rules used = {4721, 4723, 4406, 3306, 3305, 3351, 3304, 3352}

$$-\frac{\sqrt{3\pi}\,d\cos\left(\frac{6a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{3}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{8b^{3/2}c^4}+\frac{3\sqrt{\pi}\,d\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{\pi}\sqrt{b}}\right)}{8b^{3/2}c^4}+\frac{3\sqrt{\pi}\,d\sin\left(\frac{2a}{b}\right)S}{8b^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(d - c^2*d*x^2))/(a + b*ArcSin[c*x])^(3/2),x]
```

```
[Out] (-2*d*x^3*(1 - c^2*x^2)^(3/2))/(b*c*Sqrt[a + b*ArcSin[c*x]]) - (d*Sqrt[3*Pi
]*Cos[(6*a)/b]*FresnelC[(2*Sqrt[3/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/(8
*b^(3/2)*c^4) + (3*d*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*ArcSin[c*
x]])/(Sqrt[b]*Sqrt[Pi])])/(8*b^(3/2)*c^4) + (3*d*Sqrt[Pi]*FresnelS[(2*Sqrt[
a + b*ArcSin[c*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(8*b^(3/2)*c^4) - (d*
Sqrt[3*Pi]*FresnelS[(2*Sqrt[3/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[(6*
a)/b])/(8*b^(3/2)*c^4)
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^m*Sqrt[1 - c^2*x^2]*(d + e*x^2)^p
*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (-Dist[(f*m*d^IntPart[p]*
(d + e*x^2)^FracPart[p])/(b*c*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1), x], x] + Dist
[(c*(m + 2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(b*f*(n + 1)*(1 - c
^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcS
in[c*x])^(n + 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e,
 0] && LtQ[n, -1] && IGtQ[m, -3] && IGtQ[2*p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x^3\left(d-c^2dx^2\right)}{\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx = -\frac{2dx^3\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}}+\frac{(6d)\int \frac{x^2\sqrt{1-c^2x^2}}{\sqrt{a+b\sin^{-1}(cx)}}\,dx}{bc}-\frac{(12cd)\int \frac{x^4\sqrt{1-c^2x^2}}{\sqrt{a+b\sin^{-1}(cx)}}\,dx}{b}$$

$$= -\frac{2dx^3\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}}+\frac{(6d)\,\text{Subst}\left(\int \frac{\cos^2(x)\sin^2(x)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(cx)\right)}{bc^4}-\frac{(12d)\,\text{Subst}}{}$$

$$= -\frac{2dx^3\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}}+\frac{(6d)\,\text{Subst}\left(\int \left(\frac{1}{8\sqrt{a+bx}}-\frac{\cos(4x)}{8\sqrt{a+bx}}\right)dx,x,\sin^{-1}(cx)\right)}{bc^4}-\frac{(12}{}$$

$$= -\frac{2dx^3\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}}+\frac{(3d)\,\text{Subst}\left(\int \frac{\cos(2x)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(cx)\right)}{8bc^4}-\frac{(3d)\,\text{Subst}\left(\int \frac{\cos}{\sqrt{a}}\right.}{8}$$

$$= -\frac{2dx^3\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}}+\frac{\left(3d\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{2a}{b}+2x\right)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(cx)\right)}{8bc^4}-\frac{(3d}{}$$

$$= -\frac{2dx^3\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}}+\frac{\left(3d\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \cos\left(\frac{2x^2}{b}\right)dx,x,\sqrt{a+b\sin^{-1}(cx)}\right)}{4b^2c^4}$$

$$= -\frac{2dx^3\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}}-\frac{d\sqrt{3\pi}\cos\left(\frac{6a}{b}\right)C\left(\frac{2\sqrt{\frac{3}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{8b^{3/2}c^4}+\frac{3d\sqrt{\pi}\cos\left(\frac{2a}{b}\right)C}{8b^{3}}$$

Mathematica [C] time = 1.57, size = 287, normalized size = 1.14

$$-\frac{ide^{-\frac{6ia}{b}}\left(-6ie^{\frac{6ia}{b}}\sin\left(2\sin^{-1}(cx)\right)+2ie^{\frac{6ia}{b}}\sin\left(6\sin^{-1}(cx)\right)+3\sqrt{2}e^{\frac{4ia}{b}}\sqrt{-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}}\,\Gamma\left(\frac{1}{2},-\frac{2i\left(a+b\sin^{-1}(cx)\right)}{b}\right)-\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^3*(d - c^2*d*x^2))/(a + b*ArcSin[c*x])^(3/2),x]
```

```
[Out] ((-1/32*I)*d*(3*Sqrt[2]*E^(((4*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*
Gamma[1/2, ((-2*I)*(a + b*ArcSin[c*x]))/b] - 3*Sqrt[2]*E^(((8*I)*a)/b)*Sqrt
[(I*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((2*I)*(a + b*ArcSin[c*x]))/b] - Sqr
t[6]*Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((-6*I)*(a + b*ArcSin[c*
x]))/b] + Sqrt[6]*E^(((12*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gamma[1/
2, ((6*I)*(a + b*ArcSin[c*x]))/b] - (6*I)*E^(((6*I)*a)/b)*Sin[2*ArcSin[c*x]
] + (2*I)*E^(((6*I)*a)/b)*Sin[6*ArcSin[c*x]]))/(b*c^4*E^(((6*I)*a)/b)*Sqrt[
a + b*ArcSin[c*x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)/(a+b*arcsin(c*x))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >> Error detected within library code: integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(c^2dx^2-d\right)x^3}{\left(b\arcsin\left(cx\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)/(a+b*arcsin(c*x))^(3/2),x, algorithm="giac")
[Out] integrate(-(c^2*d*x^2 - d)*x^3/(b*arcsin(c*x) + a)^(3/2), x)
```

maple [A] time = 0.24, size = 287, normalized size = 1.14

$$-\frac{d\left(2\sqrt{3}\,\sqrt{\frac{1}{b}}\,\sqrt{a+b\arcsin\left(cx\right)}\,\cos\left(\frac{6a}{b}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{6}\,\sqrt{a+b\arcsin(cx)}}{\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,b}\right)\sqrt{\pi}+2\sqrt{3}\,\sqrt{\frac{1}{b}}\,\sqrt{a+b\arcsin\left(cx\right)}\,\sin$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(-c^2*d*x^2+d)/(a+b*arcsin(c*x))^(3/2),x)
[Out] -1/16/c^4*d/b*(2*3^(1/2)*(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)*cos(6*a/b)*Fre
snelC(2^(1/2)/Pi^(1/2)*6^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*Pi^(1
/2)+2*3^(1/2)*(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)*sin(6*a/b)*FresnelS(2^(1/
2)/Pi^(1/2)*6^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*Pi^(1/2)-6*(1/b)
^(1/2)*Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)*cos(2*a/b)*FresnelC(2/Pi^(1/2)/(1/b
)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)-6*(1/b)^(1/2)*Pi^(1/2)*(a+b*arcsin(c*x))
^(1/2)*sin(2*a/b)*FresnelS(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b
)+3*sin(2*(a+b*arcsin(c*x))/b-2*a/b)-sin(6*(a+b*arcsin(c*x))/b-6*a/b))/(a+b
*arcsin(c*x))^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(c^2dx^2-d\right)x^3}{\left(b\arcsin\left(cx\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)/(a+b*arcsin(c*x))^(3/2),x, algorithm="maxima")
[Out] -integrate((c^2*d*x^2 - d)*x^3/(b*arcsin(c*x) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\,\left(d-c^2\,d\,x^2\right)}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(d - c^2*d*x^2))/(a + b*asin(c*x))^(3/2),x)
[Out] int((x^3*(d - c^2*d*x^2))/(a + b*asin(c*x))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-d\left(\int\left(-\frac{x^3}{a\sqrt{a+b\,\mathrm{asin}\left(cx\right)}+b\sqrt{a+b\,\mathrm{asin}\left(cx\right)}\,\mathrm{asin}\left(cx\right)}\right)dx+\int\frac{c^2x^5}{a\sqrt{a+b\,\mathrm{asin}\left(cx\right)}+b\sqrt{a+b\,\mathrm{asin}\left(cx\right)}\,\mathrm{asin}\left(\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(-c**2*d*x**2+d)/(a+b*asin(c*x))**(3/2),x)
```

```
[Out] -d*(Integral(-x**3/(a*sqrt(a + b*asin(c*x)) + b*sqrt(a + b*asin(c*x))*asin(
c*x)), x) + Integral(c**2*x**5/(a*sqrt(a + b*asin(c*x)) + b*sqrt(a + b*asin
(c*x))*asin(c*x)), x))
```

3.432 $\int \frac{x^2(d-c^2dx^2)}{(a+b\sin^{-1}(cx))^{3/2}}\,dx$

Optimal. Leaf size=591

$$-\frac{\sqrt{2\pi}\,d\sin\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c^3}+\frac{5\sqrt{\frac{\pi}{2}}\,d\sin\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{2b^{3/2}c^3}-\frac{\sqrt{\frac{2\pi}{3}}\,d\sin\left(\frac{3a}{b}\right)C\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c^3}+$$

```
[Out] 1/8*d*cos(3*a/b)*FresnelS(6^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))
*6^(1/2)*Pi^(1/2)/b^(3/2)/c^3-1/8*d*FresnelC(6^(1/2)/Pi^(1/2)*(a+b*arcsin(c
*x))^(1/2)/b^(1/2))*sin(3*a/b)*6^(1/2)*Pi^(1/2)/b^(3/2)/c^3-1/4*d*cos(a/b)*
FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)
/b^(3/2)/c^3+1/4*d*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2
))*sin(a/b)*2^(1/2)*Pi^(1/2)/b^(3/2)/c^3+1/8*d*cos(5*a/b)*FresnelS(10^(1/2)
/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*10^(1/2)*Pi^(1/2)/b^(3/2)/c^3-1/
8*d*FresnelC(10^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*sin(5*a/b)*
10^(1/2)*Pi^(1/2)/b^(3/2)/c^3-2*d*x^2*(-c^2*x^2+1)^(3/2)/b/c/(a+b*arcsin(c*
x))^(1/2)
```

Rubi [A] time = 1.67, antiderivative size = 591, normalized size of antiderivative = 1.00, number of steps used = 32, number of rules used = 8, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.296, Rules used = {4721, 4723, 4406, 3306, 3305, 3351, 3304, 3352}

$$-\frac{\sqrt{2\pi}\,d\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c^3}+\frac{5\sqrt{\frac{\pi}{2}}\,d\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{2b^{3/2}c^3}-\frac{\sqrt{\frac{2\pi}{3}}\,d\sin\left(\frac{3a}{b}\right)\text{Fresn}}{b^{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(d - c^2*d*x^2))/(a + b*ArcSin[c*x])^(3/2),x]
```

```
[Out] (-2*d*x^2*(1 - c^2*x^2)^(3/2))/(b*c*Sqrt[a + b*ArcSin[c*x]]) - (5*d*Sqrt[Pi
/2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/(2*b^(
3/2)*c^3) + (d*Sqrt[2*Pi]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c
*x]])/Sqrt[b]])/(b^(3/2)*c^3) - (5*d*Sqrt[Pi/6]*Cos[(3*a)/b]*FresnelS[(Sqrt
[6/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/(4*b^(3/2)*c^3) + (d*Sqrt[(2*Pi)/
3]*Cos[(3*a)/b]*FresnelS[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/(b^
(3/2)*c^3) + (d*Sqrt[(5*Pi)/2]*Cos[(5*a)/b]*FresnelS[(Sqrt[10/Pi]*Sqrt[a +
b*ArcSin[c*x]])/Sqrt[b]])/(4*b^(3/2)*c^3) + (5*d*Sqrt[Pi/2]*FresnelC[(Sqrt[
2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[a/b])/(2*b^(3/2)*c^3) - (d*Sqrt
[2*Pi]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[a/b])/(b^
(3/2)*c^3) + (5*d*Sqrt[Pi/6]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c*x]])/
Sqrt[b]]*Sin[(3*a)/b])/(4*b^(3/2)*c^3) - (d*Sqrt[(2*Pi)/3]*FresnelC[(Sqrt[6
/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[(3*a)/b])/(b^(3/2)*c^3) - (d*Sqr
t[(5*Pi)/2]*FresnelC[(Sqrt[10/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[(5*
a)/b])/(4*b^(3/2)*c^3)
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
```

```
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^m*Sqrt[1 - c^2*x^2]*(d + e*x^2)^p
*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (-Dist[(f*m*d^IntPart[p]*
(d + e*x^2)^FracPart[p])/(b*c*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1), x], x] + Dist
[(c*(m + 2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(b*f*(n + 1)*(1 - c
^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcS
in[c*x])^(n + 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e,
 0] && LtQ[n, -1] && IGtQ[m, -3] && IGtQ[2*p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x^2 \left(d-c^2dx^2\right)}{\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx = -\frac{2dx^2\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} + \frac{(4d)\int \frac{x\sqrt{1-c^2x^2}}{\sqrt{a+b\sin^{-1}(cx)}}\,dx}{bc} - \frac{(10cd)\int \frac{x^3\sqrt{1-c^2x^2}}{\sqrt{a+b\sin^{-1}(cx)}}\,dx}{b}$$

$$= -\frac{2dx^2\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} + \frac{(4d)\,\mathrm{Subst}\left(\int \frac{\cos^2(x)\sin(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{bc^3} - \frac{(10d)\,\mathrm{Subst}\left(\int\right.}{}$$

$$= -\frac{2dx^2\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} + \frac{(4d)\,\mathrm{Subst}\left(\int \left(\frac{\sin(x)}{4\sqrt{a+bx}} + \frac{\sin(3x)}{4\sqrt{a+bx}}\right)dx, x, \sin^{-1}(cx)\right)}{bc^3} - \frac{(10d)\,\mathrm{S}}{}$$

$$= -\frac{2dx^2\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{(5d)\,\mathrm{Subst}\left(\int \frac{\sin(3x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{8bc^3} + \frac{(5d)\,\mathrm{Subst}\left(\int \frac{\sin(5x)}{\sqrt{a+bx}}\right.}{8bc}$$

$$= -\frac{2dx^2\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} + \frac{\left(d\cos\left(\frac{a}{b}\right)\right)\mathrm{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{bc^3} - \frac{\left(5d\cos\left(\frac{a}{b}\right)\right.}{}$$

$$= -\frac{2dx^2\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} + \frac{\left(2d\cos\left(\frac{a}{b}\right)\right)\mathrm{Subst}\left(\int \sin\left(\frac{x^2}{b}\right)dx, x, \sqrt{a+b\sin^{-1}(cx)}\right)}{b^2c^3} - \frac{(5}{}$$

$$= -\frac{2dx^2\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{5d\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{2b^{3/2}c^3} + \frac{d\sqrt{2\pi}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\right.}{b^{3/2}c^3}$$

Mathematica [C] time = 1.67, size = 514, normalized size = 0.87

$$\frac{de^{-\frac{5i\left(a+b\sin^{-1}(cx)\right)}{b}}\left(e^{\frac{5ia}{b}+2i\sin^{-1}(cx)} - 2e^{\frac{5ia}{b}+4i\sin^{-1}(cx)} - 2e^{\frac{5ia}{b}+6i\sin^{-1}(cx)} + e^{\frac{5ia}{b}+8i\sin^{-1}(cx)} + e^{\frac{5i\left(a+2b\sin^{-1}(cx)\right)}{b}} + 2e^{\frac{4ia}{b}+5i\sin^{-1}(c}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^2*(d - c^2*d*x^2))/(a + b*ArcSin[c*x])^(3/2),x]
```

```
[Out] (d*(E^(((5*I)*a)/b) + E^(((5*I)*a)/b + (2*I)*ArcSin[c*x]) - 2*E^(((5*I)*a)/
b + (4*I)*ArcSin[c*x]) - 2*E^(((5*I)*a)/b + (6*I)*ArcSin[c*x]) + E^(((5*I)*
a)/b + (8*I)*ArcSin[c*x]) + E^(((5*I)*(a + 2*b*ArcSin[c*x]))/b) + 2*E^(((4*
I)*a)/b + (5*I)*ArcSin[c*x])*Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*Gamma[1/2,
((-I)*(a + b*ArcSin[c*x]))/b] + 2*E^(((6*I)*a)/b + (5*I)*ArcSin[c*x])*Sqrt[
(I*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, (I*(a + b*ArcSin[c*x]))/b] - Sqrt[3]*
E^(((2*I)*a)/b + (5*I)*ArcSin[c*x])*Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*Gamm
a[1/2, ((-3*I)*(a + b*ArcSin[c*x]))/b] - Sqrt[3]*E^(((8*I)*a)/b + (5*I)*Arc
Sin[c*x])*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((3*I)*(a + b*ArcSin[c
*x]))/b] - Sqrt[5]*E^((5*I)*ArcSin[c*x])*Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]
*Gamma[1/2, ((-5*I)*(a + b*ArcSin[c*x]))/b] - Sqrt[5]*E^(((5*I)*(2*a + b*Ar
cSin[c*x]))/b)*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((5*I)*(a + b*Arc
Sin[c*x]))/b]))/(16*b*c^3*E^(((5*I)*(a + b*ArcSin[c*x]))/b)*Sqrt[a + b*ArcS
in[c*x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)/(a+b*arcsin(c*x))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(c^2dx^2-d)x^2}{(b\arcsin(cx)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)/(a+b*arcsin(c*x))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-(c^2*d*x^2 - d)*x^2/(b*arcsin(c*x) + a)^(3/2), x)
```

maple [A] time = 0.34, size = 441, normalized size = 0.75

$$\frac{d\left(\sqrt{5}\,\sqrt{\frac{1}{b}}\,\sqrt{\pi}\,\sqrt{2}\,\sqrt{a+b\arcsin(cx)}\,\cos\left(\frac{5a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{5}\,\sqrt{a+b\arcsin(cx)}}{\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,b}\right)-\sqrt{5}\,\sqrt{\frac{1}{b}}\,\sqrt{\pi}\,\sqrt{2}\,\sqrt{a+b\arcsin(cx)}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(-c^2*d*x^2+d)/(a+b*arcsin(c*x))^(3/2),x)
```

```
[Out] 1/8/c^3*d/b*(5^(1/2)*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*c
os(5*a/b)*FresnelS(2^(1/2)/Pi^(1/2)*5^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(
1/2)/b)-5^(1/2)*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*sin(5*
a/b)*FresnelC(2^(1/2)/Pi^(1/2)*5^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/
b)+3^(1/2)*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*cos(3*a/b)*
FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)-3^
(1/2)*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*sin(3*a/b)*Fresn
elC(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)-2*(1/b)
^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/P
i^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)+2*(1/b)^(1/2)*Pi^(1/2)*2^(1/
2)*(a+b*arcsin(c*x))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(
a+b*arcsin(c*x))^(1/2)/b)-2*cos((a+b*arcsin(c*x))/b-a/b)+cos(3*(a+b*arcsin(
c*x))/b-3*a/b)+cos(5*(a+b*arcsin(c*x))/b-5*a/b))/(a+b*arcsin(c*x))^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(c^2dx^2-d)x^2}{(b\arcsin(cx)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)/(a+b*arcsin(c*x))^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((c^2*d*x^2 - d)*x^2/(b*arcsin(c*x) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2\,\left(d-c^2\,d\,x^2\right)}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(d - c^2*d*x^2))/(a + b*asin(c*x))^(3/2),x)
```

```
[Out] int((x^2*(d - c^2*d*x^2))/(a + b*asin(c*x))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-d\left(\int\left(-\frac{x^2}{a\sqrt{a+b\,\mathrm{asin}\,(cx)}+b\sqrt{a+b\,\mathrm{asin}\,(cx)}\,\mathrm{asin}\,(cx)}\right)dx+\int\frac{c^2x^4}{a\sqrt{a+b\,\mathrm{asin}\,(cx)}+b\sqrt{a+b\,\mathrm{asin}\,(cx)}\,\mathrm{asin}\,(}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(-c**2*d*x**2+d)/(a+b*asin(c*x))**(3/2),x)
```

```
[Out] -d*(Integral(-x**2/(a*sqrt(a + b*asin(c*x)) + b*sqrt(a + b*asin(c*x))*asin(
c*x)), x) + Integral(c**2*x**4/(a*sqrt(a + b*asin(c*x)) + b*sqrt(a + b*asin
(c*x))*asin(c*x)), x))
```

3.433 $\int \frac{x(d-c^2dx^2)}{(a+b\sin^{-1}(cx))^{3/2}}\,dx$

Optimal. Leaf size=241

$$\frac{\sqrt{\frac{\pi}{2}}\,d\cos\left(\frac{4a}{b}\right)C\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c^2}+\frac{\sqrt{\pi}\,d\cos\left(\frac{2a}{b}\right)C\left(\frac{2\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}\sqrt{\pi}}\right)}{b^{3/2}c^2}+\frac{\sqrt{\pi}\,d\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}\sqrt{\pi}}\right)}{b^{3/2}c^2}+$$

```
[Out] 1/2*d*cos(4*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2
))*2^(1/2)*Pi^(1/2)/b^(3/2)/c^2+1/2*d*FresnelS(2*2^(1/2)/Pi^(1/2)*(a+b*arcs
in(c*x))^(1/2)/b^(1/2))*sin(4*a/b)*2^(1/2)*Pi^(1/2)/b^(3/2)/c^2+d*cos(2*a/b
)*FresnelC(2*(a+b*arcsin(c*x))^(1/2)/b^(1/2)/Pi^(1/2))*Pi^(1/2)/b^(3/2)/c^2
+d*FresnelS(2*(a+b*arcsin(c*x))^(1/2)/b^(1/2)/Pi^(1/2))*sin(2*a/b)*Pi^(1/2)
/b^(3/2)/c^2-2*d*x*(-c^2*x^2+1)^(3/2)/b/c/(a+b*arcsin(c*x))^(1/2)
```

Rubi [A] time = 0.79, antiderivative size = 241, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 10, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {4721, 4661, 3312, 3306, 3305, 3351, 3304, 3352, 4723, 4406}

$$\frac{\sqrt{\frac{\pi}{2}}\,d\cos\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c^2}+\frac{\sqrt{\pi}\,d\cos\left(\frac{2a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{\pi}\sqrt{b}}\right)}{b^{3/2}c^2}+\frac{\sqrt{\pi}\,d\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a}}{}\right)}{b^{3/2}c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(d - c^2*d*x^2))/(a + b*ArcSin[c*x])^(3/2),x]
```

```
[Out] (-2*d*x*(1 - c^2*x^2)^(3/2))/(b*c*Sqrt[a + b*ArcSin[c*x]]) + (d*Sqrt[Pi/2]*
Cos[(4*a)/b]*FresnelC[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/(b^(
3/2)*c^2) + (d*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*ArcSin[c*x]])/(
Sqrt[b]*Sqrt[Pi])])/(b^(3/2)*c^2) + (d*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcS
in[c*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(b^(3/2)*c^2) + (d*Sqrt[Pi/2]*F
resnelS[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[(4*a)/b])/(b^(3
/2)*c^2)
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4661

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[d^p/c, Subst[Int[(a + b*x)^n*Cos[x]^(2*p + 1), x], x, ArcS
in[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IGtQ[2
*p, 0] && (IntegerQ[p] || GtQ[d, 0])
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^m*Sqrt[1 - c^2*x^2]*(d + e*x^2)^p
*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (-Dist[(f*m*d^IntPart[p]*
(d + e*x^2)^FracPart[p])/(b*c*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1), x], x] + Dist
[(c*(m + 2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(b*f*(n + 1)*(1 - c
^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcS
in[c*x])^(n + 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e,
 0] && LtQ[n, -1] && IGtQ[m, -3] && IGtQ[2*p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x\left(d-c^2dx^2\right)}{\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx = -\frac{2dx\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} + \frac{(2d)\int \frac{\sqrt{1-c^2x^2}}{\sqrt{a+b\sin^{-1}(cx)}}\,dx}{bc} - \frac{(8cd)\int \frac{x^2\sqrt{1-c^2x^2}}{\sqrt{a+b\sin^{-1}(cx)}}\,dx}{b}$$

$$= -\frac{2dx\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} + \frac{(2d)\,\text{Subst}\left(\int \frac{\cos^2(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{bc^2} - \frac{(8d)\,\text{Subst}\left(\int \frac{\cos}{}\right.}{}$$

$$= -\frac{2dx\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} + \frac{(2d)\,\text{Subst}\left(\int \left(\frac{1}{2\sqrt{a+bx}} + \frac{\cos(2x)}{2\sqrt{a+bx}}\right)dx, x, \sin^{-1}(cx)\right)}{bc^2} - \frac{(8d}{}$$

$$= -\frac{2dx\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} + \frac{d\,\text{Subst}\left(\int \frac{\cos(2x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{bc^2} + \frac{d\,\text{Subst}\left(\int \frac{\cos(4x)}{\sqrt{a+bx}}\,d\right.}{bc^2}$$

$$= -\frac{2dx\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} + \frac{\left(d\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{2a}{b}+2x\right)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{bc^2} + \frac{\left(d\,\text{co}\right.}{}$$

$$= -\frac{2dx\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} + \frac{\left(2d\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \cos\left(\frac{2x^2}{b}\right)dx, x, \sqrt{a+b\sin^{-1}(cx)}\right)}{b^2c^2}$$

$$= -\frac{2dx\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} + \frac{d\sqrt{\frac{\pi}{2}}\cos\left(\frac{4a}{b}\right)C\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c^2} + \frac{d\sqrt{\pi}\cos\left(\frac{2a}{b}\right)C\left(\right.}{b^{3/2}c}$$

Mathematica [C] time = 2.46, size = 375, normalized size = 1.56

$$\frac{d\left(8\sqrt{\pi}\left(\frac{1}{b}\right)^{3/2}\cos\left(\frac{2a}{b}\right)C\left(\frac{2\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{\pi}}\right) + 8\sqrt{\pi}\left(\frac{1}{b}\right)^{3/2}\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{\pi}}\right) + \frac{ie^{-\frac{4ia}{b}}\left(2ie^{\frac{4ia}{b}}\sin\left(2\sin^{-}\right.\right.}{}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x*(d - c^2*d*x^2))/(a + b*ArcSin[c*x])^(3/2),x]
```

```
[Out] (d*(8*(b^(-1))^(3/2)*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[b^(-1)]*Sqrt[a
+ b*ArcSin[c*x]])/Sqrt[Pi]] + 8*(b^(-1))^(3/2)*Sqrt[Pi]*FresnelS[(2*Sqrt[b^
(-1)]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[Pi]]*Sin[(2*a)/b] + (I*(Sqrt[2]*E^(((2*
I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((-2*I)*(a + b*ArcSi
n[c*x]))/b] - Sqrt[2]*E^(((6*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gamma
[1/2, ((2*I)*(a + b*ArcSin[c*x]))/b] - Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*G
amma[1/2, ((-4*I)*(a + b*ArcSin[c*x]))/b] + E^(((8*I)*a)/b)*Sqrt[(I*(a + b*
ArcSin[c*x]))/b]*Gamma[1/2, ((4*I)*(a + b*ArcSin[c*x]))/b] + (2*I)*E^(((4*I
)*a)/b)*Sin[2*ArcSin[c*x]] + I*E^(((4*I)*a)/b)*Sin[4*ArcSin[c*x]]))/(b*E^((
(4*I)*a)/b)*Sqrt[a + b*ArcSin[c*x]])))/(4*c^2)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)/(a+b*arcsin(c*x))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(c^2dx^2-d\right)x}{\left(b\arcsin\left(cx\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)/(a+b*arcsin(c*x))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-(c^2*d*x^2 - d)*x/(b*arcsin(c*x) + a)^(3/2), x)
```

maple [A] time = 0.21, size = 281, normalized size = 1.17

$$-\frac{d\left(-2\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,\sqrt{a+b\arcsin\left(cx\right)}\,\cos\left(\frac{4a}{b}\right)\operatorname{FresnelC}\left(\frac{2\sqrt{2}\,\sqrt{a+b\arcsin(cx)}}{\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,b}\right)\sqrt{2}-2\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,\sqrt{a+b\arcsin\left(cx\right)}\,\sin$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(-c^2*d*x^2+d)/(a+b*arcsin(c*x))^(3/2),x)
```

```
[Out] -1/4/c^2*d/b/(a+b*arcsin(c*x))^(1/2)*(-2*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcsin(c
*x))^(1/2)*cos(4*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c
*x))^(1/2)/b)*2^(1/2)-2*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)*sin(4*
a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*2^(
1/2)-4*(1/b)^(1/2)*Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)*cos(2*a/b)*FresnelC(2/P
i^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)-4*(1/b)^(1/2)*Pi^(1/2)*(a+b*
arcsin(c*x))^(1/2)*sin(2*a/b)*FresnelS(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c
*x))^(1/2)/b)+2*sin(2*(a+b*arcsin(c*x))/b-2*a/b)+sin(4*(a+b*arcsin(c*x))/b-
4*a/b))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(c^2dx^2-d\right)x}{\left(b\arcsin\left(cx\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)/(a+b*arcsin(c*x))^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((c^2*d*x^2 - d)*x/(b*arcsin(c*x) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x\,\left(d-c^2\,d\,x^2\right)}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(d - c^2*d*x^2))/(a + b*asin(c*x))^(3/2),x)
```

```
[Out] int((x*(d - c^2*d*x^2))/(a + b*asin(c*x))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-d\left(\int\left(-\frac{x}{a\sqrt{a+b\operatorname{asin}\left(cx\right)}+b\sqrt{a+b\operatorname{asin}\left(cx\right)}\operatorname{asin}\left(cx\right)}\right)dx+\int\frac{c^2x^3}{a\sqrt{a+b\operatorname{asin}\left(cx\right)}+b\sqrt{a+b\operatorname{asin}\left(cx\right)}\operatorname{asin}\left(\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c**2*d*x**2+d)/(a+b*asin(c*x))**(3/2),x)
```

```
[Out] -d*(Integral(-x/(a*sqrt(a + b*asin(c*x)) + b*sqrt(a + b*asin(c*x))*asin(c*x
)), x) + Integral(c**2*x**3/(a*sqrt(a + b*asin(c*x)) + b*sqrt(a + b*asin(c*
x))*asin(c*x)), x))
```

3.434 $\int \frac{d-c^2dx^2}{\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx$

Optimal. Leaf size=253

$$\frac{3\sqrt{\frac{\pi}{2}}\,d\sin\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c}+\frac{\sqrt{\frac{3\pi}{2}}\,d\sin\left(\frac{3a}{b}\right)C\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c}-\frac{3\sqrt{\frac{\pi}{2}}\,d\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c}-\cdots$$

```
[Out] -3/2*d*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*
2^(1/2)*Pi^(1/2)/b^(3/2)/c+3/2*d*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x)
)^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/b^(3/2)/c-1/2*d*cos(3*a/b)*Fresn
elS(6^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*6^(1/2)*Pi^(1/2)/b^(3
/2)/c+1/2*d*FresnelC(6^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*sin(
3*a/b)*6^(1/2)*Pi^(1/2)/b^(3/2)/c-2*d*(-c^2*x^2+1)^(3/2)/b/c/(a+b*arcsin(c*
x))^(1/2)
```

Rubi [A] time = 0.59, antiderivative size = 253, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 8, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$, Rules used = {4659, 4723, 4406, 3306, 3305, 3351, 3304, 3352}

$$\frac{3\sqrt{\frac{\pi}{2}}\,d\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c}+\frac{\sqrt{\frac{3\pi}{2}}\,d\sin\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c}-\frac{3\sqrt{\frac{\pi}{2}}\,d\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\cdots}{\cdots}\right)}{b^{3/2}c}\cdots$$

Antiderivative was successfully verified.

```
[In] Int[(d - c^2*d*x^2)/(a + b*ArcSin[c*x])^(3/2),x]
```

```
[Out] (-2*d*(1 - c^2*x^2)^(3/2))/(b*c*Sqrt[a + b*ArcSin[c*x]]) - (3*d*Sqrt[Pi/2]*
Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/(b^(3/2)*c
) - (d*Sqrt[(3*Pi)/2]*Cos[(3*a)/b]*FresnelS[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c
*x]])/Sqrt[b]])/(b^(3/2)*c) + (3*d*Sqrt[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a +
 b*ArcSin[c*x]])/Sqrt[b]]*Sin[a/b])/(b^(3/2)*c) + (d*Sqrt[(3*Pi)/2]*Fresnel
C[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[(3*a)/b])/(b^(3/2)*c)
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4659

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[(Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*(a + b*ArcSin[c*x])^(n + 1
))/(b*c*(n + 1)), x] + Dist[(c*(2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[
p])/(b*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a
 + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^
2*d + e, 0] && LtQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{d-c^2dx^2}{\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx = -\frac{2d\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{(6cd)\int \frac{x\sqrt{1-c^2x^2}}{\sqrt{a+b\sin^{-1}(cx)}}\,dx}{b}$$

$$= -\frac{2d\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{(6d)\operatorname{Subst}\left(\int \frac{\cos^2(x)\sin(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{bc}$$

$$= -\frac{2d\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{(6d)\operatorname{Subst}\left(\int \left(\frac{\sin(x)}{4\sqrt{a+bx}}+\frac{\sin(3x)}{4\sqrt{a+bx}}\right)dx, x, \sin^{-1}(cx)\right)}{bc}$$

$$= -\frac{2d\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{(3d)\operatorname{Subst}\left(\int \frac{\sin(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{2bc} - \frac{(3d)\operatorname{Subst}\left(\int \frac{\sin(3x)}{\sqrt{a+bx}}\right.}{2bc}$$

$$= -\frac{2d\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{\left(3d\cos\left(\frac{a}{b}\right)\right)\operatorname{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{2bc} - \frac{\left(3d\cos\left(\frac{3}{b}\right.\right.}{}$$

$$= -\frac{2d\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{\left(3d\cos\left(\frac{a}{b}\right)\right)\operatorname{Subst}\left(\int \sin\left(\frac{x^2}{b}\right)dx, x, \sqrt{a+b\sin^{-1}(cx)}\right)}{b^2c} - $$

$$= -\frac{2d\left(1-c^2x^2\right)^{3/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{3d\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c} - \frac{d\sqrt{\frac{3\pi}{2}}\cos\left(\frac{3a}{b}\right)S\left(\sqrt{\frac{6}{\pi}}\right.}{b^{3/2}c}$$

Mathematica [C] time = 1.19, size = 348, normalized size = 1.38

$$\frac{de^{-\frac{3i\left(a+b\sin^{-1}(cx)\right)}{b}}\left(-3e^{\frac{3ia}{b}+2i\sin^{-1}(cx)} - 3e^{\frac{3ia}{b}+4i\sin^{-1}(cx)} - e^{\frac{3i\left(a+2b\sin^{-1}(cx)\right)}{b}} + 3e^{\frac{2ia}{b}+3i\sin^{-1}(cx)}\sqrt{-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}}\,\Gamma\left(\frac{1}{2},-\frac{i(a+b\,s\right.\right.}{}}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(d - c^2*d*x^2)/(a + b*ArcSin[c*x])^(3/2),x]
```

```
[Out] (d*(-E^(((3*I)*a)/b) - 3*E^(((3*I)*a)/b + (2*I)*ArcSin[c*x]) - 3*E^(((3*I)*
a)/b + (4*I)*ArcSin[c*x]) - E^(((3*I)*(a + 2*b*ArcSin[c*x]))/b) + 3*E^(((2*
I)*a)/b + (3*I)*ArcSin[c*x])*Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*Gamma[1/2,
((-I)*(a + b*ArcSin[c*x]))/b] + 3*E^(((4*I)*a)/b + (3*I)*ArcSin[c*x])*Sqrt[
(I*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, (I*(a + b*ArcSin[c*x]))/b] + Sqrt[3]*
E^((3*I)*ArcSin[c*x])*Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((-3*I)
*(a + b*ArcSin[c*x]))/b] + Sqrt[3]*E^((3*I)*((2*a)/b + ArcSin[c*x]))*Sqrt[(
I*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((3*I)*(a + b*ArcSin[c*x]))/b]))/(4*b*
c*E^(((3*I)*(a + b*ArcSin[c*x]))/b)*Sqrt[a + b*ArcSin[c*x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)/(a+b*arcsin(c*x))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{c^2dx^2 - d}{(b\arcsin(cx) + a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)/(a+b*arcsin(c*x))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-(c^2*d*x^2 - d)/(b*arcsin(c*x) + a)^(3/2), x)
```

maple [A] time = 0.20, size = 297, normalized size = 1.17

$$-\frac{d\left(\sqrt{3}\,\sqrt{\frac{1}{b}}\,\sqrt{\pi}\,\sqrt{2}\,\sqrt{a+b\arcsin(cx)}\,\cos\left(\frac{3a}{b}\right)S\left(\frac{\sqrt{2}\,\sqrt{3}\,\sqrt{a+b\arcsin(cx)}}{\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,b}\right) - \sqrt{3}\,\sqrt{\frac{1}{b}}\,\sqrt{\pi}\,\sqrt{2}\,\sqrt{a+b\arcsin(cx)}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)/(a+b*arcsin(c*x))^(3/2),x)
```

```
[Out] -1/2/c*d/b*(3^(1/2)*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*co
s(3*a/b)*FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1
/2)/b)-3^(1/2)*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*sin(3*a
/b)*FresnelC(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b
)+3*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*cos(a/b)*FresnelS(
2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)-3*(1/b)^(1/2)*Pi^(1
/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b
)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)+3*cos((a+b*arcsin(c*x))/b-a/b)+cos(3*(a+
b*arcsin(c*x))/b-3*a/b))/(a+b*arcsin(c*x))^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{c^2dx^2 - d}{(b\arcsin(cx) + a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)/(a+b*arcsin(c*x))^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((c^2*d*x^2 - d)/(b*arcsin(c*x) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{d - c^2\,d\,x^2}{(a + b\,\mathrm{asin}(c\,x))^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d - c^2*d*x^2)/(a + b*asin(c*x))^(3/2),x)
```

```
[Out] int((d - c^2*d*x^2)/(a + b*asin(c*x))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-d\left(\int \frac{c^2x^2}{a\sqrt{a+b\,\mathrm{asin}(cx)} + b\sqrt{a+b\,\mathrm{asin}(cx)}\,\mathrm{asin}(cx)}\,dx + \int\left(-\frac{1}{a\sqrt{a+b\,\mathrm{asin}(cx)} + b\sqrt{a+b\,\mathrm{asin}(cx)}\,\mathrm{asin}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)/(a+b*asin(c*x))**(3/2),x)
```

```
[Out] -d*(Integral(c**2*x**2/(a*sqrt(a + b*asin(c*x)) + b*sqrt(a + b*asin(c*x))*a
sin(c*x)), x) + Integral(-1/(a*sqrt(a + b*asin(c*x)) + b*sqrt(a + b*asin(c*
x))*asin(c*x)), x))
```

3.435 $\int \frac{d-c^2dx^2}{x\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx$

Optimal. Leaf size=171

$$-\frac{2d\text{Int}\left(\frac{1}{x^2\sqrt{1-c^2x^2}\sqrt{a+b\sin^{-1}(cx)}},x\right)}{bc}-\frac{2\sqrt{\pi}\,d\cos\left(\frac{2a}{b}\right)C\left(\frac{2\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}\sqrt{\pi}}\right)}{b^{3/2}}-\frac{2\sqrt{\pi}\,d\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}\sqrt{\pi}}\right)}{b^{3/2}}-\frac{2d\,(}{bcx\sqrt{a}}$$

```
[Out] -2*d*cos(2*a/b)*FresnelC(2*(a+b*arcsin(c*x))^(1/2)/b^(1/2)/Pi^(1/2))*Pi^(1/
2)/b^(3/2)-2*d*FresnelS(2*(a+b*arcsin(c*x))^(1/2)/b^(1/2)/Pi^(1/2))*sin(2*a
/b)*Pi^(1/2)/b^(3/2)-2*d*(-c^2*x^2+1)^(3/2)/b/c/x/(a+b*arcsin(c*x))^(1/2)-2
*d*Unintegrable(1/x^2/(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x))^(1/2),x)/b/c
```

Rubi [A] time = 0.78, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{d-c^2dx^2}{x\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(d - c^2*d*x^2)/(x*(a + b*ArcSin[c*x])^(3/2)),x]
```

```
[Out] (-2*d*(1 - c^2*x^2)^(3/2))/(b*c*x*Sqrt[a + b*ArcSin[c*x]]) - (2*d*Sqrt[Pi]*
Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*ArcSin[c*x]])/(Sqrt[b]*Sqrt[Pi])])/b^(3
/2) - (2*d*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c*x]])/(Sqrt[b]*Sqrt[Pi])
]*Sin[(2*a)/b])/b^(3/2) - (2*d*Defer[Int][1/(x^2*Sqrt[1 - c^2*x^2]*Sqrt[a +
 b*ArcSin[c*x]]), x])/(b*c)
```

Rubi steps

$$\int \frac{d-c^2dx^2}{x\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx = -\frac{2d\left(1-c^2x^2\right)^{3/2}}{bcx\sqrt{a+b\sin^{-1}(cx)}} - \frac{(2d)\int \frac{\sqrt{1-c^2x^2}}{x^2\sqrt{a+b\sin^{-1}(cx)}}\,dx}{bc} - \frac{(4cd)\int \frac{\sqrt{1-c^2x^2}}{\sqrt{a+b\sin^{-1}(cx)}}\,dx}{b}$$

$$= -\frac{2d\left(1-c^2x^2\right)^{3/2}}{bcx\sqrt{a+b\sin^{-1}(cx)}} - \frac{(4d)\,\mathrm{Subst}\left(\int \frac{\cos^2(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{b} - \frac{(2d)\int\Big(-\frac{}{\sqrt{1-c^2}}}{}$$

$$= -\frac{2d\left(1-c^2x^2\right)^{3/2}}{bcx\sqrt{a+b\sin^{-1}(cx)}} - \frac{(4d)\,\mathrm{Subst}\left(\int\left(\frac{1}{2\sqrt{a+bx}}+\frac{\cos(2x)}{2\sqrt{a+bx}}\right)dx, x, \sin^{-1}(cx)\right)}{b} - \frac{(}{}$$

$$= -\frac{2d\left(1-c^2x^2\right)^{3/2}}{bcx\sqrt{a+b\sin^{-1}(cx)}} - \frac{(2d)\,\mathrm{Subst}\left(\int \frac{\cos(2x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{b} - \frac{(2d)\int \frac{}{x^2\sqrt{1-c^2}}}{}$$

$$= -\frac{2d\left(1-c^2x^2\right)^{3/2}}{bcx\sqrt{a+b\sin^{-1}(cx)}} - \frac{(2d)\int \frac{1}{x^2\sqrt{1-c^2x^2}\sqrt{a+b\sin^{-1}(cx)}}\,dx}{bc} - \frac{\left(2d\cos\left(\frac{2a}{b}\right)\right)\mathrm{Subst}}{}$$

$$= -\frac{2d\left(1-c^2x^2\right)^{3/2}}{bcx\sqrt{a+b\sin^{-1}(cx)}} - \frac{(2d)\int \frac{1}{x^2\sqrt{1-c^2x^2}\sqrt{a+b\sin^{-1}(cx)}}\,dx}{bc} - \frac{\left(4d\cos\left(\frac{2a}{b}\right)\right)\mathrm{Subst}}{}$$

$$= -\frac{2d\left(1-c^2x^2\right)^{3/2}}{bcx\sqrt{a+b\sin^{-1}(cx)}} - \frac{2d\sqrt{\pi}\cos\left(\frac{2a}{b}\right)C\left(\frac{2\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}\sqrt{\pi}}\right)}{b^{3/2}} - \frac{2d\sqrt{\pi}\,S\left(\frac{2\sqrt{a+b\sin}}{\sqrt{b}\sqrt{}}\right.}{b^{3/2}}$$

Mathematica [A] time = 2.02, size = 0, normalized size = 0.00

$$\int \frac{d-c^2dx^2}{x\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(d - c^2*d*x^2)/(x*(a + b*ArcSin[c*x])^(3/2)),x]
[Out] Integrate[(d - c^2*d*x^2)/(x*(a + b*ArcSin[c*x])^(3/2)), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)/x/(a+b*arcsin(c*x))^(3/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)/x/(a+b*arcsin(c*x))^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

maple [A] time = 0.86, size = 0, normalized size = 0.00

$$\int \frac{-c^2 d x^2 + d}{x \left(a + b \arcsin\left(cx\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)/x/(a+b*arcsin(c*x))^(3/2),x)
```

```
[Out] int((-c^2*d*x^2+d)/x/(a+b*arcsin(c*x))^(3/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{c^2 d x^2 - d}{\left(b \arcsin\left(cx\right) + a\right)^{\frac{3}{2}} x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)/x/(a+b*arcsin(c*x))^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((c^2*d*x^2 - d)/((b*arcsin(c*x) + a)^(3/2)*x), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{d - c^2\, d\, x^2}{x \left(a + b \operatorname{asin}\left(c\, x\right)\right)^{3/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d - c^2*d*x^2)/(x*(a + b*asin(c*x))^(3/2)),x)
```

```
[Out] int((d - c^2*d*x^2)/(x*(a + b*asin(c*x))^(3/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$-d \left(\int \frac{c^2 x^2}{ax\sqrt{a + b \operatorname{asin}\left(cx\right)} + bx\sqrt{a + b \operatorname{asin}\left(cx\right)} \operatorname{asin}\left(cx\right)}\, dx + \int \left(-\frac{1}{ax\sqrt{a + b \operatorname{asin}\left(cx\right)} + bx\sqrt{a + b \operatorname{asin}\left(cx\right)} \operatorname{as}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)/x/(a+b*asin(c*x))**(3/2),x)
```

```
[Out] -d*(Integral(c**2*x**2/(a*x*sqrt(a + b*asin(c*x)) + b*x*sqrt(a + b*asin(c*x
))*asin(c*x)), x) + Integral(-1/(a*x*sqrt(a + b*asin(c*x)) + b*x*sqrt(a + b
*asin(c*x))*asin(c*x)), x))
```

3.436 $\int \frac{x^3\left(d-c^2dx^2\right)^2}{\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx$

Optimal. Leaf size=485

$$\frac{\sqrt{\frac{\pi}{2}}\,d^2\cos\left(\frac{4a}{b}\right)C\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{8b^{3/2}c^4}-\frac{\sqrt{3\pi}\,d^2\cos\left(\frac{6a}{b}\right)C\left(\frac{2\sqrt{\frac{3}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{16b^{3/2}c^4}+\frac{3\sqrt{\pi}\,d^2\cos\left(\frac{2a}{b}\right)C\left(\frac{2\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}\sqrt{\pi}}\right)}{16b^{3/2}c^4}$$

```
[Out] 1/16*d^2*cos(4*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(
1/2))*2^(1/2)*Pi^(1/2)/b^(3/2)/c^4+1/16*d^2*FresnelS(2*2^(1/2)/Pi^(1/2)*(a+
b*arcsin(c*x))^(1/2)/b^(1/2))*sin(4*a/b)*2^(1/2)*Pi^(1/2)/b^(3/2)/c^4+3/16*
d^2*cos(2*a/b)*FresnelC(2*(a+b*arcsin(c*x))^(1/2)/b^(1/2)/Pi^(1/2))*Pi^(1/2
)/b^(3/2)/c^4-1/16*d^2*cos(8*a/b)*FresnelC(4*(a+b*arcsin(c*x))^(1/2)/b^(1/2
)/Pi^(1/2))*Pi^(1/2)/b^(3/2)/c^4+3/16*d^2*FresnelS(2*(a+b*arcsin(c*x))^(1/2
)/b^(1/2)/Pi^(1/2))*sin(2*a/b)*Pi^(1/2)/b^(3/2)/c^4-1/16*d^2*FresnelS(4*(a+
b*arcsin(c*x))^(1/2)/b^(1/2)/Pi^(1/2))*sin(8*a/b)*Pi^(1/2)/b^(3/2)/c^4-1/16
*d^2*cos(6*a/b)*FresnelC(2*3^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2)
)*3^(1/2)*Pi^(1/2)/b^(3/2)/c^4-1/16*d^2*FresnelS(2*3^(1/2)/Pi^(1/2)*(a+b*ar
csin(c*x))^(1/2)/b^(1/2))*sin(6*a/b)*3^(1/2)*Pi^(1/2)/b^(3/2)/c^4-2*d^2*x^3
*(-c^2*x^2+1)^(5/2)/b/c/(a+b*arcsin(c*x))^(1/2)
```

Rubi [A] time = 1.66, antiderivative size = 485, normalized size of antiderivative = 1.00, number of steps used = 32, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.276, Rules used = {4721, 4723, 4406, 3306, 3305, 3351, 3304, 3352}

$$\frac{\sqrt{\frac{\pi}{2}}\,d^2\cos\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{8b^{3/2}c^4}-\frac{\sqrt{3\pi}\,d^2\cos\left(\frac{6a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{3}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{16b^{3/2}c^4}+\frac{3\sqrt{\pi}\,d^2\cos\left(\frac{2a}{b}\right)\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(d - c^2*d*x^2)^2)/(a + b*ArcSin[c*x])^(3/2),x]
```

```
[Out] (-2*d^2*x^3*(1 - c^2*x^2)^(5/2))/(b*c*Sqrt[a + b*ArcSin[c*x]]) + (d^2*Sqrt[
Pi/2]*Cos[(4*a)/b]*FresnelC[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]
)/(8*b^(3/2)*c^4) - (d^2*Sqrt[3*Pi]*Cos[(6*a)/b]*FresnelC[(2*Sqrt[3/Pi]*Sqr
t[a + b*ArcSin[c*x]])/Sqrt[b]])/(16*b^(3/2)*c^4) + (3*d^2*Sqrt[Pi]*Cos[(2*a
)/b]*FresnelC[(2*Sqrt[a + b*ArcSin[c*x]])/(Sqrt[b]*Sqrt[Pi])])/(16*b^(3/2)*
c^4) - (d^2*Sqrt[Pi]*Cos[(8*a)/b]*FresnelC[(4*Sqrt[a + b*ArcSin[c*x]])/(Sqr
t[b]*Sqrt[Pi])])/(16*b^(3/2)*c^4) + (3*d^2*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*
ArcSin[c*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/(16*b^(3/2)*c^4) + (d^2*Sqr
t[Pi/2]*FresnelS[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[(4*a)/
b])/(8*b^(3/2)*c^4) - (d^2*Sqrt[3*Pi]*FresnelS[(2*Sqrt[3/Pi]*Sqrt[a + b*Arc
Sin[c*x]])/Sqrt[b]]*Sin[(6*a)/b])/(16*b^(3/2)*c^4) - (d^2*Sqrt[Pi]*FresnelS
[(4*Sqrt[a + b*ArcSin[c*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(8*a)/b])/(16*b^(3/2)*
c^4)
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
```

```
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^m*Sqrt[1 - c^2*x^2]*(d + e*x^2)^p
*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (-Dist[(f*m*d^IntPart[p]*
(d + e*x^2)^FracPart[p])/(b*c*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1), x], x] + Dist
[(c*(m + 2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(b*f*(n + 1)*(1 - c
^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcS
in[c*x])^(n + 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e,
 0] && LtQ[n, -1] && IGtQ[m, -3] && IGtQ[2*p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x^3\left(d-c^2dx^2\right)^2}{\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx = -\frac{2d^2x^3\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} + \frac{\left(6d^2\right)\int \frac{x^2\left(1-c^2x^2\right)^{3/2}}{\sqrt{a+b\sin^{-1}(cx)}}\,dx}{bc} - \frac{\left(16cd^2\right)\int \frac{x^4\left(1-c^2x^2\right)^{3/2}}{\sqrt{a+b\sin^{-1}(cx)}}\,dx}{b}$$

$$= -\frac{2d^2x^3\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} + \frac{\left(6d^2\right)\text{Subst}\left(\int \frac{\cos^4(x)\sin^2(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{bc^4} - \frac{\left(16d^2\right)\text{Su}}{}$$

$$= -\frac{2d^2x^3\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} + \frac{\left(6d^2\right)\text{Subst}\left(\int\left(\frac{1}{16\sqrt{a+bx}} + \frac{\cos(2x)}{32\sqrt{a+bx}} - \frac{\cos(4x)}{16\sqrt{a+bx}} - \frac{\cos(6x)}{32\sqrt{a+bx}}\right.\right.}{bc^4}$$

$$= -\frac{2d^2x^3\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{d^2\,\text{Subst}\left(\int \frac{\cos(8x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{8bc^4} + \frac{\left(3d^2\right)\text{Subst}\left(\int \frac{\cos}{\sqrt{a}}\right.}{16}$$

$$= -\frac{2d^2x^3\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} + \frac{\left(3d^2\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{2a}{b}+2x\right)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{16bc^4} - \frac{(3a}{}$$

$$= -\frac{2d^2x^3\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} + \frac{\left(3d^2\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \cos\left(\frac{2x^2}{b}\right)dx, x, \sqrt{a+b\sin^{-1}(cx)}\right.}{8b^2c^4}$$

$$= -\frac{2d^2x^3\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} + \frac{d^2\sqrt{\frac{\pi}{2}}\cos\left(\frac{4a}{b}\right)C\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{8b^{3/2}c^4} - \frac{d^2\sqrt{3\pi}\cos\left(\frac{6a}{b}\right)}{16}$$

Mathematica [C] time = 3.04, size = 540, normalized size = 1.11

$$-\frac{id^2e^{-\frac{8ia}{b}}\left(-6ie^{\frac{8ia}{b}}\sin\left(2\sin^{-1}(cx)\right) - 2ie^{\frac{8ia}{b}}\sin\left(4\sin^{-1}(cx)\right) + 2ie^{\frac{8ia}{b}}\sin\left(6\sin^{-1}(cx)\right) + ie^{\frac{8ia}{b}}\sin\left(8\sin^{-1}(cx)\right)\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^3*(d - c^2*d*x^2)^2)/(a + b*ArcSin[c*x])^(3/2),x]
```

```
[Out] ((-1/64*I)*d^2*(3*Sqrt[2]*E^(((6*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c*x]))/b
]*Gamma[1/2, ((-2*I)*(a + b*ArcSin[c*x]))/b] - 3*Sqrt[2]*E^(((10*I)*a)/b)*S
qrt[(I*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((2*I)*(a + b*ArcSin[c*x]))/b] +
2*E^(((4*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((-4*I)*(a
+ b*ArcSin[c*x]))/b] - 2*E^(((12*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*G
amma[1/2, ((4*I)*(a + b*ArcSin[c*x]))/b] - Sqrt[6]*E^(((2*I)*a)/b)*Sqrt[((-
I)*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((-6*I)*(a + b*ArcSin[c*x]))/b] + Sqr
t[6]*E^(((14*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((6*I)*(a
+ b*ArcSin[c*x]))/b] - Sqrt[2]*Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*Gamma[1/2
, ((-8*I)*(a + b*ArcSin[c*x]))/b] + Sqrt[2]*E^(((16*I)*a)/b)*Sqrt[(I*(a + b
*ArcSin[c*x]))/b]*Gamma[1/2, ((8*I)*(a + b*ArcSin[c*x]))/b] - (6*I)*E^(((8*
I)*a)/b)*Sin[2*ArcSin[c*x]] - (2*I)*E^(((8*I)*a)/b)*Sin[4*ArcSin[c*x]] + (2
*I)*E^(((8*I)*a)/b)*Sin[6*ArcSin[c*x]] + I*E^(((8*I)*a)/b)*Sin[8*ArcSin[c*x
]]))/(b*c^4*E^(((8*I)*a)/b)*Sqrt[a + b*ArcSin[c*x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^2/(a+b*arcsin(c*x))^(3/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(c^2dx^2-d\right)^2 x^3}{\left(b\arcsin\left(cx\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^2/(a+b*arcsin(c*x))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((c^2*d*x^2 - d)^2*x^3/(b*arcsin(c*x) + a)^(3/2), x)
```

maple [A] time = 0.30, size = 551, normalized size = 1.14

$$-\frac{d^2\left(4\sqrt{3}\,\sqrt{\frac{1}{b}}\,\sqrt{a+b\arcsin\left(cx\right)}\,\cos\left(\frac{6a}{b}\right)\operatorname{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{6}\,\sqrt{a+b\arcsin(cx)}}{\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,b}\right)\sqrt{\pi}+4\sqrt{3}\,\sqrt{\frac{1}{b}}\,\sqrt{a+b\arcsin\left(cx\right)}\,\mathrm{si}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(-c^2*d*x^2+d)^2/(a+b*arcsin(c*x))^(3/2),x)
```

```
[Out] -1/64/c^4*d^2/b*(4*3^(1/2)*(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)*cos(6*a/b)*F
resnelC(2^(1/2)/Pi^(1/2)*6^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*Pi^
(1/2)+4*3^(1/2)*(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)*sin(6*a/b)*FresnelS(2^(
1/2)/Pi^(1/2)*6^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*Pi^(1/2)-4*Pi^
(1/2)*(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)*cos(4*a/b)*FresnelC(2*2^(1/2)/Pi^
(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*2^(1/2)-4*Pi^(1/2)*(1/b)^(1/2)
*(a+b*arcsin(c*x))^(1/2)*sin(4*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(1/b)^(1/2)
*(a+b*arcsin(c*x))^(1/2)/b)*2^(1/2)-12*(1/b)^(1/2)*Pi^(1/2)*(a+b*arcsin(c*x
))^(1/2)*cos(2*a/b)*FresnelC(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)
/b)-12*(1/b)^(1/2)*Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)*sin(2*a/b)*FresnelS(2/P
i^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)+4*Pi^(1/2)*(a+b*arcsin(c*x))
^(1/2)*cos(8*a/b)*FresnelC(4/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b
)*(1/b)^(1/2)+4*Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)*sin(8*a/b)*FresnelS(4/Pi^(
1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*(1/b)^(1/2)+6*sin(2*(a+b*arcsin
(c*x))/b-2*a/b)+2*sin(4*(a+b*arcsin(c*x))/b-4*a/b)-2*sin(6*(a+b*arcsin(c*x)
)/b-6*a/b)-sin(8*(a+b*arcsin(c*x))/b-8*a/b))/(a+b*arcsin(c*x))^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(c^2dx^2-d\right)^2 x^3}{\left(b\arcsin\left(cx\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(-c^2*d*x^2+d)^2/(a+b*arcsin(c*x))^(3/2),x, algorithm="maxima
")
```

```
[Out] integrate((c^2*d*x^2 - d)^2*x^3/(b*arcsin(c*x) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\,{\left(d-c^2\,d\,x^2\right)}^2}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(d - c^2*d*x^2)^2)/(a + b*asin(c*x))^(3/2),x)
```

```
[Out] int((x^3*(d - c^2*d*x^2)^2)/(a + b*asin(c*x))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$d^2\left(\int \frac{x^3}{a\sqrt{a+b\operatorname{asin}(cx)} + b\sqrt{a+b\operatorname{asin}(cx)}\operatorname{asin}(cx)}\,dx + \int\left(-\frac{2c^2x^5}{a\sqrt{a+b\operatorname{asin}(cx)} + b\sqrt{a+b\operatorname{asin}(cx)}\operatorname{asin}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(-c**2*d*x**2+d)**2/(a+b*asin(c*x))**(3/2),x)
```

```
[Out] d**2*(Integral(x**3/(a*sqrt(a + b*asin(c*x)) + b*sqrt(a + b*asin(c*x))*asin
(c*x)), x) + Integral(-2*c**2*x**5/(a*sqrt(a + b*asin(c*x)) + b*sqrt(a + b*
asin(c*x))*asin(c*x)), x) + Integral(c**4*x**7/(a*sqrt(a + b*asin(c*x)) + b
*sqrt(a + b*asin(c*x))*asin(c*x)), x))
```

3.437 $\int \frac{x^2\left(d-c^2dx^2\right)^2}{\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx$

Optimal. Leaf size=511

$$\frac{5\sqrt{\frac{\pi}{2}}\,d^2\sin\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{16b^{3/2}c^3}-\frac{\sqrt{\frac{3\pi}{2}}\,d^2\sin\left(\frac{3a}{b}\right)C\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{16b^{3/2}c^3}-\frac{3\sqrt{\frac{5\pi}{2}}\,d^2\sin\left(\frac{5a}{b}\right)C\left(\frac{\sqrt{\frac{10}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{16b^{3/2}c^3}$$

```
[Out] -5/32*d^2*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2
))*2^(1/2)*Pi^(1/2)/b^(3/2)/c^3+5/32*d^2*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arc
sin(c*x))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/b^(3/2)/c^3+1/32*d^2*cos
(3*a/b)*FresnelS(6^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*6^(1/2)*
Pi^(1/2)/b^(3/2)/c^3-1/32*d^2*FresnelC(6^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(
1/2)/b^(1/2))*sin(3*a/b)*6^(1/2)*Pi^(1/2)/b^(3/2)/c^3+3/32*d^2*cos(5*a/b)*F
resnelS(10^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*10^(1/2)*Pi^(1/2
)/b^(3/2)/c^3-3/32*d^2*FresnelC(10^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b
^(1/2))*sin(5*a/b)*10^(1/2)*Pi^(1/2)/b^(3/2)/c^3+1/32*d^2*cos(7*a/b)*Fresne
lS(14^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*14^(1/2)*Pi^(1/2)/b^(
3/2)/c^3-1/32*d^2*FresnelC(14^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2
))*sin(7*a/b)*14^(1/2)*Pi^(1/2)/b^(3/2)/c^3-2*d^2*x^2*(-c^2*x^2+1)^(5/2)/b/
c/(a+b*arcsin(c*x))^(1/2)
```

Rubi [A] time = 2.12, antiderivative size = 511, normalized size of antiderivative = 1.00, number of steps used = 42, number of rules used = 8, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.276, Rules used = {4721, 4723, 4406, 3306, 3305, 3351, 3304, 3352}

$$\frac{5\sqrt{\frac{\pi}{2}}\,d^2\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{16b^{3/2}c^3}-\frac{\sqrt{\frac{3\pi}{2}}\,d^2\sin\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{16b^{3/2}c^3}-\frac{3\sqrt{\frac{5\pi}{2}}\,d^2\sin\left(\frac{5a}{b}\right)\text{Fr}}{1}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(d - c^2*d*x^2)^2)/(a + b*ArcSin[c*x])^(3/2),x]
```

```
[Out] (-2*d^2*x^2*(1 - c^2*x^2)^(5/2))/(b*c*Sqrt[a + b*ArcSin[c*x]]) - (5*d^2*Sqr
t[Pi/2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/(1
6*b^(3/2)*c^3) + (d^2*Sqrt[(3*Pi)/2]*Cos[(3*a)/b]*FresnelS[(Sqrt[6/Pi]*Sqrt
[a + b*ArcSin[c*x]])/Sqrt[b]])/(16*b^(3/2)*c^3) + (3*d^2*Sqrt[(5*Pi)/2]*Cos
[(5*a)/b]*FresnelS[(Sqrt[10/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/(16*b^(3
/2)*c^3) + (d^2*Sqrt[(7*Pi)/2]*Cos[(7*a)/b]*FresnelS[(Sqrt[14/Pi]*Sqrt[a +
b*ArcSin[c*x]])/Sqrt[b]])/(16*b^(3/2)*c^3) + (5*d^2*Sqrt[Pi/2]*FresnelC[(Sq
rt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[a/b])/(16*b^(3/2)*c^3) - (d^
2*Sqrt[(3*Pi)/2]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin
[(3*a)/b])/(16*b^(3/2)*c^3) - (3*d^2*Sqrt[(5*Pi)/2]*FresnelC[(Sqrt[10/Pi]*S
qrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[(5*a)/b])/(16*b^(3/2)*c^3) - (d^2*Sqrt
[(7*Pi)/2]*FresnelC[(Sqrt[14/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[(7*a
)/b])/(16*b^(3/2)*c^3)
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
```

```
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^m*Sqrt[1 - c^2*x^2]*(d + e*x^2)^p
*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (-Dist[(f*m*d^IntPart[p]*
(d + e*x^2)^FracPart[p])/(b*c*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1), x], x] + Dist
[(c*(m + 2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(b*f*(n + 1)*(1 - c
^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcS
in[c*x])^(n + 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e,
 0] && LtQ[n, -1] && IGtQ[m, -3] && IGtQ[2*p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x^2 \left(d-c^2dx^2\right)^2}{\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx = -\frac{2d^2x^2\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} + \frac{\left(4d^2\right)\int \frac{x\left(1-c^2x^2\right)^{3/2}}{\sqrt{a+b\sin^{-1}(cx)}}\,dx}{bc} - \frac{\left(14cd^2\right)\int \frac{x^3\left(1-c^2x^2\right)^{3/2}}{\sqrt{a+b\sin^{-1}(cx)}}\,dx}{b}$$

$$= -\frac{2d^2x^2\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} + \frac{\left(4d^2\right)\mathrm{Subst}\left(\int \frac{\cos^4(x)\sin(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{bc^3} - \frac{\left(14d^2\right)\mathrm{Subst}}{}$$

$$= -\frac{2d^2x^2\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} + \frac{\left(4d^2\right)\mathrm{Subst}\left(\int \left(\frac{\sin(x)}{8\sqrt{a+bx}} + \frac{3\sin(3x)}{16\sqrt{a+bx}} + \frac{\sin(5x)}{16\sqrt{a+bx}}\right) dx, x, \sin^{-1}(c\right.}{bc^3}$$

$$= -\frac{2d^2x^2\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} + \frac{\left(7d^2\right)\mathrm{Subst}\left(\int \frac{\sin(5x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{32bc^3} + \frac{\left(7d^2\right)\mathrm{Subst}\left(\int \frac{\sin}{\sqrt{a}}\right.}{32}$$

$$= -\frac{2d^2x^2\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} + \frac{\left(d^2\cos\left(\frac{a}{b}\right)\right)\mathrm{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{2bc^3} - \frac{\left(21d^2\cos\right.}{}$$

$$= -\frac{2d^2x^2\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} + \frac{\left(d^2\cos\left(\frac{a}{b}\right)\right)\mathrm{Subst}\left(\int \sin\left(\frac{x^2}{b}\right) dx, x, \sqrt{a+b\sin^{-1}(cx)}\right)}{b^2c^3} - \frac{(2}{}$$

$$= -\frac{2d^2x^2\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{5d^2\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{16b^{3/2}c^3} + \frac{d^2\sqrt{\frac{3\pi}{2}}\cos\left(\frac{3a}{b}\right)S\left(\right.}{16b^{3/2}c}$$

Mathematica [C] time = 3.29, size = 686, normalized size = 1.34

$$\frac{d^2e^{-\frac{7i\left(a+b\sin^{-1}(cx)\right)}{b}}\left(3e^{\frac{7ia}{b}+2i\sin^{-1}(cx)} + e^{\frac{7ia}{b}+4i\sin^{-1}(cx)} - 5e^{\frac{7ia}{b}+6i\sin^{-1}(cx)} - 5e^{\frac{7ia}{b}+8i\sin^{-1}(cx)} + e^{\frac{7ia}{b}+10i\sin^{-1}(cx)} + 3e^{\frac{7ia}{b}+12i\sin}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^2*(d - c^2*d*x^2)^2)/(a + b*ArcSin[c*x])^(3/2),x]
```

```
[Out] (d^2*(E^(((7*I)*a)/b) + 3*E^(((7*I)*a)/b + (2*I)*ArcSin[c*x]) + E^(((7*I)*a
)/b + (4*I)*ArcSin[c*x]) - 5*E^(((7*I)*a)/b + (6*I)*ArcSin[c*x]) - 5*E^(((7
*I)*a)/b + (8*I)*ArcSin[c*x]) + E^(((7*I)*a)/b + (10*I)*ArcSin[c*x]) + 3*E^
(((7*I)*a)/b + (12*I)*ArcSin[c*x]) + E^(((7*I)*(a + 2*b*ArcSin[c*x]))/b) +
5*E^(((6*I)*a)/b + (7*I)*ArcSin[c*x])*Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*Ga
mma[1/2, ((-I)*(a + b*ArcSin[c*x]))/b] + 5*E^(((8*I)*a)/b + (7*I)*ArcSin[c*
x])*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, (I*(a + b*ArcSin[c*x]))/b] -
 Sqrt[3]*E^(((4*I)*a)/b + (7*I)*ArcSin[c*x])*Sqrt[((-I)*(a + b*ArcSin[c*x])
)/b]*Gamma[1/2, ((-3*I)*(a + b*ArcSin[c*x]))/b] - Sqrt[3]*E^(((10*I)*a)/b +
 (7*I)*ArcSin[c*x])*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((3*I)*(a +
b*ArcSin[c*x]))/b] - 3*Sqrt[5]*E^(((2*I)*a)/b + (7*I)*ArcSin[c*x])*Sqrt[((-
I)*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((-5*I)*(a + b*ArcSin[c*x]))/b] - 3*S
qrt[5]*E^(((12*I)*a)/b + (7*I)*ArcSin[c*x])*Sqrt[(I*(a + b*ArcSin[c*x]))/b]
*Gamma[1/2, ((5*I)*(a + b*ArcSin[c*x]))/b] - Sqrt[7]*E^((7*I)*ArcSin[c*x])*
Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((-7*I)*(a + b*ArcSin[c*x]))/
b] - Sqrt[7]*E^(((7*I)*(2*a + b*ArcSin[c*x]))/b)*Sqrt[(I*(a + b*ArcSin[c*x]
))/b]*Gamma[1/2, ((7*I)*(a + b*ArcSin[c*x]))/b]))/(64*b*c^3*E^(((7*I)*(a +
b*ArcSin[c*x]))/b)*Sqrt[a + b*ArcSin[c*x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^2/(a+b*arcsin(c*x))^(3/2),x, algorithm="fricas
")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(c^2dx^2-d\right)^2x^2}{\left(b\arcsin\left(cx\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^2/(a+b*arcsin(c*x))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((c^2*d*x^2 - d)^2*x^2/(b*arcsin(c*x) + a)^(3/2), x)
```

maple [A] time = 0.32, size = 590, normalized size = 1.15

$$\frac{d^2\left(\sqrt{7}\,\sqrt{\pi}\,\sqrt{a+b\arcsin\left(cx\right)}\,\sqrt{\frac{1}{b}}\,\cos\left(\frac{7a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{7}\,\sqrt{a+b\arcsin(cx)}}{\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,b}\right)\sqrt{2}-\sqrt{7}\,\sqrt{\pi}\,\sqrt{a+b\arcsin\left(cx\right)}\,\sqrt{\frac{1}{b}}\,\sin}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(-c^2*d*x^2+d)^2/(a+b*arcsin(c*x))^(3/2),x)
```

```
[Out] 1/32/c^3*d^2/b*(7^(1/2)*Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)*(1/b)^(1/2)*cos(7*
a/b)*FresnelS(2^(1/2)/Pi^(1/2)*7^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/
b)*2^(1/2)-7^(1/2)*Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)*(1/b)^(1/2)*sin(7*a/b)*
FresnelC(2^(1/2)/Pi^(1/2)*7^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*2^
(1/2)+3*5^(1/2)*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*cos(5*
a/b)*FresnelS(2^(1/2)/Pi^(1/2)*5^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/
b)-3*5^(1/2)*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*sin(5*a/b
)*FresnelC(2^(1/2)/Pi^(1/2)*5^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)+
3^(1/2)*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*cos(3*a/b)*Fre
snelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)-3^(1/
2)*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*sin(3*a/b)*FresnelC
(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)-5*(1/b)^(1
/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(
1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)+5*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*
(a+b*arcsin(c*x))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b
*arcsin(c*x))^(1/2)/b)+cos(3*(a+b*arcsin(c*x))/b-3*a/b)+3*cos(5*(a+b*arcsin
(c*x))/b-5*a/b)+cos(7*(a+b*arcsin(c*x))/b-7*a/b)-5*cos((a+b*arcsin(c*x))/b-
a/b))/(a+b*arcsin(c*x))^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(c^2dx^2-d\right)^2x^2}{\left(b\arcsin\left(cx\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^2/(a+b*arcsin(c*x))^(3/2),x, algorithm="maxima
")
```

```
[Out] integrate((c^2*d*x^2 - d)^2*x^2/(b*arcsin(c*x) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2 \left(d - c^2 d x^2\right)^2}{\left(a + b \operatorname{asin}\left(c x\right)\right)^{3/2}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(d - c^2*d*x^2)^2)/(a + b*asin(c*x))^(3/2),x)
```

```
[Out] int((x^2*(d - c^2*d*x^2)^2)/(a + b*asin(c*x))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$d^2 \left(\int \frac{x^2}{a\sqrt{a + b \operatorname{asin}(cx)} + b\sqrt{a + b \operatorname{asin}(cx)} \operatorname{asin}(cx)} \, dx + \int \left(-\frac{2c^2x^4}{a\sqrt{a + b \operatorname{asin}(cx)} + b\sqrt{a + b \operatorname{asin}(cx)} \operatorname{asin}(cx)} \right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(-c**2*d*x**2+d)**2/(a+b*asin(c*x))**(3/2),x)
```

```
[Out] d**2*(Integral(x**2/(a*sqrt(a + b*asin(c*x)) + b*sqrt(a + b*asin(c*x))*asin
(c*x)), x) + Integral(-2*c**2*x**4/(a*sqrt(a + b*asin(c*x)) + b*sqrt(a + b*
asin(c*x))*asin(c*x)), x) + Integral(c**4*x**6/(a*sqrt(a + b*asin(c*x)) + b
*sqrt(a + b*asin(c*x))*asin(c*x)), x))
```

3.438 $\int \frac{x\left(d-c^2dx^2\right)^2}{\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx$

Optimal. Leaf size=373

$$\frac{\sqrt{\frac{\pi}{2}}\,d^2\cos\left(\frac{4a}{b}\right)C\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c^2}+\frac{\sqrt{3\pi}\,d^2\cos\left(\frac{6a}{b}\right)C\left(\frac{2\sqrt{\frac{3}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{8b^{3/2}c^2}+\frac{5\sqrt{\pi}\,d^2\cos\left(\frac{2a}{b}\right)C\left(\frac{2\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}\sqrt{\pi}}\right)}{8b^{3/2}c^2}$$

```
[Out] 1/2*d^2*cos(4*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1
/2))*2^(1/2)*Pi^(1/2)/b^(3/2)/c^2+1/2*d^2*FresnelS(2*2^(1/2)/Pi^(1/2)*(a+b*
arcsin(c*x))^(1/2)/b^(1/2))*sin(4*a/b)*2^(1/2)*Pi^(1/2)/b^(3/2)/c^2+5/8*d^2
*cos(2*a/b)*FresnelC(2*(a+b*arcsin(c*x))^(1/2)/b^(1/2)/Pi^(1/2))*Pi^(1/2)/b
^(3/2)/c^2+5/8*d^2*FresnelS(2*(a+b*arcsin(c*x))^(1/2)/b^(1/2)/Pi^(1/2))*sin
(2*a/b)*Pi^(1/2)/b^(3/2)/c^2+1/8*d^2*cos(6*a/b)*FresnelC(2*3^(1/2)/Pi^(1/2)
*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*3^(1/2)*Pi^(1/2)/b^(3/2)/c^2+1/8*d^2*Fres
nelS(2*3^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*sin(6*a/b)*3^(1/2)
*Pi^(1/2)/b^(3/2)/c^2-2*d^2*x*(-c^2*x^2+1)^(5/2)/b/c/(a+b*arcsin(c*x))^(1/2
)
```

Rubi [A] time = 1.40, antiderivative size = 373, normalized size of antiderivative = 1.00, number of steps used = 32, number of rules used = 10, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.370, Rules used = {4721, 4661, 3312, 3306, 3305, 3351, 3304, 3352, 4723, 4406}

$$\frac{\sqrt{\frac{\pi}{2}}\,d^2\cos\left(\frac{4a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c^2}+\frac{\sqrt{3\pi}\,d^2\cos\left(\frac{6a}{b}\right)\text{FresnelC}\left(\frac{2\sqrt{\frac{3}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{8b^{3/2}c^2}+\frac{5\sqrt{\pi}\,d^2\cos\left(\frac{2a}{b}\right)}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(d - c^2*d*x^2)^2)/(a + b*ArcSin[c*x])^(3/2),x]
```

```
[Out] (-2*d^2*x*(1 - c^2*x^2)^(5/2))/(b*c*Sqrt[a + b*ArcSin[c*x]]) + (d^2*Sqrt[Pi
/2]*Cos[(4*a)/b]*FresnelC[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/
(b^(3/2)*c^2) + (d^2*Sqrt[3*Pi]*Cos[(6*a)/b]*FresnelC[(2*Sqrt[3/Pi]*Sqrt[a
+ b*ArcSin[c*x]])/Sqrt[b]])/(8*b^(3/2)*c^2) + (5*d^2*Sqrt[Pi]*Cos[(2*a)/b]*
FresnelC[(2*Sqrt[a + b*ArcSin[c*x]])/(Sqrt[b]*Sqrt[Pi])])/(8*b^(3/2)*c^2) +
 (5*d^2*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcSin[c*x]])/(Sqrt[b]*Sqrt[Pi])]*S
in[(2*a)/b])/(8*b^(3/2)*c^2) + (d^2*Sqrt[Pi/2]*FresnelS[(2*Sqrt[2/Pi]*Sqrt[
a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[(4*a)/b])/(b^(3/2)*c^2) + (d^2*Sqrt[3*Pi]*
FresnelS[(2*Sqrt[3/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[(6*a)/b])/(8*b
^(3/2)*c^2)
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4661

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[d^p/c, Subst[Int[(a + b*x)^n*Cos[x]^(2*p + 1), x], x, ArcS
in[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IGtQ[2
*p, 0] && (IntegerQ[p] || GtQ[d, 0])
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^m*Sqrt[1 - c^2*x^2]*(d + e*x^2)^p
*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (-Dist[(f*m*d^IntPart[p]*
(d + e*x^2)^FracPart[p])/(b*c*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1), x], x] + Dist
[(c*(m + 2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(b*f*(n + 1)*(1 - c
^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcS
in[c*x])^(n + 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e,
 0] && LtQ[n, -1] && IGtQ[m, -3] && IGtQ[2*p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x\left(d-c^2dx^2\right)^2}{\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx = -\frac{2d^2x\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}}+\frac{\left(2d^2\right)\int \frac{\left(1-c^2x^2\right)^{3/2}}{\sqrt{a+b\sin^{-1}(cx)}}\,dx}{bc}-\frac{\left(12cd^2\right)\int \frac{x^2\left(1-c^2x^2\right)^{3/2}}{\sqrt{a+b\sin^{-1}(cx)}}\,dx}{b}$$

$$= -\frac{2d^2x\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}}+\frac{\left(2d^2\right)\text{Subst}\left(\int \frac{\cos^4(x)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(cx)\right)}{bc^2}-\frac{\left(12d^2\right)\text{Subst}\left(\int\right.}{}$$

$$= -\frac{2d^2x\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}}+\frac{\left(2d^2\right)\text{Subst}\left(\int\left(\frac{3}{8\sqrt{a+bx}}+\frac{\cos(2x)}{2\sqrt{a+bx}}+\frac{\cos(4x)}{8\sqrt{a+bx}}\right)dx,x,\sin^{-1}\right.}{bc^2}$$

$$= -\frac{2d^2x\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}}+\frac{d^2\,\text{Subst}\left(\int \frac{\cos(4x)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(cx)\right)}{4bc^2}-\frac{\left(3d^2\right)\text{Subst}\left(\int \frac{\cos}{\sqrt{a}}\right.}{8b}$$

$$= -\frac{2d^2x\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}}-\frac{\left(3d^2\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{2a}{b}+2x\right)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(cx)\right)}{8bc^2}+\frac{\left(d^2\right.}{}$$

$$= -\frac{2d^2x\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}}-\frac{\left(3d^2\cos\left(\frac{2a}{b}\right)\right)\text{Subst}\left(\int \cos\left(\frac{2x^2}{b}\right)dx,x,\sqrt{a+b\sin^{-1}(cx)}\right.}{4b^2c^2}$$

$$= -\frac{2d^2x\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}}+\frac{d^2\sqrt{\frac{\pi}{2}}\cos\left(\frac{4a}{b}\right)C\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c^2}+\frac{d^2\sqrt{3\pi}\cos\left(\frac{6a}{b}\right)}{8}$$

Mathematica [C] time = 3.71, size = 509, normalized size = 1.36

$$\frac{d^2\left(64\sqrt{\pi}\left(\frac{1}{b}\right)^{3/2}\cos\left(\frac{2a}{b}\right)C\left(\frac{2\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{\pi}}\right)+64\sqrt{\pi}\left(\frac{1}{b}\right)^{3/2}\sin\left(\frac{2a}{b}\right)S\left(\frac{2\sqrt{\frac{1}{b}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{\pi}}\right)+\frac{ie^{-\frac{6ia}{b}}\left(10ie^{\frac{6ia}{b}}\sin(\right.}{}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x*(d - c^2*d*x^2)^2)/(a + b*ArcSin[c*x])^(3/2),x]
```

```
[Out] (d^2*(64*(b^(-1))^(3/2)*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[b^(-1)]*Sqrt
[a + b*ArcSin[c*x]])/Sqrt[Pi]] + 64*(b^(-1))^(3/2)*Sqrt[Pi]*FresnelS[(2*Sqr
t[b^(-1)]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[Pi]]*Sin[(2*a)/b] + (I*(11*Sqrt[2]*
E^(((4*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((-2*I)*(a +
b*ArcSin[c*x]))/b] - 11*Sqrt[2]*E^(((8*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c*x])
)/b]*Gamma[1/2, ((2*I)*(a + b*ArcSin[c*x]))/b] - 8*E^(((2*I)*a)/b)*Sqrt[((-
I)*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((-4*I)*(a + b*ArcSin[c*x]))/b] + 8*E
^(((10*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((4*I)*(a + b*Ar
cSin[c*x]))/b] - Sqrt[6]*Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((-6
*I)*(a + b*ArcSin[c*x]))/b] + Sqrt[6]*E^(((12*I)*a)/b)*Sqrt[(I*(a + b*ArcSi
n[c*x]))/b]*Gamma[1/2, ((6*I)*(a + b*ArcSin[c*x]))/b] + (10*I)*E^(((6*I)*a)
/b)*Sin[2*ArcSin[c*x]] + (8*I)*E^(((6*I)*a)/b)*Sin[4*ArcSin[c*x]] + (2*I)*E
^(((6*I)*a)/b)*Sin[6*ArcSin[c*x]]))/(b*E^(((6*I)*a)/b)*Sqrt[a + b*ArcSin[c*
x]])))/(32*c^2)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^2/(a+b*arcsin(c*x))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(c^2dx^2-d\right)^2x}{\left(b\arcsin\left(cx\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^2/(a+b*arcsin(c*x))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((c^2*d*x^2 - d)^2*x/(b*arcsin(c*x) + a)^(3/2), x)
```

maple [A] time = 0.24, size = 426, normalized size = 1.14

$$\frac{d^2\left(2\sqrt{3}\,\sqrt{\frac{1}{b}}\,\sqrt{a+b\arcsin\left(cx\right)}\,\cos\left(\frac{6a}{b}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{6}\,\sqrt{a+b\arcsin(cx)}}{\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,b}\right)\sqrt{\pi}\,+2\sqrt{3}\,\sqrt{\frac{1}{b}}\,\sqrt{a+b\arcsin\left(cx\right)}\,\sin}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(-c^2*d*x^2+d)^2/(a+b*arcsin(c*x))^(3/2),x)
```

```
[Out] 1/16/c^2*d^2/b*(2*3^(1/2)*(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)*cos(6*a/b)*Fr
esnelC(2^(1/2)/Pi^(1/2)*6^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*Pi^(
1/2)+2*3^(1/2)*(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)*sin(6*a/b)*FresnelS(2^(1
/2)/Pi^(1/2)*6^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*Pi^(1/2)+8*Pi^(
1/2)*(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)*cos(4*a/b)*FresnelC(2*2^(1/2)/Pi^(
1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*2^(1/2)+8*Pi^(1/2)*(1/b)^(1/2)*
(a+b*arcsin(c*x))^(1/2)*sin(4*a/b)*FresnelS(2*2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*
(a+b*arcsin(c*x))^(1/2)/b)*2^(1/2)+10*(1/b)^(1/2)*Pi^(1/2)*(a+b*arcsin(c*x)
)^(1/2)*cos(2*a/b)*FresnelC(2/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/
b)+10*(1/b)^(1/2)*Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)*sin(2*a/b)*FresnelS(2/Pi
^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)-4*sin(4*(a+b*arcsin(c*x))/b-4
*a/b)-sin(6*(a+b*arcsin(c*x))/b-6*a/b)-5*sin(2*(a+b*arcsin(c*x))/b-2*a/b))/
(a+b*arcsin(c*x))^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(c^2dx^2-d\right)^2x}{\left(b\arcsin\left(cx\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^2/(a+b*arcsin(c*x))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((c^2*d*x^2 - d)^2*x/(b*arcsin(c*x) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x\,{\left(d-c^2\,d\,x^2\right)}^2}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(d - c^2*d*x^2)^2)/(a + b*asin(c*x))^(3/2),x)
```

```
[Out] int((x*(d - c^2*d*x^2)^2)/(a + b*asin(c*x))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$d^2\left(\int \frac{x}{a\sqrt{a+b\operatorname{asin}(cx)}+b\sqrt{a+b\operatorname{asin}(cx)}\operatorname{asin}(cx)}\,dx+\int\left(-\frac{2c^2x^3}{a\sqrt{a+b\operatorname{asin}(cx)}+b\sqrt{a+b\operatorname{asin}(cx)}\operatorname{asin}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c**2*d*x**2+d)**2/(a+b*asin(c*x))**(3/2),x)
```

```
[Out] d**2*(Integral(x/(a*sqrt(a + b*asin(c*x)) + b*sqrt(a + b*asin(c*x))*asin(c*
x)), x) + Integral(-2*c**2*x**3/(a*sqrt(a + b*asin(c*x)) + b*sqrt(a + b*asi
n(c*x))*asin(c*x)), x) + Integral(c**4*x**5/(a*sqrt(a + b*asin(c*x)) + b*sq
rt(a + b*asin(c*x))*asin(c*x)), x))
```

3.439 $\int \frac{(d-c^2dx^2)^2}{(a+b\sin^{-1}(cx))^{3/2}}\,dx$

Optimal. Leaf size=390

$$\frac{5\sqrt{\frac{\pi}{2}}\,d^2\sin\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{2b^{3/2}c}+\frac{5\sqrt{\frac{3\pi}{2}}\,d^2\sin\left(\frac{3a}{b}\right)C\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{4b^{3/2}c}+\frac{\sqrt{\frac{5\pi}{2}}\,d^2\sin\left(\frac{5a}{b}\right)C\left(\frac{\sqrt{\frac{10}{\pi}}\sqrt{a+b\sin^{-1}(c}{\sqrt{b}}\right.}{4b^{3/2}c}$$

```
[Out] -5/4*d^2*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2)
)*2^(1/2)*Pi^(1/2)/b^(3/2)/c+5/4*d^2*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(
c*x))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/b^(3/2)/c-5/8*d^2*cos(3*a/b)
*FresnelS(6^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*6^(1/2)*Pi^(1/2
)/b^(3/2)/c+5/8*d^2*FresnelC(6^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/
2))*sin(3*a/b)*6^(1/2)*Pi^(1/2)/b^(3/2)/c-1/8*d^2*cos(5*a/b)*FresnelS(10^(1
/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*10^(1/2)*Pi^(1/2)/b^(3/2)/c+1
/8*d^2*FresnelC(10^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*sin(5*a/
b)*10^(1/2)*Pi^(1/2)/b^(3/2)/c-2*d^2*(-c^2*x^2+1)^(5/2)/b/c/(a+b*arcsin(c*x
))^(1/2)
```

Rubi [A] time = 0.82, antiderivative size = 390, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {4659, 4723, 4406, 3306, 3305, 3351, 3304, 3352}

$$\frac{5\sqrt{\frac{\pi}{2}}\,d^2\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{2b^{3/2}c}+\frac{5\sqrt{\frac{3\pi}{2}}\,d^2\sin\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{4b^{3/2}c}+\sqrt{\frac{5\pi}{2}}\,d^2\sin\left(\frac{5a}{b}\right)\text{Fr}$$

Antiderivative was successfully verified.

```
[In] Int[(d - c^2*d*x^2)^2/(a + b*ArcSin[c*x])^(3/2),x]
```

```
[Out] (-2*d^2*(1 - c^2*x^2)^(5/2))/(b*c*Sqrt[a + b*ArcSin[c*x]]) - (5*d^2*Sqrt[Pi
/2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/(2*b^(
3/2)*c) - (5*d^2*Sqrt[(3*Pi)/2]*Cos[(3*a)/b]*FresnelS[(Sqrt[6/Pi]*Sqrt[a +
b*ArcSin[c*x]])/Sqrt[b]])/(4*b^(3/2)*c) - (d^2*Sqrt[(5*Pi)/2]*Cos[(5*a)/b]*
FresnelS[(Sqrt[10/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/(4*b^(3/2)*c) + (5
*d^2*Sqrt[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[
a/b])/(2*b^(3/2)*c) + (5*d^2*Sqrt[(3*Pi)/2]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b
*ArcSin[c*x]])/Sqrt[b]]*Sin[(3*a)/b])/(4*b^(3/2)*c) + (d^2*Sqrt[(5*Pi)/2]*F
resnelC[(Sqrt[10/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[(5*a)/b])/(4*b^(
3/2)*c)
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4659

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[(Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*(a + b*ArcSin[c*x])^(n + 1
))/(b*c*(n + 1)), x] + Dist[(c*(2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[
p])/(b*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a
 + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^
2*d + e, 0] && LtQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^2}{\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx = -\frac{2d^2\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{\left(10cd^2\right)\int \frac{x\left(1-c^2x^2\right)^{3/2}}{\sqrt{a+b\sin^{-1}(cx)}}\,dx}{b}$$

$$= -\frac{2d^2\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{\left(10d^2\right)\text{Subst}\left(\int \frac{\cos^4(x)\sin(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{bc}$$

$$= -\frac{2d^2\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{\left(10d^2\right)\text{Subst}\left(\int \left(\frac{\sin(x)}{8\sqrt{a+bx}} + \frac{3\sin(3x)}{16\sqrt{a+bx}} + \frac{\sin(5x)}{16\sqrt{a+bx}}\right)dx, x, \sin^{-1}(\right.}{bc}$$

$$= -\frac{2d^2\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{\left(5d^2\right)\text{Subst}\left(\int \frac{\sin(5x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{8bc} - \frac{\left(5d^2\right)\text{Subst}\left(\int \frac{\sin}{\sqrt{a}}\right.}{4}$$

$$= -\frac{2d^2\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{\left(5d^2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{4bc} - \frac{\left(15d^2\cos\right.}{}$$

$$= -\frac{2d^2\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{\left(5d^2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \sin\left(\frac{x^2}{b}\right)dx, x, \sqrt{a+b\sin^{-1}(cx)}\right)}{2b^2c} - $$

$$= -\frac{2d^2\left(1-c^2x^2\right)^{5/2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{5d^2\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{2b^{3/2}c} - \frac{5d^2\sqrt{\frac{3\pi}{2}}\cos\left(\frac{3a}{b}\right)S\left(\right.}{4b^{3/2}}$$

Mathematica [C] time = 2.74, size = 522, normalized size = 1.34

$$\frac{d^2e^{-\frac{5i\left(a+b\sin^{-1}(cx)\right)}{b}}\left(-5e^{\frac{5ia}{b}+2i\sin^{-1}(cx)} - 10e^{\frac{5ia}{b}+4i\sin^{-1}(cx)} - 10e^{\frac{5ia}{b}+6i\sin^{-1}(cx)} - 5e^{\frac{5ia}{b}+8i\sin^{-1}(cx)} - e^{\frac{5i\left(a+2b\sin^{-1}(cx)\right)}{b}} + 10e^{\frac{4ia}{b}+}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(d - c^2*d*x^2)^2/(a + b*ArcSin[c*x])^(3/2),x]
```

```
[Out] (d^2*(-E^(((5*I)*a)/b) - 5*E^(((5*I)*a)/b + (2*I)*ArcSin[c*x]) - 10*E^(((5*
I)*a)/b + (4*I)*ArcSin[c*x]) - 10*E^(((5*I)*a)/b + (6*I)*ArcSin[c*x]) - 5*E
^(((5*I)*a)/b + (8*I)*ArcSin[c*x]) - E^(((5*I)*(a + 2*b*ArcSin[c*x]))/b) +
10*E^(((4*I)*a)/b + (5*I)*ArcSin[c*x])*Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*G
amma[1/2, ((-I)*(a + b*ArcSin[c*x]))/b] + 10*E^(((6*I)*a)/b + (5*I)*ArcSin[
c*x])*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, (I*(a + b*ArcSin[c*x]))/b]
 + 5*Sqrt[3]*E^(((2*I)*a)/b + (5*I)*ArcSin[c*x])*Sqrt[((-I)*(a + b*ArcSin[c
*x]))/b]*Gamma[1/2, ((-3*I)*(a + b*ArcSin[c*x]))/b] + 5*Sqrt[3]*E^(((8*I)*a
)/b + (5*I)*ArcSin[c*x])*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((3*I)*
(a + b*ArcSin[c*x]))/b] + Sqrt[5]*E^((5*I)*ArcSin[c*x])*Sqrt[((-I)*(a + b*A
rcSin[c*x]))/b]*Gamma[1/2, ((-5*I)*(a + b*ArcSin[c*x]))/b] + Sqrt[5]*E^(((5
*I)*(2*a + b*ArcSin[c*x]))/b)*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((
5*I)*(a + b*ArcSin[c*x]))/b]))/(16*b*c*E^(((5*I)*(a + b*ArcSin[c*x]))/b)*Sq
rt[a + b*ArcSin[c*x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2/(a+b*arcsin(c*x))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(c^2dx^2-d\right)^2}{\left(b\arcsin\left(cx\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2/(a+b*arcsin(c*x))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((c^2*d*x^2 - d)^2/(b*arcsin(c*x) + a)^(3/2), x)
```

maple [A] time = 0.23, size = 446, normalized size = 1.14

$$-\frac{d^2\left(5\sqrt{3}\,\sqrt{\frac{1}{b}}\,\sqrt{\pi}\,\sqrt{2}\,\sqrt{a+b\arcsin\left(cx\right)}\,\cos\left(\frac{3a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{3}\,\sqrt{a+b\arcsin(cx)}}{\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,b}\right)-5\sqrt{3}\,\sqrt{\frac{1}{b}}\,\sqrt{\pi}\,\sqrt{2}\,\sqrt{a+b\arcsin}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^2/(a+b*arcsin(c*x))^(3/2),x)
```

```
[Out] -1/8/c*d^2/b*(5*3^(1/2)*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2
)*cos(3*a/b)*FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x)
)^(1/2)/b)-5*3^(1/2)*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*s
in(3*a/b)*FresnelC(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(
1/2)/b)+5^(1/2)*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*cos(5*
a/b)*FresnelS(2^(1/2)/Pi^(1/2)*5^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/
b)-5^(1/2)*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*sin(5*a/b)*
FresnelC(2^(1/2)/Pi^(1/2)*5^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)+10
*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*cos(a/b)*FresnelS(2^(
1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)-10*(1/b)^(1/2)*Pi^(1/2
)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^
(1/2)*(a+b*arcsin(c*x))^(1/2)/b)+10*cos((a+b*arcsin(c*x))/b-a/b)+5*cos(3*(a
+b*arcsin(c*x))/b-3*a/b)+cos(5*(a+b*arcsin(c*x))/b-5*a/b))/(a+b*arcsin(c*x)
)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(c^2dx^2-d\right)^2}{\left(b\arcsin\left(cx\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2/(a+b*arcsin(c*x))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((c^2*d*x^2 - d)^2/(b*arcsin(c*x) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(d-c^2\,d\,x^2\right)^2}{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d - c^2*d*x^2)^2/(a + b*asin(c*x))^(3/2),x)
```

```
[Out] int((d - c^2*d*x^2)^2/(a + b*asin(c*x))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$d^{2}\left(\int\left(-\frac{2c^{2}x^{2}}{a\sqrt{a+b\operatorname{asin}(cx)}+b\sqrt{a+b\operatorname{asin}(cx)}\operatorname{asin}(cx)}\right)dx+\int\frac{c^{4}x^{4}}{a\sqrt{a+b\operatorname{asin}(cx)}+b\sqrt{a+b\operatorname{asin}(cx)}\operatorname{asin}(c$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**2/(a+b*asin(c*x))**(3/2),x)
```

```
[Out] d**2*(Integral(-2*c**2*x**2/(a*sqrt(a + b*asin(c*x)) + b*sqrt(a + b*asin(c*
x))*asin(c*x)), x) + Integral(c**4*x**4/(a*sqrt(a + b*asin(c*x)) + b*sqrt(a
 + b*asin(c*x))*asin(c*x)), x) + Integral(1/(a*sqrt(a + b*asin(c*x)) + b*sq
rt(a + b*asin(c*x))*asin(c*x)), x))
```

3.440 $\int \frac{\left(d-c^2dx^2\right)^2}{x\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx$

Optimal. Leaf size=289

$$-\frac{2d^2\text{Int}\left(\frac{1}{x^2\sqrt{1-c^2x^2}\sqrt{a+b\sin^{-1}(cx)}},x\right)}{bc}-\frac{\sqrt{\frac{\pi}{2}}d^2\cos\left(\frac{4a}{b}\right)C\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}}-\frac{3\sqrt{\pi}d^2\cos\left(\frac{2a}{b}\right)C\left(\frac{2\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}\sqrt{\pi}}\right)}{b^{3/2}}$$

```
[Out] -1/2*d^2*cos(4*a/b)*FresnelC(2*2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(
1/2))*2^(1/2)*Pi^(1/2)/b^(3/2)-1/2*d^2*FresnelS(2*2^(1/2)/Pi^(1/2)*(a+b*arc
sin(c*x))^(1/2)/b^(1/2))*sin(4*a/b)*2^(1/2)*Pi^(1/2)/b^(3/2)-3*d^2*cos(2*a/
b)*FresnelC(2*(a+b*arcsin(c*x))^(1/2)/b^(1/2)/Pi^(1/2))*Pi^(1/2)/b^(3/2)-3*
d^2*FresnelS(2*(a+b*arcsin(c*x))^(1/2)/b^(1/2)/Pi^(1/2))*sin(2*a/b)*Pi^(1/2
)/b^(3/2)-2*d^2*(-c^2*x^2+1)^(5/2)/b/c/x/(a+b*arcsin(c*x))^(1/2)-2*d^2*Unin
tegrable(1/x^2/(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x))^(1/2),x)/b/c
```

Rubi [A] time = 1.46, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(d-c^2dx^2\right)^2}{x\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(d - c^2*d*x^2)^2/(x*(a + b*ArcSin[c*x])^(3/2)),x]
```

```
[Out] (-2*d^2*(1 - c^2*x^2)^(5/2))/(b*c*x*Sqrt[a + b*ArcSin[c*x]]) - (d^2*Sqrt[Pi
/2]*Cos[(4*a)/b]*FresnelC[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/
b^(3/2) - (3*d^2*Sqrt[Pi]*Cos[(2*a)/b]*FresnelC[(2*Sqrt[a + b*ArcSin[c*x]])
/(Sqrt[b]*Sqrt[Pi])])/b^(3/2) - (3*d^2*Sqrt[Pi]*FresnelS[(2*Sqrt[a + b*ArcS
in[c*x]])/(Sqrt[b]*Sqrt[Pi])]*Sin[(2*a)/b])/b^(3/2) - (d^2*Sqrt[Pi/2]*Fresn
elS[(2*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[(4*a)/b])/b^(3/2) -
 (2*d^2*Defer[Int][1/(x^2*Sqrt[1 - c^2*x^2]*Sqrt[a + b*ArcSin[c*x]]), x])/(
b*c)
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^2}{x\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx = -\frac{2d^2\left(1-c^2x^2\right)^{5/2}}{bcx\sqrt{a+b\sin^{-1}(cx)}} - \frac{\left(2d^2\right)\int \frac{\left(1-c^2x^2\right)^{3/2}}{x^2\sqrt{a+b\sin^{-1}(cx)}}\,dx}{bc} - \frac{\left(8cd^2\right)\int \frac{\left(1-c^2x^2\right)^{3/2}}{\sqrt{a+b\sin^{-1}(cx)}}\,dx}{b}$$

$$= -\frac{2d^2\left(1-c^2x^2\right)^{5/2}}{bcx\sqrt{a+b\sin^{-1}(cx)}} - \frac{\left(8d^2\right)\text{Subst}\left(\int \frac{\cos^4(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{b} - \frac{\left(2d^2\right)\int\left(-\frac{}{\sqrt{1-c^2}}\right.}{}$$

$$= -\frac{2d^2\left(1-c^2x^2\right)^{5/2}}{bcx\sqrt{a+b\sin^{-1}(cx)}} - \frac{\left(8d^2\right)\text{Subst}\left(\int\left(\frac{3}{8\sqrt{a+bx}} + \frac{\cos(2x)}{2\sqrt{a+bx}} + \frac{\cos(4x)}{8\sqrt{a+bx}}\right)dx, x, \sin^{-1}(\right.}{b}$$

$$= -\frac{2d^2\left(1-c^2x^2\right)^{5/2}}{bcx\sqrt{a+b\sin^{-1}(cx)}} + \frac{2d^2\sqrt{a+b\sin^{-1}(cx)}}{b^2} - \frac{d^2\,\text{Subst}\left(\int \frac{\cos(4x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx\right.}{b}$$

$$= -\frac{2d^2\left(1-c^2x^2\right)^{5/2}}{bcx\sqrt{a+b\sin^{-1}(cx)}} + \frac{2d^2\sqrt{a+b\sin^{-1}(cx)}}{b^2} - \frac{\left(2d^2\right)\text{Subst}\left(\int\left(\frac{1}{2\sqrt{a+bx}} - \frac{\cos(2x)}{2\sqrt{a+bx}}\right.\right.}{b}$$

$$= -\frac{2d^2\left(1-c^2x^2\right)^{5/2}}{bcx\sqrt{a+b\sin^{-1}(cx)}} + \frac{d^2\,\text{Subst}\left(\int \frac{\cos(2x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{b} - \frac{\left(2d^2\right)\int \frac{}{x^2\sqrt{1-c^2x^2}\sqrt{}}}{bc}$$

$$= -\frac{2d^2\left(1-c^2x^2\right)^{5/2}}{bcx\sqrt{a+b\sin^{-1}(cx)}} - \frac{d^2\sqrt{\frac{\pi}{2}}\cos\left(\frac{4a}{b}\right)C\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}} - \frac{4d^2\sqrt{\pi}\cos\left(\frac{2a}{b}\right)}{b^3}$$

$$= -\frac{2d^2\left(1-c^2x^2\right)^{5/2}}{bcx\sqrt{a+b\sin^{-1}(cx)}} - \frac{d^2\sqrt{\frac{\pi}{2}}\cos\left(\frac{4a}{b}\right)C\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}} - \frac{4d^2\sqrt{\pi}\cos\left(\frac{2a}{b}\right)}{b^3}$$

$$= -\frac{2d^2\left(1-c^2x^2\right)^{5/2}}{bcx\sqrt{a+b\sin^{-1}(cx)}} - \frac{d^2\sqrt{\frac{\pi}{2}}\cos\left(\frac{4a}{b}\right)C\left(\frac{2\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}} - \frac{3d^2\sqrt{\pi}\cos\left(\frac{2a}{b}\right)}{b^3}$$

Mathematica [A] time = 4.15, size = 0, normalized size = 0.00

$$\int \frac{\left(d-c^2dx^2\right)^2}{x\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(d - c^2*d*x^2)^2/(x*(a + b*ArcSin[c*x])^(3/2)),x]
[Out] Integrate[(d - c^2*d*x^2)^2/(x*(a + b*ArcSin[c*x])^(3/2)), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2/x/(a+b*arcsin(c*x))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2/x/(a+b*arcsin(c*x))^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:sym2poly/r2sym(const gen & e,const index_m & i,const vect
eur & l) Error: Bad Argument Value
```

maple [A] time = 1.04, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^{2} d\,x^{2}+d\right)^{2}}{x \left(a+b \arcsin \left(c x\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^2/x/(a+b*arcsin(c*x))^(3/2),x)
```

```
[Out] int((-c^2*d*x^2+d)^2/x/(a+b*arcsin(c*x))^(3/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(c^{2} d x^{2}-d\right)^{2}}{\left(b \arcsin \left(c x\right)+a\right)^{\frac{3}{2}} x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^2/x/(a+b*arcsin(c*x))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((c^2*d*x^2 - d)^2/((b*arcsin(c*x) + a)^(3/2)*x), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(d-c^2\,d\,x^2\right)}^2}{x\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d - c^2*d*x^2)^2/(x*(a + b*asin(c*x))^(3/2)),x)
```

```
[Out] int((d - c^2*d*x^2)^2/(x*(a + b*asin(c*x))^(3/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$d^{2} \left(\int \left(- \frac{2 c^{2} x^{2}}{a x \sqrt{a + b \operatorname{asin}{\left(c x \right)}} + b x \sqrt{a + b \operatorname{asin}{\left(c x \right)}} \operatorname{asin}{\left(c x \right)}}\right)\, dx + \int \frac{c^{4} x^{4}}{a x \sqrt{a + b \operatorname{asin}{\left(c x \right)}} + b x \sqrt{a + b \operatorname{asin}{\left(c x \right)}} \operatorname{asin}{\left(c x \right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**2/x/(a+b*asin(c*x))**(3/2),x)
```

```
[Out] d**2*(Integral(-2*c**2*x**2/(a*x*sqrt(a + b*asin(c*x)) + b*x*sqrt(a + b*asi
n(c*x))*asin(c*x)), x) + Integral(c**4*x**4/(a*x*sqrt(a + b*asin(c*x)) + b*
x*sqrt(a + b*asin(c*x))*asin(c*x)), x) + Integral(1/(a*x*sqrt(a + b*asin(c*
x)) + b*x*sqrt(a + b*asin(c*x))*asin(c*x)), x))
```

3.441 $\int \left(-\frac{3x}{8(1-x^2)\sqrt{\sin^{-1}(x)}} + \frac{x\sin^{-1}(x)^{3/2}}{(1-x^2)^2} \right) dx$

Optimal. Leaf size=42

$$\frac{\sin^{-1}(x)^{3/2}}{2(1-x^2)} - \frac{3x\sqrt{\sin^{-1}(x)}}{4\sqrt{1-x^2}}$$

```
[Out] 1/2*arcsin(x)^(3/2)/(-x^2+1)-3/4*x*arcsin(x)^(1/2)/(-x^2+1)^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$, Rules used = {4677, 4651}

$$\frac{\sin^{-1}(x)^{3/2}}{2(1-x^2)} - \frac{3x\sqrt{\sin^{-1}(x)}}{4\sqrt{1-x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(-3*x)/(8*(1 - x^2)*Sqrt[ArcSin[x]]) + (x*ArcSin[x]^(3/2))/(1 - x^2)^2,
x]
```

```
[Out] (-3*x*Sqrt[ArcSin[x]])/(4*Sqrt[1 - x^2]) + ArcSin[x]^(3/2)/(2*(1 - x^2))
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int \left(-\frac{3x}{8(1-x^2)\sqrt{\sin^{-1}(x)}} + \frac{x\sin^{-1}(x)^{3/2}}{(1-x^2)^2} \right) dx &= -\left(\frac{3}{8}\int \frac{x}{(1-x^2)\sqrt{\sin^{-1}(x)}}\,dx \right) + \int \frac{x\sin^{-1}(x)^{3/2}}{(1-x^2)^2}\,dx \\
&= \frac{\sin^{-1}(x)^{3/2}}{2(1-x^2)} - \frac{3}{8}\int \frac{x}{(1-x^2)\sqrt{\sin^{-1}(x)}}\,dx - \frac{3}{4}\int \frac{\sqrt{\sin^{-1}(x)}}{(1-x^2)^{3/2}}\,dx \\
&= -\frac{3x\sqrt{\sin^{-1}(x)}}{4\sqrt{1-x^2}} + \frac{\sin^{-1}(x)^{3/2}}{2(1-x^2)}
\end{aligned}$$

Mathematica [F] time = 3.85, size = 0, normalized size = 0.00

$$\int \left(-\frac{3x}{8(1-x^2)\sqrt{\sin^{-1}(x)}} + \frac{x\sin^{-1}(x)^{3/2}}{(1-x^2)^2} \right) dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(-3*x)/(8*(1 - x^2)*Sqrt[ArcSin[x]]) + (x*ArcSin[x]^(3/2))/(1 - x
^2)^2,x]
```

```
[Out] Integrate[(-3*x)/(8*(1 - x^2)*Sqrt[ArcSin[x]]) + (x*ArcSin[x]^(3/2))/(1 - x
^2)^2, x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(x)^(3/2)/(-x^2+1)^2-3/8*x/(-x^2+1)/arcsin(x)^(1/2),x, al
gorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.81, size = 46, normalized size = 1.10

$$-\frac{x^2 \arcsin(x)^{\frac{3}{2}}}{2\left(x^2-1\right)} + \frac{1}{2}\arcsin(x)^{\frac{3}{2}} + \frac{3\sqrt{-x^2+1}\,x\sqrt{\arcsin(x)}}{4\left(x^2-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(x)^(3/2)/(-x^2+1)^2-3/8*x/(-x^2+1)/arcsin(x)^(1/2),x, al
gorithm="giac")
```

```
[Out] -1/2*x^2*arcsin(x)^(3/2)/(x^2 - 1) + 1/2*arcsin(x)^(3/2) + 3/4*sqrt(-x^2 +
1)*x*sqrt(arcsin(x))/(x^2 - 1)
```

maple [F] time = 0.61, size = 0, normalized size = 0.00

$$\int \frac{x \arcsin(x)^{\frac{3}{2}}}{\left(-x^2+1\right)^2} - \frac{3x}{8\left(-x^2+1\right)\sqrt{\arcsin(x)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arcsin(x)^(3/2)/(-x^2+1)^2-3/8*x/(-x^2+1)/arcsin(x)^(1/2),x)
```

```
[Out] int(x*arcsin(x)^(3/2)/(-x^2+1)^2-3/8*x/(-x^2+1)/arcsin(x)^(1/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(x)^(3/2)/(-x^2+1)^2-3/8*x/(-x^2+1)/arcsin(x)^(1/2),x, al
gorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{3\,x}{8\sqrt{\mathrm{asin}(x)}\,\left(x^2-1\right)} + \frac{x\,\mathrm{asin}(x)^{3/2}}{\left(x^2-1\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((3*x)/(8*asin(x)^(1/2)*(x^2 - 1)) + (x*asin(x)^(3/2))/(x^2 - 1)^2,x)
```

```
[Out] int((3*x)/(8*asin(x)^(1/2)*(x^2 - 1)) + (x*asin(x)^(3/2))/(x^2 - 1)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \left(-\frac{3x}{x^4\sqrt{\operatorname{asin}(x)}-2x^2\sqrt{\operatorname{asin}(x)}+\sqrt{\operatorname{asin}(x)}}\right)dx+\int \frac{3x^3}{x^4\sqrt{\operatorname{asin}(x)}-2x^2\sqrt{\operatorname{asin}(x)}+\sqrt{\operatorname{asin}(x)}}\,dx+\int \frac{8x\operatorname{asin}^2(x)}{x^4\sqrt{\operatorname{asin}(x)}-2x^2\sqrt{\operatorname{asin}(x)}+\sqrt{\operatorname{asin}(x)}}\,d}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*asin(x)**(3/2)/(-x**2+1)**2-3/8*x/(-x**2+1)/asin(x)**(1/2),x)
```

```
[Out] (Integral(-3*x/(x**4*sqrt(asin(x)) - 2*x**2*sqrt(asin(x)) + sqrt(asin(x))),
 x) + Integral(3*x**3/(x**4*sqrt(asin(x)) - 2*x**2*sqrt(asin(x)) + sqrt(asi
n(x))), x) + Integral(8*x*asin(x)**2/(x**4*sqrt(asin(x)) - 2*x**2*sqrt(asin
(x)) + sqrt(asin(x))), x))/8
```

3.442 $\int \left(c-a^2cx^2\right)^{3/2}\sqrt{\sin^{-1}(ax)}\,dx$

Optimal. Leaf size=227

$$-\frac{\sqrt{\frac{\pi}{2}}c\sqrt{c-a^2cx^2}S\left(2\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}(ax)}\right)}{64a\sqrt{1-a^2x^2}}-\frac{\sqrt{\pi}c\sqrt{c-a^2cx^2}S\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{8a\sqrt{1-a^2x^2}}+\frac{1}{4}x\left(c-a^2cx^2\right)^{3/2}\sqrt{\sin^{-1}(ax)}+\frac{c\sqrt{c}}{}$$

```
[Out] 1/4*c*arcsin(a*x)^(3/2)*(-a^2*c*x^2+c)^(1/2)/a/(-a^2*x^2+1)^(1/2)-1/128*c*F
resnelS(2*2^(1/2)/Pi^(1/2)*arcsin(a*x)^(1/2))*2^(1/2)*Pi^(1/2)*(-a^2*c*x^2+
c)^(1/2)/a/(-a^2*x^2+1)^(1/2)-1/8*c*FresnelS(2*arcsin(a*x)^(1/2)/Pi^(1/2))*
Pi^(1/2)*(-a^2*c*x^2+c)^(1/2)/a/(-a^2*x^2+1)^(1/2)+1/4*x*(-a^2*c*x^2+c)^(3/
2)*arcsin(a*x)^(1/2)+3/8*c*x*(-a^2*c*x^2+c)^(1/2)*arcsin(a*x)^(1/2)
```

Rubi [A] time = 0.28, antiderivative size = 227, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 9, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.375$, Rules used = {4649, 4647, 4641, 4635, 4406, 12, 3305, 3351, 4723}

$$-\frac{\sqrt{\frac{\pi}{2}}c\sqrt{c-a^2cx^2}S\left(2\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}(ax)}\right)}{64a\sqrt{1-a^2x^2}}-\frac{\sqrt{\pi}c\sqrt{c-a^2cx^2}S\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{8a\sqrt{1-a^2x^2}}+\frac{1}{4}x\left(c-a^2cx^2\right)^{3/2}\sqrt{\sin^{-1}(ax)}+\frac{c\sqrt{c}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c - a^2*c*x^2)^(3/2)*Sqrt[ArcSin[a*x]],x]
```

```
[Out] (3*c*x*Sqrt[c - a^2*c*x^2]*Sqrt[ArcSin[a*x]])/8 + (x*(c - a^2*c*x^2)^(3/2)*
Sqrt[ArcSin[a*x]])/4 + (c*Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^(3/2))/(4*a*Sqrt[
1 - a^2*x^2]) - (c*Sqrt[Pi/2]*Sqrt[c - a^2*c*x^2]*FresnelS[2*Sqrt[2/Pi]*Sqr
t[ArcSin[a*x]]])/(64*a*Sqrt[1 - a^2*x^2]) - (c*Sqrt[Pi]*Sqrt[c - a^2*c*x^2]
*FresnelS[(2*Sqrt[ArcSin[a*x]])/Sqrt[Pi]])/(8*a*Sqrt[1 - a^2*x^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
```

```
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \left(c-a^2cx^2\right)^{3/2}\sqrt{\sin^{-1}(ax)}\,dx = \frac{1}{4}x\left(c-a^2cx^2\right)^{3/2}\sqrt{\sin^{-1}(ax)} + \frac{1}{4}(3c)\int \sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}\,dx - \frac{\left(ac\sqrt{\right.}{}$$

$$= \frac{3}{8}cx\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)} + \frac{1}{4}x\left(c-a^2cx^2\right)^{3/2}\sqrt{\sin^{-1}(ax)} + \frac{\left(3c\sqrt{c-a^2c\right.}{8\sqrt{}}$$

$$= \frac{3}{8}cx\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)} + \frac{1}{4}x\left(c-a^2cx^2\right)^{3/2}\sqrt{\sin^{-1}(ax)} + \frac{c\sqrt{c-a^2cx^2}}{4a\sqrt{1-}}$$

$$= \frac{3}{8}cx\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)} + \frac{1}{4}x\left(c-a^2cx^2\right)^{3/2}\sqrt{\sin^{-1}(ax)} + \frac{c\sqrt{c-a^2cx^2}}{4a\sqrt{1-}}$$

$$= \frac{3}{8}cx\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)} + \frac{1}{4}x\left(c-a^2cx^2\right)^{3/2}\sqrt{\sin^{-1}(ax)} + \frac{c\sqrt{c-a^2cx^2}}{4a\sqrt{1-}}$$

$$= \frac{3}{8}cx\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)} + \frac{1}{4}x\left(c-a^2cx^2\right)^{3/2}\sqrt{\sin^{-1}(ax)} + \frac{c\sqrt{c-a^2cx^2}}{4a\sqrt{1-}}$$

$$= \frac{3}{8}cx\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)} + \frac{1}{4}x\left(c-a^2cx^2\right)^{3/2}\sqrt{\sin^{-1}(ax)} + \frac{c\sqrt{c-a^2cx^2}}{4a\sqrt{1-}}$$

Mathematica [C] time = 0.26, size = 166, normalized size = 0.73

$$\frac{c\sqrt{c-a^2cx^2}\left(32\sin^{-1}(ax)^2+8\sqrt{2}\sqrt{-i\sin^{-1}(ax)}\,\Gamma\left(\frac{3}{2},-2i\sin^{-1}(ax)\right)+8\sqrt{2}\sqrt{i\sin^{-1}(ax)}\,\Gamma\left(\frac{3}{2},2i\sin^{-1}(ax)\right)+\right.}{128a\sqrt{1-a^2x^2}\sqrt{\sin^{-1}(ax)}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c - a^2*c*x^2)^(3/2)*Sqrt[ArcSin[a*x]],x]
```

```
[Out] (c*Sqrt[c - a^2*c*x^2]*(32*ArcSin[a*x]^2 + 8*Sqrt[2]*Sqrt[(-I)*ArcSin[a*x]]
*Gamma[3/2, (-2*I)*ArcSin[a*x]] + 8*Sqrt[2]*Sqrt[I*ArcSin[a*x]]*Gamma[3/2,
(2*I)*ArcSin[a*x]] + Sqrt[(-I)*ArcSin[a*x]]*Gamma[3/2, (-4*I)*ArcSin[a*x]]
+ Sqrt[I*ArcSin[a*x]]*Gamma[3/2, (4*I)*ArcSin[a*x]]))/(128*a*Sqrt[1 - a^2*x
^2]*Sqrt[ArcSin[a*x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(3/2)*arcsin(a*x)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(3/2)*arcsin(a*x)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple **[F]** time = 0.47, size = 0, normalized size = 0.00

$$\int \left(-a^{2} c \,x^{2}+c \right)^{\frac{3}{2}} \sqrt{\arcsin \left(a x \right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)^(3/2)*arcsin(a*x)^(1/2),x)
```

```
[Out] int((-a^2*c*x^2+c)^(3/2)*arcsin(a*x)^(1/2),x)
```

maxima **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(3/2)*arcsin(a*x)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \sqrt{\mathrm{asin}\left(a\,x\right)}\,{\left(c-a^2\,c\,x^2\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^(1/2)*(c - a^2*c*x^2)^(3/2),x)
```

```
[Out] int(asin(a*x)^(1/2)*(c - a^2*c*x^2)^(3/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \left(- c \left(a x - 1\right) \left(a x + 1\right)\right)^{\frac{3}{2}} \sqrt{\operatorname{asin}{\left(a x \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)**(3/2)*asin(a*x)**(1/2),x)
```

```
[Out] Integral((-c*(a*x - 1)*(a*x + 1))**(3/2)*sqrt(asin(a*x)), x)
```

3.443 $\int \sqrt{c-a^2 c x^2} \sqrt{\sin^{-1}(ax)}\, dx$

Optimal. Leaf size=130

$$-\frac{\sqrt{\pi}\sqrt{c-a^2cx^2}\, S\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{8a\sqrt{1-a^2x^2}}+\frac{\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{3/2}}{3a\sqrt{1-a^2x^2}}+\frac{1}{2}x\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}$$

```
[Out] 1/3*arcsin(a*x)^(3/2)*(-a^2*c*x^2+c)^(1/2)/a/(-a^2*x^2+1)^(1/2)-1/8*Fresnel
S(2*arcsin(a*x)^(1/2)/Pi^(1/2))*Pi^(1/2)*(-a^2*c*x^2+c)^(1/2)/a/(-a^2*x^2+1
)^(1/2)+1/2*x*(-a^2*c*x^2+c)^(1/2)*arcsin(a*x)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {4647, 4641, 4635, 4406, 12, 3305, 3351}

$$-\frac{\sqrt{\pi}\sqrt{c-a^2cx^2}\, S\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{8a\sqrt{1-a^2x^2}}+\frac{\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{3/2}}{3a\sqrt{1-a^2x^2}}+\frac{1}{2}x\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[c - a^2*c*x^2]*Sqrt[ArcSin[a*x]],x]
```

```
[Out] (x*Sqrt[c - a^2*c*x^2]*Sqrt[ArcSin[a*x]])/2 + (Sqrt[c - a^2*c*x^2]*ArcSin[a
*x]^(3/2))/(3*a*Sqrt[1 - a^2*x^2]) - (Sqrt[Pi]*Sqrt[c - a^2*c*x^2]*FresnelS
[(2*Sqrt[ArcSin[a*x]])/Sqrt[Pi]])/(8*a*Sqrt[1 - a^2*x^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
 /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}\,dx &= \frac{1}{2}x\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}+\frac{\sqrt{c-a^2cx^2}\int\frac{\sqrt{\sin^{-1}(ax)}}{\sqrt{1-a^2x^2}}\,dx}{2\sqrt{1-a^2x^2}}-\frac{\left(a\sqrt{c-a^2cx^2}\right)\int\frac{}{\sqrt{\sin}}}{4\sqrt{1-a^2x^2}} \\
&= \frac{1}{2}x\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}+\frac{\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{3/2}}{3a\sqrt{1-a^2x^2}}-\frac{\sqrt{c-a^2cx^2}\,\text{Subst}\left(\int\frac{\cos}{}\right.}{4a\sqrt{1-}} \\
&= \frac{1}{2}x\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}+\frac{\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{3/2}}{3a\sqrt{1-a^2x^2}}-\frac{\sqrt{c-a^2cx^2}\,\text{Subst}\left(\int\frac{\sin}{2}\right.}{4a\sqrt{1-}} \\
&= \frac{1}{2}x\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}+\frac{\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{3/2}}{3a\sqrt{1-a^2x^2}}-\frac{\sqrt{c-a^2cx^2}\,\text{Subst}\left(\int\frac{\sin}{\sqrt{}}\right.}{8a\sqrt{1-}} \\
&= \frac{1}{2}x\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}+\frac{\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{3/2}}{3a\sqrt{1-a^2x^2}}-\frac{\sqrt{c-a^2cx^2}\,\text{Subst}\left(\int\sin\right.}{4a\sqrt{1}} \\
&= \frac{1}{2}x\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}+\frac{\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{3/2}}{3a\sqrt{1-a^2x^2}}-\frac{\sqrt{\pi}\sqrt{c-a^2cx^2}\,S\left(\frac{2\sqrt{\sin^{-}}}{\sqrt{\pi}}\right.}{8a\sqrt{1-a^2x^2}}
\end{aligned}$$

Mathematica [C] time = 0.08, size = 138, normalized size = 1.06

$$\frac{\sqrt{c-a^2cx^2}\left(16\sin^{-1}(ax)\left(3ax\sqrt{1-a^2x^2}+2\sin^{-1}(ax)\right)+3\sqrt{2}\sqrt{-i\sin^{-1}(ax)}\,\Gamma\left(\frac{1}{2},-2i\sin^{-1}(ax)\right)+3\sqrt{2}\sqrt{i\sin^{-}}\right.}{96a\sqrt{1-a^2x^2}\sqrt{\sin^{-1}(ax)}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[c - a^2*c*x^2]*Sqrt[ArcSin[a*x]],x]
```

```
[Out] (Sqrt[c - a^2*c*x^2]*(16*ArcSin[a*x]*(3*a*x*Sqrt[1 - a^2*x^2] + 2*ArcSin[a*
x]) + 3*Sqrt[2]*Sqrt[(-I)*ArcSin[a*x]]*Gamma[1/2, (-2*I)*ArcSin[a*x]] + 3*S
qrt[2]*Sqrt[I*ArcSin[a*x]]*Gamma[1/2, (2*I)*ArcSin[a*x]]))/(96*a*Sqrt[1 - a
^2*x^2]*Sqrt[ArcSin[a*x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(1/2)*arcsin(a*x)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(1/2)*arcsin(a*x)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [F] time = 0.45, size = 0, normalized size = 0.00

$$\int \sqrt{-a^2 c\,x^2 + c}\,\sqrt{\arcsin\left(ax\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)^(1/2)*arcsin(a*x)^(1/2),x)
```

```
[Out] int((-a^2*c*x^2+c)^(1/2)*arcsin(a*x)^(1/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(1/2)*arcsin(a*x)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{\mathrm{asin}\left(a\,x\right)}\,\sqrt{c-a^2\,c\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^(1/2)*(c - a^2*c*x^2)^(1/2),x)
```

```
[Out] int(asin(a*x)^(1/2)*(c - a^2*c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-c\left(ax-1\right)\left(ax+1\right)}\,\sqrt{\mathrm{asin}\left(ax\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)**(1/2)*asin(a*x)**(1/2),x)
```

```
[Out] Integral(sqrt(-c*(a*x - 1)*(a*x + 1))*sqrt(asin(a*x)), x)
```

3.444 $\int \frac{\sqrt{\sin^{-1}(ax)}}{\sqrt{c-a^2cx^2}}\,dx$

Optimal. Leaf size=44

$$\frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^{3/2}}{3a\sqrt{c-a^2cx^2}}$$

```
[Out] 2/3*arcsin(a*x)^(3/2)*(-a^2*x^2+1)^(1/2)/a/(-a^2*c*x^2+c)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 44, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {4643, 4641}

$$\frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^{3/2}}{3a\sqrt{c-a^2cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[ArcSin[a*x]]/Sqrt[c - a^2*c*x^2],x]
```

```
[Out] (2*Sqrt[1 - a^2*x^2]*ArcSin[a*x]^(3/2))/(3*a*Sqrt[c - a^2*c*x^2])
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4643

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcSin[c*x])^n
/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e
, 0] && !GtQ[d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\sqrt{\sin^{-1}(ax)}}{\sqrt{c-a^2cx^2}}\,dx &= \frac{\sqrt{1-a^2x^2}\int \frac{\sqrt{\sin^{-1}(ax)}}{\sqrt{1-a^2x^2}}\,dx}{\sqrt{c-a^2cx^2}}\\ &= \frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^{3/2}}{3a\sqrt{c-a^2cx^2}}\end{aligned}$$

Mathematica [A] time = 0.06, size = 44, normalized size = 1.00

$$\frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^{3/2}}{3a\sqrt{c-a^2cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[ArcSin[a*x]]/Sqrt[c - a^2*c*x^2],x]
```

```
[Out] (2*Sqrt[1 - a^2*x^2]*ArcSin[a*x]^(3/2))/(3*a*Sqrt[c - a^2*c*x^2])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^(1/2)/(-a^2*c*x^2+c)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{\arcsin(ax)}}{\sqrt{-a^2cx^2+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^(1/2)/(-a^2*c*x^2+c)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(arcsin(a*x))/sqrt(-a^2*c*x^2 + c), x)
```

maple [A] time = 0.06, size = 38, normalized size = 0.86

$$\frac{2\arcsin(ax)^{\frac{3}{2}}\sqrt{-a^2x^2+1}}{3a\sqrt{-c\left(a^2x^2-1\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^(1/2)/(-a^2*c*x^2+c)^(1/2),x)
```

```
[Out] 2/3*arcsin(a*x)^(3/2)/a/(-c*(a^2*x^2-1))^(1/2)*(-a^2*x^2+1)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^(1/2)/(-a^2*c*x^2+c)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sqrt{\mathrm{asin}\left(a\,x\right)}}{\sqrt{c-a^2\,c\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^(1/2)/(c - a^2*c*x^2)^(1/2),x)
```

```
[Out] int(asin(a*x)^(1/2)/(c - a^2*c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{\mathrm{asin}(ax)}}{\sqrt{-c(ax-1)(ax+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**(1/2)/(-a**2*c*x**2+c)**(1/2),x)
```

```
[Out] Integral(sqrt(asin(a*x))/sqrt(-c*(a*x - 1)*(a*x + 1)), x)
```

3.445 $\int \frac{\sqrt{\sin^{-1}(ax)}}{(c-a^2cx^2)^{3/2}}\,dx$

Optimal. Leaf size=91

$$\frac{x\sqrt{\sin^{-1}(ax)}}{c\sqrt{c-a^2cx^2}}-\frac{a\sqrt{1-a^2x^2}\,\text{Int}\left(\frac{x}{(1-a^2x^2)\sqrt{\sin^{-1}(ax)}},x\right)}{2c\sqrt{c-a^2cx^2}}$$

```
[Out] x*arcsin(a*x)^(1/2)/c/(-a^2*c*x^2+c)^(1/2)-1/2*a*(-a^2*x^2+1)^(1/2)*Uninteg
rable(x/(-a^2*x^2+1)/arcsin(a*x)^(1/2),x)/c/(-a^2*c*x^2+c)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{\sin^{-1}(ax)}}{(c-a^2cx^2)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[ArcSin[a*x]]/(c - a^2*c*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[ArcSin[a*x]])/(c*Sqrt[c - a^2*c*x^2]) - (a*Sqrt[1 - a^2*x^2]*Defer[
Int][x/((1 - a^2*x^2)*Sqrt[ArcSin[a*x]]), x])/(2*c*Sqrt[c - a^2*c*x^2])
```

Rubi steps

$$\int \frac{\sqrt{\sin^{-1}(ax)}}{(c-a^2cx^2)^{3/2}}\,dx=\frac{x\sqrt{\sin^{-1}(ax)}}{c\sqrt{c-a^2cx^2}}-\frac{\left(a\sqrt{1-a^2x^2}\right)\int \frac{x}{(1-a^2x^2)\sqrt{\sin^{-1}(ax)}}\,dx}{2c\sqrt{c-a^2cx^2}}$$

Mathematica [A] time = 0.72, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{\sin^{-1}(ax)}}{(c-a^2cx^2)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[ArcSin[a*x]]/(c - a^2*c*x^2)^(3/2),x]
```

```
[Out] Integrate[Sqrt[ArcSin[a*x]]/(c - a^2*c*x^2)^(3/2), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^(1/2)/(-a^2*c*x^2+c)^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{\arcsin(ax)}}{\left(-a^2cx^2+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^(1/2)/(-a^2*c*x^2+c)^(3/2),x, algorithm="giac")
[Out] integrate(sqrt(arcsin(a*x))/(-a^2*c*x^2 + c)^(3/2), x)
```

maple [A] time = 0.50, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{\arcsin(ax)}}{\left(-a^2c\,x^2+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^(1/2)/(-a^2*c*x^2+c)^(3/2),x)
[Out] int(arcsin(a*x)^(1/2)/(-a^2*c*x^2+c)^(3/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^(1/2)/(-a^2*c*x^2+c)^(3/2),x, algorithm="maxima")
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{\mathrm{asin}\left(a\,x\right)}}{\left(c-a^2\,c\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^(1/2)/(c - a^2*c*x^2)^(3/2),x)
[Out] int(asin(a*x)^(1/2)/(c - a^2*c*x^2)^(3/2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{\mathrm{asin}\,(ax)}}{\left(-c\,(ax-1)\,(ax+1)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**(1/2)/(-a**2*c*x**2+c)**(3/2),x)
[Out] Integral(sqrt(asin(a*x))/(-c*(a*x - 1)*(a*x + 1))**(3/2), x)
```

3.446 $\int \frac{\sqrt{\sin^{-1}(ax)}}{(c-a^2cx^2)^{5/2}}\,dx$

Optimal. Leaf size=187

$$-\frac{a\sqrt{1-a^2x^2}\,\mathrm{Int}\left(\frac{x}{(1-a^2x^2)^2\sqrt{\sin^{-1}(ax)}},x\right)}{6c^2\sqrt{c-a^2cx^2}}-\frac{a\sqrt{1-a^2x^2}\,\mathrm{Int}\left(\frac{x}{(1-a^2x^2)\sqrt{\sin^{-1}(ax)}},x\right)}{3c^2\sqrt{c-a^2cx^2}}+\frac{2x\sqrt{\sin^{-1}(ax)}}{3c^2\sqrt{c-a^2cx^2}}+\frac{x\sqrt{\sin^{-1}(ax)}}{3c\left(c-a^2cx^2\right)^{3/2}}$$

```
[Out] 1/3*x*arcsin(a*x)^(1/2)/c/(-a^2*c*x^2+c)^(3/2)+2/3*x*arcsin(a*x)^(1/2)/c^2/
(-a^2*c*x^2+c)^(1/2)-1/6*a*(-a^2*x^2+1)^(1/2)*Unintegrable(x/(-a^2*x^2+1)^2
/arcsin(a*x)^(1/2),x)/c^2/(-a^2*c*x^2+c)^(1/2)-1/3*a*(-a^2*x^2+1)^(1/2)*Uni
ntegrable(x/(-a^2*x^2+1)/arcsin(a*x)^(1/2),x)/c^2/(-a^2*c*x^2+c)^(1/2)
```

Rubi [A] time = 0.19, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{\sin^{-1}(ax)}}{\left(c-a^2cx^2\right)^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[ArcSin[a*x]]/(c - a^2*c*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[ArcSin[a*x]])/(3*c*(c - a^2*c*x^2)^(3/2)) + (2*x*Sqrt[ArcSin[a*x]])
/(3*c^2*Sqrt[c - a^2*c*x^2]) - (a*Sqrt[1 - a^2*x^2]*Defer[Int][x/((1 - a^2*
x^2)^2*Sqrt[ArcSin[a*x]]), x])/(6*c^2*Sqrt[c - a^2*c*x^2]) - (a*Sqrt[1 - a^
2*x^2]*Defer[Int][x/((1 - a^2*x^2)*Sqrt[ArcSin[a*x]]), x])/(3*c^2*Sqrt[c -
a^2*c*x^2])
```

Rubi steps

$$\begin{aligned}\int \frac{\sqrt{\sin^{-1}(ax)}}{\left(c-a^2cx^2\right)^{5/2}}\,dx &= \frac{x\sqrt{\sin^{-1}(ax)}}{3c\left(c-a^2cx^2\right)^{3/2}}+\frac{2\int \frac{\sqrt{\sin^{-1}(ax)}}{(c-a^2cx^2)^{3/2}}\,dx}{3c}-\frac{\left(a\sqrt{1-a^2x^2}\right)\int \frac{x}{(1-a^2x^2)^2\sqrt{\sin^{-1}(ax)}}\,dx}{6c^2\sqrt{c-a^2cx^2}}\\ &= \frac{x\sqrt{\sin^{-1}(ax)}}{3c\left(c-a^2cx^2\right)^{3/2}}+\frac{2x\sqrt{\sin^{-1}(ax)}}{3c^2\sqrt{c-a^2cx^2}}-\frac{\left(a\sqrt{1-a^2x^2}\right)\int \frac{x}{(1-a^2x^2)^2\sqrt{\sin^{-1}(ax)}}\,dx}{6c^2\sqrt{c-a^2cx^2}}-\frac{\left(a\sqrt{1-a^2x^2}\right.}{3c}\end{aligned}$$

Mathematica [A] time = 1.99, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{\sin^{-1}(ax)}}{\left(c-a^2cx^2\right)^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[ArcSin[a*x]]/(c - a^2*c*x^2)^(5/2),x]
```

```
[Out] Integrate[Sqrt[ArcSin[a*x]]/(c - a^2*c*x^2)^(5/2), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^(1/2)/(-a^2*c*x^2+c)^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{\arcsin(ax)}}{\left(-a^2cx^2+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^(1/2)/(-a^2*c*x^2+c)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(arcsin(a*x))/(-a^2*c*x^2 + c)^(5/2), x)
```

maple [A] time = 0.63, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{\arcsin(ax)}}{\left(-a^2c\,x^2+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^(1/2)/(-a^2*c*x^2+c)^(5/2),x)
```

```
[Out] int(arcsin(a*x)^(1/2)/(-a^2*c*x^2+c)^(5/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^(1/2)/(-a^2*c*x^2+c)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{\mathrm{asin}\left(a\,x\right)}}{{\left(c-a^2\,c\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^(1/2)/(c - a^2*c*x^2)^(5/2),x)
```

```
[Out] int(asin(a*x)^(1/2)/(c - a^2*c*x^2)^(5/2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{\operatorname{asin}{\left(ax \right)}}}{\left(-c\left(ax-1\right)\left(ax+1\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**(1/2)/(-a**2*c*x**2+c)**(5/2),x)
```

```
[Out] Integral(sqrt(asin(a*x))/(-c*(a*x - 1)*(a*x + 1))**(5/2), x)
```

3.447 $\int \left(c-a^2cx^2\right)^{3/2} \sin^{-1}(ax)^{3/2}\,dx$

Optimal. Leaf size=363

$$-\frac{3\sqrt{\frac{\pi}{2}}\,c\sqrt{c-a^2cx^2}\,C\left(2\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}(ax)}\right)}{512a\sqrt{1-a^2x^2}}-\frac{3\sqrt{\pi}\,c\sqrt{c-a^2cx^2}\,C\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{32a\sqrt{1-a^2x^2}}+\frac{3c\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{5/2}}{20a\sqrt{1-a^2x^2}}+\frac{1}{4}x\left(c-\right.$$

```
[Out] 1/4*x*(-a^2*c*x^2+c)^(3/2)*arcsin(a*x)^(3/2)+3/8*c*x*arcsin(a*x)^(3/2)*(-a^
2*c*x^2+c)^(1/2)+3/20*c*arcsin(a*x)^(5/2)*(-a^2*c*x^2+c)^(1/2)/a/(-a^2*x^2+
1)^(1/2)-3/1024*c*FresnelC(2*2^(1/2)/Pi^(1/2)*arcsin(a*x)^(1/2))*2^(1/2)*Pi
^(1/2)*(-a^2*c*x^2+c)^(1/2)/a/(-a^2*x^2+1)^(1/2)-3/32*c*FresnelC(2*arcsin(a
*x)^(1/2)/Pi^(1/2))*Pi^(1/2)*(-a^2*c*x^2+c)^(1/2)/a/(-a^2*x^2+1)^(1/2)+3/32
*c*(-a^2*x^2+1)^(3/2)*(-a^2*c*x^2+c)^(1/2)*arcsin(a*x)^(1/2)/a+27/256*c*(-a
^2*c*x^2+c)^(1/2)*arcsin(a*x)^(1/2)/a/(-a^2*x^2+1)^(1/2)-9/32*a*c*x^2*(-a^2
*c*x^2+c)^(1/2)*arcsin(a*x)^(1/2)/(-a^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.43, antiderivative size = 363, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 10, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.417$, Rules used = {4649, 4647, 4641, 4629, 4723, 3312, 3304, 3352, 4677, 4661}

$$-\frac{3\sqrt{\frac{\pi}{2}}\,c\sqrt{c-a^2cx^2}\,\text{FresnelC}\left(2\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}(ax)}\right)}{512a\sqrt{1-a^2x^2}}-\frac{3\sqrt{\pi}\,c\sqrt{c-a^2cx^2}\,\text{FresnelC}\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{32a\sqrt{1-a^2x^2}}+\frac{3c\sqrt{c-a^2cx^2}\,\sin^{-1}}{20a\sqrt{1-a^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(c - a^2*c*x^2)^(3/2)*ArcSin[a*x]^(3/2),x]
```

```
[Out] (27*c*Sqrt[c - a^2*c*x^2]*Sqrt[ArcSin[a*x]])/(256*a*Sqrt[1 - a^2*x^2]) - (9
*a*c*x^2*Sqrt[c - a^2*c*x^2]*Sqrt[ArcSin[a*x]])/(32*Sqrt[1 - a^2*x^2]) + (3
*c*(1 - a^2*x^2)^(3/2)*Sqrt[c - a^2*c*x^2]*Sqrt[ArcSin[a*x]])/(32*a) + (3*c
*x*Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^(3/2))/8 + (x*(c - a^2*c*x^2)^(3/2)*ArcS
in[a*x]^(3/2))/4 + (3*c*Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^(5/2))/(20*a*Sqrt[1
 - a^2*x^2]) - (3*c*Sqrt[Pi/2]*Sqrt[c - a^2*c*x^2]*FresnelC[2*Sqrt[2/Pi]*Sq
rt[ArcSin[a*x]]])/(512*a*Sqrt[1 - a^2*x^2]) - (3*c*Sqrt[Pi]*Sqrt[c - a^2*c*
x^2]*FresnelC[(2*Sqrt[ArcSin[a*x]])/Sqrt[Pi]])/(32*a*Sqrt[1 - a^2*x^2])
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4629

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^(m + 1)*(a + b*ArcSin[c*x])^n)/(m + 1), x] - Dist[(b*c*n)/(m + 1), Int[(x
^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4661

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[d^p/c, Subst[Int[(a + b*x)^n*Cos[x]^(2*p + 1), x], x, ArcS
in[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IGtQ[2
*p, 0] && (IntegerQ[p] || GtQ[d, 0])
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \left(c-a^2cx^2\right)^{3/2} \sin^{-1}(ax)^{3/2}\,dx = \frac{1}{4}x\left(c-a^2cx^2\right)^{3/2}\sin^{-1}(ax)^{3/2} + \frac{1}{4}(3c)\int \sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{3/2}\,dx - \frac{\left(3ac\sqrt{c}\right.}{}$$

$$= \frac{3c\left(1-a^2x^2\right)^{3/2}\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}{32a} + \frac{3}{8}cx\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{3/2} + \frac{1}{4}x\,(c$$

$$= -\frac{9acx^2\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}{32\sqrt{1-a^2x^2}} + \frac{3c\left(1-a^2x^2\right)^{3/2}\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}{32a} + \frac{3}{8}$$

$$= -\frac{9acx^2\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}{32\sqrt{1-a^2x^2}} + \frac{3c\left(1-a^2x^2\right)^{3/2}\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}{32a} + \frac{3}{8}$$

$$= -\frac{9c\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}{256a\sqrt{1-a^2x^2}} - \frac{9acx^2\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}{32\sqrt{1-a^2x^2}} + \frac{3c\left(1-a^2x^2\right)^{3/2}}{}$$

$$= \frac{27c\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}{256a\sqrt{1-a^2x^2}} - \frac{9acx^2\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}{32\sqrt{1-a^2x^2}} + \frac{3c\left(1-a^2x^2\right)^{3/2}}{}$$

$$= \frac{27c\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}{256a\sqrt{1-a^2x^2}} - \frac{9acx^2\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}{32\sqrt{1-a^2x^2}} + \frac{3c\left(1-a^2x^2\right)^{3/2}}{}$$

$$= \frac{27c\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}{256a\sqrt{1-a^2x^2}} - \frac{9acx^2\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}{32\sqrt{1-a^2x^2}} + \frac{3c\left(1-a^2x^2\right)^{3/2}}{}$$

Mathematica [C] time = 0.52, size = 186, normalized size = 0.51

$$\frac{c\sqrt{c-a^2cx^2}\left(-240\sqrt{\pi}\sqrt{\sin^{-1}(ax)^2}\,C\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right) + \sqrt{\sin^{-1}(ax)}\left(32\sqrt{\sin^{-1}(ax)^2}\left(12\sin^{-1}(ax)^2 + 20\sin\left(2\sin^{-1}\right.\right.\right.}{2560a\sqrt{1-a^2}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c - a^2*c*x^2)^(3/2)*ArcSin[a*x]^(3/2),x]
```

```
[Out] (c*Sqrt[c - a^2*c*x^2]*(-240*Sqrt[Pi]*Sqrt[ArcSin[a*x]^2]*FresnelC[(2*Sqrt[
ArcSin[a*x]])/Sqrt[Pi]] + Sqrt[ArcSin[a*x]]*(5*Sqrt[I*ArcSin[a*x]]*Gamma[5/
2, (-4*I)*ArcSin[a*x]] + 5*Sqrt[(-I)*ArcSin[a*x]]*Gamma[5/2, (4*I)*ArcSin[a
*x]] + 32*Sqrt[ArcSin[a*x]^2]*(12*ArcSin[a*x]^2 + 15*Cos[2*ArcSin[a*x]] + 2
0*ArcSin[a*x]*Sin[2*ArcSin[a*x]]))))/(2560*a*Sqrt[1 - a^2*x^2]*Sqrt[ArcSin[
a*x]^2])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(3/2)*arcsin(a*x)^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(3/2)*arcsin(a*x)^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [**F**] time = 0.39, size = 0, normalized size = 0.00

$$\int \left(-a^{2} c\,x^{2}+c\right)^{\frac{3}{2}} \arcsin \left(a x\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)^(3/2)*arcsin(a*x)^(3/2),x)
```

```
[Out] int((-a^2*c*x^2+c)^(3/2)*arcsin(a*x)^(3/2),x)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(3/2)*arcsin(a*x)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \mathrm{asin}\left(a\,x\right)^{3/2}\,{\left(c-a^2\,c\,x^2\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^(3/2)*(c - a^2*c*x^2)^(3/2),x)
```

```
[Out] int(asin(a*x)^(3/2)*(c - a^2*c*x^2)^(3/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)**(3/2)*asin(a*x)**(3/2),x)
```

```
[Out] Timed out
```

3.448 $\int \sqrt{c-a^2cx^2} \sin^{-1}(ax)^{3/2} \, dx$

Optimal. Leaf size=219

$$-\frac{3\sqrt{\pi}\sqrt{c-a^2cx^2}\,C\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{32a\sqrt{1-a^2x^2}}+\frac{\sqrt{c-a^2cx^2}\sin^{-1}(ax)^{5/2}}{5a\sqrt{1-a^2x^2}}+\frac{1}{2}x\sqrt{c-a^2cx^2}\sin^{-1}(ax)^{3/2}-\frac{3ax^2\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}}}{8\sqrt{1-a^2x^2}}$$

```
[Out] 1/2*x*arcsin(a*x)^(3/2)*(-a^2*c*x^2+c)^(1/2)+1/5*arcsin(a*x)^(5/2)*(-a^2*c*
x^2+c)^(1/2)/a/(-a^2*x^2+1)^(1/2)-3/32*FresnelC(2*arcsin(a*x)^(1/2)/Pi^(1/2
))*Pi^(1/2)*(-a^2*c*x^2+c)^(1/2)/a/(-a^2*x^2+1)^(1/2)+3/16*(-a^2*c*x^2+c)^(
1/2)*arcsin(a*x)^(1/2)/a/(-a^2*x^2+1)^(1/2)-3/8*a*x^2*(-a^2*c*x^2+c)^(1/2)*
arcsin(a*x)^(1/2)/(-a^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.22, antiderivative size = 219, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {4647, 4641, 4629, 4723, 3312, 3304, 3352}

$$-\frac{3\sqrt{\pi}\sqrt{c-a^2cx^2}\,\text{FresnelC}\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{32a\sqrt{1-a^2x^2}}+\frac{\sqrt{c-a^2cx^2}\sin^{-1}(ax)^{5/2}}{5a\sqrt{1-a^2x^2}}+\frac{1}{2}x\sqrt{c-a^2cx^2}\sin^{-1}(ax)^{3/2}-\frac{3ax^2\sqrt{c-a^2cx^2}}{8\sqrt{1-}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^(3/2),x]
```

```
[Out] (3*Sqrt[c - a^2*c*x^2]*Sqrt[ArcSin[a*x]])/(16*a*Sqrt[1 - a^2*x^2]) - (3*a*x
^2*Sqrt[c - a^2*c*x^2]*Sqrt[ArcSin[a*x]])/(8*Sqrt[1 - a^2*x^2]) + (x*Sqrt[c
 - a^2*c*x^2]*ArcSin[a*x]^(3/2))/2 + (Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^(5/2)
)/(5*a*Sqrt[1 - a^2*x^2]) - (3*Sqrt[Pi]*Sqrt[c - a^2*c*x^2]*FresnelC[(2*Sqr
t[ArcSin[a*x]])/Sqrt[Pi]])/(32*a*Sqrt[1 - a^2*x^2])
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4629

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^(m + 1)*(a + b*ArcSin[c*x])^n)/(m + 1), x] - Dist[(b*c*n)/(m + 1), Int[(x
^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
```

```
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{3/2}\,dx = \frac{1}{2}x\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{3/2} + \frac{\sqrt{c-a^2cx^2}\int \frac{\sin^{-1}(ax)^{3/2}}{\sqrt{1-a^2x^2}}\,dx}{2\sqrt{1-a^2x^2}} - \frac{\left(3a\sqrt{c-a^2cx^2}\right)\int}{4\sqrt{1-}}$$

$$= -\frac{3ax^2\sqrt{c-a^2cx^2}\,\sqrt{\sin^{-1}(ax)}}{8\sqrt{1-a^2x^2}} + \frac{1}{2}x\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{3/2} + \frac{\sqrt{c-a^2cx^2}\,\sin}{5a\sqrt{1-a}}$$

$$= -\frac{3ax^2\sqrt{c-a^2cx^2}\,\sqrt{\sin^{-1}(ax)}}{8\sqrt{1-a^2x^2}} + \frac{1}{2}x\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{3/2} + \frac{\sqrt{c-a^2cx^2}\,\sin}{5a\sqrt{1-a}}$$

$$= -\frac{3ax^2\sqrt{c-a^2cx^2}\,\sqrt{\sin^{-1}(ax)}}{8\sqrt{1-a^2x^2}} + \frac{1}{2}x\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{3/2} + \frac{\sqrt{c-a^2cx^2}\,\sin}{5a\sqrt{1-a}}$$

$$= \frac{3\sqrt{c-a^2cx^2}\,\sqrt{\sin^{-1}(ax)}}{16a\sqrt{1-a^2x^2}} - \frac{3ax^2\sqrt{c-a^2cx^2}\,\sqrt{\sin^{-1}(ax)}}{8\sqrt{1-a^2x^2}} + \frac{1}{2}x\sqrt{c-a^2cx^2}\,\sin$$

$$= \frac{3\sqrt{c-a^2cx^2}\,\sqrt{\sin^{-1}(ax)}}{16a\sqrt{1-a^2x^2}} - \frac{3ax^2\sqrt{c-a^2cx^2}\,\sqrt{\sin^{-1}(ax)}}{8\sqrt{1-a^2x^2}} + \frac{1}{2}x\sqrt{c-a^2cx^2}\,\sin$$

$$= \frac{3\sqrt{c-a^2cx^2}\,\sqrt{\sin^{-1}(ax)}}{16a\sqrt{1-a^2x^2}} - \frac{3ax^2\sqrt{c-a^2cx^2}\,\sqrt{\sin^{-1}(ax)}}{8\sqrt{1-a^2x^2}} + \frac{1}{2}x\sqrt{c-a^2cx^2}\,\sin$$

Mathematica [C] time = 0.14, size = 158, normalized size = 0.72

$$\frac{\sqrt{c-a^2cx^2}\,\sqrt{\sin^{-1}(ax)}\left(32\sin^{-1}(ax)\sqrt{\sin^{-1}(ax)^2}\left(5ax\sqrt{1-a^2x^2}+2\sin^{-1}(ax)\right)+15\sqrt{2}\,\sqrt{i\sin^{-1}(ax)}\,\Gamma\left(\frac{3}{2},-2\right.\right.}{320a\sqrt{1-a^2x^2}\,\sqrt{\sin^{-1}(ax)^2}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^(3/2),x]
```

```
[Out] (Sqrt[c - a^2*c*x^2]*Sqrt[ArcSin[a*x]]*(32*ArcSin[a*x]*Sqrt[ArcSin[a*x]^2]*
(5*a*x*Sqrt[1 - a^2*x^2] + 2*ArcSin[a*x]) + 15*Sqrt[2]*Sqrt[I*ArcSin[a*x]]*
```

```
Gamma[3/2, (-2*I)*ArcSin[a*x]] + 15*Sqrt[2]*Sqrt[(-I)*ArcSin[a*x]]*Gamma[3/
2, (2*I)*ArcSin[a*x]]))/(320*a*Sqrt[1 - a^2*x^2]*Sqrt[ArcSin[a*x]^2])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(1/2)*arcsin(a*x)^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(1/2)*arcsin(a*x)^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [F] time = 0.43, size = 0, normalized size = 0.00

$$\int \sqrt{-a^{2} c\,x^{2}+c}\;\arcsin\left(a x\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)^(1/2)*arcsin(a*x)^(3/2),x)
```

```
[Out] int((-a^2*c*x^2+c)^(1/2)*arcsin(a*x)^(3/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(1/2)*arcsin(a*x)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int {\mathrm{asin}\left(a\,x\right)}^{3/2}\,\sqrt{c-a^2\,c\,x^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^(3/2)*(c - a^2*c*x^2)^(1/2),x)
```

```
[Out] int(asin(a*x)^(3/2)*(c - a^2*c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{- c \left(a x - 1\right) \left(a x + 1\right)} \operatorname{asin}^{\frac{3}{2}}{\left(a x \right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)**(1/2)*asin(a*x)**(3/2),x)
```

```
[Out] Integral(sqrt(-c*(a*x - 1)*(a*x + 1))*asin(a*x)**(3/2), x)
```

3.449 $\int \frac{\sin^{-1}(ax)^{3/2}}{\sqrt{c-a^2cx^2}}\,dx$

Optimal. Leaf size=44

$$\frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^{5/2}}{5a\sqrt{c-a^2cx^2}}$$

```
[Out] 2/5*arcsin(a*x)^(5/2)*(-a^2*x^2+1)^(1/2)/a/(-a^2*c*x^2+c)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 44, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {4643, 4641}

$$\frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^{5/2}}{5a\sqrt{c-a^2cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a*x]^(3/2)/Sqrt[c - a^2*c*x^2],x]
```

```
[Out] (2*Sqrt[1 - a^2*x^2]*ArcSin[a*x]^(5/2))/(5*a*Sqrt[c - a^2*c*x^2])
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4643

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcSin[c*x])^n
/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e
, 0] && !GtQ[d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\sin^{-1}(ax)^{3/2}}{\sqrt{c-a^2cx^2}}\,dx &= \frac{\sqrt{1-a^2x^2}\int \frac{\sin^{-1}(ax)^{3/2}}{\sqrt{1-a^2x^2}}\,dx}{\sqrt{c-a^2cx^2}}\\ &= \frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^{5/2}}{5a\sqrt{c-a^2cx^2}}\end{aligned}$$

Mathematica [A] time = 0.07, size = 44, normalized size = 1.00

$$\frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^{5/2}}{5a\sqrt{c-a^2cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a*x]^(3/2)/Sqrt[c - a^2*c*x^2],x]
```

```
[Out] (2*Sqrt[1 - a^2*x^2]*ArcSin[a*x]^(5/2))/(5*a*Sqrt[c - a^2*c*x^2])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^(3/2)/(-a^2*c*x^2+c)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^{\frac{3}{2}}}{\sqrt{-a^2cx^2+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^(3/2)/(-a^2*c*x^2+c)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(arcsin(a*x)^(3/2)/sqrt(-a^2*c*x^2 + c), x)
```

maple [A] time = 0.06, size = 38, normalized size = 0.86

$$\frac{2\arcsin(ax)^{\frac{5}{2}}\sqrt{-a^2x^2+1}}{5a\sqrt{-c\left(a^2x^2-1\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^(3/2)/(-a^2*c*x^2+c)^(1/2),x)
```

```
[Out] 2/5*arcsin(a*x)^(5/2)/a/(-c*(a^2*x^2-1))^(1/2)*(-a^2*x^2+1)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^(3/2)/(-a^2*c*x^2+c)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\mathrm{asin}(a\,x)^{3/2}}{\sqrt{c-a^2\,c\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^(3/2)/(c - a^2*c*x^2)^(1/2),x)
```

```
[Out] int(asin(a*x)^(3/2)/(c - a^2*c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\mathrm{asin}^{\frac{3}{2}}(ax)}{\sqrt{-c(ax-1)(ax+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**(3/2)/(-a**2*c*x**2+c)**(1/2),x)
```

```
[Out] Integral(asin(a*x)**(3/2)/sqrt(-c*(a*x - 1)*(a*x + 1)), x)
```

3.450 $\int \frac{\sin^{-1}(ax)^{3/2}}{\left(c-a^2cx^2\right)^{3/2}} \, dx$

Optimal. Leaf size=91

$$\frac{x\sin^{-1}(ax)^{3/2}}{c\sqrt{c-a^2cx^2}}-\frac{3a\sqrt{1-a^2x^2}\,\text{Int}\left(\frac{x\sqrt{\sin^{-1}(ax)}}{1-a^2x^2},x\right)}{2c\sqrt{c-a^2cx^2}}$$

```
[Out] x*arcsin(a*x)^(3/2)/c/(-a^2*c*x^2+c)^(1/2)-3/2*a*(-a^2*x^2+1)^(1/2)*Uninteg
rable(x*arcsin(a*x)^(1/2)/(-a^2*x^2+1),x)/c/(-a^2*c*x^2+c)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sin^{-1}(ax)^{3/2}}{\left(c-a^2cx^2\right)^{3/2}} \, dx$$

Verification is Not applicable to the result.

```
[In] Int[ArcSin[a*x]^(3/2)/(c - a^2*c*x^2)^(3/2),x]
```

```
[Out] (x*ArcSin[a*x]^(3/2))/(c*Sqrt[c - a^2*c*x^2]) - (3*a*Sqrt[1 - a^2*x^2]*Defe
r[Int][(x*Sqrt[ArcSin[a*x]])/(1 - a^2*x^2), x])/(2*c*Sqrt[c - a^2*c*x^2])
```

Rubi steps

$$\int \frac{\sin^{-1}(ax)^{3/2}}{\left(c-a^2cx^2\right)^{3/2}} \, dx=\frac{x\sin^{-1}(ax)^{3/2}}{c\sqrt{c-a^2cx^2}}-\frac{\left(3a\sqrt{1-a^2x^2}\right)\int \frac{x\sqrt{\sin^{-1}(ax)}}{1-a^2x^2} \, dx}{2c\sqrt{c-a^2cx^2}}$$

Mathematica [A] time = 0.84, size = 0, normalized size = 0.00

$$\int \frac{\sin^{-1}(ax)^{3/2}}{\left(c-a^2cx^2\right)^{3/2}} \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[ArcSin[a*x]^(3/2)/(c - a^2*c*x^2)^(3/2),x]
```

```
[Out] Integrate[ArcSin[a*x]^(3/2)/(c - a^2*c*x^2)^(3/2), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^(3/2)/(-a^2*c*x^2+c)^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^{\frac{3}{2}}}{\left(-a^2cx^2+c\right)^{\frac{3}{2}}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^(3/2)/(-a^2*c*x^2+c)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(arcsin(a*x)^(3/2)/(-a^2*c*x^2 + c)^(3/2), x)
```

maple [A] time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{\arcsin \left(a x\right)^{\frac{3}{2}}}{\left(-a^{2} c \,x^{2}+c \right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^(3/2)/(-a^2*c*x^2+c)^(3/2),x)
```

```
[Out] int(arcsin(a*x)^(3/2)/(-a^2*c*x^2+c)^(3/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^(3/2)/(-a^2*c*x^2+c)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\mathrm{asin}\left(a\,x\right)}^{3/2}}{{\left(c-a^2\,c\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^(3/2)/(c - a^2*c*x^2)^(3/2),x)
```

```
[Out] int(asin(a*x)^(3/2)/(c - a^2*c*x^2)^(3/2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}^{\frac{3}{2}}{\left(a x \right)}}{\left(- c \left(a x - 1\right) \left(a x + 1\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**(3/2)/(-a**2*c*x**2+c)**(3/2),x)
```

```
[Out] Integral(asin(a*x)**(3/2)/(-c*(a*x - 1)*(a*x + 1))**(3/2), x)
```

3.451 $\int \left(c-a^2cx^2\right)^{3/2}\sin^{-1}(ax)^{5/2}\,dx$

Optimal. Leaf size=431

$$\frac{15\sqrt{\frac{\pi}{2}}\,c\sqrt{c-a^2cx^2}\,S\left(2\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}(ax)}\right)}{4096a\sqrt{1-a^2x^2}}+\frac{15\sqrt{\pi}\,c\sqrt{c-a^2cx^2}\,S\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{128a\sqrt{1-a^2x^2}}+\frac{3c\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{7/2}}{28a\sqrt{1-a^2x^2}}+\frac{1}{4}x\left(\right.$$

```
[Out] 1/4*x*(-a^2*c*x^2+c)^(3/2)*arcsin(a*x)^(5/2)+5/32*c*(-a^2*x^2+1)^(3/2)*arcs
in(a*x)^(3/2)*(-a^2*c*x^2+c)^(1/2)/a+3/8*c*x*arcsin(a*x)^(5/2)*(-a^2*c*x^2+
c)^(1/2)+45/256*c*arcsin(a*x)^(3/2)*(-a^2*c*x^2+c)^(1/2)/a/(-a^2*x^2+1)^(1/
2)-15/32*a*c*x^2*arcsin(a*x)^(3/2)*(-a^2*c*x^2+c)^(1/2)/(-a^2*x^2+1)^(1/2)+
3/28*c*arcsin(a*x)^(7/2)*(-a^2*c*x^2+c)^(1/2)/a/(-a^2*x^2+1)^(1/2)+15/8192*
c*FresnelS(2*2^(1/2)/Pi^(1/2)*arcsin(a*x)^(1/2))*2^(1/2)*Pi^(1/2)*(-a^2*c*x
^2+c)^(1/2)/a/(-a^2*x^2+1)^(1/2)+15/128*c*FresnelS(2*arcsin(a*x)^(1/2)/Pi^(
1/2))*Pi^(1/2)*(-a^2*c*x^2+c)^(1/2)/a/(-a^2*x^2+1)^(1/2)-225/512*c*x*(-a^2*
c*x^2+c)^(1/2)*arcsin(a*x)^(1/2)-15/256*c*x*(-a^2*x^2+1)*(-a^2*c*x^2+c)^(1/
2)*arcsin(a*x)^(1/2)
```

Rubi [A] time = 0.58, antiderivative size = 431, normalized size of antiderivative = 1.00, number of steps used = 27, number of rules used = 12, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {4649, 4647, 4641, 4629, 4707, 4635, 4406, 12, 3305, 3351, 4677, 4723}

$$\frac{15\sqrt{\frac{\pi}{2}}\,c\sqrt{c-a^2cx^2}\,S\left(2\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}(ax)}\right)}{4096a\sqrt{1-a^2x^2}}+\frac{15\sqrt{\pi}\,c\sqrt{c-a^2cx^2}\,S\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{128a\sqrt{1-a^2x^2}}+\frac{3c\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{7/2}}{28a\sqrt{1-a^2x^2}}+\frac{1}{4}x\left(\right.$$

Antiderivative was successfully verified.

```
[In] Int[(c - a^2*c*x^2)^(3/2)*ArcSin[a*x]^(5/2),x]
```

```
[Out] (-225*c*x*Sqrt[c - a^2*c*x^2]*Sqrt[ArcSin[a*x]])/512 - (15*c*x*(1 - a^2*x^2
)*Sqrt[c - a^2*c*x^2]*Sqrt[ArcSin[a*x]])/256 + (45*c*Sqrt[c - a^2*c*x^2]*Ar
cSin[a*x]^(3/2))/(256*a*Sqrt[1 - a^2*x^2]) - (15*a*c*x^2*Sqrt[c - a^2*c*x^2
]*ArcSin[a*x]^(3/2))/(32*Sqrt[1 - a^2*x^2]) + (5*c*(1 - a^2*x^2)^(3/2)*Sqrt
[c - a^2*c*x^2]*ArcSin[a*x]^(3/2))/(32*a) + (3*c*x*Sqrt[c - a^2*c*x^2]*ArcS
in[a*x]^(5/2))/8 + (x*(c - a^2*c*x^2)^(3/2)*ArcSin[a*x]^(5/2))/4 + (3*c*Sqr
t[c - a^2*c*x^2]*ArcSin[a*x]^(7/2))/(28*a*Sqrt[1 - a^2*x^2]) + (15*c*Sqrt[P
i/2]*Sqrt[c - a^2*c*x^2]*FresnelS[2*Sqrt[2/Pi]*Sqrt[ArcSin[a*x]]])/(4096*a*
Sqrt[1 - a^2*x^2]) + (15*c*Sqrt[Pi]*Sqrt[c - a^2*c*x^2]*FresnelS[(2*Sqrt[Ar
cSin[a*x]])/Sqrt[Pi]])/(128*a*Sqrt[1 - a^2*x^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4629

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^(m + 1)*(a + b*ArcSin[c*x])^n)/(m + 1), x] - Dist[(b*c*n)/(m + 1), Int[(x
^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
```

```
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \left(c-a^2cx^2\right)^{3/2}\sin^{-1}(ax)^{5/2}\,dx = \frac{1}{4}x\left(c-a^2cx^2\right)^{3/2}\sin^{-1}(ax)^{5/2}+\frac{1}{4}(3c)\int \sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{5/2}\,dx-\frac{\left(5ac\right.}{}$$

$$=\frac{5c\left(1-a^2x^2\right)^{3/2}\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{3/2}}{32a}+\frac{3}{8}cx\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{5/2}+\frac{1}{4}$$

$$=-\frac{15}{256}cx\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}-\frac{15acx^2\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{3/2}}{32\sqrt{1-a^2x^2}}$$

$$=-\frac{225}{512}cx\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}-\frac{15}{256}cx\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}$$

$$=-\frac{225}{512}cx\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}-\frac{15}{256}cx\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}$$

$$=-\frac{225}{512}cx\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}-\frac{15}{256}cx\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}$$

$$=-\frac{225}{512}cx\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}-\frac{15}{256}cx\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}$$

$$=-\frac{225}{512}cx\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}-\frac{15}{256}cx\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}$$

$$=-\frac{225}{512}cx\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}-\frac{15}{256}cx\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}$$

Mathematica [C] time = 0.40, size = 180, normalized size = 0.42

$$c\sqrt{c-a^2cx^2}\left(1680\sqrt{\pi}\sqrt{\sin^{-1}(ax)}\,S\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)+1536\sin^{-1}(ax)^4+3584\sin\left(2\sin^{-1}(ax)\right)\sin^{-1}(ax)^3-336\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c - a^2*c*x^2)^(3/2)*ArcSin[a*x]^(5/2),x]
```

```
[Out] (c*Sqrt[c - a^2*c*x^2]*(1536*ArcSin[a*x]^4 + 4480*ArcSin[a*x]^2*Cos[2*ArcSi
n[a*x]] + 1680*Sqrt[Pi]*Sqrt[ArcSin[a*x]]*FresnelS[(2*Sqrt[ArcSin[a*x]])/Sq
rt[Pi]] - 7*Sqrt[(-I)*ArcSin[a*x]]*Gamma[7/2, (-4*I)*ArcSin[a*x]] - 7*Sqrt[
I*ArcSin[a*x]]*Gamma[7/2, (4*I)*ArcSin[a*x]] - 3360*ArcSin[a*x]*Sin[2*ArcSi
n[a*x]] + 3584*ArcSin[a*x]^3*Sin[2*ArcSin[a*x]]))/(14336*a*Sqrt[1 - a^2*x^2
]*Sqrt[ArcSin[a*x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(3/2)*arcsin(a*x)^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(3/2)*arcsin(a*x)^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [F] time = 0.38, size = 0, normalized size = 0.00

$$\int \left(-a^{2} c \,x^{2}+c \right)^{\frac{3}{2}} \arcsin \left(a x \right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)^(3/2)*arcsin(a*x)^(5/2),x)
```

```
[Out] int((-a^2*c*x^2+c)^(3/2)*arcsin(a*x)^(5/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(3/2)*arcsin(a*x)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int {\mathrm{asin}\left(a\,x\right)}^{5/2}\,{\left(c-a^2\,c\,x^2\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^(5/2)*(c - a^2*c*x^2)^(3/2),x)
```

```
[Out] int(asin(a*x)^(5/2)*(c - a^2*c*x^2)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)**(3/2)*asin(a*x)**(5/2),x)
```

```
[Out] Timed out
```

3.452 $\int \sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{5/2}\,dx$

Optimal. Leaf size=247

$$\frac{15\sqrt{\pi}\sqrt{c-a^2cx^2}\,S\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{128a\sqrt{1-a^2x^2}}+\frac{\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{7/2}}{7a\sqrt{1-a^2x^2}}+\frac{1}{2}x\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{5/2}-\frac{5ax^2\sqrt{c-a^2cx^2}\,\sin^{-1}(a}{8\sqrt{1-a^2x^2}}$$

```
[Out] 1/2*x*arcsin(a*x)^(5/2)*(-a^2*c*x^2+c)^(1/2)+5/16*arcsin(a*x)^(3/2)*(-a^2*c
*x^2+c)^(1/2)/a/(-a^2*x^2+1)^(1/2)-5/8*a*x^2*arcsin(a*x)^(3/2)*(-a^2*c*x^2+
c)^(1/2)/(-a^2*x^2+1)^(1/2)+1/7*arcsin(a*x)^(7/2)*(-a^2*c*x^2+c)^(1/2)/a/(-
a^2*x^2+1)^(1/2)+15/128*FresnelS(2*arcsin(a*x)^(1/2)/Pi^(1/2))*Pi^(1/2)*(-a
^2*c*x^2+c)^(1/2)/a/(-a^2*x^2+1)^(1/2)-15/32*x*(-a^2*c*x^2+c)^(1/2)*arcsin(
a*x)^(1/2)
```

Rubi [A] time = 0.25, antiderivative size = 247, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 9, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {4647, 4641, 4629, 4707, 4635, 4406, 12, 3305, 3351}

$$\frac{15\sqrt{\pi}\sqrt{c-a^2cx^2}\,S\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{128a\sqrt{1-a^2x^2}}+\frac{\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{7/2}}{7a\sqrt{1-a^2x^2}}+\frac{1}{2}x\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{5/2}-\frac{5ax^2\sqrt{c-a^2cx^2}\,\sin^{-1}(a}{8\sqrt{1-a^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^(5/2),x]
```

```
[Out] (-15*x*Sqrt[c - a^2*c*x^2]*Sqrt[ArcSin[a*x]])/32 + (5*Sqrt[c - a^2*c*x^2]*A
rcSin[a*x]^(3/2))/(16*a*Sqrt[1 - a^2*x^2]) - (5*a*x^2*Sqrt[c - a^2*c*x^2]*A
rcSin[a*x]^(3/2))/(8*Sqrt[1 - a^2*x^2]) + (x*Sqrt[c - a^2*c*x^2]*ArcSin[a*x
]^(5/2))/2 + (Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^(7/2))/(7*a*Sqrt[1 - a^2*x^2]
) + (15*Sqrt[Pi]*Sqrt[c - a^2*c*x^2]*FresnelS[(2*Sqrt[ArcSin[a*x]])/Sqrt[Pi
]])/(128*a*Sqrt[1 - a^2*x^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4629

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^(m + 1)*(a + b*ArcSin[c*x])^n)/(m + 1), x] - Dist[(b*c*n)/(m + 1), Int[(x
^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int \sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{5/2}\,dx = \frac{1}{2}x\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{5/2} + \frac{\sqrt{c-a^2cx^2}\int \frac{\sin^{-1}(ax)^{5/2}}{\sqrt{1-a^2x^2}}dx}{2\sqrt{1-a^2x^2}} - \frac{\left(5a\sqrt{c-a^2cx^2}\right)\int x\,\mathrm{s}}{4\sqrt{1-a^2}}$$

$$= -\frac{5ax^2\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{3/2}}{8\sqrt{1-a^2x^2}} + \frac{1}{2}x\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{5/2} + \frac{\sqrt{c-a^2cx^2}\,\sin^{-1}}{7a\sqrt{1-a^2x^2}}$$

$$= -\frac{15}{32}x\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)} - \frac{5ax^2\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{3/2}}{8\sqrt{1-a^2x^2}} + \frac{1}{2}x\sqrt{c-a^2cx^2}\,\mathrm{si}$$

$$= -\frac{15}{32}x\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)} + \frac{5\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{3/2}}{16a\sqrt{1-a^2x^2}} - \frac{5ax^2\sqrt{c-a^2cx^2}\,\mathrm{sin}}{8\sqrt{1-a^2x^2}}$$

$$= -\frac{15}{32}x\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)} + \frac{5\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{3/2}}{16a\sqrt{1-a^2x^2}} - \frac{5ax^2\sqrt{c-a^2cx^2}\,\mathrm{sin}}{8\sqrt{1-a^2x^2}}$$

$$= -\frac{15}{32}x\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)} + \frac{5\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{3/2}}{16a\sqrt{1-a^2x^2}} - \frac{5ax^2\sqrt{c-a^2cx^2}\,\mathrm{sin}}{8\sqrt{1-a^2x^2}}$$

$$= -\frac{15}{32}x\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)} + \frac{5\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{3/2}}{16a\sqrt{1-a^2x^2}} - \frac{5ax^2\sqrt{c-a^2cx^2}\,\mathrm{sin}}{8\sqrt{1-a^2x^2}}$$

$$= -\frac{15}{32}x\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)} + \frac{5\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{3/2}}{16a\sqrt{1-a^2x^2}} - \frac{5ax^2\sqrt{c-a^2cx^2}\,\mathrm{sin}}{8\sqrt{1-a^2x^2}}$$

Mathematica [C] time = 0.15, size = 158, normalized size = 0.64

$$\frac{\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}\left(64\left(7ax\sqrt{1-a^2x^2}+2\sin^{-1}(ax)\right)\left(\sin^{-1}(ax)^2\right)^{3/2}+35i\sqrt{2}\sqrt{i\sin^{-1}(ax)}\,\Gamma\left(\frac{5}{2},-2i\sin^{-1}(a\right.\right.}{896a\sqrt{1-a^2x^2}\sqrt{\sin^{-1}(ax)^2}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^(5/2),x]
```

```
[Out] (Sqrt[c - a^2*c*x^2]*Sqrt[ArcSin[a*x]]*(64*(ArcSin[a*x]^2)^(3/2)*(7*a*x*Sqr
t[1 - a^2*x^2] + 2*ArcSin[a*x]) + (35*I)*Sqrt[2]*Sqrt[I*ArcSin[a*x]]*Gamma[
5/2, (-2*I)*ArcSin[a*x]] - (35*I)*Sqrt[2]*Sqrt[(-I)*ArcSin[a*x]]*Gamma[5/2,
 (2*I)*ArcSin[a*x]]))/(896*a*Sqrt[1 - a^2*x^2]*Sqrt[ArcSin[a*x]^2])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(1/2)*arcsin(a*x)^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(1/2)*arcsin(a*x)^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple **[F]** time = 0.41, size = 0, normalized size = 0.00

$$\int \sqrt{-a^{2} c\,x^{2}+c}\;\arcsin\left(a x\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)^(1/2)*arcsin(a*x)^(5/2),x)
```

```
[Out] int((-a^2*c*x^2+c)^(1/2)*arcsin(a*x)^(5/2),x)
```

maxima **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(1/2)*arcsin(a*x)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \mathrm{asin}\left(a\,x\right)^{5/2}\,\sqrt{c-a^2\,c\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^(5/2)*(c - a^2*c*x^2)^(1/2),x)
```

```
[Out] int(asin(a*x)^(5/2)*(c - a^2*c*x^2)^(1/2), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)**(1/2)*asin(a*x)**(5/2),x)
```

```
[Out] Timed out
```

3.453 $\int \frac{\sin^{-1}(ax)^{5/2}}{\sqrt{c-a^2cx^2}}\,dx$

Optimal. Leaf size=44

$$\frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^{7/2}}{7a\sqrt{c-a^2cx^2}}$$

[Out] 2/7*arcsin(a*x)^(7/2)*(-a^2*x^2+1)^(1/2)/a/(-a^2*c*x^2+c)^(1/2)

Rubi [A] time = 0.07, antiderivative size = 44, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {4643, 4641}

$$\frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^{7/2}}{7a\sqrt{c-a^2cx^2}}$$

Antiderivative was successfully verified.

[In] Int[ArcSin[a*x]^(5/2)/Sqrt[c - a^2*c*x^2],x]

[Out] (2*Sqrt[1 - a^2*x^2]*ArcSin[a*x]^(7/2))/(7*a*Sqrt[c - a^2*c*x^2])

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4643

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcSin[c*x])^n
/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e
, 0] && !GtQ[d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\sin^{-1}(ax)^{5/2}}{\sqrt{c-a^2cx^2}}\,dx &= \frac{\sqrt{1-a^2x^2}\int \frac{\sin^{-1}(ax)^{5/2}}{\sqrt{1-a^2x^2}}\,dx}{\sqrt{c-a^2cx^2}}\\ &= \frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^{7/2}}{7a\sqrt{c-a^2cx^2}}\end{aligned}$$

Mathematica [A] time = 0.06, size = 44, normalized size = 1.00

$$\frac{2\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^{7/2}}{7a\sqrt{c-a^2cx^2}}$$

Antiderivative was successfully verified.

[In] Integrate[ArcSin[a*x]^(5/2)/Sqrt[c - a^2*c*x^2],x]

[Out] (2*Sqrt[1 - a^2*x^2]*ArcSin[a*x]^(7/2))/(7*a*Sqrt[c - a^2*c*x^2])

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^(5/2)/(-a^2*c*x^2+c)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^{\frac{5}{2}}}{\sqrt{-a^2cx^2+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^(5/2)/(-a^2*c*x^2+c)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(arcsin(a*x)^(5/2)/sqrt(-a^2*c*x^2 + c), x)
```

maple [A] time = 0.06, size = 38, normalized size = 0.86

$$\frac{2\arcsin(ax)^{\frac{7}{2}}\sqrt{-a^2x^2+1}}{7a\sqrt{-c\left(a^2x^2-1\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^(5/2)/(-a^2*c*x^2+c)^(1/2),x)
```

```
[Out] 2/7*arcsin(a*x)^(7/2)/a/(-c*(a^2*x^2-1))^(1/2)*(-a^2*x^2+1)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^(5/2)/(-a^2*c*x^2+c)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\mathrm{asin}\left(a\,x\right)^{5/2}}{\sqrt{c-a^2\,c\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^(5/2)/(c - a^2*c*x^2)^(1/2),x)
```

```
[Out] int(asin(a*x)^(5/2)/(c - a^2*c*x^2)^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**(5/2)/(-a**2*c*x**2+c)**(1/2),x)
```

```
[Out] Timed out
```

3.454 $\int \frac{\sin^{-1}(ax)^{5/2}}{\left(c-a^2cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=91

$$\frac{x\sin^{-1}(ax)^{5/2}}{c\sqrt{c-a^2cx^2}}-\frac{5a\sqrt{1-a^2x^2}\,\text{Int}\left(\frac{x\sin^{-1}(ax)^{3/2}}{1-a^2x^2},x\right)}{2c\sqrt{c-a^2cx^2}}$$

```
[Out] x*arcsin(a*x)^(5/2)/c/(-a^2*c*x^2+c)^(1/2)-5/2*a*(-a^2*x^2+1)^(1/2)*Uninteg
rable(x*arcsin(a*x)^(3/2)/(-a^2*x^2+1),x)/c/(-a^2*c*x^2+c)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sin^{-1}(ax)^{5/2}}{\left(c-a^2cx^2\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[ArcSin[a*x]^(5/2)/(c - a^2*c*x^2)^(3/2),x]
```

```
[Out] (x*ArcSin[a*x]^(5/2))/(c*Sqrt[c - a^2*c*x^2]) - (5*a*Sqrt[1 - a^2*x^2]*Defe
r[Int][(x*ArcSin[a*x]^(3/2))/(1 - a^2*x^2), x])/(2*c*Sqrt[c - a^2*c*x^2])
```

Rubi steps

$$\int \frac{\sin^{-1}(ax)^{5/2}}{\left(c-a^2cx^2\right)^{3/2}}\,dx=\frac{x\sin^{-1}(ax)^{5/2}}{c\sqrt{c-a^2cx^2}}-\frac{\left(5a\sqrt{1-a^2x^2}\right)\int \frac{x\sin^{-1}(ax)^{3/2}}{1-a^2x^2}\,dx}{2c\sqrt{c-a^2cx^2}}$$

Mathematica [A] time = 0.80, size = 0, normalized size = 0.00

$$\int \frac{\sin^{-1}(ax)^{5/2}}{\left(c-a^2cx^2\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[ArcSin[a*x]^(5/2)/(c - a^2*c*x^2)^(3/2),x]
```

```
[Out] Integrate[ArcSin[a*x]^(5/2)/(c - a^2*c*x^2)^(3/2), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^(5/2)/(-a^2*c*x^2+c)^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin\left(ax\right)^{\frac{5}{2}}}{\left(-a^2cx^2+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^(5/2)/(-a^2*c*x^2+c)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(arcsin(a*x)^(5/2)/(-a^2*c*x^2 + c)^(3/2), x)
```

maple [A] time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^{\frac{5}{2}}}{\left(-a^{2} c\, x^{2}+c\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^(5/2)/(-a^2*c*x^2+c)^(3/2),x)
```

```
[Out] int(arcsin(a*x)^(5/2)/(-a^2*c*x^2+c)^(3/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^(5/2)/(-a^2*c*x^2+c)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\mathrm{asin}\left(a\,x\right)^{5/2}}{{\left(c-a^2\,c\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^(5/2)/(c - a^2*c*x^2)^(3/2),x)
```

```
[Out] int(asin(a*x)^(5/2)/(c - a^2*c*x^2)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**(5/2)/(-a**2*c*x**2+c)**(3/2),x)
```

```
[Out] Timed out
```

3.455 $\int \left(a^2-x^2\right)^{3/2} \sqrt{\sin^{-1}\left(\frac{x}{a}\right)}\, dx$

Optimal. Leaf size=226

$$\frac{3}{8}a^2x\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}+\frac{1}{4}x\left(a^2-x^2\right)^{3/2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}-\frac{\sqrt{\frac{\pi}{2}}\,a^3\sqrt{a^2-x^2}\,S\left(2\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}\right)}{64\sqrt{1-\frac{x^2}{a^2}}}-\frac{\sqrt{\pi}\,a^3\sqrt{a^2-x^2}}{8\sqrt{1}}$$

```
[Out] 1/4*a^3*arcsin(x/a)^(3/2)*(a^2-x^2)^(1/2)/(1-x^2/a^2)^(1/2)-1/128*a^3*Fresn
elS(2*2^(1/2)/Pi^(1/2)*arcsin(x/a)^(1/2))*2^(1/2)*Pi^(1/2)*(a^2-x^2)^(1/2)/
(1-x^2/a^2)^(1/2)-1/8*a^3*FresnelS(2*arcsin(x/a)^(1/2)/Pi^(1/2))*Pi^(1/2)*(
a^2-x^2)^(1/2)/(1-x^2/a^2)^(1/2)+1/4*x*(a^2-x^2)^(3/2)*arcsin(x/a)^(1/2)+3/
8*a^2*x*(a^2-x^2)^(1/2)*arcsin(x/a)^(1/2)
```

Rubi [A] time = 0.24, antiderivative size = 226, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 9, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {4649, 4647, 4641, 4635, 4406, 12, 3305, 3351, 4723}

$$-\frac{\sqrt{\frac{\pi}{2}}\,a^3\sqrt{a^2-x^2}\,S\left(2\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}\right)}{64\sqrt{1-\frac{x^2}{a^2}}}-\frac{\sqrt{\pi}\,a^3\sqrt{a^2-x^2}\,S\left(\frac{2\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{\sqrt{\pi}}\right)}{8\sqrt{1-\frac{x^2}{a^2}}}+\frac{a^3\sqrt{a^2-x^2}\sin^{-1}\left(\frac{x}{a}\right)^{3/2}}{4\sqrt{1-\frac{x^2}{a^2}}}+\frac{3}{8}a^2x\sqrt{a^2-x^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a^2 - x^2)^(3/2)*Sqrt[ArcSin[x/a]],x]
```

```
[Out] (3*a^2*x*Sqrt[a^2 - x^2]*Sqrt[ArcSin[x/a]])/8 + (x*(a^2 - x^2)^(3/2)*Sqrt[A
rcSin[x/a]])/4 + (a^3*Sqrt[a^2 - x^2]*ArcSin[x/a]^(3/2))/(4*Sqrt[1 - x^2/a^
2]) - (a^3*Sqrt[Pi/2]*Sqrt[a^2 - x^2]*FresnelS[2*Sqrt[2/Pi]*Sqrt[ArcSin[x/a
]]])/(64*Sqrt[1 - x^2/a^2]) - (a^3*Sqrt[Pi]*Sqrt[a^2 - x^2]*FresnelS[(2*Sqr
t[ArcSin[x/a]])/Sqrt[Pi]])/(8*Sqrt[1 - x^2/a^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \left(a^2-x^2\right)^{3/2} \sqrt{\sin^{-1}\left(\frac{x}{a}\right)}\, dx = \frac{1}{4}x\left(a^2-x^2\right)^{3/2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)} + \frac{1}{4}\left(3a^2\right)\int \sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}\, dx - \frac{\left(a\sqrt{a^2-x\right.}}{8}$$

$$= \frac{3}{8}a^2x\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)} + \frac{1}{4}x\left(a^2-x^2\right)^{3/2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)} - \frac{\left(3a\sqrt{a^2-x^2}\right)\int}{16\sqrt{1-\frac{x^2}{a^2}}}$$

$$= \frac{3}{8}a^2x\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)} + \frac{1}{4}x\left(a^2-x^2\right)^{3/2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)} + \frac{a^3\sqrt{a^2-x^2}\sin^{-1}(}{4\sqrt{1-\frac{x^2}{a^2}}}$$

$$= \frac{3}{8}a^2x\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)} + \frac{1}{4}x\left(a^2-x^2\right)^{3/2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)} + \frac{a^3\sqrt{a^2-x^2}\sin^{-1}(}{4\sqrt{1-\frac{x^2}{a^2}}}$$

$$= \frac{3}{8}a^2x\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)} + \frac{1}{4}x\left(a^2-x^2\right)^{3/2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)} + \frac{a^3\sqrt{a^2-x^2}\sin^{-1}(}{4\sqrt{1-\frac{x^2}{a^2}}}$$

$$= \frac{3}{8}a^2x\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)} + \frac{1}{4}x\left(a^2-x^2\right)^{3/2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)} + \frac{a^3\sqrt{a^2-x^2}\sin^{-1}(}{4\sqrt{1-\frac{x^2}{a^2}}}$$

$$= \frac{3}{8}a^2x\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)} + \frac{1}{4}x\left(a^2-x^2\right)^{3/2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)} + \frac{a^3\sqrt{a^2-x^2}\sin^{-1}(}{4\sqrt{1-\frac{x^2}{a^2}}}$$

Mathematica [C] time = 0.23, size = 183, normalized size = 0.81

$$\frac{a^3\sqrt{a^2-x^2}\left(32\sin^{-1}\left(\frac{x}{a}\right)^2 + 8\sqrt{2}\sqrt{-i\sin^{-1}\left(\frac{x}{a}\right)}\Gamma\left(\frac{3}{2},-2i\sin^{-1}\left(\frac{x}{a}\right)\right) + 8\sqrt{2}\sqrt{i\sin^{-1}\left(\frac{x}{a}\right)}\Gamma\left(\frac{3}{2},2i\sin^{-1}\left(\frac{x}{a}\right)\right) + \sqrt{-}\right.}{128\sqrt{1-\frac{x^2}{a^2}}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a^2 - x^2)^(3/2)*Sqrt[ArcSin[x/a]],x]
```

```
[Out] (a^3*Sqrt[a^2 - x^2]*(32*ArcSin[x/a]^2 + 8*Sqrt[2]*Sqrt[(-I)*ArcSin[x/a]]*G
amma[3/2, (-2*I)*ArcSin[x/a]] + 8*Sqrt[2]*Sqrt[I*ArcSin[x/a]]*Gamma[3/2, (2
*I)*ArcSin[x/a]] + Sqrt[(-I)*ArcSin[x/a]]*Gamma[3/2, (-4*I)*ArcSin[x/a]] +
Sqrt[I*ArcSin[x/a]]*Gamma[3/2, (4*I)*ArcSin[x/a]]))/(128*Sqrt[1 - x^2/a^2]*
Sqrt[ArcSin[x/a]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a^2-x^2)^(3/2)*arcsin(x/a)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a^2-x^2\right)^{\frac{3}{2}}\sqrt{\arcsin\left(\frac{x}{a}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a^2-x^2)^(3/2)*arcsin(x/a)^(1/2),x, algorithm="giac")
[Out] integrate((a^2 - x^2)^(3/2)*sqrt(arcsin(x/a)), x)
```

maple [**F**] time = 0.46, size = 0, normalized size = 0.00

$$\int \left(a^2-x^2\right)^{\frac{3}{2}}\sqrt{\arcsin\left(\frac{x}{a}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a^2-x^2)^(3/2)*arcsin(x/a)^(1/2),x)
[Out] int((a^2-x^2)^(3/2)*arcsin(x/a)^(1/2),x)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a^2-x^2)^(3/2)*arcsin(x/a)^(1/2),x, algorithm="maxima")
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \sqrt{\mathrm{asin}\left(\frac{x}{a}\right)}\,\left(a^2-x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(x/a)^(1/2)*(a^2 - x^2)^(3/2),x)
[Out] int(asin(x/a)^(1/2)*(a^2 - x^2)^(3/2), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-\left(-a+x\right)\left(a+x\right)\right)^{\frac{3}{2}}\sqrt{\mathrm{asin}\left(\frac{x}{a}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a**2-x**2)**(3/2)*asin(x/a)**(1/2),x)
[Out] Integral((-(-a + x)*(a + x))**(3/2)*sqrt(asin(x/a)), x)
```

3.456 $\int \sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}\,dx$

Optimal. Leaf size=126

$$-\frac{\sqrt{\pi}\,a\sqrt{a^2-x^2}\,S\left(\frac{2\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{\sqrt{\pi}}\right)}{8\sqrt{1-\frac{x^2}{a^2}}}+\frac{a\sqrt{a^2-x^2}\,\sin^{-1}\left(\frac{x}{a}\right)^{3/2}}{3\sqrt{1-\frac{x^2}{a^2}}}+\frac{1}{2}x\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}$$

```
[Out] 1/3*a*arcsin(x/a)^(3/2)*(a^2-x^2)^(1/2)/(1-x^2/a^2)^(1/2)-1/8*a*FresnelS(2*
arcsin(x/a)^(1/2)/Pi^(1/2))*Pi^(1/2)*(a^2-x^2)^(1/2)/(1-x^2/a^2)^(1/2)+1/2*
x*(a^2-x^2)^(1/2)*arcsin(x/a)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {4647, 4641, 4635, 4406, 12, 3305, 3351}

$$-\frac{\sqrt{\pi}\,a\sqrt{a^2-x^2}\,S\left(\frac{2\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{\sqrt{\pi}}\right)}{8\sqrt{1-\frac{x^2}{a^2}}}+\frac{a\sqrt{a^2-x^2}\,\sin^{-1}\left(\frac{x}{a}\right)^{3/2}}{3\sqrt{1-\frac{x^2}{a^2}}}+\frac{1}{2}x\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a^2 - x^2]*Sqrt[ArcSin[x/a]],x]
```

```
[Out] (x*Sqrt[a^2 - x^2]*Sqrt[ArcSin[x/a]])/2 + (a*Sqrt[a^2 - x^2]*ArcSin[x/a]^(3
/2))/(3*Sqrt[1 - x^2/a^2]) - (a*Sqrt[Pi]*Sqrt[a^2 - x^2]*FresnelS[(2*Sqrt[A
rcSin[x/a]])/Sqrt[Pi]])/(8*Sqrt[1 - x^2/a^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
 /; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rubi steps

$$\int \sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}\,dx = \frac{1}{2}x\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)} + \frac{\sqrt{a^2-x^2}\int \frac{\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{\sqrt{1-\frac{x^2}{a^2}}}\,dx}{2\sqrt{1-\frac{x^2}{a^2}}} - \frac{\sqrt{a^2-x^2}\int \frac{x}{\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}\,dx}{4a\sqrt{1-\frac{x^2}{a^2}}}$$

$$= \frac{1}{2}x\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)} + \frac{a\sqrt{a^2-x^2}\sin^{-1}\left(\frac{x}{a}\right)^{3/2}}{3\sqrt{1-\frac{x^2}{a^2}}} - \frac{\left(a\sqrt{a^2-x^2}\right)\text{Subst}\left(\int \frac{\cos}{}\right.}{4\sqrt{1-}}$$

$$= \frac{1}{2}x\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)} + \frac{a\sqrt{a^2-x^2}\sin^{-1}\left(\frac{x}{a}\right)^{3/2}}{3\sqrt{1-\frac{x^2}{a^2}}} - \frac{\left(a\sqrt{a^2-x^2}\right)\text{Subst}\left(\int \frac{\sin}{2}\right.}{4\sqrt{1-}}$$

$$= \frac{1}{2}x\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)} + \frac{a\sqrt{a^2-x^2}\sin^{-1}\left(\frac{x}{a}\right)^{3/2}}{3\sqrt{1-\frac{x^2}{a^2}}} - \frac{\left(a\sqrt{a^2-x^2}\right)\text{Subst}\left(\int \frac{\sin}{}\right.}{8\sqrt{1-}}$$

$$= \frac{1}{2}x\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)} + \frac{a\sqrt{a^2-x^2}\sin^{-1}\left(\frac{x}{a}\right)^{3/2}}{3\sqrt{1-\frac{x^2}{a^2}}} - \frac{\left(a\sqrt{a^2-x^2}\right)\text{Subst}\left(\int \sin\right.}{4\sqrt{1}}$$

$$= \frac{1}{2}x\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)} + \frac{a\sqrt{a^2-x^2}\sin^{-1}\left(\frac{x}{a}\right)^{3/2}}{3\sqrt{1-\frac{x^2}{a^2}}} - \frac{a\sqrt{\pi}\sqrt{a^2-x^2}\,S\left(\frac{2\sqrt{\sin^{-1}(}}{\sqrt{\pi}}\right.}{8\sqrt{1-\frac{x^2}{a^2}}}$$

Mathematica [C] time = 0.08, size = 148, normalized size = 1.17

$$\frac{\sqrt{a^2-x^2}\left(48x\sqrt{1-\frac{x^2}{a^2}}\sin^{-1}\left(\frac{x}{a}\right)+32a\sin^{-1}\left(\frac{x}{a}\right)^2+3\sqrt{2}a\sqrt{-i\sin^{-1}\left(\frac{x}{a}\right)}\Gamma\left(\frac{1}{2},-2i\sin^{-1}\left(\frac{x}{a}\right)\right)+3\sqrt{2}a\sqrt{i\sin^{-1}}\right.}{96\sqrt{1-\frac{x^2}{a^2}}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[a^2 - x^2]*Sqrt[ArcSin[x/a]],x]
```

```
[Out] (Sqrt[a^2 - x^2]*(48*x*Sqrt[1 - x^2/a^2]*ArcSin[x/a] + 32*a*ArcSin[x/a]^2 +
 3*Sqrt[2]*a*Sqrt[(-I)*ArcSin[x/a]]*Gamma[1/2, (-2*I)*ArcSin[x/a]] + 3*Sqrt
[2]*a*Sqrt[I*ArcSin[x/a]]*Gamma[1/2, (2*I)*ArcSin[x/a]]))/(96*Sqrt[1 - x^2/
a^2]*Sqrt[ArcSin[x/a]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a^2-x^2)^(1/2)*arcsin(x/a)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{a^2 - x^2} \sqrt{\arcsin\left(\frac{x}{a}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a^2-x^2)^(1/2)*arcsin(x/a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(a^2 - x^2)*sqrt(arcsin(x/a)), x)
```

maple [F] time = 0.44, size = 0, normalized size = 0.00

$$\int \sqrt{a^2 - x^2}\, \sqrt{\arcsin\left(\frac{x}{a}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a^2-x^2)^(1/2)*arcsin(x/a)^(1/2),x)
```

```
[Out] int((a^2-x^2)^(1/2)*arcsin(x/a)^(1/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a^2-x^2)^(1/2)*arcsin(x/a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{\mathrm{asin}\left(\frac{x}{a}\right)}\, \sqrt{a^2 - x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(x/a)^(1/2)*(a^2 - x^2)^(1/2),x)
```

```
[Out] int(asin(x/a)^(1/2)*(a^2 - x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-\left(-a + x\right)\left(a + x\right)}\, \sqrt{\mathrm{asin}\left(\frac{x}{a}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a**2-x**2)**(1/2)*asin(x/a)**(1/2),x)
```

```
[Out] Integral(sqrt(-(-a + x)*(a + x))*sqrt(asin(x/a)), x)
```

3.457 $\int \frac{\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{\sqrt{a^2-x^2}}\,dx$

Optimal. Leaf size=42

$$\frac{2a\sqrt{1-\frac{x^2}{a^2}}\,\sin^{-1}\left(\frac{x}{a}\right)^{3/2}}{3\sqrt{a^2-x^2}}$$

```
[Out] 2/3*a*arcsin(x/a)^(3/2)*(1-x^2/a^2)^(1/2)/(a^2-x^2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {4643, 4641}

$$\frac{2a\sqrt{1-\frac{x^2}{a^2}}\,\sin^{-1}\left(\frac{x}{a}\right)^{3/2}}{3\sqrt{a^2-x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[ArcSin[x/a]]/Sqrt[a^2 - x^2],x]
```

```
[Out] (2*a*Sqrt[1 - x^2/a^2]*ArcSin[x/a]^(3/2))/(3*Sqrt[a^2 - x^2])
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4643

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcSin[c*x])^n
/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e
, 0] && !GtQ[d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{\sqrt{a^2-x^2}}\,dx &= \frac{\sqrt{1-\frac{x^2}{a^2}}\int \frac{\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{\sqrt{1-\frac{x^2}{a^2}}}\,dx}{\sqrt{a^2-x^2}}\\ &= \frac{2a\sqrt{1-\frac{x^2}{a^2}}\,\sin^{-1}\left(\frac{x}{a}\right)^{3/2}}{3\sqrt{a^2-x^2}}\end{aligned}$$

Mathematica [A] time = 0.04, size = 42, normalized size = 1.00

$$\frac{2a\sqrt{1-\frac{x^2}{a^2}}\,\sin^{-1}\left(\frac{x}{a}\right)^{3/2}}{3\sqrt{a^2-x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[ArcSin[x/a]]/Sqrt[a^2 - x^2],x]
```

```
[Out] (2*a*Sqrt[1 - x^2/a^2]*ArcSin[x/a]^(3/2))/(3*Sqrt[a^2 - x^2])
```

fricas [A] time = 0.39, size = 36, normalized size = 0.86

$$-\frac{2}{3}\sqrt{-\arctan\left(-\frac{x}{\sqrt{a^2-x^2}}\right)}\arctan\left(-\frac{x}{\sqrt{a^2-x^2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x/a)^(1/2)/(a^2-x^2)^(1/2),x, algorithm="fricas")
[Out] -2/3*sqrt(-arctan(-x/sqrt(a^2 - x^2)))*arctan(-x/sqrt(a^2 - x^2))
```

giac [A] time = 0.30, size = 15, normalized size = 0.36

$$\frac{2|a|\arcsin\left(\frac{x}{a}\right)^{\frac{3}{2}}}{3a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x/a)^(1/2)/(a^2-x^2)^(1/2),x, algorithm="giac")
[Out] 2/3*abs(a)*arcsin(x/a)^(3/2)/a
```

maple [A] time = 0.07, size = 38, normalized size = 0.90

$$\frac{2\arcsin\left(\frac{x}{a}\right)^{\frac{3}{2}}a\sqrt{\frac{a^2-x^2}{a^2}}}{3\sqrt{a^2-x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(x/a)^(1/2)/(a^2-x^2)^(1/2),x)
[Out] 2/3*arcsin(x/a)^(3/2)*a/(a^2-x^2)^(1/2)*((a^2-x^2)/a^2)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x/a)^(1/2)/(a^2-x^2)^(1/2),x, algorithm="maxima")
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sqrt{\mathrm{asin}\left(\frac{x}{a}\right)}}{\sqrt{a^2-x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(x/a)^(1/2)/(a^2 - x^2)^(1/2),x)
[Out] int(asin(x/a)^(1/2)/(a^2 - x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{\mathrm{asin}\left(\frac{x}{a}\right)}}{\sqrt{-(-a+x)(a+x)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(x/a)**(1/2)/(a**2-x**2)**(1/2),x)
[Out] Integral(sqrt(asin(x/a))/sqrt(-(-a + x)*(a + x)), x)
```

3.458 $\int \frac{\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{\left(a^2-x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=90

$$\frac{x\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{a^2\sqrt{a^2-x^2}}-\frac{\sqrt{1-\frac{x^2}{a^2}}\,\text{Int}\left(\frac{x}{\left(1-\frac{x^2}{a^2}\right)\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}},x\right)}{2a^3\sqrt{a^2-x^2}}$$

```
[Out] x*arcsin(x/a)^(1/2)/a^2/(a^2-x^2)^(1/2)-1/2*(1-x^2/a^2)^(1/2)*Unintegrable(
x/(1-x^2/a^2)/arcsin(x/a)^(1/2),x)/a^3/(a^2-x^2)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{\left(a^2-x^2\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[ArcSin[x/a]]/(a^2 - x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[ArcSin[x/a]])/(a^2*Sqrt[a^2 - x^2]) - (Sqrt[1 - x^2/a^2]*Defer[Int]
[x/((1 - x^2/a^2)*Sqrt[ArcSin[x/a]]), x])/(2*a^3*Sqrt[a^2 - x^2])
```

Rubi steps

$$\int \frac{\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{\left(a^2-x^2\right)^{3/2}}\,dx=\frac{x\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{a^2\sqrt{a^2-x^2}}-\frac{\sqrt{1-\frac{x^2}{a^2}}\int \frac{x}{\left(1-\frac{x^2}{a^2}\right)\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}\,dx}{2a^3\sqrt{a^2-x^2}}$$

Mathematica [A] time = 0.68, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{\left(a^2-x^2\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[ArcSin[x/a]]/(a^2 - x^2)^(3/2),x]
```

```
[Out] Integrate[Sqrt[ArcSin[x/a]]/(a^2 - x^2)^(3/2), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x/a)^(1/2)/(a^2-x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{\arcsin\left(\frac{x}{a}\right)}}{\left(a^2-x^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x/a)^(1/2)/(a^2-x^2)^(3/2),x, algorithm="giac")
[Out] integrate(sqrt(arcsin(x/a))/(a^2 - x^2)^(3/2), x)
```

maple [A] time = 0.50, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{\arcsin\left(\frac{x}{a}\right)}}{\left(a^2-x^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(x/a)^(1/2)/(a^2-x^2)^(3/2),x)
[Out] int(arcsin(x/a)^(1/2)/(a^2-x^2)^(3/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x/a)^(1/2)/(a^2-x^2)^(3/2),x, algorithm="maxima")
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{\mathrm{asin}\left(\frac{x}{a}\right)}}{\left(a^2-x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(x/a)^(1/2)/(a^2 - x^2)^(3/2),x)
[Out] int(asin(x/a)^(1/2)/(a^2 - x^2)^(3/2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{\operatorname{asin}\left(\frac{x}{a}\right)}}{\left(-\left(-a+x\right)\left(a+x\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(x/a)**(1/2)/(a**2-x**2)**(3/2),x)
[Out] Integral(sqrt(asin(x/a))/(-(-a + x)*(a + x))**(3/2), x)
```

3.459 $\int \frac{\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{\left(a^2-x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=185

$$-\frac{\sqrt{1-\frac{x^2}{a^2}}\,\text{Int}\left(\frac{x}{\left(1-\frac{x^2}{a^2}\right)^2\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}},x\right)}{6a^5\sqrt{a^2-x^2}}-\frac{\sqrt{1-\frac{x^2}{a^2}}\,\text{Int}\left(\frac{x}{\left(1-\frac{x^2}{a^2}\right)\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}},x\right)}{3a^5\sqrt{a^2-x^2}}+\frac{x\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{3a^2\left(a^2-x^2\right)^{3/2}}+\frac{2x\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{3a^4\sqrt{a^2-x^2}}$$

```
[Out] 1/3*x*arcsin(x/a)^(1/2)/a^2/(a^2-x^2)^(3/2)+2/3*x*arcsin(x/a)^(1/2)/a^4/(a^
2-x^2)^(1/2)-1/6*(1-x^2/a^2)^(1/2)*Unintegrable(x/(1-x^2/a^2)^2/arcsin(x/a)
^(1/2),x)/a^5/(a^2-x^2)^(1/2)-1/3*(1-x^2/a^2)^(1/2)*Unintegrable(x/(1-x^2/a
^2)/arcsin(x/a)^(1/2),x)/a^5/(a^2-x^2)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{\left(a^2-x^2\right)^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[ArcSin[x/a]]/(a^2 - x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[ArcSin[x/a]])/(3*a^2*(a^2 - x^2)^(3/2)) + (2*x*Sqrt[ArcSin[x/a]])/(
3*a^4*Sqrt[a^2 - x^2]) - (Sqrt[1 - x^2/a^2]*Defer[Int][x/((1 - x^2/a^2)^2*S
qrt[ArcSin[x/a]]), x])/(6*a^5*Sqrt[a^2 - x^2]) - (Sqrt[1 - x^2/a^2]*Defer[I
nt][x/((1 - x^2/a^2)*Sqrt[ArcSin[x/a]]), x])/(3*a^5*Sqrt[a^2 - x^2])
```

Rubi steps

$$\begin{aligned}\int \frac{\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{\left(a^2-x^2\right)^{5/2}}\,dx &= \frac{x\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{3a^2\left(a^2-x^2\right)^{3/2}}+\frac{2\int \frac{\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{\left(a^2-x^2\right)^{3/2}}\,dx}{3a^2}-\frac{\sqrt{1-\frac{x^2}{a^2}}\int \frac{x}{\left(1-\frac{x^2}{a^2}\right)^2\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}\,dx}{6a^5\sqrt{a^2-x^2}}\\ &= \frac{x\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{3a^2\left(a^2-x^2\right)^{3/2}}+\frac{2x\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{3a^4\sqrt{a^2-x^2}}-\frac{\sqrt{1-\frac{x^2}{a^2}}\int \frac{x}{\left(1-\frac{x^2}{a^2}\right)^2\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}\,dx}{6a^5\sqrt{a^2-x^2}}-\frac{\sqrt{1-\frac{x^2}{a^2}}\int \frac{x}{\left(1-\frac{x^2}{a^2}\right)\sqrt{s}}}{3a^5\sqrt{a^2-x}}\end{aligned}$$

Mathematica [A] time = 2.10, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{\left(a^2-x^2\right)^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[ArcSin[x/a]]/(a^2 - x^2)^(5/2),x]
```

```
[Out] Integrate[Sqrt[ArcSin[x/a]]/(a^2 - x^2)^(5/2), x]
```

fricas [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x/a)^(1/2)/(a^2-x^2)^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [**A**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{\arcsin\left(\frac{x}{a}\right)}}{\left(a^2 - x^2\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x/a)^(1/2)/(a^2-x^2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(arcsin(x/a))/(a^2 - x^2)^(5/2), x)
```

maple [**A**] time = 0.56, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{\arcsin\left(\frac{x}{a}\right)}}{\left(a^2 - x^2\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(x/a)^(1/2)/(a^2-x^2)^(5/2),x)
```

```
[Out] int(arcsin(x/a)^(1/2)/(a^2-x^2)^(5/2),x)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x/a)^(1/2)/(a^2-x^2)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [**A**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{\mathrm{asin}\left(\frac{x}{a}\right)}}{{\left(a^2 - x^2\right)}^{5/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(x/a)^(1/2)/(a^2 - x^2)^(5/2),x)
```

```
[Out] int(asin(x/a)^(1/2)/(a^2 - x^2)^(5/2), x)
```

sympy [**A**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{\operatorname{asin}{\left(\frac{x}{a} \right)}}}{\left(-\left(-a + x\right)\left(a + x\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(x/a)**(1/2)/(a**2-x**2)**(5/2),x)
```

```
[Out] Integral(sqrt(asin(x/a))/(-(-a + x)*(a + x))**(5/2), x)
```

3.460 $\int \left(a^2-x^2\right)^{3/2} \sin^{-1}\left(\frac{x}{a}\right)^{3/2} dx$

Optimal. Leaf size=359

$$\frac{3}{8}a^2x\sqrt{a^2-x^2}\ \sin^{-1}\left(\frac{x}{a}\right)^{3/2}-\frac{9ax^2\sqrt{a^2-x^2}\ \sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{32\sqrt{1-\frac{x^2}{a^2}}}+\frac{1}{4}x\left(a^2-x^2\right)^{3/2}\sin^{-1}\left(\frac{x}{a}\right)^{3/2}+\frac{3\left(a^2-x^2\right)^{5/2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{32a\sqrt{1-\frac{x^2}{a^2}}}-$$

```
[Out] 1/4*x*(a^2-x^2)^(3/2)*arcsin(x/a)^(3/2)+3/8*a^2*x*arcsin(x/a)^(3/2)*(a^2-x^
2)^(1/2)+3/20*a^3*arcsin(x/a)^(5/2)*(a^2-x^2)^(1/2)/(1-x^2/a^2)^(1/2)-3/102
4*a^3*FresnelC(2*2^(1/2)/Pi^(1/2)*arcsin(x/a)^(1/2))*2^(1/2)*Pi^(1/2)*(a^2-
x^2)^(1/2)/(1-x^2/a^2)^(1/2)-3/32*a^3*FresnelC(2*arcsin(x/a)^(1/2)/Pi^(1/2)
)*Pi^(1/2)*(a^2-x^2)^(1/2)/(1-x^2/a^2)^(1/2)+3/32*(a^2-x^2)^(5/2)*arcsin(x/
a)^(1/2)/a/(1-x^2/a^2)^(1/2)+27/256*a^3*(a^2-x^2)^(1/2)*arcsin(x/a)^(1/2)/(
1-x^2/a^2)^(1/2)-9/32*a*x^2*(a^2-x^2)^(1/2)*arcsin(x/a)^(1/2)/(1-x^2/a^2)^(
1/2)
```

Rubi [A] time = 0.42, antiderivative size = 359, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 10, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.417, Rules used = {4649, 4647, 4641, 4629, 4723, 3312, 3304, 3352, 4677, 4661}

$$-\frac{3\sqrt{\frac{\pi}{2}}\,a^3\sqrt{a^2-x^2}\ \text{FresnelC}\left(2\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}\right)}{512\sqrt{1-\frac{x^2}{a^2}}}-\frac{3\sqrt{\pi}\,a^3\sqrt{a^2-x^2}\ \text{FresnelC}\left(\frac{2\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{\sqrt{\pi}}\right)}{32\sqrt{1-\frac{x^2}{a^2}}}+\frac{3a^3\sqrt{a^2-x^2}\ \sin^{-1}\left(\frac{x}{a}\right.}{20\sqrt{1-\frac{x^2}{a^2}}}$$

Antiderivative was successfully verified.

```
[In] Int[(a^2 - x^2)^(3/2)*ArcSin[x/a]^(3/2),x]
```

```
[Out] (27*a^3*Sqrt[a^2 - x^2]*Sqrt[ArcSin[x/a]])/(256*Sqrt[1 - x^2/a^2]) - (9*a*x
^2*Sqrt[a^2 - x^2]*Sqrt[ArcSin[x/a]])/(32*Sqrt[1 - x^2/a^2]) + (3*(a^2 - x^
2)^(5/2)*Sqrt[ArcSin[x/a]])/(32*a*Sqrt[1 - x^2/a^2]) + (3*a^2*x*Sqrt[a^2 -
x^2]*ArcSin[x/a]^(3/2))/8 + (x*(a^2 - x^2)^(3/2)*ArcSin[x/a]^(3/2))/4 + (3*
a^3*Sqrt[a^2 - x^2]*ArcSin[x/a]^(5/2))/(20*Sqrt[1 - x^2/a^2]) - (3*a^3*Sqrt
[Pi/2]*Sqrt[a^2 - x^2]*FresnelC[2*Sqrt[2/Pi]*Sqrt[ArcSin[x/a]]])/(512*Sqrt[
1 - x^2/a^2]) - (3*a^3*Sqrt[Pi]*Sqrt[a^2 - x^2]*FresnelC[(2*Sqrt[ArcSin[x/a
]])/Sqrt[Pi]])/(32*Sqrt[1 - x^2/a^2])
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4629

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^(m + 1)*(a + b*ArcSin[c*x])^n)/(m + 1), x] - Dist[(b*c*n)/(m + 1), Int[(x
^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4661

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[d^p/c, Subst[Int[(a + b*x)^n*Cos[x]^(2*p + 1), x], x, ArcS
in[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IGtQ[2
*p, 0] && (IntegerQ[p] || GtQ[d, 0])
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \left(a^2-x^2\right)^{3/2} \sin^{-1}\left(\frac{x}{a}\right)^{3/2} dx = \frac{1}{4}x\left(a^2-x^2\right)^{3/2} \sin^{-1}\left(\frac{x}{a}\right)^{3/2} + \frac{1}{4}\left(3a^2\right)\int \sqrt{a^2-x^2}\,\sin^{-1}\left(\frac{x}{a}\right)^{3/2} dx - \frac{\left(3a\sqrt{a^2-\right.}{}$$

$$= \frac{3\left(a^2-x^2\right)^{5/2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{32a\sqrt{1-\frac{x^2}{a^2}}} + \frac{3}{8}a^2x\sqrt{a^2-x^2}\,\sin^{-1}\left(\frac{x}{a}\right)^{3/2} + \frac{1}{4}x\left(a^2-x^2\right)^{3/2}\sin^{-1}$$

$$= -\frac{9ax^2\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{32\sqrt{1-\frac{x^2}{a^2}}} + \frac{3\left(a^2-x^2\right)^{5/2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{32a\sqrt{1-\frac{x^2}{a^2}}} + \frac{3}{8}a^2x\sqrt{a^2-x^2}\,\sin^{-1}$$

$$= -\frac{9ax^2\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{32\sqrt{1-\frac{x^2}{a^2}}} + \frac{3\left(a^2-x^2\right)^{5/2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{32a\sqrt{1-\frac{x^2}{a^2}}} + \frac{3}{8}a^2x\sqrt{a^2-x^2}\,\sin^{-1}$$

$$= -\frac{9a^3\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{256\sqrt{1-\frac{x^2}{a^2}}} - \frac{9ax^2\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{32\sqrt{1-\frac{x^2}{a^2}}} + \frac{3\left(a^2-x^2\right)^{5/2}\sqrt{\sin^{-1}}}{32a\sqrt{1-\frac{x^2}{a^2}}}$$

$$= \frac{27a^3\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{256\sqrt{1-\frac{x^2}{a^2}}} - \frac{9ax^2\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{32\sqrt{1-\frac{x^2}{a^2}}} + \frac{3\left(a^2-x^2\right)^{5/2}\sqrt{\sin^{-1}}}{32a\sqrt{1-\frac{x^2}{a^2}}}$$

$$= \frac{27a^3\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{256\sqrt{1-\frac{x^2}{a^2}}} - \frac{9ax^2\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{32\sqrt{1-\frac{x^2}{a^2}}} + \frac{3\left(a^2-x^2\right)^{5/2}\sqrt{\sin^{-1}}}{32a\sqrt{1-\frac{x^2}{a^2}}}$$

$$= \frac{27a^3\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{256\sqrt{1-\frac{x^2}{a^2}}} - \frac{9ax^2\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{32\sqrt{1-\frac{x^2}{a^2}}} + \frac{3\left(a^2-x^2\right)^{5/2}\sqrt{\sin^{-1}}}{32a\sqrt{1-\frac{x^2}{a^2}}}$$

Mathematica [C] time = 0.54, size = 209, normalized size = 0.58

$$\frac{a^3\sqrt{a^2-x^2}\left(-240\sqrt{\pi}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)^2}\,C\left(\frac{2\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{\sqrt{\pi}}\right) + \sqrt{\sin^{-1}\left(\frac{x}{a}\right)}\left(32\sqrt{\sin^{-1}\left(\frac{x}{a}\right)^2}\left(12\sin^{-1}\left(\frac{x}{a}\right)^2 + 20\sin\left(2\sin^{-1}\right.\right.\right.\right.}{2560\sqrt{1-\frac{x^2}{a^2}}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a^2 - x^2)^(3/2)*ArcSin[x/a]^(3/2),x]
```

```
[Out] (a^3*Sqrt[a^2 - x^2]*(-240*Sqrt[Pi]*Sqrt[ArcSin[x/a]^2]*FresnelC[(2*Sqrt[Ar
cSin[x/a]])/Sqrt[Pi]] + Sqrt[ArcSin[x/a]]*(5*Sqrt[I*ArcSin[x/a]]*Gamma[5/2,
 (-4*I)*ArcSin[x/a]] + 5*Sqrt[(-I)*ArcSin[x/a]]*Gamma[5/2, (4*I)*ArcSin[x/a
]] + 32*Sqrt[ArcSin[x/a]^2]*(12*ArcSin[x/a]^2 + 15*Cos[2*ArcSin[x/a]] + 20*
ArcSin[x/a]*Sin[2*ArcSin[x/a]]))))/(2560*Sqrt[1 - x^2/a^2]*Sqrt[ArcSin[x/a]
^2])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a^2-x^2)^(3/2)*arcsin(x/a)^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a^2 - x^2\right)^{\frac{3}{2}} \arcsin\left(\frac{x}{a}\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a^2-x^2)^(3/2)*arcsin(x/a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((a^2 - x^2)^(3/2)*arcsin(x/a)^(3/2), x)
```

maple [F] time = 0.39, size = 0, normalized size = 0.00

$$\int \left(a^2 - x^2\right)^{\frac{3}{2}} \arcsin\left(\frac{x}{a}\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a^2-x^2)^(3/2)*arcsin(x/a)^(3/2),x)
```

```
[Out] int((a^2-x^2)^(3/2)*arcsin(x/a)^(3/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a^2-x^2)^(3/2)*arcsin(x/a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \mathrm{asin}\left(\frac{x}{a}\right)^{3/2} \left(a^2 - x^2\right)^{3/2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(x/a)^(3/2)*(a^2 - x^2)^(3/2),x)
```

```
[Out] int(asin(x/a)^(3/2)*(a^2 - x^2)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a**2-x**2)**(3/2)*asin(x/a)**(3/2),x)
```

```
[Out] Timed out
```

3.461 $\int \sqrt{a^2-x^2} \sin^{-1}\left(\frac{x}{a}\right)^{3/2} dx$

Optimal. Leaf size=215

$$-\frac{3\sqrt{\pi}\, a\sqrt{a^2-x^2}\, C\left(\frac{2\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{\sqrt{\pi}}\right)}{32\sqrt{1-\frac{x^2}{a^2}}}+\frac{a\sqrt{a^2-x^2}\sin^{-1}\left(\frac{x}{a}\right)^{5/2}}{5\sqrt{1-\frac{x^2}{a^2}}}+\frac{1}{2}x\sqrt{a^2-x^2}\sin^{-1}\left(\frac{x}{a}\right)^{3/2}-\frac{3x^2\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{8a\sqrt{1-\frac{x^2}{a^2}}}+$$

```
[Out] 1/2*x*arcsin(x/a)^(3/2)*(a^2-x^2)^(1/2)+1/5*a*arcsin(x/a)^(5/2)*(a^2-x^2)^(
1/2)/(1-x^2/a^2)^(1/2)-3/32*a*FresnelC(2*arcsin(x/a)^(1/2)/Pi^(1/2))*Pi^(1/
2)*(a^2-x^2)^(1/2)/(1-x^2/a^2)^(1/2)+3/16*a*(a^2-x^2)^(1/2)*arcsin(x/a)^(1/
2)/(1-x^2/a^2)^(1/2)-3/8*x^2*(a^2-x^2)^(1/2)*arcsin(x/a)^(1/2)/a/(1-x^2/a^2
)^(1/2)
```

Rubi [A] time = 0.23, antiderivative size = 215, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {4647, 4641, 4629, 4723, 3312, 3304, 3352}

$$-\frac{3\sqrt{\pi}\, a\sqrt{a^2-x^2}\, \text{FresnelC}\left(\frac{2\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{\sqrt{\pi}}\right)}{32\sqrt{1-\frac{x^2}{a^2}}}+\frac{a\sqrt{a^2-x^2}\sin^{-1}\left(\frac{x}{a}\right)^{5/2}}{5\sqrt{1-\frac{x^2}{a^2}}}+\frac{1}{2}x\sqrt{a^2-x^2}\sin^{-1}\left(\frac{x}{a}\right)^{3/2}-\frac{3x^2\sqrt{a^2-x^2}\sqrt{\sin^{-1}}}{8a\sqrt{1-\frac{x^2}{a^2}}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a^2 - x^2]*ArcSin[x/a]^(3/2),x]
```

```
[Out] (3*a*Sqrt[a^2 - x^2]*Sqrt[ArcSin[x/a]])/(16*Sqrt[1 - x^2/a^2]) - (3*x^2*Sqr
t[a^2 - x^2]*Sqrt[ArcSin[x/a]])/(8*a*Sqrt[1 - x^2/a^2]) + (x*Sqrt[a^2 - x^2
]*ArcSin[x/a]^(3/2))/2 + (a*Sqrt[a^2 - x^2]*ArcSin[x/a]^(5/2))/(5*Sqrt[1 -
x^2/a^2]) - (3*a*Sqrt[Pi]*Sqrt[a^2 - x^2]*FresnelC[(2*Sqrt[ArcSin[x/a]])/Sq
rt[Pi]])/(32*Sqrt[1 - x^2/a^2])
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4629

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^(m + 1)*(a + b*ArcSin[c*x])^n)/(m + 1), x] - Dist[(b*c*n)/(m + 1), Int[(x
^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \sqrt{a^2-x^2}\,\sin^{-1}\left(\frac{x}{a}\right)^{3/2}dx = \frac{1}{2}x\sqrt{a^2-x^2}\,\sin^{-1}\left(\frac{x}{a}\right)^{3/2} + \frac{\sqrt{a^2-x^2}\int\frac{\sin^{-1}\left(\frac{x}{a}\right)^{3/2}}{\sqrt{1-\frac{x^2}{a^2}}}dx}{2\sqrt{1-\frac{x^2}{a^2}}} - \frac{\left(3\sqrt{a^2-x^2}\right)\int x\sqrt{\sin^{-1}\cdots}}{4a\sqrt{1-\frac{x^2}{a^2}}}$$

$$= -\frac{3x^2\sqrt{a^2-x^2}\,\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{8a\sqrt{1-\frac{x^2}{a^2}}} + \frac{1}{2}x\sqrt{a^2-x^2}\,\sin^{-1}\left(\frac{x}{a}\right)^{3/2} + \frac{a\sqrt{a^2-x^2}\,\sin^{-1}\left(\frac{x}{a}\right)^{5/\cdots}}{5\sqrt{1-\frac{x^2}{a^2}}}$$

$$= -\frac{3x^2\sqrt{a^2-x^2}\,\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{8a\sqrt{1-\frac{x^2}{a^2}}} + \frac{1}{2}x\sqrt{a^2-x^2}\,\sin^{-1}\left(\frac{x}{a}\right)^{3/2} + \frac{a\sqrt{a^2-x^2}\,\sin^{-1}\left(\frac{x}{a}\right)^{5/\cdots}}{5\sqrt{1-\frac{x^2}{a^2}}}$$

$$= -\frac{3x^2\sqrt{a^2-x^2}\,\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{8a\sqrt{1-\frac{x^2}{a^2}}} + \frac{1}{2}x\sqrt{a^2-x^2}\,\sin^{-1}\left(\frac{x}{a}\right)^{3/2} + \frac{a\sqrt{a^2-x^2}\,\sin^{-1}\left(\frac{x}{a}\right)^{5/\cdots}}{5\sqrt{1-\frac{x^2}{a^2}}}$$

$$= \frac{3a\sqrt{a^2-x^2}\,\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{16\sqrt{1-\frac{x^2}{a^2}}} - \frac{3x^2\sqrt{a^2-x^2}\,\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{8a\sqrt{1-\frac{x^2}{a^2}}} + \frac{1}{2}x\sqrt{a^2-x^2}\,\sin^{-1}\left(\frac{x}{a}\right)^{3/\cdots}$$

$$= \frac{3a\sqrt{a^2-x^2}\,\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{16\sqrt{1-\frac{x^2}{a^2}}} - \frac{3x^2\sqrt{a^2-x^2}\,\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{8a\sqrt{1-\frac{x^2}{a^2}}} + \frac{1}{2}x\sqrt{a^2-x^2}\,\sin^{-1}\left(\frac{x}{a}\right)^{3/\cdots}$$

$$= \frac{3a\sqrt{a^2-x^2}\,\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{16\sqrt{1-\frac{x^2}{a^2}}} - \frac{3x^2\sqrt{a^2-x^2}\,\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{8a\sqrt{1-\frac{x^2}{a^2}}} + \frac{1}{2}x\sqrt{a^2-x^2}\,\sin^{-1}\left(\frac{x}{a}\right)^{3/\cdots}$$

Mathematica [C] time = 0.15, size = 173, normalized size = 0.80

$$\frac{\sqrt{a^2-x^2}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}\left(32\sin^{-1}\left(\frac{x}{a}\right)\sqrt{\sin^{-1}\left(\frac{x}{a}\right)^2}\left(5x\sqrt{1-\frac{x^2}{a^2}}+2a\sin^{-1}\left(\frac{x}{a}\right)\right)+15\sqrt{2}\,a\sqrt{i\sin^{-1}\left(\frac{x}{a}\right)}\Gamma\left(\frac{3}{2},-2i\sin^{-1}\right.\right.}{320\sqrt{1-\frac{x^2}{a^2}}\sqrt{\sin^{-1}\left(\frac{x}{a}\right)^2}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[a^2 - x^2]*ArcSin[x/a]^(3/2),x]
```

```
[Out] (Sqrt[a^2 - x^2]*Sqrt[ArcSin[x/a]]*(32*ArcSin[x/a]*Sqrt[ArcSin[x/a]^2]*(5*x
*Sqrt[1 - x^2/a^2] + 2*a*ArcSin[x/a]) + 15*Sqrt[2]*a*Sqrt[I*ArcSin[x/a]]*Ga
mma[3/2, (-2*I)*ArcSin[x/a]] + 15*Sqrt[2]*a*Sqrt[(-I)*ArcSin[x/a]]*Gamma[3/
2, (2*I)*ArcSin[x/a]]))/(320*Sqrt[1 - x^2/a^2]*Sqrt[ArcSin[x/a]^2])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a^2-x^2)^(1/2)*arcsin(x/a)^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{a^2-x^2}\,\arcsin\left(\frac{x}{a}\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a^2-x^2)^(1/2)*arcsin(x/a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(a^2 - x^2)*arcsin(x/a)^(3/2), x)
```

maple [F] time = 0.43, size = 0, normalized size = 0.00

$$\int \sqrt{a^2-x^2}\;\arcsin\left(\frac{x}{a}\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a^2-x^2)^(1/2)*arcsin(x/a)^(3/2),x)
```

```
[Out] int((a^2-x^2)^(1/2)*arcsin(x/a)^(3/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a^2-x^2)^(1/2)*arcsin(x/a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \mathrm{asin}\left(\frac{x}{a}\right)^{3/2}\sqrt{a^2-x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(x/a)^(3/2)*(a^2 - x^2)^(1/2),x)
```

```
[Out] int(asin(x/a)^(3/2)*(a^2 - x^2)^(1/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-\left(-a+x\right)\left(a+x\right)}\,\operatorname{asin}^{\frac{3}{2}}\left(\frac{x}{a}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a**2-x**2)**(1/2)*asin(x/a)**(3/2),x)
```

```
[Out] Integral(sqrt(-(-a + x)*(a + x))*asin(x/a)**(3/2), x)
```

3.462 $\int \frac{\sin^{-1}\left(\frac{x}{a}\right)^{3/2}}{\sqrt{a^2-x^2}}\,dx$

Optimal. Leaf size=42

$$\frac{2a\sqrt{1-\frac{x^2}{a^2}}\,\sin^{-1}\left(\frac{x}{a}\right)^{5/2}}{5\sqrt{a^2-x^2}}$$

```
[Out] 2/5*a*arcsin(x/a)^(5/2)*(1-x^2/a^2)^(1/2)/(a^2-x^2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {4643, 4641}

$$\frac{2a\sqrt{1-\frac{x^2}{a^2}}\,\sin^{-1}\left(\frac{x}{a}\right)^{5/2}}{5\sqrt{a^2-x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[x/a]^(3/2)/Sqrt[a^2 - x^2],x]
[Out] (2*a*Sqrt[1 - x^2/a^2]*ArcSin[x/a]^(5/2))/(5*Sqrt[a^2 - x^2])
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4643

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcSin[c*x])^n
/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e
, 0] && !GtQ[d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\sin^{-1}\left(\frac{x}{a}\right)^{3/2}}{\sqrt{a^2-x^2}}\,dx &= \frac{\sqrt{1-\frac{x^2}{a^2}}\int \frac{\sin^{-1}\left(\frac{x}{a}\right)^{3/2}}{\sqrt{1-\frac{x^2}{a^2}}}\,dx}{\sqrt{a^2-x^2}}\\ &= \frac{2a\sqrt{1-\frac{x^2}{a^2}}\,\sin^{-1}\left(\frac{x}{a}\right)^{5/2}}{5\sqrt{a^2-x^2}}\end{aligned}$$

Mathematica [A] time = 0.04, size = 42, normalized size = 1.00

$$\frac{2a\sqrt{1-\frac{x^2}{a^2}}\,\sin^{-1}\left(\frac{x}{a}\right)^{5/2}}{5\sqrt{a^2-x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[x/a]^(3/2)/Sqrt[a^2 - x^2],x]
[Out] (2*a*Sqrt[1 - x^2/a^2]*ArcSin[x/a]^(5/2))/(5*Sqrt[a^2 - x^2])
```

fricas [A]   time = 0.45, size = 38, normalized size = 0.90

$$\frac{2}{5}\sqrt{-\arctan\left(-\frac{x}{\sqrt{a^2-x^2}}\right)}\arctan\left(-\frac{x}{\sqrt{a^2-x^2}}\right)^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x/a)^(3/2)/(a^2-x^2)^(1/2),x, algorithm="fricas")
[Out] 2/5*sqrt(-arctan(-x/sqrt(a^2 - x^2)))*arctan(-x/sqrt(a^2 - x^2))^2
```

giac [A]   time = 0.32, size = 15, normalized size = 0.36

$$\frac{2\,|a|\arcsin\left(\frac{x}{a}\right)^{\frac{5}{2}}}{5\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x/a)^(3/2)/(a^2-x^2)^(1/2),x, algorithm="giac")
[Out] 2/5*abs(a)*arcsin(x/a)^(5/2)/a
```

maple [A]   time = 0.06, size = 38, normalized size = 0.90

$$\frac{2\arcsin\left(\frac{x}{a}\right)^{\frac{5}{2}}a\sqrt{\frac{a^2-x^2}{a^2}}}{5\sqrt{a^2-x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(x/a)^(3/2)/(a^2-x^2)^(1/2),x)
[Out] 2/5*arcsin(x/a)^(5/2)*a/(a^2-x^2)^(1/2)*((a^2-x^2)/a^2)^(1/2)
```

maxima [F(-2)]   time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x/a)^(3/2)/(a^2-x^2)^(1/2),x, algorithm="maxima")
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\mathrm{asin}\left(\frac{x}{a}\right)^{3/2}}{\sqrt{a^2-x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(x/a)^(3/2)/(a^2 - x^2)^(1/2),x)
[Out] int(asin(x/a)^(3/2)/(a^2 - x^2)^(1/2), x)
```

sympy [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\mathrm{asin}^{\frac{3}{2}}\left(\frac{x}{a}\right)}{\sqrt{-(-a+x)(a+x)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(x/a)**(3/2)/(a**2-x**2)**(1/2),x)
[Out] Integral(asin(x/a)**(3/2)/sqrt(-(-a + x)*(a + x)), x)
```

3.463 $\int \frac{\sin^{-1}\left(\frac{x}{a}\right)^{3/2}}{\left(a^2-x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=90

$$\frac{x\sin^{-1}\left(\frac{x}{a}\right)^{3/2}}{a^2\sqrt{a^2-x^2}}-\frac{3\sqrt{1-\frac{x^2}{a^2}}\,\mathrm{Int}\left(\frac{x\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{1-\frac{x^2}{a^2}},x\right)}{2a^3\sqrt{a^2-x^2}}$$

```
[Out] x*arcsin(x/a)^(3/2)/a^2/(a^2-x^2)^(1/2)-3/2*(1-x^2/a^2)^(1/2)*Unintegrable(
x*arcsin(x/a)^(1/2)/(1-x^2/a^2),x)/a^3/(a^2-x^2)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sin^{-1}\left(\frac{x}{a}\right)^{3/2}}{\left(a^2-x^2\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[ArcSin[x/a]^(3/2)/(a^2 - x^2)^(3/2),x]
```

```
[Out] (x*ArcSin[x/a]^(3/2))/(a^2*Sqrt[a^2 - x^2]) - (3*Sqrt[1 - x^2/a^2]*Defer[In
t][(x*Sqrt[ArcSin[x/a]])/(1 - x^2/a^2), x])/(2*a^3*Sqrt[a^2 - x^2])
```

Rubi steps

$$\int \frac{\sin^{-1}\left(\frac{x}{a}\right)^{3/2}}{\left(a^2-x^2\right)^{3/2}}\,dx=\frac{x\sin^{-1}\left(\frac{x}{a}\right)^{3/2}}{a^2\sqrt{a^2-x^2}}-\frac{\left(3\sqrt{1-\frac{x^2}{a^2}}\right)\int \frac{x\sqrt{\sin^{-1}\left(\frac{x}{a}\right)}}{1-\frac{x^2}{a^2}}\,dx}{2a^3\sqrt{a^2-x^2}}$$

Mathematica [A] time = 0.77, size = 0, normalized size = 0.00

$$\int \frac{\sin^{-1}\left(\frac{x}{a}\right)^{3/2}}{\left(a^2-x^2\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[ArcSin[x/a]^(3/2)/(a^2 - x^2)^(3/2),x]
```

```
[Out] Integrate[ArcSin[x/a]^(3/2)/(a^2 - x^2)^(3/2), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x/a)^(3/2)/(a^2-x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin\left(\frac{x}{a}\right)^{\frac{3}{2}}}{\left(a^2 - x^2\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x/a)^(3/2)/(a^2-x^2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(arcsin(x/a)^(3/2)/(a^2 - x^2)^(3/2), x)
```

maple [A] time = 0.43, size = 0, normalized size = 0.00

$$\int \frac{\arcsin\left(\frac{x}{a}\right)^{\frac{3}{2}}}{\left(a^2 - x^2\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(x/a)^(3/2)/(a^2-x^2)^(3/2),x)
```

```
[Out] int(arcsin(x/a)^(3/2)/(a^2-x^2)^(3/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(x/a)^(3/2)/(a^2-x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\operatorname{asin}\left(\frac{x}{a}\right)^{3/2}}{\left(a^2 - x^2\right)^{3/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(x/a)^(3/2)/(a^2 - x^2)^(3/2),x)
```

```
[Out] int(asin(x/a)^(3/2)/(a^2 - x^2)^(3/2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{asin}^{\frac{3}{2}}\left(\frac{x}{a}\right)}{\left(-\left(-a + x\right)\left(a + x\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(x/a)**(3/2)/(a**2-x**2)**(3/2),x)
```

```
[Out] Integral(asin(x/a)**(3/2)/(-(-a + x)*(a + x))**(3/2), x)
```

3.464 $\int \frac{x}{\sqrt{1-x^2}\sqrt{\sin^{-1}(x)}}\,dx$

Optimal. Leaf size=25

$$\sqrt{2\pi}\,S\left(\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}(x)}\right)$$

```
[Out] FresnelS(2^(1/2)/Pi^(1/2)*arcsin(x)^(1/2))*2^(1/2)*Pi^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 25, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$, Rules used = {4723, 3305, 3351}

$$\sqrt{2\pi}\,S\left(\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}(x)}\right)$$

Antiderivative was successfully verified.

```
[In] Int[x/(Sqrt[1 - x^2]*Sqrt[ArcSin[x]]),x]
```

```
[Out] Sqrt[2*Pi]*FresnelS[Sqrt[2/Pi]*Sqrt[ArcSin[x]]]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{x}{\sqrt{1-x^2}\sqrt{\sin^{-1}(x)}}\,dx &= \text{Subst}\left(\int \frac{\sin(x)}{\sqrt{x}}\,dx, x, \sin^{-1}(x)\right)\\ &= 2\,\text{Subst}\left(\int \sin\left(x^2\right)\,dx, x, \sqrt{\sin^{-1}(x)}\right)\\ &= \sqrt{2\pi}\,S\left(\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}(x)}\right)\end{aligned}$$

Mathematica [C] time = 0.09, size = 53, normalized size = 2.12

$$-\frac{\sqrt{-i\sin^{-1}(x)}\,\Gamma\left(\frac{1}{2},-i\sin^{-1}(x)\right)+\sqrt{i\sin^{-1}(x)}\,\Gamma\left(\frac{1}{2},i\sin^{-1}(x)\right)}{2\sqrt{\sin^{-1}(x)}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[x/(Sqrt[1 - x^2]*Sqrt[ArcSin[x]]),x]
```

```
[Out] -1/2*(Sqrt[(-I)*ArcSin[x]]*Gamma[1/2, (-I)*ArcSin[x]] + Sqrt[I*ArcSin[x]]*G
amma[1/2, I*ArcSin[x]])/Sqrt[ArcSin[x]]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-x^2+1)^(1/2)/arcsin(x)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [C] time = 0.77, size = 37, normalized size = 1.48

$$\left(\frac{1}{4}i - \frac{1}{4}\right)\sqrt{2}\sqrt{\pi}\,\operatorname{erf}\left(\left(\frac{1}{2}i - \frac{1}{2}\right)\sqrt{2}\sqrt{\arcsin(x)}\right) - \left(\frac{1}{4}i + \frac{1}{4}\right)\sqrt{2}\sqrt{\pi}\,\operatorname{erf}\left(-\left(\frac{1}{2}i + \frac{1}{2}\right)\sqrt{2}\sqrt{\arcsin(x)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-x^2+1)^(1/2)/arcsin(x)^(1/2),x, algorithm="giac")
```

```
[Out] (1/4*I - 1/4)*sqrt(2)*sqrt(pi)*erf((1/2*I - 1/2)*sqrt(2)*sqrt(arcsin(x))) -
 (1/4*I + 1/4)*sqrt(2)*sqrt(pi)*erf(-(1/2*I + 1/2)*sqrt(2)*sqrt(arcsin(x)))
```

maple [A] time = 0.13, size = 20, normalized size = 0.80

$$\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{\arcsin(x)}}{\sqrt{\pi}}\right)\sqrt{2}\,\sqrt{\pi}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(-x^2+1)^(1/2)/arcsin(x)^(1/2),x)
```

```
[Out] FresnelS(2^(1/2)/Pi^(1/2)*arcsin(x)^(1/2))*2^(1/2)*Pi^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-x^2+1)^(1/2)/arcsin(x)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{x}{\sqrt{\operatorname{asin}(x)}\,\sqrt{1-x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(asin(x)^(1/2)*(1 - x^2)^(1/2)),x)
```

```
[Out] int(x/(asin(x)^(1/2)*(1 - x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\sqrt{-(x-1)(x+1)}\sqrt{\operatorname{asin}(x)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(-x**2+1)**(1/2)/asin(x)**(1/2),x)
```

```
[Out] Integral(x/(sqrt(-(x - 1)*(x + 1))*sqrt(asin(x))), x)
```

3.465 $\int \frac{\left(c-a^2cx^2\right)^{5/2}}{\sqrt{\sin^{-1}(ax)}}\,dx$

Optimal. Leaf size=244

$$\frac{3\sqrt{\frac{\pi}{2}}\,c^2\sqrt{c-a^2cx^2}\,C\left(2\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}(ax)}\right)}{16a\sqrt{1-a^2x^2}}+\frac{\sqrt{\frac{\pi}{3}}\,c^2\sqrt{c-a^2cx^2}\,C\left(2\sqrt{\frac{3}{\pi}}\sqrt{\sin^{-1}(ax)}\right)}{32a\sqrt{1-a^2x^2}}+\frac{15\sqrt{\pi}\,c^2\sqrt{c-a^2cx^2}\,C\left(\frac{2\sqrt{}}{}\right.}{32a\sqrt{1-a^2x^2}}$$

```
[Out] 1/96*c^2*(-a^2*c*x^2+c)^(1/2)*FresnelC(2*3^(1/2)/Pi^(1/2)*arcsin(a*x)^(1/2)
)*3^(1/2)*Pi^(1/2)/a/(-a^2*x^2+1)^(1/2)+3/32*c^2*(-a^2*c*x^2+c)^(1/2)*Fresn
elC(2*2^(1/2)/Pi^(1/2)*arcsin(a*x)^(1/2))*2^(1/2)*Pi^(1/2)/a/(-a^2*x^2+1)^(
1/2)+15/32*c^2*(-a^2*c*x^2+c)^(1/2)*FresnelC(2*arcsin(a*x)^(1/2)/Pi^(1/2))*
Pi^(1/2)/a/(-a^2*x^2+1)^(1/2)+5/8*c^2*(-a^2*c*x^2+c)^(1/2)*arcsin(a*x)^(1/2
)/a/(-a^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.19, antiderivative size = 244, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {4663, 4661, 3312, 3304, 3352}

$$\frac{3\sqrt{\frac{\pi}{2}}\,c^2\sqrt{c-a^2cx^2}\,\text{FresnelC}\left(2\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}(ax)}\right)}{16a\sqrt{1-a^2x^2}}+\frac{\sqrt{\frac{\pi}{3}}\,c^2\sqrt{c-a^2cx^2}\,\text{FresnelC}\left(2\sqrt{\frac{3}{\pi}}\sqrt{\sin^{-1}(ax)}\right)}{32a\sqrt{1-a^2x^2}}+\frac{15\sqrt{\pi}\,c^2\sqrt{}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c - a^2*c*x^2)^(5/2)/Sqrt[ArcSin[a*x]],x]
```

```
[Out] (5*c^2*Sqrt[c - a^2*c*x^2]*Sqrt[ArcSin[a*x]])/(8*a*Sqrt[1 - a^2*x^2]) + (3*
c^2*Sqrt[Pi/2]*Sqrt[c - a^2*c*x^2]*FresnelC[2*Sqrt[2/Pi]*Sqrt[ArcSin[a*x]]]
)/(16*a*Sqrt[1 - a^2*x^2]) + (c^2*Sqrt[Pi/3]*Sqrt[c - a^2*c*x^2]*FresnelC[2
*Sqrt[3/Pi]*Sqrt[ArcSin[a*x]]])/(32*a*Sqrt[1 - a^2*x^2]) + (15*c^2*Sqrt[Pi]
*Sqrt[c - a^2*c*x^2]*FresnelC[(2*Sqrt[ArcSin[a*x]])/Sqrt[Pi]])/(32*a*Sqrt[1
 - a^2*x^2])
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4661

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[d^p/c, Subst[Int[(a + b*x)^n*Cos[x]^(2*p + 1), x], x, ArcS
in[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IGtQ[2
```

```
*p, 0] && (IntegerQ[p] || GtQ[d, 0])
```

Rule 4663

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[(d^(p - 1/2)*Sqrt[d + e*x^2])/Sqrt[1 - c^2*x^2], Int[(1 -
c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IGtQ[2*p, 0] &&  !(IntegerQ[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{\left(c-a^2cx^2\right)^{5/2}}{\sqrt{\sin^{-1}(ax)}}\,dx = \frac{\left(c^2\sqrt{c-a^2cx^2}\right)\int \frac{\left(1-a^2x^2\right)^{5/2}}{\sqrt{\sin^{-1}(ax)}}\,dx}{\sqrt{1-a^2x^2}}$$

$$= \frac{\left(c^2\sqrt{c-a^2cx^2}\right)\text{Subst}\left(\int \frac{\cos^6(x)}{\sqrt{x}}\,dx, x, \sin^{-1}(ax)\right)}{a\sqrt{1-a^2x^2}}$$

$$= \frac{\left(c^2\sqrt{c-a^2cx^2}\right)\text{Subst}\left(\int \left(\frac{5}{16\sqrt{x}}+\frac{15\cos(2x)}{32\sqrt{x}}+\frac{3\cos(4x)}{16\sqrt{x}}+\frac{\cos(6x)}{32\sqrt{x}}\right)dx, x, \sin^{-1}(ax)\right)}{a\sqrt{1-a^2x^2}}$$

$$= \frac{5c^2\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}{8a\sqrt{1-a^2x^2}} + \frac{\left(c^2\sqrt{c-a^2cx^2}\right)\text{Subst}\left(\int \frac{\cos(6x)}{\sqrt{x}}\,dx, x, \sin^{-1}(ax)\right)}{32a\sqrt{1-a^2x^2}} + \frac{\left(3c^2\sqrt{c\cdots\right.}{\cdots}$$

$$= \frac{5c^2\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}{8a\sqrt{1-a^2x^2}} + \frac{\left(c^2\sqrt{c-a^2cx^2}\right)\text{Subst}\left(\int \cos\left(6x^2\right)dx, x, \sqrt{\sin^{-1}(ax)}\right)}{16a\sqrt{1-a^2x^2}} + \frac{(3\cdots}{\cdots}$$

$$= \frac{5c^2\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}{8a\sqrt{1-a^2x^2}} + \frac{3c^2\sqrt{\frac{\pi}{2}}\sqrt{c-a^2cx^2}\,C\left(2\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}(ax)}\right)}{16a\sqrt{1-a^2x^2}} + \frac{c^2\sqrt{\frac{\pi}{3}}\sqrt{c-a^2cx\cdots}}{32a\cdots}$$

Mathematica [C] time = 0.74, size = 336, normalized size = 1.38

$$\frac{c^2\sqrt{c-a^2cx^2}\left(240\sin^{-1}(ax)\sqrt{\sin^{-1}(ax)^2}-45i\sqrt{2}\left(-i\sin^{-1}(ax)\right)^{3/2}\Gamma\left(\frac{1}{2},2i\sin^{-1}(ax)\right)-18i\left(-i\sin^{-1}(ax)\right)^{3/2}\Gamma\left(\cdots\right.\right.}{\cdots}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c - a^2*c*x^2)^(5/2)/Sqrt[ArcSin[a*x]],x]
```

```
[Out] (c^2*Sqrt[c - a^2*c*x^2]*(240*ArcSin[a*x]*Sqrt[ArcSin[a*x]^2] + (3*I)*Sqrt[
2]*(16*(I*ArcSin[a*x])^(3/2) + Sqrt[(-I)*ArcSin[a*x]]*Sqrt[ArcSin[a*x]^2])*
Gamma[1/2, (-2*I)*ArcSin[a*x]] - (45*I)*Sqrt[2]*((-I)*ArcSin[a*x])^(3/2)*Ga
mma[1/2, (2*I)*ArcSin[a*x]] + (24*I)*(I*ArcSin[a*x])^(3/2)*Gamma[1/2, (-4*I
)*ArcSin[a*x]] + (6*I)*Sqrt[(-I)*ArcSin[a*x]]*Sqrt[ArcSin[a*x]^2]*Gamma[1/2
, (-4*I)*ArcSin[a*x]] - (18*I)*((-I)*ArcSin[a*x])^(3/2)*Gamma[1/2, (4*I)*Ar
cSin[a*x]] - I*Sqrt[6]*Sqrt[(-I)*ArcSin[a*x]]*Sqrt[ArcSin[a*x]^2]*Gamma[1/2
, (-6*I)*ArcSin[a*x]] - I*Sqrt[6]*((-I)*ArcSin[a*x])^(3/2)*Gamma[1/2, (6*I)
*ArcSin[a*x]]))/(384*a*Sqrt[1 - a^2*x^2]*Sqrt[ArcSin[a*x]]*Sqrt[ArcSin[a*x]
^2])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-a^2cx^2+c\right)^{\frac{5}{2}}}{\sqrt{\arcsin\left(ax\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((-a^2*c*x^2 + c)^(5/2)/sqrt(arcsin(a*x)), x)
```

maple [F] time = 0.42, size = 0, normalized size = 0.00

$$\int \frac{\left(-a^2c\,x^2+c\right)^{\frac{5}{2}}}{\sqrt{\arcsin\left(ax\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(1/2),x)
```

```
[Out] int((-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(1/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c-a^2\,c\,x^2\right)}^{5/2}}{\sqrt{\mathrm{asin}\left(a\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - a^2*c*x^2)^(5/2)/asin(a*x)^(1/2),x)
```

```
[Out] int((c - a^2*c*x^2)^(5/2)/asin(a*x)^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)**(5/2)/asin(a*x)**(1/2),x)
```

```
[Out] Timed out
```

3.466 $\int \frac{\left(c-a^2cx^2\right)^{3/2}}{\sqrt{\sin^{-1}(ax)}}\,dx$

Optimal. Leaf size=170

$$\frac{\sqrt{\frac{\pi}{2}}\, c\sqrt{c-a^2cx^2}\, C\left(2\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}(ax)}\right)}{8a\sqrt{1-a^2x^2}}+\frac{\sqrt{\pi}\, c\sqrt{c-a^2cx^2}\, C\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{2a\sqrt{1-a^2x^2}}+\frac{3c\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}{4a\sqrt{1-a^2x^2}}$$

```
[Out] 1/16*c*FresnelC(2*2^(1/2)/Pi^(1/2)*arcsin(a*x)^(1/2))*2^(1/2)*Pi^(1/2)*(-a^
2*c*x^2+c)^(1/2)/a/(-a^2*x^2+1)^(1/2)+1/2*c*FresnelC(2*arcsin(a*x)^(1/2)/Pi
^(1/2))*Pi^(1/2)*(-a^2*c*x^2+c)^(1/2)/a/(-a^2*x^2+1)^(1/2)+3/4*c*(-a^2*c*x^
2+c)^(1/2)*arcsin(a*x)^(1/2)/a/(-a^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = {4663, 4661, 3312, 3304, 3352}

$$\frac{\sqrt{\frac{\pi}{2}}\, c\sqrt{c-a^2cx^2}\, \text{FresnelC}\left(2\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}(ax)}\right)}{8a\sqrt{1-a^2x^2}}+\frac{\sqrt{\pi}\, c\sqrt{c-a^2cx^2}\, \text{FresnelC}\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{2a\sqrt{1-a^2x^2}}+\frac{3c\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(a}{4a\sqrt{1-a^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(c - a^2*c*x^2)^(3/2)/Sqrt[ArcSin[a*x]],x]
```

```
[Out] (3*c*Sqrt[c - a^2*c*x^2]*Sqrt[ArcSin[a*x]])/(4*a*Sqrt[1 - a^2*x^2]) + (c*Sq
rt[Pi/2]*Sqrt[c - a^2*c*x^2]*FresnelC[2*Sqrt[2/Pi]*Sqrt[ArcSin[a*x]]])/(8*a
*Sqrt[1 - a^2*x^2]) + (c*Sqrt[Pi]*Sqrt[c - a^2*c*x^2]*FresnelC[(2*Sqrt[ArcS
in[a*x]])/Sqrt[Pi]])/(2*a*Sqrt[1 - a^2*x^2])
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4661

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[d^p/c, Subst[Int[(a + b*x)^n*Cos[x]^(2*p + 1), x], x, ArcS
in[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IGtQ[2
*p, 0] && (IntegerQ[p] || GtQ[d, 0])
```

Rule 4663

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[(d^(p - 1/2)*Sqrt[d + e*x^2])/Sqrt[1 - c^2*x^2], Int[(1 -
c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IGtQ[2*p, 0] &&  !(IntegerQ[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{\left(c-a^2cx^2\right)^{3/2}}{\sqrt{\sin^{-1}(ax)}}\,dx = \frac{\left(c\sqrt{c-a^2cx^2}\right)\int \frac{\left(1-a^2x^2\right)^{3/2}}{\sqrt{\sin^{-1}(ax)}}\,dx}{\sqrt{1-a^2x^2}}$$

$$= \frac{\left(c\sqrt{c-a^2cx^2}\right)\text{Subst}\left(\int \frac{\cos^4(x)}{\sqrt{x}}\,dx, x, \sin^{-1}(ax)\right)}{a\sqrt{1-a^2x^2}}$$

$$= \frac{\left(c\sqrt{c-a^2cx^2}\right)\text{Subst}\left(\int \left(\frac{3}{8\sqrt{x}}+\frac{\cos(2x)}{2\sqrt{x}}+\frac{\cos(4x)}{8\sqrt{x}}\right)dx, x, \sin^{-1}(ax)\right)}{a\sqrt{1-a^2x^2}}$$

$$= \frac{3c\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}{4a\sqrt{1-a^2x^2}} + \frac{\left(c\sqrt{c-a^2cx^2}\right)\text{Subst}\left(\int \frac{\cos(4x)}{\sqrt{x}}\,dx, x, \sin^{-1}(ax)\right)}{8a\sqrt{1-a^2x^2}} + \frac{\left(c\sqrt{c-\right.}{}$$

$$= \frac{3c\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}{4a\sqrt{1-a^2x^2}} + \frac{\left(c\sqrt{c-a^2cx^2}\right)\text{Subst}\left(\int \cos\left(4x^2\right)dx, x, \sqrt{\sin^{-1}(ax)}\right)}{4a\sqrt{1-a^2x^2}} + \cdots$$

$$= \frac{3c\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}{4a\sqrt{1-a^2x^2}} + \frac{c\sqrt{\frac{\pi}{2}}\sqrt{c-a^2cx^2}\,C\left(2\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}(ax)}\right)}{8a\sqrt{1-a^2x^2}} + \frac{c\sqrt{\pi}\sqrt{c-a^2cx^2}}{2a\sqrt{1-}}$$

Mathematica [C] time = 0.37, size = 182, normalized size = 1.07

$$\frac{c\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}\left(24\sqrt{\sin^{-1}(ax)^2}-4\sqrt{2}\sqrt{i\sin^{-1}(ax)}\,\Gamma\left(\frac{1}{2},-2i\sin^{-1}(ax)\right)-4\sqrt{2}\sqrt{-i\sin^{-1}(ax)}\,\Gamma\left(\frac{1}{2},2\right.\right.}{32a\sqrt{1-a^2x^2}\sqrt{\sin^{-1}(ax)^2}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c - a^2*c*x^2)^(3/2)/Sqrt[ArcSin[a*x]],x]
```

```
[Out] (c*Sqrt[c - a^2*c*x^2]*Sqrt[ArcSin[a*x]]*(24*Sqrt[ArcSin[a*x]^2] - 4*Sqrt[2
]*Sqrt[I*ArcSin[a*x]]*Gamma[1/2, (-2*I)*ArcSin[a*x]] - 4*Sqrt[2]*Sqrt[(-I)*
ArcSin[a*x]]*Gamma[1/2, (2*I)*ArcSin[a*x]] - Sqrt[I*ArcSin[a*x]]*Gamma[1/2,
 (-4*I)*ArcSin[a*x]] - Sqrt[(-I)*ArcSin[a*x]]*Gamma[1/2, (4*I)*ArcSin[a*x]]
))/(32*a*Sqrt[1 - a^2*x^2]*Sqrt[ArcSin[a*x]^2])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-a^2cx^2+c\right)^{\frac{3}{2}}}{\sqrt{\arcsin\left(ax\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((-a^2*c*x^2 + c)^(3/2)/sqrt(arcsin(a*x)), x)
```

maple [F] time = 0.39, size = 0, normalized size = 0.00

$$\int \frac{\left(-a^{2} c \,x^{2}+c \right)^{\frac{3}{2}}}{\sqrt{\arcsin \left(a x \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(1/2),x)
```

```
[Out] int((-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(1/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c-a^2\,c\,x^2\right)}^{3/2}}{\sqrt{\mathrm{asin}\left(a\,x\right)}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - a^2*c*x^2)^(3/2)/asin(a*x)^(1/2),x)
```

```
[Out] int((c - a^2*c*x^2)^(3/2)/asin(a*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(- c \left(a x - 1\right) \left(a x + 1\right)\right)^{\frac{3}{2}}}{\sqrt{\operatorname{asin}{\left(a x \right)}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)**(3/2)/asin(a*x)**(1/2),x)
```

```
[Out] Integral((-c*(a*x - 1)*(a*x + 1))**(3/2)/sqrt(asin(a*x)), x)
```

3.467 $\int \frac{\sqrt{c-a^2cx^2}}{\sqrt{\sin^{-1}(ax)}}\,dx$

Optimal. Leaf size=99

$$\frac{\sqrt{\pi}\sqrt{c-a^2cx^2}\,C\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{2a\sqrt{1-a^2x^2}}+\frac{\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}{a\sqrt{1-a^2x^2}}$$

```
[Out] 1/2*FresnelC(2*arcsin(a*x)^(1/2)/Pi^(1/2))*Pi^(1/2)*(-a^2*c*x^2+c)^(1/2)/a/
(-a^2*x^2+1)^(1/2)+(-a^2*c*x^2+c)^(1/2)*arcsin(a*x)^(1/2)/a/(-a^2*x^2+1)^(1
/2)
```

Rubi [A] time = 0.12, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {4663, 4661, 3312, 3304, 3352}

$$\frac{\sqrt{\pi}\sqrt{c-a^2cx^2}\,\text{FresnelC}\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{2a\sqrt{1-a^2x^2}}+\frac{\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}{a\sqrt{1-a^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[c - a^2*c*x^2]/Sqrt[ArcSin[a*x]],x]
```

```
[Out] (Sqrt[c - a^2*c*x^2]*Sqrt[ArcSin[a*x]])/(a*Sqrt[1 - a^2*x^2]) + (Sqrt[Pi]*S
qrt[c - a^2*c*x^2]*FresnelC[(2*Sqrt[ArcSin[a*x]])/Sqrt[Pi]])/(2*a*Sqrt[1 -
a^2*x^2])
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4661

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[d^p/c, Subst[Int[(a + b*x)^n*Cos[x]^(2*p + 1), x], x, ArcS
in[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IGtQ[2
*p, 0] && (IntegerQ[p] || GtQ[d, 0])
```

Rule 4663

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[(d^(p - 1/2)*Sqrt[d + e*x^2])/Sqrt[1 - c^2*x^2], Int[(1 -
c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
```

```
EqQ[c^2*d + e, 0] && IGtQ[2*p, 0] &&  !(IntegerQ[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{\sqrt{c-a^2cx^2}}{\sqrt{\sin^{-1}(ax)}}\,dx = \frac{\sqrt{c-a^2cx^2}\int \frac{\sqrt{1-a^2x^2}}{\sqrt{\sin^{-1}(ax)}}\,dx}{\sqrt{1-a^2x^2}}$$
$$= \frac{\sqrt{c-a^2cx^2}\,\text{Subst}\left(\int \frac{\cos^2(x)}{\sqrt{x}}\,dx, x, \sin^{-1}(ax)\right)}{a\sqrt{1-a^2x^2}}$$
$$= \frac{\sqrt{c-a^2cx^2}\,\text{Subst}\left(\int \left(\frac{1}{2\sqrt{x}}+\frac{\cos(2x)}{2\sqrt{x}}\right)dx, x, \sin^{-1}(ax)\right)}{a\sqrt{1-a^2x^2}}$$
$$= \frac{\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}{a\sqrt{1-a^2x^2}} + \frac{\sqrt{c-a^2cx^2}\,\text{Subst}\left(\int \frac{\cos(2x)}{\sqrt{x}}\,dx, x, \sin^{-1}(ax)\right)}{2a\sqrt{1-a^2x^2}}$$
$$= \frac{\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}{a\sqrt{1-a^2x^2}} + \frac{\sqrt{c-a^2cx^2}\,\text{Subst}\left(\int \cos\left(2x^2\right)dx, x, \sqrt{\sin^{-1}(ax)}\right)}{a\sqrt{1-a^2x^2}}$$
$$= \frac{\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}{a\sqrt{1-a^2x^2}} + \frac{\sqrt{\pi}\sqrt{c-a^2cx^2}\,C\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{2a\sqrt{1-a^2x^2}}$$

Mathematica [C] time = 0.16, size = 118, normalized size = 1.19

$$\frac{\sqrt{c\left(1-a^2x^2\right)}\left(8\sin^{-1}(ax)-i\sqrt{2}\sqrt{-i\sin^{-1}(ax)}\,\Gamma\left(\frac{1}{2},-2i\sin^{-1}(ax)\right)+i\sqrt{2}\sqrt{i\sin^{-1}(ax)}\,\Gamma\left(\frac{1}{2},2i\sin^{-1}(ax)\right)\right)}{8a\sqrt{1-a^2x^2}\sqrt{\sin^{-1}(ax)}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[c - a^2*c*x^2]/Sqrt[ArcSin[a*x]],x]
```

```
[Out] (Sqrt[c*(1 - a^2*x^2)]*(8*ArcSin[a*x] - I*Sqrt[2]*Sqrt[(-I)*ArcSin[a*x]]*Ga
mma[1/2, (-2*I)*ArcSin[a*x]] + I*Sqrt[2]*Sqrt[I*ArcSin[a*x]]*Gamma[1/2, (2*
I)*ArcSin[a*x]]))/(8*a*Sqrt[1 - a^2*x^2]*Sqrt[ArcSin[a*x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-a^2cx^2+c}}{\sqrt{\arcsin\left(ax\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(-a^2*c*x^2 + c)/sqrt(arcsin(a*x)), x)
```

maple [F] time = 0.44, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-a^2c\,x^2+c}}{\sqrt{\arcsin\left(ax\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(1/2),x)
[Out] int((-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(1/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(1/2),x, algorithm="maxima")
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{c-a^2\,c\,x^2}}{\sqrt{\mathrm{asin}\left(a\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - a^2*c*x^2)^(1/2)/asin(a*x)^(1/2),x)
[Out] int((c - a^2*c*x^2)^(1/2)/asin(a*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c\left(ax-1\right)\left(ax+1\right)}}{\sqrt{\mathrm{asin}\left(ax\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)**(1/2)/asin(a*x)**(1/2),x)
[Out] Integral(sqrt(-c*(a*x - 1)*(a*x + 1))/sqrt(asin(a*x)), x)
```

3.468 $\int \frac{1}{\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}\,dx$

Optimal. Leaf size=42

$$\frac{2\sqrt{1-a^2x^2}\sqrt{\sin^{-1}(ax)}}{a\sqrt{c-a^2cx^2}}$$

```
[Out] 2*(-a^2*x^2+1)^(1/2)*arcsin(a*x)^(1/2)/a/(-a^2*c*x^2+c)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.083$, Rules used = {4643, 4641}

$$\frac{2\sqrt{1-a^2x^2}\sqrt{\sin^{-1}(ax)}}{a\sqrt{c-a^2cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[c - a^2*c*x^2]*Sqrt[ArcSin[a*x]]),x]
```

```
[Out] (2*Sqrt[1 - a^2*x^2]*Sqrt[ArcSin[a*x]])/(a*Sqrt[c - a^2*c*x^2])
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4643

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcSin[c*x])^n
/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e
, 0] &&  !GtQ[d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{1}{\sqrt{c-a^2cx^2}\sqrt{\sin^{-1}(ax)}}\,dx &= \frac{\sqrt{1-a^2x^2}\int \frac{1}{\sqrt{1-a^2x^2}\sqrt{\sin^{-1}(ax)}}\,dx}{\sqrt{c-a^2cx^2}}\\ &= \frac{2\sqrt{1-a^2x^2}\sqrt{\sin^{-1}(ax)}}{a\sqrt{c-a^2cx^2}}\end{aligned}$$

Mathematica [A] time = 0.05, size = 42, normalized size = 1.00

$$\frac{2\sqrt{1-a^2x^2}\sqrt{\sin^{-1}(ax)}}{a\sqrt{c-a^2cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[c - a^2*c*x^2]*Sqrt[ArcSin[a*x]]),x]
```

```
[Out] (2*Sqrt[1 - a^2*x^2]*Sqrt[ArcSin[a*x]])/(a*Sqrt[c - a^2*c*x^2])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{-a^2cx^2+c}\,\sqrt{\arcsin(ax)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(-a^2*c*x^2 + c)*sqrt(arcsin(a*x))), x)
```

maple [A] time = 0.06, size = 38, normalized size = 0.90

$$\frac{2\sqrt{\arcsin(ax)}\,\sqrt{-a^2x^2+1}}{a\sqrt{-c\left(a^2x^2-1\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(1/2),x)
```

```
[Out] 2*arcsin(a*x)^(1/2)/a/(-c*(a^2*x^2-1))^(1/2)*(-a^2*x^2+1)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{1}{\sqrt{\mathrm{asin}(a\,x)}\,\sqrt{c-a^2\,c\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(asin(a*x)^(1/2)*(c - a^2*c*x^2)^(1/2)),x)
```

```
[Out] int(1/(asin(a*x)^(1/2)*(c - a^2*c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{-c\,(ax-1)\,(ax+1)}\,\sqrt{\mathrm{asin}(ax)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a**2*c*x**2+c)**(1/2)/asin(a*x)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(-c*(a*x - 1)*(a*x + 1))*sqrt(asin(a*x))), x)
```

3.469 $\int \frac{1}{(c-a^2cx^2)^{3/2}\sqrt{\sin^{-1}(ax)}}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{1}{\left(c-a^2cx^2\right)^{3/2}\sqrt{\sin^{-1}(ax)}},x\right)$$

```
[Out] Unintegrable(1/(-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(1/2),x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\left(c-a^2cx^2\right)^{3/2}\sqrt{\sin^{-1}(ax)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c - a^2*c*x^2)^(3/2)*Sqrt[ArcSin[a*x]]),x]
[Out] Defer[Int][1/((c - a^2*c*x^2)^(3/2)*Sqrt[ArcSin[a*x]]), x]
```

Rubi steps

$$\int \frac{1}{\left(c-a^2cx^2\right)^{3/2}\sqrt{\sin^{-1}(ax)}}\,dx=\int \frac{1}{\left(c-a^2cx^2\right)^{3/2}\sqrt{\sin^{-1}(ax)}}\,dx$$

Mathematica [A] time = 1.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(c-a^2cx^2\right)^{3/2}\sqrt{\sin^{-1}(ax)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c - a^2*c*x^2)^(3/2)*Sqrt[ArcSin[a*x]]),x]
[Out] Integrate[1/((c - a^2*c*x^2)^(3/2)*Sqrt[ArcSin[a*x]]), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(1/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-a^2cx^2+c\right)^{\frac{3}{2}}\sqrt{\arcsin(ax)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/((-a^2*c*x^2 + c)^(3/2)*sqrt(arcsin(a*x))), x)
```

maple [A] time = 0.48, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-a^{2} c\,x^{2}+c\right)^{\frac{3}{2}} \sqrt{\arcsin \left(a x\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(1/2),x)
```

```
[Out] int(1/(-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(1/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\sqrt{\mathrm{asin}\left(a\,x\right)}\,{\left(c-a^2\,c\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(asin(a*x)^(1/2)*(c - a^2*c*x^2)^(3/2)),x)
```

```
[Out] int(1/(asin(a*x)^(1/2)*(c - a^2*c*x^2)^(3/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(- c \left(a x - 1\right) \left(a x + 1\right)\right)^{\frac{3}{2}} \sqrt{\operatorname{asin}{\left(a x \right)}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a**2*c*x**2+c)**(3/2)/asin(a*x)**(1/2),x)
```

```
[Out] Integral(1/((-c*(a*x - 1)*(a*x + 1))**(3/2)*sqrt(asin(a*x))), x)
```

3.470 $\int \frac{1}{(c-a^2cx^2)^{5/2}\sqrt{\sin^{-1}(ax)}}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{1}{\left(c-a^2cx^2\right)^{5/2}\sqrt{\sin^{-1}(ax)}},x\right)$$

```
[Out] Unintegrable(1/(-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(1/2),x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\left(c-a^2cx^2\right)^{5/2}\sqrt{\sin^{-1}(ax)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c - a^2*c*x^2)^(5/2)*Sqrt[ArcSin[a*x]]),x]
[Out] Defer[Int][1/((c - a^2*c*x^2)^(5/2)*Sqrt[ArcSin[a*x]]), x]
```

Rubi steps

$$\int \frac{1}{\left(c-a^2cx^2\right)^{5/2}\sqrt{\sin^{-1}(ax)}}\,dx=\int \frac{1}{\left(c-a^2cx^2\right)^{5/2}\sqrt{\sin^{-1}(ax)}}\,dx$$

Mathematica [A] time = 2.42, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(c-a^2cx^2\right)^{5/2}\sqrt{\sin^{-1}(ax)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c - a^2*c*x^2)^(5/2)*Sqrt[ArcSin[a*x]]),x]
[Out] Integrate[1/((c - a^2*c*x^2)^(5/2)*Sqrt[ArcSin[a*x]]), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(1/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-a^2cx^2+c\right)^{\frac{5}{2}}\sqrt{\arcsin\left(ax\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/((-a^2*c*x^2 + c)^(5/2)*sqrt(arcsin(a*x))), x)
```

maple [A] time = 0.58, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-a^{2} c \,x^{2}+c \right)^{\frac{5}{2}} \sqrt{\arcsin \left(a x \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(1/2),x)
```

```
[Out] int(1/(-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(1/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\sqrt{\mathrm{asin}\left(a\,x\right)}\,{\left(c-a^2\,c\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(asin(a*x)^(1/2)*(c - a^2*c*x^2)^(5/2)),x)
```

```
[Out] int(1/(asin(a*x)^(1/2)*(c - a^2*c*x^2)^(5/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(- c \left(a x - 1\right) \left(a x + 1\right)\right)^{\frac{5}{2}} \sqrt{\operatorname{asin}{\left(a x \right)}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a**2*c*x**2+c)**(5/2)/asin(a*x)**(1/2),x)
```

```
[Out] Integral(1/((-c*(a*x - 1)*(a*x + 1))**(5/2)*sqrt(asin(a*x))), x)
```

3.471 $\int \frac{\left(c-a^2cx^2\right)^{5/2}}{\sin^{-1}(ax)^{3/2}}\,dx$

Optimal. Leaf size=237

$$-\frac{3\sqrt{\frac{\pi}{2}}\,c^2\sqrt{c-a^2cx^2}\,S\left(2\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}(ax)}\right)}{2a\sqrt{1-a^2x^2}}-\frac{\sqrt{3\pi}\,c^2\sqrt{c-a^2cx^2}\,S\left(2\sqrt{\frac{3}{\pi}}\sqrt{\sin^{-1}(ax)}\right)}{8a\sqrt{1-a^2x^2}}-\frac{15\sqrt{\pi}\,c^2\sqrt{c-a^2cx^2}\,S\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{8a\sqrt{1-a^2x^2}}$$

```
[Out] -3/4*c^2*FresnelS(2*2^(1/2)/Pi^(1/2)*arcsin(a*x)^(1/2))*2^(1/2)*Pi^(1/2)*(-
a^2*c*x^2+c)^(1/2)/a/(-a^2*x^2+1)^(1/2)-15/8*c^2*FresnelS(2*arcsin(a*x)^(1/
2)/Pi^(1/2))*Pi^(1/2)*(-a^2*c*x^2+c)^(1/2)/a/(-a^2*x^2+1)^(1/2)-1/8*c^2*Fre
snelS(2*3^(1/2)/Pi^(1/2)*arcsin(a*x)^(1/2))*3^(1/2)*Pi^(1/2)*(-a^2*c*x^2+c)
^(1/2)/a/(-a^2*x^2+1)^(1/2)-2*(-a^2*c*x^2+c)^(5/2)*(-a^2*x^2+1)^(1/2)/a/arc
sin(a*x)^(1/2)
```

Rubi [A] time = 0.19, antiderivative size = 237, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = {4659, 4723, 4406, 3305, 3351}

$$-\frac{3\sqrt{\frac{\pi}{2}}\,c^2\sqrt{c-a^2cx^2}\,S\left(2\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}(ax)}\right)}{2a\sqrt{1-a^2x^2}}-\frac{\sqrt{3\pi}\,c^2\sqrt{c-a^2cx^2}\,S\left(2\sqrt{\frac{3}{\pi}}\sqrt{\sin^{-1}(ax)}\right)}{8a\sqrt{1-a^2x^2}}-\frac{15\sqrt{\pi}\,c^2\sqrt{c-a^2cx^2}\,S\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{8a\sqrt{1-a^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(c - a^2*c*x^2)^(5/2)/ArcSin[a*x]^(3/2),x]
```

```
[Out] (-2*Sqrt[1 - a^2*x^2]*(c - a^2*c*x^2)^(5/2))/(a*Sqrt[ArcSin[a*x]]) - (3*c^2
*Sqrt[Pi/2]*Sqrt[c - a^2*c*x^2]*FresnelS[2*Sqrt[2/Pi]*Sqrt[ArcSin[a*x]]])/(
2*a*Sqrt[1 - a^2*x^2]) - (c^2*Sqrt[3*Pi]*Sqrt[c - a^2*c*x^2]*FresnelS[2*Sqr
t[3/Pi]*Sqrt[ArcSin[a*x]]])/(8*a*Sqrt[1 - a^2*x^2]) - (15*c^2*Sqrt[Pi]*Sqrt
[c - a^2*c*x^2]*FresnelS[(2*Sqrt[ArcSin[a*x]])/Sqrt[Pi]])/(8*a*Sqrt[1 - a^2
*x^2])
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4659

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[(Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*(a + b*ArcSin[c*x])^(n + 1
))/(b*c*(n + 1)), x] + Dist[(c*(2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[
```

```
p])/(b*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a
 + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^
2*d + e, 0] && LtQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{\left(c-a^2cx^2\right)^{5/2}}{\sin^{-1}(ax)^{3/2}}\,dx = -\frac{2\sqrt{1-a^2x^2}\left(c-a^2cx^2\right)^{5/2}}{a\sqrt{\sin^{-1}(ax)}} - \frac{\left(12ac^2\sqrt{c-a^2cx^2}\right)\int \frac{x\left(1-a^2x^2\right)^2}{\sqrt{\sin^{-1}(ax)}}\,dx}{\sqrt{1-a^2x^2}}$$

$$= -\frac{2\sqrt{1-a^2x^2}\left(c-a^2cx^2\right)^{5/2}}{a\sqrt{\sin^{-1}(ax)}} - \frac{\left(12c^2\sqrt{c-a^2cx^2}\right)\text{Subst}\left(\int \frac{\cos^5(x)\sin(x)}{\sqrt{x}}\,dx, x, \sin^{-1}(ax)\right)}{a\sqrt{1-a^2x^2}}$$

$$= -\frac{2\sqrt{1-a^2x^2}\left(c-a^2cx^2\right)^{5/2}}{a\sqrt{\sin^{-1}(ax)}} - \frac{\left(12c^2\sqrt{c-a^2cx^2}\right)\text{Subst}\left(\int \left(\frac{5\sin(2x)}{32\sqrt{x}} + \frac{\sin(4x)}{8\sqrt{x}} + \frac{\sin(6x)}{32\sqrt{x}}\right) d\ldots\right.}{a\sqrt{1-a^2x^2}}$$

$$= -\frac{2\sqrt{1-a^2x^2}\left(c-a^2cx^2\right)^{5/2}}{a\sqrt{\sin^{-1}(ax)}} - \frac{\left(3c^2\sqrt{c-a^2cx^2}\right)\text{Subst}\left(\int \frac{\sin(6x)}{\sqrt{x}}\,dx, x, \sin^{-1}(ax)\right)}{8a\sqrt{1-a^2x^2}} - \frac{\left(3c\ldots\right.}{\ldots}$$

$$= -\frac{2\sqrt{1-a^2x^2}\left(c-a^2cx^2\right)^{5/2}}{a\sqrt{\sin^{-1}(ax)}} - \frac{\left(3c^2\sqrt{c-a^2cx^2}\right)\text{Subst}\left(\int \sin\left(6x^2\right)dx, x, \sqrt{\sin^{-1}(ax)}\right)}{4a\sqrt{1-a^2x^2}}$$

$$= -\frac{2\sqrt{1-a^2x^2}\left(c-a^2cx^2\right)^{5/2}}{a\sqrt{\sin^{-1}(ax)}} - \frac{3c^2\sqrt{\frac{\pi}{2}}\sqrt{c-a^2cx^2}\,S\left(2\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}(ax)}\right)}{2a\sqrt{1-a^2x^2}} - \frac{c^2\sqrt{3\pi}\sqrt{c-\ldots}}{\ldots}$$

Mathematica [C] time = 1.26, size = 404, normalized size = 1.70

$$-\frac{c^2\sqrt{c-a^2cx^2}\,e^{-6i\sin^{-1}(ax)}\left(64\sqrt{\pi}\,e^{6i\sin^{-1}(ax)}\sqrt{\sin^{-1}(ax)}\,S\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right) + 6e^{2i\sin^{-1}(ax)} + 15e^{4i\sin^{-1}(ax)} + 20e^{6i\sin\ldots}\right.}{\ldots}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c - a^2*c*x^2)^(5/2)/ArcSin[a*x]^(3/2),x]
```

```
[Out] -1/32*(c^2*Sqrt[c - a^2*c*x^2]*(1 + 6*E^((2*I)*ArcSin[a*x]) + 15*E^((4*I)*A
rcSin[a*x]) + 20*E^((6*I)*ArcSin[a*x]) + 15*E^((8*I)*ArcSin[a*x]) + 6*E^((1
0*I)*ArcSin[a*x]) + E^((12*I)*ArcSin[a*x]) + 64*E^((6*I)*ArcSin[a*x])*Sqrt[
Pi]*Sqrt[ArcSin[a*x]]*FresnelS[(2*Sqrt[ArcSin[a*x]])/Sqrt[Pi]] + Sqrt[2]*E^
((6*I)*ArcSin[a*x])*Sqrt[(-I)*ArcSin[a*x]]*Gamma[1/2, (-2*I)*ArcSin[a*x]] +
 Sqrt[2]*E^((6*I)*ArcSin[a*x])*Sqrt[I*ArcSin[a*x]]*Gamma[1/2, (2*I)*ArcSin[
a*x]] - 12*E^((6*I)*ArcSin[a*x])*Sqrt[(-I)*ArcSin[a*x]]*Gamma[1/2, (-4*I)*A
rcSin[a*x]] - 12*E^((6*I)*ArcSin[a*x])*Sqrt[I*ArcSin[a*x]]*Gamma[1/2, (4*I)
*ArcSin[a*x]] - Sqrt[6]*E^((6*I)*ArcSin[a*x])*Sqrt[(-I)*ArcSin[a*x]]*Gamma[
1/2, (-6*I)*ArcSin[a*x]] - Sqrt[6]*E^((6*I)*ArcSin[a*x])*Sqrt[I*ArcSin[a*x]
```

```
]*Gamma[1/2, (6*I)*ArcSin[a*x]]))/(a*E^((6*I)*ArcSin[a*x])*Sqrt[1 - a^2*x^2
]*Sqrt[ArcSin[a*x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(3/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-a^2cx^2 + c\right)^{\frac{5}{2}}}{\arcsin\left(ax\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(3/2),x, algorithm="giac")
[Out] integrate((-a^2*c*x^2 + c)^(5/2)/arcsin(a*x)^(3/2), x)
```

maple [F] time = 0.38, size = 0, normalized size = 0.00

$$\int \frac{\left(-a^2c\,x^2 + c\right)^{\frac{5}{2}}}{\arcsin\left(ax\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(3/2),x)
[Out] int((-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(3/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(3/2),x, algorithm="maxima")
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c - a^2\,c\,x^2\right)}^{5/2}}{{\mathrm{asin}\left(a\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - a^2*c*x^2)^(5/2)/asin(a*x)^(3/2),x)
[Out] int((c - a^2*c*x^2)^(5/2)/asin(a*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)**(5/2)/asin(a*x)**(3/2),x)
```

```
[Out] Timed out
```

3.472 $\int \frac{(c-a^2cx^2)^{3/2}}{\sin^{-1}(ax)^{3/2}}\,dx$

Optimal. Leaf size=163

$$-\frac{\sqrt{\frac{\pi}{2}}\,c\sqrt{c-a^2cx^2}\,S\left(2\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}(ax)}\right)}{a\sqrt{1-a^2x^2}}-\frac{2\sqrt{\pi}\,c\sqrt{c-a^2cx^2}\,S\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{a\sqrt{1-a^2x^2}}-\frac{2\sqrt{1-a^2x^2}\,(c-a^2cx^2)^{3/2}}{a\sqrt{\sin^{-1}(ax)}}$$

```
[Out] -1/2*c*FresnelS(2*2^(1/2)/Pi^(1/2)*arcsin(a*x)^(1/2))*2^(1/2)*Pi^(1/2)*(-a^
2*c*x^2+c)^(1/2)/a/(-a^2*x^2+1)^(1/2)-2*c*FresnelS(2*arcsin(a*x)^(1/2)/Pi^(
1/2))*Pi^(1/2)*(-a^2*c*x^2+c)^(1/2)/a/(-a^2*x^2+1)^(1/2)-2*(-a^2*c*x^2+c)^(
3/2)*(-a^2*x^2+1)^(1/2)/a/arcsin(a*x)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 163, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = {4659, 4723, 4406, 3305, 3351}

$$-\frac{\sqrt{\frac{\pi}{2}}\,c\sqrt{c-a^2cx^2}\,S\left(2\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}(ax)}\right)}{a\sqrt{1-a^2x^2}}-\frac{2\sqrt{\pi}\,c\sqrt{c-a^2cx^2}\,S\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{a\sqrt{1-a^2x^2}}-\frac{2\sqrt{1-a^2x^2}\,(c-a^2cx^2)^{3/2}}{a\sqrt{\sin^{-1}(ax)}}$$

Antiderivative was successfully verified.

```
[In] Int[(c - a^2*c*x^2)^(3/2)/ArcSin[a*x]^(3/2),x]
```

```
[Out] (-2*Sqrt[1 - a^2*x^2]*(c - a^2*c*x^2)^(3/2))/(a*Sqrt[ArcSin[a*x]]) - (c*Sqr
t[Pi/2]*Sqrt[c - a^2*c*x^2]*FresnelS[2*Sqrt[2/Pi]*Sqrt[ArcSin[a*x]]])/(a*Sq
rt[1 - a^2*x^2]) - (2*c*Sqrt[Pi]*Sqrt[c - a^2*c*x^2]*FresnelS[(2*Sqrt[ArcSi
n[a*x]])/Sqrt[Pi]])/(a*Sqrt[1 - a^2*x^2])
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4659

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[(Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*(a + b*ArcSin[c*x])^(n + 1
))/(b*c*(n + 1)), x] + Dist[(c*(2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[
p])/(b*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a
 + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^
2*d + e, 0] && LtQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{\left(c-a^2cx^2\right)^{3/2}}{\sin^{-1}(ax)^{3/2}}\,dx = -\frac{2\sqrt{1-a^2x^2}\left(c-a^2cx^2\right)^{3/2}}{a\sqrt{\sin^{-1}(ax)}} - \frac{\left(8ac\sqrt{c-a^2cx^2}\right)\int \frac{x\left(1-a^2x^2\right)}{\sqrt{\sin^{-1}(ax)}}\,dx}{\sqrt{1-a^2x^2}}$$

$$= -\frac{2\sqrt{1-a^2x^2}\left(c-a^2cx^2\right)^{3/2}}{a\sqrt{\sin^{-1}(ax)}} - \frac{\left(8c\sqrt{c-a^2cx^2}\right)\text{Subst}\left(\int \frac{\cos^3(x)\sin(x)}{\sqrt{x}}\,dx, x, \sin^{-1}(ax)\right)}{a\sqrt{1-a^2x^2}}$$

$$= -\frac{2\sqrt{1-a^2x^2}\left(c-a^2cx^2\right)^{3/2}}{a\sqrt{\sin^{-1}(ax)}} - \frac{\left(8c\sqrt{c-a^2cx^2}\right)\text{Subst}\left(\int \left(\frac{\sin(2x)}{4\sqrt{x}}+\frac{\sin(4x)}{8\sqrt{x}}\right)dx, x, \sin^{-1}(a\right.}{a\sqrt{1-a^2x^2}}$$

$$= -\frac{2\sqrt{1-a^2x^2}\left(c-a^2cx^2\right)^{3/2}}{a\sqrt{\sin^{-1}(ax)}} - \frac{\left(c\sqrt{c-a^2cx^2}\right)\text{Subst}\left(\int \frac{\sin(4x)}{\sqrt{x}}\,dx, x, \sin^{-1}(ax)\right)}{a\sqrt{1-a^2x^2}} - \frac{\left(2c\sqrt{c\right.}{}$$

$$= -\frac{2\sqrt{1-a^2x^2}\left(c-a^2cx^2\right)^{3/2}}{a\sqrt{\sin^{-1}(ax)}} - \frac{\left(2c\sqrt{c-a^2cx^2}\right)\text{Subst}\left(\int \sin\left(4x^2\right)dx, x, \sqrt{\sin^{-1}(ax)}\right)}{a\sqrt{1-a^2x^2}} -$$

$$= -\frac{2\sqrt{1-a^2x^2}\left(c-a^2cx^2\right)^{3/2}}{a\sqrt{\sin^{-1}(ax)}} - \frac{c\sqrt{\frac{\pi}{2}}\sqrt{c-a^2cx^2}\,S\left(2\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}(ax)}\right)}{a\sqrt{1-a^2x^2}} - \frac{2c\sqrt{\pi}\sqrt{c-a^2c}}{a\sqrt{1}}$$

Mathematica [C] time = 0.44, size = 211, normalized size = 1.29

$$-\frac{c\sqrt{c-a^2cx^2}\,e^{-4i\sin^{-1}(ax)}\left(16\sqrt{\pi}\,e^{4i\sin^{-1}(ax)}\sqrt{\sin^{-1}(ax)}\,S\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)+6e^{4i\sin^{-1}(ax)}+e^{8i\sin^{-1}(ax)}+8e^{4i\sin^{-1}(ax)}\right.}{8a\sqrt{1-a}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c - a^2*c*x^2)^(3/2)/ArcSin[a*x]^(3/2),x]
```

```
[Out] -1/8*(c*Sqrt[c - a^2*c*x^2]*(1 + 6*E^((4*I)*ArcSin[a*x]) + E^((8*I)*ArcSin[
a*x]) + 8*E^((4*I)*ArcSin[a*x])*Cos[2*ArcSin[a*x]] + 16*E^((4*I)*ArcSin[a*x
])*Sqrt[Pi]*Sqrt[ArcSin[a*x]]*FresnelS[(2*Sqrt[ArcSin[a*x]])/Sqrt[Pi]] - 2*
E^((4*I)*ArcSin[a*x])*Sqrt[(-I)*ArcSin[a*x]]*Gamma[1/2, (-4*I)*ArcSin[a*x]]
 - 2*E^((4*I)*ArcSin[a*x])*Sqrt[I*ArcSin[a*x]]*Gamma[1/2, (4*I)*ArcSin[a*x]
]))/(a*E^((4*I)*ArcSin[a*x])*Sqrt[1 - a^2*x^2]*Sqrt[ArcSin[a*x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-a^2cx^2+c\right)^{\frac{3}{2}}}{\arcsin\left(ax\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((-a^2*c*x^2 + c)^(3/2)/arcsin(a*x)^(3/2), x)
```

maple [F] time = 0.38, size = 0, normalized size = 0.00

$$\int \frac{\left(-a^2c\,x^2+c\right)^{\frac{3}{2}}}{\arcsin\left(ax\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(3/2),x)
```

```
[Out] int((-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(3/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c-a^2\,c\,x^2\right)}^{3/2}}{{\mathrm{asin}\left(a\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - a^2*c*x^2)^(3/2)/asin(a*x)^(3/2),x)
```

```
[Out] int((c - a^2*c*x^2)^(3/2)/asin(a*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c\left(ax-1\right)\left(ax+1\right)\right)^{\frac{3}{2}}}{\operatorname{asin}^{\frac{3}{2}}\left(ax\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)**(3/2)/asin(a*x)**(3/2),x)
```

```
[Out] Integral((-c*(a*x - 1)*(a*x + 1))**(3/2)/asin(a*x)**(3/2), x)
```

3.473 $\int \frac{\sqrt{c-a^2cx^2}}{\sin^{-1}(ax)^{3/2}}\,dx$

Optimal. Leaf size=98

$$-\frac{2\sqrt{\pi}\sqrt{c-a^2cx^2}\,S\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{a\sqrt{1-a^2x^2}}-\frac{2\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}}{a\sqrt{\sin^{-1}(ax)}}$$

```
[Out] -2*FresnelS(2*arcsin(a*x)^(1/2)/Pi^(1/2))*Pi^(1/2)*(-a^2*c*x^2+c)^(1/2)/a/(
-a^2*x^2+1)^(1/2)-2*(-a^2*c*x^2+c)^(1/2)*(-a^2*x^2+1)^(1/2)/a/arcsin(a*x)^(
1/2)
```

Rubi [A] time = 0.08, antiderivative size = 98, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {4659, 4635, 4406, 12, 3305, 3351}

$$-\frac{2\sqrt{\pi}\sqrt{c-a^2cx^2}\,S\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{a\sqrt{1-a^2x^2}}-\frac{2\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}}{a\sqrt{\sin^{-1}(ax)}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[c - a^2*c*x^2]/ArcSin[a*x]^(3/2),x]
```

```
[Out] (-2*Sqrt[1 - a^2*x^2]*Sqrt[c - a^2*c*x^2])/(a*Sqrt[ArcSin[a*x]]) - (2*Sqrt[
Pi]*Sqrt[c - a^2*c*x^2]*FresnelS[(2*Sqrt[ArcSin[a*x]])/Sqrt[Pi]])/(a*Sqrt[1
 - a^2*x^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4659

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[(Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*(a + b*ArcSin[c*x])^(n + 1
))/(b*c*(n + 1)), x] + Dist[(c*(2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[
p])/(b*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a
 + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^
2*d + e, 0] && LtQ[n, -1]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sqrt{c-a^2cx^2}}{\sin^{-1}(ax)^{3/2}}\,dx &= -\frac{2\sqrt{1-a^2x^2}\,\sqrt{c-a^2cx^2}}{a\sqrt{\sin^{-1}(ax)}}-\frac{\left(4a\sqrt{c-a^2cx^2}\right)\int \frac{x}{\sqrt{\sin^{-1}(ax)}}\,dx}{\sqrt{1-a^2x^2}}\\
&= -\frac{2\sqrt{1-a^2x^2}\,\sqrt{c-a^2cx^2}}{a\sqrt{\sin^{-1}(ax)}}-\frac{\left(4\sqrt{c-a^2cx^2}\right)\mathrm{Subst}\left(\int \frac{\cos(x)\sin(x)}{\sqrt{x}}\,dx,x,\sin^{-1}(ax)\right)}{a\sqrt{1-a^2x^2}}\\
&= -\frac{2\sqrt{1-a^2x^2}\,\sqrt{c-a^2cx^2}}{a\sqrt{\sin^{-1}(ax)}}-\frac{\left(4\sqrt{c-a^2cx^2}\right)\mathrm{Subst}\left(\int \frac{\sin(2x)}{2\sqrt{x}}\,dx,x,\sin^{-1}(ax)\right)}{a\sqrt{1-a^2x^2}}\\
&= -\frac{2\sqrt{1-a^2x^2}\,\sqrt{c-a^2cx^2}}{a\sqrt{\sin^{-1}(ax)}}-\frac{\left(2\sqrt{c-a^2cx^2}\right)\mathrm{Subst}\left(\int \frac{\sin(2x)}{\sqrt{x}}\,dx,x,\sin^{-1}(ax)\right)}{a\sqrt{1-a^2x^2}}\\
&= -\frac{2\sqrt{1-a^2x^2}\,\sqrt{c-a^2cx^2}}{a\sqrt{\sin^{-1}(ax)}}-\frac{\left(4\sqrt{c-a^2cx^2}\right)\mathrm{Subst}\left(\int \sin\left(2x^2\right)dx,x,\sqrt{\sin^{-1}(ax)}\right)}{a\sqrt{1-a^2x^2}}\\
&= -\frac{2\sqrt{1-a^2x^2}\,\sqrt{c-a^2cx^2}}{a\sqrt{\sin^{-1}(ax)}}-\frac{2\sqrt{\pi}\,\sqrt{c-a^2cx^2}\,S\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{a\sqrt{1-a^2x^2}}
\end{aligned}
$$

Mathematica [A] time = 0.19, size = 83, normalized size = 0.85

$$
-\frac{\sqrt{c\left(1-a^2x^2\right)}\left(2\sqrt{\pi}\,\sqrt{\sin^{-1}(ax)}\,S\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)+\cos\left(2\sin^{-1}(ax)\right)+1\right)}{a\sqrt{1-a^2x^2}\,\sqrt{\sin^{-1}(ax)}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[c - a^2*c*x^2]/ArcSin[a*x]^(3/2),x]
```

```
[Out] -((Sqrt[c*(1 - a^2*x^2)]*(1 + Cos[2*ArcSin[a*x]] + 2*Sqrt[Pi]*Sqrt[ArcSin[a
*x]]*FresnelS[(2*Sqrt[ArcSin[a*x]])/Sqrt[Pi]]))/(a*Sqrt[1 - a^2*x^2]*Sqrt[A
rcSin[a*x]]))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-a^2cx^2+c}}{\arcsin(ax)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(-a^2*c*x^2 + c)/arcsin(a*x)^(3/2), x)
```

maple [F] time = 0.42, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-a^2c\,x^2+c}}{\arcsin(ax)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(3/2),x)
```

```
[Out] int((-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(3/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{c-a^2\,c\,x^2}}{{\mathrm{asin}\left(a\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - a^2*c*x^2)^(1/2)/asin(a*x)^(3/2),x)
```

```
[Out] int((c - a^2*c*x^2)^(1/2)/asin(a*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c\,(ax-1)\,(ax+1)}}{\operatorname{asin}^{\frac{3}{2}}(ax)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)**(1/2)/asin(a*x)**(3/2),x)
```

```
[Out] Integral(sqrt(-c*(a*x - 1)*(a*x + 1))/asin(a*x)**(3/2), x)
```

3.474 $\int \frac{1}{\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{3/2}}\,dx$

Optimal. Leaf size=42

$$-\frac{2\sqrt{1-a^2x^2}}{a\sqrt{c-a^2cx^2}\,\sqrt{\sin^{-1}(ax)}}$$

```
[Out] -2*(-a^2*x^2+1)^(1/2)/a/(-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {4643, 4641}

$$-\frac{2\sqrt{1-a^2x^2}}{a\sqrt{c-a^2cx^2}\,\sqrt{\sin^{-1}(ax)}}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^(3/2)),x]
```

```
[Out] (-2*Sqrt[1 - a^2*x^2])/(a*Sqrt[c - a^2*c*x^2]*Sqrt[ArcSin[a*x]])
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4643

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcSin[c*x])^n
/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e
, 0] && !GtQ[d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{1}{\sqrt{c-a^2cx^2}\,\sin^{-1}(ax)^{3/2}}\,dx &= \frac{\sqrt{1-a^2x^2}\int \frac{1}{\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^{3/2}}\,dx}{\sqrt{c-a^2cx^2}}\\ &= -\frac{2\sqrt{1-a^2x^2}}{a\sqrt{c-a^2cx^2}\,\sqrt{\sin^{-1}(ax)}}\end{aligned}$$

Mathematica [A] time = 0.05, size = 42, normalized size = 1.00

$$-\frac{2\sqrt{1-a^2x^2}}{a\sqrt{c-a^2cx^2}\,\sqrt{\sin^{-1}(ax)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^(3/2)),x]
```

```
[Out] (-2*Sqrt[1 - a^2*x^2])/(a*Sqrt[c - a^2*c*x^2]*Sqrt[ArcSin[a*x]])
```

fricas [A] time = 0.40, size = 48, normalized size = 1.14

$$\frac{2\sqrt{-a^2cx^2+c}\,\sqrt{-a^2x^2+1}}{\left(a^3cx^2-ac\right)\sqrt{\arcsin(ax)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(3/2),x, algorithm="fricas")
```

```
[Out] 2*sqrt(-a^2*c*x^2 + c)*sqrt(-a^2*x^2 + 1)/((a^3*c*x^2 - a*c)*sqrt(arcsin(a*
x)))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{-a^2cx^2 + c}\, \arcsin(ax)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(-a^2*c*x^2 + c)*arcsin(a*x)^(3/2)), x)
```

maple [A] time = 0.06, size = 38, normalized size = 0.90

$$-\frac{2\sqrt{-a^2x^2+1}}{\sqrt{\arcsin(ax)}\, a\sqrt{-c\left(a^2x^2-1\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(3/2),x)
```

```
[Out] -2/arcsin(a*x)^(1/2)/a/(-c*(a^2*x^2-1))^(1/2)*(-a^2*x^2+1)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{1}{\mathrm{asin}(a\,x)^{3/2}\,\sqrt{c-a^2\,c\,x^2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(asin(a*x)^(3/2)*(c - a^2*c*x^2)^(1/2)),x)
```

```
[Out] int(1/(asin(a*x)^(3/2)*(c - a^2*c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{-c(ax-1)(ax+1)}\, \operatorname{asin}^{\frac{3}{2}}(ax)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a**2*c*x**2+c)**(1/2)/asin(a*x)**(3/2),x)
```

```
[Out] Integral(1/(sqrt(-c*(a*x - 1)*(a*x + 1))*asin(a*x)**(3/2)), x)
```

3.475 $\int \frac{1}{(c-a^2cx^2)^{3/2}\sin^{-1}(ax)^{3/2}}\,dx$

Optimal. Leaf size=103

$$\frac{4a\sqrt{1-a^2x^2}\,\text{Int}\left(\frac{x}{(1-a^2x^2)^2\sqrt{\sin^{-1}(ax)}},x\right)}{c\sqrt{c-a^2cx^2}}-\frac{2\sqrt{1-a^2x^2}}{a\left(c-a^2cx^2\right)^{3/2}\sqrt{\sin^{-1}(ax)}}$$

```
[Out] -2*(-a^2*x^2+1)^(1/2)/a/(-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(1/2)+4*a*(-a^2*x^
2+1)^(1/2)*Unintegrable(x/(-a^2*x^2+1)^2/arcsin(a*x)^(1/2),x)/c/(-a^2*c*x^2
+c)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\left(c-a^2cx^2\right)^{3/2}\sin^{-1}(ax)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c - a^2*c*x^2)^(3/2)*ArcSin[a*x]^(3/2)),x]
```

```
[Out] (-2*Sqrt[1 - a^2*x^2])/(a*(c - a^2*c*x^2)^(3/2)*Sqrt[ArcSin[a*x]]) + (4*a*S
qrt[1 - a^2*x^2]*Defer[Int][x/((1 - a^2*x^2)^2*Sqrt[ArcSin[a*x]]), x])/(c*S
qrt[c - a^2*c*x^2])
```

Rubi steps

$$\int \frac{1}{\left(c-a^2cx^2\right)^{3/2}\sin^{-1}(ax)^{3/2}}\,dx=-\frac{2\sqrt{1-a^2x^2}}{a\left(c-a^2cx^2\right)^{3/2}\sqrt{\sin^{-1}(ax)}}+\frac{\left(4a\sqrt{1-a^2x^2}\right)\int\frac{x}{(1-a^2x^2)^2\sqrt{\sin^{-1}(ax)}}\,dx}{c\sqrt{c-a^2cx^2}}$$

Mathematica [A] time = 0.94, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(c-a^2cx^2\right)^{3/2}\sin^{-1}(ax)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c - a^2*c*x^2)^(3/2)*ArcSin[a*x]^(3/2)),x]
```

```
[Out] Integrate[1/((c - a^2*c*x^2)^(3/2)*ArcSin[a*x]^(3/2)), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-a^2cx^2+c\right)^{\frac{3}{2}} \arcsin(ax)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(3/2),x, algorithm="giac")
[Out] integrate(1/((-a^2*c*x^2 + c)^(3/2)*arcsin(a*x)^(3/2)), x)
```

maple [A] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-a^2c\,x^2+c\right)^{\frac{3}{2}} \arcsin(ax)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(3/2),x)
[Out] int(1/(-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(3/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(3/2),x, algorithm="maxima")
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\mathrm{asin}\left(a\,x\right)^{3/2}\,{\left(c-a^2\,c\,x^2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(asin(a*x)^(3/2)*(c - a^2*c*x^2)^(3/2)),x)
[Out] int(1/(asin(a*x)^(3/2)*(c - a^2*c*x^2)^(3/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-c\left(ax-1\right)\left(ax+1\right)\right)^{\frac{3}{2}} \operatorname{asin}^{\frac{3}{2}}(ax)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a**2*c*x**2+c)**(3/2)/asin(a*x)**(3/2),x)
[Out] Integral(1/((-c*(a*x - 1)*(a*x + 1))**(3/2)*asin(a*x)**(3/2)), x)
```

3.476 $\int \frac{1}{\left(c-a^2cx^2\right)^{5/2}\sin^{-1}(ax)^{3/2}}\,dx$

Optimal. Leaf size=103

$$\frac{8a\sqrt{1-a^2x^2}\,\mathrm{Int}\left(\frac{x}{\left(1-a^2x^2\right)^3\sqrt{\sin^{-1}(ax)}},x\right)}{c^2\sqrt{c-a^2cx^2}}-\frac{2\sqrt{1-a^2x^2}}{a\left(c-a^2cx^2\right)^{5/2}\sqrt{\sin^{-1}(ax)}}$$

```
[Out] -2*(-a^2*x^2+1)^(1/2)/a/(-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(1/2)+8*a*(-a^2*x^
2+1)^(1/2)*Unintegrable(x/(-a^2*x^2+1)^3/arcsin(a*x)^(1/2),x)/c^2/(-a^2*c*x
^2+c)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\left(c-a^2cx^2\right)^{5/2}\sin^{-1}(ax)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c - a^2*c*x^2)^(5/2)*ArcSin[a*x]^(3/2)),x]
```

```
[Out] (-2*Sqrt[1 - a^2*x^2])/(a*(c - a^2*c*x^2)^(5/2)*Sqrt[ArcSin[a*x]]) + (8*a*S
qrt[1 - a^2*x^2]*Defer[Int][x/((1 - a^2*x^2)^3*Sqrt[ArcSin[a*x]]), x])/(c^2
*Sqrt[c - a^2*c*x^2])
```

Rubi steps

$$\int \frac{1}{\left(c-a^2cx^2\right)^{5/2}\sin^{-1}(ax)^{3/2}}\,dx=-\frac{2\sqrt{1-a^2x^2}}{a\left(c-a^2cx^2\right)^{5/2}\sqrt{\sin^{-1}(ax)}}+\frac{\left(8a\sqrt{1-a^2x^2}\right)\int \frac{x}{\left(1-a^2x^2\right)^3\sqrt{\sin^{-1}(ax)}}\,dx}{c^2\sqrt{c-a^2cx^2}}$$

Mathematica [A] time = 2.21, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(c-a^2cx^2\right)^{5/2}\sin^{-1}(ax)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c - a^2*c*x^2)^(5/2)*ArcSin[a*x]^(3/2)),x]
```

```
[Out] Integrate[1/((c - a^2*c*x^2)^(5/2)*ArcSin[a*x]^(3/2)), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-a^2cx^2+c\right)^{\frac{5}{2}}\arcsin\left(ax\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(1/((-a^2*c*x^2 + c)^(5/2)*arcsin(a*x)^(3/2)), x)
```

maple [A] time = 0.58, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-a^2c\,x^2+c\right)^{\frac{5}{2}}\arcsin\left(ax\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(3/2),x)
```

```
[Out] int(1/(-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(3/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{{\mathrm{asin}\left(a\,x\right)}^{3/2}\,{\left(c-a^2\,c\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(asin(a*x)^(3/2)*(c - a^2*c*x^2)^(5/2)),x)
```

```
[Out] int(1/(asin(a*x)^(3/2)*(c - a^2*c*x^2)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a**2*c*x**2+c)**(5/2)/asin(a*x)**(3/2),x)
```

```
[Out] Timed out
```

3.477 $\int \frac{(c-a^2cx^2)^{3/2}}{\sin^{-1}(ax)^{5/2}}\,dx$

Optimal. Leaf size=206

$$-\frac{4\sqrt{2\pi}\,c\sqrt{c-a^2cx^2}\,C\left(2\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}(ax)}\right)}{3a\sqrt{1-a^2x^2}}-\frac{8\sqrt{\pi}\,c\sqrt{c-a^2cx^2}\,C\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{3a\sqrt{1-a^2x^2}}-\frac{2\sqrt{1-a^2x^2}\,\left(c-a^2cx^2\right)^{3/2}}{3a\sin^{-1}(ax)^{3/2}}+\frac{16cx\,(\ldots}{\ldots}$$

```
[Out] -2/3*(-a^2*c*x^2+c)^(3/2)*(-a^2*x^2+1)^(1/2)/a/arcsin(a*x)^(3/2)-8/3*c*Fres
nelC(2*arcsin(a*x)^(1/2)/Pi^(1/2))*Pi^(1/2)*(-a^2*c*x^2+c)^(1/2)/a/(-a^2*x^
2+1)^(1/2)-4/3*c*FresnelC(2*2^(1/2)/Pi^(1/2)*arcsin(a*x)^(1/2))*2^(1/2)*Pi^
(1/2)*(-a^2*c*x^2+c)^(1/2)/a/(-a^2*x^2+1)^(1/2)+16/3*c*x*(-a^2*x^2+1)*(-a^2
*c*x^2+c)^(1/2)/arcsin(a*x)^(1/2)
```

Rubi [A] time = 0.30, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4659, 4721, 4661, 3312, 3304, 3352, 4723, 4406}

$$-\frac{4\sqrt{2\pi}\,c\sqrt{c-a^2cx^2}\,\text{FresnelC}\left(2\sqrt{\frac{2}{\pi}}\sqrt{\sin^{-1}(ax)}\right)}{3a\sqrt{1-a^2x^2}}-\frac{8\sqrt{\pi}\,c\sqrt{c-a^2cx^2}\,\text{FresnelC}\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{3a\sqrt{1-a^2x^2}}-\frac{2\sqrt{1-a^2x^2}\,\left(c-a\ldots\right.}{3a\sin^{-1}(ax)\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(c - a^2*c*x^2)^(3/2)/ArcSin[a*x]^(5/2),x]
```

```
[Out] (-2*Sqrt[1 - a^2*x^2]*(c - a^2*c*x^2)^(3/2))/(3*a*ArcSin[a*x]^(3/2)) + (16*
c*x*(1 - a^2*x^2)*Sqrt[c - a^2*c*x^2])/(3*Sqrt[ArcSin[a*x]]) - (4*c*Sqrt[2*
Pi]*Sqrt[c - a^2*c*x^2]*FresnelC[2*Sqrt[2/Pi]*Sqrt[ArcSin[a*x]]])/(3*a*Sqrt
[1 - a^2*x^2]) - (8*c*Sqrt[Pi]*Sqrt[c - a^2*c*x^2]*FresnelC[(2*Sqrt[ArcSin[
a*x]])/Sqrt[Pi]])/(3*a*Sqrt[1 - a^2*x^2])
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4659

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[(Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*(a + b*ArcSin[c*x])^(n + 1
))/(b*c*(n + 1)), x] + Dist[(c*(2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[
p])/(b*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a
 + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^
2*d + e, 0] && LtQ[n, -1]
```

Rule 4661

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[d^p/c, Subst[Int[(a + b*x)^n*Cos[x]^(2*p + 1), x], x, ArcS
in[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IGtQ[2
*p, 0] && (IntegerQ[p] || GtQ[d, 0])
```

Rule 4721

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((f_.)*(x_))^(m_.)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^m*Sqrt[1 - c^2*x^2]*(d + e*x^2)^p
*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + (-Dist[(f*m*d^IntPart[p]*
(d + e*x^2)^FracPart[p])/(b*c*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)
^(m - 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n + 1), x], x] + Dist
[(c*(m + 2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(b*f*(n + 1)*(1 - c
^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcS
in[c*x])^(n + 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e,
 0] && LtQ[n, -1] && IGtQ[m, -3] && IGtQ[2*p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{\left(c-a^2cx^2\right)^{3/2}}{\sin^{-1}(ax)^{5/2}}\,dx = -\frac{2\sqrt{1-a^2x^2}\left(c-a^2cx^2\right)^{3/2}}{3a\sin^{-1}(ax)^{3/2}} - \frac{\left(8ac\sqrt{c-a^2cx^2}\right)\int \frac{x\left(1-a^2x^2\right)}{\sin^{-1}(ax)^{3/2}}\,dx}{3\sqrt{1-a^2x^2}}$$

$$= -\frac{2\sqrt{1-a^2x^2}\left(c-a^2cx^2\right)^{3/2}}{3a\sin^{-1}(ax)^{3/2}} + \frac{16cx\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}}{3\sqrt{\sin^{-1}(ax)}} - \frac{\left(16c\sqrt{c-a^2cx^2}\right)\int \frac{\sqrt{1-a^2x^2}}{\sqrt{\sin^{-1}(ax)}}}{3\sqrt{1-a^2x^2}}$$

$$= -\frac{2\sqrt{1-a^2x^2}\left(c-a^2cx^2\right)^{3/2}}{3a\sin^{-1}(ax)^{3/2}} + \frac{16cx\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}}{3\sqrt{\sin^{-1}(ax)}} - \frac{\left(16c\sqrt{c-a^2cx^2}\right)\text{Subst}\left(\int \text{co}\right.}{3a\sqrt{1-a^2}}$$

$$= -\frac{2\sqrt{1-a^2x^2}\left(c-a^2cx^2\right)^{3/2}}{3a\sin^{-1}(ax)^{3/2}} + \frac{16cx\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}}{3\sqrt{\sin^{-1}(ax)}} - \frac{\left(16c\sqrt{c-a^2cx^2}\right)\text{Subst}\left(\int\left(\right.\right.}{3a\sqrt{1}}$$

$$= -\frac{2\sqrt{1-a^2x^2}\left(c-a^2cx^2\right)^{3/2}}{3a\sin^{-1}(ax)^{3/2}} + \frac{16cx\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}}{3\sqrt{\sin^{-1}(ax)}} - \frac{\left(8c\sqrt{c-a^2cx^2}\right)\text{Subst}\left(\int \frac{\cos}{\sqrt{}}\right.}{3a\sqrt{1-a^2x}}$$

$$= -\frac{2\sqrt{1-a^2x^2}\left(c-a^2cx^2\right)^{3/2}}{3a\sin^{-1}(ax)^{3/2}} + \frac{16cx\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}}{3\sqrt{\sin^{-1}(ax)}} - \frac{\left(16c\sqrt{c-a^2cx^2}\right)\text{Subst}\left(\int \text{cc}\right.}{3a\sqrt{1-}}$$

$$= -\frac{2\sqrt{1-a^2x^2}\left(c-a^2cx^2\right)^{3/2}}{3a\sin^{-1}(ax)^{3/2}} + \frac{16cx\left(1-a^2x^2\right)\sqrt{c-a^2cx^2}}{3\sqrt{\sin^{-1}(ax)}} - \frac{4c\sqrt{2\pi}\sqrt{c-a^2cx^2}\,C\left(2\sqrt{\frac{2}{\pi}}\right.}{3a\sqrt{1-a^2x^2}}$$

Mathematica [C] time = 1.60, size = 251, normalized size = 1.22

$$\frac{c\sqrt{c-a^2cx^2}\left(16a^2x^2+64ax\sqrt{1-a^2x^2}\sin^{-1}(ax)-e^{-4i\sin^{-1}(ax)}-e^{4i\sin^{-1}(ax)}+8ie^{-4i\sin^{-1}(ax)}\sin^{-1}(ax)-8ie^{4i\sin^{-1}(}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c - a^2*c*x^2)^(3/2)/ArcSin[a*x]^(5/2),x]
```

```
[Out] (c*Sqrt[c - a^2*c*x^2]*(-14 - E^((-4*I)*ArcSin[a*x]) - E^((4*I)*ArcSin[a*x]
) + 16*a^2*x^2 + ((8*I)*ArcSin[a*x])/E^((4*I)*ArcSin[a*x]) - (8*I)*E^((4*I)
*ArcSin[a*x])*ArcSin[a*x] + 64*a*x*Sqrt[1 - a^2*x^2]*ArcSin[a*x] - 16*Sqrt[
2]*((-I)*ArcSin[a*x])^(3/2)*Gamma[1/2, (-2*I)*ArcSin[a*x]] - 16*Sqrt[2]*(I*
ArcSin[a*x])^(3/2)*Gamma[1/2, (2*I)*ArcSin[a*x]] - 16*((-I)*ArcSin[a*x])^(3
/2)*Gamma[1/2, (-4*I)*ArcSin[a*x]] - 16*(I*ArcSin[a*x])^(3/2)*Gamma[1/2, (4
*I)*ArcSin[a*x]]))/(24*a*Sqrt[1 - a^2*x^2]*ArcSin[a*x]^(3/2))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-a^2cx^2+c\right)^{\frac{3}{2}}}{\arcsin\left(ax\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((-a^2*c*x^2 + c)^(3/2)/arcsin(a*x)^(5/2), x)
```

maple [F] time = 0.39, size = 0, normalized size = 0.00

$$\int \frac{\left(-a^{2} c \,x^{2}+c \right)^{\frac{3}{2}}}{\arcsin \left(a x \right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(5/2),x)
```

```
[Out] int((-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(5/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c-a^2\,c\,x^2\right)}^{3/2}}{{\mathrm{asin}\left(a\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - a^2*c*x^2)^(3/2)/asin(a*x)^(5/2),x)
```

```
[Out] int((c - a^2*c*x^2)^(3/2)/asin(a*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)**(3/2)/asin(a*x)**(5/2),x)
```

```
[Out] Timed out
```

3.478 $\int \frac{\sqrt{c-a^2cx^2}}{\sin^{-1}(ax)^{5/2}}\,dx$

Optimal. Leaf size=130

$$-\frac{8\sqrt{\pi}\sqrt{c-a^2cx^2}\,C\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{3a\sqrt{1-a^2x^2}}+\frac{8x\sqrt{c-a^2cx^2}}{3\sqrt{\sin^{-1}(ax)}}-\frac{2\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}}{3a\sin^{-1}(ax)^{3/2}}$$

```
[Out] -8/3*FresnelC(2*arcsin(a*x)^(1/2)/Pi^(1/2))*Pi^(1/2)*(-a^2*c*x^2+c)^(1/2)/a
/(-a^2*x^2+1)^(1/2)-2/3*(-a^2*c*x^2+c)^(1/2)*(-a^2*x^2+1)^(1/2)/a/arcsin(a*
x)^(3/2)+8/3*x*(-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {4659, 4631, 3304, 3352}

$$-\frac{8\sqrt{\pi}\sqrt{c-a^2cx^2}\,\text{FresnelC}\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{3a\sqrt{1-a^2x^2}}+\frac{8x\sqrt{c-a^2cx^2}}{3\sqrt{\sin^{-1}(ax)}}-\frac{2\sqrt{1-a^2x^2}\sqrt{c-a^2cx^2}}{3a\sin^{-1}(ax)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[c - a^2*c*x^2]/ArcSin[a*x]^(5/2),x]
```

```
[Out] (-2*Sqrt[1 - a^2*x^2]*Sqrt[c - a^2*c*x^2])/(3*a*ArcSin[a*x]^(3/2)) + (8*x*S
qrt[c - a^2*c*x^2])/(3*Sqrt[ArcSin[a*x]]) - (8*Sqrt[Pi]*Sqrt[c - a^2*c*x^2]
*FresnelC[(2*Sqrt[ArcSin[a*x]])/Sqrt[Pi]])/(3*a*Sqrt[1 - a^2*x^2])
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4659

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[(Sqrt[1 - c^2*x^2]*(d + e*x^2)^p*(a + b*ArcSin[c*x])^(n + 1
))/(b*c*(n + 1)), x] + Dist[(c*(2*p + 1)*d^IntPart[p]*(d + e*x^2)^FracPart[
p])/(b*(n + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a
 + b*ArcSin[c*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^
2*d + e, 0] && LtQ[n, -1]
```

Rubi steps

$$\int \frac{\sqrt{c-a^2cx^2}}{\sin^{-1}(ax)^{5/2}}\,dx = -\frac{2\sqrt{1-a^2x^2}\,\sqrt{c-a^2cx^2}}{3a\sin^{-1}(ax)^{3/2}} - \frac{\left(4a\sqrt{c-a^2cx^2}\right)\int \frac{x}{\sin^{-1}(ax)^{3/2}}\,dx}{3\sqrt{1-a^2x^2}}$$

$$= -\frac{2\sqrt{1-a^2x^2}\,\sqrt{c-a^2cx^2}}{3a\sin^{-1}(ax)^{3/2}} + \frac{8x\sqrt{c-a^2cx^2}}{3\sqrt{\sin^{-1}(ax)}} - \frac{\left(8\sqrt{c-a^2cx^2}\right)\text{Subst}\left(\int \frac{\cos(2x)}{\sqrt{x}}\,dx, x, \sin^{-1}(\right.}{3a\sqrt{1-a^2x^2}}$$

$$= -\frac{2\sqrt{1-a^2x^2}\,\sqrt{c-a^2cx^2}}{3a\sin^{-1}(ax)^{3/2}} + \frac{8x\sqrt{c-a^2cx^2}}{3\sqrt{\sin^{-1}(ax)}} - \frac{\left(16\sqrt{c-a^2cx^2}\right)\text{Subst}\left(\int \cos\left(2x^2\right)\,dx, x, \sqrt{\right.}{3a\sqrt{1-a^2x^2}}$$

$$= -\frac{2\sqrt{1-a^2x^2}\,\sqrt{c-a^2cx^2}}{3a\sin^{-1}(ax)^{3/2}} + \frac{8x\sqrt{c-a^2cx^2}}{3\sqrt{\sin^{-1}(ax)}} - \frac{8\sqrt{\pi}\,\sqrt{c-a^2cx^2}\,C\left(\frac{2\sqrt{\sin^{-1}(ax)}}{\sqrt{\pi}}\right)}{3a\sqrt{1-a^2x^2}}$$

Mathematica [C] time = 0.52, size = 142, normalized size = 1.09

$$\frac{2\sqrt{c-a^2cx^2}\left(a^2x^2+4ax\sqrt{1-a^2x^2}\,\sin^{-1}(ax)-\sqrt{2}\left(-i\sin^{-1}(ax)\right)^{3/2}\Gamma\left(\frac{1}{2},-2i\sin^{-1}(ax)\right)+\frac{\sqrt{2}\,\sin^{-1}(ax)^2\Gamma\left(\frac{1}{2},2i\sin\right.}{\sqrt{i\sin^{-1}(ax)}}\right.}{3a\sqrt{1-a^2x^2}\,\sin^{-1}(ax)^{3/2}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[c - a^2*c*x^2]/ArcSin[a*x]^(5/2),x]
```

```
[Out] (2*Sqrt[c - a^2*c*x^2]*(-1 + a^2*x^2 + 4*a*x*Sqrt[1 - a^2*x^2]*ArcSin[a*x]
- Sqrt[2]*((-I)*ArcSin[a*x])^(3/2)*Gamma[1/2, (-2*I)*ArcSin[a*x]] + (Sqrt[2
]*ArcSin[a*x]^2*Gamma[1/2, (2*I)*ArcSin[a*x]])/Sqrt[I*ArcSin[a*x]]))/(3*a*S
qrt[1 - a^2*x^2]*ArcSin[a*x]^(3/2))
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-a^2cx^2+c}}{\arcsin(ax)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(-a^2*c*x^2 + c)/arcsin(a*x)^(5/2), x)
```

maple [F] time = 0.42, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-a^2c\,x^2+c}}{\arcsin(ax)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(5/2),x)
```

```
[Out] int((-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(5/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{c-a^2\,c\,x^2}}{{\mathrm{asin}\left(a\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c - a^2*c*x^2)^(1/2)/asin(a*x)^(5/2),x)
```

```
[Out] int((c - a^2*c*x^2)^(1/2)/asin(a*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c\left(ax-1\right)\left(ax+1\right)}}{\operatorname{asin}^{\frac{5}{2}}{\left(ax \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-a**2*c*x**2+c)**(1/2)/asin(a*x)**(5/2),x)
```

```
[Out] Integral(sqrt(-c*(a*x - 1)*(a*x + 1))/asin(a*x)**(5/2), x)
```

3.479 $\int \frac{1}{\sqrt{c-a^2cx^2}\sin^{-1}(ax)^{5/2}}\,dx$

Optimal. Leaf size=44

$$-\frac{2\sqrt{1-a^2x^2}}{3a\sqrt{c-a^2cx^2}\sin^{-1}(ax)^{3/2}}$$

```
[Out] -2/3*(-a^2*x^2+1)^(1/2)/a/(-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(3/2)
```

Rubi [A] time = 0.07, antiderivative size = 44, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {4643, 4641}

$$-\frac{2\sqrt{1-a^2x^2}}{3a\sqrt{c-a^2cx^2}\sin^{-1}(ax)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^(5/2)),x]
[Out] (-2*Sqrt[1 - a^2*x^2])/(3*a*Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^(3/2))
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4643

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 - c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcSin[c*x])^n
/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e
, 0] && !GtQ[d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{1}{\sqrt{c-a^2cx^2}\sin^{-1}(ax)^{5/2}}\,dx &= \frac{\sqrt{1-a^2x^2}\int \frac{1}{\sqrt{1-a^2x^2}\sin^{-1}(ax)^{5/2}}\,dx}{\sqrt{c-a^2cx^2}}\\ &= -\frac{2\sqrt{1-a^2x^2}}{3a\sqrt{c-a^2cx^2}\sin^{-1}(ax)^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.06, size = 44, normalized size = 1.00

$$-\frac{2\sqrt{1-a^2x^2}}{3a\sqrt{c-a^2cx^2}\sin^{-1}(ax)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^(5/2)),x]
[Out] (-2*Sqrt[1 - a^2*x^2])/(3*a*Sqrt[c - a^2*c*x^2]*ArcSin[a*x]^(3/2))
```

fricas [A] time = 0.48, size = 48, normalized size = 1.09

$$\frac{2\sqrt{-a^2cx^2+c}\sqrt{-a^2x^2+1}}{3\left(a^3cx^2-ac\right)\arcsin\left(ax\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*sqrt(-a^2*c*x^2 + c)*sqrt(-a^2*x^2 + 1)/((a^3*c*x^2 - a*c)*arcsin(a*x)^
(3/2))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{-a^2cx^2+c}\,\arcsin\left(ax\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(-a^2*c*x^2 + c)*arcsin(a*x)^(5/2)), x)
```

maple [A] time = 0.06, size = 38, normalized size = 0.86

$$-\frac{2\sqrt{-a^2x^2+1}}{3\arcsin\left(ax\right)^{\frac{3}{2}}\,a\sqrt{-c\left(a^2x^2-1\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(5/2),x)
```

```
[Out] -2/3/arcsin(a*x)^(3/2)/a/(-c*(a^2*x^2-1))^(1/2)*(-a^2*x^2+1)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(1/2)/arcsin(a*x)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{1}{\mathrm{asin}\left(a\,x\right)^{5/2}\,\sqrt{c-a^2\,c\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(asin(a*x)^(5/2)*(c - a^2*c*x^2)^(1/2)),x)
```

```
[Out] int(1/(asin(a*x)^(5/2)*(c - a^2*c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{-c\left(ax-1\right)\left(ax+1\right)}\,\mathrm{asin}^{\frac{5}{2}}\left(ax\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a**2*c*x**2+c)**(1/2)/asin(a*x)**(5/2),x)
```

```
[Out] Integral(1/(sqrt(-c*(a*x - 1)*(a*x + 1))*asin(a*x)**(5/2)), x)
```

3.480 $\int \frac{1}{\left(c-a^2cx^2\right)^{3/2}\sin^{-1}(ax)^{5/2}}\,dx$

Optimal. Leaf size=107

$$\frac{4a\sqrt{1-a^2x^2}\,\mathrm{Int}\left(\frac{x}{\left(1-a^2x^2\right)^2\sin^{-1}(ax)^{3/2}},x\right)}{3c\sqrt{c-a^2cx^2}}-\frac{2\sqrt{1-a^2x^2}}{3a\left(c-a^2cx^2\right)^{3/2}\sin^{-1}(ax)^{3/2}}$$

```
[Out] -2/3*(-a^2*x^2+1)^(1/2)/a/(-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(3/2)+4/3*a*(-a^
2*x^2+1)^(1/2)*Unintegrable(x/(-a^2*x^2+1)^2/arcsin(a*x)^(3/2),x)/c/(-a^2*c
*x^2+c)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\left(c-a^2cx^2\right)^{3/2}\sin^{-1}(ax)^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c - a^2*c*x^2)^(3/2)*ArcSin[a*x]^(5/2)),x]
```

```
[Out] (-2*Sqrt[1 - a^2*x^2])/(3*a*(c - a^2*c*x^2)^(3/2)*ArcSin[a*x]^(3/2)) + (4*a
*Sqrt[1 - a^2*x^2]*Defer[Int][x/((1 - a^2*x^2)^2*ArcSin[a*x]^(3/2)), x])/(3
*c*Sqrt[c - a^2*c*x^2])
```

Rubi steps

$$\int \frac{1}{\left(c-a^2cx^2\right)^{3/2}\sin^{-1}(ax)^{5/2}}\,dx=-\frac{2\sqrt{1-a^2x^2}}{3a\left(c-a^2cx^2\right)^{3/2}\sin^{-1}(ax)^{3/2}}+\frac{\left(4a\sqrt{1-a^2x^2}\right)\int \frac{x}{\left(1-a^2x^2\right)^2\sin^{-1}(ax)^{3/2}}\,dx}{3c\sqrt{c-a^2cx^2}}$$

Mathematica [A] time = 1.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(c-a^2cx^2\right)^{3/2}\sin^{-1}(ax)^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c - a^2*c*x^2)^(3/2)*ArcSin[a*x]^(5/2)),x]
```

```
[Out] Integrate[1/((c - a^2*c*x^2)^(3/2)*ArcSin[a*x]^(5/2)), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-a^2cx^2+c\right)^{\frac{3}{2}}\arcsin\left(ax\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(1/((-a^2*c*x^2 + c)^(3/2)*arcsin(a*x)^(5/2)), x)
```

maple [A] time = 0.47, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-a^2c\,x^2+c\right)^{\frac{3}{2}}\arcsin\left(ax\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(5/2),x)
```

```
[Out] int(1/(-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(5/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(3/2)/arcsin(a*x)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\mathrm{asin}\left(a\,x\right)^{5/2}\,{\left(c-a^2\,c\,x^2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(asin(a*x)^(5/2)*(c - a^2*c*x^2)^(3/2)),x)
```

```
[Out] int(1/(asin(a*x)^(5/2)*(c - a^2*c*x^2)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a**2*c*x**2+c)**(3/2)/asin(a*x)**(5/2),x)
```

```
[Out] Timed out
```

3.481 $\int \frac{1}{\left(c-a^2cx^2\right)^{5/2}\sin^{-1}(ax)^{5/2}}\,dx$

Optimal. Leaf size=107

$$\frac{8a\sqrt{1-a^2x^2}\,\mathrm{Int}\left(\frac{x}{\left(1-a^2x^2\right)^3\sin^{-1}(ax)^{3/2}},x\right)}{3c^2\sqrt{c-a^2cx^2}}-\frac{2\sqrt{1-a^2x^2}}{3a\left(c-a^2cx^2\right)^{5/2}\sin^{-1}(ax)^{3/2}}$$

```
[Out] -2/3*(-a^2*x^2+1)^(1/2)/a/(-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(3/2)+8/3*a*(-a^
2*x^2+1)^(1/2)*Unintegrable(x/(-a^2*x^2+1)^3/arcsin(a*x)^(3/2),x)/c^2/(-a^2
*c*x^2+c)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\left(c-a^2cx^2\right)^{5/2}\sin^{-1}(ax)^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c - a^2*c*x^2)^(5/2)*ArcSin[a*x]^(5/2)),x]
```

```
[Out] (-2*Sqrt[1 - a^2*x^2])/(3*a*(c - a^2*c*x^2)^(5/2)*ArcSin[a*x]^(3/2)) + (8*a
*Sqrt[1 - a^2*x^2]*Defer[Int][x/((1 - a^2*x^2)^3*ArcSin[a*x]^(3/2)), x])/(3
*c^2*Sqrt[c - a^2*c*x^2])
```

Rubi steps

$$\int \frac{1}{\left(c-a^2cx^2\right)^{5/2}\sin^{-1}(ax)^{5/2}}\,dx=-\frac{2\sqrt{1-a^2x^2}}{3a\left(c-a^2cx^2\right)^{5/2}\sin^{-1}(ax)^{3/2}}+\frac{\left(8a\sqrt{1-a^2x^2}\right)\int \frac{x}{\left(1-a^2x^2\right)^3\sin^{-1}(ax)^{3/2}}\,dx}{3c^2\sqrt{c-a^2cx^2}}$$

Mathematica [A] time = 2.11, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(c-a^2cx^2\right)^{5/2}\sin^{-1}(ax)^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c - a^2*c*x^2)^(5/2)*ArcSin[a*x]^(5/2)),x]
```

```
[Out] Integrate[1/((c - a^2*c*x^2)^(5/2)*ArcSin[a*x]^(5/2)), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(5/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [**A**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-a^2cx^2+c\right)^{\frac{5}{2}}\arcsin\left(ax\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(5/2),x, algorithm="giac")
[Out] integrate(1/((-a^2*c*x^2 + c)^(5/2)*arcsin(a*x)^(5/2)), x)
```

maple [**A**] time = 0.58, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-a^2c\,x^2+c\right)^{\frac{5}{2}}\arcsin\left(ax\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(5/2),x)
[Out] int(1/(-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(5/2),x)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a^2*c*x^2+c)^(5/2)/arcsin(a*x)^(5/2),x, algorithm="maxima")
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [**A**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\mathrm{asin}\left(a\,x\right)^{5/2}\,{\left(c-a^2\,c\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(asin(a*x)^(5/2)*(c - a^2*c*x^2)^(5/2)),x)
[Out] int(1/(asin(a*x)^(5/2)*(c - a^2*c*x^2)^(5/2)), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-a**2*c*x**2+c)**(5/2)/asin(a*x)**(5/2),x)
[Out] Timed out
```

3.482 $\int x^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n\,dx$

Optimal. Leaf size=259

$$\frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^{n+1}}{8bc^3(n+1)\sqrt{1-c^2x^2}}+\frac{i2^{-2(n+3)}e^{-\frac{4ia}{b}}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^{-n}\Gamma\left(n+1,-\frac{4i(}{}\right.}{c^3\sqrt{1-c^2x^2}}$$

```
[Out] 1/8*(a+b*arcsin(c*x))^(1+n)*(-c^2*d*x^2+d)^(1/2)/b/c^3/(1+n)/(-c^2*x^2+1)^(
1/2)+I*(a+b*arcsin(c*x))^n*GAMMA(1+n,-4*I*(a+b*arcsin(c*x))/b)*(-c^2*d*x^2+
d)^(1/2)/(2^(6+2*n))/c^3/exp(4*I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(-c^2*x^
2+1)^(1/2)-I*exp(4*I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n,4*I*(a+b*arcsin(c*x
))/b)*(-c^2*d*x^2+d)^(1/2)/(2^(6+2*n))/c^3/((I*(a+b*arcsin(c*x))/b)^n)/(-c^
2*x^2+1)^(1/2)
```

Rubi [A] time = 0.46, antiderivative size = 259, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {4725, 4723, 4406, 3307, 2181}

$$\frac{i2^{-2(n+3)}e^{-\frac{4ia}{b}}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^{-n}\text{Gamma}\left(n+1,-\frac{4i\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{c^3\sqrt{1-c^2x^2}}-\frac{i2^{-2(n+3)}e^{\frac{4ia}{b}}}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n,x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^(1 + n))/(8*b*c^3*(1 + n)*Sqrt[1 -
 c^2*x^2]) + (I*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((-4
*I)*(a + b*ArcSin[c*x]))/b])/(2^(2*(3 + n))*c^3*E^(((4*I)*a)/b)*Sqrt[1 - c^
2*x^2]*(((-I)*(a + b*ArcSin[c*x]))/b)^n) - (I*E^(((4*I)*a)/b)*Sqrt[d - c^2*
d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((4*I)*(a + b*ArcSin[c*x]))/b])/(
2^(2*(3 + n))*c^3*Sqrt[1 - c^2*x^2]*((I*(a + b*ArcSin[c*x]))/b)^n)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
```

```
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 4725

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.)*((d_) + (e_.)*(x_)^2
)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPart[p])/(1 - c^2*x
^2)^FracPart[p], Int[x^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; F
reeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p,
 -1] && IGtQ[m, 0] &&  !(IntegerQ[p] || GtQ[d, 0])
```

Rubi steps

$$\int x^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n\,dx = \frac{\sqrt{d-c^2dx^2}\int x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^n\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\sqrt{d-c^2dx^2}\,\text{Subst}\left(\int (a+bx)^n\cos^2(x)\sin^2(x)\,dx,x,\sin^{-1}(cx)\right)}{c^3\sqrt{1-c^2x^2}}$$

$$= \frac{\sqrt{d-c^2dx^2}\,\text{Subst}\left(\int\left(\frac{1}{8}(a+bx)^n-\frac{1}{8}(a+bx)^n\cos(4x)\right)dx,x,\sin^{-1}(cx$$

$$= \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^{1+n}}{8bc^3(1+n)\sqrt{1-c^2x^2}} - \frac{\sqrt{d-c^2dx^2}\,\text{Subst}\left(\int (a+bx)^n\cos(4\right.}{8c^3\sqrt{1-c^2x^2}}$$

$$= \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^{1+n}}{8bc^3(1+n)\sqrt{1-c^2x^2}} - \frac{\sqrt{d-c^2dx^2}\,\text{Subst}\left(\int e^{-4ix}(a+bx)^n\right.}{16c^3\sqrt{1-c^2x^2}}$$

$$= \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^{1+n}}{8bc^3(1+n)\sqrt{1-c^2x^2}} + \frac{i4^{-3-n}e^{-\frac{4ia}{b}}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(\right.}{}$$

Mathematica [A] time = 0.90, size = 189, normalized size = 0.73

$$\frac{d\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^n\left(\frac{8\left(a+b\sin^{-1}(cx)\right)}{bn+b}+i4^{-n}e^{-\frac{4ia}{b}}\left(\frac{\left(a+b\sin^{-1}(cx)\right)^2}{b^2}\right)^{-n}\left(\left(\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^n\Gamma\left(n+1,-\frac{4i\left(a+b\sin^{-1}(\right.}{b}\right.\right.\right.}{64c^3\sqrt{d\left(1-c^2x^2\right)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n,x]
```

```
[Out] (d*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^n*((8*(a + b*ArcSin[c*x]))/(b + b*
n) + (I*(((I*(a + b*ArcSin[c*x]))/b)^n*Gamma[1 + n, ((-4*I)*(a + b*ArcSin[c
*x]))/b] - E^(((8*I)*a)/b)*(((-I)*(a + b*ArcSin[c*x]))/b)^n*Gamma[1 + n, ((
4*I)*(a + b*ArcSin[c*x]))/b]))/(4^n*E^(((4*I)*a)/b)*((a + b*ArcSin[c*x])^2/
b^2)^n)))/(64*c^3*Sqrt[d*(1 - c^2*x^2)])
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)^n x^2, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^n,x, algorithm="fricas
")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)^n*x^2, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-c^2dx^2 + d}\,(b\arcsin{(cx)} + a)^n x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^n,x, algorithm="giac")
```

```
[Out] integrate(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)^n*x^2, x)
```

maple [F] time = 0.57, size = 0, normalized size = 0.00

$$\int x^2\sqrt{-c^2d\,x^2 + d}\;(a + b\arcsin{(cx)})^n\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^n,x)
```

```
[Out] int(x^2*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^n,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-c^2dx^2 + d}\,(b\arcsin{(cx)} + a)^n x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^n,x, algorithm="maxima
")
```

```
[Out] integrate(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)^n*x^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,(a + b\,\mathrm{asin}\,(c\,x))^n\,\sqrt{d - c^2\,d\,x^2}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c*x))^n*(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int(x^2*(a + b*asin(c*x))^n*(d - c^2*d*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2\sqrt{-d\,(cx - 1)\,(cx + 1)}\;(a + b\,\mathrm{asin}\,(cx))^n\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x))**n,x)
```

```
[Out] Integral(x**2*sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**n, x)
```

3.483 $\int x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n\,dx$

Optimal. Leaf size=391

$$-\frac{e^{-\frac{ia}{b}}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^{-n}\Gamma\left(n+1,-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{8c^2\sqrt{1-c^2x^2}}-\frac{3^{-n-1}e^{-\frac{3ia}{b}}\sqrt{d-c^2dx^2}\left(a+b\sin\right.}{}$$

```
[Out] -1/8*(a+b*arcsin(c*x))^n*GAMMA(1+n,-I*(a+b*arcsin(c*x))/b)*(-c^2*d*x^2+d)^(
1/2)/c^2/exp(I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(-c^2*x^2+1)^(1/2)-1/8*exp
(I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n,I*(a+b*arcsin(c*x))/b)*(-c^2*d*x^2+d)
^(1/2)/c^2/((I*(a+b*arcsin(c*x))/b)^n)/(-c^2*x^2+1)^(1/2)-1/8*3^(-1-n)*(a+b
*arcsin(c*x))^n*GAMMA(1+n,-3*I*(a+b*arcsin(c*x))/b)*(-c^2*d*x^2+d)^(1/2)/c^
2/exp(3*I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(-c^2*x^2+1)^(1/2)-1/8*3^(-1-n)
*exp(3*I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n,3*I*(a+b*arcsin(c*x))/b)*(-c^2*
d*x^2+d)^(1/2)/c^2/((I*(a+b*arcsin(c*x))/b)^n)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.44, antiderivative size = 391, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {4725, 4723, 4406, 3308, 2181}

$$-\frac{e^{-\frac{ia}{b}}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^{-n}\text{Gamma}\left(n+1,-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{8c^2\sqrt{1-c^2x^2}}-\frac{3^{-n-1}e^{-\frac{3ia}{b}}\sqrt{d-c^2dx^2}\left(a\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n,x]
```

```
[Out] -(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((-I)*(a + b*ArcSi
n[c*x]))/b])/(8*c^2*E^((I*a)/b)*Sqrt[1 - c^2*x^2]*(((-I)*(a + b*ArcSin[c*x]
))/b)^n) - (E^((I*a)/b)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 +
 n, (I*(a + b*ArcSin[c*x]))/b])/(8*c^2*Sqrt[1 - c^2*x^2]*((I*(a + b*ArcSin[
c*x]))/b)^n) - (3^(-1 - n)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[
1 + n, ((-3*I)*(a + b*ArcSin[c*x]))/b])/(8*c^2*E^(((3*I)*a)/b)*Sqrt[1 - c^2
*x^2]*(((-I)*(a + b*ArcSin[c*x]))/b)^n) - (3^(-1 - n)*E^(((3*I)*a)/b)*Sqrt[
d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((3*I)*(a + b*ArcSin[c*x]
))/b])/(8*c^2*Sqrt[1 - c^2*x^2]*((I*(a + b*ArcSin[c*x]))/b)^n)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 4725

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.)*((d_) + (e_.)*(x_)^2
)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPart[p])/(1 - c^2*x
^2)^FracPart[p], Int[x^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; F
reeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p,
 -1] && IGtQ[m, 0] &&  !(IntegerQ[p] || GtQ[d, 0])
```

Rubi steps

$$\int x\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n dx = \frac{\sqrt{d-c^2dx^2}\int x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^n dx}{\sqrt{1-c^2x^2}}$$
$$= \frac{\sqrt{d-c^2dx^2}\,\text{Subst}\left(\int (a+bx)^n\cos^2(x)\sin(x)\,dx,x,\sin^{-1}(cx)\right)}{c^2\sqrt{1-c^2x^2}}$$
$$= \frac{\sqrt{d-c^2dx^2}\,\text{Subst}\left(\int\left(\frac{1}{4}(a+bx)^n\sin(x)+\frac{1}{4}(a+bx)^n\sin(3x)\right)dx,x,\right.}{c^2\sqrt{1-c^2x^2}}$$
$$= \frac{\sqrt{d-c^2dx^2}\,\text{Subst}\left(\int (a+bx)^n\sin(x)\,dx,x,\sin^{-1}(cx)\right)}{4c^2\sqrt{1-c^2x^2}} + \frac{\sqrt{d-c^2dx^2}}{}$$
$$= \frac{\left(i\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int e^{-ix}(a+bx)^n\,dx,x,\sin^{-1}(cx)\right)}{8c^2\sqrt{1-c^2x^2}} - \frac{\left(i\sqrt{d-c^2dx}\right.}{}$$
$$= -\frac{e^{-\frac{ia}{b}}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^{-n}\Gamma\left(1+n,-\frac{i(a+\right.}{}}{8c^2\sqrt{1-c^2x^2}}$$

Mathematica [A] time = 0.91, size = 272, normalized size = 0.70

$$\frac{de^{-\frac{3ia}{b}}\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^n\left(3e^{\frac{2ia}{b}}\left(\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^{-n}\left(-\Gamma\left(n+1,-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)\right)-e^{\frac{2ia}{b}}\left(\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n,x]
```

```
[Out] (d*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^n*(3*E^(((2*I)*a)/b)*(-(Gamma[1 +
n, ((-I)*(a + b*ArcSin[c*x]))/b]/(((-I)*(a + b*ArcSin[c*x]))/b)^n) - (E^(((
2*I)*a)/b)*Gamma[1 + n, (I*(a + b*ArcSin[c*x]))/b])/((I*(a + b*ArcSin[c*x])
)/b)^n) - (((I*(a + b*ArcSin[c*x]))/b)^n*Gamma[1 + n, ((-3*I)*(a + b*ArcSin
[c*x]))/b] + E^(((6*I)*a)/b)*(((-I)*(a + b*ArcSin[c*x]))/b)^n*Gamma[1 + n,
((3*I)*(a + b*ArcSin[c*x]))/b])/(3^n*((a + b*ArcSin[c*x])^2/b^2)^n)))/(24*c
^2*E^(((3*I)*a)/b)*Sqrt[d*(1 - c^2*x^2)])
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)^n x, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^n,x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)^n*x, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^n,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [F] time = 0.27, size = 0, normalized size = 0.00

$$\int x\sqrt{-c^{2} d\,x^{2}+d}\;\left(a +b \arcsin \left(c x \right)\right)^{n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^n,x)
```

```
[Out] int(x*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^n,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-c^{2} d x^{2} + d} {\left(b \arcsin\left(c x\right) + a\right)}^{n} x\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^n,x, algorithm="maxima")
```

```
[Out] integrate(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)^n*x, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^n\,\sqrt{d-c^2\,d\,x^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c*x))^n*(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int(x*(a + b*asin(c*x))^n*(d - c^2*d*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x \sqrt{- d \left(c x - 1\right) \left(c x + 1\right)} \left(a + b \operatorname{asin}{\left(c x \right)}\right)^{n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x))**n,x)
```

```
[Out] Integral(x*sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**n, x)
```

3.484 $\int \sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^n\,dx$

Optimal. Leaf size=259

$$\frac{\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^{n+1}}{2bc(n+1)\sqrt{1-c^2x^2}}-\frac{i2^{-n-3}e^{-\frac{2ia}{b}}\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^{-n}\Gamma\left(n+1,-\frac{2i\left(a+\right.}{}\right.}{c\sqrt{1-c^2x^2}}$$

```
[Out] 1/2*(a+b*arcsin(c*x))^(1+n)*(-c^2*d*x^2+d)^(1/2)/b/c/(1+n)/(-c^2*x^2+1)^(1/
2)-I*2^(-3-n)*(a+b*arcsin(c*x))^n*GAMMA(1+n,-2*I*(a+b*arcsin(c*x))/b)*(-c^2
*d*x^2+d)^(1/2)/c/exp(2*I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(-c^2*x^2+1)^(1
/2)+I*2^(-3-n)*exp(2*I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n,2*I*(a+b*arcsin(c
*x))/b)*(-c^2*d*x^2+d)^(1/2)/c/((I*(a+b*arcsin(c*x))/b)^n)/(-c^2*x^2+1)^(1/
2)
```

Rubi [A] time = 0.29, antiderivative size = 259, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {4663, 4661, 3312, 3307, 2181}

$$-\frac{i2^{-n-3}e^{-\frac{2ia}{b}}\sqrt{d-c^2dx^2}\,\left(a+b\sin^{-1}(cx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^{-n}\text{Gamma}\left(n+1,-\frac{2i\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{c\sqrt{1-c^2x^2}}+\frac{i2^{-n-3}e^{\frac{2ia}{b}}\sqrt{d}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n,x]
```

```
[Out] (Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^(1 + n))/(2*b*c*(1 + n)*Sqrt[1 - c
^2*x^2]) - (I*2^(-3 - n)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1
+ n, ((-2*I)*(a + b*ArcSin[c*x]))/b])/(c*E^(((2*I)*a)/b)*Sqrt[1 - c^2*x^2]*
(((-I)*(a + b*ArcSin[c*x]))/b)^n) + (I*2^(-3 - n)*E^(((2*I)*a)/b)*Sqrt[d -
c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((2*I)*(a + b*ArcSin[c*x]))/b
])/(c*Sqrt[1 - c^2*x^2]*((I*(a + b*ArcSin[c*x]))/b)^n)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 4661

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[d^p/c, Subst[Int[(a + b*x)^n*Cos[x]^(2*p + 1), x], x, ArcS
```

```
in[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IGtQ[2
*p, 0] && (IntegerQ[p] || GtQ[d, 0])
```

Rule 4663

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[(d^(p - 1/2)*Sqrt[d + e*x^2])/Sqrt[1 - c^2*x^2], Int[(1 -
c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IGtQ[2*p, 0] &&  !(IntegerQ[p] || GtQ[d, 0])
```

Rubi steps

$$\int \sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n dx = \frac{\sqrt{d-c^2dx^2}\int \sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^n dx}{\sqrt{1-c^2x^2}}$$
$$= \frac{\sqrt{d-c^2dx^2}\,\text{Subst}\left(\int (a+bx)^n\cos^2(x)\,dx, x, \sin^{-1}(cx)\right)}{c\sqrt{1-c^2x^2}}$$
$$= \frac{\sqrt{d-c^2dx^2}\,\text{Subst}\left(\int \left(\frac{1}{2}(a+bx)^n+\frac{1}{2}(a+bx)^n\cos(2x)\right)dx, x, \sin^{-1}(cx)\right)}{c\sqrt{1-c^2x^2}}$$
$$= \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^{1+n}}{2bc(1+n)\sqrt{1-c^2x^2}}+\frac{\sqrt{d-c^2dx^2}\,\text{Subst}\left(\int (a+bx)^n\cos(2x\right.}{2c\sqrt{1-c^2x^2}}$$
$$= \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^{1+n}}{2bc(1+n)\sqrt{1-c^2x^2}}+\frac{\sqrt{d-c^2dx^2}\,\text{Subst}\left(\int e^{-2ix}(a+bx)^n dx\right.}{4c\sqrt{1-c^2x^2}}$$
$$= \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^{1+n}}{2bc(1+n)\sqrt{1-c^2x^2}}-\frac{i2^{-3-n}e^{-\frac{2ia}{b}}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx\right.}{c}$$

Mathematica [A] time = 0.83, size = 182, normalized size = 0.70

$$\frac{d\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^n\left(\frac{4a+4b\sin^{-1}(cx)}{bn+b}-i2^{-n}e^{-\frac{2ia}{b}}\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^{-n}\Gamma\left(n+1,-\frac{2i\left(a+b\sin^{-1}(cx)\right)}{b}\right)+i2^{-n}e^{\frac{2ia}{b}}\left(\right.\right.}{8c\sqrt{d\left(1-c^2x^2\right)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n,x]
```

```
[Out] (d*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^n*((4*a + 4*b*ArcSin[c*x])/(b + b*
n) - (I*Gamma[1 + n, ((-2*I)*(a + b*ArcSin[c*x]))/b])/(2^n*E^(((2*I)*a)/b)*
(((-I)*(a + b*ArcSin[c*x]))/b)^n) + (I*E^(((2*I)*a)/b)*Gamma[1 + n, ((2*I)*
(a + b*ArcSin[c*x]))/b])/(2^n*((I*(a + b*ArcSin[c*x]))/b)^n)))/(8*c*Sqrt[d*
(1 - c^2*x^2)])
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^n,x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)^n, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^n,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [F] time = 0.26, size = 0, normalized size = 0.00

$$\int \sqrt{-c^2 d\,x^2 + d}\,\,(a + b \arcsin(cx))^n\,\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^n,x)
```

```
[Out] int((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^n,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-c^2dx^2 + d}\,(b \arcsin(cx) + a)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^n,x, algorithm="maxima")
```

```
[Out] integrate(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)^n, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a + b\,\mathrm{asin}(c\,x))^n\,\sqrt{d - c^2\,d\,x^2}\,\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^n*(d - c^2*d*x^2)^(1/2),x)
```

```
[Out] int((a + b*asin(c*x))^n*(d - c^2*d*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-d\,(cx - 1)\,(cx + 1)}\,\,(a + b\,\mathrm{asin}\,(cx))^n\,\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x))**n,x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**n, x)
```

3.485 $\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n}{x}\,dx$

Optimal. Leaf size=219

$$d\mathrm{Int}\left(\frac{\left(a+b\sin^{-1}(cx)\right)^n}{x\sqrt{d-c^2dx^2}},x\right)+\frac{de^{-\frac{ia}{b}}\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^{-n}\Gamma\left(n+1,-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{2\sqrt{d-c^2dx^2}}+\frac{de^{\frac{ia}{b}}}{}$$

```
[Out] 1/2*d*(a+b*arcsin(c*x))^n*GAMMA(1+n,-I*(a+b*arcsin(c*x))/b)*(-c^2*x^2+1)^(1
/2)/exp(I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(-c^2*d*x^2+d)^(1/2)+1/2*d*exp(
I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n,I*(a+b*arcsin(c*x))/b)*(-c^2*x^2+1)^(1
/2)/((I*(a+b*arcsin(c*x))/b)^n)/(-c^2*d*x^2+d)^(1/2)+d*Unintegrable((a+b*ar
csin(c*x))^n/x/(-c^2*d*x^2+d)^(1/2),x)
```

Rubi [A] time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n)/x,x]
```

```
[Out] Defer[Int][(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n)/x, x]
```

Rubi steps

$$\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n}{x}\,dx=\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n}{x}\,dx$$

Mathematica [A] time = 0.23, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n)/x,x]
```

```
[Out] Integrate[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n)/x, x]
```

fricas [A] time = 0.55, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)^n}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^n/x,x, algorithm="fricas")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)^n/x, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^n/x,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.66, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^2 d\,x^2 + d}\;(a + b\arcsin(cx))^n}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^n/x,x)
```

```
[Out] int((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^n/x,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^2dx^2 + d}\,(b\arcsin(cx) + a)^n}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^n/x,x, algorithm="maxima")
```

```
[Out] integrate(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)^n/x, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\mathrm{asin}(c\,x))^n\,\sqrt{d - c^2\,d\,x^2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^n*(d - c^2*d*x^2)^(1/2))/x,x)
```

```
[Out] int(((a + b*asin(c*x))^n*(d - c^2*d*x^2)^(1/2))/x, x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-d\,(cx - 1)\,(cx + 1)}\;(a + b\,\mathrm{asin}(cx))^n}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x))**n/x,x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**n/x, x)
```

3.486 $\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n}{x^2}\,dx$

Optimal. Leaf size=88

$$d\text{Int}\left(\frac{\left(a+b\sin^{-1}(cx)\right)^n}{x^2\sqrt{d-c^2dx^2}},x\right)-\frac{cd\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^{n+1}}{b(n+1)\sqrt{d-c^2dx^2}}$$

```
[Out] -c*d*(a+b*arcsin(c*x))^(1+n)*(-c^2*x^2+1)^(1/2)/b/(1+n)/(-c^2*d*x^2+d)^(1/2
)+d*Unintegrable((a+b*arcsin(c*x))^n/x^2/(-c^2*d*x^2+d)^(1/2),x)
```

Rubi [A] time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n}{x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n)/x^2,x]
```

```
[Out] Defer[Int][(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n)/x^2, x]
```

Rubi steps

$$\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n}{x^2}\,dx=\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n}{x^2}\,dx$$

Mathematica [A] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n}{x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n)/x^2,x]
```

```
[Out] Integrate[(Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n)/x^2, x]
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)^n}{x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^n/x^2,x, algorithm="fricas
")
```

```
[Out] integral(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)^n/x^2, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^n/x^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.39, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^2 d\,x^2 + d}\;\left(a + b \arcsin\left(cx\right)\right)^n}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^n/x^2,x)
```

```
[Out] int((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^n/x^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-c^2 dx^2 + d}\,\left(b \arcsin\left(cx\right) + a\right)^n}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(1/2)*(a+b*arcsin(c*x))^n/x^2,x, algorithm="maxima
")
```

```
[Out] integrate(sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)^n/x^2, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a + b \operatorname{asin}\left(c\,x\right)\right)^n\,\sqrt{d - c^2\,d\,x^2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^n*(d - c^2*d*x^2)^(1/2))/x^2,x)
```

```
[Out] int(((a + b*asin(c*x))^n*(d - c^2*d*x^2)^(1/2))/x^2, x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-d\left(cx - 1\right)\left(cx + 1\right)}\;\left(a + b \operatorname{asin}\left(cx\right)\right)^n}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(1/2)*(a+b*asin(c*x))**n/x**2,x)
```

```
[Out] Integral(sqrt(-d*(c*x - 1)*(c*x + 1))*(a + b*asin(c*x))**n/x**2, x)
```

3.487 $\int x^2 \left(d-c^2 d x^2\right)^{3/2} \left(a+b \sin^{-1}(cx)\right)^n \, dx$

Optimal. Leaf size=684

$$\frac{d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^{n+1}}{16bc^3(n+1)\sqrt{1-c^2x^2}}-\frac{id2^{-n-7}e^{-\frac{2ia}{b}}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^{-n}\Gamma\left(n+1,-\frac{2i\left(a+b\right.}{}\right.}{c^3\sqrt{1-c^2x^2}}$$

```
[Out] 1/16*d*(a+b*arcsin(c*x))^(1+n)*(-c^2*d*x^2+d)^(1/2)/b/c^3/(1+n)/(-c^2*x^2+1
)^(1/2)-I*2^(-7-n)*d*(a+b*arcsin(c*x))^n*GAMMA(1+n,-2*I*(a+b*arcsin(c*x))/b
)*(-c^2*d*x^2+d)^(1/2)/c^3/exp(2*I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(-c^2*
x^2+1)^(1/2)+I*2^(-7-n)*d*exp(2*I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n,2*I*(a
+b*arcsin(c*x))/b)*(-c^2*d*x^2+d)^(1/2)/c^3/((I*(a+b*arcsin(c*x))/b)^n)/(-c
^2*x^2+1)^(1/2)+I*2^(-7-2*n)*d*(a+b*arcsin(c*x))^n*GAMMA(1+n,-4*I*(a+b*arcs
in(c*x))/b)*(-c^2*d*x^2+d)^(1/2)/c^3/exp(4*I*a/b)/((-I*(a+b*arcsin(c*x))/b)
^n)/(-c^2*x^2+1)^(1/2)-I*2^(-7-2*n)*d*exp(4*I*a/b)*(a+b*arcsin(c*x))^n*GAMM
A(1+n,4*I*(a+b*arcsin(c*x))/b)*(-c^2*d*x^2+d)^(1/2)/c^3/((I*(a+b*arcsin(c*x
))/b)^n)/(-c^2*x^2+1)^(1/2)+I*2^(-7-n)*3^(-1-n)*d*(a+b*arcsin(c*x))^n*GAMMA
(1+n,-6*I*(a+b*arcsin(c*x))/b)*(-c^2*d*x^2+d)^(1/2)/c^3/exp(6*I*a/b)/((-I*(
a+b*arcsin(c*x))/b)^n)/(-c^2*x^2+1)^(1/2)-I*2^(-7-n)*3^(-1-n)*d*exp(6*I*a/b
)*(a+b*arcsin(c*x))^n*GAMMA(1+n,6*I*(a+b*arcsin(c*x))/b)*(-c^2*d*x^2+d)^(1/
2)/c^3/((I*(a+b*arcsin(c*x))/b)^n)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.81, antiderivative size = 684, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {4725, 4723, 4406, 3307, 2181}

$$-\frac{id2^{-n-7}e^{-\frac{2ia}{b}}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^{-n}\text{Gamma}\left(n+1,-\frac{2i\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{c^3\sqrt{1-c^2x^2}}+\frac{id2^{-2n-7}e^{-\frac{4ia}{b}}\sqrt{}}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^n,x]
```

```
[Out] (d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^(1 + n))/(16*b*c^3*(1 + n)*Sqrt[
1 - c^2*x^2]) - (I*2^(-7 - n)*d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*G
amma[1 + n, ((-2*I)*(a + b*ArcSin[c*x]))/b])/(c^3*E^(((2*I)*a)/b)*Sqrt[1 -
c^2*x^2]*(((-I)*(a + b*ArcSin[c*x]))/b)^n) + (I*2^(-7 - n)*d*E^(((2*I)*a)/b
)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((2*I)*(a + b*ArcS
in[c*x]))/b])/(c^3*Sqrt[1 - c^2*x^2]*((I*(a + b*ArcSin[c*x]))/b)^n) + (I*2^
(-7 - 2*n)*d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((-4*I)
*(a + b*ArcSin[c*x]))/b])/(c^3*E^(((4*I)*a)/b)*Sqrt[1 - c^2*x^2]*(((-I)*(a
+ b*ArcSin[c*x]))/b)^n) - (I*2^(-7 - 2*n)*d*E^(((4*I)*a)/b)*Sqrt[d - c^2*d*
x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((4*I)*(a + b*ArcSin[c*x]))/b])/(c^
3*Sqrt[1 - c^2*x^2]*((I*(a + b*ArcSin[c*x]))/b)^n) + (I*2^(-7 - n)*3^(-1 -
n)*d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((-6*I)*(a + b*
ArcSin[c*x]))/b])/(c^3*E^(((6*I)*a)/b)*Sqrt[1 - c^2*x^2]*(((-I)*(a + b*ArcS
in[c*x]))/b)^n) - (I*2^(-7 - n)*3^(-1 - n)*d*E^(((6*I)*a)/b)*Sqrt[d - c^2*d
*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((6*I)*(a + b*ArcSin[c*x]))/b])/(c
^3*Sqrt[1 - c^2*x^2]*((I*(a + b*ArcSin[c*x]))/b)^n)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 4725

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.)*((d_) + (e_.)*(x_)^2
)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPart[p])/(1 - c^2*x
^2)^FracPart[p], Int[x^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; F
reeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p,
 -1] && IGtQ[m, 0] &&  !(IntegerQ[p] || GtQ[d, 0])
```

Rubi steps

$$\int x^2\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^n\,dx=\frac{\left(d\sqrt{d-c^2dx^2}\right)\int x^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^n\,dx}{\sqrt{1-c^2x^2}}$$

$$=\frac{\left(d\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int(a+bx)^n\cos^4(x)\sin^2(x)\,dx,x,\sin^{-1}(cx)\right)}{c^3\sqrt{1-c^2x^2}}$$

$$=\frac{\left(d\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int\left(\frac{1}{16}(a+bx)^n+\frac{1}{32}(a+bx)^n\cos(2x)-\frac{1}{16}(\ldots\right.\right.}{c^3\sqrt{1-c^2x\ldots}}$$

$$=\frac{d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^{1+n}}{16bc^3(1+n)\sqrt{1-c^2x^2}}+\frac{\left(d\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int(a+\ldots\right.}{32c^3\sqrt{1\ldots}}$$

$$=\frac{d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^{1+n}}{16bc^3(1+n)\sqrt{1-c^2x^2}}+\frac{\left(d\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int e^{-2i\ldots}\right.}{64c^3\sqrt{1-\ldots}}$$

$$=\frac{d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^{1+n}}{16bc^3(1+n)\sqrt{1-c^2x^2}}-\frac{i2^{-7-n}de^{-\frac{2ia}{b}}\sqrt{d-c^2dx^2}\left(a+\ldots\right.}{\ldots}$$

Mathematica [A] time = 3.57, size = 436, normalized size = 0.64

$$d^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^n\left(3i2^{-n}e^{-\frac{2ia}{b}}\left(\frac{\left(a+b\sin^{-1}(cx)\right)^2}{b^2}\right)^{-n}\left(e^{\frac{4ia}{b}}\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^n\Gamma\left(n+1,\frac{2i\left(a+b\sin^{-1}(cx)\right)}{b}\right)-\ldots\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^n,x]
```

```
[Out] (d^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^n*((24*(a + b*ArcSin[c*x]))/(b +
 b*n) + ((3*I)*(-(((I*(a + b*ArcSin[c*x]))/b)^n*Gamma[1 + n, ((-2*I)*(a + b
*ArcSin[c*x]))/b]) + E^(((4*I)*a)/b)*(((-I)*(a + b*ArcSin[c*x]))/b)^n*Gamma
[1 + n, ((2*I)*(a + b*ArcSin[c*x]))/b]))/(2^n*E^(((2*I)*a)/b)*((a + b*ArcSi
n[c*x])^2/b^2)^n) + ((3*I)*(((I*(a + b*ArcSin[c*x]))/b)^n*Gamma[1 + n, ((-4
*I)*(a + b*ArcSin[c*x]))/b] - E^(((8*I)*a)/b)*(((-I)*(a + b*ArcSin[c*x]))/b
)^n*Gamma[1 + n, ((4*I)*(a + b*ArcSin[c*x]))/b]))/(4^n*E^(((4*I)*a)/b)*((a
+ b*ArcSin[c*x])^2/b^2)^n) + (I*(((I*(a + b*ArcSin[c*x]))/b)^n*Gamma[1 + n,
 ((-6*I)*(a + b*ArcSin[c*x]))/b] - E^(((12*I)*a)/b)*(((-I)*(a + b*ArcSin[c*
x]))/b)^n*Gamma[1 + n, ((6*I)*(a + b*ArcSin[c*x]))/b]))/(6^n*E^(((6*I)*a)/b
)*((a + b*ArcSin[c*x])^2/b^2)^n)))/(384*c^3*Sqrt[d - c^2*d*x^2])
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(c^2dx^4-dx^2\right)\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)^n,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^n,x, algorithm="fricas
")
```

```
[Out] integral(-(c^2*d*x^4 - d*x^2)*sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)^n, x
)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(-c^2dx^2+d\right)^{\frac{3}{2}}(b\arcsin(cx)+a)^nx^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^n,x, algorithm="giac")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(3/2)*(b*arcsin(c*x) + a)^n*x^2, x)
```

maple [F] time = 0.47, size = 0, normalized size = 0.00

$$\int x^2\left(-c^2d\,x^2+d\right)^{\frac{3}{2}}\left(a+b\arcsin(cx)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^n,x)
```

```
[Out] int(x^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^n,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(-c^2dx^2+d\right)^{\frac{3}{2}}(b\arcsin(cx)+a)^nx^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^n,x, algorithm="maxima
")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(3/2)*(b*arcsin(c*x) + a)^n*x^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2 (a + b \operatorname{asin}(c x))^n \left(d - c^2 d x^2\right)^{3/2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c*x))^n*(d - c^2*d*x^2)^(3/2),x)
[Out] int(x^2*(a + b*asin(c*x))^n*(d - c^2*d*x^2)^(3/2), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))**n,x)
[Out] Exception raised: HeuristicGCDFailed
```

3.488 $\int x \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right)^n \, dx$

Optimal. Leaf size=595

$$-\frac{de^{-\frac{ia}{b}}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n\left(-\frac{i(a+b\sin^{-1}(cx))}{b}\right)^{-n}\Gamma\left(n+1,-\frac{i(a+b\sin^{-1}(cx))}{b}\right)}{16c^2\sqrt{1-c^2x^2}}-\frac{d3^{-n}e^{-\frac{3ia}{b}}\sqrt{d-c^2dx^2}\left(a+b\sin\right.}{}$$

```
[Out] -1/16*d*(a+b*arcsin(c*x))^n*GAMMA(1+n,-I*(a+b*arcsin(c*x))/b)*(-c^2*d*x^2+d
)^(1/2)/c^2/exp(I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(-c^2*x^2+1)^(1/2)-1/16
*d*exp(I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n,I*(a+b*arcsin(c*x))/b)*(-c^2*d*
x^2+d)^(1/2)/c^2/((I*(a+b*arcsin(c*x))/b)^n)/(-c^2*x^2+1)^(1/2)-1/32*d*(a+b
*arcsin(c*x))^n*GAMMA(1+n,-3*I*(a+b*arcsin(c*x))/b)*(-c^2*d*x^2+d)^(1/2)/(3
^n)/c^2/exp(3*I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(-c^2*x^2+1)^(1/2)-1/32*d
*exp(3*I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n,3*I*(a+b*arcsin(c*x))/b)*(-c^2*
d*x^2+d)^(1/2)/(3^n)/c^2/((I*(a+b*arcsin(c*x))/b)^n)/(-c^2*x^2+1)^(1/2)-1/3
2*5^(-1-n)*d*(a+b*arcsin(c*x))^n*GAMMA(1+n,-5*I*(a+b*arcsin(c*x))/b)*(-c^2*
d*x^2+d)^(1/2)/c^2/exp(5*I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(-c^2*x^2+1)^(
1/2)-1/32*5^(-1-n)*d*exp(5*I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n,5*I*(a+b*ar
csin(c*x))/b)*(-c^2*d*x^2+d)^(1/2)/c^2/((I*(a+b*arcsin(c*x))/b)^n)/(-c^2*x^
2+1)^(1/2)
```

Rubi [A] time = 0.59, antiderivative size = 595, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {4725, 4723, 4406, 3308, 2181}

$$-\frac{de^{-\frac{ia}{b}}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n\left(-\frac{i(a+b\sin^{-1}(cx))}{b}\right)^{-n}\text{Gamma}\left(n+1,-\frac{i(a+b\sin^{-1}(cx))}{b}\right)}{16c^2\sqrt{1-c^2x^2}}-\frac{d3^{-n}e^{-\frac{3ia}{b}}\sqrt{d-c^2dx^2}\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[x*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^n,x]
```

```
[Out] -(d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((-I)*(a + b*Arc
Sin[c*x]))/b])/(16*c^2*E^((I*a)/b)*Sqrt[1 - c^2*x^2]*(((-I)*(a + b*ArcSin[c
*x]))/b)^n) - (d*E^((I*a)/b)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamm
a[1 + n, (I*(a + b*ArcSin[c*x]))/b])/(16*c^2*Sqrt[1 - c^2*x^2]*((I*(a + b*A
rcSin[c*x]))/b)^n) - (d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 +
 n, ((-3*I)*(a + b*ArcSin[c*x]))/b])/(32*3^n*c^2*E^(((3*I)*a)/b)*Sqrt[1 - c
^2*x^2]*(((-I)*(a + b*ArcSin[c*x]))/b)^n) - (d*E^(((3*I)*a)/b)*Sqrt[d - c^2
*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((3*I)*(a + b*ArcSin[c*x]))/b])/
(32*3^n*c^2*Sqrt[1 - c^2*x^2]*((I*(a + b*ArcSin[c*x]))/b)^n) - (5^(-1 - n)*
d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((-5*I)*(a + b*Arc
Sin[c*x]))/b])/(32*c^2*E^(((5*I)*a)/b)*Sqrt[1 - c^2*x^2]*(((-I)*(a + b*ArcS
in[c*x]))/b)^n) - (5^(-1 - n)*d*E^(((5*I)*a)/b)*Sqrt[d - c^2*d*x^2]*(a + b*
ArcSin[c*x])^n*Gamma[1 + n, ((5*I)*(a + b*ArcSin[c*x]))/b])/(32*c^2*Sqrt[1
- c^2*x^2]*((I*(a + b*ArcSin[c*x]))/b)^n)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 4725

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.)*((d_) + (e_.)*(x_)^2
)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPart[p])/(1 - c^2*x
^2)^FracPart[p], Int[x^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; F
reeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p,
 -1] && IGtQ[m, 0] &&  !(IntegerQ[p] || GtQ[d, 0])
```

Rubi steps

$$\int x\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^n\,dx=\frac{\left(d\sqrt{d-c^2dx^2}\right)\int x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^n\,dx}{\sqrt{1-c^2x^2}}$$
$$=\frac{\left(d\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int(a+bx)^n\cos^4(x)\sin(x)\,dx,x,\sin^{-1}(cx)\right)}{c^2\sqrt{1-c^2x^2}}$$
$$=\frac{\left(d\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int\left(\frac{1}{8}(a+bx)^n\sin(x)+\frac{3}{16}(a+bx)^n\sin(3x)\right.\right.}{c^2\sqrt{1-c^2x^2}}$$
$$=\frac{\left(d\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int(a+bx)^n\sin(5x)\,dx,x,\sin^{-1}(cx)\right)}{16c^2\sqrt{1-c^2x^2}}+\frac{\left(d\sqrt{d}\right.}{}$$
$$=\frac{\left(id\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int e^{-5ix}(a+bx)^n\,dx,x,\sin^{-1}(cx)\right)}{32c^2\sqrt{1-c^2x^2}}-\frac{\left(id\sqrt{d}\right.}{}$$
$$=-\frac{de^{-\frac{ia}{b}}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^{-n}\Gamma\left(1+n,\right.}{16c^2\sqrt{1-c^2x^2}}$$

Mathematica [A] time = 2.41, size = 464, normalized size = 0.78

$$-\frac{d^2 15^{-n-1}e^{-\frac{5ia}{b}}\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^n\left(\frac{\left(a+b\sin^{-1}(cx)\right)^2}{b^2}\right)^{-3n}\left(\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^n\left(2\,15^{n+1}e^{\frac{6ia}{b}}\left(\frac{\left(a+b\sin^{-1}(cx)\right)^2}{b^2}\right)^{2}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^n,x]
```

```
[Out] -1/32*(15^(-1 - n)*d^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^n*(2*15^(1 + n
)*E^(((4*I)*a)/b)*((I*(a + b*ArcSin[c*x]))/b)^n*((a + b*ArcSin[c*x])^2/b^2)
^(2*n)*Gamma[1 + n, ((-I)*(a + b*ArcSin[c*x]))/b] + (((-I)*(a + b*ArcSin[c*
x]))/b)^n*(2*15^(1 + n)*E^(((6*I)*a)/b)*((a + b*ArcSin[c*x])^2/b^2)^(2*n)*G
amma[1 + n, (I*(a + b*ArcSin[c*x]))/b] + 3*(5^(1 + n)*E^(((2*I)*a)/b)*((I*(
a + b*ArcSin[c*x]))/b)^(2*n)*((a + b*ArcSin[c*x])^2/b^2)^n*Gamma[1 + n, ((-
3*I)*(a + b*ArcSin[c*x]))/b] + 5^(1 + n)*E^(((8*I)*a)/b)*((a + b*ArcSin[c*x
])^2/b^2)^(2*n)*Gamma[1 + n, ((3*I)*(a + b*ArcSin[c*x]))/b] + 3^n*((((-I)*(
a + b*ArcSin[c*x]))/b)^n*((I*(a + b*ArcSin[c*x]))/b)^(3*n)*Gamma[1 + n, ((-
5*I)*(a + b*ArcSin[c*x]))/b] + E^(((10*I)*a)/b)*((a + b*ArcSin[c*x])^2/b^2)
^(2*n)*Gamma[1 + n, ((5*I)*(a + b*ArcSin[c*x]))/b]))))/(c^2*E^(((5*I)*a)/b
)*Sqrt[d - c^2*d*x^2]*((a + b*ArcSin[c*x])^2/b^2)^(3*n))
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(c^{2} d x^{3} - d x\right) \sqrt{-c^{2} d x^{2} + d} \left(b \arcsin\left(c x\right) + a\right)^{n}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^n,x, algorithm="fricas")
```

```
[Out] integral(-(c^2*d*x^3 - d*x)*sqrt(-c^2*d*x^2 + d)*(b*arcsin(c*x) + a)^n, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^n,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [F] time = 0.19, size = 0, normalized size = 0.00

$$\int x \left(-c^{2} d \,x^{2}+d \right)^{\frac{3}{2}} \left(a +b \arcsin \left(c x \right)\right)^{n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^n,x)
```

```
[Out] int(x*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^n,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int {\left(-c^{2} d x^{2} + d\right)}^{\frac{3}{2}} {\left(b \arcsin\left(c x\right) + a\right)}^{n} x \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^n,x, algorithm="maxima")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(3/2)*(b*arcsin(c*x) + a)^n*x, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^n\,{\left(d-c^2\,d\,x^2\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c*x))^n*(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int(x*(a + b*asin(c*x))^n*(d - c^2*d*x^2)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))**n,x)
```

```
[Out] Timed out
```

3.489 $\int \left(d-c^2dx^2\right)^{3/2} \left(a+b\sin^{-1}(cx)\right)^n \, dx$

Optimal. Leaf size=466

$$\frac{3d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^{n+1}}{8bc(n+1)\sqrt{1-c^2x^2}}-\frac{id2^{-n-3}e^{-\frac{2ia}{b}}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^{-n}\Gamma\left(n+1,-\frac{2i(a-}{}\right.}{c\sqrt{1-c^2x^2}}$$

```
[Out] 3/8*d*(a+b*arcsin(c*x))^(1+n)*(-c^2*d*x^2+d)^(1/2)/b/c/(1+n)/(-c^2*x^2+1)^(
1/2)-I*2^(-3-n)*d*(a+b*arcsin(c*x))^n*GAMMA(1+n,-2*I*(a+b*arcsin(c*x))/b)*(
-c^2*d*x^2+d)^(1/2)/c/exp(2*I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(-c^2*x^2+1
)^(1/2)+I*2^(-3-n)*d*exp(2*I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n,2*I*(a+b*ar
csin(c*x))/b)*(-c^2*d*x^2+d)^(1/2)/c/((I*(a+b*arcsin(c*x))/b)^n)/(-c^2*x^2+
1)^(1/2)-I*d*(a+b*arcsin(c*x))^n*GAMMA(1+n,-4*I*(a+b*arcsin(c*x))/b)*(-c^2*
d*x^2+d)^(1/2)/(2^(6+2*n))/c/exp(4*I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(-c^
2*x^2+1)^(1/2)+I*d*exp(4*I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n,4*I*(a+b*arcs
in(c*x))/b)*(-c^2*d*x^2+d)^(1/2)/(2^(6+2*n))/c/((I*(a+b*arcsin(c*x))/b)^n)/
(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.41, antiderivative size = 466, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {4663, 4661, 3312, 3307, 2181}

$$-\frac{id2^{-n-3}e^{-\frac{2ia}{b}}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^{-n}\text{Gamma}\left(n+1,-\frac{2i\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{c\sqrt{1-c^2x^2}}-\frac{id2^{-2(n+3)}e^{-\frac{4ia}{b}}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^n,x]
```

```
[Out] (3*d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^(1 + n))/(8*b*c*(1 + n)*Sqrt[1
 - c^2*x^2]) - (I*2^(-3 - n)*d*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Ga
mma[1 + n, ((-2*I)*(a + b*ArcSin[c*x]))/b])/(c*E^(((2*I)*a)/b)*Sqrt[1 - c^2
*x^2]*(((-I)*(a + b*ArcSin[c*x]))/b)^n) + (I*2^(-3 - n)*d*E^(((2*I)*a)/b)*S
qrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((2*I)*(a + b*ArcSin[
c*x]))/b])/(c*Sqrt[1 - c^2*x^2]*((I*(a + b*ArcSin[c*x]))/b)^n) - (I*d*Sqrt[
d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((-4*I)*(a + b*ArcSin[c*x
]))/b])/(2^(2*(3 + n))*c*E^(((4*I)*a)/b)*Sqrt[1 - c^2*x^2]*(((-I)*(a + b*Ar
cSin[c*x]))/b)^n) + (I*d*E^(((4*I)*a)/b)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[
c*x])^n*Gamma[1 + n, ((4*I)*(a + b*ArcSin[c*x]))/b])/(2^(2*(3 + n))*c*Sqrt[
1 - c^2*x^2]*((I*(a + b*ArcSin[c*x]))/b)^n)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 4661

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[d^p/c, Subst[Int[(a + b*x)^n*Cos[x]^(2*p + 1), x], x, ArcS
in[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IGtQ[2
*p, 0] && (IntegerQ[p] || GtQ[d, 0])
```

Rule 4663

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[(d^(p - 1/2)*Sqrt[d + e*x^2])/Sqrt[1 - c^2*x^2], Int[(1 -
c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IGtQ[2*p, 0] &&  !(IntegerQ[p] || GtQ[d, 0])
```

Rubi steps

$$\int \left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^n\,dx = \frac{\left(d\sqrt{d-c^2dx^2}\right)\int \left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^n\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int (a+bx)^n\cos^4(x)\,dx, x, \sin^{-1}(cx)\right)}{c\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int \left(\frac{3}{8}(a+bx)^n+\frac{1}{2}(a+bx)^n\cos(2x)+\frac{1}{8}(a+b\right.\right.}{c\sqrt{1-c^2x^2}}$$

$$= \frac{3d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^{1+n}}{8bc(1+n)\sqrt{1-c^2x^2}} + \frac{\left(d\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int (a+b\right.}{8c\sqrt{1-}}$$

$$= \frac{3d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^{1+n}}{8bc(1+n)\sqrt{1-c^2x^2}} + \frac{\left(d\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int e^{-4ix}(\right.}{16c\sqrt{1-}}$$

$$= \frac{3d\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^{1+n}}{8bc(1+n)\sqrt{1-c^2x^2}} - \frac{i2^{-3-n}de^{-\frac{2ia}{b}}\sqrt{d-c^2dx^2}\left(a+b\right.}{}$$

Mathematica [A] time = 1.99, size = 326, normalized size = 0.70

$$\frac{d^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^n\left(i4^{-n}e^{-\frac{4ia}{b}}\left(\frac{\left(a+b\sin^{-1}(cx)\right)^2}{b^2}\right)^{-n}\left(e^{\frac{8ia}{b}}\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^n\Gamma\left(n+1,\frac{4i\left(a+b\sin^{-1}(cx)\right)}{b}\right)-\left(\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^n,x]
```

```
[Out] (d^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^n*((-8*(a + b*ArcSin[c*x]))/(b +
 b*n) + 8*((4*a + 4*b*ArcSin[c*x])/(b + b*n) - (I*Gamma[1 + n, ((-2*I)*(a +
 b*ArcSin[c*x]))/b])/(2^n*E^(((2*I)*a)/b)*(((-I)*(a + b*ArcSin[c*x]))/b)^n)
 + (I*E^(((2*I)*a)/b)*Gamma[1 + n, ((2*I)*(a + b*ArcSin[c*x]))/b])/(2^n*((I
*(a + b*ArcSin[c*x]))/b)^n)) + (I*(-(((I*(a + b*ArcSin[c*x]))/b)^n*Gamma[1
+ n, ((-4*I)*(a + b*ArcSin[c*x]))/b]) + E^(((8*I)*a)/b)*(((-I)*(a + b*ArcSi
```

```
n[c*x]))/b)^n*Gamma[1 + n, ((4*I)*(a + b*ArcSin[c*x]))/b]))/(4^n*E^(((4*I)*
a)/b)*((a + b*ArcSin[c*x])^2/b^2)^n)))/(64*c*Sqrt[d - c^2*d*x^2])
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(-c^2dx^2+d\right)^{\frac{3}{2}}(b\arcsin(cx)+a)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^n,x, algorithm="fricas")
```

```
[Out] integral((-c^2*d*x^2 + d)^(3/2)*(b*arcsin(c*x) + a)^n, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^n,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [F] time = 0.14, size = 0, normalized size = 0.00

$$\int \left(-c^2d\,x^2+d\right)^{\frac{3}{2}} \left(a+b\arcsin(cx)\right)^n \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^n,x)
```

```
[Out] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^n,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-c^2dx^2+d\right)^{\frac{3}{2}}(b\arcsin(cx)+a)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^n,x, algorithm="maxima")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(3/2)*(b*arcsin(c*x) + a)^n, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,\mathrm{asin}(c\,x))^n\,\left(d-c^2\,d\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^n*(d - c^2*d*x^2)^(3/2),x)
```

```
[Out] int((a + b*asin(c*x))^n*(d - c^2*d*x^2)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))**n,x)
```

```
[Out] Timed out
```

3.490 $\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^n}{x}\,dx$

Optimal. Leaf size=427

$$d^2\mathrm{Int}\left(\frac{\left(a+b\sin^{-1}(cx)\right)^n}{x\sqrt{d-c^2dx^2}},x\right)+\frac{5d^2e^{-\frac{ia}{b}}\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^{-n}\Gamma\left(n+1,-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{8\sqrt{d-c^2dx^2}}$$

```
[Out] 5/8*d^2*(a+b*arcsin(c*x))^n*GAMMA(1+n,-I*(a+b*arcsin(c*x))/b)*(-c^2*x^2+1)^
(1/2)/exp(I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(-c^2*d*x^2+d)^(1/2)+5/8*d^2*
exp(I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n,I*(a+b*arcsin(c*x))/b)*(-c^2*x^2+1
)^(1/2)/((I*(a+b*arcsin(c*x))/b)^n)/(-c^2*d*x^2+d)^(1/2)+1/8*3^(-1-n)*d^2*(
a+b*arcsin(c*x))^n*GAMMA(1+n,-3*I*(a+b*arcsin(c*x))/b)*(-c^2*x^2+1)^(1/2)/e
xp(3*I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(-c^2*d*x^2+d)^(1/2)+1/8*3^(-1-n)*
d^2*exp(3*I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n,3*I*(a+b*arcsin(c*x))/b)*(-c
^2*x^2+1)^(1/2)/((I*(a+b*arcsin(c*x))/b)^n)/(-c^2*d*x^2+d)^(1/2)+d^2*Uninte
grable((a+b*arcsin(c*x))^n/x/(-c^2*d*x^2+d)^(1/2),x)
```

Rubi [A] time = 0.16, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^n}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^n)/x,x]
[Out] Defer[Int][((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^n)/x, x]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^n}{x}\,dx=\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^n}{x}\,dx$$

Mathematica [A] time = 0.24, size = 0, normalized size = 0.00

$$\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^n}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^n)/x,x]
[Out] Integrate[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^n)/x, x]
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(-c^2dx^2+d\right)^{\frac{3}{2}}\left(b\arcsin(cx)+a\right)^n}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^n/x,x, algorithm="fricas")
```

```
[Out] integral((-c^2*d*x^2 + d)^(3/2)*(b*arcsin(c*x) + a)^n/x, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^n/x,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.28, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^{2} d \,x^{2}+d \right)^{\frac{3}{2}} \left(a +b \arcsin \left(c x \right)\right)^{n}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^n/x,x)
```

```
[Out] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^n/x,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{{\left(-c^{2} d x^{2} + d\right)}^{\frac{3}{2}} {\left(b \arcsin\left(c x\right) + a\right)}^{n}}{x}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^n/x,x, algorithm="maxima")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(3/2)*(b*arcsin(c*x) + a)^n/x, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^n\,{\left(d-c^2\,d\,x^2\right)}^{3/2}}{x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^n*(d - c^2*d*x^2)^(3/2))/x,x)
```

```
[Out] int(((a + b*asin(c*x))^n*(d - c^2*d*x^2)^(3/2))/x, x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(- d \left(c x - 1\right) \left(c x + 1\right)\right)^{\frac{3}{2}} \left(a + b \operatorname{asin}{\left(c x \right)}\right)^{n}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))**n/x,x)
```

```
[Out] Integral((-d*(c*x - 1)*(c*x + 1))**(3/2)*(a + b*asin(c*x))**n/x, x)
```

3.491 $\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^n}{x^2}\,dx$

Optimal. Leaf size=298

$$d^2\text{Int}\left(\frac{\left(a+b\sin^{-1}(cx)\right)^n}{x^2\sqrt{d-c^2dx^2}},x\right)-\frac{3cd^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^{n+1}}{2b(n+1)\sqrt{d-c^2dx^2}}+\frac{icd^22^{-n-3}e^{-\frac{2ia}{b}}\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^{n}}{\sqrt{d-}}$$

```
[Out] -3/2*c*d^2*(a+b*arcsin(c*x))^(1+n)*(-c^2*x^2+1)^(1/2)/b/(1+n)/(-c^2*d*x^2+d
)^(1/2)+I*2^(-3-n)*c*d^2*(a+b*arcsin(c*x))^n*GAMMA(1+n,-2*I*(a+b*arcsin(c*x
))/b)*(-c^2*x^2+1)^(1/2)/exp(2*I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(-c^2*d*
x^2+d)^(1/2)-I*2^(-3-n)*c*d^2*exp(2*I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n,2*
I*(a+b*arcsin(c*x))/b)*(-c^2*x^2+1)^(1/2)/((I*(a+b*arcsin(c*x))/b)^n)/(-c^2
*d*x^2+d)^(1/2)+d^2*Unintegrable((a+b*arcsin(c*x))^n/x^2/(-c^2*d*x^2+d)^(1/
2),x)
```

Rubi [A] time = 0.16, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^n}{x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^n)/x^2,x]

[Out] Defer[Int][((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^n)/x^2, x]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^n}{x^2}\,dx=\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^n}{x^2}\,dx$$

Mathematica [A] time = 0.82, size = 0, normalized size = 0.00

$$\int \frac{\left(d-c^2dx^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^n}{x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^n)/x^2,x]

[Out] Integrate[((d - c^2*d*x^2)^(3/2)*(a + b*ArcSin[c*x])^n)/x^2, x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(-c^2dx^2+d\right)^{\frac{3}{2}}\left(b\arcsin(cx)+a\right)^n}{x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^n/x^2,x, algorithm="fricas
")
```

```
[Out] integral((-c^2*d*x^2 + d)^(3/2)*(b*arcsin(c*x) + a)^n/x^2, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^n/x^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.40, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^{2} d\,x^{2}+d\right)^{\frac{3}{2}} \left(a +b \arcsin \left(c x \right)\right)^{n}}{x^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^n/x^2,x)
```

```
[Out] int((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^n/x^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{{\left(-c^{2} d x^{2} + d\right)}^{\frac{3}{2}} {\left(b \arcsin\left(c x\right) + a\right)}^{n}}{x^{2}}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(3/2)*(a+b*arcsin(c*x))^n/x^2,x, algorithm="maxima
")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(3/2)*(b*arcsin(c*x) + a)^n/x^2, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^n\,{\left(d-c^2\,d\,x^2\right)}^{3/2}}{x^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^n*(d - c^2*d*x^2)^(3/2))/x^2,x)
```

```
[Out] int(((a + b*asin(c*x))^n*(d - c^2*d*x^2)^(3/2))/x^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(3/2)*(a+b*asin(c*x))**n/x**2,x)
```

```
[Out] Timed out
```

3.492 $\int x^2 \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right)^n \, dx$

Optimal. Leaf size=906

$$-\frac{i2^{-n-7}d^2e^{-\frac{2ia}{b}}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n\Gamma\left(n+1,-\frac{2i\left(a+b\sin^{-1}(cx)\right)}{b}\right)\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^{-n}}{c^3\sqrt{1-c^2x^2}}+\frac{i2^{-2(n+4)}d^2e^{-\frac{4ia}{b}}\sqrt{d}}{}$$

```
[Out] 5/128*d^2*(a+b*arcsin(c*x))^(1+n)*(-c^2*d*x^2+d)^(1/2)/b/c^3/(1+n)/(-c^2*x^
2+1)^(1/2)-I*2^(-7-n)*d^2*(a+b*arcsin(c*x))^n*GAMMA(1+n,-2*I*(a+b*arcsin(c*
x))/b)*(-c^2*d*x^2+d)^(1/2)/c^3/exp(2*I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(
-c^2*x^2+1)^(1/2)+I*2^(-7-n)*d^2*exp(2*I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n
,2*I*(a+b*arcsin(c*x))/b)*(-c^2*d*x^2+d)^(1/2)/c^3/((I*(a+b*arcsin(c*x))/b)
^n)/(-c^2*x^2+1)^(1/2)+I*d^2*(a+b*arcsin(c*x))^n*GAMMA(1+n,-4*I*(a+b*arcsin
(c*x))/b)*(-c^2*d*x^2+d)^(1/2)/(2^(8+2*n))/c^3/exp(4*I*a/b)/((-I*(a+b*arcsi
n(c*x))/b)^n)/(-c^2*x^2+1)^(1/2)-I*d^2*exp(4*I*a/b)*(a+b*arcsin(c*x))^n*GAM
MA(1+n,4*I*(a+b*arcsin(c*x))/b)*(-c^2*d*x^2+d)^(1/2)/(2^(8+2*n))/c^3/((I*(a
+b*arcsin(c*x))/b)^n)/(-c^2*x^2+1)^(1/2)+I*2^(-7-n)*3^(-1-n)*d^2*(a+b*arcsi
n(c*x))^n*GAMMA(1+n,-6*I*(a+b*arcsin(c*x))/b)*(-c^2*d*x^2+d)^(1/2)/c^3/exp(
6*I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(-c^2*x^2+1)^(1/2)-I*2^(-7-n)*3^(-1-n
)*d^2*exp(6*I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n,6*I*(a+b*arcsin(c*x))/b)*(
-c^2*d*x^2+d)^(1/2)/c^3/((I*(a+b*arcsin(c*x))/b)^n)/(-c^2*x^2+1)^(1/2)+I*2^
(-11-3*n)*d^2*(a+b*arcsin(c*x))^n*GAMMA(1+n,-8*I*(a+b*arcsin(c*x))/b)*(-c^2
*d*x^2+d)^(1/2)/c^3/exp(8*I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(-c^2*x^2+1)^
(1/2)-I*2^(-11-3*n)*d^2*exp(8*I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n,8*I*(a+b
*arcsin(c*x))/b)*(-c^2*d*x^2+d)^(1/2)/c^3/((I*(a+b*arcsin(c*x))/b)^n)/(-c^2
*x^2+1)^(1/2)
```

Rubi [A] time = 0.96, antiderivative size = 906, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {4725, 4723, 4406, 3307, 2181}

$$-\frac{i2^{-n-7}d^2e^{-\frac{2ia}{b}}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n\text{Gamma}\left(n+1,-\frac{2i\left(a+b\sin^{-1}(cx)\right)}{b}\right)\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^{-n}}{c^3\sqrt{1-c^2x^2}}+\frac{i2^{-2(n+4)}d^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^n,x]
```

```
[Out] (5*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^(1 + n))/(128*b*c^3*(1 + n)*
Sqrt[1 - c^2*x^2]) - (I*2^(-7 - n)*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*
x])^n*Gamma[1 + n, ((-2*I)*(a + b*ArcSin[c*x]))/b])/(c^3*E^(((2*I)*a)/b)*Sq
rt[1 - c^2*x^2]*(((-I)*(a + b*ArcSin[c*x]))/b)^n) + (I*2^(-7 - n)*d^2*E^(((
2*I)*a)/b)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((2*I)*(a
 + b*ArcSin[c*x]))/b])/(c^3*Sqrt[1 - c^2*x^2]*((I*(a + b*ArcSin[c*x]))/b)^n
) + (I*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((-4*I)*(
a + b*ArcSin[c*x]))/b])/(2^(2*(4 + n))*c^3*E^(((4*I)*a)/b)*Sqrt[1 - c^2*x^2
]*(((-I)*(a + b*ArcSin[c*x]))/b)^n) - (I*d^2*E^(((4*I)*a)/b)*Sqrt[d - c^2*d
*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((4*I)*(a + b*ArcSin[c*x]))/b])/(2
^(2*(4 + n))*c^3*Sqrt[1 - c^2*x^2]*((I*(a + b*ArcSin[c*x]))/b)^n) + (I*2^(-
7 - n)*3^(-1 - n)*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n
, ((-6*I)*(a + b*ArcSin[c*x]))/b])/(c^3*E^(((6*I)*a)/b)*Sqrt[1 - c^2*x^2]*(
((-I)*(a + b*ArcSin[c*x]))/b)^n) - (I*2^(-7 - n)*3^(-1 - n)*d^2*E^(((6*I)*a
)/b)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((6*I)*(a + b*A
rcSin[c*x]))/b])/(c^3*Sqrt[1 - c^2*x^2]*((I*(a + b*ArcSin[c*x]))/b)^n) + (I
*2^(-11 - 3*n)*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, (
(-8*I)*(a + b*ArcSin[c*x]))/b])/(c^3*E^(((8*I)*a)/b)*Sqrt[1 - c^2*x^2]*(((-
```

```
I)*(a + b*ArcSin[c*x]))/b)^n) - (I*2^(-11 - 3*n)*d^2*E^(((8*I)*a)/b)*Sqrt[d
 - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((8*I)*(a + b*ArcSin[c*x])
)/b])/(c^3*Sqrt[1 - c^2*x^2]*((I*(a + b*ArcSin[c*x]))/b)^n)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 4725

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.)*((d_) + (e_.)*(x_)^2
)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPart[p])/(1 - c^2*x
^2)^FracPart[p], Int[x^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; F
reeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p,
 -1] && IGtQ[m, 0] &&  !(IntegerQ[p] || GtQ[d, 0])
```

Rubi steps

$$\int x^2\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^n\,dx=\frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int x^2\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^n\,dx}{\sqrt{1-c^2x^2}}$$

$$=\frac{\left(d^2\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int(a+bx)^n\cos^6(x)\sin^2(x)\,dx,x,\sin^{-1}(cx\right.}{c^3\sqrt{1-c^2x^2}}$$

$$=\frac{\left(d^2\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int\left(\frac{5}{128}(a+bx)^n+\frac{1}{32}(a+bx)^n\cos(2x)-\right.\right.}{}$$

$$=\frac{5d^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^{1+n}}{128bc^3(1+n)\sqrt{1-c^2x^2}}-\frac{\left(d^2\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int(\right.}{128c^3}$$

$$=\frac{5d^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^{1+n}}{128bc^3(1+n)\sqrt{1-c^2x^2}}-\frac{\left(d^2\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int e\right.}{256c^3}$$

$$=\frac{5d^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^{1+n}}{128bc^3(1+n)\sqrt{1-c^2x^2}}-\frac{i2^{-7-n}d^2e^{-\frac{2ia}{b}}\sqrt{d-c^2dx^2}\,(}{}$$

Mathematica [A] time = 4.41, size = 989, normalized size = 1.09

$$\frac{2^{-3n-11}3^{-n-1}d^3e^{-\frac{8ia}{b}}\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^n\left(\frac{\left(a+b\sin^{-1}(cx)\right)^2}{b^2}\right)^{-n}\left(i3^{n+1}4^{n+2}be^{\frac{10ia}{b}}(n+1)\Gamma\left(n+1,\frac{2i\left(a+b\sin^{-1}(c\right.}{b}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^n,x]
```

```
[Out] (2^(-11 - 3*n)*3^(-1 - n)*d^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^n*(5*2^
(4 + 3*n)*3^(1 + n)*a*E^(((8*I)*a)/b)*((a + b*ArcSin[c*x])^2/b^2)^n + 5*2^(
4 + 3*n)*3^(1 + n)*b*E^(((8*I)*a)/b)*ArcSin[c*x]*((a + b*ArcSin[c*x])^2/b^2
)^n - I*3^(1 + n)*4^(2 + n)*b*E^(((6*I)*a)/b)*(1 + n)*((I*(a + b*ArcSin[c*x
]))/b)^n*Gamma[1 + n, ((-2*I)*(a + b*ArcSin[c*x]))/b] + I*3^(1 + n)*4^(2 +
n)*b*E^(((10*I)*a)/b)*(1 + n)*(((-I)*(a + b*ArcSin[c*x]))/b)^n*Gamma[1 + n,
 ((2*I)*(a + b*ArcSin[c*x]))/b] + I*2^(3 + n)*3^(1 + n)*b*E^(((4*I)*a)/b)*(
(I*(a + b*ArcSin[c*x]))/b)^n*Gamma[1 + n, ((-4*I)*(a + b*ArcSin[c*x]))/b] +
 I*2^(3 + n)*3^(1 + n)*b*E^(((4*I)*a)/b)*n*((I*(a + b*ArcSin[c*x]))/b)^n*Ga
mma[1 + n, ((-4*I)*(a + b*ArcSin[c*x]))/b] - I*2^(3 + n)*3^(1 + n)*b*E^(((1
2*I)*a)/b)*(((-I)*(a + b*ArcSin[c*x]))/b)^n*Gamma[1 + n, ((4*I)*(a + b*ArcS
in[c*x]))/b] - I*2^(3 + n)*3^(1 + n)*b*E^(((12*I)*a)/b)*n*(((-I)*(a + b*Arc
Sin[c*x]))/b)^n*Gamma[1 + n, ((4*I)*(a + b*ArcSin[c*x]))/b] + I*4^(2 + n)*b
*E^(((2*I)*a)/b)*((I*(a + b*ArcSin[c*x]))/b)^n*Gamma[1 + n, ((-6*I)*(a + b*
ArcSin[c*x]))/b] + I*4^(2 + n)*b*E^(((2*I)*a)/b)*n*((I*(a + b*ArcSin[c*x]))
/b)^n*Gamma[1 + n, ((-6*I)*(a + b*ArcSin[c*x]))/b] - I*4^(2 + n)*b*E^(((14*
I)*a)/b)*(((-I)*(a + b*ArcSin[c*x]))/b)^n*Gamma[1 + n, ((6*I)*(a + b*ArcSin
[c*x]))/b] - I*4^(2 + n)*b*E^(((14*I)*a)/b)*n*(((-I)*(a + b*ArcSin[c*x]))/b
)^n*Gamma[1 + n, ((6*I)*(a + b*ArcSin[c*x]))/b] + I*3^(1 + n)*b*((I*(a + b*
ArcSin[c*x]))/b)^n*Gamma[1 + n, ((-8*I)*(a + b*ArcSin[c*x]))/b] + I*3^(1 +
n)*b*n*((I*(a + b*ArcSin[c*x]))/b)^n*Gamma[1 + n, ((-8*I)*(a + b*ArcSin[c*x
]))/b] - I*3^(1 + n)*b*E^(((16*I)*a)/b)*(((-I)*(a + b*ArcSin[c*x]))/b)^n*Ga
mma[1 + n, ((8*I)*(a + b*ArcSin[c*x]))/b] - I*3^(1 + n)*b*E^(((16*I)*a)/b)*
n*(((-I)*(a + b*ArcSin[c*x]))/b)^n*Gamma[1 + n, ((8*I)*(a + b*ArcSin[c*x]))
/b]))/(b*c^3*E^(((8*I)*a)/b)*(1 + n)*Sqrt[d - c^2*d*x^2]*((a + b*ArcSin[c*x
])^2/b^2)^n)
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(c^4d^2x^6 - 2\,c^2d^2x^4 + d^2x^2\right)\sqrt{-c^2dx^2 + d}\,(b\arcsin{(cx)} + a)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^n,x, algorithm="fricas
")
```

```
[Out] integral((c^4*d^2*x^6 - 2*c^2*d^2*x^4 + d^2*x^2)*sqrt(-c^2*d*x^2 + d)*(b*ar
csin(c*x) + a)^n, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-c^2dx^2 + d\right)^{\frac{5}{2}}(b\arcsin{(cx)} + a)^n x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^n,x, algorithm="giac")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(5/2)*(b*arcsin(c*x) + a)^n*x^2, x)
```

maple [F] time = 0.48, size = 0, normalized size = 0.00

$$\int x^2\left(-c^2d\,x^2 + d\right)^{\frac{5}{2}}(a + b\arcsin{(cx)})^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^n,x)
```

```
[Out] int(x^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^n,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-c^2dx^2 + d\right)^{\frac{5}{2}}(b\arcsin{(cx)} + a)^n x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^n,x, algorithm="maxima
")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(5/2)*(b*arcsin(c*x) + a)^n*x^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,(a + b\,\mathrm{asin}\,(c\,x))^n\,\left(d - c^2\,d\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c*x))^n*(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int(x^2*(a + b*asin(c*x))^n*(d - c^2*d*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))**n,x)
```

```
[Out] Timed out
```

3.493 $\int x \left(d-c^2 d x^2\right)^{5/2} \left(a+b \sin^{-1}(cx)\right)^n \, dx$

Optimal. Leaf size=815

$$-\frac{5d^2 e^{-\frac{ia}{b}} \sqrt{d-c^2dx^2} \left(a+b\sin^{-1}(cx)\right)^n \Gamma\left(n+1,-\frac{i(a+b\sin^{-1}(cx))}{b}\right)\left(-\frac{i(a+b\sin^{-1}(cx))}{b}\right)^{-n}}{128c^2\sqrt{1-c^2x^2}} - \frac{3^{1-n}d^2e^{-\frac{3ia}{b}}\sqrt{d-c^2dx^2}\ (\ldots}{\ldots}$$

```
[Out] -5/128*d^2*(a+b*arcsin(c*x))^n*GAMMA(1+n,-I*(a+b*arcsin(c*x))/b)*(-c^2*d*x^
2+d)^(1/2)/c^2/exp(I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(-c^2*x^2+1)^(1/2)-5
/128*d^2*exp(I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n,I*(a+b*arcsin(c*x))/b)*(-
c^2*d*x^2+d)^(1/2)/c^2/((I*(a+b*arcsin(c*x))/b)^n)/(-c^2*x^2+1)^(1/2)-1/128
*3^(1-n)*d^2*(a+b*arcsin(c*x))^n*GAMMA(1+n,-3*I*(a+b*arcsin(c*x))/b)*(-c^2*
d*x^2+d)^(1/2)/c^2/exp(3*I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(-c^2*x^2+1)^(
1/2)-1/128*3^(1-n)*d^2*exp(3*I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n,3*I*(a+b*
arcsin(c*x))/b)*(-c^2*d*x^2+d)^(1/2)/c^2/((I*(a+b*arcsin(c*x))/b)^n)/(-c^2*
x^2+1)^(1/2)-1/128*d^2*(a+b*arcsin(c*x))^n*GAMMA(1+n,-5*I*(a+b*arcsin(c*x))
/b)*(-c^2*d*x^2+d)^(1/2)/(5^n)/c^2/exp(5*I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n
)/(-c^2*x^2+1)^(1/2)-1/128*d^2*exp(5*I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n,5
*I*(a+b*arcsin(c*x))/b)*(-c^2*d*x^2+d)^(1/2)/(5^n)/c^2/((I*(a+b*arcsin(c*x)
)/b)^n)/(-c^2*x^2+1)^(1/2)-1/128*7^(-1-n)*d^2*(a+b*arcsin(c*x))^n*GAMMA(1+n
,-7*I*(a+b*arcsin(c*x))/b)*(-c^2*d*x^2+d)^(1/2)/c^2/exp(7*I*a/b)/((-I*(a+b*
arcsin(c*x))/b)^n)/(-c^2*x^2+1)^(1/2)-1/128*7^(-1-n)*d^2*exp(7*I*a/b)*(a+b*
arcsin(c*x))^n*GAMMA(1+n,7*I*(a+b*arcsin(c*x))/b)*(-c^2*d*x^2+d)^(1/2)/c^2/
((I*(a+b*arcsin(c*x))/b)^n)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.73, antiderivative size = 815, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {4725, 4723, 4406, 3308, 2181}

$$-\frac{5d^2 e^{-\frac{ia}{b}} \sqrt{d-c^2dx^2} \left(a+b\sin^{-1}(cx)\right)^n \text{Gamma}\left(n+1,-\frac{i(a+b\sin^{-1}(cx))}{b}\right)\left(-\frac{i(a+b\sin^{-1}(cx))}{b}\right)^{-n}}{128c^2\sqrt{1-c^2x^2}} - \frac{3^{1-n}d^2e^{-\frac{3ia}{b}}\sqrt{d-\ldots}}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[x*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^n,x]
```

```
[Out] (-5*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((-I)*(a + b
*ArcSin[c*x]))/b])/(128*c^2*E^((I*a)/b)*Sqrt[1 - c^2*x^2]*(((-I)*(a + b*Arc
Sin[c*x]))/b)^n) - (5*d^2*E^((I*a)/b)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x
])^n*Gamma[1 + n, (I*(a + b*ArcSin[c*x]))/b])/(128*c^2*Sqrt[1 - c^2*x^2]*((
I*(a + b*ArcSin[c*x]))/b)^n) - (3^(1 - n)*d^2*Sqrt[d - c^2*d*x^2]*(a + b*Ar
cSin[c*x])^n*Gamma[1 + n, ((-3*I)*(a + b*ArcSin[c*x]))/b])/(128*c^2*E^(((3*
I)*a)/b)*Sqrt[1 - c^2*x^2]*(((-I)*(a + b*ArcSin[c*x]))/b)^n) - (3^(1 - n)*d
^2*E^(((3*I)*a)/b)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, (
(3*I)*(a + b*ArcSin[c*x]))/b])/(128*c^2*Sqrt[1 - c^2*x^2]*((I*(a + b*ArcSin
[c*x]))/b)^n) - (d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n,
 ((-5*I)*(a + b*ArcSin[c*x]))/b])/(128*5^n*c^2*E^(((5*I)*a)/b)*Sqrt[1 - c^2
*x^2]*(((-I)*(a + b*ArcSin[c*x]))/b)^n) - (d^2*E^(((5*I)*a)/b)*Sqrt[d - c^2
*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((5*I)*(a + b*ArcSin[c*x]))/b])/
(128*5^n*c^2*Sqrt[1 - c^2*x^2]*((I*(a + b*ArcSin[c*x]))/b)^n) - (7^(-1 - n)
*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((-7*I)*(a + b*
ArcSin[c*x]))/b])/(128*c^2*E^(((7*I)*a)/b)*Sqrt[1 - c^2*x^2]*(((-I)*(a + b*
ArcSin[c*x]))/b)^n) - (7^(-1 - n)*d^2*E^(((7*I)*a)/b)*Sqrt[d - c^2*d*x^2]*(
a + b*ArcSin[c*x])^n*Gamma[1 + n, ((7*I)*(a + b*ArcSin[c*x]))/b])/(128*c^2*
Sqrt[1 - c^2*x^2]*((I*(a + b*ArcSin[c*x]))/b)^n)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rule 4725

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.)*((d_) + (e_.)*(x_)^2
)^(p_), x_Symbol] :> Dist[(d^IntPart[p]*(d + e*x^2)^FracPart[p])/(1 - c^2*x
^2)^FracPart[p], Int[x^m*(1 - c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; F
reeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p,
 -1] && IGtQ[m, 0] &&  !(IntegerQ[p] || GtQ[d, 0])
```

Rubi steps

$$\int x\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^n\,dx=\frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int x\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^n\,dx}{\sqrt{1-c^2x^2}}$$

$$=\frac{\left(d^2\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int(a+bx)^n\cos^6(x)\sin(x)\,dx,x,\sin^{-1}(cx)\right)}{c^2\sqrt{1-c^2x^2}}$$

$$=\frac{\left(d^2\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int\left(\frac{5}{64}(a+bx)^n\sin(x)+\frac{9}{64}(a+bx)^n\sin(3x)+\right.\right.}{c^2\sqrt{1-c^2x}}$$

$$=\frac{\left(d^2\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int(a+bx)^n\sin(7x)\,dx,x,\sin^{-1}(cx)\right)}{64c^2\sqrt{1-c^2x^2}}+\frac{\left(5d^2\sqrt{d\right.}}{}$$

$$=\frac{\left(id^2\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int e^{-7ix}(a+bx)^n\,dx,x,\sin^{-1}(cx)\right)}{128c^2\sqrt{1-c^2x^2}}-\frac{\left(id^2\sqrt{d-\right.}}{}$$

$$=-\frac{5d^2e^{-\frac{ia}{b}}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^{-n}\Gamma\left(1+n,-\right.}{128c^2\sqrt{1-c^2x^2}}$$

Mathematica [A] time = 4.30, size = 603, normalized size = 0.74

$$-\frac{d^3 5^{-n} 21^{-n-1} e^{-\frac{7ia}{b}} \sqrt{1-c^2x^2} \left(a+b\sin^{-1}(cx)\right)^n \left(\frac{\left(a+b\sin^{-1}(cx)\right)^2}{b^2}\right)^{-3n} \left(\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^n \left(9\, 5^n 7^{n+1} e^{\frac{4ia}{b}} \left(\frac{i\left(a+b\sin^{-1}(c\right.}{b}\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^n,x]
```

```
[Out] -1/128*(21^(-1 - n)*d^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^n*(105^(1 + n
)*E^(((6*I)*a)/b)*((I*(a + b*ArcSin[c*x]))/b)^n*((a + b*ArcSin[c*x])^2/b^2)
^(2*n)*Gamma[1 + n, ((-I)*(a + b*ArcSin[c*x]))/b] + (((-I)*(a + b*ArcSin[c*
x]))/b)^n*(105^(1 + n)*E^(((8*I)*a)/b)*((a + b*ArcSin[c*x])^2/b^2)^(2*n)*Ga
mma[1 + n, (I*(a + b*ArcSin[c*x]))/b] + 9*5^n*7^(1 + n)*E^(((4*I)*a)/b)*((I
*(a + b*ArcSin[c*x]))/b)^(2*n)*((a + b*ArcSin[c*x])^2/b^2)^n*Gamma[1 + n, (
(-3*I)*(a + b*ArcSin[c*x]))/b] + 9*5^n*7^(1 + n)*E^(((10*I)*a)/b)*((a + b*A
rcSin[c*x])^2/b^2)^(2*n)*Gamma[1 + n, ((3*I)*(a + b*ArcSin[c*x]))/b] + 3^(1
 + n)*(7^(1 + n)*E^(((2*I)*a)/b)*(((-I)*(a + b*ArcSin[c*x]))/b)^n*((I*(a +
b*ArcSin[c*x]))/b)^(3*n)*Gamma[1 + n, ((-5*I)*(a + b*ArcSin[c*x]))/b] + 7^(
1 + n)*E^(((12*I)*a)/b)*((a + b*ArcSin[c*x])^2/b^2)^(2*n)*Gamma[1 + n, ((5*
I)*(a + b*ArcSin[c*x]))/b] + 5^n*((((-I)*(a + b*ArcSin[c*x]))/b)^n*((I*(a +
 b*ArcSin[c*x]))/b)^(3*n)*Gamma[1 + n, ((-7*I)*(a + b*ArcSin[c*x]))/b] + E^
(((14*I)*a)/b)*((a + b*ArcSin[c*x])^2/b^2)^(2*n)*Gamma[1 + n, ((7*I)*(a + b
*ArcSin[c*x]))/b])))))/(5^n*c^2*E^(((7*I)*a)/b)*Sqrt[d - c^2*d*x^2]*((a + b
*ArcSin[c*x])^2/b^2)^(3*n))
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(c^4d^2x^5 - 2\,c^2d^2x^3 + d^2x\right)\sqrt{-c^2dx^2 + d}\,(b\arcsin(cx) + a)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^n,x, algorithm="fricas")
```

```
[Out] integral((c^4*d^2*x^5 - 2*c^2*d^2*x^3 + d^2*x)*sqrt(-c^2*d*x^2 + d)*(b*arcs
in(c*x) + a)^n, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^n,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [F] time = 0.19, size = 0, normalized size = 0.00

$$\int x\left(-c^2d\,x^2 + d\right)^{\frac{5}{2}} (a + b\arcsin(cx))^n\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^n,x)
```

```
[Out] int(x*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^n,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-c^2dx^2+d\right)^{\frac{5}{2}}(b\arcsin{(cx)}+a)^n x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^n,x, algorithm="maxima")
[Out] integrate((-c^2*d*x^2 + d)^(5/2)*(b*arcsin(c*x) + a)^n*x, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x\,(a+b\,\mathrm{asin}\,(c\,x))^n\,\left(d-c^2\,d\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c*x))^n*(d - c^2*d*x^2)^(5/2),x)
[Out] int(x*(a + b*asin(c*x))^n*(d - c^2*d*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))**n,x)
[Out] Timed out
```

3.494 $\int \left(d-c^2dx^2\right)^{5/2} \left(a+b\sin^{-1}(cx)\right)^n \, dx$

Optimal. Leaf size=698

$$\frac{5d^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^{n+1}}{16bc(n+1)\sqrt{1-c^2x^2}}-\frac{15id^2 2^{-n-7}e^{-\frac{2ia}{b}}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^{-n}\Gamma\left(n+\right.}{c\sqrt{1-c^2x^2}}$$

```
[Out] 5/16*d^2*(a+b*arcsin(c*x))^(1+n)*(-c^2*d*x^2+d)^(1/2)/b/c/(1+n)/(-c^2*x^2+1
)^(1/2)-15*I*2^(-7-n)*d^2*(a+b*arcsin(c*x))^n*GAMMA(1+n,-2*I*(a+b*arcsin(c*
x))/b)*(-c^2*d*x^2+d)^(1/2)/c/exp(2*I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(-c
^2*x^2+1)^(1/2)+15*I*2^(-7-n)*d^2*exp(2*I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+
n,2*I*(a+b*arcsin(c*x))/b)*(-c^2*d*x^2+d)^(1/2)/c/((I*(a+b*arcsin(c*x))/b)^
n)/(-c^2*x^2+1)^(1/2)-3*I*2^(-7-2*n)*d^2*(a+b*arcsin(c*x))^n*GAMMA(1+n,-4*I
*(a+b*arcsin(c*x))/b)*(-c^2*d*x^2+d)^(1/2)/c/exp(4*I*a/b)/((-I*(a+b*arcsin(
c*x))/b)^n)/(-c^2*x^2+1)^(1/2)+3*I*2^(-7-2*n)*d^2*exp(4*I*a/b)*(a+b*arcsin(
c*x))^n*GAMMA(1+n,4*I*(a+b*arcsin(c*x))/b)*(-c^2*d*x^2+d)^(1/2)/c/((I*(a+b*
arcsin(c*x))/b)^n)/(-c^2*x^2+1)^(1/2)-I*2^(-7-n)*3^(-1-n)*d^2*(a+b*arcsin(c
*x))^n*GAMMA(1+n,-6*I*(a+b*arcsin(c*x))/b)*(-c^2*d*x^2+d)^(1/2)/c/exp(6*I*a
/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(-c^2*x^2+1)^(1/2)+I*2^(-7-n)*3^(-1-n)*d^2
*exp(6*I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n,6*I*(a+b*arcsin(c*x))/b)*(-c^2*
d*x^2+d)^(1/2)/c/((I*(a+b*arcsin(c*x))/b)^n)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.58, antiderivative size = 698, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {4663, 4661, 3312, 3307, 2181}

$$-\frac{15id^2 2^{-n-7}e^{-\frac{2ia}{b}}\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^n\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^{-n}\text{Gamma}\left(n+1,-\frac{2i\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{c\sqrt{1-c^2x^2}}-\frac{3id^2 2^{-2n}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^n,x]
```

```
[Out] (5*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^(1 + n))/(16*b*c*(1 + n)*Sqr
t[1 - c^2*x^2]) - ((15*I)*2^(-7 - n)*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[
c*x])^n*Gamma[1 + n, ((-2*I)*(a + b*ArcSin[c*x]))/b])/(c*E^(((2*I)*a)/b)*Sq
rt[1 - c^2*x^2]*(((-I)*(a + b*ArcSin[c*x]))/b)^n) + ((15*I)*2^(-7 - n)*d^2*
E^(((2*I)*a)/b)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((2*
I)*(a + b*ArcSin[c*x]))/b])/(c*Sqrt[1 - c^2*x^2]*((I*(a + b*ArcSin[c*x]))/b
)^n) - ((3*I)*2^(-7 - 2*n)*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Ga
mma[1 + n, ((-4*I)*(a + b*ArcSin[c*x]))/b])/(c*E^(((4*I)*a)/b)*Sqrt[1 - c^2
*x^2]*(((-I)*(a + b*ArcSin[c*x]))/b)^n) + ((3*I)*2^(-7 - 2*n)*d^2*E^(((4*I)
*a)/b)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((4*I)*(a + b
*ArcSin[c*x]))/b])/(c*Sqrt[1 - c^2*x^2]*((I*(a + b*ArcSin[c*x]))/b)^n) - (I
*2^(-7 - n)*3^(-1 - n)*d^2*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[
1 + n, ((-6*I)*(a + b*ArcSin[c*x]))/b])/(c*E^(((6*I)*a)/b)*Sqrt[1 - c^2*x^2
]*(((-I)*(a + b*ArcSin[c*x]))/b)^n) + (I*2^(-7 - n)*3^(-1 - n)*d^2*E^(((6*I
)*a)/b)*Sqrt[d - c^2*d*x^2]*(a + b*ArcSin[c*x])^n*Gamma[1 + n, ((6*I)*(a +
b*ArcSin[c*x]))/b])/(c*Sqrt[1 - c^2*x^2]*((I*(a + b*ArcSin[c*x]))/b)^n)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 4661

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[d^p/c, Subst[Int[(a + b*x)^n*Cos[x]^(2*p + 1), x], x, ArcS
in[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && IGtQ[2
*p, 0] && (IntegerQ[p] || GtQ[d, 0])
```

Rule 4663

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Dist[(d^(p - 1/2)*Sqrt[d + e*x^2])/Sqrt[1 - c^2*x^2], Int[(1 -
c^2*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IGtQ[2*p, 0] &&  !(IntegerQ[p] || GtQ[d, 0])
```

Rubi steps

$$\int \left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^n\,dx=\frac{\left(d^2\sqrt{d-c^2dx^2}\right)\int\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^n\,dx}{\sqrt{1-c^2x^2}}$$

$$=\frac{\left(d^2\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int(a+bx)^n\cos^6(x)\,dx,x,\sin^{-1}(cx)\right)}{c\sqrt{1-c^2x^2}}$$

$$=\frac{\left(d^2\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int\left(\frac{5}{16}(a+bx)^n+\frac{15}{32}(a+bx)^n\cos(2x)+\frac{3}{16}(a+\right.\right.}{c\sqrt{1-c^2x^2}}$$

$$=\frac{5d^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^{1+n}}{16bc(1+n)\sqrt{1-c^2x^2}}+\frac{\left(d^2\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int(a+b\right.}{32c\sqrt{1-}}$$

$$=\frac{5d^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^{1+n}}{16bc(1+n)\sqrt{1-c^2x^2}}+\frac{\left(d^2\sqrt{d-c^2dx^2}\right)\text{Subst}\left(\int e^{-6ix}(a\right.}{64c\sqrt{1-c^2}}$$

$$=\frac{5d^2\sqrt{d-c^2dx^2}\left(a+b\sin^{-1}(cx)\right)^{1+n}}{16bc(1+n)\sqrt{1-c^2x^2}}-\frac{15i2^{-7-n}d^2e^{-\frac{2ia}{b}}\sqrt{d-c^2dx^2}\left(a+\right.}{}$$

Mathematica [A] time = 4.76, size = 477, normalized size = 0.68

$$\frac{d^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^n\left(9i4^{-n}e^{\frac{4ia}{b}}\left(\frac{\left(a+b\sin^{-1}(cx)\right)^2}{b^2}\right)^{-n}\left(-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)^n\Gamma\left(n+1,\frac{4i\left(a+b\sin^{-1}(cx)\right)}{b}\right)+i6^{-n}e^{\frac{6ia}{b}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^n,x]
```

```
[Out] (d^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^n*((120*a)/(b + b*n) + (120*ArcS
in[c*x])/(1 + n) - ((45*I)*Gamma[1 + n, ((-2*I)*(a + b*ArcSin[c*x]))/b])/(2
^n*E^(((2*I)*a)/b)*(((-I)*(a + b*ArcSin[c*x]))/b)^n) + ((45*I)*E^(((2*I)*a)
/b)*Gamma[1 + n, ((2*I)*(a + b*ArcSin[c*x]))/b])/(2^n*((I*(a + b*ArcSin[c*x
]))/b)^n) - ((9*I)*((I*(a + b*ArcSin[c*x]))/b)^n*Gamma[1 + n, ((-4*I)*(a +
b*ArcSin[c*x]))/b])/(4^n*E^(((4*I)*a)/b)*((a + b*ArcSin[c*x])^2/b^2)^n) + (
(9*I)*E^(((4*I)*a)/b)*(((-I)*(a + b*ArcSin[c*x]))/b)^n*Gamma[1 + n, ((4*I)*
(a + b*ArcSin[c*x]))/b])/(4^n*((a + b*ArcSin[c*x])^2/b^2)^n) - (I*((I*(a +
b*ArcSin[c*x]))/b)^n*Gamma[1 + n, ((-6*I)*(a + b*ArcSin[c*x]))/b])/(6^n*E^(
((6*I)*a)/b)*((a + b*ArcSin[c*x])^2/b^2)^n) + (I*E^(((6*I)*a)/b)*(((-I)*(a
+ b*ArcSin[c*x]))/b)^n*Gamma[1 + n, ((6*I)*(a + b*ArcSin[c*x]))/b])/(6^n*((
a + b*ArcSin[c*x])^2/b^2)^n)))/(384*c*Sqrt[d - c^2*d*x^2])
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(c^4d^2x^4 - 2\,c^2d^2x^2 + d^2\right)\sqrt{-c^2dx^2 + d}\,(b\arcsin(cx) + a)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^n,x, algorithm="fricas")
```

```
[Out] integral((c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2)*sqrt(-c^2*d*x^2 + d)*(b*arcsin
(c*x) + a)^n, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^n,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [F] time = 0.13, size = 0, normalized size = 0.00

$$\int \left(-c^2d\,x^2 + d\right)^{\frac{5}{2}} (a + b\arcsin(cx))^n\; dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^n,x)
```

```
[Out] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^n,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-c^2dx^2 + d\right)^{\frac{5}{2}}(b\arcsin(cx) + a)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^n,x, algorithm="maxima")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(5/2)*(b*arcsin(c*x) + a)^n, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a + b\,\mathrm{asin}(c\,x))^n\,\left(d - c^2\,d\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^n*(d - c^2*d*x^2)^(5/2),x)
```

```
[Out] int((a + b*asin(c*x))^n*(d - c^2*d*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))**n,x)
```

```
[Out] Timed out
```

3.495 $\int \frac{(d-c^2dx^2)^{5/2}(a+b\sin^{-1}(cx))^n}{x}\,dx$

Optimal. Leaf size=827

$$\frac{11d^3e^{-\frac{ia}{b}}\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^n\Gamma\left(n+1,-\frac{i(a+b\sin^{-1}(cx))}{b}\right)\left(-\frac{i(a+b\sin^{-1}(cx))}{b}\right)^{-n}}{16\sqrt{d-c^2dx^2}}-\frac{5\,3^{-n-1}d^3e^{-\frac{3ia}{b}}\sqrt{1-c^2x^2}\,(a$$

```
[Out] 11/16*d^3*(a+b*arcsin(c*x))^n*GAMMA(1+n,-I*(a+b*arcsin(c*x))/b)*(-c^2*x^2+1
)^(1/2)/exp(I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(-c^2*d*x^2+d)^(1/2)+11/16*
d^3*exp(I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n,I*(a+b*arcsin(c*x))/b)*(-c^2*x
^2+1)^(1/2)/((I*(a+b*arcsin(c*x))/b)^n)/(-c^2*d*x^2+d)^(1/2)-5/32*3^(-1-n)*
d^3*(a+b*arcsin(c*x))^n*GAMMA(1+n,-3*I*(a+b*arcsin(c*x))/b)*(-c^2*x^2+1)^(1
/2)/exp(3*I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(-c^2*d*x^2+d)^(1/2)+1/8*d^3*
(a+b*arcsin(c*x))^n*GAMMA(1+n,-3*I*(a+b*arcsin(c*x))/b)*(-c^2*x^2+1)^(1/2)/
(3^n)/exp(3*I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(-c^2*d*x^2+d)^(1/2)-5/32*3
^(-1-n)*d^3*exp(3*I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n,3*I*(a+b*arcsin(c*x)
)/b)*(-c^2*x^2+1)^(1/2)/((I*(a+b*arcsin(c*x))/b)^n)/(-c^2*d*x^2+d)^(1/2)+1/
8*d^3*exp(3*I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n,3*I*(a+b*arcsin(c*x))/b)*(
-c^2*x^2+1)^(1/2)/(3^n)/((I*(a+b*arcsin(c*x))/b)^n)/(-c^2*d*x^2+d)^(1/2)+1/
32*5^(-1-n)*d^3*(a+b*arcsin(c*x))^n*GAMMA(1+n,-5*I*(a+b*arcsin(c*x))/b)*(-c
^2*x^2+1)^(1/2)/exp(5*I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(-c^2*d*x^2+d)^(1
/2)+1/32*5^(-1-n)*d^3*exp(5*I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n,5*I*(a+b*a
rcsin(c*x))/b)*(-c^2*x^2+1)^(1/2)/((I*(a+b*arcsin(c*x))/b)^n)/(-c^2*d*x^2+d
)^(1/2)+d^3*Unintegrable((a+b*arcsin(c*x))^n/x/(-c^2*d*x^2+d)^(1/2),x)
```

Rubi [A] time = 0.15, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^n}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^n)/x,x]
[Out] Defer[Int][((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^n)/x, x]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^n}{x}\,dx=\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^n}{x}\,dx$$

Mathematica [A] time = 0.25, size = 0, normalized size = 0.00

$$\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^n}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^n)/x,x]
[Out] Integrate[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^n)/x, x]
```

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(c^4d^2x^4 - 2\,c^2d^2x^2 + d^2\right)\sqrt{-c^2dx^2 + d}\,(b\arcsin(cx) + a)^n}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^n/x,x, algorithm="fricas")
```

```
[Out] integral((c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2)*sqrt(-c^2*d*x^2 + d)*(b*arcsin
(c*x) + a)^n/x, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^n/x,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.27, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2d\,x^2 + d\right)^{\frac{5}{2}} (a + b\arcsin(cx))^n}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^n/x,x)
```

```
[Out] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^n/x,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^2dx^2 + d\right)^{\frac{5}{2}}(b\arcsin(cx) + a)^n}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^n/x,x, algorithm="maxima")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(5/2)*(b*arcsin(c*x) + a)^n/x, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\mathrm{asin}(c\,x))^n \left(d - c^2\,d\,x^2\right)^{5/2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^n*(d - c^2*d*x^2)^(5/2))/x,x)
```

```
[Out] int(((a + b*asin(c*x))^n*(d - c^2*d*x^2)^(5/2))/x, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))**n/x,x)
```

```
[Out] Timed out
```

3.496 $\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^n}{x^2}\,dx$

Optimal. Leaf size=502

$$d^3\mathrm{Int}\left(\frac{\left(a+b\sin^{-1}(cx)\right)^n}{x^2\sqrt{d-c^2dx^2}},x\right)-\frac{15cd^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^{n+1}}{8b(n+1)\sqrt{d-c^2dx^2}}+\frac{icd^32^{-n-2}e^{-\frac{2ia}{b}}\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d}}$$

```
[Out] -15/8*c*d^3*(a+b*arcsin(c*x))^(1+n)*(-c^2*x^2+1)^(1/2)/b/(1+n)/(-c^2*d*x^2+
d)^(1/2)+I*2^(-2-n)*c*d^3*(a+b*arcsin(c*x))^n*GAMMA(1+n,-2*I*(a+b*arcsin(c*
x))/b)*(-c^2*x^2+1)^(1/2)/exp(2*I*a/b)/((-I*(a+b*arcsin(c*x))/b)^n)/(-c^2*d
*x^2+d)^(1/2)-I*2^(-2-n)*c*d^3*exp(2*I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n,2
*I*(a+b*arcsin(c*x))/b)*(-c^2*x^2+1)^(1/2)/((I*(a+b*arcsin(c*x))/b)^n)/(-c^
2*d*x^2+d)^(1/2)+I*c*d^3*(a+b*arcsin(c*x))^n*GAMMA(1+n,-4*I*(a+b*arcsin(c*x
))/b)*(-c^2*x^2+1)^(1/2)/(2^(6+2*n))/exp(4*I*a/b)/((-I*(a+b*arcsin(c*x))/b)
^n)/(-c^2*d*x^2+d)^(1/2)-I*c*d^3*exp(4*I*a/b)*(a+b*arcsin(c*x))^n*GAMMA(1+n
,4*I*(a+b*arcsin(c*x))/b)*(-c^2*x^2+1)^(1/2)/(2^(6+2*n))/((I*(a+b*arcsin(c*
x))/b)^n)/(-c^2*d*x^2+d)^(1/2)+d^3*Unintegrable((a+b*arcsin(c*x))^n/x^2/(-c
^2*d*x^2+d)^(1/2),x)
```

Rubi [A] time = 0.16, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^n}{x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^n)/x^2,x]
```

```
[Out] Defer[Int][((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^n)/x^2, x]
```

Rubi steps

$$\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^n}{x^2}\,dx=\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^n}{x^2}\,dx$$

Mathematica [A] time = 0.80, size = 0, normalized size = 0.00

$$\int \frac{\left(d-c^2dx^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^n}{x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^n)/x^2,x]
```

```
[Out] Integrate[((d - c^2*d*x^2)^(5/2)*(a + b*ArcSin[c*x])^n)/x^2, x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(c^4d^2x^4-2\,c^2d^2x^2+d^2\right)\sqrt{-c^2dx^2+d}\,(b\arcsin(cx)+a)^n}{x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^n/x^2,x, algorithm="fricas
")
```

```
[Out] integral((c^4*d^2*x^4 - 2*c^2*d^2*x^2 + d^2)*sqrt(-c^2*d*x^2 + d)*(b*arcsin
(c*x) + a)^n/x^2, x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^n/x^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [A] time = 0.37, size = 0, normalized size = 0.00

$$\int \frac{\left(-c^{2} d \,x^{2}+d \right)^{\frac{5}{2}} \left(a +b \arcsin \left(c x \right)\right)^{n}}{x^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^n/x^2,x)
```

```
[Out] int((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^n/x^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{{\left(-c^{2} d x^{2} + d\right)}^{\frac{5}{2}} {\left(b \arcsin \left(c x\right) + a\right)}^{n}}{x^{2}}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c^2*d*x^2+d)^(5/2)*(a+b*arcsin(c*x))^n/x^2,x, algorithm="maxima
")
```

```
[Out] integrate((-c^2*d*x^2 + d)^(5/2)*(b*arcsin(c*x) + a)^n/x^2, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^n\,{\left(d-c^2\,d\,x^2\right)}^{5/2}}{x^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^n*(d - c^2*d*x^2)^(5/2))/x^2,x)
```

```
[Out] int(((a + b*asin(c*x))^n*(d - c^2*d*x^2)^(5/2))/x^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c**2*d*x**2+d)**(5/2)*(a+b*asin(c*x))**n/x**2,x)
```

```
[Out] Timed out
```

3.497 $\int \frac{x^m \sin^{-1}(ax)^n}{\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{x^m \sin^{-1}(ax)^n}{\sqrt{1-a^2x^2}},x\right)$$

```
[Out] Unintegrable(x^m*arcsin(a*x)^n/(-a^2*x^2+1)^(1/2),x)
```

Rubi [A] time = 0.10, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{x^m \sin^{-1}(ax)^n}{\sqrt{1-a^2x^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(x^m*ArcSin[a*x]^n)/Sqrt[1 - a^2*x^2],x]
[Out] Defer[Int][(x^m*ArcSin[a*x]^n)/Sqrt[1 - a^2*x^2], x]
```

Rubi steps

$$\int \frac{x^m \sin^{-1}(ax)^n}{\sqrt{1-a^2x^2}}\,dx = \int \frac{x^m \sin^{-1}(ax)^n}{\sqrt{1-a^2x^2}}\,dx$$

Mathematica [A] time = 0.53, size = 0, normalized size = 0.00

$$\int \frac{x^m \sin^{-1}(ax)^n}{\sqrt{1-a^2x^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(x^m*ArcSin[a*x]^n)/Sqrt[1 - a^2*x^2],x]
[Out] Integrate[(x^m*ArcSin[a*x]^n)/Sqrt[1 - a^2*x^2], x]
```

fricas [A] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-a^2x^2+1}\,x^m \arcsin(ax)^n}{a^2x^2-1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*arcsin(a*x)^n/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
[Out] integral(-sqrt(-a^2*x^2 + 1)*x^m*arcsin(a*x)^n/(a^2*x^2 - 1), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*arcsin(a*x)^n/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
[Out] Timed out
```

maple [A] time = 0.43, size = 0, normalized size = 0.00

$$\int \frac{x^m \arcsin(ax)^n}{\sqrt{-a^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*arcsin(a*x)^n/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] int(x^m*arcsin(a*x)^n/(-a^2*x^2+1)^(1/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*arcsin(a*x)^n/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{x^m \operatorname{asin}(a\,x)^n}{\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*asin(a*x)^n)/(1 - a^2*x^2)^(1/2),x)
```

```
[Out] int((x^m*asin(a*x)^n)/(1 - a^2*x^2)^(1/2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m \operatorname{asin}^n(ax)}{\sqrt{-(ax-1)(ax+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*asin(a*x)**n/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(x**m*asin(a*x)**n/sqrt(-(a*x - 1)*(a*x + 1)), x)
```

3.498 $\int \frac{x^3 \sin^{-1}(ax)^n}{\sqrt{1-a^2x^2}} \, dx$

Optimal. Leaf size=163

$$-\frac{3\sin^{-1}(ax)^n\left(-i\sin^{-1}(ax)\right)^{-n}\Gamma\left(n+1,-i\sin^{-1}(ax)\right)}{8a^4}+\frac{3^{-n-1}\sin^{-1}(ax)^n\left(-i\sin^{-1}(ax)\right)^{-n}\Gamma\left(n+1,-3i\sin^{-1}(a\right.}{8a^4}$$

```
[Out] -3/8*arcsin(a*x)^n*GAMMA(1+n,-I*arcsin(a*x))/a^4/((-I*arcsin(a*x))^n)-3/8*a
rcsin(a*x)^n*GAMMA(1+n,I*arcsin(a*x))/a^4/((I*arcsin(a*x))^n)+1/8*3^(-1-n)*
arcsin(a*x)^n*GAMMA(1+n,-3*I*arcsin(a*x))/a^4/((-I*arcsin(a*x))^n)+1/8*3^(-
1-n)*arcsin(a*x)^n*GAMMA(1+n,3*I*arcsin(a*x))/a^4/((I*arcsin(a*x))^n)
```

Rubi [A] time = 0.25, antiderivative size = 163, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {4723, 3312, 3308, 2181}

$$-\frac{3\sin^{-1}(ax)^n\left(-i\sin^{-1}(ax)\right)^{-n}\text{Gamma}\left(n+1,-i\sin^{-1}(ax)\right)}{8a^4}+\frac{3^{-n-1}\sin^{-1}(ax)^n\left(-i\sin^{-1}(ax)\right)^{-n}\text{Gamma}\left(n+\right.}{8a^4}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*ArcSin[a*x]^n)/Sqrt[1 - a^2*x^2],x]
```

```
[Out] (-3*ArcSin[a*x]^n*Gamma[1 + n, (-I)*ArcSin[a*x]])/(8*a^4*((-I)*ArcSin[a*x])
^n) - (3*ArcSin[a*x]^n*Gamma[1 + n, I*ArcSin[a*x]])/(8*a^4*(I*ArcSin[a*x])^
n) + (3^(-1 - n)*ArcSin[a*x]^n*Gamma[1 + n, (-3*I)*ArcSin[a*x]])/(8*a^4*((-
I)*ArcSin[a*x])^n) + (3^(-1 - n)*ArcSin[a*x]^n*Gamma[1 + n, (3*I)*ArcSin[a*
x]])/(8*a^4*(I*ArcSin[a*x])^n)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x^3 \sin^{-1}(ax)^n}{\sqrt{1-a^2x^2}}\,dx = \frac{\text{Subst}\left(\int x^n \sin^3(x)\,dx, x, \sin^{-1}(ax)\right)}{a^4}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{3}{4}x^n \sin(x) - \frac{1}{4}x^n \sin(3x)\right)dx, x, \sin^{-1}(ax)\right)}{a^4}$$
$$= -\frac{\text{Subst}\left(\int x^n \sin(3x)\,dx, x, \sin^{-1}(ax)\right)}{4a^4} + \frac{3\,\text{Subst}\left(\int x^n \sin(x)\,dx, x, \sin^{-1}(ax)\right)}{4a^4}$$
$$= -\frac{i\,\text{Subst}\left(\int e^{-3ix}x^n\,dx, x, \sin^{-1}(ax)\right)}{8a^4} + \frac{i\,\text{Subst}\left(\int e^{3ix}x^n\,dx, x, \sin^{-1}(ax)\right)}{8a^4} + \frac{(3i)\,\text{Subst}\left(\int e\right.}{}$$
$$= -\frac{3\left(-i\sin^{-1}(ax)\right)^{-n}\sin^{-1}(ax)^n\Gamma\left(1+n, -i\sin^{-1}(ax)\right)}{8a^4} - \frac{3\left(i\sin^{-1}(ax)\right)^{-n}\sin^{-1}(ax)^n\Gamma\left(1+\right.}{8a^4}$$

Mathematica [A] time = 0.34, size = 153, normalized size = 0.94

$$-\frac{3^{-n-1}\sin^{-1}(ax)^n\left(\sin^{-1}(ax)^2\right)^{-2n}\left(\left(-i\sin^{-1}(ax)\right)^n\left(3^{n+2}\left(\sin^{-1}(ax)^2\right)^n\Gamma\left(n+1, i\sin^{-1}(ax)\right) - \left(\sin^{-1}(ax)^2\right)^n\Gamma\left(n\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*ArcSin[a*x]^n)/Sqrt[1 - a^2*x^2],x]
```

```
[Out] -1/8*(3^(-1 - n)*ArcSin[a*x]^n*(3^(2 + n)*(I*ArcSin[a*x])^n*(ArcSin[a*x]^2)
^n*Gamma[1 + n, (-I)*ArcSin[a*x]] + ((-I)*ArcSin[a*x])^n*(3^(2 + n)*(ArcSin
[a*x]^2)^n*Gamma[1 + n, I*ArcSin[a*x]] - (I*ArcSin[a*x])^(2*n)*Gamma[1 + n,
 (-3*I)*ArcSin[a*x]] - (ArcSin[a*x]^2)^n*Gamma[1 + n, (3*I)*ArcSin[a*x]])))
/(a^4*(ArcSin[a*x]^2)^(2*n))
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-a^2x^2+1}\,x^3\arcsin(ax)^n}{a^2x^2-1}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arcsin(a*x)^n/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-a^2*x^2 + 1)*x^3*arcsin(a*x)^n/(a^2*x^2 - 1), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arcsin(a*x)^n/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:sym2poly/r2sym(const gen & e,const index_m &
 i,const vecteur & l) Error: Bad Argument Value
```

maple [F] time = 0.46, size = 0, normalized size = 0.00

$$\int \frac{x^3\arcsin(ax)^n}{\sqrt{-a^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*arcsin(a*x)^n/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] int(x^3*arcsin(a*x)^n/(-a^2*x^2+1)^(1/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arcsin(a*x)^n/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^3 \operatorname{asin}(a\,x)^n}{\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*asin(a*x)^n)/(1 - a^2*x^2)^(1/2),x)
```

```
[Out] int((x^3*asin(a*x)^n)/(1 - a^2*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3 \operatorname{asin}^n(ax)}{\sqrt{-(ax-1)(ax+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*asin(a*x)**n/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(x**3*asin(a*x)**n/sqrt(-(a*x - 1)*(a*x + 1)), x)
```

3.499 $\int \frac{x^2 \sin^{-1}(ax)^n}{\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=109

$$\frac{\sin^{-1}(ax)^{n+1}}{2a^3(n+1)}+\frac{i2^{-n-3}\sin^{-1}(ax)^n\left(-i\sin^{-1}(ax)\right)^{-n}\Gamma\left(n+1,-2i\sin^{-1}(ax)\right)}{a^3}-\frac{i2^{-n-3}\left(i\sin^{-1}(ax)\right)^{-n}\sin^{-1}(ax)^n\Gamma\left(n+\right.}{a^3}$$

```
[Out] 1/2*arcsin(a*x)^(1+n)/a^3/(1+n)+I*2^(-3-n)*arcsin(a*x)^n*GAMMA(1+n,-2*I*arc
sin(a*x))/a^3/((-I*arcsin(a*x))^n)-I*2^(-3-n)*arcsin(a*x)^n*GAMMA(1+n,2*I*a
rcsin(a*x))/a^3/((I*arcsin(a*x))^n)
```

Rubi [A] time = 0.21, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {4723, 3312, 3307, 2181}

$$\frac{i2^{-n-3}\sin^{-1}(ax)^n\left(-i\sin^{-1}(ax)\right)^{-n}\text{Gamma}\left(n+1,-2i\sin^{-1}(ax)\right)}{a^3}-\frac{i2^{-n-3}\left(i\sin^{-1}(ax)\right)^{-n}\sin^{-1}(ax)^n\text{Gamma}\left(n+\right.}{a^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*ArcSin[a*x]^n)/Sqrt[1 - a^2*x^2],x]
```

```
[Out] ArcSin[a*x]^(1 + n)/(2*a^3*(1 + n)) + (I*2^(-3 - n)*ArcSin[a*x]^n*Gamma[1 +
 n, (-2*I)*ArcSin[a*x]])/(a^3*((-I)*ArcSin[a*x])^n) - (I*2^(-3 - n)*ArcSin[
a*x]^n*Gamma[1 + n, (2*I)*ArcSin[a*x]])/(a^3*(I*ArcSin[a*x])^n)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{x^2 \sin^{-1}(ax)^n}{\sqrt{1-a^2x^2}}\,dx = \frac{\text{Subst}\left(\int x^n \sin^2(x)\,dx, x, \sin^{-1}(ax)\right)}{a^3}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{x^n}{2} - \frac{1}{2}x^n \cos(2x)\right)\,dx, x, \sin^{-1}(ax)\right)}{a^3}$$
$$= \frac{\sin^{-1}(ax)^{1+n}}{2a^3(1+n)} - \frac{\text{Subst}\left(\int x^n \cos(2x)\,dx, x, \sin^{-1}(ax)\right)}{2a^3}$$
$$= \frac{\sin^{-1}(ax)^{1+n}}{2a^3(1+n)} - \frac{\text{Subst}\left(\int e^{-2ix}x^n\,dx, x, \sin^{-1}(ax)\right)}{4a^3} - \frac{\text{Subst}\left(\int e^{2ix}x^n\,dx, x, \sin^{-1}(ax)\right)}{4a^3}$$
$$= \frac{\sin^{-1}(ax)^{1+n}}{2a^3(1+n)} + \frac{i2^{-3-n}\left(-i\sin^{-1}(ax)\right)^{-n}\sin^{-1}(ax)^n\Gamma\left(1+n,-2i\sin^{-1}(ax)\right)}{a^3} - \frac{i2^{-3-n}\left(i\,\text{si}\right.}{}$$

Mathematica [A] time = 0.27, size = 109, normalized size = 1.00

$$\frac{2^{-n-3}\sin^{-1}(ax)^n\left(\sin^{-1}(ax)^2\right)^{-n}\left(2^{n+2}\sin^{-1}(ax)\left(\sin^{-1}(ax)^2\right)^n - i(n+1)\left(-i\sin^{-1}(ax)\right)^n\Gamma\left(n+1,2i\sin^{-1}(ax)\right)\right.}{a^3(n+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*ArcSin[a*x]^n)/Sqrt[1 - a^2*x^2],x]
[Out] (2^(-3 - n)*ArcSin[a*x]^n*(2^(2 + n)*ArcSin[a*x]*(ArcSin[a*x]^2)^n + I*(1 +
 n)*(I*ArcSin[a*x])^n*Gamma[1 + n, (-2*I)*ArcSin[a*x]] - I*(1 + n)*((-I)*Ar
cSin[a*x])^n*Gamma[1 + n, (2*I)*ArcSin[a*x]]))/(a^3*(1 + n)*(ArcSin[a*x]^2)
^n)
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-a^2x^2+1}\,x^2\arcsin(ax)^n}{a^2x^2-1}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(a*x)^n/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
[Out] integral(-sqrt(-a^2*x^2 + 1)*x^2*arcsin(a*x)^n/(a^2*x^2 - 1), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2\arcsin(ax)^n}{\sqrt{-a^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(a*x)^n/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
[Out] integrate(x^2*arcsin(a*x)^n/sqrt(-a^2*x^2 + 1), x)
```

maple [F] time = 0.40, size = 0, normalized size = 0.00

$$\int \frac{x^2\arcsin(ax)^n}{\sqrt{-a^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arcsin(a*x)^n/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] int(x^2*arcsin(a*x)^n/(-a^2*x^2+1)^(1/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arcsin(a*x)^n/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^2\,\mathrm{asin}\left(a\,x\right)^n}{\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*asin(a*x)^n)/(1 - a^2*x^2)^(1/2),x)
```

```
[Out] int((x^2*asin(a*x)^n)/(1 - a^2*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{2} \operatorname{asin}^{n}{\left(a x \right)}}{\sqrt{- \left(a x - 1\right) \left(a x + 1\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*asin(a*x)**n/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(x**2*asin(a*x)**n/sqrt(-(a*x - 1)*(a*x + 1)), x)
```

3.500 $\int \frac{x \sin^{-1}(ax)^n}{\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=75

$$-\frac{\sin^{-1}(ax)^n\left(-i\sin^{-1}(ax)\right)^{-n}\Gamma\left(n+1,-i\sin^{-1}(ax)\right)}{2a^2}-\frac{\left(i\sin^{-1}(ax)\right)^{-n}\sin^{-1}(ax)^n\Gamma\left(n+1,i\sin^{-1}(ax)\right)}{2a^2}$$

```
[Out] -1/2*arcsin(a*x)^n*GAMMA(1+n,-I*arcsin(a*x))/a^2/((-I*arcsin(a*x))^n)-1/2*a
rcsin(a*x)^n*GAMMA(1+n,I*arcsin(a*x))/a^2/((I*arcsin(a*x))^n)
```

Rubi [A] time = 0.12, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {4723, 3308, 2181}

$$-\frac{\sin^{-1}(ax)^n\left(-i\sin^{-1}(ax)\right)^{-n}\text{Gamma}\left(n+1,-i\sin^{-1}(ax)\right)}{2a^2}-\frac{\left(i\sin^{-1}(ax)\right)^{-n}\sin^{-1}(ax)^n\text{Gamma}\left(n+1,i\sin^{-1}\right.}{2a^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x*ArcSin[a*x]^n)/Sqrt[1 - a^2*x^2],x]
```

```
[Out] -(ArcSin[a*x]^n*Gamma[1 + n, (-I)*ArcSin[a*x]])/(2*a^2*((-I)*ArcSin[a*x])^n
) - (ArcSin[a*x]^n*Gamma[1 + n, I*ArcSin[a*x]])/(2*a^2*(I*ArcSin[a*x])^n)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{x\sin^{-1}(ax)^n}{\sqrt{1-a^2x^2}}\,dx &= \frac{\text{Subst}\left(\int x^n\sin(x)\,dx,x,\sin^{-1}(ax)\right)}{a^2}\\ &= \frac{i\,\text{Subst}\left(\int e^{-ix}x^n\,dx,x,\sin^{-1}(ax)\right)}{2a^2}-\frac{i\,\text{Subst}\left(\int e^{ix}x^n\,dx,x,\sin^{-1}(ax)\right)}{2a^2}\\ &= -\frac{\left(-i\sin^{-1}(ax)\right)^{-n}\sin^{-1}(ax)^n\Gamma\left(1+n,-i\sin^{-1}(ax)\right)}{2a^2}-\frac{\left(i\sin^{-1}(ax)\right)^{-n}\sin^{-1}(ax)^n\Gamma\left(1+n\right.}{2a^2}\end{aligned}$$

Mathematica [A] time = 0.09, size = 70, normalized size = 0.93

$$-\frac{\sin^{-1}(ax)^n \left(\sin^{-1}(ax)^2\right)^{-n} \left(\left(-i\sin^{-1}(ax)\right)^n \Gamma\left(n+1, i\sin^{-1}(ax)\right) + \left(i\sin^{-1}(ax)\right)^n \Gamma\left(n+1, -i\sin^{-1}(ax)\right)\right)}{2a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*ArcSin[a*x]^n)/Sqrt[1 - a^2*x^2],x]
```

```
[Out] -1/2*(ArcSin[a*x]^n*((I*ArcSin[a*x])^n*Gamma[1 + n, (-I)*ArcSin[a*x]] + ((-
I)*ArcSin[a*x])^n*Gamma[1 + n, I*ArcSin[a*x]]))/(a^2*(ArcSin[a*x]^2)^n)
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-a^2x^2+1}\,x\arcsin(ax)^n}{a^2x^2-1}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(a*x)^n/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(-a^2*x^2 + 1)*x*arcsin(a*x)^n/(a^2*x^2 - 1), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\arcsin(ax)^n}{\sqrt{-a^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(a*x)^n/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(x*arcsin(a*x)^n/sqrt(-a^2*x^2 + 1), x)
```

maple [F] time = 0.10, size = 0, normalized size = 0.00

$$\int \frac{x\arcsin(ax)^n}{\sqrt{-a^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arcsin(a*x)^n/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] int(x*arcsin(a*x)^n/(-a^2*x^2+1)^(1/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arcsin(a*x)^n/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x\,\mathrm{asin}(a\,x)^n}{\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*asin(a*x)^n)/(1 - a^2*x^2)^(1/2),x)
```

```
[Out] int((x*asin(a*x)^n)/(1 - a^2*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x \operatorname{asin}^{n}(ax)}{\sqrt{-(ax-1)(ax+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*asin(a*x)**n/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(x*asin(a*x)**n/sqrt(-(a*x - 1)*(a*x + 1)), x)
```

3.501 $\int \frac{\sin^{-1}(ax)^n}{\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=17

$$\frac{\sin^{-1}(ax)^{n+1}}{a(n+1)}$$

```
[Out] arcsin(a*x)^(1+n)/a/(1+n)
```

Rubi [A] time = 0.04, antiderivative size = 17, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.048$, Rules used = {4641}

$$\frac{\sin^{-1}(ax)^{n+1}}{a(n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[ArcSin[a*x]^n/Sqrt[1 - a^2*x^2],x]
```

```
[Out] ArcSin[a*x]^(1 + n)/(a*(1 + n))
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{\sin^{-1}(ax)^n}{\sqrt{1-a^2x^2}}\,dx = \frac{\sin^{-1}(ax)^{1+n}}{a(1+n)}$$

Mathematica [A] time = 0.01, size = 17, normalized size = 1.00

$$\frac{\sin^{-1}(ax)^{n+1}}{a(n+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcSin[a*x]^n/Sqrt[1 - a^2*x^2],x]
```

```
[Out] ArcSin[a*x]^(1 + n)/(a*(1 + n))
```

fricas [A] time = 0.43, size = 18, normalized size = 1.06

$$\frac{\arcsin(ax)^n \arcsin(ax)}{an+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^n/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
```

```
[Out] arcsin(a*x)^n*arcsin(a*x)/(a*n + a)
```

giac [A] time = 0.40, size = 17, normalized size = 1.00

$$\frac{\arcsin(ax)^{n+1}}{a(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^n/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] arcsin(a*x)^(n + 1)/(a*(n + 1))
```

maple [A] time = 0.01, size = 18, normalized size = 1.06

$$\frac{\arcsin(ax)^{1+n}}{a(1+n)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^n/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] arcsin(a*x)^(1+n)/a/(1+n)
```

maxima [A] time = 0.45, size = 17, normalized size = 1.00

$$\frac{\arcsin(ax)^{n+1}}{a(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^n/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] arcsin(a*x)^(n + 1)/(a*(n + 1))
```

mupad [B] time = 0.31, size = 33, normalized size = 1.94

$$\begin{cases} \frac{\ln(\mathrm{asin}(a\,x))}{a} & \text{if } n=-1 \\ \frac{\mathrm{asin}(a\,x)^{n+1}}{a\,(n+1)} & \text{if } n\neq -1 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^n/(1 - a^2*x^2)^(1/2),x)
```

```
[Out] piecewise(n == -1, log(asin(a*x))/a, n ~= -1, asin(a*x)^(n + 1)/(a*(n + 1))
)
```

sympy [A] time = 0.83, size = 34, normalized size = 2.00

$$\begin{cases} \tilde{\infty}x & \text{for } a=0 \wedge n=-1 \\ 0^n x & \text{for } a=0 \\ \frac{\log(\mathrm{asin}(ax))}{a} & \text{for } n=-1 \\ \frac{\mathrm{asin}(ax)\,\mathrm{asin}^n(ax)}{an+a} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**n/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Piecewise((zoo*x, Eq(a, 0) & Eq(n, -1)), (0**n*x, Eq(a, 0)), (log(asin(a*x)
)/a, Eq(n, -1)), (asin(a*x)*asin(a*x)**n/(a*n + a), True))
```

3.502 $\int \frac{\sin^{-1}(ax)^n}{x\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{\sin^{-1}(ax)^n}{x\sqrt{1-a^2x^2}},x\right)$$

```
[Out] Unintegrable(arcsin(a*x)^n/x/(-a^2*x^2+1)^(1/2),x)
```

Rubi [A] time = 0.10, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sin^{-1}(ax)^n}{x\sqrt{1-a^2x^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[ArcSin[a*x]^n/(x*Sqrt[1 - a^2*x^2]),x]
[Out] Defer[Int][ArcSin[a*x]^n/(x*Sqrt[1 - a^2*x^2]), x]
```

Rubi steps

$$\int \frac{\sin^{-1}(ax)^n}{x\sqrt{1-a^2x^2}}\,dx = \int \frac{\sin^{-1}(ax)^n}{x\sqrt{1-a^2x^2}}\,dx$$

Mathematica [A] time = 3.56, size = 0, normalized size = 0.00

$$\int \frac{\sin^{-1}(ax)^n}{x\sqrt{1-a^2x^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[ArcSin[a*x]^n/(x*Sqrt[1 - a^2*x^2]),x]
[Out] Integrate[ArcSin[a*x]^n/(x*Sqrt[1 - a^2*x^2]), x]
```

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-a^2x^2+1}\,\arcsin(ax)^n}{a^2x^3-x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^n/x/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
[Out] integral(-sqrt(-a^2*x^2 + 1)*arcsin(a*x)^n/(a^2*x^3 - x), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^n}{\sqrt{-a^2x^2+1}\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^n/x/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
[Out] integrate(arcsin(a*x)^n/(sqrt(-a^2*x^2 + 1)*x), x)
```

maple [A] time = 0.18, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^n}{x\sqrt{-a^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^n/x/(-a^2*x^2+1)^(1/2),x)
[Out] int(arcsin(a*x)^n/x/(-a^2*x^2+1)^(1/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^n/x/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\mathrm{asin}\left(a\,x\right)^n}{x\,\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^n/(x*(1 - a^2*x^2)^(1/2)),x)
[Out] int(asin(a*x)^n/(x*(1 - a^2*x^2)^(1/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\mathrm{asin}^{n}\left(ax\right)}{x\sqrt{-\left(ax-1\right)\left(ax+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**n/x/(-a**2*x**2+1)**(1/2),x)
[Out] Integral(asin(a*x)**n/(x*sqrt(-(a*x - 1)*(a*x + 1))), x)
```

3.503 $\int \frac{\sin^{-1}(ax)^n}{x^2\sqrt{1-a^2x^2}}\,dx$

Optimal. Leaf size=27

$$\text{Int}\left(\frac{\sin^{-1}(ax)^n}{x^2\sqrt{1-a^2x^2}},x\right)$$

```
[Out] Unintegrable(arcsin(a*x)^n/x^2/(-a^2*x^2+1)^(1/2),x)
```

Rubi [A] time = 0.10, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sin^{-1}(ax)^n}{x^2\sqrt{1-a^2x^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[ArcSin[a*x]^n/(x^2*Sqrt[1 - a^2*x^2]),x]
[Out] Defer[Int][ArcSin[a*x]^n/(x^2*Sqrt[1 - a^2*x^2]), x]
```

Rubi steps

$$\int \frac{\sin^{-1}(ax)^n}{x^2\sqrt{1-a^2x^2}}\,dx = \int \frac{\sin^{-1}(ax)^n}{x^2\sqrt{1-a^2x^2}}\,dx$$

Mathematica [A] time = 1.04, size = 0, normalized size = 0.00

$$\int \frac{\sin^{-1}(ax)^n}{x^2\sqrt{1-a^2x^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[ArcSin[a*x]^n/(x^2*Sqrt[1 - a^2*x^2]),x]
[Out] Integrate[ArcSin[a*x]^n/(x^2*Sqrt[1 - a^2*x^2]), x]
```

fricas [A] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-a^2x^2+1}\,\arcsin(ax)^n}{a^2x^4-x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^n/x^2/(-a^2*x^2+1)^(1/2),x, algorithm="fricas")
[Out] integral(-sqrt(-a^2*x^2 + 1)*arcsin(a*x)^n/(a^2*x^4 - x^2), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^n}{\sqrt{-a^2x^2+1}\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^n/x^2/(-a^2*x^2+1)^(1/2),x, algorithm="giac")
[Out] integrate(arcsin(a*x)^n/(sqrt(-a^2*x^2 + 1)*x^2), x)
```

maple [A] time = 0.27, size = 0, normalized size = 0.00

$$\int \frac{\arcsin(ax)^n}{x^2\sqrt{-a^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arcsin(a*x)^n/x^2/(-a^2*x^2+1)^(1/2),x)
```

```
[Out] int(arcsin(a*x)^n/x^2/(-a^2*x^2+1)^(1/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arcsin(a*x)^n/x^2/(-a^2*x^2+1)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\mathrm{asin}\left(a\,x\right)^n}{x^2\,\sqrt{1-a^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(asin(a*x)^n/(x^2*(1 - a^2*x^2)^(1/2)),x)
```

```
[Out] int(asin(a*x)^n/(x^2*(1 - a^2*x^2)^(1/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\mathrm{asin}^{n}\left(ax\right)}{x^{2}\sqrt{-\left(ax-1\right)\left(ax+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(asin(a*x)**n/x**2/(-a**2*x**2+1)**(1/2),x)
```

```
[Out] Integral(asin(a*x)**n/(x**2*sqrt(-(a*x - 1)*(a*x + 1))), x)
```

3.504 $\int (d+cdx)^{5/2}\sqrt{f-cfx}\,\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=376

$$\frac{1}{4}c^2d^2x^3\sqrt{cdx+d}\,\sqrt{f-cfx}\,\left(a+b\sin^{-1}(cx)\right)+\frac{5d^2\sqrt{cdx+d}\,\sqrt{f-cfx}\,\left(a+b\sin^{-1}(cx)\right)^2}{16bc\sqrt{1-c^2x^2}}-\frac{2d^2\left(1-c^2x^2\right)\sqrt{cdx+}}{}$$

```
[Out] 3/8*d^2*x*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*f*x+f)^(1/2)+1/4*c^2*d^2*x^
3*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*f*x+f)^(1/2)-2/3*d^2*(-c^2*x^2+1)*(
a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*f*x+f)^(1/2)/c+2/3*b*d^2*x*(c*d*x+d)^(
1/2)*(-c*f*x+f)^(1/2)/(-c^2*x^2+1)^(1/2)-3/16*b*c*d^2*x^2*(c*d*x+d)^(1/2)*(
-c*f*x+f)^(1/2)/(-c^2*x^2+1)^(1/2)-2/9*b*c^2*d^2*x^3*(c*d*x+d)^(1/2)*(-c*f*
x+f)^(1/2)/(-c^2*x^2+1)^(1/2)-1/16*b*c^3*d^2*x^4*(c*d*x+d)^(1/2)*(-c*f*x+f)
^(1/2)/(-c^2*x^2+1)^(1/2)+5/16*d^2*(a+b*arcsin(c*x))^2*(c*d*x+d)^(1/2)*(-c*
f*x+f)^(1/2)/b/c/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.54, antiderivative size = 376, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 8, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.267$, Rules used = {4673, 4763, 4647, 4641, 30, 4677, 4697, 4707}

$$\frac{1}{4}c^2d^2x^3\sqrt{cdx+d}\,\sqrt{f-cfx}\,\left(a+b\sin^{-1}(cx)\right)+\frac{5d^2\sqrt{cdx+d}\,\sqrt{f-cfx}\,\left(a+b\sin^{-1}(cx)\right)^2}{16bc\sqrt{1-c^2x^2}}-\frac{2d^2\left(1-c^2x^2\right)\sqrt{cdx+}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(d + c*d*x)^(5/2)*Sqrt[f - c*f*x]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (2*b*d^2*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(3*Sqrt[1 - c^2*x^2]) - (3*b*c*
d^2*x^2*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(16*Sqrt[1 - c^2*x^2]) - (2*b*c^2*
d^2*x^3*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(9*Sqrt[1 - c^2*x^2]) - (b*c^3*d^2
*x^4*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(16*Sqrt[1 - c^2*x^2]) + (3*d^2*x*Sqr
t[d + c*d*x]*Sqrt[f - c*f*x]*(a + b*ArcSin[c*x]))/8 + (c^2*d^2*x^3*Sqrt[d +
 c*d*x]*Sqrt[f - c*f*x]*(a + b*ArcSin[c*x]))/4 - (2*d^2*Sqrt[d + c*d*x]*Sqr
t[f - c*f*x]*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(3*c) + (5*d^2*Sqrt[d + c*d
*x]*Sqrt[f - c*f*x]*(a + b*ArcSin[c*x])^2)/(16*b*c*Sqrt[1 - c^2*x^2])
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
```

```
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int (d+cdx)^{5/2}\sqrt{f-cfx}\left(a+b\sin^{-1}(cx)\right)dx = \frac{\left(\sqrt{d+cdx}\sqrt{f-cfx}\right)\int (d+cdx)^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(\sqrt{d+cdx}\sqrt{f-cfx}\right)\int \left(d^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)+2cd^2x\right.}{\sqrt{1}}$$

$$= \frac{\left(d^2\sqrt{d+cdx}\sqrt{f-cfx}\right)\int \sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)dx}{\sqrt{1-c^2x^2}} + \frac{(2cd}{}$$

$$= \frac{1}{2}d^2x\sqrt{d+cdx}\sqrt{f-cfx}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}c^2d^2x^3\sqrt{d+cdx}\sqrt{}$$

$$= \frac{2bd^2x\sqrt{d+cdx}\sqrt{f-cfx}}{3\sqrt{1-c^2x^2}} - \frac{bcd^2x^2\sqrt{d+cdx}\sqrt{f-cfx}}{4\sqrt{1-c^2x^2}} - \frac{2bc^2d^2}{}$$

$$= \frac{2bd^2x\sqrt{d+cdx}\sqrt{f-cfx}}{3\sqrt{1-c^2x^2}} - \frac{3bcd^2x^2\sqrt{d+cdx}\sqrt{f-cfx}}{16\sqrt{1-c^2x^2}} - \frac{2bc^2d}{}$$

Mathematica [A] time = 1.36, size = 293, normalized size = 0.78

$$\frac{d^2\sqrt{cdx+d}\sqrt{f-cfx}\left(48a\sqrt{1-c^2x^2}\left(6c^3x^3+16c^2x^2+9cx-16\right)-256bcx\left(c^2x^2-3\right)+144b\cos\left(2\sin^{-1}(cx)\right)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + c*d*x)^(5/2)*Sqrt[f - c*f*x]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (360*b*d^2*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*ArcSin[c*x]^2 - 720*a*d^(5/2)*Sq
rt[f]*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(Sqrt[
d]*Sqrt[f]*(-1 + c^2*x^2))] + d^2*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(-256*b*c
*x*(-3 + c^2*x^2) + 48*a*Sqrt[1 - c^2*x^2]*(-16 + 9*c*x + 16*c^2*x^2 + 6*c^
3*x^3) + 144*b*Cos[2*ArcSin[c*x]] - 9*b*Cos[4*ArcSin[c*x]]) + 12*b*d^2*Sqrt
[d + c*d*x]*Sqrt[f - c*f*x]*ArcSin[c*x]*(-64*(1 - c^2*x^2)^(3/2) + 24*Sin[2
*ArcSin[c*x]] - 3*Sin[4*ArcSin[c*x]]))/(1152*c*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(ac^2d^2x^2+2\,acd^2x+ad^2+\left(bc^2d^2x^2+2\,bcd^2x+bd^2\right)\arcsin(cx)\right)\sqrt{cdx+d}\sqrt{-cfx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))*(-c*f*x+f)^(1/2),x, algorithm="
fricas")
```

```
[Out] integral((a*c^2*d^2*x^2 + 2*a*c*d^2*x + a*d^2 + (b*c^2*d^2*x^2 + 2*b*c*d^2*
x + b*d^2)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*f*x + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (cdx+d)^{\frac{5}{2}}\sqrt{-cfx+f}\,(b\arcsin(cx)+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))*(-c*f*x+f)^(1/2),x, algorithm="
giac")
```

```
[Out] integrate((c*d*x + d)^(5/2)*sqrt(-c*f*x + f)*(b*arcsin(c*x) + a), x)
```

maple [F] time = 0.44, size = 0, normalized size = 0.00

$$\int (cdx + d)^{\frac{5}{2}} (a + b \arcsin (cx)) \sqrt{-cfx + f}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))*(-c*f*x+f)^(1/2),x)
```

```
[Out] int((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))*(-c*f*x+f)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\sqrt{d}\sqrt{f}\int \left(c^2d^2x^2 + 2\,cd^2x + d^2\right)\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)\,dx + \frac{1}{24}\left(15\,\sqrt{-c^2dfx^2 +\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))*(-c*f*x+f)^(1/2),x, algorithm="
maxima")
```

```
[Out] b*sqrt(d)*sqrt(f)*integrate((c^2*d^2*x^2 + 2*c*d^2*x + d^2)*sqrt(c*x + 1)*s
qrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)), x) + 1/24*(15*sqr
t(-c^2*d*f*x^2 + d*f)*d^2*x + 15*d^3*f*arcsin(c*x)/(sqrt(d*f)*c) - 6*(-c^2*
d*f*x^2 + d*f)^(3/2)*d*x/f - 16*(-c^2*d*f*x^2 + d*f)^(3/2)*d/(c*f))*a
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a + b\,\mathrm{asin}\,(c\,x))\,(d + c\,d\,x)^{5/2}\,\sqrt{f - c\,f\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(d + c*d*x)^(5/2)*(f - c*f*x)^(1/2),x)
```

```
[Out] int((a + b*asin(c*x))*(d + c*d*x)^(5/2)*(f - c*f*x)^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(5/2)*(a+b*asin(c*x))**(-c*f*x+f)**(1/2),x)
```

```
[Out] Timed out
```

3.505 $\int (d+cdx)^{3/2}\sqrt{f-cfx}\left(a+b\sin^{-1}(cx)\right)dx$

Optimal. Leaf size=273

$$\frac{d\sqrt{cdx+d}\sqrt{f-cfx}\left(a+b\sin^{-1}(cx)\right)^2}{4bc\sqrt{1-c^2x^2}}-\frac{d\left(1-c^2x^2\right)\sqrt{cdx+d}\sqrt{f-cfx}\left(a+b\sin^{-1}(cx)\right)}{3c}+\frac{1}{2}dx\sqrt{cdx+d}\sqrt{f-}$$

```
[Out] 1/2*d*x*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*f*x+f)^(1/2)-1/3*d*(-c^2*x^2+
1)*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*f*x+f)^(1/2)/c+1/3*b*d*x*(c*d*x+d)
^(1/2)*(-c*f*x+f)^(1/2)/(-c^2*x^2+1)^(1/2)-1/4*b*c*d*x^2*(c*d*x+d)^(1/2)*(-
c*f*x+f)^(1/2)/(-c^2*x^2+1)^(1/2)-1/9*b*c^2*d*x^3*(c*d*x+d)^(1/2)*(-c*f*x+f
)^(1/2)/(-c^2*x^2+1)^(1/2)+1/4*d*(a+b*arcsin(c*x))^2*(c*d*x+d)^(1/2)*(-c*f*
x+f)^(1/2)/b/c/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.30, antiderivative size = 273, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {4673, 4763, 4647, 4641, 30, 4677}

$$\frac{d\sqrt{cdx+d}\sqrt{f-cfx}\left(a+b\sin^{-1}(cx)\right)^2}{4bc\sqrt{1-c^2x^2}}-\frac{d\left(1-c^2x^2\right)\sqrt{cdx+d}\sqrt{f-cfx}\left(a+b\sin^{-1}(cx)\right)}{3c}+\frac{1}{2}dx\sqrt{cdx+d}\sqrt{f-}$$

Antiderivative was successfully verified.

```
[In] Int[(d + c*d*x)^(3/2)*Sqrt[f - c*f*x]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*d*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(3*Sqrt[1 - c^2*x^2]) - (b*c*d*x^2*
Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(4*Sqrt[1 - c^2*x^2]) - (b*c^2*d*x^3*Sqrt[
d + c*d*x]*Sqrt[f - c*f*x])/(9*Sqrt[1 - c^2*x^2]) + (d*x*Sqrt[d + c*d*x]*Sq
rt[f - c*f*x]*(a + b*ArcSin[c*x]))/2 - (d*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(
1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(3*c) + (d*Sqrt[d + c*d*x]*Sqrt[f - c*f*x
]*(a + b*ArcSin[c*x])^2)/(4*b*c*Sqrt[1 - c^2*x^2])
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int (d+cdx)^{3/2}\sqrt{f-cfx}\left(a+b\sin^{-1}(cx)\right)dx = \frac{\left(\sqrt{d+cdx}\sqrt{f-cfx}\right)\int (d+cdx)\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(\sqrt{d+cdx}\sqrt{f-cfx}\right)\int \left(d\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)+cdx\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d\sqrt{d+cdx}\sqrt{f-cfx}\right)\int \sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)dx}{\sqrt{1-c^2x^2}} + \frac{(c}{}$$

$$= \frac{1}{2}dx\sqrt{d+cdx}\sqrt{f-cfx}\left(a+b\sin^{-1}(cx)\right) - \frac{d\sqrt{d+cdx}\sqrt{f-c}}{}$$

$$= \frac{bdx\sqrt{d+cdx}\sqrt{f-cfx}}{3\sqrt{1-c^2x^2}} - \frac{bcdx^2\sqrt{d+cdx}\sqrt{f-cfx}}{4\sqrt{1-c^2x^2}} - \frac{bc^2dx^3}{}$$

Mathematica [A] time = 1.06, size = 260, normalized size = 0.95

$$\frac{d\sqrt{cdx+d}\sqrt{f-cfx}\left(12a\sqrt{1-c^2x^2}\left(2c^2x^2+3cx-2\right)-8bcx\left(c^2x^2-3\right)+9b\cos\left(2\sin^{-1}(cx)\right)\right)-36ad^{3/2}\sqrt{f}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + c*d*x)^(3/2)*Sqrt[f - c*f*x]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (18*b*d*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*ArcSin[c*x]^2 - 36*a*d^(3/2)*Sqrt[f
]*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(Sqrt[d]*S
qrt[f]*(-1 + c^2*x^2))] + d*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(-8*b*c*x*(-3 +
 c^2*x^2) + 12*a*Sqrt[1 - c^2*x^2]*(-2 + 3*c*x + 2*c^2*x^2) + 9*b*Cos[2*Arc
Sin[c*x]]) + 6*b*d*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*ArcSin[c*x]*(-4*(1 - c^2
*x^2)^(3/2) + 3*Sin[2*ArcSin[c*x]]))/(72*c*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left((acdx+ad+(bcdx+bd)\arcsin(cx))\sqrt{cdx+d}\sqrt{-cfx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))*(-c*f*x+f)^(1/2),x, algorithm="fricas")

[Out] integral((a*c*d*x + a*d + (b*c*d*x + b*d)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*f*x + f), x)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (cdx+d)^{\frac{3}{2}}\sqrt{-cfx+f}\,(b\arcsin(cx)+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))*(-c*f*x+f)^(1/2),x, algorithm="giac")

[Out] integrate((c*d*x + d)^(3/2)*sqrt(-c*f*x + f)*(b*arcsin(c*x) + a), x)

maple [F] time = 0.28, size = 0, normalized size = 0.00

$$\int (cdx+d)^{\frac{3}{2}}\,(a+b\arcsin(cx))\,\sqrt{-cfx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))*(-c*f*x+f)^(1/2),x)

[Out] int((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))*(-c*f*x+f)^(1/2),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\sqrt{d}\sqrt{f}\int (cdx+d)\sqrt{cx+1}\sqrt{-cx+1}\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)dx+\frac{1}{6}\left(3\sqrt{-c^2dfx^2+df}\,dx+\frac{3\,d^2f\,\text{arcs}}{\sqrt{df}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))*(-c*f*x+f)^(1/2),x, algorithm="maxima")

[Out] b*sqrt(d)*sqrt(f)*integrate((c*d*x + d)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)), x) + 1/6*(3*sqrt(-c^2*d*f*x^2 + d*f)*d*x + 3*d^2*f*arcsin(c*x)/(sqrt(d*f)*c) - 2*(-c^2*d*f*x^2 + d*f)^(3/2)/(c*f))*a

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,\mathrm{asin}(c\,x))\,(d+c\,d\,x)^{3/2}\,\sqrt{f-c\,f\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a + b*asin(c*x))*(d + c*d*x)^(3/2)*(f - c*f*x)^(1/2),x)

[Out] int((a + b*asin(c*x))*(d + c*d*x)^(3/2)*(f - c*f*x)^(1/2), x)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d(cx+1))^{\frac{3}{2}}\sqrt{-f(cx-1)}\,(a+b\,\mathrm{asin}(cx))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((c*d*x+d)**(3/2)*(a+b*asin(c*x))*(-c*f*x+f)**(1/2),x)

[Out] Integral((d*(c*x + 1))**(3/2)*sqrt(-f*(c*x - 1))*(a + b*asin(c*x)), x)

3.506 $\int \sqrt{d+cdx}\sqrt{f-cfx}\left(a+b\sin^{-1}(cx)\right)dx$

Optimal. Leaf size=134

$$\frac{\sqrt{cdx+d}\sqrt{f-cfx}\left(a+b\sin^{-1}(cx)\right)^2}{4bc\sqrt{1-c^2x^2}}+\frac{1}{2}x\sqrt{cdx+d}\sqrt{f-cfx}\left(a+b\sin^{-1}(cx)\right)-\frac{bcx^2\sqrt{cdx+d}\sqrt{f-cfx}}{4\sqrt{1-c^2x^2}}$$

```
[Out] 1/2*x*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*f*x+f)^(1/2)-1/4*b*c*x^2*(c*d*x
+d)^(1/2)*(-c*f*x+f)^(1/2)/(-c^2*x^2+1)^(1/2)+1/4*(a+b*arcsin(c*x))^2*(c*d*
x+d)^(1/2)*(-c*f*x+f)^(1/2)/b/c/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 134, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {4673, 4647, 4641, 30}

$$\frac{\sqrt{cdx+d}\sqrt{f-cfx}\left(a+b\sin^{-1}(cx)\right)^2}{4bc\sqrt{1-c^2x^2}}+\frac{1}{2}x\sqrt{cdx+d}\sqrt{f-cfx}\left(a+b\sin^{-1}(cx)\right)-\frac{bcx^2\sqrt{cdx+d}\sqrt{f-cfx}}{4\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(a + b*ArcSin[c*x]),x]
```

```
[Out] -(b*c*x^2*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(4*Sqrt[1 - c^2*x^2]) + (x*Sqrt[
d + c*d*x]*Sqrt[f - c*f*x]*(a + b*ArcSin[c*x]))/2 + (Sqrt[d + c*d*x]*Sqrt[f
 - c*f*x]*(a + b*ArcSin[c*x])^2)/(4*b*c*Sqrt[1 - c^2*x^2])
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rubi steps

$$\int \sqrt{d+cdx}\sqrt{f-cfx}\left(a+b\sin^{-1}(cx)\right)dx=\frac{\left(\sqrt{d+cdx}\sqrt{f-cfx}\right)\int\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)dx}{\sqrt{1-c^2x^2}}$$
$$=\frac{1}{2}x\sqrt{d+cdx}\sqrt{f-cfx}\left(a+b\sin^{-1}(cx)\right)+\frac{\left(\sqrt{d+cdx}\sqrt{f-cfx}\right)\int}{2\sqrt{1-c^2x}}$$
$$=-\frac{bcx^2\sqrt{d+cdx}\sqrt{f-cfx}}{4\sqrt{1-c^2x^2}}+\frac{1}{2}x\sqrt{d+cdx}\sqrt{f-cfx}\left(a+b\sin^{-1}(c\right.$$

Mathematica [A] time = 0.65, size = 207, normalized size = 1.54

$$\frac{1}{2}ax\sqrt{d(cx+1)}\sqrt{-f(cx-1)}-\frac{a\sqrt{d}\sqrt{f}\tan^{-1}\left(\frac{cx\sqrt{d(cx+1)}\sqrt{-f(cx-1)}}{\sqrt{d}\sqrt{f}(cx-1)(cx+1)}\right)}{2c}+\frac{b\sqrt{cdx+d}\sqrt{f-cfx}\sqrt{-df\left(1-c^2x^2\right)}\left(2\sin\right.}{8c\sqrt{1-c^2x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(a + b*ArcSin[c*x]),x]
```

```
[Out] (a*x*Sqrt[-(f*(-1 + c*x))]*Sqrt[d*(1 + c*x)])/2 - (a*Sqrt[d]*Sqrt[f]*ArcTan
[(c*x*Sqrt[-(f*(-1 + c*x))]*Sqrt[d*(1 + c*x)])/(Sqrt[d]*Sqrt[f]*(-1 + c*x)*
(1 + c*x))])/(2*c) + (b*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*Sqrt[-(d*f*(1 - c^2
*x^2))]*(Cos[2*ArcSin[c*x]] + 2*ArcSin[c*x]*(ArcSin[c*x] + Sin[2*ArcSin[c*x
]])))/(8*c*Sqrt[(-d - c*d*x)*(f - c*f*x)]*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.41, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\sqrt{cdx+d}\sqrt{-cfx+f}\,(b\arcsin(cx)+a),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))*(-c*f*x+f)^(1/2),x, algorithm="
fricas")
```

```
[Out] integral(sqrt(c*d*x + d)*sqrt(-c*f*x + f)*(b*arcsin(c*x) + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\sqrt{cdx+d}\sqrt{-cfx+f}\,(b\arcsin(cx)+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))*(-c*f*x+f)^(1/2),x, algorithm="
giac")
```

```
[Out] integrate(sqrt(c*d*x + d)*sqrt(-c*f*x + f)*(b*arcsin(c*x) + a), x)
```

maple [F] time = 0.28, size = 0, normalized size = 0.00

$$\int\sqrt{cdx+d}\,\left(a+b\arcsin(cx)\right)\sqrt{-cfx+f}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))*(-c*f*x+f)^(1/2),x)
```

```
[Out] int((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))*(-c*f*x+f)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\sqrt{d}\sqrt{f}\int\sqrt{cx+1}\sqrt{-cx+1}\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)dx+\frac{1}{2}\left(\sqrt{-c^2dfx^2+df}\,x+\frac{df\arcsin(cx)}{\sqrt{df}\,c}\right)a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))*(-c*f*x+f)^(1/2),x, algorithm="
maxima")
```

```
[Out] b*sqrt(d)*sqrt(f)*integrate(sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(
c*x + 1)*sqrt(-c*x + 1)), x) + 1/2*(sqrt(-c^2*d*f*x^2 + d*f)*x + d*f*arcsin
(c*x)/(sqrt(d*f)*c))*a
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int(a+b\operatorname{asin}(c\,x))\sqrt{d+c\,d\,x}\sqrt{f-c\,f\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(d + c*d*x)^(1/2)*(f - c*f*x)^(1/2),x)
```

```
[Out] int((a + b*asin(c*x))*(d + c*d*x)^(1/2)*(f - c*f*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\sqrt{d(cx+1)}\sqrt{-f(cx-1)}\,(a+b\operatorname{asin}(cx))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(1/2)*(a+b*asin(c*x))*(-c*f*x+f)**(1/2),x)
```

```
[Out] Integral(sqrt(d*(c*x + 1))*sqrt(-f*(c*x - 1))*(a + b*asin(c*x)), x)
```

3.507 $\int \frac{\sqrt{f-cfx}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d+cdx}}\,dx$

Optimal. Leaf size=141

$$\frac{f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\sqrt{cdx+d}\sqrt{f-cfx}}+\frac{f\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{cdx+d}\sqrt{f-cfx}}-\frac{bfx\sqrt{1-c^2x^2}}{\sqrt{cdx+d}\sqrt{f-cfx}}$$

```
[Out] f*(-c^2*x^2+1)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)-b*f*x*(
-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)+1/2*f*(a+b*arcsin(c*x))^
2*(-c^2*x^2+1)^(1/2)/b/c/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)
```

Rubi [A] time = 0.26, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {4673, 4763, 4641, 4677, 8}

$$\frac{f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\sqrt{cdx+d}\sqrt{f-cfx}}+\frac{f\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{cdx+d}\sqrt{f-cfx}}-\frac{bfx\sqrt{1-c^2x^2}}{\sqrt{cdx+d}\sqrt{f-cfx}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[f - c*f*x]*(a + b*ArcSin[c*x]))/Sqrt[d + c*d*x],x]
```

```
[Out] -((b*f*x*Sqrt[1 - c^2*x^2])/(Sqrt[d + c*d*x]*Sqrt[f - c*f*x])) + (f*(1 - c^
2*x^2)*(a + b*ArcSin[c*x]))/(c*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]) + (f*Sqrt[1
 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
```

```
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int \frac{\sqrt{f-cfx}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d+cdx}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f-cfx)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\sqrt{f-cfx}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{f\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} - \frac{cfx\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\right)dx}{\sqrt{d+cdx}\sqrt{f-cfx}}$$

$$= \frac{\left(f\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\sqrt{f-cfx}} - \frac{\left(cf\sqrt{1-c^2x^2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\sqrt{f-cfx}}$$

$$= \frac{f\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{d+cdx}\sqrt{f-cfx}} + \frac{f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\sqrt{d+cdx}\sqrt{f-cfx}} - \frac{\left(bf\sqrt{1-\ldots}\right.}{\sqrt{d+c\ldots}}$$

$$= -\frac{bfx\sqrt{1-c^2x^2}}{\sqrt{d+cdx}\sqrt{f-cfx}} + \frac{f\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{d+cdx}\sqrt{f-cfx}} + \frac{f\sqrt{1-c^2x^2}\left(a+\ldots\right.}{2bc\sqrt{d+cdx\ldots}}$$

Mathematica [A] time = 0.83, size = 200, normalized size = 1.42

$$\frac{\frac{2\sqrt{cdx+d}\sqrt{f-cfx}\left(a\sqrt{1-c^2x^2}-bcx\right)}{\sqrt{1-c^2x^2}} - 2a\sqrt{d}\sqrt{f}\tan^{-1}\left(\frac{cx\sqrt{cdx+d}\sqrt{f-cfx}}{\sqrt{d}\sqrt{f}\left(c^2x^2-1\right)}\right) + \frac{b\sqrt{cdx+d}\sqrt{f-cfx}\sin^{-1}(cx)^2}{\sqrt{1-c^2x^2}} + 2b\sqrt{cdx+d}\sqrt{f-\ldots}}{2cd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[f - c*f*x]*(a + b*ArcSin[c*x]))/Sqrt[d + c*d*x],x]
```

```
[Out] ((2*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(-(b*c*x) + a*Sqrt[1 - c^2*x^2]))/Sqrt[
1 - c^2*x^2] + 2*b*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*ArcSin[c*x] + (b*Sqrt[d
+ c*d*x]*Sqrt[f - c*f*x]*ArcSin[c*x]^2)/Sqrt[1 - c^2*x^2] - 2*a*Sqrt[d]*Sqr
t[f]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(Sqrt[d]*Sqrt[f]*(-1 + c^
2*x^2))])/(2*c*d)
```

fricas [F] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-cfx+f}\,(b\arcsin(cx)+a)}{\sqrt{cdx+d}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*(-c*f*x+f)^(1/2)/(c*d*x+d)^(1/2),x, algorithm="
fricas")
```

```
[Out] integral(sqrt(-c*f*x + f)*(b*arcsin(c*x) + a)/sqrt(c*d*x + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-cfx+f}\,(b\arcsin(cx)+a)}{\sqrt{cdx+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*(-c*f*x+f)^(1/2)/(c*d*x+d)^(1/2),x, algorithm="
giac")
```

```
[Out] integrate(sqrt(-c*f*x + f)*(b*arcsin(c*x) + a)/sqrt(c*d*x + d), x)
```

maple [F] time = 0.32, size = 0, normalized size = 0.00

$$\int \frac{(a + b \arcsin(cx)) \sqrt{-cfx + f}}{\sqrt{cdx + d}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))*(-c*f*x+f)^(1/2)/(c*d*x+d)^(1/2),x)
```

```
[Out] int((a+b*arcsin(c*x))*(-c*f*x+f)^(1/2)/(c*d*x+d)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a\left(\frac{f \arcsin(cx)}{cd\sqrt{\frac{f}{d}}} + \frac{\sqrt{-c^2dfx^2 + df}}{cd}\right) + \frac{-\frac{1}{2}b\sqrt{f}\left(2x - \frac{2\sqrt{cx+1}\sqrt{-cx+1}\arctan\left(cx, \sqrt{cx+1}\sqrt{-cx+1}\right)}{c} - \frac{\arctan\left(cx, \sqrt{cx+1}\sqrt{-cx+1}\right)^2}{c}\right.}{\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*(-c*f*x+f)^(1/2)/(c*d*x+d)^(1/2),x, algorithm="
maxima")
```

```
[Out] a*(f*arcsin(c*x)/(c*d*sqrt(f/d)) + sqrt(-c^2*d*f*x^2 + d*f)/(c*d)) + b*sqrt
(f)*integrate(sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/sqr
t(c*x + 1), x)/sqrt(d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a + b \operatorname{asin}(c\,x))\,\sqrt{f - c\,f\,x}}{\sqrt{d + c\,d\,x}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(f - c*f*x)^(1/2))/(d + c*d*x)^(1/2),x)
```

```
[Out] int(((a + b*asin(c*x))*(f - c*f*x)^(1/2))/(d + c*d*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-f(cx - 1)}\,(a + b \operatorname{asin}(cx))}{\sqrt{d(cx + 1)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))*(-c*f*x+f)**(1/2)/(c*d*x+d)**(1/2),x)
```

```
[Out] Integral(sqrt(-f*(c*x - 1))*(a + b*asin(c*x))/sqrt(d*(c*x + 1)), x)
```

3.508 $\int \frac{\sqrt{f-cfx}\left(a+b\sin^{-1}(cx)\right)}{(d+cdx)^{3/2}}\,dx$

Optimal. Leaf size=162

$$-\frac{f^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc(cdx+d)^{3/2}(f-cfx)^{3/2}}-\frac{2f^2(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}+\frac{2bf^2\left(1-c^2x^2\right)^{3/2}\log(cx+1)}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}$$

```
[Out] -2*f^2*(-c*x+1)*(-c^2*x^2+1)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(3/2)/(-c*f*x+f)
^(3/2)-1/2*f^2*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))^2/b/c/(c*d*x+d)^(3/2)/(
-c*f*x+f)^(3/2)+2*b*f^2*(-c^2*x^2+1)^(3/2)*ln(c*x+1)/c/(c*d*x+d)^(3/2)/(-c*
f*x+f)^(3/2)
```

Rubi [A] time = 0.36, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.267$, Rules used = {4673, 4775, 637, 4761, 12, 627, 31, 4641}

$$-\frac{f^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc(cdx+d)^{3/2}(f-cfx)^{3/2}}-\frac{2f^2(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}+\frac{2bf^2\left(1-c^2x^2\right)^{3/2}\log(cx+1)}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[f - c*f*x]*(a + b*ArcSin[c*x]))/(d + c*d*x)^(3/2),x]
```

```
[Out] (-2*f^2*(1 - c*x)*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(c*(d + c*d*x)^(3/2)*(
f - c*f*x)^(3/2)) - (f^2*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/(2*b*c*
(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)) + (2*b*f^2*(1 - c^2*x^2)^(3/2)*Log[1 +
 c*x])/(c*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 627

```
Int[((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int
[(d + e*x)^(m + p)*(a/d + (c*x)/e)^p, x] /; FreeQ[{a, c, d, e, m, p}, x] &&
 EqQ[c*d^2 + a*e^2, 0] && (IntegerQ[p] || (GtQ[a, 0] && GtQ[d, 0] && Intege
rQ[m + p]))
```

Rule 637

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2)^(3/2), x_Symbol] :> Simp[(-(a
*e) + c*d*x)/(a*c*Sqrt[a + c*x^2]), x] /; FreeQ[{a, c, d, e}, x]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4761

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rule 4775

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{\sqrt{f-cfx}\left(a+b\sin^{-1}(cx)\right)}{(d+cdx)^{3/2}}\,dx = \frac{\left(1-c^2x^2\right)^{3/2}\int \frac{(f-cfx)^2\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}\,dx}{(d+cdx)^{3/2}(f-cfx)^{3/2}}$$

$$= \frac{\left(1-c^2x^2\right)^{3/2}\int \left(\frac{2\left(f^2-cf^2x\right)\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}-\frac{f^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\right)dx}{(d+cdx)^{3/2}(f-cfx)^{3/2}}$$

$$= \frac{\left(2\left(1-c^2x^2\right)^{3/2}\right)\int \frac{\left(f^2-cf^2x\right)\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}\,dx}{(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{\left(f^2\left(1-c^2x^2\right)^{3/2}\right)\int \frac{a+b\sin^{-1}(cx)}{\sqrt{1-c^2x^2}}}{(d+cdx)^{3/2}(f-cfx)^{3/2}}$$

$$= -\frac{2f^2(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{f^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{2bc(d+cdx)^{3/2}(f-cfx)^{3/2}}$$

$$= -\frac{2f^2(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{f^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{2bc(d+cdx)^{3/2}(f-cfx)^{3/2}}$$

$$= -\frac{2f^2(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{f^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{2bc(d+cdx)^{3/2}(f-cfx)^{3/2}}$$

$$= -\frac{2f^2(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{f^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{2bc(d+cdx)^{3/2}(f-cfx)^{3/2}}$$

Mathematica [A] time = 1.46, size = 248, normalized size = 1.53

$$-\frac{-2a\sqrt{d}\sqrt{f}\tan^{-1}\left(\frac{cx\sqrt{cdx+d}\sqrt{f-cfx}}{\sqrt{d}\sqrt{f}\left(c^2x^2-1\right)}\right)+\frac{4a\sqrt{cdx+d}\sqrt{f-cfx}}{cx+1}+\frac{b\sqrt{cdx+d}\sqrt{f-cfx}\left(\cos\left(\frac{1}{2}\sin^{-1}(cx)\right)\left(\sin^{-1}(cx)\left(\sin^{-1}(cx)+4\right)-8\log\left(\sin\left(\right.\right.\right.\right.}{}}{2cd^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[f - c*f*x]*(a + b*ArcSin[c*x]))/(d + c*d*x)^(3/2),x]
```

```
[Out] -1/2*((4*a*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(1 + c*x) - 2*a*Sqrt[d]*Sqrt[f]
*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(Sqrt[d]*Sqrt[f]*(-1 + c^2*x^
2))] + (b*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(Cos[ArcSin[c*x]/2]*(ArcSin[c*x]*
(4 + ArcSin[c*x]) - 8*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]) + ((-4
+ ArcSin[c*x])*ArcSin[c*x] - 8*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]
)*Sin[ArcSin[c*x]/2]))/(Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[
c*x]/2])))/(c*d^2)
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cdx+d}\sqrt{-cfx+f}\,(b\arcsin(cx)+a)}{c^2d^2x^2+2\,cd^2x+d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*(-c*f*x+f)^(1/2)/(c*d*x+d)^(3/2),x, algorithm="
fricas")
```

```
[Out] integral(sqrt(c*d*x + d)*sqrt(-c*f*x + f)*(b*arcsin(c*x) + a)/(c^2*d^2*x^2
+ 2*c*d^2*x + d^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-cfx+f}\,(b\arcsin(cx)+a)}{(cdx+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*(-c*f*x+f)^(1/2)/(c*d*x+d)^(3/2),x, algorithm="
giac")
```

```
[Out] integrate(sqrt(-c*f*x + f)*(b*arcsin(c*x) + a)/(c*d*x + d)^(3/2), x)
```

maple [F] time = 0.38, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin(cx))\sqrt{-cfx+f}}{(cdx+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))*(-c*f*x+f)^(1/2)/(c*d*x+d)^(3/2),x)
```

```
[Out] int((a+b*arcsin(c*x))*(-c*f*x+f)^(1/2)/(c*d*x+d)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-a\left(\frac{2\sqrt{-c^2dfx^2+df}}{c^2d^2x+cd^2}+\frac{f\arcsin(cx)}{cd^2\sqrt{\frac{f}{d}}}\right)+\frac{\frac{b\sqrt{f}\int\frac{\sqrt{-cx+1}\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)}{(cx+1)^{\frac{3}{2}}}\,dx}{d}}{\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*(-c*f*x+f)^(1/2)/(c*d*x+d)^(3/2),x, algorithm="
maxima")
```

```
[Out] -a*(2*sqrt(-c^2*d*f*x^2 + d*f)/(c^2*d^2*x + c*d^2) + f*arcsin(c*x)/(c*d^2*s
qrt(f/d))) + b*sqrt(f)*integrate(sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*
sqrt(-c*x + 1))/((c*d*x + d)*sqrt(c*x + 1)), x)/sqrt(d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))\,\sqrt{f-c\,f\,x}}{(d+c\,d\,x)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(f - c*f*x)^(1/2))/(d + c*d*x)^(3/2),x)
[Out] int(((a + b*asin(c*x))*(f - c*f*x)^(1/2))/(d + c*d*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-f\,(cx-1)}\,(a+b\,\mathrm{asin}\,(cx))}{(d\,(cx+1))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))*(-c*f*x+f)**(1/2)/(c*d*x+d)**(3/2),x)
[Out] Integral(sqrt(-f*(c*x - 1))*(a + b*asin(c*x))/(d*(c*x + 1))**(3/2), x)
```

3.509 $\int \frac{\sqrt{f-cfx}\left(a+b\sin^{-1}(cx)\right)}{(d+cdx)^{5/2}}\,dx$

Optimal. Leaf size=163

$$-\frac{f^3(1-cx)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{2bf^3\left(1-c^2x^2\right)^{5/2}}{3c(cx+1)(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{bf^3\left(1-c^2x^2\right)^{5/2}\log(cx+1)}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}$$

```
[Out] -2/3*b*f^3*(-c^2*x^2+1)^(5/2)/c/(c*x+1)/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)-1/
3*f^3*(-c*x+1)^3*(-c^2*x^2+1)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*f*x+f
)^(5/2)-1/3*b*f^3*(-c^2*x^2+1)^(5/2)*ln(c*x+1)/c/(c*d*x+d)^(5/2)/(-c*f*x+f)
^(5/2)
```

Rubi [A] time = 0.27, antiderivative size = 163, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {4673, 651, 4761, 12, 627, 43}

$$-\frac{f^3(1-cx)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{2bf^3\left(1-c^2x^2\right)^{5/2}}{3c(cx+1)(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{bf^3\left(1-c^2x^2\right)^{5/2}\log(cx+1)}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[f - c*f*x]*(a + b*ArcSin[c*x]))/(d + c*d*x)^(5/2),x]
```

```
[Out] (-2*b*f^3*(1 - c^2*x^2)^(5/2))/(3*c*(1 + c*x)*(d + c*d*x)^(5/2)*(f - c*f*x)
^(5/2)) - (f^3*(1 - c*x)^3*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(3*c*(d + c*d
*x)^(5/2)*(f - c*f*x)^(5/2)) - (b*f^3*(1 - c^2*x^2)^(5/2)*Log[1 + c*x])/(3*
c*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 627

```
Int[((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int
[(d + e*x)^(m + p)*(a/d + (c*x)/e)^p, x] /; FreeQ[{a, c, d, e, m, p}, x] &&
 EqQ[c*d^2 + a*e^2, 0] && (IntegerQ[p] || (GtQ[a, 0] && GtQ[d, 0] && Intege
rQ[m + p]))
```

Rule 651

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^m*(a + c*x^2)^(p + 1))/(2*c*d*(p + 1)), x] /; FreeQ[{a, c, d,
e, m, p}, x] && EqQ[c*d^2 + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2,
0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
```

```
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4761

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rubi steps

$$\int \frac{\sqrt{f-cfx}\left(a+b\sin^{-1}(cx)\right)}{(d+cdx)^{5/2}}dx = \frac{\left(1-c^2x^2\right)^{5/2}\int \frac{(f-cfx)^3\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{5/2}}dx}{(d+cdx)^{5/2}(f-cfx)^{5/2}}$$

$$= -\frac{f^3(1-cx)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{\left(bc\left(1-c^2x^2\right)^{5/2}\right)\int -\frac{f^3(1-cx)^3}{3c\left(1-c^2x^2\right)^2}d}{(d+cdx)^{5/2}(f-cfx)^{5/2}}$$

$$= -\frac{f^3(1-cx)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{\left(bf^3\left(1-c^2x^2\right)^{5/2}\right)\int \frac{(1-cx)^3}{\left(1-c^2x^2\right)^2}dx}{3(d+cdx)^{5/2}(f-cfx)^{5/2}}$$

$$= -\frac{f^3(1-cx)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{\left(bf^3\left(1-c^2x^2\right)^{5/2}\right)\int \frac{1-cx}{(1+cx)^2}dx}{3(d+cdx)^{5/2}(f-cfx)^{5/2}}$$

$$= -\frac{f^3(1-cx)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{\left(bf^3\left(1-c^2x^2\right)^{5/2}\right)\int \left(\frac{1}{-1-cx}+\frac{}{(1\cdot}\right.}{3(d+cdx)^{5/2}(f-cfx)^{5/2}}$$

$$= -\frac{2bf^3\left(1-c^2x^2\right)^{5/2}}{3c(1+cx)(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{f^3(1-cx)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right.}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}}$$

Mathematica [A] time = 0.55, size = 114, normalized size = 0.70

$$-\frac{f\sqrt{cdx+d}\left((cx-1)\left(acx-a-b\sqrt{1-c^2x^2}\right)+b(cx+1)\sqrt{1-c^2x^2}\log(-f(cx+1))+b(cx-1)^2\sin^{-1}(cx)\right)}{3cd^3(cx+1)^2\sqrt{f-cfx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[f - c*f*x]*(a + b*ArcSin[c*x]))/(d + c*d*x)^(5/2),x]
```

```
[Out] -1/3*(f*Sqrt[d + c*d*x]*((-1 + c*x)*(-a + a*c*x - b*Sqrt[1 - c^2*x^2]) + b*
(-1 + c*x)^2*ArcSin[c*x] + b*(1 + c*x)*Sqrt[1 - c^2*x^2]*Log[-(f*(1 + c*x))
]))/(c*d^3*(1 + c*x)^2*Sqrt[f - c*f*x])
```

fricas [A] time = 0.62, size = 520, normalized size = 3.19

$$\left[\frac{\left(bc^3dx^3+bc^2dx^2-bcdx-bd\right)\sqrt{\frac{f}{d}}\log\left(\frac{c^6fx^6+4c^5fx^5+5c^4fx^4-4c^2fx^2-4cfx+\left(c^4x^4+4c^3x^3+6c^2x^2+4cx\right)\sqrt{-c^2x^2+1}\sqrt{cdx+d}\sqrt{-cfx}}{c^4x^4+2c^3x^3-2cx-1}\right.}{6\left(c^4d^3x^3+c^3d^3x^2\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*(-c*f*x+f)^(1/2)/(c*d*x+d)^(5/2),x, algorithm="
fricas")
```

```
[Out] [1/6*((b*c^3*d*x^3 + b*c^2*d*x^2 - b*c*d*x - b*d)*sqrt(f/d)*log((c^6*f*x^6
+ 4*c^5*f*x^5 + 5*c^4*f*x^4 - 4*c^2*f*x^2 - 4*c*f*x + (c^4*x^4 + 4*c^3*x^3
+ 6*c^2*x^2 + 4*c*x)*sqrt(-c^2*x^2 + 1)*sqrt(c*d*x + d)*sqrt(-c*f*x + f)*sq
rt(f/d) - 2*f)/(c^4*x^4 + 2*c^3*x^3 - 2*c*x - 1)) + 2*(a*c^2*x^2 - 2*sqrt(-
c^2*x^2 + 1)*b*c*x - 2*a*c*x + (b*c^2*x^2 - 2*b*c*x + b)*arcsin(c*x) + a)*s
qrt(c*d*x + d)*sqrt(-c*f*x + f))/(c^4*d^3*x^3 + c^3*d^3*x^2 - c^2*d^3*x - c
*d^3), -1/3*((b*c^3*d*x^3 + b*c^2*d*x^2 - b*c*d*x - b*d)*sqrt(-f/d)*arctan(
(c^2*x^2 + 2*c*x + 2)*sqrt(-c^2*x^2 + 1)*sqrt(c*d*x + d)*sqrt(-c*f*x + f)*s
qrt(-f/d)/(c^4*f*x^4 + 2*c^3*f*x^3 - c^2*f*x^2 - 2*c*f*x)) - (a*c^2*x^2 - 2
*sqrt(-c^2*x^2 + 1)*b*c*x - 2*a*c*x + (b*c^2*x^2 - 2*b*c*x + b)*arcsin(c*x)
 + a)*sqrt(c*d*x + d)*sqrt(-c*f*x + f))/(c^4*d^3*x^3 + c^3*d^3*x^2 - c^2*d^
3*x - c*d^3)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-cfx+f}\,(b\arcsin(cx)+a)}{(cdx+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*(-c*f*x+f)^(1/2)/(c*d*x+d)^(5/2),x, algorithm="
giac")
```

```
[Out] integrate(sqrt(-c*f*x + f)*(b*arcsin(c*x) + a)/(c*d*x + d)^(5/2), x)
```

maple [F] time = 0.32, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin(cx))\sqrt{-cfx+f}}{(cdx+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))*(-c*f*x+f)^(1/2)/(c*d*x+d)^(5/2),x)
```

```
[Out] int((a+b*arcsin(c*x))*(-c*f*x+f)^(1/2)/(c*d*x+d)^(5/2),x)
```

maxima [A] time = 0.49, size = 215, normalized size = 1.32

$$-\frac{1}{3}bc\left(\frac{2\sqrt{f}}{c^3d^{\frac{5}{2}}x+c^2d^{\frac{5}{2}}}+\frac{\sqrt{f}\log(cx+1)}{c^2d^{\frac{5}{2}}}\right)-\frac{1}{3}b\left(\frac{2\sqrt{-c^2dfx^2+df}}{c^3d^3x^2+2c^2d^3x+cd^3}-\frac{\sqrt{-c^2dfx^2+df}}{c^2d^3x+cd^3}\right)\arcsin(cx)-\frac{1}{3}a\left(\frac{}{c^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))*(-c*f*x+f)^(1/2)/(c*d*x+d)^(5/2),x, algorithm="
maxima")
```

```
[Out] -1/3*b*c*(2*sqrt(f)/(c^3*d^(5/2)*x + c^2*d^(5/2)) + sqrt(f)*log(c*x + 1)/(c
^2*d^(5/2))) - 1/3*b*(2*sqrt(-c^2*d*f*x^2 + d*f)/(c^3*d^3*x^2 + 2*c^2*d^3*x
 + c*d^3) - sqrt(-c^2*d*f*x^2 + d*f)/(c^2*d^3*x + c*d^3))*arcsin(c*x) - 1/3
*a*(2*sqrt(-c^2*d*f*x^2 + d*f)/(c^3*d^3*x^2 + 2*c^2*d^3*x + c*d^3) - sqrt(-
c^2*d*f*x^2 + d*f)/(c^2*d^3*x + c*d^3))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))\,\sqrt{f-c\,f\,x}}{(d+c\,d\,x)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(f - c*f*x)^(1/2))/(d + c*d*x)^(5/2),x)
```

```
[Out] int(((a + b*asin(c*x))*(f - c*f*x)^(1/2))/(d + c*d*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))*(-c*f*x+f)**(1/2)/(c*d*x+d)**(5/2),x)
```

```
[Out] Timed out
```

3.510 $\int (d+cdx)^{5/2}(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=414

$$\frac{3dx(cdx+d)^{3/2}(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{8\left(1-c^2x^2\right)}+\frac{3d(cdx+d)^{3/2}(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{16bc\left(1-c^2x^2\right)^{3/2}}-\frac{d\left(1-c^2x^2\right)(cdx}{}$$

```
[Out] 1/5*b*d*x*(c*d*x+d)^(3/2)*(-c*f*x+f)^(3/2)/(-c^2*x^2+1)^(3/2)-5/16*b*c*d*x^
2*(c*d*x+d)^(3/2)*(-c*f*x+f)^(3/2)/(-c^2*x^2+1)^(3/2)-2/15*b*c^2*d*x^3*(c*d
*x+d)^(3/2)*(-c*f*x+f)^(3/2)/(-c^2*x^2+1)^(3/2)+1/16*b*c^3*d*x^4*(c*d*x+d)^
(3/2)*(-c*f*x+f)^(3/2)/(-c^2*x^2+1)^(3/2)+1/25*b*c^4*d*x^5*(c*d*x+d)^(3/2)*
(-c*f*x+f)^(3/2)/(-c^2*x^2+1)^(3/2)+1/4*d*x*(c*d*x+d)^(3/2)*(-c*f*x+f)^(3/2
)*(a+b*arcsin(c*x))+3/8*d*x*(c*d*x+d)^(3/2)*(-c*f*x+f)^(3/2)*(a+b*arcsin(c*
x))/(-c^2*x^2+1)-1/5*d*(c*d*x+d)^(3/2)*(-c*f*x+f)^(3/2)*(-c^2*x^2+1)*(a+b*a
rcsin(c*x))/c+3/16*d*(c*d*x+d)^(3/2)*(-c*f*x+f)^(3/2)*(a+b*arcsin(c*x))^2/b
/c/(-c^2*x^2+1)^(3/2)
```

Rubi [A] time = 0.39, antiderivative size = 414, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {4673, 4763, 4649, 4647, 4641, 30, 14, 4677, 194}

$$\frac{3dx(cdx+d)^{3/2}(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{8\left(1-c^2x^2\right)}+\frac{3d(cdx+d)^{3/2}(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{16bc\left(1-c^2x^2\right)^{3/2}}-\frac{d\left(1-c^2x^2\right)(cdx}{}$$

Antiderivative was successfully verified.

```
[In] Int[(d + c*d*x)^(5/2)*(f - c*f*x)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*d*x*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2))/(5*(1 - c^2*x^2)^(3/2)) - (5*b*
c*d*x^2*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2))/(16*(1 - c^2*x^2)^(3/2)) - (2*
b*c^2*d*x^3*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2))/(15*(1 - c^2*x^2)^(3/2)) +
 (b*c^3*d*x^4*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2))/(16*(1 - c^2*x^2)^(3/2))
 + (b*c^4*d*x^5*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2))/(25*(1 - c^2*x^2)^(3/2
)) + (d*x*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)*(a + b*ArcSin[c*x]))/4 + (3*d
*x*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)*(a + b*ArcSin[c*x]))/(8*(1 - c^2*x^2
)) - (d*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)*(1 - c^2*x^2)*(a + b*ArcSin[c*x
]))/(5*c) + (3*d*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)*(a + b*ArcSin[c*x])^2)
/(16*b*c*(1 - c^2*x^2)^(3/2))
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
```

```
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int (d+cdx)^{5/2}(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)\,dx = \frac{\left((d+cdx)^{3/2}(f-cfx)^{3/2}\right)\int (d+cdx)\left(1-c^2x^2\right)^{3/2}\left(a+b\sin\right.}{\left(1-c^2x^2\right)^{3/2}}$$

$$= \frac{\left((d+cdx)^{3/2}(f-cfx)^{3/2}\right)\int \left(d\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)\right.}{\left(1-c^2x^2\right)^{3/2}}$$

$$= \frac{\left(d(d+cdx)^{3/2}(f-cfx)^{3/2}\right)\int \left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}$$

$$= \frac{1}{4}dx(d+cdx)^{3/2}(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right) - \frac{d(d+cdx)^{3/2}}{}$$

$$= \frac{1}{4}dx(d+cdx)^{3/2}(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right) + \frac{3dx(d+cdx}{}$$

$$= \frac{bdx(d+cdx)^{3/2}(f-cfx)^{3/2}}{5\left(1-c^2x^2\right)^{3/2}} - \frac{5bcdx^2(d+cdx)^{3/2}(f-cfx)^{3/2}}{16\left(1-c^2x^2\right)^{3/2}}$$

Mathematica [A] time = 1.74, size = 305, normalized size = 0.74

$$\frac{d^2f\left(\sqrt{cdx+d}\sqrt{f-cfx}\left(-240a\sqrt{1-c^2x^2}\left(8c^4x^4+10c^3x^3-16c^2x^2-25cx+8\right)+128bcx\left(3c^4x^4-10c^2x^2+\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + c*d*x)^(5/2)*(f - c*f*x)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d^2*f*(1800*b*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*ArcSin[c*x]^2 - 3600*a*Sqrt[
d]*Sqrt[f]*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(
Sqrt[d]*Sqrt[f]*(-1 + c^2*x^2))] + Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(128*b*c
*x*(15 - 10*c^2*x^2 + 3*c^4*x^4) - 240*a*Sqrt[1 - c^2*x^2]*(8 - 25*c*x - 16
*c^2*x^2 + 10*c^3*x^3 + 8*c^4*x^4) + 1200*b*Cos[2*ArcSin[c*x]] + 75*b*Cos[4
*ArcSin[c*x]]) - 60*b*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*ArcSin[c*x]*(32*(1 -
c^2*x^2)^(5/2) - 40*Sin[2*ArcSin[c*x]] - 5*Sin[4*ArcSin[c*x]])))/(9600*c*Sq
rt[1 - c^2*x^2])
```

fricas [F] time = 0.57, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(ac^3d^2fx^3+ac^2d^2fx^2-acd^2fx-ad^2f+\left(bc^3d^2fx^3+bc^2d^2fx^2-bcd^2fx-bd^2f\right)\arcsin(cx)\right)\sqrt{cd}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(-c*f*x+f)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="
fricas")
```

```
[Out] integral(-(a*c^3*d^2*f*x^3 + a*c^2*d^2*f*x^2 - a*c*d^2*f*x - a*d^2*f + (b*c
^3*d^2*f*x^3 + b*c^2*d^2*f*x^2 - b*c*d^2*f*x - b*d^2*f)*arcsin(c*x))*sqrt(c
*d*x + d)*sqrt(-c*f*x + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (cdx+d)^{\frac{5}{2}}\left(-cfx+f\right)^{\frac{3}{2}}(b\arcsin(cx)+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(-c*f*x+f)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="
giac")
```

```
[Out] integrate((c*d*x + d)^(5/2)*(-c*f*x + f)^(3/2)*(b*arcsin(c*x) + a), x)
```

maple [F] time = 0.28, size = 0, normalized size = 0.00

$$\int (cdx+d)^{\frac{5}{2}} \left(-cfx+f\right)^{\frac{3}{2}} (a+b\arcsin (cx))\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(5/2)*(-c*f*x+f)^(3/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] int((c*d*x+d)^(5/2)*(-c*f*x+f)^(3/2)*(a+b*arcsin(c*x)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\sqrt{d}\,\sqrt{f}\int -\left(c^3d^2fx^3+c^2d^2fx^2-cd^2fx-d^2f\right)\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)dx+\frac{1}{40}\left(15\,\sqrt{\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(-c*f*x+f)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="
maxima")
```

```
[Out] b*sqrt(d)*sqrt(f)*integrate(-(c^3*d^2*f*x^3 + c^2*d^2*f*x^2 - c*d^2*f*x - d
^2*f)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1
)), x) + 1/40*(15*sqrt(-c^2*d*f*x^2 + d*f)*d^2*f*x + 15*d^3*f^2*arcsin(c*x)
/(sqrt(d*f)*c) + 10*(-c^2*d*f*x^2 + d*f)^(3/2)*d*x - 8*(-c^2*d*f*x^2 + d*f)
^(5/2)/(c*f))*a
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,\mathrm{asin}\left(c\,x\right))\,{\left(d+c\,d\,x\right)}^{5/2}\,{\left(f-c\,f\,x\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(d + c*d*x)^(5/2)*(f - c*f*x)^(3/2),x)
```

```
[Out] int((a + b*asin(c*x))*(d + c*d*x)^(5/2)*(f - c*f*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(5/2)*(-c*f*x+f)**(3/2)*(a+b*asin(c*x)),x)
```

```
[Out] Timed out
```

3.511 $\int (d+cdx)^{3/2}(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=226

$$\frac{3x(cdx+d)^{3/2}(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{8\left(1-c^2x^2\right)}+\frac{3(cdx+d)^{3/2}(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{16bc\left(1-c^2x^2\right)^{3/2}}+\frac{1}{4}x(cdx+d)^{3/2}(f-cf$$

```
[Out] -5/16*b*c*x^2*(c*d*x+d)^(3/2)*(-c*f*x+f)^(3/2)/(-c^2*x^2+1)^(3/2)+1/16*b*c^
3*x^4*(c*d*x+d)^(3/2)*(-c*f*x+f)^(3/2)/(-c^2*x^2+1)^(3/2)+1/4*x*(c*d*x+d)^(
3/2)*(-c*f*x+f)^(3/2)*(a+b*arcsin(c*x))+3/8*x*(c*d*x+d)^(3/2)*(-c*f*x+f)^(3
/2)*(a+b*arcsin(c*x))/(-c^2*x^2+1)+3/16*(c*d*x+d)^(3/2)*(-c*f*x+f)^(3/2)*(a
+b*arcsin(c*x))^2/b/c/(-c^2*x^2+1)^(3/2)
```

Rubi [A] time = 0.22, antiderivative size = 226, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {4673, 4649, 4647, 4641, 30, 14}

$$\frac{3x(cdx+d)^{3/2}(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{8\left(1-c^2x^2\right)}+\frac{3(cdx+d)^{3/2}(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{16bc\left(1-c^2x^2\right)^{3/2}}+\frac{1}{4}x(cdx+d)^{3/2}(f-cf$$

Antiderivative was successfully verified.

```
[In] Int[(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (-5*b*c*x^2*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2))/(16*(1 - c^2*x^2)^(3/2)) +
 (b*c^3*x^4*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2))/(16*(1 - c^2*x^2)^(3/2)) +
 (x*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)*(a + b*ArcSin[c*x]))/4 + (3*x*(d +
c*d*x)^(3/2)*(f - c*f*x)^(3/2)*(a + b*ArcSin[c*x]))/(8*(1 - c^2*x^2)) + (3*
(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)*(a + b*ArcSin[c*x])^2)/(16*b*c*(1 - c^2
*x^2)^(3/2))
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rubi steps

$$\int (d+cdx)^{3/2}(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)\,dx=\frac{\left((d+cdx)^{3/2}(f-cfx)^{3/2}\right)\int \left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)\,dx}{\left(1-c^2x^2\right)^{3/2}}$$

$$=\frac{1}{4}x(d+cdx)^{3/2}(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)+\frac{\left(3(d+cdx)^{3/2}(f\right.}{}$$

$$=\frac{1}{4}x(d+cdx)^{3/2}(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)+\frac{3x(d+cdx)^{3/2}(f}{8}$$

$$=-\frac{5bcx^2(d+cdx)^{3/2}(f-cfx)^{3/2}}{16\left(1-c^2x^2\right)^{3/2}}+\frac{bc^3x^4(d+cdx)^{3/2}(f-cfx)^{3/2}}{16\left(1-c^2x^2\right)^{3/2}}$$

Mathematica [A] time = 1.13, size = 247, normalized size = 1.09

$$\frac{df\sqrt{cdx+d}\,\sqrt{f-cfx}\left(16acx\sqrt{1-c^2x^2}\left(5-2c^2x^2\right)+16b\cos\left(2\sin^{-1}(cx)\right)+b\cos\left(4\sin^{-1}(cx)\right)\right)-48ad^{3/2}f^{3/2}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (24*b*d*f*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*ArcSin[c*x]^2 - 48*a*d^(3/2)*f^(3
/2)*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(Sqrt[d]
*Sqrt[f]*(-1 + c^2*x^2))] + d*f*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(16*a*c*x*(
5 - 2*c^2*x^2)*Sqrt[1 - c^2*x^2] + 16*b*Cos[2*ArcSin[c*x]] + b*Cos[4*ArcSin
[c*x]]) + 4*b*d*f*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*ArcSin[c*x]*(8*Sin[2*ArcS
in[c*x]] + Sin[4*ArcSin[c*x]]))/(128*c*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(ac^2dfx^2-adf+\left(bc^2dfx^2-bdf\right)\arcsin(cx)\right)\sqrt{cdx+d}\,\sqrt{-cfx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(-c*f*x+f)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="
fricas")
```

[Out] integral(-(a*c^2*d*f*x^2 - a*d*f + (b*c^2*d*f*x^2 - b*d*f)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*f*x + f), x)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (cdx+d)^{\frac{3}{2}}(-cfx+f)^{\frac{3}{2}}(b\arcsin(cx)+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((c*d*x+d)^(3/2)*(-c*f*x+f)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="giac")

[Out] integrate((c*d*x + d)^(3/2)*(-c*f*x + f)^(3/2)*(b*arcsin(c*x) + a), x)

maple [F] time = 0.27, size = 0, normalized size = 0.00

$$\int (cdx+d)^{\frac{3}{2}}\left(-cfx+f\right)^{\frac{3}{2}}\left(a+b\arcsin(cx)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((c*d*x+d)^(3/2)*(-c*f*x+f)^(3/2)*(a+b*arcsin(c*x)),x)

[Out] int((c*d*x+d)^(3/2)*(-c*f*x+f)^(3/2)*(a+b*arcsin(c*x)),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\sqrt{d}\sqrt{f}\int -\left(c^2dfx^2-df\right)\sqrt{cx+1}\sqrt{-cx+1}\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)dx+\frac{1}{8}\left(3\sqrt{-c^2dfx^2+df}\,dfx+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((c*d*x+d)^(3/2)*(-c*f*x+f)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="maxima")

[Out] b*sqrt(d)*sqrt(f)*integrate(-(c^2*d*f*x^2 - d*f)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)), x) + 1/8*(3*sqrt(-c^2*d*f*x^2 + d*f)*d*f*x + 3*d^2*f^2*arcsin(c*x)/(sqrt(d*f)*c) + 2*(-c^2*d*f*x^2 + d*f)^(3/2)*x)*a

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,\mathrm{asin}(c\,x))\,\left(d+c\,d\,x\right)^{3/2}\,\left(f-c\,f\,x\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a + b*asin(c*x))*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2),x)

[Out] int((a + b*asin(c*x))*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2), x)

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((c*d*x+d)**(3/2)*(-c*f*x+f)**(3/2)*(a+b*asin(c*x)),x)

[Out] Timed out

3.512 $\int \sqrt{d+cdx}\,(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=273

$$\frac{f\sqrt{cdx+d}\,\sqrt{f-cfx}\,\left(a+b\sin^{-1}(cx)\right)^2}{4bc\sqrt{1-c^2x^2}}+\frac{f\left(1-c^2x^2\right)\sqrt{cdx+d}\,\sqrt{f-cfx}\,\left(a+b\sin^{-1}(cx)\right)}{3c}+\frac{1}{2}fx\sqrt{cdx+d}\,\sqrt{f-}$$

```
[Out] 1/2*f*x*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*f*x+f)^(1/2)+1/3*f*(-c^2*x^2+
1)*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*f*x+f)^(1/2)/c-1/3*b*f*x*(c*d*x+d)
^(1/2)*(-c*f*x+f)^(1/2)/(-c^2*x^2+1)^(1/2)-1/4*b*c*f*x^2*(c*d*x+d)^(1/2)*(-
c*f*x+f)^(1/2)/(-c^2*x^2+1)^(1/2)+1/9*b*c^2*f*x^3*(c*d*x+d)^(1/2)*(-c*f*x+f
)^(1/2)/(-c^2*x^2+1)^(1/2)+1/4*f*(a+b*arcsin(c*x))^2*(c*d*x+d)^(1/2)*(-c*f*
x+f)^(1/2)/b/c/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.31, antiderivative size = 273, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {4673, 4763, 4647, 4641, 30, 4677}

$$\frac{f\sqrt{cdx+d}\,\sqrt{f-cfx}\,\left(a+b\sin^{-1}(cx)\right)^2}{4bc\sqrt{1-c^2x^2}}+\frac{f\left(1-c^2x^2\right)\sqrt{cdx+d}\,\sqrt{f-cfx}\,\left(a+b\sin^{-1}(cx)\right)}{3c}+\frac{1}{2}fx\sqrt{cdx+d}\,\sqrt{f-}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d + c*d*x]*(f - c*f*x)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] -(b*f*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(3*Sqrt[1 - c^2*x^2]) - (b*c*f*x^2
*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(4*Sqrt[1 - c^2*x^2]) + (b*c^2*f*x^3*Sqrt
[d + c*d*x]*Sqrt[f - c*f*x])/(9*Sqrt[1 - c^2*x^2]) + (f*x*Sqrt[d + c*d*x]*S
qrt[f - c*f*x]*(a + b*ArcSin[c*x]))/2 + (f*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*
(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(3*c) + (f*Sqrt[d + c*d*x]*Sqrt[f - c*f*
x]*(a + b*ArcSin[c*x])^2)/(4*b*c*Sqrt[1 - c^2*x^2])
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int \sqrt{d+cdx}\,(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)dx = \frac{\left(\sqrt{d+cdx}\,\sqrt{f-cfx}\right)\int (f-cfx)\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(\sqrt{d+cdx}\,\sqrt{f-cfx}\right)\int \left(f\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)-cfx\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(f\sqrt{d+cdx}\,\sqrt{f-cfx}\right)\int \sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)dx}{\sqrt{1-c^2x^2}} - \frac{(c}{}$$

$$= \frac{1}{2}fx\sqrt{d+cdx}\,\sqrt{f-cfx}\left(a+b\sin^{-1}(cx)\right) + \frac{f\sqrt{d+cdx}\,\sqrt{f-}}{}$$

$$= -\frac{bfx\sqrt{d+cdx}\,\sqrt{f-cfx}}{3\sqrt{1-c^2x^2}} - \frac{bcfx^2\sqrt{d+cdx}\,\sqrt{f-cfx}}{4\sqrt{1-c^2x^2}} + \frac{bc^2f}{}$$

Mathematica [A] time = 1.08, size = 260, normalized size = 0.95

$$\frac{f\sqrt{cdx+d}\,\sqrt{f-cfx}\left(12a\sqrt{1-c^2x^2}\left(-2c^2x^2+3cx+2\right)+8bcx\left(c^2x^2-3\right)+9b\cos\left(2\sin^{-1}(cx)\right)\right)-36a\sqrt{d}\,f^{3}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d + c*d*x]*(f - c*f*x)^(3/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (18*b*f*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*ArcSin[c*x]^2 - 36*a*Sqrt[d]*f^(3/2
)*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(Sqrt[d]*S
qrt[f]*(-1 + c^2*x^2))] + f*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(12*a*(2 + 3*c*
x - 2*c^2*x^2)*Sqrt[1 - c^2*x^2] + 8*b*c*x*(-3 + c^2*x^2) + 9*b*Cos[2*ArcSi
n[c*x]]) + 6*b*f*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*ArcSin[c*x]*(4*(1 - c^2*x^
2)^(3/2) + 3*Sin[2*ArcSin[c*x]]))/(72*c*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(acfx-af+\left(bcfx-bf\right)\arcsin\left(cx\right)\right)\sqrt{cdx+d}\,\sqrt{-cfx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(-c*f*x+f)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="
fricas")
```

```
[Out] integral(-(a*c*f*x - a*f + (b*c*f*x - b*f)*arcsin(c*x))*sqrt(c*d*x + d)*sqr
t(-c*f*x + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{cdx+d}\left(-cfx+f\right)^{\frac{3}{2}}(b\arcsin\left(cx\right)+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(-c*f*x+f)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="
giac")
```

```
[Out] integrate(sqrt(c*d*x + d)*(-c*f*x + f)^(3/2)*(b*arcsin(c*x) + a), x)
```

maple [F] time = 0.28, size = 0, normalized size = 0.00

$$\int \sqrt{cdx+d}\,\left(-cfx+f\right)^{\frac{3}{2}}\left(a+b\arcsin\left(cx\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(1/2)*(-c*f*x+f)^(3/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] int((c*d*x+d)^(1/2)*(-c*f*x+f)^(3/2)*(a+b*arcsin(c*x)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\sqrt{d}\,\sqrt{f}\int -\left(cfx-f\right)\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)dx+\frac{1}{6}\left(3\sqrt{-c^2dfx^2+df}\,fx+\frac{3\,df^2\,\text{ar}}{\sqrt{c}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(-c*f*x+f)^(3/2)*(a+b*arcsin(c*x)),x, algorithm="
maxima")
```

```
[Out] b*sqrt(d)*sqrt(f)*integrate(-(c*f*x - f)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arcta
n2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)), x) + 1/6*(3*sqrt(-c^2*d*f*x^2 + d*f)
*f*x + 3*d*f^2*arcsin(c*x)/(sqrt(d*f)*c) + 2*(-c^2*d*f*x^2 + d*f)^(3/2)/(c*
d))*a
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\sqrt{d+c\,d\,x}\,{\left(f-c\,f\,x\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(d + c*d*x)^(1/2)*(f - c*f*x)^(3/2),x)
```

```
[Out] int((a + b*asin(c*x))*(d + c*d*x)^(1/2)*(f - c*f*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{d\left(cx+1\right)}\,\left(-f\left(cx-1\right)\right)^{\frac{3}{2}}\left(a+b\,\mathrm{asin}\left(cx\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(1/2)*(-c*f*x+f)**(3/2)*(a+b*asin(c*x)),x)
```

```
[Out] Integral(sqrt(d*(c*x + 1))*(-f*(c*x - 1))**(3/2)*(a + b*asin(c*x)), x)
```

3.513 $\int \frac{(f-cfx)^{3/2}(a+b\sin^{-1}(cx))}{\sqrt{d+cdx}}\,dx$

Optimal. Leaf size=242

$$\frac{3f^2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{4bc\sqrt{cdx+d}\,\sqrt{f-cfx}}-\frac{f^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{cdx+d}\,\sqrt{f-cfx}}+\frac{2f^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{cdx+d}\,\sqrt{f-cfx}}+\frac{bcf^2x^2}{4\sqrt{cdx+}}$$

```
[Out] 2*f^2*(-c^2*x^2+1)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)-1/2
*f^2*x*(-c^2*x^2+1)*(a+b*arcsin(c*x))/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)-2*b*
f^2*x*(-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)+1/4*b*c*f^2*x^2*(
-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)+3/4*f^2*(a+b*arcsin(c*x)
)^2*(-c^2*x^2+1)^(1/2)/b/c/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)
```

Rubi [A] time = 0.43, antiderivative size = 242, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.233, Rules used = {4673, 4763, 4641, 4677, 8, 4707, 30}

$$\frac{3f^2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{4bc\sqrt{cdx+d}\,\sqrt{f-cfx}}-\frac{f^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{cdx+d}\,\sqrt{f-cfx}}+\frac{2f^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{cdx+d}\,\sqrt{f-cfx}}+\frac{bcf^2x^2}{4\sqrt{cdx+}}$$

Antiderivative was successfully verified.

```
[In] Int[((f - c*f*x)^(3/2)*(a + b*ArcSin[c*x]))/Sqrt[d + c*d*x],x]
```

```
[Out] (-2*b*f^2*x*Sqrt[1 - c^2*x^2])/(Sqrt[d + c*d*x]*Sqrt[f - c*f*x]) + (b*c*f^2
*x^2*Sqrt[1 - c^2*x^2])/(4*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]) + (2*f^2*(1 - c
^2*x^2)*(a + b*ArcSin[c*x]))/(c*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]) - (f^2*x*(
1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(2*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]) + (3*
f^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(4*b*c*Sqrt[d + c*d*x]*Sqrt[f
- c*f*x])
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
```

```
1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int \frac{(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d+cdx}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f-cfx)^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\,\sqrt{f-cfx}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{f^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} - \frac{2cf^2x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} + \frac{c^2f^2x^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\right)dx}{\sqrt{d+cdx}\,\sqrt{f-cfx}}$$

$$= \frac{\left(f^2\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\,\sqrt{f-cfx}} - \frac{\left(2cf^2\sqrt{1-c^2x^2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\,\sqrt{f-cfx}} + \frac{(}{}$$

$$= \frac{2f^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{d+cdx}\,\sqrt{f-cfx}} - \frac{f^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{d+cdx}\,\sqrt{f-cfx}} + \frac{f^2\sqrt{1}}{2}$$

$$= -\frac{2bf^2x\sqrt{1-c^2x^2}}{\sqrt{d+cdx}\,\sqrt{f-cfx}} + \frac{bcf^2x^2\sqrt{1-c^2x^2}}{4\sqrt{d+cdx}\,\sqrt{f-cfx}} + \frac{2f^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}\right.}{c\sqrt{d+cdx}\,\sqrt{f-cf}}$$

Mathematica [A] time = 1.32, size = 238, normalized size = 0.98

$$\frac{-f\sqrt{cdx+d}\,\sqrt{f-cfx}\left(4a(cx-4)\sqrt{1-c^2x^2}+16bcx+b\cos\left(2\sin^{-1}(cx)\right)\right)-12a\sqrt{d}\,f^{3/2}\sqrt{1-c^2x^2}\,\tan^{-1}\left(\frac{cx\sqrt{cd}}{\sqrt{d}\,\sqrt{}}\right.}{8cd\sqrt{1-c^2x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f - c*f*x)^(3/2)*(a + b*ArcSin[c*x]))/Sqrt[d + c*d*x],x]
```

```
[Out] (-4*b*f*(-4 + c*x)*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*Sqrt[1 - c^2*x^2]*ArcSin
[c*x] + 6*b*f*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*ArcSin[c*x]^2 - 12*a*Sqrt[d]*
f^(3/2)*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(Sqr
t[d]*Sqrt[f]*(-1 + c^2*x^2))] - f*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(16*b*c*x
```

```
 + 4*a*(-4 + c*x)*Sqrt[1 - c^2*x^2] + b*Cos[2*ArcSin[c*x]]))/(8*c*d*Sqrt[1
- c^2*x^2])
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(acfx-af+\left(bcfx-bf\right)\arcsin\left(cx\right)\right)\sqrt{-cfx+f}}{\sqrt{cdx+d}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*f*x+f)^(3/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(1/2),x, algorithm="
fricas")
```

```
[Out] integral(-(a*c*f*x - a*f + (b*c*f*x - b*f)*arcsin(c*x))*sqrt(-c*f*x + f)/sq
rt(c*d*x + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-cfx+f\right)^{\frac{3}{2}}\left(b\arcsin\left(cx\right)+a\right)}{\sqrt{cdx+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*f*x+f)^(3/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(1/2),x, algorithm="
giac")
```

```
[Out] integrate((-c*f*x + f)^(3/2)*(b*arcsin(c*x) + a)/sqrt(c*d*x + d), x)
```

maple [F] time = 0.32, size = 0, normalized size = 0.00

$$\int \frac{\left(-cfx+f\right)^{\frac{3}{2}}\left(a+b\arcsin\left(cx\right)\right)}{\sqrt{cdx+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c*f*x+f)^(3/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(1/2),x)
```

```
[Out] int((-c*f*x+f)^(3/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\left(\frac{\sqrt{-c^2dfx^2+df}\,fx}{d}-\frac{3\,f^2\arcsin\left(cx\right)}{\sqrt{df}\,c}-\frac{4\,\sqrt{-c^2dfx^2+df}\,f}{cd}\right)a-\frac{-\frac{1}{4}\left(\frac{2\,\sqrt{cx+1}\,(-cx+1)^{\frac{3}{2}}f\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{c}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*f*x+f)^(3/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(1/2),x, algorithm="
maxima")
```

```
[Out] -1/2*(sqrt(-c^2*d*f*x^2 + d*f)*f*x/d - 3*f^2*arcsin(c*x)/(sqrt(d*f)*c) - 4*
sqrt(-c^2*d*f*x^2 + d*f)*f/(c*d))*a - b*sqrt(f)*integrate((c*f*x - f)*sqrt(
-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/sqrt(c*x + 1), x)/sqrt
(d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(f-c\,f\,x\right)}^{3/2}}{\sqrt{d+c\,d\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(f - c*f*x)^(3/2))/(d + c*d*x)^(1/2),x)
```

```
[Out] int(((a + b*asin(c*x))*(f - c*f*x)^(3/2))/(d + c*d*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-f\left(cx-1\right)\right)^{\frac{3}{2}}\left(a+b\operatorname{asin}\left(cx\right)\right)}{\sqrt{d\left(cx+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*f*x+f)**(3/2)*(a+b*asin(c*x))/(c*d*x+d)**(1/2),x)
```

```
[Out] Integral((-f*(c*x - 1))**(3/2)*(a + b*asin(c*x))/sqrt(d*(c*x + 1)), x)
```

3.514 $\int \frac{(f-cfx)^{3/2}(a+b\sin^{-1}(cx))}{(d+cdx)^{3/2}}\,dx$

Optimal. Leaf size=252

$$-\frac{3f^3\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc(cdx+d)^{3/2}(f-cfx)^{3/2}}-\frac{f^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}-\frac{4f^3(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}$$

```
[Out] b*f^3*x*(-c^2*x^2+1)^(3/2)/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)-4*f^3*(-c*x+1)*
(-c^2*x^2+1)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)-f^3*(-c^2
*x^2+1)^2*(a+b*arcsin(c*x))/c/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)-3/2*f^3*(-c^
2*x^2+1)^(3/2)*(a+b*arcsin(c*x))^2/b/c/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)+4*b
*f^3*(-c^2*x^2+1)^(3/2)*ln(c*x+1)/c/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)
```

Rubi [A] time = 0.44, antiderivative size = 252, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 10, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4673, 4775, 637, 4761, 12, 627, 31, 4641, 4677, 8}

$$-\frac{3f^3\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc(cdx+d)^{3/2}(f-cfx)^{3/2}}-\frac{f^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}-\frac{4f^3(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f - c*f*x)^(3/2)*(a + b*ArcSin[c*x]))/(d + c*d*x)^(3/2),x]
```

```
[Out] (b*f^3*x*(1 - c^2*x^2)^(3/2))/((d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)) - (4*f^
3*(1 - c*x)*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(c*(d + c*d*x)^(3/2)*(f - c*
f*x)^(3/2)) - (f^3*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x]))/(c*(d + c*d*x)^(3/2
)*(f - c*f*x)^(3/2)) - (3*f^3*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/(2
*b*c*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)) + (4*b*f^3*(1 - c^2*x^2)^(3/2)*Lo
g[1 + c*x])/(c*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2))
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 627

```
Int[((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int
[(d + e*x)^(m + p)*(a/d + (c*x)/e)^p, x] /; FreeQ[{a, c, d, e, m, p}, x] &&
 EqQ[c*d^2 + a*e^2, 0] && (IntegerQ[p] || (GtQ[a, 0] && GtQ[d, 0] && Intege
rQ[m + p]))
```

Rule 637

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2)^(3/2), x_Symbol] :> Simp[(-(a
*e) + c*d*x)/(a*c*Sqrt[a + c*x^2]), x] /; FreeQ[{a, c, d, e}, x]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4761

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rule 4775

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{(d+cdx)^{3/2}}\,dx = \frac{\left(1-c^2x^2\right)^{3/2}\int \frac{(f-cfx)^3\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}\,dx}{(d+cdx)^{3/2}(f-cfx)^{3/2}}$$

$$= \frac{\left(1-c^2x^2\right)^{3/2}\int \left(\frac{4\left(f^3-cf^3x\right)\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}} - \frac{3f^3\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} + \frac{cf^3x\left(a+b\sin^{-1}(cx\right.}{\sqrt{1-c^2x^2}}\right.}{(d+cdx)^{3/2}(f-cfx)^{3/2}}$$

$$= \frac{\left(4\left(1-c^2x^2\right)^{3/2}\right)\int \frac{\left(f^3-cf^3x\right)\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}\,dx}{(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{\left(3f^3\left(1-c^2x^2\right)^{3/2}\right)\int \frac{a+b\sin}{\sqrt{1-}}}{(d+cdx)^{3/2}(f-cfx}$$

$$= -\frac{4f^3(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{f^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(\right.}{c(d+cdx)^{3/2}(f-cfx)^{3/2}}$$

$$= \frac{bf^3x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{4f^3(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{f^3}{}$$

$$= \frac{bf^3x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{4f^3(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{f^3}{}$$

$$= \frac{bf^3x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{4f^3(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{f^3}{}$$

Mathematica [A] time = 3.55, size = 291, normalized size = 1.15

$$\frac{f\left(6a\sqrt{d}\sqrt{f}\tan^{-1}\left(\frac{cx\sqrt{cdx+d}\sqrt{f-cfx}}{\sqrt{d}\sqrt{f}\left(c^2x^2-1\right)}\right) - \frac{\sqrt{cdx+d}\sqrt{f-cfx}\csc^2\left(\frac{1}{2}\sin^{-1}(cx)\right)\left(2\left(a(cx+5)\left(\sqrt{1-c^2x^2}+cx-1\right)+bcx\left(\sqrt{1-c^2x^2}-cx-1\right)+8b\right.\right.}{}\right.}{2cd^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f - c*f*x)^(3/2)*(a + b*ArcSin[c*x]))/(d + c*d*x)^(3/2),x]
```

```
[Out] (f*(6*a*Sqrt[d]*Sqrt[f]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(Sqrt[
d]*Sqrt[f]*(-1 + c^2*x^2))] - (Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*Csc[ArcSin[c
*x]/2]^2*(2*b*(5 + c*x)*(-1 + c*x + Sqrt[1 - c^2*x^2])*ArcSin[c*x] - 3*b*(-
1 - c*x + Sqrt[1 - c^2*x^2])*ArcSin[c*x]^2 + 2*(b*c*x*(-1 - c*x + Sqrt[1 -
c^2*x^2]) + a*(5 + c*x)*(-1 + c*x + Sqrt[1 - c^2*x^2]) + 8*b*(-1 - c*x + Sq
rt[1 - c^2*x^2])*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]])))/(2*Sqrt[1
- c^2*x^2]*(1 + Cot[ArcSin[c*x]/2]))))/(2*c*d^2)
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(acfx - af + \left(bcfx - bf\right)\arcsin\left(cx\right)\right)\sqrt{cdx+d}\sqrt{-cfx+f}}{c^2d^2x^2 + 2\,cd^2x + d^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*f*x+f)^(3/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(3/2),x, algorithm="
fricas")
```

```
[Out] integral(-(a*c*f*x - a*f + (b*c*f*x - b*f)*arcsin(c*x))*sqrt(c*d*x + d)*sqr
t(-c*f*x + f)/(c^2*d^2*x^2 + 2*c*d^2*x + d^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-cfx+f\right)^{\frac{3}{2}}(b\arcsin\left(cx\right)+a)}{(cdx+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*f*x+f)^(3/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(3/2),x, algorithm="
giac")
```

```
[Out] integrate((-c*f*x + f)^(3/2)*(b*arcsin(c*x) + a)/(c*d*x + d)^(3/2), x)
```

maple [F] time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{\left(-cfx+f\right)^{\frac{3}{2}}(a+b\arcsin\left(cx\right))}{(cdx+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c*f*x+f)^(3/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(3/2),x)
```

```
[Out] int((-c*f*x+f)^(3/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-b\sqrt{d}\sqrt{f}\int \frac{\left(cfx-f\right)\sqrt{cx+1}\sqrt{-cx+1}\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)}{c^2d^2x^2+2\,cd^2x+d^2}\,dx+a\left(\frac{\left(-c^2dfx^2+df\right)^{\frac{3}{2}}}{c^3d^3x^2+2\,c^2d^3x+cd^3}-\frac{6\,\sqrt{-c^2}}{c^2d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*f*x+f)^(3/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(3/2),x, algorithm="
maxima")
```

```
[Out] -b*sqrt(d)*sqrt(f)*integrate((c*f*x - f)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arcta
n2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^2*d^2*x^2 + 2*c*d^2*x + d^2), x) +
 a*((-c^2*d*f*x^2 + d*f)^(3/2)/(c^3*d^3*x^2 + 2*c^2*d^3*x + c*d^3) - 6*sqrt
(-c^2*d*f*x^2 + d*f)*f/(c^2*d^2*x + c*d^2) - 3*f^2*arcsin(c*x)/(c*d^2*sqrt(
f/d)))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}\left(c\,x\right))\,{\left(f-c\,f\,x\right)}^{3/2}}{{\left(d+c\,d\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(f - c*f*x)^(3/2))/(d + c*d*x)^(3/2),x)
```

```
[Out] int(((a + b*asin(c*x))*(f - c*f*x)^(3/2))/(d + c*d*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*f*x+f)**(3/2)*(a+b*asin(c*x))/(c*d*x+d)**(3/2),x)
```

```
[Out] Timed out
```

3.515 $\int \frac{(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{(d+cdx)^{5/2}}\,dx$

Optimal. Leaf size=324

$$\frac{2f^4(1-cx)\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{c(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{2f^4(1-cx)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}+\frac{f^4\left(1-c^2x^2\right)^{5/2}\sin^{-1}(cx)}{c(cdx+d)^{5/2}(f-}$$

```
[Out] -4/3*b*f^4*(-c^2*x^2+1)^(5/2)/c/(c*x+1)/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)-1/
2*b*f^4*(-c^2*x^2+1)^(5/2)*arcsin(c*x)^2/c/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)
-2/3*f^4*(-c*x+1)^3*(-c^2*x^2+1)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*f*
x+f)^(5/2)+2*f^4*(-c*x+1)*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))/c/(c*d*x+d)^(5/2
)/(-c*f*x+f)^(5/2)+f^4*(-c^2*x^2+1)^(5/2)*arcsin(c*x)*(a+b*arcsin(c*x))/c/(
c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)-8/3*b*f^4*(-c^2*x^2+1)^(5/2)*ln(c*x+1)/c/(c
*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)
```

Rubi [A] time = 0.35, antiderivative size = 324, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 9, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {4673, 669, 653, 216, 4761, 627, 43, 31, 4641}

$$\frac{2f^4(1-cx)\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{c(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{2f^4(1-cx)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}+\frac{f^4\left(1-c^2x^2\right)^{5/2}\sin^{-1}(cx)}{c(cdx+d)^{5/2}(f-}$$

Antiderivative was successfully verified.

```
[In] Int[((f - c*f*x)^(3/2)*(a + b*ArcSin[c*x]))/(d + c*d*x)^(5/2),x]
```

```
[Out] (-4*b*f^4*(1 - c^2*x^2)^(5/2))/(3*c*(1 + c*x)*(d + c*d*x)^(5/2)*(f - c*f*x)
^(5/2)) - (b*f^4*(1 - c^2*x^2)^(5/2)*ArcSin[c*x]^2)/(2*c*(d + c*d*x)^(5/2)*
(f - c*f*x)^(5/2)) - (2*f^4*(1 - c*x)^3*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/
(3*c*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)) + (2*f^4*(1 - c*x)*(1 - c^2*x^2)^
2*(a + b*ArcSin[c*x]))/(c*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)) + (f^4*(1 -
c^2*x^2)^(5/2)*ArcSin[c*x]*(a + b*ArcSin[c*x]))/(c*(d + c*d*x)^(5/2)*(f - c
*f*x)^(5/2)) - (8*b*f^4*(1 - c^2*x^2)^(5/2)*Log[1 + c*x])/(3*c*(d + c*d*x)^
(5/2)*(f - c*f*x)^(5/2))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 627

```
Int[((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int
[(d + e*x)^(m + p)*(a/d + (c*x)/e)^p, x] /; FreeQ[{a, c, d, e, m, p}, x] &&
 EqQ[c*d^2 + a*e^2, 0] && (IntegerQ[p] || (GtQ[a, 0] && GtQ[d, 0] && Intege
rQ[m + p]))
```

Rule 653

```
Int[((d_) + (e_.)*(x_))^2*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(e*
(d + e*x)*(a + c*x^2)^(p + 1))/(c*(p + 1)), x] - Dist[(e^2*(p + 2))/(c*(p +
 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, p}, x] && EqQ[c
*d^2 + a*e^2, 0] &&  !IntegerQ[p] && LtQ[p, -1]
```

Rule 669

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^(m - 1)*(a + c*x^2)^(p + 1))/(c*(p + 1)), x] - Dist[(e^2*(m +
p))/(c*(p + 1)), Int[(d + e*x)^(m - 2)*(a + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, c, d, e}, x] && EqQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && In
tegerQ[2*p]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4761

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rubi steps

$$\int \frac{(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{(d+cdx)^{5/2}}\,dx = \frac{\left(1-c^2x^2\right)^{5/2}\int \frac{(f-cfx)^4\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{5/2}}\,dx}{(d+cdx)^{5/2}(f-cfx)^{5/2}}$$

$$= -\frac{2f^4(1-cx)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{2f^4(1-cx)\left(1-c^2x^2\right)^2\left(a\ldots\right.}{c(d+cdx)^{5/2}(f-c\ldots}$$

$$= -\frac{2f^4(1-cx)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{2f^4(1-cx)\left(1-c^2x^2\right)^2\left(a\ldots\right.}{c(d+cdx)^{5/2}(f-c\ldots}$$

$$= -\frac{bf^4\left(1-c^2x^2\right)^{5/2}\sin^{-1}(cx)^2}{2c(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{2f^4(1-cx)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\ldots\right.}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}}$$

$$= -\frac{bf^4\left(1-c^2x^2\right)^{5/2}\sin^{-1}(cx)^2}{2c(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{2f^4(1-cx)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\ldots\right.}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}}$$

$$= -\frac{4bf^4\left(1-c^2x^2\right)^{5/2}}{3c(1+cx)(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{bf^4\left(1-c^2x^2\right)^{5/2}\sin^{-1}(cx)^2}{2c(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{2f\ldots}{\ldots}$$

Mathematica [A] time = 5.61, size = 599, normalized size = 1.85

$$\frac{f\left(-12a\sqrt{d}\sqrt{f}\tan^{-1}\left(\frac{cx\sqrt{cdx+d}\sqrt{f-cfx}}{\sqrt{d}\sqrt{f}\left(c^2x^2-1\right)}\right) + \frac{16a(2cx+1)\sqrt{cdx+d}\sqrt{f-cfx}}{(cx+1)^2} - \frac{b\sqrt{cdx+d}\sqrt{f-cfx}\left(\cos\left(\frac{1}{2}\sin^{-1}(cx)\right)-\sin\left(\frac{1}{2}\sin^{-1}(cx)\right)\right)\left(\ldots\right.}{\ldots}\right.}{\ldots}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((f - c*f*x)^(3/2)*(a + b*ArcSin[c*x]))/(d + c*d*x)^(5/2),x]
```

```
[Out] (f*((16*a*(1 + 2*c*x)*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(1 + c*x)^2 - 12*a*S
qrt[d]*Sqrt[f]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(Sqrt[d]*Sqrt[f
]*(-1 + c^2*x^2))] - (b*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(Cos[ArcSin[c*x]/2]
 - Sin[ArcSin[c*x]/2])*(Cos[ArcSin[c*x]/2]*(-8 + 6*ArcSin[c*x] + 9*ArcSin[c
*x]^2 - 84*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]) + Cos[(3*ArcSin[c*
x])/2]*((14 - 3*ArcSin[c*x])*ArcSin[c*x] + 28*Log[Cos[ArcSin[c*x]/2] + Sin[
ArcSin[c*x]/2]]) + 2*(-4 + 2*(2 + 7*Sqrt[1 - c^2*x^2])*ArcSin[c*x] + 3*(2 +
 Sqrt[1 - c^2*x^2])*ArcSin[c*x]^2 - 28*(2 + Sqrt[1 - c^2*x^2])*Log[Cos[ArcS
in[c*x]/2] + Sin[ArcSin[c*x]/2]])*Sin[ArcSin[c*x]/2]))/((-1 + c*x)*(Cos[Arc
Sin[c*x]/2] + Sin[ArcSin[c*x]/2])^4) - (2*b*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]
*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])*(Cos[(3*ArcSin[c*x])/2]*(ArcSin[
c*x] + 2*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]) - Cos[ArcSin[c*x]/2]
*(4 + 3*ArcSin[c*x] + 6*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]) + 2*(
-2 + (2 + Sqrt[1 - c^2*x^2])*ArcSin[c*x] - 2*(2 + Sqrt[1 - c^2*x^2])*Log[Co
s[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]])*Sin[ArcSin[c*x]/2]))/((-1 + c*x)*(C
os[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^4)))/(12*c*d^3)
```

fricas [F] time = 0.52, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(acfx-af+\left(bcfx-bf\right)\arcsin\left(cx\right)\right)\sqrt{cdx+d}\sqrt{-cfx+f}}{c^3d^3x^3+3\,c^2d^3x^2+3\,cd^3x+d^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*f*x+f)^(3/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(5/2),x, algorithm="
fricas")
```

[Out] integral(-(a*c*f*x - a*f + (b*c*f*x - b*f)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*f*x + f)/(c^3*d^3*x^3 + 3*c^2*d^3*x^2 + 3*c*d^3*x + d^3), x)

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-cfx+f\right)^{\frac{3}{2}}(b\arcsin\left(cx\right)+a)}{\left(cdx+d\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((-c*f*x+f)^(3/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(5/2),x, algorithm="giac")

[Out] integrate((-c*f*x + f)^(3/2)*(b*arcsin(c*x) + a)/(c*d*x + d)^(5/2), x)

maple [**F**] time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{\left(-cfx+f\right)^{\frac{3}{2}}\left(a+b\arcsin\left(cx\right)\right)}{\left(cdx+d\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((-c*f*x+f)^(3/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(5/2),x)

[Out] int((-c*f*x+f)^(3/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(5/2),x)

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$-b\sqrt{d}\sqrt{f}\int \frac{\left(cfx-f\right)\sqrt{cx+1}\sqrt{-cx+1}\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)}{c^3d^3x^3+3c^2d^3x^2+3cd^3x+d^3}\,dx-\frac{1}{3}a\left(\frac{\left(-c^2dfx^2+df\right)^{\frac{3}{2}}}{c^4d^4x^3+3c^3d^4x^2+3c^2d^4x+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((-c*f*x+f)^(3/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(5/2),x, algorithm="maxima")

[Out] -b*sqrt(d)*sqrt(f)*integrate((c*f*x - f)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^3*d^3*x^3 + 3*c^2*d^3*x^2 + 3*c*d^3*x + d^3), x) - 1/3*a*((-c^2*d*f*x^2 + d*f)^(3/2)/(c^4*d^4*x^3 + 3*c^3*d^4*x^2 + 3*c^2*d^4*x + c*d^4) + 2*sqrt(-c^2*d*f*x^2 + d*f)*f/(c^3*d^3*x^2 + 2*c^2*d^3*x + c*d^3) - 7*sqrt(-c^2*d*f*x^2 + d*f)*f/(c^2*d^3*x + c*d^3) - 3*f^2*arcsin(c*x)/(c*d^3*sqrt(f/d)))

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(f-c\,f\,x\right)}^{3/2}}{{\left(d+c\,d\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a + b*asin(c*x))*(f - c*f*x)^(3/2))/(d + c*d*x)^(5/2),x)

[Out] int(((a + b*asin(c*x))*(f - c*f*x)^(3/2))/(d + c*d*x)^(5/2), x)

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((-c*f*x+f)**(3/2)*(a+b*asin(c*x))/(c*d*x+d)**(5/2),x)

[Out] Timed out

3.516 $\int (d+cdx)^{5/2}(f-cfx)^{5/2}\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=315

$$\frac{5x(cdx+d)^{5/2}(f-cfx)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{24\left(1-c^2x^2\right)}+\frac{5x(cdx+d)^{5/2}(f-cfx)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{16\left(1-c^2x^2\right)^2}+\frac{5(cdx+d)^{5/2}(f-c}{32bc(}$$

```
[Out] -25/96*b*c*x^2*(c*d*x+d)^(5/2)*(-c*f*x+f)^(5/2)/(-c^2*x^2+1)^(5/2)+5/96*b*c
^3*x^4*(c*d*x+d)^(5/2)*(-c*f*x+f)^(5/2)/(-c^2*x^2+1)^(5/2)+1/6*x*(c*d*x+d)^
(5/2)*(-c*f*x+f)^(5/2)*(a+b*arcsin(c*x))+5/16*x*(c*d*x+d)^(5/2)*(-c*f*x+f)^
(5/2)*(a+b*arcsin(c*x))/(-c^2*x^2+1)^2+5/24*x*(c*d*x+d)^(5/2)*(-c*f*x+f)^(5
/2)*(a+b*arcsin(c*x))/(-c^2*x^2+1)+5/32*(c*d*x+d)^(5/2)*(-c*f*x+f)^(5/2)*(a
+b*arcsin(c*x))^2/b/c/(-c^2*x^2+1)^(5/2)+1/36*b*(c*d*x+d)^(5/2)*(-c*f*x+f)^
(5/2)*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.27, antiderivative size = 315, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.233, Rules used = {4673, 4649, 4647, 4641, 30, 14, 261}

$$\frac{5x(cdx+d)^{5/2}(f-cfx)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{24\left(1-c^2x^2\right)}+\frac{5x(cdx+d)^{5/2}(f-cfx)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{16\left(1-c^2x^2\right)^2}+\frac{5(cdx+d)^{5/2}(f-c}{32bc(}$$

Antiderivative was successfully verified.

```
[In] Int[(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (-25*b*c*x^2*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2))/(96*(1 - c^2*x^2)^(5/2))
+ (5*b*c^3*x^4*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2))/(96*(1 - c^2*x^2)^(5/2)
) + (b*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)*Sqrt[1 - c^2*x^2])/(36*c) + (x*(
d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)*(a + b*ArcSin[c*x]))/6 + (5*x*(d + c*d*x
)^(5/2)*(f - c*f*x)^(5/2)*(a + b*ArcSin[c*x]))/(16*(1 - c^2*x^2)^2) + (5*x*
(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)*(a + b*ArcSin[c*x]))/(24*(1 - c^2*x^2))
 + (5*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)*(a + b*ArcSin[c*x])^2)/(32*b*c*(1
 - c^2*x^2)^(5/2))
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rubi steps

$$\int (d+cdx)^{5/2}(f-cfx)^{5/2}\left(a+b\sin^{-1}(cx)\right)dx=\frac{\left((d+cdx)^{5/2}(f-cfx)^{5/2}\right)\int\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)dx}{\left(1-c^2x^2\right)^{5/2}}$$

$$=\frac{1}{6}x(d+cdx)^{5/2}(f-cfx)^{5/2}\left(a+b\sin^{-1}(cx)\right)+\frac{\left(5(d+cdx)^{5/2}(f\right.}{}$$

$$=\frac{b(d+cdx)^{5/2}(f-cfx)^{5/2}\sqrt{1-c^2x^2}}{36c}+\frac{1}{6}x(d+cdx)^{5/2}(f-cfx)^{5}$$

$$=\frac{b(d+cdx)^{5/2}(f-cfx)^{5/2}\sqrt{1-c^2x^2}}{36c}+\frac{1}{6}x(d+cdx)^{5/2}(f-cfx)^{5}$$

$$=-\frac{25bcx^2(d+cdx)^{5/2}(f-cfx)^{5/2}}{96\left(1-c^2x^2\right)^{5/2}}+\frac{5bc^3x^4(d+cdx)^{5/2}(f-cfx)}{96\left(1-c^2x^2\right)^{5/2}}$$

Mathematica [A] time = 1.71, size = 303, normalized size = 0.96

$$\frac{d^2f^2\left(\sqrt{cdx+d}\sqrt{f-cfx}\left(1584acx\sqrt{1-c^2x^2}+384ac^5x^5\sqrt{1-c^2x^2}-1248ac^3x^3\sqrt{1-c^2x^2}+270b\cos\left(2\sin^{-1}(\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d^2*f^2*(360*b*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*ArcSin[c*x]^2 - 720*a*Sqrt[
d]*Sqrt[f]*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(
Sqrt[d]*Sqrt[f]*(-1 + c^2*x^2))] + Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(1584*a*
c*x*Sqrt[1 - c^2*x^2] - 1248*a*c^3*x^3*Sqrt[1 - c^2*x^2] + 384*a*c^5*x^5*Sq
rt[1 - c^2*x^2] + 270*b*Cos[2*ArcSin[c*x]] + 27*b*Cos[4*ArcSin[c*x]] + 2*b*
Cos[6*ArcSin[c*x]]) + 12*b*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*ArcSin[c*x]*(45*
Sin[2*ArcSin[c*x]] + 9*Sin[4*ArcSin[c*x]] + Sin[6*ArcSin[c*x]])))/(2304*c*S
qrt[1 - c^2*x^2])
```

fricas [F] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(ac^4d^2f^2x^4 - 2\,ac^2d^2f^2x^2 + ad^2f^2 + \left(bc^4d^2f^2x^4 - 2\,bc^2d^2f^2x^2 + bd^2f^2\right)\arcsin\left(cx\right)\right)\sqrt{cdx+d}\,\sqrt{-cf\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(-c*f*x+f)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="
fricas")
```

```
[Out] integral((a*c^4*d^2*f^2*x^4 - 2*a*c^2*d^2*f^2*x^2 + a*d^2*f^2 + (b*c^4*d^2*
f^2*x^4 - 2*b*c^2*d^2*f^2*x^2 + b*d^2*f^2)*arcsin(c*x))*sqrt(c*d*x + d)*sqr
t(-c*f*x + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (cdx+d)^{\frac{5}{2}}\left(-cfx+f\right)^{\frac{5}{2}}(b\arcsin\left(cx\right)+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(-c*f*x+f)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="
giac")
```

```
[Out] integrate((c*d*x + d)^(5/2)*(-c*f*x + f)^(5/2)*(b*arcsin(c*x) + a), x)
```

maple [F] time = 0.27, size = 0, normalized size = 0.00

$$\int (cdx+d)^{\frac{5}{2}}\left(-cfx+f\right)^{\frac{5}{2}}\left(a+b\arcsin\left(cx\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(5/2)*(-c*f*x+f)^(5/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] int((c*d*x+d)^(5/2)*(-c*f*x+f)^(5/2)*(a+b*arcsin(c*x)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\sqrt{d}\,\sqrt{f}\int\left(c^4d^2f^2x^4 - 2\,c^2d^2f^2x^2 + d^2f^2\right)\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)dx + \frac{1}{48}\left(15\,\sqrt{-c\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(-c*f*x+f)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="
maxima")
```

```
[Out] b*sqrt(d)*sqrt(f)*integrate((c^4*d^2*f^2*x^4 - 2*c^2*d^2*f^2*x^2 + d^2*f^2)
*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)), x
) + 1/48*(15*sqrt(-c^2*d*f*x^2 + d*f)*d^2*f^2*x + 15*d^3*f^3*arcsin(c*x)/(s
qrt(d*f)*c) + 10*(-c^2*d*f*x^2 + d*f)^(3/2)*d*f*x + 8*(-c^2*d*f*x^2 + d*f)^
(5/2)*x)*a
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(d+c\,d\,x\right)}^{5/2}\,{\left(f-c\,f\,x\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2),x)
```

```
[Out] int((a + b*asin(c*x))*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(5/2)*(-c*f*x+f)**(5/2)*(a+b*asin(c*x)),x)
```

```
[Out] Timed out
```

3.517 $\int (d+cdx)^{3/2}(f-cfx)^{5/2}\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=414

$$\frac{3fx(cdx+d)^{3/2}(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{8\left(1-c^2x^2\right)}+\frac{3f(cdx+d)^{3/2}(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{16bc\left(1-c^2x^2\right)^{3/2}}+\frac{f\left(1-c^2x^2\right)(cdx$$

```
[Out] -1/5*b*f*x*(c*d*x+d)^(3/2)*(-c*f*x+f)^(3/2)/(-c^2*x^2+1)^(3/2)-5/16*b*c*f*x
^2*(c*d*x+d)^(3/2)*(-c*f*x+f)^(3/2)/(-c^2*x^2+1)^(3/2)+2/15*b*c^2*f*x^3*(c*
d*x+d)^(3/2)*(-c*f*x+f)^(3/2)/(-c^2*x^2+1)^(3/2)+1/16*b*c^3*f*x^4*(c*d*x+d)
^(3/2)*(-c*f*x+f)^(3/2)/(-c^2*x^2+1)^(3/2)-1/25*b*c^4*f*x^5*(c*d*x+d)^(3/2)
*(-c*f*x+f)^(3/2)/(-c^2*x^2+1)^(3/2)+1/4*f*x*(c*d*x+d)^(3/2)*(-c*f*x+f)^(3/
2)*(a+b*arcsin(c*x))+3/8*f*x*(c*d*x+d)^(3/2)*(-c*f*x+f)^(3/2)*(a+b*arcsin(c
*x))/(-c^2*x^2+1)+1/5*f*(c*d*x+d)^(3/2)*(-c*f*x+f)^(3/2)*(-c^2*x^2+1)*(a+b*
arcsin(c*x))/c+3/16*f*(c*d*x+d)^(3/2)*(-c*f*x+f)^(3/2)*(a+b*arcsin(c*x))^2/
b/c/(-c^2*x^2+1)^(3/2)
```

Rubi [A] time = 0.38, antiderivative size = 414, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {4673, 4763, 4649, 4647, 4641, 30, 14, 4677, 194}

$$\frac{3fx(cdx+d)^{3/2}(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{8\left(1-c^2x^2\right)}+\frac{3f(cdx+d)^{3/2}(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{16bc\left(1-c^2x^2\right)^{3/2}}+\frac{f\left(1-c^2x^2\right)(cdx$$

Antiderivative was successfully verified.

```
[In] Int[(d + c*d*x)^(3/2)*(f - c*f*x)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] -(b*f*x*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2))/(5*(1 - c^2*x^2)^(3/2)) - (5*b
*c*f*x^2*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2))/(16*(1 - c^2*x^2)^(3/2)) + (2
*b*c^2*f*x^3*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2))/(15*(1 - c^2*x^2)^(3/2))
+ (b*c^3*f*x^4*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2))/(16*(1 - c^2*x^2)^(3/2)
) - (b*c^4*f*x^5*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2))/(25*(1 - c^2*x^2)^(3/
2)) + (f*x*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)*(a + b*ArcSin[c*x]))/4 + (3*
f*x*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)*(a + b*ArcSin[c*x]))/(8*(1 - c^2*x^
2)) + (f*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)*(1 - c^2*x^2)*(a + b*ArcSin[c*
x]))/(5*c) + (3*f*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)*(a + b*ArcSin[c*x])^2
)/(16*b*c*(1 - c^2*x^2)^(3/2))
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
```

```
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int (d+cdx)^{3/2}(f-cfx)^{5/2}\left(a+b\sin^{-1}(cx)\right)dx = \frac{\left((d+cdx)^{3/2}(f-cfx)^{3/2}\right)\int (f-cfx)\left(1-c^2x^2\right)^{3/2}\left(a+b\sin\right.}{\left(1-c^2x^2\right)^{3/2}}$$

$$= \frac{\left((d+cdx)^{3/2}(f-cfx)^{3/2}\right)\int \left(f\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right.\right.}{\left(1-c^2x^2\right)^{3/2}}$$

$$= \frac{\left(f(d+cdx)^{3/2}(f-cfx)^{3/2}\right)\int \left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}$$

$$= \frac{1}{4}fx(d+cdx)^{3/2}(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)+\frac{f(d+cdx)^{3/}}{}$$

$$= \frac{1}{4}fx(d+cdx)^{3/2}(f-cfx)^{3/2}\left(a+b\sin^{-1}(cx)\right)+\frac{3fx(d+cdx}{}$$

$$= -\frac{bfx(d+cdx)^{3/2}(f-cfx)^{3/2}}{5\left(1-c^2x^2\right)^{3/2}}-\frac{5bcfx^2(d+cdx)^{3/2}(f-cfx)}{16\left(1-c^2x^2\right)^{3/2}}$$

Mathematica [A] time = 1.65, size = 305, normalized size = 0.74

$$\frac{df^2\left(\sqrt{cdx+d}\sqrt{f-cfx}\left(240a\sqrt{1-c^2x^2}\left(8c^4x^4-10c^3x^3-16c^2x^2+25cx+8\right)-128bcx\left(3c^4x^4-10c^2x^2+1\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + c*d*x)^(3/2)*(f - c*f*x)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (d*f^2*(1800*b*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*ArcSin[c*x]^2 - 3600*a*Sqrt[
d]*Sqrt[f]*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(
Sqrt[d]*Sqrt[f]*(-1 + c^2*x^2))] + Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(-128*b*
c*x*(15 - 10*c^2*x^2 + 3*c^4*x^4) + 240*a*Sqrt[1 - c^2*x^2]*(8 + 25*c*x - 1
6*c^2*x^2 - 10*c^3*x^3 + 8*c^4*x^4) + 1200*b*Cos[2*ArcSin[c*x]] + 75*b*Cos[
4*ArcSin[c*x]]) + 60*b*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*ArcSin[c*x]*(32*(1 -
 c^2*x^2)^(5/2) + 40*Sin[2*ArcSin[c*x]] + 5*Sin[4*ArcSin[c*x]])))/(9600*c*S
qrt[1 - c^2*x^2])
```

fricas [F] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(ac^3df^2x^3-ac^2df^2x^2-acdf^2x+adf^2+\left(bc^3df^2x^3-bc^2df^2x^2-bcdf^2x+bdf^2\right)\arcsin(cx)\right)\sqrt{cdx}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(-c*f*x+f)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="
fricas")
```

```
[Out] integral((a*c^3*d*f^2*x^3 - a*c^2*d*f^2*x^2 - a*c*d*f^2*x + a*d*f^2 + (b*c^
3*d*f^2*x^3 - b*c^2*d*f^2*x^2 - b*c*d*f^2*x + b*d*f^2)*arcsin(c*x))*sqrt(c*
d*x + d)*sqrt(-c*f*x + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (cdx+d)^{\frac{3}{2}}\left(-cfx+f\right)^{\frac{5}{2}}\left(b\arcsin(cx)+a\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(-c*f*x+f)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="
giac")
```

```
[Out] integrate((c*d*x + d)^(3/2)*(-c*f*x + f)^(5/2)*(b*arcsin(c*x) + a), x)
```

maple [F] time = 0.28, size = 0, normalized size = 0.00

$$\int (cdx+d)^{\frac{3}{2}} \left(-cfx+f\right)^{\frac{5}{2}} (a+b\arcsin(cx))\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(3/2)*(-c*f*x+f)^(5/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] int((c*d*x+d)^(3/2)*(-c*f*x+f)^(5/2)*(a+b*arcsin(c*x)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\sqrt{d}\sqrt{f}\int \left(c^3df^2x^3 - c^2df^2x^2 - cdf^2x + df^2\right)\sqrt{cx+1}\sqrt{-cx+1}\arctan\left(cx, \sqrt{cx+1}\sqrt{-cx+1}\right)dx + \frac{1}{40}\left(15\sqrt{-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(-c*f*x+f)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="
maxima")
```

```
[Out] b*sqrt(d)*sqrt(f)*integrate((c^3*d*f^2*x^3 - c^2*d*f^2*x^2 - c*d*f^2*x + d*
f^2)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)
), x) + 1/40*(15*sqrt(-c^2*d*f*x^2 + d*f)*d*f^2*x + 15*d^2*f^3*arcsin(c*x)/
(sqrt(d*f)*c) + 10*(-c^2*d*f*x^2 + d*f)^(3/2)*f*x + 8*(-c^2*d*f*x^2 + d*f)^
(5/2)/(c*d))*a
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,\mathrm{asin}\left(c\,x\right))\,{\left(d+c\,d\,x\right)}^{3/2}\,{\left(f-c\,f\,x\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(d + c*d*x)^(3/2)*(f - c*f*x)^(5/2),x)
```

```
[Out] int((a + b*asin(c*x))*(d + c*d*x)^(3/2)*(f - c*f*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(3/2)*(-c*f*x+f)**(5/2)*(a+b*asin(c*x)),x)
```

```
[Out] Timed out
```

3.518 $\int \sqrt{d+cdx}\,(f-cfx)^{5/2}\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=376

$$\frac{1}{4}c^2f^2x^3\sqrt{cdx+d}\,\sqrt{f-cfx}\,\left(a+b\sin^{-1}(cx)\right)+\frac{5f^2\sqrt{cdx+d}\,\sqrt{f-cfx}\,\left(a+b\sin^{-1}(cx)\right)^2}{16bc\sqrt{1-c^2x^2}}+\frac{2f^2\left(1-c^2x^2\right)\sqrt{ca}}{}$$

```
[Out] 3/8*f^2*x*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*f*x+f)^(1/2)+1/4*c^2*f^2*x^
3*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*f*x+f)^(1/2)+2/3*f^2*(-c^2*x^2+1)*(
a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*f*x+f)^(1/2)/c-2/3*b*f^2*x*(c*d*x+d)^(
1/2)*(-c*f*x+f)^(1/2)/(-c^2*x^2+1)^(1/2)-3/16*b*c*f^2*x^2*(c*d*x+d)^(1/2)*(
-c*f*x+f)^(1/2)/(-c^2*x^2+1)^(1/2)+2/9*b*c^2*f^2*x^3*(c*d*x+d)^(1/2)*(-c*f*
x+f)^(1/2)/(-c^2*x^2+1)^(1/2)-1/16*b*c^3*f^2*x^4*(c*d*x+d)^(1/2)*(-c*f*x+f)
^(1/2)/(-c^2*x^2+1)^(1/2)+5/16*f^2*(a+b*arcsin(c*x))^2*(c*d*x+d)^(1/2)*(-c*
f*x+f)^(1/2)/b/c/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.54, antiderivative size = 376, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 8, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267, Rules used = {4673, 4763, 4647, 4641, 30, 4677, 4697, 4707}

$$\frac{1}{4}c^2f^2x^3\sqrt{cdx+d}\,\sqrt{f-cfx}\,\left(a+b\sin^{-1}(cx)\right)+\frac{5f^2\sqrt{cdx+d}\,\sqrt{f-cfx}\,\left(a+b\sin^{-1}(cx)\right)^2}{16bc\sqrt{1-c^2x^2}}+\frac{2f^2\left(1-c^2x^2\right)\sqrt{ca}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d + c*d*x]*(f - c*f*x)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (-2*b*f^2*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(3*Sqrt[1 - c^2*x^2]) - (3*b*c
*f^2*x^2*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(16*Sqrt[1 - c^2*x^2]) + (2*b*c^2
*f^2*x^3*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(9*Sqrt[1 - c^2*x^2]) - (b*c^3*f^
2*x^4*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(16*Sqrt[1 - c^2*x^2]) + (3*f^2*x*Sq
rt[d + c*d*x]*Sqrt[f - c*f*x]*(a + b*ArcSin[c*x]))/8 + (c^2*f^2*x^3*Sqrt[d
+ c*d*x]*Sqrt[f - c*f*x]*(a + b*ArcSin[c*x]))/4 + (2*f^2*Sqrt[d + c*d*x]*Sq
rt[f - c*f*x]*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(3*c) + (5*f^2*Sqrt[d + c*
d*x]*Sqrt[f - c*f*x]*(a + b*ArcSin[c*x])^2)/(16*b*c*Sqrt[1 - c^2*x^2])
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
```

```
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int \sqrt{d+cdx}(f-cfx)^{5/2}\left(a+b\sin^{-1}(cx)\right)dx = \frac{\left(\sqrt{d+cdx}\sqrt{f-cfx}\right)\int(f-cfx)^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(\sqrt{d+cdx}\sqrt{f-cfx}\right)\int\left(f^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)-2cf\right.}{}$$

$$= \frac{\left(f^2\sqrt{d+cdx}\sqrt{f-cfx}\right)\int\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)dx}{\sqrt{1-c^2x^2}} - $$

$$= \frac{1}{2}f^2x\sqrt{d+cdx}\sqrt{f-cfx}\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}c^2f^2x^3\sqrt{d+cd}$$

$$= -\frac{2bf^2x\sqrt{d+cdx}\sqrt{f-cfx}}{3\sqrt{1-c^2x^2}} - \frac{bcf^2x^2\sqrt{d+cdx}\sqrt{f-cfx}}{4\sqrt{1-c^2x^2}} + $$

$$= -\frac{2bf^2x\sqrt{d+cdx}\sqrt{f-cfx}}{3\sqrt{1-c^2x^2}} - \frac{3bcf^2x^2\sqrt{d+cdx}\sqrt{f-cfx}}{16\sqrt{1-c^2x^2}} + $$

Mathematica [A] time = 1.35, size = 293, normalized size = 0.78

$$\frac{f^2\sqrt{cdx+d}\sqrt{f-cfx}\left(48a\sqrt{1-c^2x^2}\left(6c^3x^3-16c^2x^2+9cx+16\right)+256bcx\left(c^2x^2-3\right)+144b\cos\left(2\sin^{-1}(cx\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d + c*d*x]*(f - c*f*x)^(5/2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (360*b*f^2*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*ArcSin[c*x]^2 - 720*a*Sqrt[d]*f^
(5/2)*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(Sqrt[
d]*Sqrt[f]*(-1 + c^2*x^2))] + f^2*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(256*b*c*
x*(-3 + c^2*x^2) + 48*a*Sqrt[1 - c^2*x^2]*(16 + 9*c*x - 16*c^2*x^2 + 6*c^3*
x^3) + 144*b*Cos[2*ArcSin[c*x]] - 9*b*Cos[4*ArcSin[c*x]]) - 12*b*f^2*Sqrt[d
 + c*d*x]*Sqrt[f - c*f*x]*ArcSin[c*x]*(-64*(1 - c^2*x^2)^(3/2) - 24*Sin[2*A
rcSin[c*x]] + 3*Sin[4*ArcSin[c*x]]))/(1152*c*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(ac^2f^2x^2-2\,acf^2x+af^2+\left(bc^2f^2x^2-2\,bcf^2x+bf^2\right)\arcsin(cx)\right)\sqrt{cdx+d}\sqrt{-cfx+f},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(-c*f*x+f)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="
fricas")
```

```
[Out] integral((a*c^2*f^2*x^2 - 2*a*c*f^2*x + a*f^2 + (b*c^2*f^2*x^2 - 2*b*c*f^2*
x + b*f^2)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*f*x + f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\sqrt{cdx+d}\left(-cfx+f\right)^{\frac{5}{2}}(b\arcsin(cx)+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(-c*f*x+f)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="
giac")
```

```
[Out] integrate(sqrt(c*d*x + d)*(-c*f*x + f)^(5/2)*(b*arcsin(c*x) + a), x)
```

maple [F] time = 0.28, size = 0, normalized size = 0.00

$$\int \sqrt{cdx+d}\,\left(-cfx+f\right)^{\frac{5}{2}}\left(a+b\arcsin\left(cx\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(1/2)*(-c*f*x+f)^(5/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] int((c*d*x+d)^(1/2)*(-c*f*x+f)^(5/2)*(a+b*arcsin(c*x)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\sqrt{d}\,\sqrt{f}\int\left(c^2f^2x^2-2\,cf^2x+f^2\right)\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)dx+\frac{1}{24}\left(15\sqrt{-c^2dfx^2+df}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(-c*f*x+f)^(5/2)*(a+b*arcsin(c*x)),x, algorithm="
maxima")
```

```
[Out] b*sqrt(d)*sqrt(f)*integrate((c^2*f^2*x^2 - 2*c*f^2*x + f^2)*sqrt(c*x + 1)*s
qrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)), x) + 1/24*(15*sqr
t(-c^2*d*f*x^2 + d*f)*f^2*x + 15*d*f^3*arcsin(c*x)/(sqrt(d*f)*c) - 6*(-c^2*
d*f*x^2 + d*f)^(3/2)*f*x/d + 16*(-c^2*d*f*x^2 + d*f)^(3/2)*f/(c*d))*a
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\sqrt{d+c\,d\,x}\,{\left(f-c\,f\,x\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(d + c*d*x)^(1/2)*(f - c*f*x)^(5/2),x)
```

```
[Out] int((a + b*asin(c*x))*(d + c*d*x)^(1/2)*(f - c*f*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(1/2)*(-c*f*x+f)**(5/2)*(a+b*asin(c*x)),x)
```

```
[Out] Timed out
```

3.519 $\int \frac{(f-cfx)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d+cdx}}\,dx$

Optimal. Leaf size=345

$$\frac{5f^3\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{4bc\sqrt{cdx+d}\,\sqrt{f-cfx}}+\frac{cf^3x^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3\sqrt{cdx+d}\,\sqrt{f-cfx}}-\frac{3f^3x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{cdx+d}\,\sqrt{f-cfx}}+\frac{11f^3}{}$$

```
[Out] 11/3*f^3*(-c^2*x^2+1)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)-
3/2*f^3*x*(-c^2*x^2+1)*(a+b*arcsin(c*x))/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)+1
/3*c*f^3*x^2*(-c^2*x^2+1)*(a+b*arcsin(c*x))/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2
)-11/3*b*f^3*x*(-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)+3/4*b*c*
f^3*x^2*(-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)-1/9*b*c^2*f^3*x
^3*(-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)+5/4*f^3*(a+b*arcsin(
c*x))^2*(-c^2*x^2+1)^(1/2)/b/c/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)
```

Rubi [A] time = 0.59, antiderivative size = 345, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 7, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.233, Rules used = {4673, 4763, 4641, 4677, 8, 4707, 30}

$$\frac{5f^3\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{4bc\sqrt{cdx+d}\,\sqrt{f-cfx}}+\frac{cf^3x^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3\sqrt{cdx+d}\,\sqrt{f-cfx}}-\frac{3f^3x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{cdx+d}\,\sqrt{f-cfx}}+\frac{11f^3}{}$$

Antiderivative was successfully verified.

```
[In] Int[((f - c*f*x)^(5/2)*(a + b*ArcSin[c*x]))/Sqrt[d + c*d*x],x]
```

```
[Out] (-11*b*f^3*x*Sqrt[1 - c^2*x^2])/(3*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]) + (3*b*
c*f^3*x^2*Sqrt[1 - c^2*x^2])/(4*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]) - (b*c^2*f
^3*x^3*Sqrt[1 - c^2*x^2])/(9*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]) + (11*f^3*(1
- c^2*x^2)*(a + b*ArcSin[c*x]))/(3*c*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]) - (3*
f^3*x*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(2*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]
) + (c*f^3*x^2*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(3*Sqrt[d + c*d*x]*Sqrt[f
 - c*f*x]) + (5*f^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(4*b*c*Sqrt[d
+ c*d*x]*Sqrt[f - c*f*x])
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int \frac{(f-cfx)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d+cdx}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(f-cfx)^3\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\sqrt{f-cfx}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{f^3\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} - \frac{3cf^3x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} + \frac{3c^2f^3x^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} - \frac{c^3f^3 \cdots}{\cdots}\right.}{\sqrt{d+cdx}\sqrt{f-cfx}}$$

$$= \frac{\left(f^3\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\sqrt{f-cfx}} - \frac{\left(3cf^3\sqrt{1-c^2x^2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\sqrt{f-cfx}} + \cdots$$

$$= \frac{3f^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{d+cdx}\sqrt{f-cfx}} - \frac{3f^3x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{d+cdx}\sqrt{f-cfx}} + \frac{cf^3 \cdots}{\cdots}$$

$$= -\frac{3bf^3x\sqrt{1-c^2x^2}}{\sqrt{d+cdx}\sqrt{f-cfx}} + \frac{3bcf^3x^2\sqrt{1-c^2x^2}}{4\sqrt{d+cdx}\sqrt{f-cfx}} - \frac{bc^2f^3x^3\sqrt{1-c^2x^2}}{9\sqrt{d+cdx}\sqrt{f-cfx}} + \cdots$$

$$= -\frac{11bf^3x\sqrt{1-c^2x^2}}{3\sqrt{d+cdx}\sqrt{f-cfx}} + \frac{3bcf^3x^2\sqrt{1-c^2x^2}}{4\sqrt{d+cdx}\sqrt{f-cfx}} - \frac{bc^2f^3x^3\sqrt{1-c^2x^2}}{9\sqrt{d+cdx}\sqrt{f-cfx}} + \cdots$$

Mathematica [A] time = 1.99, size = 274, normalized size = 0.79

$$\frac{f^2\sqrt{cdx+d}\sqrt{f-cfx}\left(12a\sqrt{1-c^2x^2}\left(2c^2x^2-9cx+22\right)-270bcx+2b\sin\left(3\sin^{-1}(cx)\right)-27b\cos\left(2\sin^{-1}(cx)\right)\cdots\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f - c*f*x)^(5/2)*(a + b*ArcSin[c*x]))/Sqrt[d + c*d*x],x]
```

```
[Out] (90*b*f^2*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*ArcSin[c*x]^2 - 180*a*Sqrt[d]*f^(
5/2)*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(Sqrt[d
]*Sqrt[f]*(-1 + c^2*x^2))] - 6*b*f^2*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*ArcSin
[c*x]*(9*(-5 + 2*c*x)*Sqrt[1 - c^2*x^2] + Cos[3*ArcSin[c*x]]) + f^2*Sqrt[d
+ c*d*x]*Sqrt[f - c*f*x]*(-270*b*c*x + 12*a*Sqrt[1 - c^2*x^2]*(22 - 9*c*x +
 2*c^2*x^2) - 27*b*Cos[2*ArcSin[c*x]] + 2*b*Sin[3*ArcSin[c*x]]))/(72*c*d*Sq
rt[1 - c^2*x^2])
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(ac^2f^2x^2 - 2\,acf^2x + af^2 + \left(bc^2f^2x^2 - 2\,bcf^2x + bf^2\right)\arcsin\left(cx\right)\right)\sqrt{-cfx + f}}{\sqrt{cdx + d}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*f*x+f)^(5/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(1/2),x, algorithm="
fricas")
```

```
[Out] integral((a*c^2*f^2*x^2 - 2*a*c*f^2*x + a*f^2 + (b*c^2*f^2*x^2 - 2*b*c*f^2*
x + b*f^2)*arcsin(c*x))*sqrt(-c*f*x + f)/sqrt(c*d*x + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-cfx + f\right)^{\frac{5}{2}}\left(b\arcsin\left(cx\right) + a\right)}{\sqrt{cdx + d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*f*x+f)^(5/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(1/2),x, algorithm="
giac")
```

```
[Out] integrate((-c*f*x + f)^(5/2)*(b*arcsin(c*x) + a)/sqrt(c*d*x + d), x)
```

maple [F] time = 0.32, size = 0, normalized size = 0.00

$$\int \frac{\left(-cfx + f\right)^{\frac{5}{2}}\left(a + b\arcsin\left(cx\right)\right)}{\sqrt{cdx + d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c*f*x+f)^(5/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(1/2),x)
```

```
[Out] int((-c*f*x+f)^(5/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{6}\left(\frac{2\sqrt{-c^2dfx^2 + df}\,cf^2x^2}{d} - \frac{9\sqrt{-c^2dfx^2 + df}\,f^2x}{d} + \frac{15\,f^3\arcsin\left(cx\right)}{\sqrt{df}\,c} + \frac{22\sqrt{-c^2dfx^2 + df}\,f^2}{cd}\right)a + \frac{\frac{1}{36}\left(12\sqrt{cx\cdots}\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*f*x+f)^(5/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(1/2),x, algorithm="
maxima")
```

```
[Out] 1/6*(2*sqrt(-c^2*d*f*x^2 + d*f)*c*f^2*x^2/d - 9*sqrt(-c^2*d*f*x^2 + d*f)*f^
2*x/d + 15*f^3*arcsin(c*x)/(sqrt(d*f)*c) + 22*sqrt(-c^2*d*f*x^2 + d*f)*f^2/
```

```
(c*d))*a + b*sqrt(f)*integrate((c^2*f^2*x^2 - 2*c*f^2*x + f^2)*sqrt(-c*x +
1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/sqrt(c*x + 1), x)/sqrt(d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\mathrm{asin}\,(c\,x))\,\left(f - c\,f\,x\right)^{5/2}}{\sqrt{d + c\,d\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(f - c*f*x)^(5/2))/(d + c*d*x)^(1/2),x)
[Out] int(((a + b*asin(c*x))*(f - c*f*x)^(5/2))/(d + c*d*x)^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*f*x+f)**(5/2)*(a+b*asin(c*x))/(c*d*x+d)**(1/2),x)
[Out] Timed out
```

3.520 $\int \frac{(f-cfx)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{(d+cdx)^{3/2}}\,dx$

Optimal. Leaf size=465

$$-\frac{5f^4(1-cx)\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{2c(cdx+d)^{3/2}(f-cfx)^{3/2}}-\frac{15f^4\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{2c(cdx+d)^{3/2}(f-cfx)^{3/2}}-\frac{2f^4(1-cx)^3\left(1-c^2x^2\right)\left(a+b\,\mathrm{s}\right.}{c(cdx+d)^{3/2}(f-cfx)^{3}}$$

```
[Out] 3/2*b*f^4*x*(-c^2*x^2+1)^(3/2)/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)+b*c*f^4*x^2
*(-c^2*x^2+1)^(3/2)/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)-5/4*b*f^4*(-c*x+1)^2*(
-c^2*x^2+1)^(3/2)/c/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)+15/4*b*f^4*(-c^2*x^2+1
)^(3/2)*arcsin(c*x)^2/c/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)-2*f^4*(-c*x+1)^3*(
-c^2*x^2+1)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)-15/2*f^4*(
-c^2*x^2+1)^2*(a+b*arcsin(c*x))/c/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)-5/2*f^4*
(-c*x+1)*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))/c/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2
)-15/2*f^4*(-c^2*x^2+1)^(3/2)*arcsin(c*x)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(3/
2)/(-c*f*x+f)^(3/2)+8*b*f^4*(-c^2*x^2+1)^(3/2)*ln(c*x+1)/c/(c*d*x+d)^(3/2)/
(-c*f*x+f)^(3/2)
```

Rubi [A] time = 0.38, antiderivative size = 465, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 9, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {4673, 669, 671, 641, 216, 4761, 627, 43, 4641}

$$-\frac{5f^4(1-cx)\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{2c(cdx+d)^{3/2}(f-cfx)^{3/2}}-\frac{15f^4\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{2c(cdx+d)^{3/2}(f-cfx)^{3/2}}-\frac{2f^4(1-cx)^3\left(1-c^2x^2\right)\left(a+b\,\mathrm{s}\right.}{c(cdx+d)^{3/2}(f-cfx)^{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((f - c*f*x)^(5/2)*(a + b*ArcSin[c*x]))/(d + c*d*x)^(3/2),x]
```

```
[Out] (3*b*f^4*x*(1 - c^2*x^2)^(3/2))/(2*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)) + (
b*c*f^4*x^2*(1 - c^2*x^2)^(3/2))/((d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)) - (5
*b*f^4*(1 - c*x)^2*(1 - c^2*x^2)^(3/2))/(4*c*(d + c*d*x)^(3/2)*(f - c*f*x)^
(3/2)) + (15*b*f^4*(1 - c^2*x^2)^(3/2)*ArcSin[c*x]^2)/(4*c*(d + c*d*x)^(3/2
)*(f - c*f*x)^(3/2)) - (2*f^4*(1 - c*x)^3*(1 - c^2*x^2)*(a + b*ArcSin[c*x])
)/(c*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)) - (15*f^4*(1 - c^2*x^2)^2*(a + b*
ArcSin[c*x]))/(2*c*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)) - (5*f^4*(1 - c*x)*
(1 - c^2*x^2)^2*(a + b*ArcSin[c*x]))/(2*c*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/
2)) - (15*f^4*(1 - c^2*x^2)^(3/2)*ArcSin[c*x]*(a + b*ArcSin[c*x]))/(2*c*(d
+ c*d*x)^(3/2)*(f - c*f*x)^(3/2)) + (8*b*f^4*(1 - c^2*x^2)^(3/2)*Log[1 + c*
x])/(c*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2))
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 627

```
Int[((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int
[(d + e*x)^(m + p)*(a/d + (c*x)/e)^p, x] /; FreeQ[{a, c, d, e, m, p}, x] &&
 EqQ[c*d^2 + a*e^2, 0] && (IntegerQ[p] || (GtQ[a, 0] && GtQ[d, 0] && Intege
```

```
rQ[m + p]))
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rule 669

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^(m - 1)*(a + c*x^2)^(p + 1))/(c*(p + 1)), x] - Dist[(e^2*(m +
p))/(c*(p + 1)), Int[(d + e*x)^(m - 2)*(a + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, c, d, e}, x] && EqQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && In
tegerQ[2*p]
```

Rule 671

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^(m - 1)*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 1)), x] + Dist[(2*c
*d*(m + p))/(c*(m + 2*p + 1)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p, x], x]
/; FreeQ[{a, c, d, e, p}, x] && EqQ[c*d^2 + a*e^2, 0] && GtQ[m, 1] && NeQ[m
 + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4761

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rubi steps

$$\int \frac{(f-cfx)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{(d+cdx)^{3/2}}\,dx = \frac{\left(1-c^2x^2\right)^{3/2}\int \frac{(f-cfx)^4\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}\,dx}{(d+cdx)^{3/2}(f-cfx)^{3/2}}$$

$$= -\frac{2f^4(1-cx)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{15f^4\left(1-c^2x^2\right)^2\left(a+b\sin\right.}{2c(d+cdx)^{3/2}(f-cfx\right.}$$

$$= \frac{15bf^4x\left(1-c^2x^2\right)^{3/2}}{2(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{5bf^4(1-cx)^2\left(1-c^2x^2\right)^{3/2}}{4c(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{2f^4(1-cx)^3\left(\right.}{c(d+\right.}$$

$$= \frac{15bf^4x\left(1-c^2x^2\right)^{3/2}}{2(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{5bf^4(1-cx)^2\left(1-c^2x^2\right)^{3/2}}{4c(d+cdx)^{3/2}(f-cfx)^{3/2}} + \frac{15bf^4\left(1-c^2\right.}{4c(d+cdx)\right.}$$

$$= \frac{15bf^4x\left(1-c^2x^2\right)^{3/2}}{2(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{5bf^4(1-cx)^2\left(1-c^2x^2\right)^{3/2}}{4c(d+cdx)^{3/2}(f-cfx)^{3/2}} + \frac{15bf^4\left(1-c^2\right.}{4c(d+cdx)\right.}$$

$$= \frac{3bf^4x\left(1-c^2x^2\right)^{3/2}}{2(d+cdx)^{3/2}(f-cfx)^{3/2}} + \frac{bcf^4x^2\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{5bf^4(1-cx)^2\left(1\right.}{4c(d+cdx)^{3/2}(f\right.}$$

Mathematica [A] time = 3.77, size = 685, normalized size = 1.47

$$\frac{f^2\left(8a\sqrt{1-c^2x^2}\left(c^2x^2-7cx-24\right)\sqrt{cdx+d}\sqrt{f-cfx}\left(\sin\left(\frac{1}{2}\sin^{-1}(cx)\right)+\cos\left(\frac{1}{2}\sin^{-1}(cx)\right)\right)+120a\sqrt{d}\sqrt{f}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f - c*f*x)^(5/2)*(a + b*ArcSin[c*x]))/(d + c*d*x)^(3/2),x]
```

```
[Out] (f^2*(8*a*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*Sqrt[1 - c^2*x^2]*(-24 - 7*c*x +
c^2*x^2)*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]) + 120*a*Sqrt[d]*Sqrt[f]*
(1 + c*x)*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(S
qrt[d]*Sqrt[f]*(-1 + c^2*x^2))]*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]) -
 8*b*(1 + c*x)*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(Cos[ArcSin[c*x]/2]*(ArcSin[
c*x]*(4 + ArcSin[c*x]) - 8*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]) +
((-4 + ArcSin[c*x])*ArcSin[c*x] - 8*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x
]/2]])*Sin[ArcSin[c*x]/2]) - 32*b*(1 + c*x)*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]
*(ArcSin[c*x]^2*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]) - (c*x + 4*Log[Co
s[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]])*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*
x]/2]) + ArcSin[c*x]*((2 + Sqrt[1 - c^2*x^2])*Cos[ArcSin[c*x]/2] + (-2 + Sq
rt[1 - c^2*x^2])*Sin[ArcSin[c*x]/2])) - b*(1 + c*x)*Sqrt[d + c*d*x]*Sqrt[f
- c*f*x]*(20*ArcSin[c*x]^2*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]) - 2*(1
6*c*x + Cos[2*ArcSin[c*x]] + 32*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]
])*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]) + 2*ArcSin[c*x]*(24*Cos[ArcSin
[c*x]/2] + 7*Cos[(3*ArcSin[c*x])/2] + Cos[(5*ArcSin[c*x])/2] - 24*Sin[ArcSi
n[c*x]/2] + 7*Sin[(3*ArcSin[c*x])/2] - Sin[(5*ArcSin[c*x])/2]))))/(16*c*d^2
*(1 + c*x)*Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]))
```

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(ac^2f^2x^2-2\,acf^2x+af^2+\left(bc^2f^2x^2-2\,bcf^2x+bf^2\right)\arcsin\left(cx\right)\right)\sqrt{cdx+d}\,\sqrt{-cfx+f}}{c^2d^2x^2+2\,cd^2x+d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*f*x+f)^(5/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(3/2),x, algorithm="
fricas")
```

```
[Out] integral((a*c^2*f^2*x^2 - 2*a*c*f^2*x + a*f^2 + (b*c^2*f^2*x^2 - 2*b*c*f^2*
x + b*f^2)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*f*x + f)/(c^2*d^2*x^2 + 2*c
*d^2*x + d^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-cfx+f\right)^{\frac{5}{2}}\left(b \arcsin\left(cx\right)+a\right)}{\left(cdx+d\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*f*x+f)^(5/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(3/2),x, algorithm="
giac")
```

```
[Out] integrate((-c*f*x + f)^(5/2)*(b*arcsin(c*x) + a)/(c*d*x + d)^(3/2), x)
```

maple [F] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{\left(-cfx+f\right)^{\frac{5}{2}}\left(a+b \arcsin\left(cx\right)\right)}{\left(cdx+d\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c*f*x+f)^(5/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(3/2),x)
```

```
[Out] int((-c*f*x+f)^(5/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\left(\frac{c^2f^3x^3}{\sqrt{-c^2dfx^2+df}\,d}-\frac{8\,cf^3x^2}{\sqrt{-c^2dfx^2+df}\,d}-\frac{17\,f^3x}{\sqrt{-c^2dfx^2+df}\,d}+\frac{15\,f^3\arcsin\left(cx\right)}{\sqrt{df}\,cd}+\frac{24\,f^3}{\sqrt{-c^2dfx^2+df}\,cd}\right)a+\frac{\left(c^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*f*x+f)^(5/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(3/2),x, algorithm="
maxima")
```

```
[Out] -1/2*(c^2*f^3*x^3/(sqrt(-c^2*d*f*x^2 + d*f)*d) - 8*c*f^3*x^2/(sqrt(-c^2*d*f
*x^2 + d*f)*d) - 17*f^3*x/(sqrt(-c^2*d*f*x^2 + d*f)*d) + 15*f^3*arcsin(c*x)
/(sqrt(d*f)*c*d) + 24*f^3/(sqrt(-c^2*d*f*x^2 + d*f)*c*d))*a + b*sqrt(f)*int
egrate((c^2*f^2*x^2 - 2*c*f^2*x + f^2)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x
 + 1)*sqrt(-c*x + 1))/((c*d*x + d)*sqrt(c*x + 1)), x)/sqrt(d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(f-c\,f\,x\right)}^{5/2}}{{\left(d+c\,d\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(f - c*f*x)^(5/2))/(d + c*d*x)^(3/2),x)
```

```
[Out] int(((a + b*asin(c*x))*(f - c*f*x)^(5/2))/(d + c*d*x)^(3/2), x)
```

<u>**sympy**</u> [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*f*x+f)**(5/2)*(a+b*asin(c*x))/(c*d*x+d)**(3/2),x)
```

```
[Out] Timed out
```

3.521 $\int \frac{(f-cfx)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{(d+cdx)^{5/2}}\,dx$

Optimal. Leaf size=420

$$\frac{5f^5\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)}{c(cdx+d)^{5/2}(f-cfx)^{5/2}}+\frac{10f^5(1-cx)^2\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{2f^5(1-cx)^4\left(1-c^2x^2\right)\left(a+b\sin^{-1}\right.}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}$$

```
[Out] -b*f^5*x*(-c^2*x^2+1)^(5/2)/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)-8/3*b*f^5*(-c^
2*x^2+1)^(5/2)/c/(c*x+1)/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)-5/2*b*f^5*(-c^2*x
^2+1)^(5/2)*arcsin(c*x)^2/c/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)-2/3*f^5*(-c*x+
1)^4*(-c^2*x^2+1)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)+10/3
*f^5*(-c*x+1)^2*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*f*x+
f)^(5/2)+5*f^5*(-c^2*x^2+1)^3*(a+b*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*f*x+f
)^(5/2)+5*f^5*(-c^2*x^2+1)^(5/2)*arcsin(c*x)*(a+b*arcsin(c*x))/c/(c*d*x+d)^
(5/2)/(-c*f*x+f)^(5/2)-28/3*b*f^5*(-c^2*x^2+1)^(5/2)*ln(c*x+1)/c/(c*d*x+d)^
(5/2)/(-c*f*x+f)^(5/2)
```

Rubi [A] time = 0.39, antiderivative size = 420, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.267$, Rules used = {4673, 669, 641, 216, 4761, 627, 43, 4641}

$$\frac{5f^5\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)}{c(cdx+d)^{5/2}(f-cfx)^{5/2}}+\frac{10f^5(1-cx)^2\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{2f^5(1-cx)^4\left(1-c^2x^2\right)\left(a+b\sin^{-1}\right.}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f - c*f*x)^(5/2)*(a + b*ArcSin[c*x]))/(d + c*d*x)^(5/2),x]
```

```
[Out] -((b*f^5*x*(1 - c^2*x^2)^(5/2))/((d + c*d*x)^(5/2)*(f - c*f*x)^(5/2))) - (8
*b*f^5*(1 - c^2*x^2)^(5/2))/(3*c*(1 + c*x)*(d + c*d*x)^(5/2)*(f - c*f*x)^(5
/2)) - (5*b*f^5*(1 - c^2*x^2)^(5/2)*ArcSin[c*x]^2)/(2*c*(d + c*d*x)^(5/2)*(
f - c*f*x)^(5/2)) - (2*f^5*(1 - c*x)^4*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(
3*c*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)) + (10*f^5*(1 - c*x)^2*(1 - c^2*x^2
)^2*(a + b*ArcSin[c*x]))/(3*c*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)) + (5*f^5
*(1 - c^2*x^2)^3*(a + b*ArcSin[c*x]))/(c*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2
)) + (5*f^5*(1 - c^2*x^2)^(5/2)*ArcSin[c*x]*(a + b*ArcSin[c*x]))/(c*(d + c*
d*x)^(5/2)*(f - c*f*x)^(5/2)) - (28*b*f^5*(1 - c^2*x^2)^(5/2)*Log[1 + c*x])
/(3*c*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2))
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 627

```
Int[((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int
[(d + e*x)^(m + p)*(a/d + (c*x)/e)^p, x] /; FreeQ[{a, c, d, e, m, p}, x] &&
 EqQ[c*d^2 + a*e^2, 0] && (IntegerQ[p] || (GtQ[a, 0] && GtQ[d, 0] && Intege
rQ[m + p]))
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rule 669

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^(m - 1)*(a + c*x^2)^(p + 1))/(c*(p + 1)), x] - Dist[(e^2*(m +
p))/(c*(p + 1)), Int[(d + e*x)^(m - 2)*(a + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, c, d, e}, x] && EqQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && In
tegerQ[2*p]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4761

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rubi steps

$$\int \frac{(f-cfx)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{(d+cdx)^{5/2}}\,dx = \frac{\left(1-c^2x^2\right)^{5/2}\int \frac{(f-cfx)^5\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{5/2}}\,dx}{(d+cdx)^{5/2}(f-cfx)^{5/2}}$$

$$= -\frac{2f^5(1-cx)^4\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{10f^5(1-cx)^2\left(1-c^2x^2\right)^2\left(a+\right.}{3c(d+cdx)^{5/2}(f-cf}$$

$$= -\frac{5bf^5x\left(1-c^2x^2\right)^{5/2}}{(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{2f^5(1-cx)^4\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + 10$$

$$= -\frac{5bf^5x\left(1-c^2x^2\right)^{5/2}}{(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{5bf^5\left(1-c^2x^2\right)^{5/2}\sin^{-1}(cx)^2}{2c(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{2f^5(1-cx)^4(1}{3c(d+}$$

$$= -\frac{5bf^5x\left(1-c^2x^2\right)^{5/2}}{(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{5bf^5\left(1-c^2x^2\right)^{5/2}\sin^{-1}(cx)^2}{2c(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{2f^5(1-cx)^4(1}{3c(d+}$$

$$= -\frac{bf^5x\left(1-c^2x^2\right)^{5/2}}{(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{8bf^5\left(1-c^2x^2\right)^{5/2}}{3c(1+cx)(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{5bf^5(1-}{2c(d+c}$$

Mathematica [B] time = 6.81, size = 847, normalized size = 2.02

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((f - c*f*x)^(5/2)*(a + b*ArcSin[c*x]))/(d + c*d*x)^(5/2),x]
```

```
[Out] (f^2*((4*a*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(23 + 34*c*x + 3*c^2*x^2))/(1 +
c*x)^2 - 60*a*Sqrt[d]*Sqrt[f]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/
(Sqrt[d]*Sqrt[f]*(-1 + c^2*x^2))] + (2*b*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(C
os[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])*(Cos[ArcSin[c*x]/2]*(-8 + 6*ArcSin[
c*x] + 9*ArcSin[c*x]^2 - 84*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]) +
 Cos[(3*ArcSin[c*x])/2]*((14 - 3*ArcSin[c*x])*ArcSin[c*x] + 28*Log[Cos[ArcS
in[c*x]/2] + Sin[ArcSin[c*x]/2]]) + 2*(-4 + 2*(2 + 7*Sqrt[1 - c^2*x^2])*Arc
Sin[c*x] + 3*(2 + Sqrt[1 - c^2*x^2])*ArcSin[c*x]^2 - 28*(2 + Sqrt[1 - c^2*x
^2])*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]])*Sin[ArcSin[c*x]/2]))/((1
 - c*x)*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^4) + (2*b*Sqrt[d + c*d*x]
*Sqrt[f - c*f*x]*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])*(Cos[(3*ArcSin[c
*x])/2]*(ArcSin[c*x] + 2*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]) - Co
s[ArcSin[c*x]/2]*(4 + 3*ArcSin[c*x] + 6*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin
[c*x]/2]]) + 2*(-2 + (2 + Sqrt[1 - c^2*x^2])*ArcSin[c*x] - 2*(2 + Sqrt[1 -
c^2*x^2])*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]])*Sin[ArcSin[c*x]/2])
)/((1 - c*x)*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^4) + (b*Sqrt[d + c*d
*x]*Sqrt[f - c*f*x]*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])*(2*(4 + 6*c*x
 + 6*c^2*x^2 + 52*(1 + c*x)*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]])*(
Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]) - 18*ArcSin[c*x]^2*(Cos[ArcSin[c*x
]/2] + Sin[ArcSin[c*x]/2])^3 + ArcSin[c*x]*(-24*Cos[ArcSin[c*x]/2] - 35*Cos
[(3*ArcSin[c*x])/2] + 3*Cos[(5*ArcSin[c*x])/2] + 24*Sin[ArcSin[c*x]/2] - 35
*Sin[(3*ArcSin[c*x])/2] - 3*Sin[(5*ArcSin[c*x])/2])))/((-1 + c*x)*(Cos[ArcS
in[c*x]/2] + Sin[ArcSin[c*x]/2])^4)))/(12*c*d^3)
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(ac^2f^2x^2 - 2\,acf^2x + af^2 + \left(bc^2f^2x^2 - 2\,bcf^2x + bf^2\right)\arcsin(cx)\right)\sqrt{cdx+d}\,\sqrt{-cfx+f}}{c^3d^3x^3 + 3\,c^2d^3x^2 + 3\,cd^3x + d^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*f*x+f)^(5/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(5/2),x, algorithm="
fricas")
```

```
[Out] integral((a*c^2*f^2*x^2 - 2*a*c*f^2*x + a*f^2 + (b*c^2*f^2*x^2 - 2*b*c*f^2*
x + b*f^2)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*f*x + f)/(c^3*d^3*x^3 + 3*c
^2*d^3*x^2 + 3*c*d^3*x + d^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-cfx+f\right)^{\frac{5}{2}}(b\arcsin\left(cx\right)+a)}{(cdx+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*f*x+f)^(5/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(5/2),x, algorithm="
giac")
```

```
[Out] integrate((-c*f*x + f)^(5/2)*(b*arcsin(c*x) + a)/(c*d*x + d)^(5/2), x)
```

maple [F] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{\left(-cfx+f\right)^{\frac{5}{2}}\left(a+b\arcsin\left(cx\right)\right)}{(cdx+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c*f*x+f)^(5/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(5/2),x)
```

```
[Out] int((-c*f*x+f)^(5/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(5/2),x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*f*x+f)^(5/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(5/2),x, algorithm="
maxima")
```

```
[Out] Timed out
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(f-c\,f\,x\right)}^{5/2}}{{\left(d+c\,d\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(f - c*f*x)^(5/2))/(d + c*d*x)^(5/2),x)
```

```
[Out] int(((a + b*asin(c*x))*(f - c*f*x)^(5/2))/(d + c*d*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*f*x+f)**(5/2)*(a+b*asin(c*x))/(c*d*x+d)**(5/2),x)
```

```
[Out] Timed out
```

3.522 $\int \frac{(d+cdx)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{f-cfx}}\,dx$

Optimal. Leaf size=345

$$\frac{5d^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{4bc\sqrt{cdx+d}\sqrt{f-cfx}}-\frac{cd^3x^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3\sqrt{cdx+d}\sqrt{f-cfx}}-\frac{3d^3x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{cdx+d}\sqrt{f-cfx}}-\frac{11d^3\left(1-\right.}{3c\sqrt{}}$$

```
[Out] -11/3*d^3*(-c^2*x^2+1)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)
-3/2*d^3*x*(-c^2*x^2+1)*(a+b*arcsin(c*x))/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)-
1/3*c*d^3*x^2*(-c^2*x^2+1)*(a+b*arcsin(c*x))/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/
2)+11/3*b*d^3*x*(-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)+3/4*b*c
*d^3*x^2*(-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)+1/9*b*c^2*d^3*
x^3*(-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)+5/4*d^3*(a+b*arcsin
(c*x))^2*(-c^2*x^2+1)^(1/2)/b/c/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)
```

Rubi [A] time = 0.59, antiderivative size = 345, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 7, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.233, Rules used = {4673, 4763, 4641, 4677, 8, 4707, 30}

$$\frac{5d^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{4bc\sqrt{cdx+d}\sqrt{f-cfx}}-\frac{cd^3x^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3\sqrt{cdx+d}\sqrt{f-cfx}}-\frac{3d^3x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{cdx+d}\sqrt{f-cfx}}-\frac{11d^3\left(1-\right.}{3c\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + c*d*x)^(5/2)*(a + b*ArcSin[c*x]))/Sqrt[f - c*f*x],x]
```

```
[Out] (11*b*d^3*x*Sqrt[1 - c^2*x^2])/(3*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]) + (3*b*c
*d^3*x^2*Sqrt[1 - c^2*x^2])/(4*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]) + (b*c^2*d^
3*x^3*Sqrt[1 - c^2*x^2])/(9*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]) - (11*d^3*(1 -
 c^2*x^2)*(a + b*ArcSin[c*x]))/(3*c*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]) - (3*d
^3*x*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(2*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])
 - (c*d^3*x^2*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(3*Sqrt[d + c*d*x]*Sqrt[f
- c*f*x]) + (5*d^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(4*b*c*Sqrt[d +
 c*d*x]*Sqrt[f - c*f*x])
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int \frac{(d+cdx)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{f-cfx}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(d+cdx)^3\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\,\sqrt{f-cfx}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} + \frac{3cd^3x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} + \frac{3c^2d^3x^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} + \cdots\right.}{\sqrt{d+cdx}\,\sqrt{f-cfx}}$$

$$= \frac{\left(d^3\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\,\sqrt{f-cfx}} + \frac{\left(3cd^3\sqrt{1-c^2x^2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\,\sqrt{f-cfx}} + \cdots$$

$$= -\frac{3d^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{d+cdx}\,\sqrt{f-cfx}} - \frac{3d^3x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{d+cdx}\,\sqrt{f-cfx}} - \cdots$$

$$= \frac{3bd^3x\sqrt{1-c^2x^2}}{\sqrt{d+cdx}\,\sqrt{f-cfx}} + \frac{3bcd^3x^2\sqrt{1-c^2x^2}}{4\sqrt{d+cdx}\,\sqrt{f-cfx}} + \frac{bc^2d^3x^3\sqrt{1-c^2x^2}}{9\sqrt{d+cdx}\,\sqrt{f-cfx}} - \cdots$$

$$= \frac{11bd^3x\sqrt{1-c^2x^2}}{3\sqrt{d+cdx}\,\sqrt{f-cfx}} + \frac{3bcd^3x^2\sqrt{1-c^2x^2}}{4\sqrt{d+cdx}\,\sqrt{f-cfx}} + \frac{bc^2d^3x^3\sqrt{1-c^2x^2}}{9\sqrt{d+cdx}\,\sqrt{f-cfx}} \cdots$$

Mathematica [A] time = 2.28, size = 270, normalized size = 0.78

$$-\frac{d^2\left(\sqrt{cdx+d}\,\sqrt{f-cfx}\left(12a\sqrt{1-c^2x^2}\left(2c^2x^2+9cx+22\right)-270bcx+2b\sin\left(3\sin^{-1}(cx)\right)+27b\cos\left(2\sin^{-1}\cdots\right.\right.\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + c*d*x)^(5/2)*(a + b*ArcSin[c*x]))/Sqrt[f - c*f*x],x]
```

```
[Out] -1/72*(d^2*(-90*b*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*ArcSin[c*x]^2 + 180*a*Sqr
t[d]*Sqrt[f]*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])
/(Sqrt[d]*Sqrt[f]*(-1 + c^2*x^2))] + 6*b*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*Ar
cSin[c*x]*(9*(5 + 2*c*x)*Sqrt[1 - c^2*x^2] - Cos[3*ArcSin[c*x]]) + Sqrt[d +
 c*d*x]*Sqrt[f - c*f*x]*(-270*b*c*x + 12*a*Sqrt[1 - c^2*x^2]*(22 + 9*c*x +
2*c^2*x^2) + 27*b*Cos[2*ArcSin[c*x]] + 2*b*Sin[3*ArcSin[c*x]])))/(c*f*Sqrt[
1 - c^2*x^2])
```

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(ac^2d^2x^2 + 2\,acd^2x + ad^2 + \left(bc^2d^2x^2 + 2\,bcd^2x + bd^2\right)\arcsin\left(cx\right)\right)\sqrt{cdx + d}\,\sqrt{-cfx + f}}{cfx - f}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(1/2),x, algorithm="
fricas")
```

```
[Out] integral(-(a*c^2*d^2*x^2 + 2*a*c*d^2*x + a*d^2 + (b*c^2*d^2*x^2 + 2*b*c*d^2
*x + b*d^2)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*f*x + f)/(c*f*x - f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(cdx + d)^{\frac{5}{2}}(b\arcsin\left(cx\right) + a)}{\sqrt{-cfx + f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(1/2),x, algorithm="
giac")
```

```
[Out] integrate((c*d*x + d)^(5/2)*(b*arcsin(c*x) + a)/sqrt(-c*f*x + f), x)
```

maple [F] time = 0.32, size = 0, normalized size = 0.00

$$\int \frac{(cdx + d)^{\frac{5}{2}}\,(a + b\arcsin\left(cx\right))}{\sqrt{-cfx + f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(1/2),x)
```

```
[Out] int((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{6}\left(\frac{2\sqrt{-c^2dfx^2 + df}\,cd^2x^2}{f} + \frac{9\sqrt{-c^2dfx^2 + df}\,d^2x}{f} - \frac{15\,d^3\arcsin\left(cx\right)}{\sqrt{df}\,c} + \frac{22\sqrt{-c^2dfx^2 + df}\,d^2}{cf}\right)a + \frac{-\frac{1}{36}\left(12\,(cx+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(1/2),x, algorithm="
maxima")
```

```
[Out] -1/6*(2*sqrt(-c^2*d*f*x^2 + d*f)*c*d^2*x^2/f + 9*sqrt(-c^2*d*f*x^2 + d*f)*d
^2*x/f - 15*d^3*arcsin(c*x)/(sqrt(d*f)*c) + 22*sqrt(-c^2*d*f*x^2 + d*f)*d^2
```

```
/(c*f))*a + b*sqrt(d)*integrate((c^2*d^2*x^2 + 2*c*d^2*x + d^2)*sqrt(c*x +
1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/sqrt(-c*x + 1), x)/sqrt(f)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\operatorname{asin}(c\,x))\,(d + c\,d\,x)^{5/2}}{\sqrt{f - c\,f\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d + c*d*x)^(5/2))/(f - c*f*x)^(1/2),x)
[Out] int(((a + b*asin(c*x))*(d + c*d*x)^(5/2))/(f - c*f*x)^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(5/2)*(a+b*asin(c*x))/(-c*f*x+f)**(1/2),x)
[Out] Timed out
```

3.523 $\int \frac{(d+cdx)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{f-cfx}}\,dx$

Optimal. Leaf size=242

$$\frac{3d^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{4bc\sqrt{cdx+d}\sqrt{f-cfx}}-\frac{d^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{cdx+d}\sqrt{f-cfx}}-\frac{2d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{cdx+d}\sqrt{f-cfx}}+\frac{bcd^2x^2\sqrt{1}}{4\sqrt{cdx+d}}$$

```
[Out] -2*d^2*(-c^2*x^2+1)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)-1/
2*d^2*x*(-c^2*x^2+1)*(a+b*arcsin(c*x))/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)+2*b
*d^2*x*(-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)+1/4*b*c*d^2*x^2*
(-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)+3/4*d^2*(a+b*arcsin(c*x
))^2*(-c^2*x^2+1)^(1/2)/b/c/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)
```

Rubi [A] time = 0.42, antiderivative size = 242, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.233, Rules used = {4673, 4763, 4641, 4677, 8, 4707, 30}

$$\frac{3d^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{4bc\sqrt{cdx+d}\sqrt{f-cfx}}-\frac{d^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{cdx+d}\sqrt{f-cfx}}-\frac{2d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{cdx+d}\sqrt{f-cfx}}+\frac{bcd^2x^2\sqrt{1}}{4\sqrt{cdx+d}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + c*d*x)^(3/2)*(a + b*ArcSin[c*x]))/Sqrt[f - c*f*x],x]
```

```
[Out] (2*b*d^2*x*Sqrt[1 - c^2*x^2])/(Sqrt[d + c*d*x]*Sqrt[f - c*f*x]) + (b*c*d^2*
x^2*Sqrt[1 - c^2*x^2])/(4*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]) - (2*d^2*(1 - c^
2*x^2)*(a + b*ArcSin[c*x]))/(c*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]) - (d^2*x*(1
 - c^2*x^2)*(a + b*ArcSin[c*x]))/(2*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]) + (3*d
^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(4*b*c*Sqrt[d + c*d*x]*Sqrt[f -
 c*f*x])
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
```

```
1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int \frac{(d+cdx)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{f-cfx}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(d+cdx)^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\sqrt{f-cfx}}$$
$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}+\frac{2cd^2x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}+\frac{c^2d^2x^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\right)dx}{\sqrt{d+cdx}\sqrt{f-cfx}}$$
$$= \frac{\left(d^2\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\sqrt{f-cfx}}+\frac{\left(2cd^2\sqrt{1-c^2x^2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\sqrt{f-cfx}}+$$
$$= -\frac{2d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{d+cdx}\sqrt{f-cfx}}-\frac{d^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{d+cdx}\sqrt{f-cfx}}+$$
$$= \frac{2bd^2x\sqrt{1-c^2x^2}}{\sqrt{d+cdx}\sqrt{f-cfx}}+\frac{bcd^2x^2\sqrt{1-c^2x^2}}{4\sqrt{d+cdx}\sqrt{f-cfx}}-\frac{2d^2\left(1-c^2x^2\right)\left(a+b\sin\right.}{c\sqrt{d+cdx}\sqrt{f-cf}}$$

Mathematica [A] time = 1.24, size = 238, normalized size = 0.98

$$\frac{d\sqrt{cdx+d}\sqrt{f-cfx}\left(-4a(cx+4)\sqrt{1-c^2x^2}+16bcx-b\cos\left(2\sin^{-1}(cx)\right)\right)-12ad^{3/2}\sqrt{f}\sqrt{1-c^2x^2}\tan^{-1}\left(\right.}{8cf\sqrt{1-}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + c*d*x)^(3/2)*(a + b*ArcSin[c*x]))/Sqrt[f - c*f*x],x]
```

```
[Out] (-4*b*d*(4 + c*x)*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*Sqrt[1 - c^2*x^2]*ArcSin[
c*x] + 6*b*d*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*ArcSin[c*x]^2 - 12*a*d^(3/2)*S
qrt[f]*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(Sqrt
```

```
[d]*Sqrt[f]*(-1 + c^2*x^2))] + d*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(16*b*c*x
- 4*a*(4 + c*x)*Sqrt[1 - c^2*x^2] - b*Cos[2*ArcSin[c*x]]))/(8*c*f*Sqrt[1 -
c^2*x^2])
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{(acdx + ad + (bcdx + bd)\arcsin(cx))\sqrt{cdx + d}\sqrt{-cfx + f}}{cfx - f}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(1/2),x, algorithm="
fricas")
```

```
[Out] integral(-(a*c*d*x + a*d + (b*c*d*x + b*d)*arcsin(c*x))*sqrt(c*d*x + d)*sqr
t(-c*f*x + f)/(c*f*x - f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(cdx + d)^{\frac{3}{2}}(b\arcsin(cx) + a)}{\sqrt{-cfx + f}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(1/2),x, algorithm="
giac")
```

```
[Out] integrate((c*d*x + d)^(3/2)*(b*arcsin(c*x) + a)/sqrt(-c*f*x + f), x)
```

maple [F] time = 0.32, size = 0, normalized size = 0.00

$$\int \frac{(cdx + d)^{\frac{3}{2}}(a + b\arcsin(cx))}{\sqrt{-cfx + f}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(1/2),x)
```

```
[Out] int((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\left(\frac{\sqrt{-c^2dfx^2 + df}\,dx}{f} - \frac{3\,d^2\arcsin(cx)}{\sqrt{df}\,c} + \frac{4\sqrt{-c^2dfx^2 + df}\,d}{cf}\right)a - \frac{bd^{\frac{3}{2}}\left(\int \frac{\sqrt{cx+1}\sqrt{-cx+1}\,cx\arctan\left(cx, \sqrt{cx+1}\sqrt{-cx+1}\right)}{cx-1}\, d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(1/2),x, algorithm="
maxima")
```

```
[Out] -1/2*(sqrt(-c^2*d*f*x^2 + d*f)*d*x/f - 3*d^2*arcsin(c*x)/(sqrt(d*f)*c) + 4*
sqrt(-c^2*d*f*x^2 + d*f)*d/(c*f))*a - b*sqrt(d)*integrate((c*d*x + d)*sqrt(
c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(c*x - 1
), x)/sqrt(f)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\mathrm{asin}(c\,x))\,(d + c\,d\,x)^{3/2}}{\sqrt{f - c\,f\,x}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d + c*d*x)^(3/2))/(f - c*f*x)^(1/2),x)
```

```
[Out] int(((a + b*asin(c*x))*(d + c*d*x)^(3/2))/(f - c*f*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d\left(cx+1\right)\right)^{\frac{3}{2}}\left(a+b\operatorname{asin}\left(cx\right)\right)}{\sqrt{-f\left(cx-1\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(3/2)*(a+b*asin(c*x))/(-c*f*x+f)**(1/2),x)
```

```
[Out] Integral((d*(c*x + 1))**(3/2)*(a + b*asin(c*x))/sqrt(-f*(c*x - 1)), x)
```

3.524 $\int \frac{\sqrt{d+cdx}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{f-cfx}}\,dx$

Optimal. Leaf size=141

$$\frac{d\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\sqrt{cdx+d}\sqrt{f-cfx}}-\frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{cdx+d}\sqrt{f-cfx}}+\frac{bdx\sqrt{1-c^2x^2}}{\sqrt{cdx+d}\sqrt{f-cfx}}$$

```
[Out] -d*(-c^2*x^2+1)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)+b*d*x*
(-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)+1/2*d*(a+b*arcsin(c*x))
^2*(-c^2*x^2+1)^(1/2)/b/c/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2)
```

Rubi [A] time = 0.26, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {4673, 4763, 4641, 4677, 8}

$$\frac{d\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\sqrt{cdx+d}\sqrt{f-cfx}}-\frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{cdx+d}\sqrt{f-cfx}}+\frac{bdx\sqrt{1-c^2x^2}}{\sqrt{cdx+d}\sqrt{f-cfx}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d + c*d*x]*(a + b*ArcSin[c*x]))/Sqrt[f - c*f*x],x]
```

```
[Out] (b*d*x*Sqrt[1 - c^2*x^2])/(Sqrt[d + c*d*x]*Sqrt[f - c*f*x]) - (d*(1 - c^2*x
^2)*(a + b*ArcSin[c*x]))/(c*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]) + (d*Sqrt[1 -
c^2*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
```

```
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int \frac{\sqrt{d+cdx}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{f-cfx}}dx = \frac{\sqrt{1-c^2x^2}\int \frac{(d+cdx)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}dx}{\sqrt{d+cdx}\sqrt{f-cfx}}$$
$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{d\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}+\frac{cdx\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\right)dx}{\sqrt{d+cdx}\sqrt{f-cfx}}$$
$$= \frac{\left(d\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{\sqrt{1-c^2x^2}}dx}{\sqrt{d+cdx}\sqrt{f-cfx}} + \frac{\left(cd\sqrt{1-c^2x^2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}dx}{\sqrt{d+cdx}\sqrt{f-cfx}}$$
$$= -\frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{d+cdx}\sqrt{f-cfx}} + \frac{d\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\sqrt{d+cdx}\sqrt{f-cfx}} + \frac{\left(bd\sqrt{1\right.}{\sqrt{d+}}$$
$$= \frac{bdx\sqrt{1-c^2x^2}}{\sqrt{d+cdx}\sqrt{f-cfx}} - \frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c\sqrt{d+cdx}\sqrt{f-cfx}} + \frac{d\sqrt{1-c^2x^2}\left(a+b\right.}{2bc\sqrt{d+cdx}\sqrt{}}$$

Mathematica [A] time = 0.81, size = 200, normalized size = 1.42

$$\frac{\frac{2\sqrt{cdx+d}\sqrt{f-cfx}\left(bcx-a\sqrt{1-c^2x^2}\right)}{\sqrt{1-c^2x^2}} - 2a\sqrt{d}\sqrt{f}\tan^{-1}\left(\frac{cx\sqrt{cdx+d}\sqrt{f-cfx}}{\sqrt{d}\sqrt{f}\left(c^2x^2-1\right)}\right) + \frac{b\sqrt{cdx+d}\sqrt{f-cfx}\sin^{-1}(cx)^2}{\sqrt{1-c^2x^2}} - 2b\sqrt{cdx+d}\sqrt{f-}}{2cf}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[d + c*d*x]*(a + b*ArcSin[c*x]))/Sqrt[f - c*f*x],x]
```

```
[Out] ((2*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(b*c*x - a*Sqrt[1 - c^2*x^2]))/Sqrt[1 -
 c^2*x^2] - 2*b*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*ArcSin[c*x] + (b*Sqrt[d + c
*d*x]*Sqrt[f - c*f*x]*ArcSin[c*x]^2)/Sqrt[1 - c^2*x^2] - 2*a*Sqrt[d]*Sqrt[f
]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(Sqrt[d]*Sqrt[f]*(-1 + c^2*x
^2))])/(2*c*f)
```

fricas [F] time = 0.41, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{cdx+d}\sqrt{-cfx+f}\,(b\arcsin(cx)+a)}{cfx-f}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(1/2),x, algorithm="
fricas")
```

```
[Out] integral(-sqrt(c*d*x + d)*sqrt(-c*f*x + f)*(b*arcsin(c*x) + a)/(c*f*x - f),
 x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cdx+d}\,(b\arcsin(cx)+a)}{\sqrt{-cfx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(1/2),x, algorithm="giac")

[Out] integrate(sqrt(c*d*x + d)*(b*arcsin(c*x) + a)/sqrt(-c*f*x + f), x)

maple [F] time = 0.33, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cdx+d}\,\left(a+b\arcsin\left(cx\right)\right)}{\sqrt{-cfx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(1/2),x)

[Out] int((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(1/2),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a\left(\frac{d\arcsin\left(cx\right)}{cf\sqrt{\frac{d}{f}}}-\frac{\sqrt{-c^2dfx^2+df}}{cf}\right)+\frac{b\sqrt{d}\left(x-\frac{2\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{cx+1}\right)^2}{c}-\frac{\sqrt{cx+1}\sqrt{-cx+1}\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)}{c}+\frac{2\arcsin(}{}\right.}{\sqrt{f}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(1/2),x, algorithm="maxima")

[Out] a*(d*arcsin(c*x)/(c*f*sqrt(d/f)) - sqrt(-c^2*d*f*x^2 + d*f)/(c*f)) + b*sqrt(d)*integrate(sqrt(c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/sqrt(-c*x + 1), x)/sqrt(f)

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\sqrt{d+c\,d\,x}}{\sqrt{f-c\,f\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a + b*asin(c*x))*(d + c*d*x)^(1/2))/(f - c*f*x)^(1/2),x)

[Out] int(((a + b*asin(c*x))*(d + c*d*x)^(1/2))/(f - c*f*x)^(1/2), x)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d\left(cx+1\right)}\,\left(a+b\,\mathrm{asin}\left(cx\right)\right)}{\sqrt{-f\left(cx-1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((c*d*x+d)**(1/2)*(a+b*asin(c*x))/(-c*f*x+f)**(1/2),x)

[Out] Integral(sqrt(d*(c*x + 1))*(a + b*asin(c*x))/sqrt(-f*(c*x - 1)), x)

3.525 $\int \frac{a+b\sin^{-1}(cx)}{\sqrt{d+cdx}\sqrt{f-cfx}}\,dx$

Optimal. Leaf size=55

$$\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\sqrt{cdx+d}\sqrt{f-cfx}}$$

```
[Out] 1/2*(a+b*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/b/c/(c*d*x+d)^(1/2)/(-c*f*x+f)^(
1/2)
```

Rubi [A] time = 0.14, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067, Rules used = {4673, 4641}

$$\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\sqrt{cdx+d}\sqrt{f-cfx}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(Sqrt[d + c*d*x]*Sqrt[f - c*f*x]),x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(2*b*c*Sqrt[d + c*d*x]*Sqrt[f - c
*f*x])
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\sin^{-1}(cx)}{\sqrt{d+cdx}\sqrt{f-cfx}}\,dx &= \frac{\sqrt{1-c^2x^2}\int \frac{a+b\sin^{-1}(cx)}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\sqrt{f-cfx}}\\ &= \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc\sqrt{d+cdx}\sqrt{f-cfx}}\end{aligned}$$

Mathematica [A] time = 0.56, size = 110, normalized size = 2.00

$$\frac{\frac{b\sqrt{1-c^2x^2}\sin^{-1}(cx)^2}{\sqrt{cdx+d}\sqrt{f-cfx}}-\frac{2a\tan^{-1}\left(\frac{cx\sqrt{cdx+d}\sqrt{f-cfx}}{\sqrt{d}\sqrt{f}\left(c^2x^2-1\right)}\right)}{\sqrt{d}\sqrt{f}}}{2c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/(Sqrt[d + c*d*x]*Sqrt[f - c*f*x]),x]
```

```
[Out] ((b*Sqrt[1 - c^2*x^2]*ArcSin[c*x]^2)/(Sqrt[d + c*d*x]*Sqrt[f - c*f*x]) - (2
*a*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(Sqrt[d]*Sqrt[f]*(-1 + c^2*
x^2))])/(Sqrt[d]*Sqrt[f]))/(2*c)
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{cdx+d}\,\sqrt{-cfx+f}\,(b\arcsin(cx)+a)}{c^2dfx^2-df},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2),x, algorithm="
fricas")
```

```
[Out] integral(-sqrt(c*d*x + d)*sqrt(-c*f*x + f)*(b*arcsin(c*x) + a)/(c^2*d*f*x^2
 - d*f), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\arcsin(cx)+a}{\sqrt{cdx+d}\,\sqrt{-cfx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2),x, algorithm="
giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/(sqrt(c*d*x + d)*sqrt(-c*f*x + f)), x)
```

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{a+b\arcsin(cx)}{\sqrt{cdx+d}\,\sqrt{-cfx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2),x)
```

```
[Out] int((a+b*arcsin(c*x))/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2),x)
```

maxima [A] time = 0.47, size = 32, normalized size = 0.58

$$\frac{b\arcsin(cx)^2}{2\sqrt{df}\,c}+\frac{a\arcsin(cx)}{\sqrt{df}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(1/2)/(-c*f*x+f)^(1/2),x, algorithm="
maxima")
```

```
[Out] 1/2*b*arcsin(c*x)^2/(sqrt(d*f)*c) + a*arcsin(c*x)/(sqrt(d*f)*c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{a+b\,\mathrm{asin}(c\,x)}{\sqrt{d+c\,d\,x}\,\sqrt{f-c\,f\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/((d + c*d*x)^(1/2)*(f - c*f*x)^(1/2)),x)
```

```
[Out] int((a + b*asin(c*x))/((d + c*d*x)^(1/2)*(f - c*f*x)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b \operatorname{asin}(cx)}{\sqrt{d(cx+1)}\sqrt{-f(cx-1)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(c*d*x+d)**(1/2)/(-c*f*x+f)**(1/2),x)
[Out] Integral((a + b*asin(c*x))/(sqrt(d*(c*x + 1))*sqrt(-f*(c*x - 1))), x)
```

3.526 $\int \frac{a+b\sin^{-1}(cx)}{(d+cdx)^{3/2}\sqrt{f-cfx}}\,dx$

Optimal. Leaf size=99

$$\frac{bf\left(1-c^2x^2\right)^{3/2}\log(cx+1)}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}-\frac{f(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}$$

```
[Out] -f*(-c*x+1)*(-c^2*x^2+1)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/
2)+b*f*(-c^2*x^2+1)^(3/2)*ln(c*x+1)/c/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)
```

Rubi [A] time = 0.21, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 6, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {4673, 637, 4761, 12, 627, 31}

$$\frac{bf\left(1-c^2x^2\right)^{3/2}\log(cx+1)}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}-\frac{f(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/((d + c*d*x)^(3/2)*Sqrt[f - c*f*x]),x]
```

```
[Out] -((f*(1 - c*x)*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(c*(d + c*d*x)^(3/2)*(f -
 c*f*x)^(3/2))) + (b*f*(1 - c^2*x^2)^(3/2)*Log[1 + c*x])/(c*(d + c*d*x)^(3/
2)*(f - c*f*x)^(3/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 627

```
Int[((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int
[(d + e*x)^(m + p)*(a/d + (c*x)/e)^p, x] /; FreeQ[{a, c, d, e, m, p}, x] &&
 EqQ[c*d^2 + a*e^2, 0] && (IntegerQ[p] || (GtQ[a, 0] && GtQ[d, 0] && Intege
rQ[m + p]))
```

Rule 637

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2)^(3/2), x_Symbol] :> Simp[(-(a
*e) + c*d*x)/(a*c*Sqrt[a + c*x^2]), x] /; FreeQ[{a, c, d, e}, x]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4761

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
```

```
x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rubi steps

$$\begin{aligned}\int \frac{a+b\sin^{-1}(cx)}{(d+cdx)^{3/2}\sqrt{f-cfx}}\,dx &= \frac{\left(1-c^2x^2\right)^{3/2}\int \frac{(f-cfx)\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}\,dx}{(d+cdx)^{3/2}(f-cfx)^{3/2}}\\
&= -\frac{f(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}}+\frac{\left(bc\left(1-c^2x^2\right)^{3/2}\right)\int \frac{f(1-cx)}{c\left(1-c^2x^2\right)}\,dx}{(d+cdx)^{3/2}(f-cfx)^{3/2}}\\
&= -\frac{f(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}}+\frac{\left(bf\left(1-c^2x^2\right)^{3/2}\right)\int \frac{1-cx}{1-c^2x^2}\,dx}{(d+cdx)^{3/2}(f-cfx)^{3/2}}\\
&= -\frac{f(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}}+\frac{\left(bf\left(1-c^2x^2\right)^{3/2}\right)\int \frac{1}{1+cx}\,dx}{(d+cdx)^{3/2}(f-cfx)^{3/2}}\\
&= -\frac{f(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}}+\frac{bf\left(1-c^2x^2\right)^{3/2}\log(1+cx)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.39, size = 79, normalized size = 0.80

$$\frac{\sqrt{cdx+d}\left(a(cx-1)+b\sqrt{1-c^2x^2}\log(-f(cx+1))+b(cx-1)\sin^{-1}(cx)\right)}{cd^2(cx+1)\sqrt{f-cfx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/((d + c*d*x)^(3/2)*Sqrt[f - c*f*x]),x]
```

```
[Out] (Sqrt[d + c*d*x]*(a*(-1 + c*x) + b*(-1 + c*x)*ArcSin[c*x] + b*Sqrt[1 - c^2*
x^2]*Log[-(f*(1 + c*x))]))/(c*d^2*(1 + c*x)*Sqrt[f - c*f*x])
```

fricas [A] time = 0.48, size = 348, normalized size = 3.52

$$\left[\frac{(bcx+b)\sqrt{df}\log\left(\frac{c^6dfx^6+4c^5dfx^5+5c^4dfx^4-4c^2dfx^2-4cdfx-\left(c^4x^4+4c^3x^3+6c^2x^2+4cx\right)\sqrt{-c^2x^2+1}\sqrt{cdx+d}\sqrt{-cfx+f}\sqrt{df}-2df}{c^4x^4+2c^3x^3-2cx-1}\right)-}{2\left(c^2d^2fx+cd^2f\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(3/2)/(-c*f*x+f)^(1/2),x, algorithm="
fricas")
```

```
[Out] [1/2*((b*c*x + b)*sqrt(d*f)*log((c^6*d*f*x^6 + 4*c^5*d*f*x^5 + 5*c^4*d*f*x^
4 - 4*c^2*d*f*x^2 - 4*c*d*f*x - (c^4*x^4 + 4*c^3*x^3 + 6*c^2*x^2 + 4*c*x)*s
qrt(-c^2*x^2 + 1)*sqrt(c*d*x + d)*sqrt(-c*f*x + f)*sqrt(d*f) - 2*d*f)/(c^4*
x^4 + 2*c^3*x^3 - 2*c*x - 1)) - 2*sqrt(c*d*x + d)*sqrt(-c*f*x + f)*(b*arcsi
n(c*x) + a))/(c^2*d^2*f*x + c*d^2*f), ((b*c*x + b)*sqrt(-d*f)*arctan((c^2*x
^2 + 2*c*x + 2)*sqrt(-c^2*x^2 + 1)*sqrt(c*d*x + d)*sqrt(-c*f*x + f)*sqrt(-d
*f)/(c^4*d*f*x^4 + 2*c^3*d*f*x^3 - c^2*d*f*x^2 - 2*c*d*f*x)) - sqrt(c*d*x +
 d)*sqrt(-c*f*x + f)*(b*arcsin(c*x) + a))/(c^2*d^2*f*x + c*d^2*f)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b \arcsin(cx) + a}{(cdx + d)^{\frac{3}{2}} \sqrt{-cfx + f}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(3/2)/(-c*f*x+f)^(1/2),x, algorithm="
giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/((c*d*x + d)^(3/2)*sqrt(-c*f*x + f)), x)
```

maple [F] time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{a + b \arcsin(cx)}{(cdx + d)^{\frac{3}{2}} \sqrt{-cfx + f}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(c*d*x+d)^(3/2)/(-c*f*x+f)^(1/2),x)
```

```
[Out] int((a+b*arcsin(c*x))/(c*d*x+d)^(3/2)/(-c*f*x+f)^(1/2),x)
```

maxima [A] time = 0.48, size = 96, normalized size = 0.97

$$-\frac{\sqrt{-c^2 dfx^2 + df}\, b \arcsin(cx)}{c^2 d^2 fx + cd^2 f} - \frac{\sqrt{-c^2 dfx^2 + df}\, a}{c^2 d^2 fx + cd^2 f} + \frac{b \log(cx + 1)}{cd^{\frac{3}{2}} \sqrt{f}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(3/2)/(-c*f*x+f)^(1/2),x, algorithm="
maxima")
```

```
[Out] -sqrt(-c^2*d*f*x^2 + d*f)*b*arcsin(c*x)/(c^2*d^2*f*x + c*d^2*f) - sqrt(-c^2
*d*f*x^2 + d*f)*a/(c^2*d^2*f*x + c*d^2*f) + b*log(c*x + 1)/(c*d^(3/2)*sqrt(
f))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a + b \operatorname{asin}(c\, x)}{(d + c\, d\, x)^{3/2} \sqrt{f - c\, f\, x}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/((d + c*d*x)^(3/2)*(f - c*f*x)^(1/2)),x)
```

```
[Out] int((a + b*asin(c*x))/((d + c*d*x)^(3/2)*(f - c*f*x)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b \operatorname{asin}(cx)}{(d(cx + 1))^{\frac{3}{2}} \sqrt{-f(cx - 1)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(c*d*x+d)**(3/2)/(-c*f*x+f)**(1/2),x)
```

```
[Out] Integral((a + b*asin(c*x))/((d*(c*x + 1))**(3/2)*sqrt(-f*(c*x - 1))), x)
```

3.527 $\int \frac{a+b\sin^{-1}(cx)}{(d+cdx)^{5/2}\sqrt{f-cfx}}\,dx$

Optimal. Leaf size=265

$$\frac{f^2x\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{2f^2(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{bf^2\left(1-c^2x^2\right)^{5/2}}{3c(cx+1)(cdx+d)^{5/2}(f-cfx)^{5/2}}$$

```
[Out] -1/3*b*f^2*(-c^2*x^2+1)^(5/2)/c/(c*x+1)/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)-2/
3*f^2*(-c*x+1)*(-c^2*x^2+1)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*f*x+f)^
(5/2)+1/3*f^2*x*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*f*x+f)
^(5/2)+1/3*b*f^2*(-c^2*x^2+1)^(5/2)*arctanh(c*x)/c/(c*d*x+d)^(5/2)/(-c*f*x+
f)^(5/2)+1/6*b*f^2*(-c^2*x^2+1)^(5/2)*ln(-c^2*x^2+1)/c/(c*d*x+d)^(5/2)/(-c*
f*x+f)^(5/2)
```

Rubi [A] time = 0.30, antiderivative size = 265, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267, Rules used = {4673, 653, 191, 4761, 627, 44, 207, 260}

$$\frac{f^2x\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{2f^2(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{bf^2\left(1-c^2x^2\right)^{5/2}}{3c(cx+1)(cdx+d)^{5/2}(f-cfx)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/((d + c*d*x)^(5/2)*Sqrt[f - c*f*x]),x]
```

```
[Out] -(b*f^2*(1 - c^2*x^2)^(5/2))/(3*c*(1 + c*x)*(d + c*d*x)^(5/2)*(f - c*f*x)^(
5/2)) - (2*f^2*(1 - c*x)*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(3*c*(d + c*d*x
)^(5/2)*(f - c*f*x)^(5/2)) + (f^2*x*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x]))/(3
*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)) + (b*f^2*(1 - c^2*x^2)^(5/2)*ArcTanh[
c*x])/(3*c*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)) + (b*f^2*(1 - c^2*x^2)^(5/2
)*Log[1 - c^2*x^2])/(6*c*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2))
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 627

```
Int[((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int
[(d + e*x)^(m + p)*(a/d + (c*x)/e)^p, x] /; FreeQ[{a, c, d, e, m, p}, x] &&
```

```
 EqQ[c*d^2 + a*e^2, 0] && (IntegerQ[p] || (GtQ[a, 0] && GtQ[d, 0] && Intege
rQ[m + p]))
```

Rule 653

```
Int[((d_) + (e_.)*(x_))^2*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(e*
(d + e*x)*(a + c*x^2)^(p + 1))/(c*(p + 1)), x] - Dist[(e^2*(p + 2))/(c*(p +
 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, p}, x] && EqQ[c
*d^2 + a*e^2, 0] &&  !IntegerQ[p] && LtQ[p, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4761

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{(d+cdx)^{5/2}\sqrt{f-cfx}}\,dx = \frac{\left(1-c^2x^2\right)^{5/2}\int \frac{(f-cfx)^2\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{5/2}}\,dx}{(d+cdx)^{5/2}(f-cfx)^{5/2}}$$

$$= -\frac{2f^2(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{f^2x\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{(b}{}$$

$$= -\frac{2f^2(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{f^2x\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{(2}{}$$

$$= -\frac{2f^2(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{f^2x\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{bf}{}$$

$$= -\frac{2f^2(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{f^2x\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{bf}{}$$

$$= -\frac{bf^2\left(1-c^2x^2\right)^{5/2}}{3c(1+cx)(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{2f^2(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{f}{}$$

$$= -\frac{bf^2\left(1-c^2x^2\right)^{5/2}}{3c(1+cx)(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{2f^2(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{f}{}$$

Mathematica [A] time = 0.51, size = 118, normalized size = 0.45

$$\frac{\sqrt{cdx+d}\left((cx+2)\left(acx-a-b\sqrt{1-c^2x^2}\right)+b(cx+1)\sqrt{1-c^2x^2}\log(-f(cx+1))+b\left(c^2x^2+cx-2\right)\sin^{-1}(cx\right.}{3cd^3(cx+1)^2\sqrt{f-cfx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/((d + c*d*x)^(5/2)*Sqrt[f - c*f*x]),x]
```

```
[Out] (Sqrt[d + c*d*x]*((2 + c*x)*(-a + a*c*x - b*Sqrt[1 - c^2*x^2]) + b*(-2 + c*
x + c^2*x^2)*ArcSin[c*x] + b*(1 + c*x)*Sqrt[1 - c^2*x^2]*Log[-(f*(1 + c*x))
]))/(3*c*d^3*(1 + c*x)^2*Sqrt[f - c*f*x])
```

fricas [A] time = 0.55, size = 525, normalized size = 1.98

$$\left[\frac{\left(bc^3x^3+bc^2x^2-bcx-b\right)\sqrt{df}\log\left(\frac{c^6dfx^6+4c^5dfx^5+5c^4dfx^4-4c^2dfx^2-4cdfx-\left(c^4x^4+4c^3x^3+6c^2x^2+4cx\right)\sqrt{-c^2x^2+1}\sqrt{cdx+d}\sqrt{-}}{c^4x^4+2c^3x^3-2cx-1}\right.}{6\left(c^4d^3fx^3+c^3d^3\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*f*x+f)^(1/2),x, algorithm="
fricas")
```

```
[Out] [1/6*((b*c^3*x^3 + b*c^2*x^2 - b*c*x - b)*sqrt(d*f)*log((c^6*d*f*x^6 + 4*c^
5*d*f*x^5 + 5*c^4*d*f*x^4 - 4*c^2*d*f*x^2 - 4*c*d*f*x - (c^4*x^4 + 4*c^3*x^
3 + 6*c^2*x^2 + 4*c*x)*sqrt(-c^2*x^2 + 1)*sqrt(c*d*x + d)*sqrt(-c*f*x + f)*
sqrt(d*f) - 2*d*f)/(c^4*x^4 + 2*c^3*x^3 - 2*c*x - 1)) - 2*(a*c^2*x^2 + sqrt
(-c^2*x^2 + 1)*b*c*x + a*c*x + (b*c^2*x^2 + b*c*x - 2*b)*arcsin(c*x) - 2*a)
*sqrt(c*d*x + d)*sqrt(-c*f*x + f))/(c^4*d^3*f*x^3 + c^3*d^3*f*x^2 - c^2*d^3
*f*x - c*d^3*f), 1/3*((b*c^3*x^3 + b*c^2*x^2 - b*c*x - b)*sqrt(-d*f)*arctan
((c^2*x^2 + 2*c*x + 2)*sqrt(-c^2*x^2 + 1)*sqrt(c*d*x + d)*sqrt(-c*f*x + f)*
sqrt(-d*f)/(c^4*d*f*x^4 + 2*c^3*d*f*x^3 - c^2*d*f*x^2 - 2*c*d*f*x)) - (a*c^
2*x^2 + sqrt(-c^2*x^2 + 1)*b*c*x + a*c*x + (b*c^2*x^2 + b*c*x - 2*b)*arcsin
(c*x) - 2*a)*sqrt(c*d*x + d)*sqrt(-c*f*x + f))/(c^4*d^3*f*x^3 + c^3*d^3*f*x
^2 - c^2*d^3*f*x - c*d^3*f)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\arcsin(cx)+a}{(cdx+d)^{\frac{5}{2}}\sqrt{-cfx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*f*x+f)^(1/2),x, algorithm="
giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/((c*d*x + d)^(5/2)*sqrt(-c*f*x + f)), x)
```

maple [F] time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{a+b\arcsin(cx)}{(cdx+d)^{\frac{5}{2}}\sqrt{-cfx+f}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*f*x+f)^(1/2),x)
```

```
[Out] int((a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*f*x+f)^(1/2),x)
```

maxima [A] time = 0.49, size = 223, normalized size = 0.84

$$-\frac{1}{3}\,bc\left(\frac{1}{c^3d^{\frac{5}{2}}\sqrt{f}\,x+c^2d^{\frac{5}{2}}\sqrt{f}}-\frac{\log\left(cx+1\right)}{c^2d^{\frac{5}{2}}\sqrt{f}}\right)-\frac{1}{3}\,b\left(\frac{\sqrt{-c^2dfx^2+df}}{c^3d^3fx^2+2\,c^2d^3fx+cd^3f}+\frac{\sqrt{-c^2dfx^2+df}}{c^2d^3fx+cd^3f}\right)\arcsin\left(cx\right)-\frac{1}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*f*x+f)^(1/2),x, algorithm="
maxima")
```

```
[Out] -1/3*b*c*(1/(c^3*d^(5/2)*sqrt(f)*x + c^2*d^(5/2)*sqrt(f)) - log(c*x + 1)/(c
^2*d^(5/2)*sqrt(f))) - 1/3*b*(sqrt(-c^2*d*f*x^2 + d*f)/(c^3*d^3*f*x^2 + 2*c
^2*d^3*f*x + c*d^3*f) + sqrt(-c^2*d*f*x^2 + d*f)/(c^2*d^3*f*x + c*d^3*f))*a
rcsin(c*x) - 1/3*a*(sqrt(-c^2*d*f*x^2 + d*f)/(c^3*d^3*f*x^2 + 2*c^2*d^3*f*x
 + c*d^3*f) + sqrt(-c^2*d*f*x^2 + d*f)/(c^2*d^3*f*x + c*d^3*f))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\mathrm{asin}\left(c\,x\right)}{{\left(d+c\,d\,x\right)}^{5/2}\,\sqrt{f-c\,f\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/((d + c*d*x)^(5/2)*(f - c*f*x)^(1/2)),x)
```

```
[Out] int((a + b*asin(c*x))/((d + c*d*x)^(5/2)*(f - c*f*x)^(1/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(c*d*x+d)**(5/2)/(-c*f*x+f)**(1/2),x)
```

```
[Out] Timed out
```

3.528 $\int \frac{(d+cdx)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{(f-cfx)^{3/2}}\,dx$

Optimal. Leaf size=463

$$\frac{5d^4(cx+1)\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{2c(cdx+d)^{3/2}(f-cfx)^{3/2}}+\frac{15d^4\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{2c(cdx+d)^{3/2}(f-cfx)^{3/2}}+\frac{2d^4(cx+1)^3\left(1-c^2x^2\right)\left(a+b\sin\right.}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}$$

```
[Out] -3/2*b*d^4*x*(-c^2*x^2+1)^(3/2)/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)+b*c*d^4*x^
2*(-c^2*x^2+1)^(3/2)/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)-5/4*b*d^4*(c*x+1)^2*(
-c^2*x^2+1)^(3/2)/c/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)+15/4*b*d^4*(-c^2*x^2+1
)^(3/2)*arcsin(c*x)^2/c/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)+2*d^4*(c*x+1)^3*(-
c^2*x^2+1)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)+15/2*d^4*(-
c^2*x^2+1)^2*(a+b*arcsin(c*x))/c/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)+5/2*d^4*(
c*x+1)*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))/c/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)-
15/2*d^4*(-c^2*x^2+1)^(3/2)*arcsin(c*x)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(3/2)
/(-c*f*x+f)^(3/2)+8*b*d^4*(-c^2*x^2+1)^(3/2)*ln(-c*x+1)/c/(c*d*x+d)^(3/2)/(
-c*f*x+f)^(3/2)
```

Rubi [A] time = 0.37, antiderivative size = 463, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 9, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {4673, 669, 671, 641, 216, 4761, 627, 43, 4641}

$$\frac{5d^4(cx+1)\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{2c(cdx+d)^{3/2}(f-cfx)^{3/2}}+\frac{15d^4\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{2c(cdx+d)^{3/2}(f-cfx)^{3/2}}+\frac{2d^4(cx+1)^3\left(1-c^2x^2\right)\left(a+b\sin\right.}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + c*d*x)^(5/2)*(a + b*ArcSin[c*x]))/(f - c*f*x)^(3/2),x]
```

```
[Out] (-3*b*d^4*x*(1 - c^2*x^2)^(3/2))/(2*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)) +
(b*c*d^4*x^2*(1 - c^2*x^2)^(3/2))/((d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)) - (
5*b*d^4*(1 + c*x)^2*(1 - c^2*x^2)^(3/2))/(4*c*(d + c*d*x)^(3/2)*(f - c*f*x)
^(3/2)) + (15*b*d^4*(1 - c^2*x^2)^(3/2)*ArcSin[c*x]^2)/(4*c*(d + c*d*x)^(3/
2)*(f - c*f*x)^(3/2)) + (2*d^4*(1 + c*x)^3*(1 - c^2*x^2)*(a + b*ArcSin[c*x]
))/(c*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)) + (15*d^4*(1 - c^2*x^2)^2*(a + b
*ArcSin[c*x]))/(2*c*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)) + (5*d^4*(1 + c*x)
*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x]))/(2*c*(d + c*d*x)^(3/2)*(f - c*f*x)^(3
/2)) - (15*d^4*(1 - c^2*x^2)^(3/2)*ArcSin[c*x]*(a + b*ArcSin[c*x]))/(2*c*(d
 + c*d*x)^(3/2)*(f - c*f*x)^(3/2)) + (8*b*d^4*(1 - c^2*x^2)^(3/2)*Log[1 - c
*x])/(c*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2))
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 627

```
Int[((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int
[(d + e*x)^(m + p)*(a/d + (c*x)/e)^p, x] /; FreeQ[{a, c, d, e, m, p}, x] &&
 EqQ[c*d^2 + a*e^2, 0] && (IntegerQ[p] || (GtQ[a, 0] && GtQ[d, 0] && Intege
```

```
rQ[m + p]))
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rule 669

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^(m - 1)*(a + c*x^2)^(p + 1))/(c*(p + 1)), x] - Dist[(e^2*(m +
p))/(c*(p + 1)), Int[(d + e*x)^(m - 2)*(a + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, c, d, e}, x] && EqQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && In
tegerQ[2*p]
```

Rule 671

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^(m - 1)*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 1)), x] + Dist[(2*c
*d*(m + p))/(c*(m + 2*p + 1)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p, x], x]
/; FreeQ[{a, c, d, e, p}, x] && EqQ[c*d^2 + a*e^2, 0] && GtQ[m, 1] && NeQ[m
 + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4761

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rubi steps

$$\int \frac{(d+cdx)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{(f-cfx)^{3/2}}\,dx = \frac{\left(1-c^2x^2\right)^{3/2}\int \frac{(d+cdx)^4\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}dx}{(d+cdx)^{3/2}(f-cfx)^{3/2}}$$

$$= \frac{2d^4(1+cx)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}} + \frac{15d^4\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}\right.}{2c(d+cdx)^{3/2}(f-cfx)^{3/}}$$

$$= -\frac{15bd^4x\left(1-c^2x^2\right)^{3/2}}{2(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{5bd^4(1+cx)^2\left(1-c^2x^2\right)^{3/2}}{4c(d+cdx)^{3/2}(f-cfx)^{3/2}} + \frac{2d^4(1+cx)^3}{c(d+}$$

$$= -\frac{15bd^4x\left(1-c^2x^2\right)^{3/2}}{2(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{5bd^4(1+cx)^2\left(1-c^2x^2\right)^{3/2}}{4c(d+cdx)^{3/2}(f-cfx)^{3/2}} + \frac{15bd^4\left(1-c^2\right.}{4c(d+cdx}$$

$$= -\frac{15bd^4x\left(1-c^2x^2\right)^{3/2}}{2(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{5bd^4(1+cx)^2\left(1-c^2x^2\right)^{3/2}}{4c(d+cdx)^{3/2}(f-cfx)^{3/2}} + \frac{15bd^4\left(1-c^2\right.}{4c(d+cdx}$$

$$= -\frac{3bd^4x\left(1-c^2x^2\right)^{3/2}}{2(d+cdx)^{3/2}(f-cfx)^{3/2}} + \frac{bcd^4x^2\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{5bd^4(1+cx)^2\left(\right.}{4c(d+cdx)^{3/2}(}$$

Mathematica [A] time = 4.55, size = 768, normalized size = 1.66

$$d^2\left(\frac{8a\left(c^2x^2+7cx-24\right)\sqrt{cdx+d}\sqrt{f-cfx}}{cx-1} + 120a\sqrt{d}\sqrt{f}\tan^{-1}\left(\frac{cx\sqrt{cdx+d}\sqrt{f-cfx}}{\sqrt{d}\sqrt{f}\left(c^2x^2-1\right)}\right) - \frac{8b(cx+1)\sqrt{cdx+d}\sqrt{f-cfx}\left(\cos\left(\frac{1}{2}\sin^{-1}(cx)\right)\left(\left(\sin\right.\right.\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + c*d*x)^(5/2)*(a + b*ArcSin[c*x]))/(f - c*f*x)^(3/2),x]
```

```
[Out] (d^2*((8*a*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(-24 + 7*c*x + c^2*x^2))/(-1 + c
*x) + 120*a*Sqrt[d]*Sqrt[f]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(S
qrt[d]*Sqrt[f]*(-1 + c^2*x^2))] - (8*b*(1 + c*x)*Sqrt[d + c*d*x]*Sqrt[f - c
*f*x]*(Cos[ArcSin[c*x]/2]*((-4 + ArcSin[c*x])*ArcSin[c*x] - 8*Log[Cos[ArcSi
n[c*x]/2] - Sin[ArcSin[c*x]/2]]) - (ArcSin[c*x]*(4 + ArcSin[c*x]) - 8*Log[C
os[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]])*Sin[ArcSin[c*x]/2]))/(Sqrt[1 - c^2
*x^2]*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])*(Cos[ArcSin[c*x]/2] + Sin[A
rcSin[c*x]/2])^2) - (32*b*(1 + c*x)*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(ArcSin
[c*x]^2*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]) + (c*x - 4*Log[Cos[ArcSin
[c*x]/2] - Sin[ArcSin[c*x]/2]])*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]) -
 ArcSin[c*x]*((2 + Sqrt[1 - c^2*x^2])*Cos[ArcSin[c*x]/2] - (-2 + Sqrt[1 - c
^2*x^2])*Sin[ArcSin[c*x]/2])))/(Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] - Sin
[ArcSin[c*x]/2])*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^2) + (b*(1 + c*x
)*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(-20*ArcSin[c*x]^2*(Cos[ArcSin[c*x]/2] -
Sin[ArcSin[c*x]/2]) + 2*(-16*c*x + Cos[2*ArcSin[c*x]] + 32*Log[Cos[ArcSin[c
*x]/2] - Sin[ArcSin[c*x]/2]])*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]) + 2
*ArcSin[c*x]*(24*Cos[ArcSin[c*x]/2] + 7*Cos[(3*ArcSin[c*x])/2] + Cos[(5*Arc
Sin[c*x])/2] + 24*Sin[ArcSin[c*x]/2] - 7*Sin[(3*ArcSin[c*x])/2] + Sin[(5*Ar
cSin[c*x])/2])))/(Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2
])*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^2)))/(16*c*f^2)
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(ac^2d^2x^2 + 2\,acd^2x + ad^2 + \left(bc^2d^2x^2 + 2\,bcd^2x + bd^2\right)\arcsin(cx)\right)\sqrt{cdx+d}\sqrt{-cfx+f}}{c^2f^2x^2 - 2\,cf^2x + f^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(3/2),x, algorithm="
fricas")
```

```
[Out] integral((a*c^2*d^2*x^2 + 2*a*c*d^2*x + a*d^2 + (b*c^2*d^2*x^2 + 2*b*c*d^2*
x + b*d^2)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*f*x + f)/(c^2*f^2*x^2 - 2*c
*f^2*x + f^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(cdx+d)^{\frac{5}{2}}(b\arcsin(cx)+a)}{(-cfx+f)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(3/2),x, algorithm="
giac")
```

```
[Out] integrate((c*d*x + d)^(5/2)*(b*arcsin(c*x) + a)/(-c*f*x + f)^(3/2), x)
```

maple [F] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{(cdx+d)^{\frac{5}{2}}(a+b\arcsin(cx))}{(-cfx+f)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(3/2),x)
```

```
[Out] int((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\left(\frac{c^2d^3x^3}{\sqrt{-c^2dfx^2+df}\,f}+\frac{8\,cd^3x^2}{\sqrt{-c^2dfx^2+df}\,f}-\frac{17\,d^3x}{\sqrt{-c^2dfx^2+df}\,f}+\frac{15\,d^3\arcsin(cx)}{\sqrt{df}\,cf}-\frac{24\,d^3}{\sqrt{-c^2dfx^2+df}\,cf}\right)a-\frac{(c^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(3/2),x, algorithm="
maxima")
```

```
[Out] -1/2*(c^2*d^3*x^3/(sqrt(-c^2*d*f*x^2 + d*f)*f) + 8*c*d^3*x^2/(sqrt(-c^2*d*f
*x^2 + d*f)*f) - 17*d^3*x/(sqrt(-c^2*d*f*x^2 + d*f)*f) + 15*d^3*arcsin(c*x)
/(sqrt(d*f)*c*f) - 24*d^3/(sqrt(-c^2*d*f*x^2 + d*f)*c*f))*a - b*sqrt(d)*int
egrate((c^2*d^2*x^2 + 2*c*d^2*x + d^2)*sqrt(c*x + 1)*arctan2(c*x, sqrt(c*x
+ 1)*sqrt(-c*x + 1))/((c*f*x - f)*sqrt(-c*x + 1)), x)/sqrt(f)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))\,(d+c\,d\,x)^{5/2}}{(f-c\,f\,x)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d + c*d*x)^(5/2))/(f - c*f*x)^(3/2),x)
```

```
[Out] int(((a + b*asin(c*x))*(d + c*d*x)^(5/2))/(f - c*f*x)^(3/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(5/2)*(a+b*asin(c*x))/(-c*f*x+f)**(3/2),x)
[Out] Timed out
```

3.529 $\int \frac{(d+cdx)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{(f-cfx)^{3/2}}\,dx$

Optimal. Leaf size=252

$$-\frac{3d^3\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc(cdx+d)^{3/2}(f-cfx)^{3/2}}+\frac{d^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}+\frac{4d^3(cx+1)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}-$$

```
[Out] -b*d^3*x*(-c^2*x^2+1)^(3/2)/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)+4*d^3*(c*x+1)*
(-c^2*x^2+1)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)+d^3*(-c^2
*x^2+1)^2*(a+b*arcsin(c*x))/c/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)-3/2*d^3*(-c^
2*x^2+1)^(3/2)*(a+b*arcsin(c*x))^2/b/c/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)+4*b
*d^3*(-c^2*x^2+1)^(3/2)*ln(-c*x+1)/c/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)
```

Rubi [A] time = 0.42, antiderivative size = 252, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 10, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4673, 4775, 637, 4761, 12, 627, 31, 4641, 4677, 8}

$$-\frac{3d^3\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc(cdx+d)^{3/2}(f-cfx)^{3/2}}+\frac{d^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}+\frac{4d^3(cx+1)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}-$$

Antiderivative was successfully verified.

```
[In] Int[((d + c*d*x)^(3/2)*(a + b*ArcSin[c*x]))/(f - c*f*x)^(3/2),x]
```

```
[Out] -((b*d^3*x*(1 - c^2*x^2)^(3/2))/((d + c*d*x)^(3/2)*(f - c*f*x)^(3/2))) + (4
*d^3*(1 + c*x)*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(c*(d + c*d*x)^(3/2)*(f -
 c*f*x)^(3/2)) + (d^3*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x]))/(c*(d + c*d*x)^(
3/2)*(f - c*f*x)^(3/2)) - (3*d^3*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)
/(2*b*c*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)) + (4*b*d^3*(1 - c^2*x^2)^(3/2)
*Log[1 - c*x])/(c*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2))
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 627

```
Int[((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int
[(d + e*x)^(m + p)*(a/d + (c*x)/e)^p, x] /; FreeQ[{a, c, d, e, m, p}, x] &&
 EqQ[c*d^2 + a*e^2, 0] && (IntegerQ[p] || (GtQ[a, 0] && GtQ[d, 0] && Intege
rQ[m + p]))
```

Rule 637

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2)^(3/2), x_Symbol] :> Simp[(-(a
*e) + c*d*x)/(a*c*Sqrt[a + c*x^2]), x] /; FreeQ[{a, c, d, e}, x]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4761

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rule 4775

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(d+cdx)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{(f-cfx)^{3/2}}\,dx = \frac{\left(1-c^2x^2\right)^{3/2}\int \frac{(d+cdx)^3\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}\,dx}{(d+cdx)^{3/2}(f-cfx)^{3/2}}$$

$$= \frac{\left(1-c^2x^2\right)^{3/2}\int \left(\frac{4\left(d^3+cd^3x\right)\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}} - \frac{3d^3\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} - \frac{cd^3x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\right)}{(d+cdx)^{3/2}(f-cfx)^{3/2}}$$

$$= \frac{\left(4\left(1-c^2x^2\right)^{3/2}\right)\int \frac{\left(d^3+cd^3x\right)\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}\,dx}{(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{\left(3d^3\left(1-c^2x^2\right)^{3/2}\right)\int \frac{a+b\sin^{-1}(c}{\sqrt{1-c^2x^2}}}{(d+cdx)^{3/2}(f-cfx)^{3/2}}$$

$$= \frac{4d^3(1+cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}} + \frac{d^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}}$$

$$= -\frac{bd^3x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(f-cfx)^{3/2}} + \frac{4d^3(1+cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}} + \frac{d^3(}{c}$$

$$= -\frac{bd^3x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(f-cfx)^{3/2}} + \frac{4d^3(1+cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}} + \frac{d^3(}{c}$$

$$= -\frac{bd^3x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(f-cfx)^{3/2}} + \frac{4d^3(1+cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}} + \frac{d^3(}{c}$$

Mathematica [B] time = 3.09, size = 514, normalized size = 2.04

$$\frac{d\left(6a\sqrt{d}\sqrt{f}\tan^{-1}\left(\frac{cx\sqrt{cdx+d}\sqrt{f-cfx}}{\sqrt{d}\sqrt{f}\left(c^2x^2-1\right)}\right) + \frac{2a(cx-5)\sqrt{cdx+d}\sqrt{f-cfx}}{cx-1} - \frac{b(cx+1)\sqrt{cdx+d}\sqrt{f-cfx}\left(\cos\left(\frac{1}{2}\sin^{-1}(cx)\right)\left(\left(\sin^{-1}(cx)-4\right)\sin^{-1}(cx\right.\right.}{\sqrt{1-c^2x^2}}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d + c*d*x)^(3/2)*(a + b*ArcSin[c*x]))/(f - c*f*x)^(3/2),x]
```

```
[Out] (d*((2*a*(-5 + c*x)*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(-1 + c*x) + 6*a*Sqrt[
d]*Sqrt[f]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(Sqrt[d]*Sqrt[f]*(-
1 + c^2*x^2))] - (b*(1 + c*x)*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(Cos[ArcSin[c
*x]/2]*((-4 + ArcSin[c*x])*ArcSin[c*x] - 8*Log[Cos[ArcSin[c*x]/2] - Sin[Arc
Sin[c*x]/2]]) - (ArcSin[c*x]*(4 + ArcSin[c*x]) - 8*Log[Cos[ArcSin[c*x]/2] -
 Sin[ArcSin[c*x]/2]])*Sin[ArcSin[c*x]/2]))/(Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c
*x]/2] - Sin[ArcSin[c*x]/2])*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^2) -
 (2*b*(1 + c*x)*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(ArcSin[c*x]^2*(Cos[ArcSin[
c*x]/2] - Sin[ArcSin[c*x]/2]) + (c*x - 4*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSi
n[c*x]/2]])*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]) - ArcSin[c*x]*((2 + S
qrt[1 - c^2*x^2])*Cos[ArcSin[c*x]/2] - (-2 + Sqrt[1 - c^2*x^2])*Sin[ArcSin[
c*x]/2])))/(Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])*(Co
s[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^2)))/(2*c*f^2)
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(acdx + ad + (bcdx + bd)\arcsin(cx))\sqrt{cdx+d}\sqrt{-cfx+f}}{c^2f^2x^2 - 2cf^2x + f^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(3/2),x, algorithm="
fricas")
```

```
[Out] integral((a*c*d*x + a*d + (b*c*d*x + b*d)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt
(-c*f*x + f)/(c^2*f^2*x^2 - 2*c*f^2*x + f^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(cdx+d)^{\frac{3}{2}}(b\arcsin(cx)+a)}{\left(-cfx+f\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(3/2),x, algorithm="
giac")
```

```
[Out] integrate((c*d*x + d)^(3/2)*(b*arcsin(c*x) + a)/(-c*f*x + f)^(3/2), x)
```

maple [F] time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{(cdx+d)^{\frac{3}{2}}\left(a+b\arcsin(cx)\right)}{\left(-cfx+f\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(3/2),x)
```

```
[Out] int((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\sqrt{d}\sqrt{f}\int \frac{(cdx+d)\sqrt{cx+1}\sqrt{-cx+1}\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)}{c^2f^2x^2-2cf^2x+f^2}\,dx - a\left(\frac{\left(-c^2dfx^2+df\right)^{\frac{3}{2}}}{c^3f^3x^2-2c^2f^3x+cf^3}+\frac{6\sqrt{-}}{c^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(3/2),x, algorithm="
maxima")
```

```
[Out] b*sqrt(d)*sqrt(f)*integrate((c*d*x + d)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan
2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^2*f^2*x^2 - 2*c*f^2*x + f^2), x) -
a*((-c^2*d*f*x^2 + d*f)^(3/2)/(c^3*f^3*x^2 - 2*c^2*f^3*x + c*f^3) + 6*sqrt(
-c^2*d*f*x^2 + d*f)*d/(c^2*f^2*x - c*f^2) + 3*d^2*arcsin(c*x)/(c*f^2*sqrt(d
/f)))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))\,\left(d+c\,d\,x\right)^{3/2}}{\left(f-c\,f\,x\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d + c*d*x)^(3/2))/(f - c*f*x)^(3/2),x)
```

```
[Out] int(((a + b*asin(c*x))*(d + c*d*x)^(3/2))/(f - c*f*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(3/2)*(a+b*asin(c*x))/(-c*f*x+f)**(3/2),x)
```

```
[Out] Timed out
```

3.530 $\int \frac{\sqrt{d+cdx}\left(a+b\sin^{-1}(cx)\right)}{(f-cfx)^{3/2}}\,dx$

Optimal. Leaf size=162

$$-\frac{d^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc(cdx+d)^{3/2}(f-cfx)^{3/2}}+\frac{2d^2(cx+1)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}+\frac{2bd^2\left(1-c^2x^2\right)^{3/2}\log(1-cx)}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}$$

```
[Out] 2*d^2*(c*x+1)*(-c^2*x^2+1)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(3/2)/(-c*f*x+f)^(
3/2)-1/2*d^2*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))^2/b/c/(c*d*x+d)^(3/2)/(-c
*f*x+f)^(3/2)+2*b*d^2*(-c^2*x^2+1)^(3/2)*ln(-c*x+1)/c/(c*d*x+d)^(3/2)/(-c*f
*x+f)^(3/2)
```

Rubi [A] time = 0.35, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.267$, Rules used = {4673, 4775, 637, 4761, 12, 627, 31, 4641}

$$-\frac{d^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{2bc(cdx+d)^{3/2}(f-cfx)^{3/2}}+\frac{2d^2(cx+1)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}+\frac{2bd^2\left(1-c^2x^2\right)^{3/2}\log(1-cx)}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d + c*d*x]*(a + b*ArcSin[c*x]))/(f - c*f*x)^(3/2),x]
```

```
[Out] (2*d^2*(1 + c*x)*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(c*(d + c*d*x)^(3/2)*(f
 - c*f*x)^(3/2)) - (d^2*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/(2*b*c*(
d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)) + (2*b*d^2*(1 - c^2*x^2)^(3/2)*Log[1 -
c*x])/(c*(d + c*d*x)^(3/2)*(f - c*f*x)^(3/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 627

```
Int[((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int
[(d + e*x)^(m + p)*(a/d + (c*x)/e)^p, x] /; FreeQ[{a, c, d, e, m, p}, x] &&
 EqQ[c*d^2 + a*e^2, 0] && (IntegerQ[p] || (GtQ[a, 0] && GtQ[d, 0] && Intege
rQ[m + p]))
```

Rule 637

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2)^(3/2), x_Symbol] :> Simp[(-(a
*e) + c*d*x)/(a*c*Sqrt[a + c*x^2]), x] /; FreeQ[{a, c, d, e}, x]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4761

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rule 4775

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{\sqrt{d+cdx}\left(a+b\sin^{-1}(cx)\right)}{(f-cfx)^{3/2}}\,dx = \frac{\left(1-c^2x^2\right)^{3/2}\int \frac{(d+cdx)^2\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}\,dx}{(d+cdx)^{3/2}(f-cfx)^{3/2}}$$

$$= \frac{\left(1-c^2x^2\right)^{3/2}\int \left(\frac{2\left(d^2+cd^2x\right)\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}-\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\right)dx}{(d+cdx)^{3/2}(f-cfx)^{3/2}}$$

$$= \frac{\left(2\left(1-c^2x^2\right)^{3/2}\right)\int \frac{\left(d^2+cd^2x\right)\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}\,dx}{(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{\left(d^2\left(1-c^2x^2\right)^{3/2}\right)\int \frac{a+b\sin^{-1}(c}{\sqrt{1-c^2x^2}}}{(d+cdx)^{3/2}(f-cfx)^{3/2}}$$

$$= \frac{2d^2(1+cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{d^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right.}{2bc(d+cdx)^{3/2}(f-cfx)^{3/2}}$$

$$= \frac{2d^2(1+cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{d^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right.}{2bc(d+cdx)^{3/2}(f-cfx)^{3/2}}$$

$$= \frac{2d^2(1+cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{d^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right.}{2bc(d+cdx)^{3/2}(f-cfx)^{3/2}}$$

$$= \frac{2d^2(1+cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{d^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right.}{2bc(d+cdx)^{3/2}(f-cfx)^{3/2}}$$

Mathematica [A] time = 1.72, size = 281, normalized size = 1.73

$$-\frac{-2a\sqrt{d}\sqrt{f}\tan^{-1}\left(\frac{cx\sqrt{cdx+d}\sqrt{f-cfx}}{\sqrt{d}\sqrt{f}\left(c^2x^2-1\right)}\right)+\frac{4a\sqrt{cdx+d}\sqrt{f-cfx}}{cx-1}+\frac{b(cx+1)\sqrt{cdx+d}\sqrt{f-cfx}\left(\cos\left(\frac{1}{2}\sin^{-1}(cx)\right)\left(\left(\sin^{-1}(cx)-4\right)\sin^{-1}(cx)-\right.\right.}{\sqrt{1-c^2x^2}\left(\right.}}{2cf^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[d + c*d*x]*(a + b*ArcSin[c*x]))/(f - c*f*x)^(3/2),x]
```

```
[Out] -1/2*((4*a*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(-1 + c*x) - 2*a*Sqrt[d]*Sqrt[f
]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(Sqrt[d]*Sqrt[f]*(-1 + c^2*x
^2))] + (b*(1 + c*x)*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(Cos[ArcSin[c*x]/2]*((
-4 + ArcSin[c*x])*ArcSin[c*x] - 8*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/
2]]) - (ArcSin[c*x]*(4 + ArcSin[c*x]) - 8*Log[Cos[ArcSin[c*x]/2] - Sin[ArcS
in[c*x]/2]])*Sin[ArcSin[c*x]/2]))/(Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] -
Sin[ArcSin[c*x]/2])*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^2))/(c*f^2)
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cdx+d}\,\sqrt{-cfx+f}\,(b\arcsin(cx)+a)}{c^2f^2x^2-2\,cf^2x+f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(3/2),x, algorithm="
fricas")
```

```
[Out] integral(sqrt(c*d*x + d)*sqrt(-c*f*x + f)*(b*arcsin(c*x) + a)/(c^2*f^2*x^2
- 2*c*f^2*x + f^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cdx+d}\,(b\arcsin(cx)+a)}{(-cfx+f)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(3/2),x, algorithm="
giac")
```

```
[Out] integrate(sqrt(c*d*x + d)*(b*arcsin(c*x) + a)/(-c*f*x + f)^(3/2), x)
```

maple [F] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cdx+d}\,\,(a+b\arcsin(cx))}{(-cfx+f)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(3/2),x)
```

```
[Out] int((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-a\left(\frac{2\sqrt{-c^2dfx^2+df}}{c^2f^2x-cf^2}+\frac{d\arcsin(cx)}{cf^2\sqrt{\frac{d}{f}}}\right)-\frac{\frac{b\sqrt{d}\int \frac{\sqrt{cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{(cx-1)\sqrt{-cx+1}}\,dx}{f}}{\sqrt{f}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(3/2),x, algorithm="
maxima")
```

```
[Out] -a*(2*sqrt(-c^2*d*f*x^2 + d*f)/(c^2*f^2*x - c*f^2) + d*arcsin(c*x)/(c*f^2*s
qrt(d/f))) - b*sqrt(d)*integrate(sqrt(c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*s
qrt(-c*x + 1))/((c*f*x - f)*sqrt(-c*x + 1)), x)/sqrt(f)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))\,\sqrt{d+c\,d\,x}}{{\left(f-c\,f\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d + c*d*x)^(1/2))/(f - c*f*x)^(3/2),x)
[Out] int(((a + b*asin(c*x))*(d + c*d*x)^(1/2))/(f - c*f*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d\left(cx+1\right)}\,\left(a+b\operatorname{asin}\left(cx\right)\right)}{\left(-f\left(cx-1\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(1/2)*(a+b*asin(c*x))/(-c*f*x+f)**(3/2),x)
[Out] Integral(sqrt(d*(c*x + 1))*(a + b*asin(c*x))/(-f*(c*x - 1))**(3/2), x)
```

3.531 $\int \frac{a+b\sin^{-1}(cx)}{\sqrt{d+cdx}\,(f-cfx)^{3/2}}\,dx$

Optimal. Leaf size=98

$$\frac{d(cx+1)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}+\frac{bd\left(1-c^2x^2\right)^{3/2}\log(1-cx)}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}$$

```
[Out] d*(c*x+1)*(-c^2*x^2+1)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)
+b*d*(-c^2*x^2+1)^(3/2)*ln(-c*x+1)/c/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)
```

Rubi [A] time = 0.21, antiderivative size = 98, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 6, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {4673, 637, 4761, 12, 627, 31}

$$\frac{d(cx+1)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}+\frac{bd\left(1-c^2x^2\right)^{3/2}\log(1-cx)}{c(cdx+d)^{3/2}(f-cfx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(Sqrt[d + c*d*x]*(f - c*f*x)^(3/2)),x]
```

```
[Out] (d*(1 + c*x)*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(c*(d + c*d*x)^(3/2)*(f - c
*f*x)^(3/2)) + (b*d*(1 - c^2*x^2)^(3/2)*Log[1 - c*x])/(c*(d + c*d*x)^(3/2)*
(f - c*f*x)^(3/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 627

```
Int[((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int
[(d + e*x)^(m + p)*(a/d + (c*x)/e)^p, x] /; FreeQ[{a, c, d, e, m, p}, x] &&
 EqQ[c*d^2 + a*e^2, 0] && (IntegerQ[p] || (GtQ[a, 0] && GtQ[d, 0] && Intege
rQ[m + p]))
```

Rule 637

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2)^(3/2), x_Symbol] :> Simp[(-(a
*e) + c*d*x)/(a*c*Sqrt[a + c*x^2]), x] /; FreeQ[{a, c, d, e}, x]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4761

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
```

```
x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rubi steps

$$
\begin{aligned}
\int \frac{a+b\sin^{-1}(cx)}{\sqrt{d+cdx}\,(f-cfx)^{3/2}}\,dx &= \frac{\left(1-c^2x^2\right)^{3/2}\int \frac{(d+cdx)\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{3/2}}\,dx}{(d+cdx)^{3/2}(f-cfx)^{3/2}}\\
&= \frac{d(1+cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{\left(bc\left(1-c^2x^2\right)^{3/2}\right)\int \frac{d(1+cx)}{c\left(1-c^2x^2\right)}\,dx}{(d+cdx)^{3/2}(f-cfx)^{3/2}}\\
&= \frac{d(1+cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{\left(bd\left(1-c^2x^2\right)^{3/2}\right)\int \frac{1+cx}{1-c^2x^2}\,dx}{(d+cdx)^{3/2}(f-cfx)^{3/2}}\\
&= \frac{d(1+cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}} - \frac{\left(bd\left(1-c^2x^2\right)^{3/2}\right)\int \frac{1}{1-cx}\,dx}{(d+cdx)^{3/2}(f-cfx)^{3/2}}\\
&= \frac{d(1+cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}} + \frac{bd\left(1-c^2x^2\right)^{3/2}\log(1-cx)}{c(d+cdx)^{3/2}(f-cfx)^{3/2}}
\end{aligned}
$$

Mathematica [A] time = 0.48, size = 106, normalized size = 1.08

$$
\frac{\sqrt{cdx+d}\,\sqrt{f-cfx}\left(a\left(-\sqrt{1-c^2x^2}\right)-b\sqrt{1-c^2x^2}\,\sin^{-1}(cx)+b(cx-1)\log(f-cfx)\right)}{cdf^2(cx-1)\sqrt{1-c^2x^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/(Sqrt[d + c*d*x]*(f - c*f*x)^(3/2)),x]
```

```
[Out] (Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(-(a*Sqrt[1 - c^2*x^2]) - b*Sqrt[1 - c^2*x
^2]*ArcSin[c*x] + b*(-1 + c*x)*Log[f - c*f*x]))/(c*d*f^2*(-1 + c*x)*Sqrt[1
- c^2*x^2])
```

fricas [A] time = 0.48, size = 354, normalized size = 3.61

$$
\left[\frac{(bcx-b)\sqrt{df}\,\log\left(\frac{c^6dfx^6-4\,c^5dfx^5+5\,c^4dfx^4-4\,c^2dfx^2+4\,cdfx-\left(c^4x^4-4\,c^3x^3+6\,c^2x^2-4\,cx\right)\sqrt{-c^2x^2+1}\,\sqrt{cdx+d}\,\sqrt{-cfx+f}\,\sqrt{df}-2\,df}{c^4x^4-2\,c^3x^3+2\,cx-1}\right)-}{2\left(c^2df^2x-cdf^2\right)}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(1/2)/(-c*f*x+f)^(3/2),x, algorithm="
fricas")
```

```
[Out] [1/2*((b*c*x - b)*sqrt(d*f)*log((c^6*d*f*x^6 - 4*c^5*d*f*x^5 + 5*c^4*d*f*x^
4 - 4*c^2*d*f*x^2 + 4*c*d*f*x - (c^4*x^4 - 4*c^3*x^3 + 6*c^2*x^2 - 4*c*x)*s
qrt(-c^2*x^2 + 1)*sqrt(c*d*x + d)*sqrt(-c*f*x + f)*sqrt(d*f) - 2*d*f)/(c^4*
x^4 - 2*c^3*x^3 + 2*c*x - 1)) - 2*sqrt(c*d*x + d)*sqrt(-c*f*x + f)*(b*arcsi
n(c*x) + a))/(c^2*d*f^2*x - c*d*f^2), ((b*c*x - b)*sqrt(-d*f)*arctan((c^2*x
^2 - 2*c*x + 2)*sqrt(-c^2*x^2 + 1)*sqrt(c*d*x + d)*sqrt(-c*f*x + f)*sqrt(-d
*f)/(c^4*d*f*x^4 - 2*c^3*d*f*x^3 - c^2*d*f*x^2 + 2*c*d*f*x)) - sqrt(c*d*x +
 d)*sqrt(-c*f*x + f)*(b*arcsin(c*x) + a))/(c^2*d*f^2*x - c*d*f^2)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b \arcsin(cx) + a}{\sqrt{cdx + d}\left(-cfx + f\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(1/2)/(-c*f*x+f)^(3/2),x, algorithm="
giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/(sqrt(c*d*x + d)*(-c*f*x + f)^(3/2)), x)
```

maple [F] time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{a + b \arcsin(cx)}{\sqrt{cdx + d}\,\left(-cfx + f\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(c*d*x+d)^(1/2)/(-c*f*x+f)^(3/2),x)
```

```
[Out] int((a+b*arcsin(c*x))/(c*d*x+d)^(1/2)/(-c*f*x+f)^(3/2),x)
```

maxima [A] time = 0.48, size = 98, normalized size = 1.00

$$-\frac{\sqrt{-c^2dfx^2 + df}\,b \arcsin(cx)}{c^2df^2x - cdf^2} - \frac{\sqrt{-c^2dfx^2 + df}\,a}{c^2df^2x - cdf^2} + \frac{b \log(cx - 1)}{c\sqrt{d}\,f^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(1/2)/(-c*f*x+f)^(3/2),x, algorithm="
maxima")
```

```
[Out] -sqrt(-c^2*d*f*x^2 + d*f)*b*arcsin(c*x)/(c^2*d*f^2*x - c*d*f^2) - sqrt(-c^2
*d*f*x^2 + d*f)*a/(c^2*d*f^2*x - c*d*f^2) + b*log(c*x - 1)/(c*sqrt(d)*f^(3/
2))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a + b \operatorname{asin}(c\,x)}{\sqrt{d + c\,d\,x}\,\left(f - c\,f\,x\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/((d + c*d*x)^(1/2)*(f - c*f*x)^(3/2)),x)
```

```
[Out] int((a + b*asin(c*x))/((d + c*d*x)^(1/2)*(f - c*f*x)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(c*d*x+d)**(1/2)/(-c*f*x+f)**(3/2),x)
```

```
[Out] Timed out
```

3.532 $\int \frac{a+b\sin^{-1}(cx)}{(d+cdx)^{3/2}(f-cfx)^{3/2}}\,dx$

Optimal. Leaf size=96

$$\frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{(cdx+d)^{3/2}(f-cfx)^{3/2}}+\frac{b\left(1-c^2x^2\right)^{3/2}\log\left(1-c^2x^2\right)}{2c(cdx+d)^{3/2}(f-cfx)^{3/2}}$$

```
[Out] x*(-c^2*x^2+1)*(a+b*arcsin(c*x))/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)+1/2*b*(-c
^2*x^2+1)^(3/2)*ln(-c^2*x^2+1)/c/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2)
```

Rubi [A] time = 0.17, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {4673, 4651, 260}

$$\frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{(cdx+d)^{3/2}(f-cfx)^{3/2}}+\frac{b\left(1-c^2x^2\right)^{3/2}\log\left(1-c^2x^2\right)}{2c(cdx+d)^{3/2}(f-cfx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/((d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)),x]
```

```
[Out] (x*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/((d + c*d*x)^(3/2)*(f - c*f*x)^(3/2))
 + (b*(1 - c^2*x^2)^(3/2)*Log[1 - c^2*x^2])/(2*c*(d + c*d*x)^(3/2)*(f - c*f
*x)^(3/2))
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin^{-1}(cx)}{(d+cdx)^{3/2}(f-cfx)^{3/2}}\,dx &= \frac{\left(1-c^2x^2\right)^{3/2}\int \frac{a+b\sin^{-1}(cx)}{\left(1-c^2x^2\right)^{3/2}}\,dx}{(d+cdx)^{3/2}(f-cfx)^{3/2}}\\
&= \frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{(d+cdx)^{3/2}(f-cfx)^{3/2}}-\frac{\left(bc\left(1-c^2x^2\right)^{3/2}\right)\int \frac{x}{1-c^2x^2}\,dx}{(d+cdx)^{3/2}(f-cfx)^{3/2}}\\
&= \frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{(d+cdx)^{3/2}(f-cfx)^{3/2}}+\frac{b\left(1-c^2x^2\right)^{3/2}\log\left(1-c^2x^2\right)}{2c(d+cdx)^{3/2}(f-cfx)^{3/2}}
\end{aligned}$$

Mathematica [A] time = 0.51, size = 105, normalized size = 1.09

$$\frac{\sqrt{cdx+d}\left(2acx+b\sqrt{1-c^2x^2}\log(-f(cx+1))+b\sqrt{1-c^2x^2}\log(f-cfx)+2bcx\sin^{-1}(cx)\right)}{2cd^2f(cx+1)\sqrt{f-cfx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/((d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)),x]
```

```
[Out] (Sqrt[d + c*d*x]*(2*a*c*x + 2*b*c*x*ArcSin[c*x] + b*Sqrt[1 - c^2*x^2]*Log[-
(f*(1 + c*x))] + b*Sqrt[1 - c^2*x^2]*Log[f - c*f*x]))/(2*c*d^2*f*(1 + c*x)*
Sqrt[f - c*f*x])
```

fricas [F] time = 0.54, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cdx+d}\sqrt{-cfx+f}\,(b\arcsin(cx)+a)}{c^4d^2f^2x^4-2\,c^2d^2f^2x^2+d^2f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2),x, algorithm="
fricas")
```

```
[Out] integral(sqrt(c*d*x + d)*sqrt(-c*f*x + f)*(b*arcsin(c*x) + a)/(c^4*d^2*f^2*
x^4 - 2*c^2*d^2*f^2*x^2 + d^2*f^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{b\arcsin(cx)+a}{(cdx+d)^{\frac{3}{2}}\left(-cfx+f\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2),x, algorithm="
giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/((c*d*x + d)^(3/2)*(-c*f*x + f)^(3/2)), x)
```

maple [F] time = 0.33, size = 0, normalized size = 0.00

$$\int\frac{a+b\arcsin(cx)}{(cdx+d)^{\frac{3}{2}}\left(-cfx+f\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2),x)
```

```
[Out] int((a+b*arcsin(c*x))/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2),x)
```

maxima [A] time = 0.46, size = 86, normalized size = 0.90

$$\frac{bx\arcsin(cx)}{\sqrt{-c^2dfx^2+df}\,df}+\frac{ax}{\sqrt{-c^2dfx^2+df}\,df}-\frac{b\sqrt{\frac{1}{df}}\log\left(x^2-\frac{1}{c^2}\right)}{2\,cdf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(3/2)/(-c*f*x+f)^(3/2),x, algorithm="
maxima")
```

```
[Out] b*x*arcsin(c*x)/(sqrt(-c^2*d*f*x^2 + d*f)*d*f) + a*x/(sqrt(-c^2*d*f*x^2 + d
*f)*d*f) - 1/2*b*sqrt(1/(d*f))*log(x^2 - 1/c^2)/(c*d*f)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\mathrm{asin}\left(c\,x\right)}{{\left(d+c\,d\,x\right)}^{3/2}\,{\left(f-c\,f\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/((d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)),x)
[Out] int((a + b*asin(c*x))/((d + c*d*x)^(3/2)*(f - c*f*x)^(3/2)), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(c*d*x+d)**(3/2)/(-c*f*x+f)**(3/2),x)
[Out] Timed out
```

3.533 $\int \frac{a+b\sin^{-1}(cx)}{(d+cdx)^{5/2}(f-cfx)^{3/2}}\,dx$

Optimal. Leaf size=255

$$\frac{2fx\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{f(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{bf\left(1-c^2x^2\right)^{5/2}}{6c(cx+1)(cdx+d)^{5/2}(f-cfx)^{5/2}}+\frac{bf(}{3c}$$

```
[Out] -1/6*b*f*(-c^2*x^2+1)^(5/2)/c/(c*x+1)/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)-1/3*
f*(-c*x+1)*(-c^2*x^2+1)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2
)+2/3*f*x*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)
+1/6*b*f*(-c^2*x^2+1)^(5/2)*arctanh(c*x)/c/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)
+1/3*b*f*(-c^2*x^2+1)^(5/2)*ln(-c^2*x^2+1)/c/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/
2)
```

Rubi [A] time = 0.26, antiderivative size = 255, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267, Rules used = {4673, 639, 191, 4761, 627, 44, 207, 260}

$$\frac{2fx\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{f(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{bf\left(1-c^2x^2\right)^{5/2}}{6c(cx+1)(cdx+d)^{5/2}(f-cfx)^{5/2}}+\frac{bf(}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/((d + c*d*x)^(5/2)*(f - c*f*x)^(3/2)),x]
```

```
[Out] -(b*f*(1 - c^2*x^2)^(5/2))/(6*c*(1 + c*x)*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/
2)) - (f*(1 - c*x)*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(3*c*(d + c*d*x)^(5/2
)*(f - c*f*x)^(5/2)) + (2*f*x*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x]))/(3*(d +
c*d*x)^(5/2)*(f - c*f*x)^(5/2)) + (b*f*(1 - c^2*x^2)^(5/2)*ArcTanh[c*x])/(6
*c*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)) + (b*f*(1 - c^2*x^2)^(5/2)*Log[1 -
c^2*x^2])/(3*c*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2))
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 627

```
Int[((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int
[(d + e*x)^(m + p)*(a/d + (c*x)/e)^p, x] /; FreeQ[{a, c, d, e, m, p}, x] &&
```

```
 EqQ[c*d^2 + a*e^2, 0] && (IntegerQ[p] || (GtQ[a, 0] && GtQ[d, 0] && Intege
rQ[m + p]))
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4761

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{(d+cdx)^{5/2}(f-cfx)^{3/2}}\,dx = \frac{\left(1-c^2x^2\right)^{5/2}\int \frac{(f-cfx)\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{5/2}}\,dx}{(d+cdx)^{5/2}(f-cfx)^{5/2}}$$

$$= -\frac{f(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{2fx\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(d+cdx)^{5/2}(f-cfx)^{5/2}} -$$

$$= -\frac{f(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{2fx\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(d+cdx)^{5/2}(f-cfx)^{5/2}} +$$

$$= -\frac{f(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{2fx\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(d+cdx)^{5/2}(f-cfx)^{5/2}} +$$

$$= -\frac{f(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{2fx\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(d+cdx)^{5/2}(f-cfx)^{5/2}} +$$

$$= -\frac{bf\left(1-c^2x^2\right)^{5/2}}{6c(1+cx)(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{f(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} +$$

$$= -\frac{bf\left(1-c^2x^2\right)^{5/2}}{6c(1+cx)(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{f(1-cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} +$$

Mathematica [A] time = 0.68, size = 180, normalized size = 0.71

$$\frac{\sqrt{cdx+d}\left(8ac^2x^2+8acx-4a+3bcx\sqrt{1-c^2x^2}\log(f-cfx)+5b(cx+1)\sqrt{1-c^2x^2}\log(-f(cx+1))+3b\sqrt{1-c\right.}{12cd^3f(cx+1)^2\sqrt{f-cfx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/((d + c*d*x)^(5/2)*(f - c*f*x)^(3/2)),x]
```

```
[Out] (Sqrt[d + c*d*x]*(-4*a + 8*a*c*x + 8*a*c^2*x^2 - 2*b*Sqrt[1 - c^2*x^2] + 4*
b*(-1 + 2*c*x + 2*c^2*x^2)*ArcSin[c*x] + 5*b*(1 + c*x)*Sqrt[1 - c^2*x^2]*Lo
g[-(f*(1 + c*x))] + 3*b*Sqrt[1 - c^2*x^2]*Log[f - c*f*x] + 3*b*c*x*Sqrt[1 -
 c^2*x^2]*Log[f - c*f*x]))/(12*c*d^3*f*(1 + c*x)^2*Sqrt[f - c*f*x])
```

fricas [F] time = 0.67, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cdx+d}\sqrt{-cfx+f}\,(b\arcsin(cx)+a)}{c^5d^3f^2x^5+c^4d^3f^2x^4-2\,c^3d^3f^2x^3-2\,c^2d^3f^2x^2+cd^3f^2x+d^3f^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*f*x+f)^(3/2),x, algorithm="
fricas")
```

```
[Out] integral(sqrt(c*d*x + d)*sqrt(-c*f*x + f)*(b*arcsin(c*x) + a)/(c^5*d^3*f^2*
x^5 + c^4*d^3*f^2*x^4 - 2*c^3*d^3*f^2*x^3 - 2*c^2*d^3*f^2*x^2 + c*d^3*f^2*x
 + d^3*f^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\arcsin(cx)+a}{(cdx+d)^{\frac{5}{2}}\left(-cfx+f\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*f*x+f)^(3/2),x, algorithm="
giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/((c*d*x + d)^(5/2)*(-c*f*x + f)^(3/2)), x)
```

maple [F] time = 0.33, size = 0, normalized size = 0.00

$$\int \frac{a+b\arcsin(cx)}{(cdx+d)^{\frac{5}{2}}\left(-cfx+f\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*f*x+f)^(3/2),x)
```

```
[Out] int((a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*f*x+f)^(3/2),x)
```

maxima [A] time = 0.48, size = 234, normalized size = 0.92

$$-\frac{1}{12}\,bc\left(\frac{2\sqrt{d}\sqrt{f}}{c^3d^3f^2x+c^2d^3f^2}-\frac{5\log(cx+1)}{c^2d^{\frac{5}{2}}f^{\frac{3}{2}}}-\frac{3\log(cx-1)}{c^2d^{\frac{5}{2}}f^{\frac{3}{2}}}\right)-\frac{1}{3}\,b\left(\frac{1}{\sqrt{-c^2dfx^2+df}\,c^2d^2fx+\sqrt{-c^2dfx^2+df}\,cd^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*f*x+f)^(3/2),x, algorithm="
maxima")
```

```
[Out] -1/12*b*c*(2*sqrt(d)*sqrt(f)/(c^3*d^3*f^2*x + c^2*d^3*f^2) - 5*log(c*x + 1)
/(c^2*d^(5/2)*f^(3/2)) - 3*log(c*x - 1)/(c^2*d^(5/2)*f^(3/2))) - 1/3*b*(1/(
sqrt(-c^2*d*f*x^2 + d*f)*c^2*d^2*f*x + sqrt(-c^2*d*f*x^2 + d*f)*c*d^2*f) -
2*x/(sqrt(-c^2*d*f*x^2 + d*f)*d^2*f))*arcsin(c*x) - 1/3*a*(1/(sqrt(-c^2*d*f
*x^2 + d*f)*c^2*d^2*f*x + sqrt(-c^2*d*f*x^2 + d*f)*c*d^2*f) - 2*x/(sqrt(-c^
2*d*f*x^2 + d*f)*d^2*f))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a + b\,\mathrm{asin}\,(c\,x)}{(d + c\,d\,x)^{5/2}\,\left(f - c\,f\,x\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/((d + c*d*x)^(5/2)*(f - c*f*x)^(3/2)),x)
```

```
[Out] int((a + b*asin(c*x))/((d + c*d*x)^(5/2)*(f - c*f*x)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(c*d*x+d)**(5/2)/(-c*f*x+f)**(3/2),x)
```

```
[Out] Timed out
```

3.534 $\int \frac{(d+cdx)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{(f-cfx)^{5/2}}\,dx$

Optimal. Leaf size=419

$$-\frac{5d^5\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)}{c(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{10d^5(cx+1)^2\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}+\frac{2d^5(cx+1)^4\left(1-c^2x^2\right)\left(a+b\sin\right.}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}$$

```
[Out] b*d^5*x*(-c^2*x^2+1)^(5/2)/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)-8/3*b*d^5*(-c^2
*x^2+1)^(5/2)/c/(-c*x+1)/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)-5/2*b*d^5*(-c^2*x
^2+1)^(5/2)*arcsin(c*x)^2/c/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)+2/3*d^5*(c*x+1
)^4*(-c^2*x^2+1)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)-10/3*
d^5*(c*x+1)^2*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*f*x+f)
^(5/2)-5*d^5*(-c^2*x^2+1)^3*(a+b*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*f*x+f)^
(5/2)+5*d^5*(-c^2*x^2+1)^(5/2)*arcsin(c*x)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(5
/2)/(-c*f*x+f)^(5/2)-28/3*b*d^5*(-c^2*x^2+1)^(5/2)*ln(-c*x+1)/c/(c*d*x+d)^(
5/2)/(-c*f*x+f)^(5/2)
```

Rubi [A] time = 0.38, antiderivative size = 419, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267, Rules used = {4673, 669, 641, 216, 4761, 627, 43, 4641}

$$-\frac{5d^5\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)}{c(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{10d^5(cx+1)^2\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}+\frac{2d^5(cx+1)^4\left(1-c^2x^2\right)\left(a+b\sin\right.}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + c*d*x)^(5/2)*(a + b*ArcSin[c*x]))/(f - c*f*x)^(5/2),x]
```

```
[Out] (b*d^5*x*(1 - c^2*x^2)^(5/2))/((d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)) - (8*b*
d^5*(1 - c^2*x^2)^(5/2))/(3*c*(1 - c*x)*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)
) - (5*b*d^5*(1 - c^2*x^2)^(5/2)*ArcSin[c*x]^2)/(2*c*(d + c*d*x)^(5/2)*(f -
 c*f*x)^(5/2)) + (2*d^5*(1 + c*x)^4*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(3*c
*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)) - (10*d^5*(1 + c*x)^2*(1 - c^2*x^2)^2
*(a + b*ArcSin[c*x]))/(3*c*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)) - (5*d^5*(1
 - c^2*x^2)^3*(a + b*ArcSin[c*x]))/(c*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2))
+ (5*d^5*(1 - c^2*x^2)^(5/2)*ArcSin[c*x]*(a + b*ArcSin[c*x]))/(c*(d + c*d*x
)^(5/2)*(f - c*f*x)^(5/2)) - (28*b*d^5*(1 - c^2*x^2)^(5/2)*Log[1 - c*x])/(3
*c*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2))
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 627

```
Int[((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int
[(d + e*x)^(m + p)*(a/d + (c*x)/e)^p, x] /; FreeQ[{a, c, d, e, m, p}, x] &&
 EqQ[c*d^2 + a*e^2, 0] && (IntegerQ[p] || (GtQ[a, 0] && GtQ[d, 0] && Intege
rQ[m + p]))
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rule 669

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^(m - 1)*(a + c*x^2)^(p + 1))/(c*(p + 1)), x] - Dist[(e^2*(m +
p))/(c*(p + 1)), Int[(d + e*x)^(m - 2)*(a + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, c, d, e}, x] && EqQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && In
tegerQ[2*p]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4761

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rubi steps

$$\int \frac{(d+cdx)^{5/2}\left(a+b\sin^{-1}(cx)\right)}{(f-cfx)^{5/2}}\,dx = \frac{\left(1-c^2x^2\right)^{5/2}\int \frac{(d+cdx)^5\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{5/2}}dx}{(d+cdx)^{5/2}(f-cfx)^{5/2}}$$

$$= \frac{2d^5(1+cx)^4\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{10d^5(1+cx)^2\left(1-c^2x^2\right)^2\left(a+b\right.}{3c(d+cdx)^{5/2}(f-cfx)}$$

$$= \frac{5bd^5x\left(1-c^2x^2\right)^{5/2}}{(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{2d^5(1+cx)^4\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} - 10d^5$$

$$= \frac{5bd^5x\left(1-c^2x^2\right)^{5/2}}{(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{5bd^5\left(1-c^2x^2\right)^{5/2}\sin^{-1}(cx)^2}{2c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{2d^5(1+cx)^4\left(1-\right.}{3c(d+cd}$$

$$= \frac{5bd^5x\left(1-c^2x^2\right)^{5/2}}{(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{5bd^5\left(1-c^2x^2\right)^{5/2}\sin^{-1}(cx)^2}{2c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{2d^5(1+cx)^4\left(1-\right.}{3c(d+cd}$$

$$= \frac{bd^5x\left(1-c^2x^2\right)^{5/2}}{(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{8bd^5\left(1-c^2x^2\right)^{5/2}}{3c(1-cx)(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{5bd^5\left(1-c^2\right.}{2c(d+cdx}$$

Mathematica [B] time = 6.21, size = 850, normalized size = 2.03

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d + c*d*x)^(5/2)*(a + b*ArcSin[c*x]))/(f - c*f*x)^(5/2),x]
```

```
[Out] (d^2*((-4*a*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(23 - 34*c*x + 3*c^2*x^2))/(-1
+ c*x)^2 - 60*a*Sqrt[d]*Sqrt[f]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]
)/(Sqrt[d]*Sqrt[f]*(-1 + c^2*x^2))] + (2*b*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*
(Cos[ArcSin[c*x]/2]*(-4 + 3*ArcSin[c*x] - 6*Log[Cos[ArcSin[c*x]/2] - Sin[Ar
cSin[c*x]/2]]) - Cos[(3*ArcSin[c*x])/2]*(ArcSin[c*x] - 2*Log[Cos[ArcSin[c*x
]/2] - Sin[ArcSin[c*x]/2]]) + 2*(2 + (2 + Sqrt[1 - c^2*x^2])*ArcSin[c*x] +
2*(2 + Sqrt[1 - c^2*x^2])*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]])*Sin
[ArcSin[c*x]/2]))/((Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^4*(Cos[ArcSin[
c*x]/2] + Sin[ArcSin[c*x]/2])) + (2*b*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(Cos[
ArcSin[c*x]/2]*(-8 - 6*ArcSin[c*x] + 9*ArcSin[c*x]^2 - 84*Log[Cos[ArcSin[c*
x]/2] - Sin[ArcSin[c*x]/2]]) + Cos[(3*ArcSin[c*x])/2]*(-(ArcSin[c*x]*(14 +
3*ArcSin[c*x])) + 28*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]]) + 2*(4 +
 2*(2 + 7*Sqrt[1 - c^2*x^2])*ArcSin[c*x] - 3*(2 + Sqrt[1 - c^2*x^2])*ArcSin
[c*x]^2 + 28*(2 + Sqrt[1 - c^2*x^2])*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*
x]/2]])*Sin[ArcSin[c*x]/2]))/((Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^4*(
Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])) + (b*Sqrt[d + c*d*x]*Sqrt[f - c*f
*x]*(2*(-7 + 6*c*x + 3*Cos[2*ArcSin[c*x]] + 52*(-1 + c*x)*Log[Cos[ArcSin[c*
x]/2] - Sin[ArcSin[c*x]/2]])*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]) + 18
*ArcSin[c*x]^2*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^3 + ArcSin[c*x]*(-
24*Cos[ArcSin[c*x]/2] - 35*Cos[(3*ArcSin[c*x])/2] + 3*Cos[(5*ArcSin[c*x])/2
] - 24*Sin[ArcSin[c*x]/2] + 35*Sin[(3*ArcSin[c*x])/2] + 3*Sin[(5*ArcSin[c*x
])/2])))/((Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^4*(Cos[ArcSin[c*x]/2] +
 Sin[ArcSin[c*x]/2]))))/(12*c*f^3)
```

fricas [F] time = 0.84, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(ac^2d^2x^2+2\,acd^2x+ad^2+\left(bc^2d^2x^2+2\,bcd^2x+bd^2\right)\arcsin\left(cx\right)\right)\sqrt{cdx+d}\,\sqrt{-cfx+f}}{c^3f^3x^3-3\,c^2f^3x^2+3\,cf^3x-f^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(5/2),x, algorithm="
fricas")
```

```
[Out] integral(-(a*c^2*d^2*x^2 + 2*a*c*d^2*x + a*d^2 + (b*c^2*d^2*x^2 + 2*b*c*d^2
*x + b*d^2)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*f*x + f)/(c^3*f^3*x^3 - 3*
c^2*f^3*x^2 + 3*c*f^3*x - f^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(cdx + d)^{\frac{5}{2}}(b \arcsin (cx) + a)}{\left(-cfx + f\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(5/2),x, algorithm="
giac")
```

```
[Out] integrate((c*d*x + d)^(5/2)*(b*arcsin(c*x) + a)/(-c*f*x + f)^(5/2), x)
```

maple [F] time = 0.37, size = 0, normalized size = 0.00

$$\int \frac{(cdx + d)^{\frac{5}{2}} (a + b \arcsin (cx))}{\left(-cfx + f\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(5/2),x)
```

```
[Out] int((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(5/2),x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(5/2),x, algorithm="
maxima")
```

```
[Out] Timed out
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b \,\mathrm{asin}\,(c\,x))\ (d + c\,d\,x)^{5/2}}{\left(f - c\,f\,x\right)^{5/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d + c*d*x)^(5/2))/(f - c*f*x)^(5/2),x)
```

```
[Out] int(((a + b*asin(c*x))*(d + c*d*x)^(5/2))/(f - c*f*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(5/2)*(a+b*asin(c*x))/(-c*f*x+f)**(5/2),x)
```

```
[Out] Timed out
```

3.535 $\int \frac{(d+cdx)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{(f-cfx)^{5/2}}\,dx$

Optimal. Leaf size=324

$$-\frac{2d^4(cx+1)\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{c(cdx+d)^{5/2}(f-cfx)^{5/2}}+\frac{2d^4(cx+1)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}+\frac{d^4\left(1-c^2x^2\right)^{5/2}\sin^{-1}(cx)\left(a\right.}{c(cdx+d)^{5/2}(f-c}$$

```
[Out] -4/3*b*d^4*(-c^2*x^2+1)^(5/2)/c/(-c*x+1)/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)-1
/2*b*d^4*(-c^2*x^2+1)^(5/2)*arcsin(c*x)^2/c/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2
)+2/3*d^4*(c*x+1)^3*(-c^2*x^2+1)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*f*
x+f)^(5/2)-2*d^4*(c*x+1)*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))/c/(c*d*x+d)^(5/2)
/(-c*f*x+f)^(5/2)+d^4*(-c^2*x^2+1)^(5/2)*arcsin(c*x)*(a+b*arcsin(c*x))/c/(c
*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)-8/3*b*d^4*(-c^2*x^2+1)^(5/2)*ln(-c*x+1)/c/(c
*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)
```

Rubi [A] time = 0.34, antiderivative size = 324, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 9, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {4673, 669, 653, 216, 4761, 627, 43, 31, 4641}

$$-\frac{2d^4(cx+1)\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{c(cdx+d)^{5/2}(f-cfx)^{5/2}}+\frac{2d^4(cx+1)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}+\frac{d^4\left(1-c^2x^2\right)^{5/2}\sin^{-1}(cx)\left(a\right.}{c(cdx+d)^{5/2}(f-c}$$

Antiderivative was successfully verified.

```
[In] Int[((d + c*d*x)^(3/2)*(a + b*ArcSin[c*x]))/(f - c*f*x)^(5/2),x]
```

```
[Out] (-4*b*d^4*(1 - c^2*x^2)^(5/2))/(3*c*(1 - c*x)*(d + c*d*x)^(5/2)*(f - c*f*x)
^(5/2)) - (b*d^4*(1 - c^2*x^2)^(5/2)*ArcSin[c*x]^2)/(2*c*(d + c*d*x)^(5/2)*
(f - c*f*x)^(5/2)) + (2*d^4*(1 + c*x)^3*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/
(3*c*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)) - (2*d^4*(1 + c*x)*(1 - c^2*x^2)^
2*(a + b*ArcSin[c*x]))/(c*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)) + (d^4*(1 -
c^2*x^2)^(5/2)*ArcSin[c*x]*(a + b*ArcSin[c*x]))/(c*(d + c*d*x)^(5/2)*(f - c
*f*x)^(5/2)) - (8*b*d^4*(1 - c^2*x^2)^(5/2)*Log[1 - c*x])/(3*c*(d + c*d*x)^
(5/2)*(f - c*f*x)^(5/2))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 627

```
Int[((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int
[(d + e*x)^(m + p)*(a/d + (c*x)/e)^p, x] /; FreeQ[{a, c, d, e, m, p}, x] &&
 EqQ[c*d^2 + a*e^2, 0] && (IntegerQ[p] || (GtQ[a, 0] && GtQ[d, 0] && Intege
rQ[m + p]))
```

Rule 653

```
Int[((d_) + (e_.)*(x_))^2*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(e*
(d + e*x)*(a + c*x^2)^(p + 1))/(c*(p + 1)), x] - Dist[(e^2*(p + 2))/(c*(p +
 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, p}, x] && EqQ[c
*d^2 + a*e^2, 0] &&  !IntegerQ[p] && LtQ[p, -1]
```

Rule 669

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^(m - 1)*(a + c*x^2)^(p + 1))/(c*(p + 1)), x] - Dist[(e^2*(m +
p))/(c*(p + 1)), Int[(d + e*x)^(m - 2)*(a + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, c, d, e}, x] && EqQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && In
tegerQ[2*p]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4761

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rubi steps

$$\int \frac{(d+cdx)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{(f-cfx)^{5/2}}\,dx = \frac{\left(1-c^2x^2\right)^{5/2}\int \frac{(d+cdx)^4\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{5/2}}\,dx}{(d+cdx)^{5/2}(f-cfx)^{5/2}}$$

$$= \frac{2d^4(1+cx)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{2d^4(1+cx)\left(1-c^2x^2\right)^2\left(a+b\sin\right.}{c(d+cdx)^{5/2}(f-cfx)^{5/}}$$

$$= \frac{2d^4(1+cx)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{2d^4(1+cx)\left(1-c^2x^2\right)^2\left(a+b\sin\right.}{c(d+cdx)^{5/2}(f-cfx)^{5/}}$$

$$= -\frac{bd^4\left(1-c^2x^2\right)^{5/2}\sin^{-1}(cx)^2}{2c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{2d^4(1+cx)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} -$$

$$= -\frac{bd^4\left(1-c^2x^2\right)^{5/2}\sin^{-1}(cx)^2}{2c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{2d^4(1+cx)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} -$$

$$= -\frac{4bd^4\left(1-c^2x^2\right)^{5/2}}{3c(1-cx)(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{bd^4\left(1-c^2x^2\right)^{5/2}\sin^{-1}(cx)^2}{2c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{2d^4(1}{}$$

Mathematica [A] time = 4.99, size = 601, normalized size = 1.85

$$\frac{d\left(-12a\sqrt{d}\sqrt{f}\tan^{-1}\left(\frac{cx\sqrt{cdx+d}\sqrt{f-cfx}}{\sqrt{d}\sqrt{f}\left(c^2x^2-1\right)}\right) + \frac{16a(2cx-1)\sqrt{cdx+d}\sqrt{f-cfx}}{(cx-1)^2} + \frac{2b\sqrt{cdx+d}\sqrt{f-cfx}\left(2\sin\left(\frac{1}{2}\sin^{-1}(cx)\right)\left(\left(\sqrt{1-c^2x^2}+2\right)\sin^{-1}\right.\right.}{}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d + c*d*x)^(3/2)*(a + b*ArcSin[c*x]))/(f - c*f*x)^(5/2),x]
```

```
[Out] (d*((16*a*(-1 + 2*c*x)*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(-1 + c*x)^2 - 12*a
*Sqrt[d]*Sqrt[f]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[f - c*f*x])/(Sqrt[d]*Sqrt
[f]*(-1 + c^2*x^2))] + (2*b*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(Cos[ArcSin[c*x
]/2]*(-4 + 3*ArcSin[c*x] - 6*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]])
- Cos[(3*ArcSin[c*x])/2]*(ArcSin[c*x] - 2*Log[Cos[ArcSin[c*x]/2] - Sin[ArcS
in[c*x]/2]]) + 2*(2 + (2 + Sqrt[1 - c^2*x^2])*ArcSin[c*x] + 2*(2 + Sqrt[1 -
 c^2*x^2])*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]])*Sin[ArcSin[c*x]/2]
))/((Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^4*(Cos[ArcSin[c*x]/2] + Sin[A
rcSin[c*x]/2])) + (b*Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(Cos[ArcSin[c*x]/2]*(-
8 - 6*ArcSin[c*x] + 9*ArcSin[c*x]^2 - 84*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSi
n[c*x]/2]]) + Cos[(3*ArcSin[c*x])/2]*(-(ArcSin[c*x]*(14 + 3*ArcSin[c*x])) +
 28*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]]) + 2*(4 + 2*(2 + 7*Sqrt[1
- c^2*x^2])*ArcSin[c*x] - 3*(2 + Sqrt[1 - c^2*x^2])*ArcSin[c*x]^2 + 28*(2 +
 Sqrt[1 - c^2*x^2])*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]])*Sin[ArcSi
n[c*x]/2]))/((Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^4*(Cos[ArcSin[c*x]/2
] + Sin[ArcSin[c*x]/2]))))/(12*c*f^3)
```

fricas [F] time = 1.24, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{(acdx+ad+(bcdx+bd)\arcsin(cx))\sqrt{cdx+d}\sqrt{-cfx+f}}{c^3f^3x^3-3c^2f^3x^2+3cf^3x-f^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(5/2),x, algorithm="
fricas")
```

```
[Out] integral(-(a*c*d*x + a*d + (b*c*d*x + b*d)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*f*x + f)/(c^3*f^3*x^3 - 3*c^2*f^3*x^2 + 3*c*f^3*x - f^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(cdx+d)^{\frac{3}{2}}(b \arcsin(cx)+a)}{\left(-cfx+f\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((c*d*x + d)^(3/2)*(b*arcsin(c*x) + a)/(-c*f*x + f)^(5/2), x)
```

maple [F] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{(cdx+d)^{\frac{3}{2}}\,(a+b \arcsin(cx))}{\left(-cfx+f\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(5/2),x)
```

```
[Out] int((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-b\sqrt{d}\,\sqrt{f}\int \frac{(cdx+d)\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)}{c^3f^3x^3-3\,c^2f^3x^2+3\,cf^3x-f^3}\,dx - \frac{1}{3}\,a\left(\frac{\left(-c^2dfx^2+df\right)^{\frac{3}{2}}}{c^4f^4x^3-3\,c^3f^4x^2+3\,c^2f^4x\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(5/2),x, algorithm="maxima")
```

```
[Out] -b*sqrt(d)*sqrt(f)*integrate((c*d*x + d)*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(c^3*f^3*x^3 - 3*c^2*f^3*x^2 + 3*c*f^3*x - f^3), x) - 1/3*a*((-c^2*d*f*x^2 + d*f)^(3/2)/(c^4*f^4*x^3 - 3*c^3*f^4*x^2 + 3*c^2*f^4*x - c*f^4) - 2*sqrt(-c^2*d*f*x^2 + d*f)*d/(c^3*f^3*x^2 - 2*c^2*f^3*x + c*f^3) - 7*sqrt(-c^2*d*f*x^2 + d*f)*d/(c^2*f^3*x - c*f^3) - 3*d^2*arcsin(c*x)/(c*f^3*sqrt(d/f)))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b \operatorname{asin}(c\,x))\,\left(d+c\,d\,x\right)^{3/2}}{\left(f-c\,f\,x\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d + c*d*x)^(3/2))/(f - c*f*x)^(5/2),x)
```

```
[Out] int(((a + b*asin(c*x))*(d + c*d*x)^(3/2))/(f - c*f*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(3/2)*(a+b*asin(c*x))/(-c*f*x+f)**(5/2),x)
```

```
[Out] Timed out
```

3.536 $\int \frac{\sqrt{d+cdx}\left(a+b\sin^{-1}(cx)\right)}{(f-cfx)^{5/2}}\,dx$

Optimal. Leaf size=164

$$\frac{d^3(cx+1)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{2bd^3\left(1-c^2x^2\right)^{5/2}}{3c(1-cx)(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{bd^3\left(1-c^2x^2\right)^{5/2}\log(1-cx)}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}$$

```
[Out] -2/3*b*d^3*(-c^2*x^2+1)^(5/2)/c/(-c*x+1)/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)+1
/3*d^3*(c*x+1)^3*(-c^2*x^2+1)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*f*x+f
)^(5/2)-1/3*b*d^3*(-c^2*x^2+1)^(5/2)*ln(-c*x+1)/c/(c*d*x+d)^(5/2)/(-c*f*x+f
)^(5/2)
```

Rubi [A] time = 0.26, antiderivative size = 164, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {4673, 651, 4761, 12, 627, 43}

$$\frac{d^3(cx+1)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{2bd^3\left(1-c^2x^2\right)^{5/2}}{3c(1-cx)(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{bd^3\left(1-c^2x^2\right)^{5/2}\log(1-cx)}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d + c*d*x]*(a + b*ArcSin[c*x]))/(f - c*f*x)^(5/2),x]
```

```
[Out] (-2*b*d^3*(1 - c^2*x^2)^(5/2))/(3*c*(1 - c*x)*(d + c*d*x)^(5/2)*(f - c*f*x)
^(5/2)) + (d^3*(1 + c*x)^3*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(3*c*(d + c*d
*x)^(5/2)*(f - c*f*x)^(5/2)) - (b*d^3*(1 - c^2*x^2)^(5/2)*Log[1 - c*x])/(3*
c*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 627

```
Int[((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int
[(d + e*x)^(m + p)*(a/d + (c*x)/e)^p, x] /; FreeQ[{a, c, d, e, m, p}, x] &&
 EqQ[c*d^2 + a*e^2, 0] && (IntegerQ[p] || (GtQ[a, 0] && GtQ[d, 0] && Intege
rQ[m + p]))
```

Rule 651

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^m*(a + c*x^2)^(p + 1))/(2*c*d*(p + 1)), x] /; FreeQ[{a, c, d,
e, m, p}, x] && EqQ[c*d^2 + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2,
0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
```

```
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4761

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rubi steps

$$\int \frac{\sqrt{d+cdx}\left(a+b\sin^{-1}(cx)\right)}{(f-cfx)^{5/2}}\,dx = \frac{\left(1-c^2x^2\right)^{5/2}\int \frac{(d+cdx)^3\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{5/2}}\,dx}{(d+cdx)^{5/2}(f-cfx)^{5/2}}$$

$$= \frac{d^3(1+cx)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{\left(bc\left(1-c^2x^2\right)^{5/2}\right)\int \frac{d^3(1+cx)^3}{3c\left(1-c^2x^2\right)^2}\,dx}{(d+cdx)^{5/2}(f-cfx)^{5/2}}$$

$$= \frac{d^3(1+cx)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{\left(bd^3\left(1-c^2x^2\right)^{5/2}\right)\int \frac{(1+cx)^3}{\left(1-c^2x^2\right)^2}\,dx}{3(d+cdx)^{5/2}(f-cfx)^{5/2}}$$

$$= \frac{d^3(1+cx)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{\left(bd^3\left(1-c^2x^2\right)^{5/2}\right)\int \frac{1+cx}{(1-cx)^2}\,dx}{3(d+cdx)^{5/2}(f-cfx)^{5/2}}$$

$$= \frac{d^3(1+cx)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{\left(bd^3\left(1-c^2x^2\right)^{5/2}\right)\int \left(\frac{2}{(-1+cx)^2}+\frac{}{-1\ldots}\right.}{3(d+cdx)^{5/2}(f-cfx)^{5/2}}$$

$$= -\frac{2bd^3\left(1-c^2x^2\right)^{5/2}}{3c(1-cx)(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{d^3(1+cx)^3\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right.}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}}$$

Mathematica [A] time = 0.54, size = 126, normalized size = 0.77

$$\frac{\sqrt{cdx+d}\sqrt{f-cfx}\left((cx+1)\left(a\sqrt{1-c^2x^2}+bcx-b\right)+b(cx+1)\sqrt{1-c^2x^2}\sin^{-1}(cx)-b(cx-1)^2\log(f-cfx)\right)}{3cf^3(cx-1)^2\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[d + c*d*x]*(a + b*ArcSin[c*x]))/(f - c*f*x)^(5/2),x]
```

```
[Out] (Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*((1 + c*x)*(-b + b*c*x + a*Sqrt[1 - c^2*x^
2]) + b*(1 + c*x)*Sqrt[1 - c^2*x^2]*ArcSin[c*x] - b*(-1 + c*x)^2*Log[f - c*
f*x]))/(3*c*f^3*(-1 + c*x)^2*Sqrt[1 - c^2*x^2])
```

fricas [A] time = 0.62, size = 520, normalized size = 3.17

$$\left[\frac{\left(bc^3fx^3-bc^2fx^2-bcfx+bf\right)\sqrt{\frac{d}{f}}\log\left(\frac{c^6dx^6-4c^5dx^5+5c^4dx^4-4c^2dx^2+4cdx+\left(c^4x^4-4c^3x^3+6c^2x^2-4cx\right)\sqrt{-c^2x^2+1}\sqrt{cdx+d}\sqrt{-cfx\ldots}}{c^4x^4-2c^3x^3+2cx-1}\right.}{6\left(c^4f^3x^3-c^3f^3x^2\ldots\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(5/2),x, algorithm="
fricas")
```

```
[Out] [1/6*((b*c^3*f*x^3 - b*c^2*f*x^2 - b*c*f*x + b*f)*sqrt(d/f)*log((c^6*d*x^6
- 4*c^5*d*x^5 + 5*c^4*d*x^4 - 4*c^2*d*x^2 + 4*c*d*x + (c^4*x^4 - 4*c^3*x^3
+ 6*c^2*x^2 - 4*c*x)*sqrt(-c^2*x^2 + 1)*sqrt(c*d*x + d)*sqrt(-c*f*x + f)*sq
rt(d/f) - 2*d)/(c^4*x^4 - 2*c^3*x^3 + 2*c*x - 1)) + 2*(a*c^2*x^2 - 2*sqrt(-
c^2*x^2 + 1)*b*c*x + 2*a*c*x + (b*c^2*x^2 + 2*b*c*x + b)*arcsin(c*x) + a)*s
qrt(c*d*x + d)*sqrt(-c*f*x + f))/(c^4*f^3*x^3 - c^3*f^3*x^2 - c^2*f^3*x + c
*f^3), -1/3*((b*c^3*f*x^3 - b*c^2*f*x^2 - b*c*f*x + b*f)*sqrt(-d/f)*arctan(
(c^2*x^2 - 2*c*x + 2)*sqrt(-c^2*x^2 + 1)*sqrt(c*d*x + d)*sqrt(-c*f*x + f)*s
qrt(-d/f)/(c^4*d*x^4 - 2*c^3*d*x^3 - c^2*d*x^2 + 2*c*d*x)) - (a*c^2*x^2 - 2
*sqrt(-c^2*x^2 + 1)*b*c*x + 2*a*c*x + (b*c^2*x^2 + 2*b*c*x + b)*arcsin(c*x)
 + a)*sqrt(c*d*x + d)*sqrt(-c*f*x + f))/(c^4*f^3*x^3 - c^3*f^3*x^2 - c^2*f^
3*x + c*f^3)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cdx+d}\,(b\arcsin(cx)+a)}{(-cfx+f)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(5/2),x, algorithm="
giac")
```

```
[Out] integrate(sqrt(c*d*x + d)*(b*arcsin(c*x) + a)/(-c*f*x + f)^(5/2), x)
```

maple [F] time = 0.33, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cdx+d}\;(a+b\arcsin(cx))}{(-cfx+f)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(5/2),x)
```

```
[Out] int((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(5/2),x)
```

maxima [A] time = 0.50, size = 217, normalized size = 1.32

$$\frac{1}{3}\,bc\left(\frac{2\,\sqrt{d}}{c^3f^{\frac{5}{2}}x-c^2f^{\frac{5}{2}}}-\frac{\sqrt{d}\,\log(cx-1)}{c^2f^{\frac{5}{2}}}\right)+\frac{1}{3}\,b\left(\frac{2\,\sqrt{-c^2dfx^2+df}}{c^3f^3x^2-2\,c^2f^3x+cf^3}+\frac{\sqrt{-c^2dfx^2+df}}{c^2f^3x-cf^3}\right)\arcsin(cx)+\frac{1}{3}\,a\left(\cdots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))/(-c*f*x+f)^(5/2),x, algorithm="
maxima")
```

```
[Out] 1/3*b*c*(2*sqrt(d)/(c^3*f^(5/2)*x - c^2*f^(5/2)) - sqrt(d)*log(c*x - 1)/(c^
2*f^(5/2))) + 1/3*b*(2*sqrt(-c^2*d*f*x^2 + d*f)/(c^3*f^3*x^2 - 2*c^2*f^3*x
+ c*f^3) + sqrt(-c^2*d*f*x^2 + d*f)/(c^2*f^3*x - c*f^3))*arcsin(c*x) + 1/3*
a*(2*sqrt(-c^2*d*f*x^2 + d*f)/(c^3*f^3*x^2 - 2*c^2*f^3*x + c*f^3) + sqrt(-c
^2*d*f*x^2 + d*f)/(c^2*f^3*x - c*f^3))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))\,\sqrt{d+c\,d\,x}}{(f-c\,f\,x)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d + c*d*x)^(1/2))/(f - c*f*x)^(5/2),x)
```

```
[Out] int(((a + b*asin(c*x))*(d + c*d*x)^(1/2))/(f - c*f*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(1/2)*(a+b*asin(c*x))/(-c*f*x+f)**(5/2),x)
```

```
[Out] Timed out
```

3.537 $\int \frac{a+b\sin^{-1}(cx)}{\sqrt{d+cdx}\,(f-cfx)^{5/2}}\,dx$

Optimal. Leaf size=265

$$\frac{d^2x\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(cdx+d)^{5/2}(f-cfx)^{5/2}}+\frac{2d^2(cx+1)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{bd^2\left(1-c^2x^2\right)^{5/2}}{3c(1-cx)(cdx+d)^{5/2}(f-cfx)^{5/2}}-$$

```
[Out] -1/3*b*d^2*(-c^2*x^2+1)^(5/2)/c/(-c*x+1)/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)+2
/3*d^2*(c*x+1)*(-c^2*x^2+1)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*f*x+f)^
(5/2)+1/3*d^2*x*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*f*x+f)
^(5/2)-1/3*b*d^2*(-c^2*x^2+1)^(5/2)*arctanh(c*x)/c/(c*d*x+d)^(5/2)/(-c*f*x+
f)^(5/2)+1/6*b*d^2*(-c^2*x^2+1)^(5/2)*ln(-c^2*x^2+1)/c/(c*d*x+d)^(5/2)/(-c*
f*x+f)^(5/2)
```

Rubi [A] time = 0.29, antiderivative size = 265, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267, Rules used = {4673, 653, 191, 4761, 627, 44, 207, 260}

$$\frac{d^2x\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(cdx+d)^{5/2}(f-cfx)^{5/2}}+\frac{2d^2(cx+1)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{bd^2\left(1-c^2x^2\right)^{5/2}}{3c(1-cx)(cdx+d)^{5/2}(f-cfx)^{5/2}}-$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(Sqrt[d + c*d*x]*(f - c*f*x)^(5/2)),x]
```

```
[Out] -(b*d^2*(1 - c^2*x^2)^(5/2))/(3*c*(1 - c*x)*(d + c*d*x)^(5/2)*(f - c*f*x)^(
5/2)) + (2*d^2*(1 + c*x)*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(3*c*(d + c*d*x
)^(5/2)*(f - c*f*x)^(5/2)) + (d^2*x*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x]))/(3
*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)) - (b*d^2*(1 - c^2*x^2)^(5/2)*ArcTanh[
c*x])/(3*c*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)) + (b*d^2*(1 - c^2*x^2)^(5/2
)*Log[1 - c^2*x^2])/(6*c*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2))
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 627

```
Int[((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int
[(d + e*x)^(m + p)*(a/d + (c*x)/e)^p, x] /; FreeQ[{a, c, d, e, m, p}, x] &&
```

```
 EqQ[c*d^2 + a*e^2, 0] && (IntegerQ[p] || (GtQ[a, 0] && GtQ[d, 0] && Intege
rQ[m + p]))
```

Rule 653

```
Int[((d_) + (e_.)*(x_))^2*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(e*
(d + e*x)*(a + c*x^2)^(p + 1))/(c*(p + 1)), x] - Dist[(e^2*(p + 2))/(c*(p +
 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, p}, x] && EqQ[c
*d^2 + a*e^2, 0] &&  !IntegerQ[p] && LtQ[p, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4761

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{\sqrt{d+cdx}\,(f-cfx)^{5/2}}\,dx = \frac{\left(1-c^2x^2\right)^{5/2}\int \frac{(d+cdx)^2\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{5/2}}\,dx}{(d+cdx)^{5/2}(f-cfx)^{5/2}}$$

$$= \frac{2d^2(1+cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{d^2x\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{(bc(\ldots}{\ldots}$$

$$= \frac{2d^2(1+cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{d^2x\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{(2b\ldots}{\ldots}$$

$$= \frac{2d^2(1+cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{d^2x\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{bd^2\ldots}{6\ldots}$$

$$= \frac{2d^2(1+cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{d^2x\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{bd^2\ldots}{6\ldots}$$

$$= -\frac{bd^2\left(1-c^2x^2\right)^{5/2}}{3c(1-cx)(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{2d^2(1+cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{d\ldots}{\ldots}$$

$$= -\frac{bd^2\left(1-c^2x^2\right)^{5/2}}{3c(1-cx)(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{2d^2(1+cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{d\ldots}{\ldots}$$

Mathematica [A] time = 0.50, size = 130, normalized size = 0.49

$$\frac{\sqrt{cdx+d}\sqrt{f-cfx}\left(-(cx-2)\left(a\sqrt{1-c^2x^2}+bcx-b\right)-b(cx-2)\sqrt{1-c^2x^2}\sin^{-1}(cx)+b(cx-1)^2\log(f-cf\right.}{3cdf^3(cx-1)^2\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/(Sqrt[d + c*d*x]*(f - c*f*x)^(5/2)),x]
```

```
[Out] (Sqrt[d + c*d*x]*Sqrt[f - c*f*x]*(-((-2 + c*x)*(-b + b*c*x + a*Sqrt[1 - c^2
*x^2])) - b*(-2 + c*x)*Sqrt[1 - c^2*x^2]*ArcSin[c*x] + b*(-1 + c*x)^2*Log[f
 - c*f*x]))/(3*c*d*f^3*(-1 + c*x)^2*Sqrt[1 - c^2*x^2])
```

fricas [A] time = 0.64, size = 527, normalized size = 1.99

$$\left[\frac{\left(bc^3x^3-bc^2x^2-bcx+b\right)\sqrt{df}\log\left(\frac{c^6dfx^6-4c^5dfx^5+5c^4dfx^4-4c^2dfx^2+4cdfx-\left(c^4x^4-4c^3x^3+6c^2x^2-4cx\right)\sqrt{-c^2x^2+1}\sqrt{cdx+d}\sqrt{-}}{c^4x^4-2c^3x^3+2cx-1}\right.}{6\left(c^4df^3x^3-c^3df^3\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(1/2)/(-c*f*x+f)^(5/2),x, algorithm="
fricas")
```

```
[Out] [1/6*((b*c^3*x^3 - b*c^2*x^2 - b*c*x + b)*sqrt(d*f)*log((c^6*d*f*x^6 - 4*c^
5*d*f*x^5 + 5*c^4*d*f*x^4 - 4*c^2*d*f*x^2 + 4*c*d*f*x - (c^4*x^4 - 4*c^3*x^
3 + 6*c^2*x^2 - 4*c*x)*sqrt(-c^2*x^2 + 1)*sqrt(c*d*x + d)*sqrt(-c*f*x + f)*
sqrt(d*f) - 2*d*f)/(c^4*x^4 - 2*c^3*x^3 + 2*c*x - 1)) - 2*(a*c^2*x^2 + sqrt
(-c^2*x^2 + 1)*b*c*x - a*c*x + (b*c^2*x^2 - b*c*x - 2*b)*arcsin(c*x) - 2*a)
*sqrt(c*d*x + d)*sqrt(-c*f*x + f))/(c^4*d*f^3*x^3 - c^3*d*f^3*x^2 - c^2*d*f
^3*x + c*d*f^3), 1/3*((b*c^3*x^3 - b*c^2*x^2 - b*c*x + b)*sqrt(-d*f)*arctan
((c^2*x^2 - 2*c*x + 2)*sqrt(-c^2*x^2 + 1)*sqrt(c*d*x + d)*sqrt(-c*f*x + f)*
sqrt(-d*f)/(c^4*d*f*x^4 - 2*c^3*d*f*x^3 - c^2*d*f*x^2 + 2*c*d*f*x)) - (a*c^
2*x^2 + sqrt(-c^2*x^2 + 1)*b*c*x - a*c*x + (b*c^2*x^2 - b*c*x - 2*b)*arcsin
(c*x) - 2*a)*sqrt(c*d*x + d)*sqrt(-c*f*x + f))/(c^4*d*f^3*x^3 - c^3*d*f^3*x
^2 - c^2*d*f^3*x + c*d*f^3)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\arcsin(cx)+a}{\sqrt{cdx+d}\left(-cfx+f\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(1/2)/(-c*f*x+f)^(5/2),x, algorithm="
giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/(sqrt(c*d*x + d)*(-c*f*x + f)^(5/2)), x)
```

maple [F] time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{a+b\arcsin(cx)}{\sqrt{cdx+d}\,\left(-cfx+f\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(c*d*x+d)^(1/2)/(-c*f*x+f)^(5/2),x)
```

```
[Out] int((a+b*arcsin(c*x))/(c*d*x+d)^(1/2)/(-c*f*x+f)^(5/2),x)
```

maxima [A] time = 0.49, size = 227, normalized size = 0.86

$$\frac{1}{3}\,bc\left(\frac{1}{c^3\sqrt{d}\,f^{\frac{5}{2}}x-c^2\sqrt{d}\,f^{\frac{5}{2}}}+\frac{\log\left(cx-1\right)}{c^2\sqrt{d}\,f^{\frac{5}{2}}}\right)+\frac{1}{3}\,b\left(\frac{\sqrt{-c^2dfx^2+df}}{c^3df^3x^2-2\,c^2df^3x+cdf^3}-\frac{\sqrt{-c^2dfx^2+df}}{c^2df^3x-cdf^3}\right)\arcsin\left(cx\right)+\frac{1}{3}\,a\Big($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(1/2)/(-c*f*x+f)^(5/2),x, algorithm="
maxima")
```

```
[Out] 1/3*b*c*(1/(c^3*sqrt(d)*f^(5/2)*x - c^2*sqrt(d)*f^(5/2)) + log(c*x - 1)/(c^
2*sqrt(d)*f^(5/2))) + 1/3*b*(sqrt(-c^2*d*f*x^2 + d*f)/(c^3*d*f^3*x^2 - 2*c^
2*d*f^3*x + c*d*f^3) - sqrt(-c^2*d*f*x^2 + d*f)/(c^2*d*f^3*x - c*d*f^3))*ar
csin(c*x) + 1/3*a*(sqrt(-c^2*d*f*x^2 + d*f)/(c^3*d*f^3*x^2 - 2*c^2*d*f^3*x
+ c*d*f^3) - sqrt(-c^2*d*f*x^2 + d*f)/(c^2*d*f^3*x - c*d*f^3))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\mathrm{asin}\left(c\,x\right)}{\sqrt{d+c\,d\,x}\,{\left(f-c\,f\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/((d + c*d*x)^(1/2)*(f - c*f*x)^(5/2)),x)
```

```
[Out] int((a + b*asin(c*x))/((d + c*d*x)^(1/2)*(f - c*f*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(c*d*x+d)**(1/2)/(-c*f*x+f)**(5/2),x)
```

```
[Out] Timed out
```

3.538 $\int \frac{a+b\sin^{-1}(cx)}{(d+cdx)^{3/2}(f-cfx)^{5/2}}\,dx$

Optimal. Leaf size=255

$$\frac{2dx\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(cdx+d)^{5/2}(f-cfx)^{5/2}}+\frac{d(cx+1)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{bd\left(1-c^2x^2\right)^{5/2}}{6c(1-cx)(cdx+d)^{5/2}(f-cfx)^{5/2}}+\cdots$$

```
[Out] -1/6*b*d*(-c^2*x^2+1)^(5/2)/c/(-c*x+1)/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)+1/3
*d*(c*x+1)*(-c^2*x^2+1)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2
)+2/3*d*x*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)
-1/6*b*d*(-c^2*x^2+1)^(5/2)*arctanh(c*x)/c/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)
+1/3*b*d*(-c^2*x^2+1)^(5/2)*ln(-c^2*x^2+1)/c/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/
2)
```

Rubi [A] time = 0.25, antiderivative size = 255, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.267$, Rules used = {4673, 639, 191, 4761, 627, 44, 207, 260}

$$\frac{2dx\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(cdx+d)^{5/2}(f-cfx)^{5/2}}+\frac{d(cx+1)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{bd\left(1-c^2x^2\right)^{5/2}}{6c(1-cx)(cdx+d)^{5/2}(f-cfx)^{5/2}}+\cdots$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/((d + c*d*x)^(3/2)*(f - c*f*x)^(5/2)),x]
```

```
[Out] -(b*d*(1 - c^2*x^2)^(5/2))/(6*c*(1 - c*x)*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/
2)) + (d*(1 + c*x)*(1 - c^2*x^2)*(a + b*ArcSin[c*x]))/(3*c*(d + c*d*x)^(5/2
)*(f - c*f*x)^(5/2)) + (2*d*x*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x]))/(3*(d +
c*d*x)^(5/2)*(f - c*f*x)^(5/2)) - (b*d*(1 - c^2*x^2)^(5/2)*ArcTanh[c*x])/(6
*c*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)) + (b*d*(1 - c^2*x^2)^(5/2)*Log[1 -
c^2*x^2])/(3*c*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2))
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 627

```
Int[((d_) + (e_.)*(x_))^(m_.)*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int
[(d + e*x)^(m + p)*(a/d + (c*x)/e)^p, x] /; FreeQ[{a, c, d, e, m, p}, x] &&
```

```
 EqQ[c*d^2 + a*e^2, 0] && (IntegerQ[p] || (GtQ[a, 0] && GtQ[d, 0] && Intege
rQ[m + p]))
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4761

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_) + (g_.)*(x_))^(m_.)*((d_) + (e
_.)*(x_)^2)^(p_), x_Symbol] :> With[{u = IntHide[(f + g*x)^m*(d + e*x^2)^p,
 x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[Dist[1/Sqrt[1 - c^2*x^2
], u, x], x], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] &
& IGtQ[m, 0] && ILtQ[p + 1/2, 0] && GtQ[d, 0] && (LtQ[m, -2*p - 1] || GtQ[m
, 3])
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{(d+cdx)^{3/2}(f-cfx)^{5/2}}\,dx = \frac{\left(1-c^2x^2\right)^{5/2}\int \frac{(d+cdx)\left(a+b\sin^{-1}(cx)\right)}{\left(1-c^2x^2\right)^{5/2}}\,dx}{(d+cdx)^{5/2}(f-cfx)^{5/2}}$$

$$= \frac{d(1+cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{2dx\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{\left(bc\left(\right.\right.}{}$$

$$= \frac{d(1+cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{2dx\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{\left(bd\left(\right.\right.}{3}$$

$$= \frac{d(1+cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{2dx\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{bd\left(\right.}{3c}$$

$$= \frac{d(1+cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{2dx\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{bd\left(\right.}{3c}$$

$$= -\frac{bd\left(1-c^2x^2\right)^{5/2}}{6c(1-cx)(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{d(1+cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{2d}{}$$

$$= -\frac{bd\left(1-c^2x^2\right)^{5/2}}{6c(1-cx)(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{d(1+cx)\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{2d}{}$$

Mathematica [A] time = 0.69, size = 184, normalized size = 0.72

$$\frac{\sqrt{cdx+d}\left(8ac^2x^2-8acx-4a+5bcx\sqrt{1-c^2x^2}\log(f-cfx)+3b(cx-1)\sqrt{1-c^2x^2}\log(-f(cx+1))-5b\sqrt{1}\right.}{12cd^2f^2\left(c^2x^2-1\right)\sqrt{f-cfx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/((d + c*d*x)^(3/2)*(f - c*f*x)^(5/2)),x]
```

```
[Out] (Sqrt[d + c*d*x]*(-4*a - 8*a*c*x + 8*a*c^2*x^2 + 2*b*Sqrt[1 - c^2*x^2] + 4*
b*(-1 - 2*c*x + 2*c^2*x^2)*ArcSin[c*x] + 3*b*(-1 + c*x)*Sqrt[1 - c^2*x^2]*L
og[-(f*(1 + c*x))] - 5*b*Sqrt[1 - c^2*x^2]*Log[f - c*f*x] + 5*b*c*x*Sqrt[1
- c^2*x^2]*Log[f - c*f*x]))/(12*c*d^2*f^2*Sqrt[f - c*f*x]*(-1 + c^2*x^2))
```

fricas [F] time = 0.73, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{cdx+d}\sqrt{-cfx+f}\,(b\arcsin(cx)+a)}{c^5d^2f^3x^5-c^4d^2f^3x^4-2\,c^3d^2f^3x^3+2\,c^2d^2f^3x^2+cd^2f^3x-d^2f^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(3/2)/(-c*f*x+f)^(5/2),x, algorithm="
fricas")
```

```
[Out] integral(-sqrt(c*d*x + d)*sqrt(-c*f*x + f)*(b*arcsin(c*x) + a)/(c^5*d^2*f^3
*x^5 - c^4*d^2*f^3*x^4 - 2*c^3*d^2*f^3*x^3 + 2*c^2*d^2*f^3*x^2 + c*d^2*f^3*
x - d^2*f^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{b\arcsin(cx)+a}{(cdx+d)^{\frac{3}{2}}\left(-cfx+f\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(3/2)/(-c*f*x+f)^(5/2),x, algorithm="
giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/((c*d*x + d)^(3/2)*(-c*f*x + f)^(5/2)), x)
```

maple [F] time = 0.34, size = 0, normalized size = 0.00

$$\int\frac{a+b\arcsin(cx)}{(cdx+d)^{\frac{3}{2}}\left(-cfx+f\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(c*d*x+d)^(3/2)/(-c*f*x+f)^(5/2),x)
```

```
[Out] int((a+b*arcsin(c*x))/(c*d*x+d)^(3/2)/(-c*f*x+f)^(5/2),x)
```

maxima [A] time = 0.55, size = 237, normalized size = 0.93

$$\frac{1}{12}bc\left(\frac{2\sqrt{d}\sqrt{f}}{c^3d^2f^3x-c^2d^2f^3}+\frac{3\log(cx+1)}{c^2d^{\frac{3}{2}}f^{\frac{5}{2}}}+\frac{5\log(cx-1)}{c^2d^{\frac{3}{2}}f^{\frac{5}{2}}}\right)-\frac{1}{3}b\left(\frac{1}{\sqrt{-c^2dfx^2+df}\,c^2df^2x-\sqrt{-c^2dfx^2+df}\,cd\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(3/2)/(-c*f*x+f)^(5/2),x, algorithm="
maxima")
```

```
[Out] 1/12*b*c*(2*sqrt(d)*sqrt(f)/(c^3*d^2*f^3*x - c^2*d^2*f^3) + 3*log(c*x + 1)/
(c^2*d^(3/2)*f^(5/2)) + 5*log(c*x - 1)/(c^2*d^(3/2)*f^(5/2))) - 1/3*b*(1/(s
qrt(-c^2*d*f*x^2 + d*f)*c^2*d*f^2*x - sqrt(-c^2*d*f*x^2 + d*f)*c*d*f^2) - 2
*x/(sqrt(-c^2*d*f*x^2 + d*f)*d*f^2))*arcsin(c*x) - 1/3*a*(1/(sqrt(-c^2*d*f*
x^2 + d*f)*c^2*d*f^2*x - sqrt(-c^2*d*f*x^2 + d*f)*c*d*f^2) - 2*x/(sqrt(-c^2
*d*f*x^2 + d*f)*d*f^2))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a + b \operatorname{asin}(c x)}{(d + c d x)^{3/2} \left(f - c f x\right)^{5/2}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/((d + c*d*x)^(3/2)*(f - c*f*x)^(5/2)),x)
```

```
[Out] int((a + b*asin(c*x))/((d + c*d*x)^(3/2)*(f - c*f*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(c*d*x+d)**(3/2)/(-c*f*x+f)**(5/2),x)
```

```
[Out] Timed out
```

3.539 $\int \frac{a+b\sin^{-1}(cx)}{(d+cdx)^{5/2}(f-cfx)^{5/2}}\,dx$

Optimal. Leaf size=188

$$\frac{2x\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(cdx+d)^{5/2}(f-cfx)^{5/2}}+\frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{b\left(1-c^2x^2\right)^{3/2}}{6c(cdx+d)^{5/2}(f-cfx)^{5/2}}+\frac{b\left(1-c^2x^2\right)^{5/2}\log}{3c(cdx+d)^{5/2}(f}$$

```
[Out] -1/6*b*(-c^2*x^2+1)^(3/2)/c/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)+1/3*x*(-c^2*x^
2+1)*(a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)+2/3*x*(-c^2*x^2+1)^
2*(a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)+1/3*b*(-c^2*x^2+1)^(5/
2)*ln(-c^2*x^2+1)/c/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2)
```

Rubi [A] time = 0.20, antiderivative size = 188, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {4673, 4655, 4651, 260, 261}

$$\frac{2x\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{3(cdx+d)^{5/2}(f-cfx)^{5/2}}+\frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3(cdx+d)^{5/2}(f-cfx)^{5/2}}-\frac{b\left(1-c^2x^2\right)^{3/2}}{6c(cdx+d)^{5/2}(f-cfx)^{5/2}}+\frac{b\left(1-c^2x^2\right)^{5/2}\log}{3c(cdx+d)^{5/2}(f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/((d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)),x]
```

```
[Out] -(b*(1 - c^2*x^2)^(3/2))/(6*c*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)) + (x*(1
- c^2*x^2)*(a + b*ArcSin[c*x]))/(3*(d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)) + (
2*x*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x]))/(3*(d + c*d*x)^(5/2)*(f - c*f*x)^(
5/2)) + (b*(1 - c^2*x^2)^(5/2)*Log[1 - c^2*x^2])/(3*c*(d + c*d*x)^(5/2)*(f
- c*f*x)^(5/2))
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{(d+cdx)^{5/2}(f-cfx)^{5/2}}\,dx = \frac{\left(1-c^2x^2\right)^{5/2}\int \frac{a+b\sin^{-1}(cx)}{\left(1-c^2x^2\right)^{5/2}}\,dx}{(d+cdx)^{5/2}(f-cfx)^{5/2}}$$
$$= \frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{\left(2\left(1-c^2x^2\right)^{5/2}\right)\int \frac{a+b\sin^{-1}(cx)}{\left(1-c^2x^2\right)^{3/2}}\,dx}{3(d+cdx)^{5/2}(f-cfx)^{5/2}} - \frac{\left(bc\left(1-c^2x^2\right.\right.}{3(d+cdx}$$
$$= -\frac{b\left(1-c^2x^2\right)^{3/2}}{6c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{2x\left(1-c^2x^2\right)^2\left(a\right.}{3(d+cdx)^{5/2}(}$$
$$= -\frac{b\left(1-c^2x^2\right)^{3/2}}{6c(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)}{3(d+cdx)^{5/2}(f-cfx)^{5/2}} + \frac{2x\left(1-c^2x^2\right)^2\left(a\right.}{3(d+cdx)^{5/2}(}$$

Mathematica [A] time = 0.64, size = 178, normalized size = 0.95

$$\frac{\sqrt{cdx+d}\left(4ac^3x^3-6acx+2bc^2x^2\sqrt{1-c^2x^2}\log(f-cfx)-2b\left(1-c^2x^2\right)^{3/2}\log(-f(cx+1))-2b\sqrt{1-c^2x^2}\log(\right.}{6cd^3(cx-1)\sqrt{f-cfx}\,(cfx+f)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])/((d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)),x]
```

```
[Out] (Sqrt[d + c*d*x]*(-6*a*c*x + 4*a*c^3*x^3 + b*Sqrt[1 - c^2*x^2] + 2*b*c*x*(-
3 + 2*c^2*x^2)*ArcSin[c*x] - 2*b*(1 - c^2*x^2)^(3/2)*Log[-(f*(1 + c*x))] -
2*b*Sqrt[1 - c^2*x^2]*Log[f - c*f*x] + 2*b*c^2*x^2*Sqrt[1 - c^2*x^2]*Log[f
- c*f*x]))/(6*c*d^3*(-1 + c*x)*Sqrt[f - c*f*x]*(f + c*f*x)^2)
```

fricas [F] time = 0.60, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{cdx+d}\,\sqrt{-cfx+f}\,(b\arcsin(cx)+a)}{c^6d^3f^3x^6-3\,c^4d^3f^3x^4+3\,c^2d^3f^3x^2-d^3f^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2),x, algorithm="
fricas")
```

```
[Out] integral(-sqrt(c*d*x + d)*sqrt(-c*f*x + f)*(b*arcsin(c*x) + a)/(c^6*d^3*f^3
*x^6 - 3*c^4*d^3*f^3*x^4 + 3*c^2*d^3*f^3*x^2 - d^3*f^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\arcsin(cx)+a}{(cdx+d)^{\frac{5}{2}}\left(-cfx+f\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2),x, algorithm="
giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/((c*d*x + d)^(5/2)*(-c*f*x + f)^(5/2)), x)
```

maple [F] time = 0.33, size = 0, normalized size = 0.00

$$\int \frac{a+b\arcsin(cx)}{(cdx+d)^{\frac{5}{2}}\left(-cfx+f\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2),x)
```

```
[Out] int((a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2),x)
```

maxima [A] time = 0.52, size = 177, normalized size = 0.94

$$\frac{1}{6}\,bc\left(\frac{1}{c^4d^{\frac{5}{2}}f^{\frac{5}{2}}x^2-c^2d^{\frac{5}{2}}f^{\frac{5}{2}}}+\frac{2\,\log(cx+1)}{c^2d^{\frac{5}{2}}f^{\frac{5}{2}}}+\frac{2\,\log(cx-1)}{c^2d^{\frac{5}{2}}f^{\frac{5}{2}}}\right)+\frac{1}{3}\,b\left(\frac{x}{\left(-c^2dfx^2+df\right)^{\frac{3}{2}}df}+\frac{2\,x}{\sqrt{-c^2dfx^2+df}\,d^2f}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*f*x+f)^(5/2),x, algorithm="
maxima")
```

```
[Out] 1/6*b*c*(1/(c^4*d^(5/2)*f^(5/2)*x^2 - c^2*d^(5/2)*f^(5/2)) + 2*log(c*x + 1)
/(c^2*d^(5/2)*f^(5/2)) + 2*log(c*x - 1)/(c^2*d^(5/2)*f^(5/2))) + 1/3*b*(x/(
(-c^2*d*f*x^2 + d*f)^(3/2)*d*f) + 2*x/(sqrt(-c^2*d*f*x^2 + d*f)*d^2*f^2))*a
rcsin(c*x) + 1/3*a*(x/((-c^2*d*f*x^2 + d*f)^(3/2)*d*f) + 2*x/(sqrt(-c^2*d*f
*x^2 + d*f)*d^2*f^2))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\mathrm{asin}\left(c\,x\right)}{{\left(d+c\,d\,x\right)}^{5/2}\,{\left(f-c\,f\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/((d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)),x)
```

```
[Out] int((a + b*asin(c*x))/((d + c*d*x)^(5/2)*(f - c*f*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(c*d*x+d)**(5/2)/(-c*f*x+f)**(5/2),x)
```

```
[Out] Timed out
```

3.540 $\int (d+cdx)^{5/2}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=613

$$\frac{1}{4}c^2d^2x^3\sqrt{cdx+d}\,\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^2-\frac{3bcd^2x^2\sqrt{cdx+d}\,\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)}{8\sqrt{1-c^2x^2}}+\frac{4bd^2x\sqrt{cdx+d}\,\sqrt{e}}{3\sqrt{1}}$$

```
[Out] 8/9*b^2*d^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/c-15/64*b^2*d^2*x*(c*d*x+d)^(1
/2)*(-c*e*x+e)^(1/2)-1/32*b^2*c^2*d^2*x^3*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)+
4/27*b^2*d^2*(-c^2*x^2+1)*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/c+3/8*d^2*x*(a+b
*arcsin(c*x))^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)+1/4*c^2*d^2*x^3*(a+b*arcsi
n(c*x))^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)-2/3*d^2*(-c^2*x^2+1)*(a+b*arcsin
(c*x))^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/c+15/64*b^2*d^2*arcsin(c*x)*(c*d*
x+d)^(1/2)*(-c*e*x+e)^(1/2)/c/(-c^2*x^2+1)^(1/2)+4/3*b*d^2*x*(a+b*arcsin(c*
x))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)-3/8*b*c*d^2*x^2*(a+
b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)-4/9*b*c^
2*d^2*x^3*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(
1/2)-1/8*b*c^3*d^2*x^4*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(
-c^2*x^2+1)^(1/2)+5/24*d^2*(a+b*arcsin(c*x))^3*(c*d*x+d)^(1/2)*(-c*e*x+e)^(
1/2)/b/c/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 1.01, antiderivative size = 613, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 13, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.406, Rules used = {4673, 4763, 4647, 4641, 4627, 321, 216, 4677, 4645, 444, 43, 4697, 4707}

$$-\frac{bc^3d^2x^4\sqrt{cdx+d}\,\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)}{8\sqrt{1-c^2x^2}}+\frac{1}{4}c^2d^2x^3\sqrt{cdx+d}\,\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^2-\frac{4bc^2d^2x^3\sqrt{cdx+d}}{9}$$

Antiderivative was successfully verified.

```
[In] Int[(d + c*d*x)^(5/2)*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (8*b^2*d^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(9*c) - (15*b^2*d^2*x*Sqrt[d +
c*d*x]*Sqrt[e - c*e*x])/64 - (b^2*c^2*d^2*x^3*Sqrt[d + c*d*x]*Sqrt[e - c*e*
x])/32 + (4*b^2*d^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(1 - c^2*x^2))/(27*c) +
 (15*b^2*d^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x])/(64*c*Sqrt[1 - c^
2*x^2]) + (4*b*d^2*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x]))/(
3*Sqrt[1 - c^2*x^2]) - (3*b*c*d^2*x^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a +
b*ArcSin[c*x]))/(8*Sqrt[1 - c^2*x^2]) - (4*b*c^2*d^2*x^3*Sqrt[d + c*d*x]*Sq
rt[e - c*e*x]*(a + b*ArcSin[c*x]))/(9*Sqrt[1 - c^2*x^2]) - (b*c^3*d^2*x^4*S
qrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x]))/(8*Sqrt[1 - c^2*x^2]) +
 (3*d^2*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2)/8 + (c^2*d
^2*x^3*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2)/4 - (2*d^2*Sq
rt[d + c*d*x]*Sqrt[e - c*e*x]*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(3*c) +
(5*d^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^3)/(24*b*c*Sqrt[
1 - c^2*x^2])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 444

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
```

```
, 0] && NeQ[p, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int (d+cdx)^{5/2}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^2 dx = \frac{\left(\sqrt{d+cdx}\sqrt{e-cex}\right)\int (d+cdx)^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(\sqrt{d+cdx}\sqrt{e-cex}\right)\int \left(d^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2+2cd\right.}{}$$

$$= \frac{\left(d^2\sqrt{d+cdx}\sqrt{e-cex}\right)\int \sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2 dx}{\sqrt{1-c^2x^2}} + $$

$$= \frac{1}{2}d^2x\sqrt{d+cdx}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^2 + \frac{1}{4}c^2d^2x^3\sqrt{d+cd}$$

$$= \frac{4bd^2x\sqrt{d+cdx}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)}{3\sqrt{1-c^2x^2}} - \frac{bcd^2x^2\sqrt{d+cdx}}{2}$$

$$= -\frac{1}{4}b^2d^2x\sqrt{d+cdx}\sqrt{e-cex} - \frac{1}{32}b^2c^2d^2x^3\sqrt{d+cdx}\sqrt{e-cex}$$

$$= -\frac{15}{64}b^2d^2x\sqrt{d+cdx}\sqrt{e-cex} - \frac{1}{32}b^2c^2d^2x^3\sqrt{d+cdx}\sqrt{e-cex}$$

$$= \frac{8b^2d^2\sqrt{d+cdx}\sqrt{e-cex}}{9c} - \frac{15}{64}b^2d^2x\sqrt{d+cdx}\sqrt{e-cex} - \frac{1}{32}b$$

Mathematica [A] time = 2.60, size = 555, normalized size = 0.91

$$\frac{d^2\sqrt{cdx+d}\sqrt{e-cex}\left(3\left(1536a^2c^2x^2\sqrt{1-c^2x^2}+864a^2cx\sqrt{1-c^2x^2}-1536a^2\sqrt{1-c^2x^2}+576a^2c^3x^3\sqrt{1-c^2}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + c*d*x)^(5/2)*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (1440*b^2*d^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^3 - 4320*a^2*d^(5
/2)*Sqrt[e]*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/
(Sqrt[d]*Sqrt[e]*(-1 + c^2*x^2))] + 12*b*d^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x
]*ArcSin[c*x]*(576*b*c*x - 768*a*Sqrt[1 - c^2*x^2] + 768*a*c^2*x^2*Sqrt[1 -
 c^2*x^2] + 144*b*Cos[2*ArcSin[c*x]] - 9*b*Cos[4*ArcSin[c*x]] + 288*a*Sin[2
*ArcSin[c*x]] + 64*b*Sin[3*ArcSin[c*x]] - 36*a*Sin[4*ArcSin[c*x]]) - 72*b*d
^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^2*(-60*a + 48*b*Sqrt[1 - c^2
*x^2] + 16*b*Cos[3*ArcSin[c*x]] - 24*b*Sin[2*ArcSin[c*x]] + 3*b*Sin[4*ArcSi
n[c*x]]) + d^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(1728*a*b*Cos[2*ArcSin[c*x]]
 + 256*b^2*Cos[3*ArcSin[c*x]] + 3*(3072*a*b*c*x - 1024*a*b*c^3*x^3 - 1536*a
^2*Sqrt[1 - c^2*x^2] + 2304*b^2*Sqrt[1 - c^2*x^2] + 864*a^2*c*x*Sqrt[1 - c^
2*x^2] + 1536*a^2*c^2*x^2*Sqrt[1 - c^2*x^2] + 576*a^2*c^3*x^3*Sqrt[1 - c^2*
x^2] - 36*a*b*Cos[4*ArcSin[c*x]] - 288*b^2*Sin[2*ArcSin[c*x]] + 9*b^2*Sin[4
*ArcSin[c*x]])))/(6912*c*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a^2c^2d^2x^2+2\,a^2cd^2x+a^2d^2+\left(b^2c^2d^2x^2+2\,b^2cd^2x+b^2d^2\right)\arcsin(cx)^2+2\left(abc^2d^2x^2+2\,abcd^2x+\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))^2*(-c*e*x+e)^(1/2),x, algorithm
="fricas")
```

```
[Out] integral((a^2*c^2*d^2*x^2 + 2*a^2*c*d^2*x + a^2*d^2 + (b^2*c^2*d^2*x^2 + 2*
b^2*c*d^2*x + b^2*d^2)*arcsin(c*x)^2 + 2*(a*b*c^2*d^2*x^2 + 2*a*b*c*d^2*x +
 a*b*d^2)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*e*x + e), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))^2*(-c*e*x+e)^(1/2),x, algorithm
="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(t_nostep)]Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Warning, integration of abs or sign assumes constant sign by intervals (cor
rect if the argument is real):Check [abs(t_nostep)]Warning, integration of
abs or sign assumes constant sign by intervals (correct if the argument is
real):Check [abs(t_nostep)]Simplification assuming t_nostep near 0Simplific
ation assuming t_nostep near 0Simplification assuming t_nostep near 0Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Simplification assuming t_nostep near 0Warning, integration of abs or sign
assumes constant sign by intervals (correct if the argument is real):Check
[abs(t_nostep)]Simplification assuming t_nostep near 0Simplification assumi
ng t_nostep near 0Simplification assuming t_nostep near 0Simplification ass
uming t_nostep near 0Simplification assuming t_nostep near 0Simplification
assuming t_nostep near 0Simplification assuming t_nostep near 0Simplificati
on assuming t_nostep near 0Warning, integration of abs or sign assumes cons
tant sign by intervals (correct if the argument is real):Check [abs(t_noste
p)]Warning, integration of abs or sign assumes constant sign by intervals (
correct if the argument is real):Check [abs(t_nostep)]sym2poly/r2sym(const
gen & e,const index_m & i,const vecteur & l) Error: Bad Argument Value
```

maple [F] time = 0.37, size = 0, normalized size = 0.00

$$\int (cdx+d)^{\frac{5}{2}} (a+b\arcsin(cx))^2 \sqrt{-cex+e}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))^2*(-c*e*x+e)^(1/2),x)
```

```
[Out] int((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))^2*(-c*e*x+e)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{24}\left(15\sqrt{-c^2dex^2+de}\,d^2x + \frac{15\,d^3e\arcsin(cx)}{\sqrt{de}\,c} - \frac{6\left(-c^2dex^2+de\right)^{\frac{3}{2}}dx}{e} - \frac{16\left(-c^2dex^2+de\right)^{\frac{3}{2}}d}{ce}\right)a^2 + \sqrt{d}\sqrt{e}\int\left(\left(b^2\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))^2*(-c*e*x+e)^(1/2),x, algorithm
="maxima")
```

```
[Out] 1/24*(15*sqrt(-c^2*d*e*x^2 + d*e)*d^2*x + 15*d^3*e*arcsin(c*x)/(sqrt(d*e)*c
) - 6*(-c^2*d*e*x^2 + d*e)^(3/2)*d*x/e - 16*(-c^2*d*e*x^2 + d*e)^(3/2)*d/(c
*e))*a^2 + sqrt(d)*sqrt(e)*integrate(((b^2*c^2*d^2*x^2 + 2*b^2*c*d^2*x + b^
2*d^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c^2*d^2*x^2 +
2*a*b*c*d^2*x + a*b*d^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c
*x + 1)*sqrt(-c*x + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a + b \operatorname{asin}(c x))^2 (d + c d x)^{5/2} \sqrt{e - c e x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2*(d + c*d*x)^(5/2)*(e - c*e*x)^(1/2),x)
```

```
[Out] int((a + b*asin(c*x))^2*(d + c*d*x)^(5/2)*(e - c*e*x)^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(5/2)*(a+b*asin(c*x))**2*(-c*e*x+e)**(1/2),x)
```

```
[Out] Timed out
```

3.541 $\int (d+cdx)^{3/2}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=455

$$-\frac{bcdx^2\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{1-c^2x^2}}+\frac{2bdx\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)}{3\sqrt{1-c^2x^2}}+\frac{d\sqrt{cdx+d}\sqrt{e-cex}\left(a\right.}{6bc\sqrt{1-c^2}}$$

```
[Out] 4/9*b^2*d*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/c-1/4*b^2*d*x*(c*d*x+d)^(1/2)*(-
c*e*x+e)^(1/2)+2/27*b^2*d*(-c^2*x^2+1)*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/c+1
/2*d*x*(a+b*arcsin(c*x))^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)-1/3*d*(-c^2*x^2
+1)*(a+b*arcsin(c*x))^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/c+1/4*b^2*d*arcsin
(c*x)*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/c/(-c^2*x^2+1)^(1/2)+2/3*b*d*x*(a+b*
arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)-1/2*b*c*d*
x^2*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)-2
/9*b*c^2*d*x^3*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2
+1)^(1/2)+1/6*d*(a+b*arcsin(c*x))^3*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/b/c/(-
c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.57, antiderivative size = 455, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 11, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.344, Rules used = {4673, 4763, 4647, 4641, 4627, 321, 216, 4677, 4645, 444, 43}

$$-\frac{2bc^2dx^3\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)}{9\sqrt{1-c^2x^2}}-\frac{bcdx^2\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{1-c^2x^2}}+\frac{2bdx\sqrt{cdx+d}\sqrt{e-c}}{3\sqrt{1-}}$$

Antiderivative was successfully verified.

```
[In] Int[(d + c*d*x)^(3/2)*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (4*b^2*d*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(9*c) - (b^2*d*x*Sqrt[d + c*d*x]*
Sqrt[e - c*e*x])/4 + (2*b^2*d*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(1 - c^2*x^2)
)/(27*c) + (b^2*d*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x])/(4*c*Sqrt[1
- c^2*x^2]) + (2*b*d*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x]))
/(3*Sqrt[1 - c^2*x^2]) - (b*c*d*x^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*
ArcSin[c*x]))/(2*Sqrt[1 - c^2*x^2]) - (2*b*c^2*d*x^3*Sqrt[d + c*d*x]*Sqrt[e
 - c*e*x]*(a + b*ArcSin[c*x]))/(9*Sqrt[1 - c^2*x^2]) + (d*x*Sqrt[d + c*d*x]
*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2)/2 - (d*Sqrt[d + c*d*x]*Sqrt[e - c*e
*x]*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(3*c) + (d*Sqrt[d + c*d*x]*Sqrt[e
- c*e*x]*(a + b*ArcSin[c*x])^3)/(6*b*c*Sqrt[1 - c^2*x^2])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
```

```
+ 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 444

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
```

```
b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int (d+cdx)^{3/2}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^2\,dx = \frac{\left(\sqrt{d+cdx}\sqrt{e-cex}\right)\int (d+cdx)\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(\sqrt{d+cdx}\sqrt{e-cex}\right)\int \left(d\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2+cdx\sqrt{1-\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(d\sqrt{d+cdx}\sqrt{e-cex}\right)\int \sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}} + \frac{\left(cd\sqrt{\right.}{}$$

$$= \frac{1}{2}dx\sqrt{d+cdx}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^2 - \frac{d\sqrt{d+cdx}\sqrt{e-cex}}{}$$

$$= \frac{2bdx\sqrt{d+cdx}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)}{3\sqrt{1-c^2x^2}} - \frac{bcdx^2\sqrt{d+cdx}\sqrt{e-}}{2\sqrt{1-}}$$

$$= -\frac{1}{4}b^2dx\sqrt{d+cdx}\sqrt{e-cex} + \frac{2bdx\sqrt{d+cdx}\sqrt{e-cex}\left(a+b\sin^{-}\right.}{3\sqrt{1-c^2x^2}}$$

$$= -\frac{1}{4}b^2dx\sqrt{d+cdx}\sqrt{e-cex} + \frac{b^2d\sqrt{d+cdx}\sqrt{e-cex}\sin^{-1}(cx)}{4c\sqrt{1-c^2x^2}} +$$

$$= \frac{4b^2d\sqrt{d+cdx}\sqrt{e-cex}}{9c} - \frac{1}{4}b^2dx\sqrt{d+cdx}\sqrt{e-cex} + \frac{2b^2d\sqrt{d+}}{}$$

Mathematica [A] time = 2.01, size = 437, normalized size = 0.96

$$\frac{d\sqrt{cdx+d}\sqrt{e-cex}\left(12\left(3a^2\sqrt{1-c^2x^2}\left(2c^2x^2+3cx-2\right)-4abcx\left(c^2x^2-3\right)+9b^2\sqrt{1-c^2x^2}\right)+54ab\cos\left(2\sin^{-}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + c*d*x)^(3/2)*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (36*b^2*d*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^3 - 108*a^2*d^(3/2)*S
qrt[e]*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(Sqrt
[d]*Sqrt[e]*(-1 + c^2*x^2))] - 18*b*d*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSi
n[c*x]^2*(-6*a + 3*b*Sqrt[1 - c^2*x^2] + b*Cos[3*ArcSin[c*x]] - 3*b*Sin[2*A
rcSin[c*x]]) + d*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(12*(9*b^2*Sqrt[1 - c^2*x^
2] - 4*a*b*c*x*(-3 + c^2*x^2) + 3*a^2*Sqrt[1 - c^2*x^2]*(-2 + 3*c*x + 2*c^2
*x^2)) + 54*a*b*Cos[2*ArcSin[c*x]] + 4*b^2*Cos[3*ArcSin[c*x]] - 27*b^2*Sin[
2*ArcSin[c*x]]) + 6*b*d*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]*(9*b*Co
s[2*ArcSin[c*x]] + 2*(9*b*c*x - 12*a*Sqrt[1 - c^2*x^2] + 12*a*c^2*x^2*Sqrt[
1 - c^2*x^2] + 9*a*Sin[2*ArcSin[c*x]] + b*Sin[3*ArcSin[c*x]])))/(216*c*Sqrt
[1 - c^2*x^2])
```

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a^2cdx+a^2d+\left(b^2cdx+b^2d\right)\arcsin(cx)^2+2\left(abcdx+abd\right)\arcsin(cx)\right)\sqrt{cdx+d}\sqrt{-cex+e},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))^2*(-c*e*x+e)^(1/2),x, algorithm
="fricas")
```

```
[Out] integral((a^2*c*d*x + a^2*d + (b^2*c*d*x + b^2*d)*arcsin(c*x)^2 + 2*(a*b*c*
d*x + a*b*d)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*e*x + e), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))^2*(-c*e*x+e)^(1/2),x, algorithm
="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(t_nostep)]Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Warning, integration of abs or sign assumes constant sign by intervals (cor
rect if the argument is real):Check [abs(t_nostep)]Warning, integration of
abs or sign assumes constant sign by intervals (correct if the argument is
real):Check [abs(t_nostep)]Simplification assuming t_nostep near 0Simplific
ation assuming t_nostep near 0Simplification assuming t_nostep near 0Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Simplification assuming t_nostep near 0Warning, integration of abs or sign
assumes constant sign by intervals (correct if the argument is real):Check
[abs(t_nostep)]Simplification assuming t_nostep near 0Simplification assumi
ng t_nostep near 0Simplification assuming t_nostep near 0Simplification ass
uming t_nostep near 0Simplification assuming t_nostep near 0Simplification
assuming t_nostep near 0Simplification assuming t_nostep near 0Simplificati
on assuming t_nostep near 0Warning, integration of abs or sign assumes cons
tant sign by intervals (correct if the argument is real):Check [abs(t_noste
p)]Warning, integration of abs or sign assumes constant sign by intervals (
correct if the argument is real):Check [abs(t_nostep)]sym2poly/r2sym(const
gen & e,const index_m & i,const vecteur & l) Error: Bad Argument Value
```

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int (cdx+d)^{\frac{3}{2}} (a+b\arcsin (cx))^2 \sqrt{-cex+e}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))^2*(-c*e*x+e)^(1/2),x)
```

```
[Out] int((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))^2*(-c*e*x+e)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{6}\left(3\sqrt{-c^2dex^2+de}\,dx+\frac{3\,d^2e\arcsin(cx)}{\sqrt{de}\,c}-\frac{2\left(-c^2dex^2+de\right)^{\frac{3}{2}}}{ce}\right)a^2+\sqrt{d}\sqrt{e}\int\left(\left(b^2cdx+b^2d\right)\arctan\left(cx,\sqrt{cx\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))^2*(-c*e*x+e)^(1/2),x, algorithm
="maxima")
```

```
[Out] 1/6*(3*sqrt(-c^2*d*e*x^2 + d*e)*d*x + 3*d^2*e*arcsin(c*x)/(sqrt(d*e)*c) - 2
*(-c^2*d*e*x^2 + d*e)^(3/2)/(c*e))*a^2 + sqrt(d)*sqrt(e)*integrate(((b^2*c*
d*x + b^2*d)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c*d*x +
a*b*d)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x
+ 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a + b \operatorname{asin}(c\,x))^2\,(d + c\,d\,x)^{3/2}\,\sqrt{e - c\,e\,x}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2*(d + c*d*x)^(3/2)*(e - c*e*x)^(1/2),x)
```

```
[Out] int((a + b*asin(c*x))^2*(d + c*d*x)^(3/2)*(e - c*e*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (d\,(cx + 1))^{\frac{3}{2}}\,\sqrt{-e\,(cx - 1)}\,(a + b \operatorname{asin}(cx))^2\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(3/2)*(a+b*asin(c*x))**2*(-c*e*x+e)**(1/2),x)
```

```
[Out] Integral((d*(c*x + 1))**(3/2)*sqrt(-e*(c*x - 1))*(a + b*asin(c*x))**2, x)
```

3.542 $\int \sqrt{d+cdx}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=222

$$\frac{\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^3}{6bc\sqrt{1-c^2x^2}}-\frac{bcx^2\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{1-c^2x^2}}+\frac{1}{2}x\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\right.$$

```
[Out] -1/4*b^2*x*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)+1/2*x*(c*d*x+d)^(1/2)*(-c*e*x+e
)^(1/2)*(a+b*arcsin(c*x))^2+1/4*b^2*arcsin(c*x)*(c*d*x+d)^(1/2)*(-c*e*x+e)^
(1/2)/c/(-c^2*x^2+1)^(1/2)-1/2*b*c*x^2*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-
c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)+1/6*(a+b*arcsin(c*x))^3*(c*d*x+d)^(1/2)*(
-c*e*x+e)^(1/2)/b/c/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.30, antiderivative size = 222, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {4673, 4647, 4641, 4627, 321, 216}

$$\frac{\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^3}{6bc\sqrt{1-c^2x^2}}-\frac{bcx^2\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{1-c^2x^2}}+\frac{1}{2}x\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\right.$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -(b^2*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/4 + (b^2*Sqrt[d + c*d*x]*Sqrt[e -
c*e*x]*ArcSin[c*x])/(4*c*Sqrt[1 - c^2*x^2]) - (b*c*x^2*Sqrt[d + c*d*x]*Sqrt
[e - c*e*x]*(a + b*ArcSin[c*x]))/(2*Sqrt[1 - c^2*x^2]) + (x*Sqrt[d + c*d*x]
*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2)/2 + (Sqrt[d + c*d*x]*Sqrt[e - c*e*x
]*(a + b*ArcSin[c*x])^3)/(6*b*c*Sqrt[1 - c^2*x^2])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rubi steps

$$\int \sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)^2\,dx = \frac{\left(\sqrt{d+cdx}\,\sqrt{e-cex}\right)\int \sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{1}{2}x\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)^2 + \frac{\left(\sqrt{d+cdx}\,\sqrt{e-cex}\right)\int}{2\sqrt{1-c^2}}$$

$$= -\frac{bcx^2\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{1-c^2x^2}} + \frac{1}{2}x\sqrt{d+cdx}\,\sqrt{e-ce}$$

$$= -\frac{1}{4}b^2x\sqrt{d+cdx}\,\sqrt{e-cex} - \frac{bcx^2\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(c\right.}{2\sqrt{1-c^2x^2}}$$

$$= -\frac{1}{4}b^2x\sqrt{d+cdx}\,\sqrt{e-cex} + \frac{b^2\sqrt{d+cdx}\,\sqrt{e-cex}\,\sin^{-1}(cx)}{4c\sqrt{1-c^2x^2}} - \frac{bcx^2}{}$$

Mathematica [A] time = 1.15, size = 288, normalized size = 1.30

$$3\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(4a^2cx\sqrt{1-c^2x^2}+2ab\cos\left(2\sin^{-1}(cx)\right)-b^2\sin\left(2\sin^{-1}(cx)\right)\right)-12a^2\sqrt{d}\,\sqrt{e}\,\sqrt{1-c^2x^2}\,\tan$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (4*b^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^3 - 12*a^2*Sqrt[d]*Sqrt[
e]*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(Sqrt[d]*
Sqrt[e]*(-1 + c^2*x^2))] + 6*b*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]*
(b*Cos[2*ArcSin[c*x]] + 2*a*Sin[2*ArcSin[c*x]]) + 6*b*Sqrt[d + c*d*x]*Sqrt[
e - c*e*x]*ArcSin[c*x]^2*(2*a + b*Sin[2*ArcSin[c*x]]) + 3*Sqrt[d + c*d*x]*S
qrt[e - c*e*x]*(4*a^2*c*x*Sqrt[1 - c^2*x^2] + 2*a*b*Cos[2*ArcSin[c*x]] - b^
2*Sin[2*ArcSin[c*x]]))/(24*c*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 1.40, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)\sqrt{cdx+d}\,\sqrt{-cex+e}\,,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2,x, algorithm
="fricas")
```

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(c*d*x + d)*sqrt
(-c*e*x + e), x)
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2,x, algorithm
="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(t_nostep)]Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Warning, integration of abs or sign assumes constant sign by intervals (cor
rect if the argument is real):Check [abs(t_nostep)]Warning, integration of
abs or sign assumes constant sign by intervals (correct if the argument is
real):Check [abs(t_nostep)]Simplification assuming t_nostep near 0Simplific
ation assuming t_nostep near 0Simplification assuming t_nostep near 0Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Simplification assuming t_nostep near 0Warning, integration of abs or sign
assumes constant sign by intervals (correct if the argument is real):Check
[abs(t_nostep)]Warning, integration of abs or sign assumes constant sign by
 intervals (correct if the argument is real):Check [abs(t_nostep)]sym2poly/
r2sym(const gen & e,const index_m & i,const vecteur & l) Error: Bad Argumen
t Value
```

maple [**F**] time = 0.31, size = 0, normalized size = 0.00

$$\int \sqrt{cdx+d}\,\sqrt{-cex+e}\,\left(a+b\arcsin\left(cx\right)\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] int((c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2,x)
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\left(\sqrt{-c^{2}dex^{2}+de}\,x+\frac{de\arcsin\left(cx\right)}{\sqrt{de}\,c}\right)a^{2}+\sqrt{d}\,\sqrt{e}\,\int\left(b^{2}\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)^{2}+2\,ab\arctan\left(cx,\sqrt{c\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2,x, algorithm
="maxima")
```

```
[Out] 1/2*(sqrt(-c^2*d*e*x^2 + d*e)*x + d*e*arcsin(c*x)/(sqrt(d*e)*c))*a^2 + sqrt
(d)*sqrt(e)*integrate((b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2
*a*b*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x +
1), x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,\sqrt{d+c\,d\,x}\,\sqrt{e-c\,e\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2*(d + c*d*x)^(1/2)*(e - c*e*x)^(1/2),x)
```

```
[Out] int((a + b*asin(c*x))^2*(d + c*d*x)^(1/2)*(e - c*e*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{d (cx+1)}\sqrt{-e (cx-1)}\,(a+b\operatorname{asin}(cx))^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(1/2)*(-c*e*x+e)**(1/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(sqrt(d*(c*x + 1))*sqrt(-e*(c*x - 1))*(a + b*asin(c*x))**2, x)
```

3.543 $\int \frac{\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+cdx}}\,dx$

Optimal. Leaf size=230

$$-\frac{2abex\sqrt{1-c^2x^2}}{\sqrt{cdx+d}\sqrt{e-cex}}+\frac{e\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{cdx+d}\sqrt{e-cex}}+\frac{e\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c\sqrt{cdx+d}\sqrt{e-cex}}-\frac{2b^2e\left(1-c^2x^2\right)}{c\sqrt{cdx+d}\sqrt{e-cex}}-\frac{2b}{}$$

```
[Out] -2*b^2*e*(-c^2*x^2+1)/c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+e*(-c^2*x^2+1)*(a+
b*arcsin(c*x))^2/c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-2*a*b*e*x*(-c^2*x^2+1)^
(1/2)/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-2*b^2*e*x*arcsin(c*x)*(-c^2*x^2+1)^(
1/2)/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+1/3*e*(a+b*arcsin(c*x))^3*(-c^2*x^2+1
)^(1/2)/b/c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)
```

Rubi [A] time = 0.44, antiderivative size = 230, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.188$, Rules used = {4673, 4763, 4641, 4677, 4619, 261}

$$-\frac{2abex\sqrt{1-c^2x^2}}{\sqrt{cdx+d}\sqrt{e-cex}}+\frac{e\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{cdx+d}\sqrt{e-cex}}+\frac{e\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c\sqrt{cdx+d}\sqrt{e-cex}}-\frac{2b^2e\left(1-c^2x^2\right)}{c\sqrt{cdx+d}\sqrt{e-cex}}-\frac{2b}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2)/Sqrt[d + c*d*x],x]
```

```
[Out] (-2*a*b*e*x*Sqrt[1 - c^2*x^2])/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) - (2*b^2*e
*(1 - c^2*x^2))/(c*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) - (2*b^2*e*x*Sqrt[1 - c
^2*x^2]*ArcSin[c*x])/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (e*(1 - c^2*x^2)*(
a + b*ArcSin[c*x])^2)/(c*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (e*Sqrt[1 - c^2
*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int \frac{\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+cdx}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(e-cex)\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\,\sqrt{e-cex}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{e\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}} - \frac{cex\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\right) dx}{\sqrt{d+cdx}\,\sqrt{e-cex}}$$

$$= \frac{\left(e\sqrt{1-c^2x^2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\,\sqrt{e-cex}} - \frac{\left(ce\sqrt{1-c^2x^2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\,\sqrt{e-cex}}$$

$$= \frac{e\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c\sqrt{d+cdx}\,\sqrt{e-cex}} + \frac{e\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{d+cdx}\,\sqrt{e-cex}} - \frac{\left(2be\sqrt{1-\right.}{}$$

$$= -\frac{2abex\sqrt{1-c^2x^2}}{\sqrt{d+cdx}\,\sqrt{e-cex}} + \frac{e\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c\sqrt{d+cdx}\,\sqrt{e-cex}} + \frac{e\sqrt{1-c^2x^2}\left(a+b\,\mathrm{s}\right.}{3bc\sqrt{d+cdx}\,\sqrt{e}}$$

$$= -\frac{2abex\sqrt{1-c^2x^2}}{\sqrt{d+cdx}\,\sqrt{e-cex}} - \frac{2b^2ex\sqrt{1-c^2x^2}\sin^{-1}(cx)}{\sqrt{d+cdx}\,\sqrt{e-cex}} + \frac{e\left(1-c^2x^2\right)\left(a+b\sin^{-1}\right.}{c\sqrt{d+cdx}\,\sqrt{e-ce}}$$

$$= -\frac{2abex\sqrt{1-c^2x^2}}{\sqrt{d+cdx}\,\sqrt{e-cex}} - \frac{2b^2e\left(1-c^2x^2\right)}{c\sqrt{d+cdx}\,\sqrt{e-cex}} - \frac{2b^2ex\sqrt{1-c^2x^2}\sin^{-1}(cx)}{\sqrt{d+cdx}\,\sqrt{e-cex}} + \cdots$$

Mathematica [A] time = 1.28, size = 296, normalized size = 1.29

$$\frac{3\sqrt{cdx+d}\,\sqrt{e-cex}\left(a^2\sqrt{1-c^2x^2}-2abcx-2b^2\sqrt{1-c^2x^2}\right)-3a^2\sqrt{d}\,\sqrt{e}\,\sqrt{1-c^2x^2}\tan^{-1}\left(\frac{cx\sqrt{cdx+d}\,\sqrt{e-cex}}{\sqrt{d}\,\sqrt{e}\left(c^2x^2-1\right)}\right)+3b\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2)/Sqrt[d + c*d*x],x]
```

```
[Out] (3*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(-2*a*b*c*x + a^2*Sqrt[1 - c^2*x^2] - 2*
b^2*Sqrt[1 - c^2*x^2]) - 6*b*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(b*c*x - a*Sqr
t[1 - c^2*x^2])*ArcSin[c*x] + 3*b*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*Sq
rt[1 - c^2*x^2])*ArcSin[c*x]^2 + b^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin
[c*x]^3 - 3*a^2*Sqrt[d]*Sqrt[e]*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*
```

```
x]*Sqrt[e - c*e*x])/(Sqrt[d]*Sqrt[e]*(-1 + c^2*x^2))])/(3*c*d*Sqrt[1 - c^2*
x^2])
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b^2 \arcsin\left(cx\right)^2 + 2\,ab \arcsin\left(cx\right) + a^2\right)\sqrt{-cex + e}}{\sqrt{cdx + d}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2*(-c*e*x+e)^(1/2)/(c*d*x+d)^(1/2),x, algorithm
="fricas")
```

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(-c*e*x + e)/sqr
t(c*d*x + d), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2*(-c*e*x+e)^(1/2)/(c*d*x+d)^(1/2),x, algorithm
="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(t_nostep)]Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Warning, integration of abs or sign assumes constant sign by intervals (cor
rect if the argument is real):Check [abs(t_nostep)]Warning, integration of
abs or sign assumes constant sign by intervals (correct if the argument is
real):Check [abs(t_nostep)]Simplification assuming t_nostep near 0Simplific
ation assuming t_nostep near 0Simplification assuming t_nostep near 0Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Simplification assuming t_nostep near 0Warning, integration of abs or sign
assumes constant sign by intervals (correct if the argument is real):Check
[abs(t_nostep)]Warning, integration of abs or sign assumes constant sign by
 intervals (correct if the argument is real):Check [abs(t_nostep)]sym2poly/
r2sym(const gen & e,const index_m & i,const vecteur & l) Error: Bad Argumen
t Value
```

maple [F] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \arcsin\left(cx\right)\right)^2 \sqrt{-cex + e}}{\sqrt{cdx + d}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2*(-c*e*x+e)^(1/2)/(c*d*x+d)^(1/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2*(-c*e*x+e)^(1/2)/(c*d*x+d)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a^2\left(\frac{e \arcsin\left(cx\right)}{cd\sqrt{\frac{e}{d}}} + \frac{\sqrt{-c^2dex^2 + de}}{cd}\right) + \sqrt{d}\,\sqrt{e}\int \frac{\left(b^2 \arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)^2 + 2\,ab \arctan\left(cx, \sqrt{cx+1}\right.\right.}{cdx + d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2*(-c*e*x+e)^(1/2)/(c*d*x+d)^(1/2),x, algorithm
="maxima")
```

```
[Out] a^2*(e*arcsin(c*x)/(c*d*sqrt(e/d)) + sqrt(-c^2*d*e*x^2 + d*e)/(c*d)) + sqrt
(d)*sqrt(e)*integrate((b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2
*a*b*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x +
1)/(c*d*x + d), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))^2\,\sqrt{e-c\,e\,x}}{\sqrt{d+c\,d\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(e - c*e*x)^(1/2))/(d + c*d*x)^(1/2),x)
```

```
[Out] int(((a + b*asin(c*x))^2*(e - c*e*x)^(1/2))/(d + c*d*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-e\,(cx-1)}\,\left(a+b\,\mathrm{asin}\,(cx)\right)^2}{\sqrt{d\,(cx+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2*(-c*e*x+e)**(1/2)/(c*d*x+d)**(1/2),x)
```

```
[Out] Integral(sqrt(-e*(c*x - 1))*(a + b*asin(c*x))**2/sqrt(d*(c*x + 1)), x)
```

3.544 $\int \frac{\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}}\,dx$

Optimal. Leaf size=530

$$-\frac{e^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(cdx+d)^{3/2}(e-cex)^{3/2}}-\frac{2ie^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{c(cdx+d)^{3/2}(e-cex)^{3/2}}-\frac{2e^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(cdx+d)^{3/2}(e-cex)^{3/2}}+\frac{2e}{}$$

```
[Out] -2*e^2*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+
2*e^2*x*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-2
*I*e^2*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^
(3/2)-1/3*e^2*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))^3/b/c/(c*d*x+d)^(3/2)/(-
c*e*x+e)^(3/2)-8*I*b*e^2*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))*arctan(I*c*x+
(-c^2*x^2+1)^(1/2))/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+4*b*e^2*(-c^2*x^2+1)
^(3/2)*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c/(c*d*x+d)^(3/
2)/(-c*e*x+e)^(3/2)+4*I*b^2*e^2*(-c^2*x^2+1)^(3/2)*polylog(2,-I*(I*c*x+(-c^
2*x^2+1)^(1/2)))/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-4*I*b^2*e^2*(-c^2*x^2+1
)^(3/2)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/(c*d*x+d)^(3/2)/(-c*e*x+e
)^(3/2)-2*I*b^2*e^2*(-c^2*x^2+1)^(3/2)*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2)
)^2)/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)
```

Rubi [A] time = 0.95, antiderivative size = 530, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 13, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.406, Rules used = {4673, 4775, 4763, 4651, 4675, 3719, 2190, 2279, 2391, 4677, 4657, 4181, 4641}

$$\frac{4ib^2e^2\left(1-c^2x^2\right)^{3/2}\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{c(cdx+d)^{3/2}(e-cex)^{3/2}}-\frac{4ib^2e^2\left(1-c^2x^2\right)^{3/2}\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{c(cdx+d)^{3/2}(e-cex)^{3/2}}-\frac{2ib^2e^2\left(1-c^2x^2\right)^{3/2}}{c(cdx+}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2)/(d + c*d*x)^(3/2),x]
```

```
[Out] (-2*e^2*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(c*(d + c*d*x)^(3/2)*(e - c*e*
x)^(3/2)) + (2*e^2*x*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/((d + c*d*x)^(3/2
)*(e - c*e*x)^(3/2)) - ((2*I)*e^2*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2
)/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) - (e^2*(1 - c^2*x^2)^(3/2)*(a + b
*ArcSin[c*x])^3)/(3*b*c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) - ((8*I)*b*e^2
*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])])/(c*(d +
 c*d*x)^(3/2)*(e - c*e*x)^(3/2)) + (4*b*e^2*(1 - c^2*x^2)^(3/2)*(a + b*ArcS
in[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(
3/2)) + ((4*I)*b^2*e^2*(1 - c^2*x^2)^(3/2)*PolyLog[2, (-I)*E^(I*ArcSin[c*x]
)])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) - ((4*I)*b^2*e^2*(1 - c^2*x^2)^
(3/2)*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/
2)) - ((2*I)*b^2*e^2*(1 - c^2*x^2)^(3/2)*PolyLog[2, -E^((2*I)*ArcSin[c*x])]
)/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2))
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
```

```
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
```

```
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4775

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}}dx = \frac{\left(1-c^2x^2\right)^{3/2}\int \frac{(e-cex)^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}dx}{(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= \frac{\left(1-c^2x^2\right)^{3/2}\int \left(\frac{2\left(e^2-ce^2x\right)\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}} - \frac{e^2\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\right)dx}{(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= \frac{\left(2\left(1-c^2x^2\right)^{3/2}\right)\int \frac{\left(e^2-ce^2x\right)\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}dx}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{\left(e^2\left(1-c^2x^2\right)^{3/2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right.}{\sqrt{1-c^2x^2}}}{(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= -\frac{e^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{\left(2\left(1-c^2x^2\right)^{3/2}\right)\int \left(\frac{e^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}} - \cdots\right.}{(d+cdx)^{3/2}(e-cex)^{3}}$$

$$= -\frac{e^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{\left(2e^2\left(1-c^2x^2\right)^{3/2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}dx}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \cdots$$

$$= -\frac{2e^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2e^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{e^2\left(\cdots\right.}{\cdots}$$

$$= -\frac{2e^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2e^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{e^2\left(\cdots\right.}{\cdots}$$

$$= -\frac{2e^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2e^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{2ie\cdots}{\cdots}$$

$$= -\frac{2e^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2e^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{2ie\cdots}{\cdots}$$

$$= -\frac{2e^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2e^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{2ie\cdots}{\cdots}$$

$$= -\frac{2e^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2e^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{2ie\cdots}{\cdots}$$

Mathematica [A] time = 4.27, size = 547, normalized size = 1.03

$$3a^2\sqrt{d}\sqrt{e}\tan^{-1}\left(\frac{cx\sqrt{cdx+d}\sqrt{e-cex}}{\sqrt{d}\sqrt{e}\left(c^2x^2-1\right)}\right) - \frac{6a^2\sqrt{cdx+d}\sqrt{e-cex}}{cx+1} - \frac{3ab\sqrt{cdx+d}\sqrt{e-cex}\left(\cos\left(\frac{1}{2}\sin^{-1}(cx)\right)\left(\sin^{-1}(cx)\left(\sin^{-1}(cx)+4\right)-8\log\left(\sin\left(\frac{1}{2}\sin\cdots\right.\right.\right.\right.}{\sqrt{1\cdots}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2)/(d + c*d*x)^(3/2),x]
```

```
[Out] ((-6*a^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(1 + c*x) + 3*a^2*Sqrt[d]*Sqrt[e]
*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(Sqrt[d]*Sqrt[e]*(-1 + c^2*x^
2))] - (3*a*b*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(Cos[ArcSin[c*x]/2]*(ArcSin[c
*x]*(4 + ArcSin[c*x]) - 8*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]) + (
(-4 + ArcSin[c*x])*ArcSin[c*x] - 8*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]
/2]])*Sin[ArcSin[c*x]/2]))/(Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] + Sin[Arc
Sin[c*x]/2])) + (b^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*((-6 - 6*I)*ArcSin[c*x
]^2*(Cos[ArcSin[c*x]/2] + I*Sin[ArcSin[c*x]/2]) - ArcSin[c*x]^3*(Cos[ArcSin
```

```
[c*x]/2] + Sin[ArcSin[c*x]/2]) + 6*ArcSin[c*x]*(I*Pi + 4*Log[1 - I*E^(I*Arc
Sin[c*x])])*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]) + 12*Pi*(2*Log[1 + E^
((-I)*ArcSin[c*x])] + Log[1 - I*E^(I*ArcSin[c*x])] - 2*Log[Cos[ArcSin[c*x]/
2]] - Log[Sin[(Pi + 2*ArcSin[c*x])/4]])*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*
x]/2]) - (24*I)*PolyLog[2, I*E^(I*ArcSin[c*x])]*(Cos[ArcSin[c*x]/2] + Sin[A
rcSin[c*x]/2])))/(Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2
])))/(3*c*d^2)
```

fricas [F] time = 0.66, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b^2\arcsin\left(cx\right)^2+2\,ab\arcsin\left(cx\right)+a^2\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{c^2d^2x^2+2\,cd^2x+d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2*(-c*e*x+e)^(1/2)/(c*d*x+d)^(3/2),x, algorithm
="fricas")
```

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(c*d*x + d)*sqrt
(-c*e*x + e)/(c^2*d^2*x^2 + 2*c*d^2*x + d^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\sqrt{-cex+e}\left(b\arcsin\left(cx\right)+a\right)^2}{\left(cdx+d\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2*(-c*e*x+e)^(1/2)/(c*d*x+d)^(3/2),x, algorithm
="giac")
```

```
[Out] integrate(sqrt(-c*e*x + e)*(b*arcsin(c*x) + a)^2/(c*d*x + d)^(3/2), x)
```

maple [F] time = 0.29, size = 0, normalized size = 0.00

$$\int\frac{\left(a+b\arcsin\left(cx\right)\right)^2\sqrt{-cex+e}}{\left(cdx+d\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2*(-c*e*x+e)^(1/2)/(c*d*x+d)^(3/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2*(-c*e*x+e)^(1/2)/(c*d*x+d)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-a^2\left(\frac{2\sqrt{-c^2dex^2+de}}{c^2d^2x+cd^2}+\frac{e\arcsin\left(cx\right)}{cd^2\sqrt{\frac{e}{d}}}\right)+\sqrt{d}\,\sqrt{e}\int\frac{\left(b^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)^2+2\,ab\arctan\left(cx,\sqrt{cx\right.\right.}{c^2d^2x^2+2\,cd^2x+d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2*(-c*e*x+e)^(1/2)/(c*d*x+d)^(3/2),x, algorithm
="maxima")
```

```
[Out] -a^2*(2*sqrt(-c^2*d*e*x^2 + d*e)/(c^2*d^2*x + c*d^2) + e*arcsin(c*x)/(c*d^2
*sqrt(e/d))) + sqrt(d)*sqrt(e)*integrate((b^2*arctan2(c*x, sqrt(c*x + 1)*sq
rt(-c*x + 1))^2 + 2*a*b*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*
x + 1)*sqrt(-c*x + 1)/(c^2*d^2*x^2 + 2*c*d^2*x + d^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\operatorname{asin}(c\,x))^2\,\sqrt{e-c\,e\,x}}{(d+c\,d\,x)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(e - c*e*x)^(1/2))/(d + c*d*x)^(3/2),x)
[Out] int(((a + b*asin(c*x))^2*(e - c*e*x)^(1/2))/(d + c*d*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-e\,(cx-1)}\,\left(a+b\operatorname{asin}(cx)\right)^2}{(d\,(cx+1))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2*(-c*e*x+e)**(1/2)/(c*d*x+d)**(3/2),x)
[Out] Integral(sqrt(-e*(c*x - 1))*(a + b*asin(c*x))**2/(d*(c*x + 1))**(3/2), x)
```

3.545 $\int \frac{\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{5/2}}\,dx$

Optimal. Leaf size=486

$$\frac{ie^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}-\frac{4be^3\left(1-c^2x^2\right)^{5/2}\log\left(1-ie^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}+\frac{e^3\left(1-c^2x^2\right)^{5/2}\text{co}}{3c}$$

```
[Out] 1/3*I*e^3*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(5/2)/(-c*e*x+
e)^(5/2)-4/3*b^2*e^3*(-c^2*x^2+1)^(5/2)*cot(1/4*Pi+1/2*arcsin(c*x))/c/(c*d*
x+d)^(5/2)/(-c*e*x+e)^(5/2)+1/3*e^3*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))^2*
cot(1/4*Pi+1/2*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-2/3*b*e^3*(-
c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))*csc(1/4*Pi+1/2*arcsin(c*x))^2/c/(c*d*x+d
)^(5/2)/(-c*e*x+e)^(5/2)-1/3*e^3*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))^2*cot
(1/4*Pi+1/2*arcsin(c*x))*csc(1/4*Pi+1/2*arcsin(c*x))^2/c/(c*d*x+d)^(5/2)/(-
c*e*x+e)^(5/2)-4/3*b*e^3*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))*ln(1-I*(I*c*x
+(-c^2*x^2+1)^(1/2)))/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+4/3*I*b^2*e^3*(-c^
2*x^2+1)^(5/2)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/(c*d*x+d)^(5/2)/(-
c*e*x+e)^(5/2)
```

Rubi [A] time = 1.12, antiderivative size = 486, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 12, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {4673, 4775, 4773, 3318, 4186, 3767, 8, 4184, 3717, 2190, 2279, 2391}

$$\frac{4ib^2e^3\left(1-c^2x^2\right)^{5/2}\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}+\frac{ie^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}-\frac{4be^3\left(1-c^2x^2\right)^{5/2}\log\left(1-ie^{i}\right.}{3c(cdx+d)^{5/2}(}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2)/(d + c*d*x)^(5/2),x]
```

```
[Out] ((I/3)*e^3*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2)/(c*(d + c*d*x)^(5/2)*
(e - c*e*x)^(5/2)) - (4*b^2*e^3*(1 - c^2*x^2)^(5/2)*Cot[Pi/4 + ArcSin[c*x]/
2])/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) + (e^3*(1 - c^2*x^2)^(5/2)*(a
 + b*ArcSin[c*x])^2*Cot[Pi/4 + ArcSin[c*x]/2])/(3*c*(d + c*d*x)^(5/2)*(e -
c*e*x)^(5/2)) - (2*b*e^3*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])*Csc[Pi/4 +
 ArcSin[c*x]/2]^2)/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (e^3*(1 - c^
2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2*Cot[Pi/4 + ArcSin[c*x]/2]*Csc[Pi/4 + Arc
Sin[c*x]/2]^2)/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (4*b*e^3*(1 - c^
2*x^2)^(5/2)*(a + b*ArcSin[c*x])*Log[1 - I*E^(I*ArcSin[c*x])])/(3*c*(d + c*
d*x)^(5/2)*(e - c*e*x)^(5/2)) + (((4*I)/3)*b^2*e^3*(1 - c^2*x^2)^(5/2)*Poly
Log[2, I*E^(I*ArcSin[c*x])])/(c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2))
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
```

```
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4775

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{5/2}}\,dx = \frac{\left(1-c^2x^2\right)^{5/2}\int \frac{(e-cex)^3\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\,dx}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{\left(1-c^2x^2\right)^{5/2}\int \left(\frac{2e^3\left(a+b\sin^{-1}(cx)\right)^2}{(1+cx)^2\sqrt{1-c^2x^2}}-\frac{e^3\left(a+b\sin^{-1}(cx)\right)^2}{(1+cx)\sqrt{1-c^2x^2}}\right)dx}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= -\frac{\left(e^3\left(1-c^2x^2\right)^{5/2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(1+cx)\sqrt{1-c^2x^2}}\,dx}{(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{\left(2e^3\left(1-c^2x^2\right)^{5/2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right.}{(1+cx)^2\sqrt{1-c^2x}}}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= -\frac{\left(e^3\left(1-c^2x^2\right)^{5/2}\right)\text{Subst}\left(\int \frac{(a+bx)^2}{c+c\sin(x)}\,dx,x,\sin^{-1}(cx)\right)}{(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{\left(2ce^3\left(1-c^2x^2\right)^{5}\right.}{}$$

$$= -\frac{\left(e^3\left(1-c^2x^2\right)^{5/2}\right)\text{Subst}\left(\int (a+bx)^2\csc^2\left(\frac{\pi}{4}+\frac{x}{2}\right)dx,x,\sin^{-1}(cx)\right)}{2c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{\left(e^3\right.}{}$$

$$= \frac{e^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2\cot\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(cx)\right)}{c(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{2be^3\left(1-c^2x^2\right)}{}$$

$$= \frac{ie^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{e^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2\text{co}}{3c(d+cdx)^{5/2}(e-ce}$$

$$= \frac{ie^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{4b^2e^3\left(1-c^2x^2\right)^{5/2}\cot\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(\right.}{3c(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{ie^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{4b^2e^3\left(1-c^2x^2\right)^{5/2}\cot\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(\right.}{3c(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{ie^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{4b^2e^3\left(1-c^2x^2\right)^{5/2}\cot\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(\right.}{3c(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{ie^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{4b^2e^3\left(1-c^2x^2\right)^{5/2}\cot\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(\right.}{3c(d+cdx)^{5/2}(e-cex)^{5/2}}$$

Mathematica [A] time = 8.23, size = 698, normalized size = 1.44

$$\frac{\sqrt{d(cx+1)}\sqrt{-e(cx-1)}\left(\frac{a^2}{3d^3(cx+1)}-\frac{2a^2}{3d^3(cx+1)^2}\right)}{c} - \frac{ab\sqrt{cdx+d}\sqrt{e-cex}\sqrt{-de\left(1-c^2x^2\right)}\left(\cos\left(\frac{1}{2}\sin^{-1}(cx)\right)-\text{si}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2)/(d + c*d*x)^(5/2),x]
```

```
[Out] (Sqrt[-(e*(-1 + c*x))]*Sqrt[d*(1 + c*x)]*((-2*a^2)/(3*d^3*(1 + c*x)^2) + a^
2/(3*d^3*(1 + c*x))))/c - (a*b*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[-(d*e*(
1 - c^2*x^2))]*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])*(Cos[(3*ArcSin[c*x
])/2]*(ArcSin[c*x] + 2*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]) - Cos[
ArcSin[c*x]/2]*(4 + 3*ArcSin[c*x] + 6*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c
*x]/2]]) + 2*(-2 + 2*ArcSin[c*x] + Sqrt[1 - c^2*x^2]*ArcSin[c*x] - 4*Log[Co
s[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]] - 2*Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin
[c*x]/2] + Sin[ArcSin[c*x]/2]])*Sin[ArcSin[c*x]/2]))/(3*c*d^3*(-1 + c*x)*Sq
rt[(-d - c*d*x)*(e - c*e*x)]*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^4) -
 (b^2*(-1 + c*x)*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[-(d*e*(1 - c^2*x^2))]
*((-I)*Pi*ArcSin[c*x] + (1 + I)*ArcSin[c*x]^2 - 4*Pi*Log[1 + E^((-I)*ArcSin
[c*x])] - 2*(Pi + 2*ArcSin[c*x])*Log[1 - I*E^(I*ArcSin[c*x])] + 4*Pi*Log[Co
s[ArcSin[c*x]/2]] + 2*Pi*Log[Sin[(Pi + 2*ArcSin[c*x])/4]] + (4*I)*PolyLog[2
, I*E^(I*ArcSin[c*x])] + (4*ArcSin[c*x]^2*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c
*x]/2] + Sin[ArcSin[c*x]/2])^3 - (2*ArcSin[c*x]*(2 + ArcSin[c*x]))/(Cos[Arc
Sin[c*x]/2] + Sin[ArcSin[c*x]/2])^2 - (2*(-4 + ArcSin[c*x]^2)*Sin[ArcSin[c*
x]/2])/(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])))/(3*c*d^3*Sqrt[(-d - c*d*
x)*(e - c*e*x)]*Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])
^2)
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b^2 \arcsin\left(cx\right)^2 + 2\,ab \arcsin\left(cx\right) + a^2\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{c^3d^3x^3 + 3\,c^2d^3x^2 + 3\,cd^3x + d^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2*(-c*e*x+e)^(1/2)/(c*d*x+d)^(5/2),x, algorithm
="fricas")
```

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(c*d*x + d)*sqrt
(-c*e*x + e)/(c^3*d^3*x^3 + 3*c^2*d^3*x^2 + 3*c*d^3*x + d^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-cex+e}\left(b \arcsin\left(cx\right) + a\right)^2}{\left(cdx+d\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2*(-c*e*x+e)^(1/2)/(c*d*x+d)^(5/2),x, algorithm
="giac")
```

```
[Out] integrate(sqrt(-c*e*x + e)*(b*arcsin(c*x) + a)^2/(c*d*x + d)^(5/2), x)
```

maple [F] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \arcsin\left(cx\right)\right)^2 \sqrt{-cex+e}}{\left(cdx+d\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2*(-c*e*x+e)^(1/2)/(c*d*x+d)^(5/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2*(-c*e*x+e)^(1/2)/(c*d*x+d)^(5/2),x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2*(-c*e*x+e)^(1/2)/(c*d*x+d)^(5/2),x, algorithm
="maxima")
```

```
[Out] Timed out
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^2\,\sqrt{e-c\,e\,x}}{{\left(d+c\,d\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(e - c*e*x)^(1/2))/(d + c*d*x)^(5/2),x)
```

```
[Out] int(((a + b*asin(c*x))^2*(e - c*e*x)^(1/2))/(d + c*d*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2*(-c*e*x+e)**(1/2)/(c*d*x+d)**(5/2),x)
```

```
[Out] Timed out
```

3.546 $\int (d+cdx)^{5/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=697

$$-\frac{3bcdx^2(cdx+d)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{8\left(1-c^2x^2\right)^{3/2}}+\frac{3dx(cdx+d)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{8\left(1-c^2x^2\right)}+\frac{2bdx(cdx+d)^{3/}}{5}$$

```
[Out] 8/225*b^2*d*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)/c-1/32*b^2*d*x*(c*d*x+d)^(3/2)
*(-c*e*x+e)^(3/2)+16/75*b^2*d*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)/c/(-c^2*x^2+
1)-15/64*b^2*d*x*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)/(-c^2*x^2+1)+2/125*b^2*d*
(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(-c^2*x^2+1)/c+9/64*b^2*d*(c*d*x+d)^(3/2)*
(-c*e*x+e)^(3/2)*arcsin(c*x)/c/(-c^2*x^2+1)^(3/2)+2/5*b*d*x*(c*d*x+d)^(3/2)
*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))/(-c^2*x^2+1)^(3/2)-3/8*b*c*d*x^2*(c*d*x
+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))/(-c^2*x^2+1)^(3/2)-4/15*b*c^2*
d*x^3*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))/(-c^2*x^2+1)^(3/2)
+2/25*b*c^4*d*x^5*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))/(-c^2*
x^2+1)^(3/2)+1/4*d*x*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2+3
/8*d*x*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/(-c^2*x^2+1)-1/
5*d*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2/c+1/8
*d*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^3/b/c/(-c^2*x^2+1)^(3
/2)+1/8*b*d*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))*(-c^2*x^2+1)
^(1/2)/c
```

Rubi [A] time = 0.80, antiderivative size = 697, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 15, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.469, Rules used = {4673, 4763, 4649, 4647, 4641, 4627, 321, 216, 4677, 195, 194, 4645, 12, 1247, 698}

$$\frac{2bc^4dx^5(cdx+d)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{25\left(1-c^2x^2\right)^{3/2}}-\frac{4bc^2dx^3(cdx+d)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{15\left(1-c^2x^2\right)^{3/2}}-\frac{3bcdx^2(cdx+}{}$$

Antiderivative was successfully verified.

```
[In] Int[(d + c*d*x)^(5/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (8*b^2*d*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2))/(225*c) - (b^2*d*x*(d + c*d*x
)^(3/2)*(e - c*e*x)^(3/2))/32 + (16*b^2*d*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/
2))/(75*c*(1 - c^2*x^2)) - (15*b^2*d*x*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2))
/(64*(1 - c^2*x^2)) + (2*b^2*d*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(1 - c^2
*x^2))/(125*c) + (9*b^2*d*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*ArcSin[c*x])/
(64*c*(1 - c^2*x^2)^(3/2)) + (2*b*d*x*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(
a + b*ArcSin[c*x]))/(5*(1 - c^2*x^2)^(3/2)) - (3*b*c*d*x^2*(d + c*d*x)^(3/2
)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x]))/(8*(1 - c^2*x^2)^(3/2)) - (4*b*c^2
*d*x^3*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x]))/(15*(1 - c^
2*x^2)^(3/2)) + (2*b*c^4*d*x^5*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(a + b*A
rcSin[c*x]))/(25*(1 - c^2*x^2)^(3/2)) + (b*d*(d + c*d*x)^(3/2)*(e - c*e*x)^
(3/2)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(8*c) + (d*x*(d + c*d*x)^(3/2)
*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2)/4 + (3*d*x*(d + c*d*x)^(3/2)*(e -
 c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2)/(8*(1 - c^2*x^2)) - (d*(d + c*d*x)^(3/
2)*(e - c*e*x)^(3/2)*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(5*c) + (d*(d + c
*d*x)^(3/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^3)/(8*b*c*(1 - c^2*x^2)^(
3/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 698

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 1247

```
Int[(x_)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(
p_.), x_Symbol] :> Dist[1/2, Subst[Int[(d + e*x)^q*(a + b*x + c*x^2)^p, x],
 x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int (d+cdx)^{5/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx = \frac{\left((d+cdx)^{3/2}(e-cex)^{3/2}\right)\int (d+cdx)\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}\right.}{\left(1-c^2x^2\right)^{3/2}}$$

$$= \frac{\left((d+cdx)^{3/2}(e-cex)^{3/2}\right)\int \left(d\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\right.}{\left(1-c^2x^2\right)^{3/2}}$$

$$= \frac{\left(d(d+cdx)^{3/2}(e-cex)^{3/2}\right)\int \left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}$$

$$= \frac{1}{4}dx(d+cdx)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2 - \frac{d(d+cdx)^{3/2}}{}$$

$$= \frac{2bdx(d+cdx)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{5\left(1-c^2x^2\right)^{3/2}} - \frac{4bc^2dx^3(d+}{}$$

$$= -\frac{1}{32}b^2dx(d+cdx)^{3/2}(e-cex)^{3/2} + \frac{2bdx(d+cdx)^{3/2}(e-cex)^{}}{5\left(1-c^2x^2\right.}$$

$$= -\frac{1}{32}b^2dx(d+cdx)^{3/2}(e-cex)^{3/2} - \frac{15b^2dx(d+cdx)^{3/2}(e-ce}{64\left(1-c^2x^2\right)}$$

$$= -\frac{1}{32}b^2dx(d+cdx)^{3/2}(e-cex)^{3/2} - \frac{15b^2dx(d+cdx)^{3/2}(e-ce}{64\left(1-c^2x^2\right)}$$

$$= \frac{8b^2d(d+cdx)^{3/2}(e-cex)^{3/2}}{225c} - \frac{1}{32}b^2dx(d+cdx)^{3/2}(e-cex)^{3/2}$$

Mathematica [A] time = 4.04, size = 574, normalized size = 0.82

$$\frac{d^2e\left(\sqrt{cdx+d}\,\sqrt{e-cex}\left(-15\left(480a^2\sqrt{1-c^2x^2}\left(8c^4x^4+10c^3x^3-16c^2x^2-25cx+8\right)-512abcx\left(3c^4x^4-10c^2\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + c*d*x)^(5/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (d^2*e*(36000*b^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^3 - 108000*a^
2*Sqrt[d]*Sqrt[e]*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c*
e*x])/(Sqrt[d]*Sqrt[e]*(-1 + c^2*x^2))] + 1800*b*Sqrt[d + c*d*x]*Sqrt[e - c
*e*x]*ArcSin[c*x]^2*(-10*b*Cos[3*ArcSin[c*x]] - 2*b*Cos[5*ArcSin[c*x]] + 5*
(12*a - 4*b*Sqrt[1 - c^2*x^2] + 8*b*Sin[2*ArcSin[c*x]] + b*Sin[4*ArcSin[c*x
]])) + Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(72000*a*b*Cos[2*ArcSin[c*x]] + 4000
*b^2*Cos[3*ArcSin[c*x]] + 4500*a*b*Cos[4*ArcSin[c*x]] + 288*b^2*Cos[5*ArcSi
n[c*x]] - 15*(-4800*b^2*Sqrt[1 - c^2*x^2] - 512*a*b*c*x*(15 - 10*c^2*x^2 +
3*c^4*x^4) + 480*a^2*Sqrt[1 - c^2*x^2]*(8 - 25*c*x - 16*c^2*x^2 + 10*c^3*x^
3 + 8*c^4*x^4) + 2400*b^2*Sin[2*ArcSin[c*x]] + 75*b^2*Sin[4*ArcSin[c*x]]))
- 60*b*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]*(-1200*b*Cos[2*ArcSin[c*
x]] - 75*b*Cos[4*ArcSin[c*x]] - 4*(300*b*c*x - 480*a*Sqrt[1 - c^2*x^2] + 96
0*a*c^2*x^2*Sqrt[1 - c^2*x^2] - 480*a*c^4*x^4*Sqrt[1 - c^2*x^2] + 600*a*Sin
```

```
[2*ArcSin[c*x]] + 50*b*Sin[3*ArcSin[c*x]] + 75*a*Sin[4*ArcSin[c*x]] + 6*b*S
in[5*ArcSin[c*x]]))))/(288000*c*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(a^2c^3d^2ex^3 + a^2c^2d^2ex^2 - a^2cd^2ex - a^2d^2e + \left(b^2c^3d^2ex^3 + b^2c^2d^2ex^2 - b^2cd^2ex - b^2d^2e\right)\arcsin(cx)^2 + \right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm
="fricas")
```

```
[Out] integral(-(a^2*c^3*d^2*e*x^3 + a^2*c^2*d^2*e*x^2 - a^2*c*d^2*e*x - a^2*d^2*
e + (b^2*c^3*d^2*e*x^3 + b^2*c^2*d^2*e*x^2 - b^2*c*d^2*e*x - b^2*d^2*e)*arc
sin(c*x)^2 + 2*(a*b*c^3*d^2*e*x^3 + a*b*c^2*d^2*e*x^2 - a*b*c*d^2*e*x - a*b
*d^2*e)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*e*x + e), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm
="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(t_nostep)]Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Warning, integration of abs or sign assumes constant sign by intervals (cor
rect if the argument is real):Check [abs(t_nostep)]Warning, integration of
abs or sign assumes constant sign by intervals (correct if the argument is
real):Check [abs(t_nostep)]Simplification assuming t_nostep near 0Simplific
ation assuming t_nostep near 0Simplification assuming t_nostep near 0Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Simplification assuming t_nostep near 0Warning, integration of abs or sign
assumes constant sign by intervals (correct if the argument is real):Check
[abs(t_nostep)]Simplification assuming t_nostep near 0Simplification assumi
ng t_nostep near 0Simplification assuming t_nostep near 0Simplification ass
uming t_nostep near 0Simplification assuming t_nostep near 0Simplification
assuming t_nostep near 0Simplification assuming t_nostep near 0Simplificati
on assuming t_nostep near 0Warning, integration of abs or sign assumes cons
tant sign by intervals (correct if the argument is real):Check [abs(t_noste
p)]Simplification assuming t_nostep near 0Simplification assuming t_nostep
near 0Simplification assuming t_nostep near 0Simplification assuming t_nost
ep near 0Simplification assuming t_nostep near 0Simplification assuming t_n
ostep near 0Simplification assuming t_nostep near 0Simplification assuming
t_nostep near 0Warning, integration of abs or sign assumes constant sign by
 intervals (correct if the argument is real):Check [abs(t_nostep)]Simplific
ation assuming t_nostep near 0Simplification assuming t_nostep near 0Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Simplification assuming t_nostep near 0Simplification assuming t_nostep nea
r 0Warning, integration of abs or sign assumes constant sign by intervals (
correct if the argument is real):Check [abs(t_nostep)]Warning, integration
of abs or sign assumes constant sign by intervals (correct if the argument
is real):Check [abs(t_nostep)]sym2poly/r2sym(const gen & e,const index_m &
i,const vecteur & l) Error: Bad Argument Value
```

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int (cdx+d)^{\frac{5}{2}} (-cex+e)^{\frac{3}{2}} (a+b\arcsin (cx))^{2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(5/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] int((c*d*x+d)^(5/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{40}\left(15\sqrt{-c^2dex^2+de}\,d^2ex + \frac{15\,d^3e^2\arcsin(cx)}{\sqrt{de}\,c} + 10\left(-c^2dex^2+de\right)^{\frac{3}{2}}dx - \frac{8\left(-c^2dex^2+de\right)^{\frac{5}{2}}}{ce}\right)a^2 + \sqrt{d}\,\sqrt{e}\int -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm
="maxima")
```

```
[Out] 1/40*(15*sqrt(-c^2*d*e*x^2 + d*e)*d^2*e*x + 15*d^3*e^2*arcsin(c*x)/(sqrt(d*
e)*c) + 10*(-c^2*d*e*x^2 + d*e)^(3/2)*d*x - 8*(-c^2*d*e*x^2 + d*e)^(5/2)/(c
*e))*a^2 + sqrt(d)*sqrt(e)*integrate(-((b^2*c^3*d^2*e*x^3 + b^2*c^2*d^2*e*x
^2 - b^2*c*d^2*e*x - b^2*d^2*e)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^
2 + 2*(a*b*c^3*d^2*e*x^3 + a*b*c^2*d^2*e*x^2 - a*b*c*d^2*e*x - a*b*d^2*e)*a
rctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(d+c\,d\,x\right)}^{5/2}\,{\left(e-c\,e\,x\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2*(d + c*d*x)^(5/2)*(e - c*e*x)^(3/2),x)
```

```
[Out] int((a + b*asin(c*x))^2*(d + c*d*x)^(5/2)*(e - c*e*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(5/2)*(-c*e*x+e)**(3/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Timed out
```

3.547 $\int (d+cdx)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=362

$$\frac{(cdx+d)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^3}{8bc\left(1-c^2x^2\right)^{3/2}}+\frac{3x(cdx+d)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{8\left(1-c^2x^2\right)}+\frac{b\sqrt{1-c^2x^2}\,(cdx+d)^{3/2}(\cdots}{\cdots}$$

```
[Out] -1/32*b^2*x*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)-15/64*b^2*x*(c*d*x+d)^(3/2)*(-
c*e*x+e)^(3/2)/(-c^2*x^2+1)+9/64*b^2*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*arcsi
n(c*x)/c/(-c^2*x^2+1)^(3/2)-3/8*b*c*x^2*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a
+b*arcsin(c*x))/(-c^2*x^2+1)^(3/2)+1/4*x*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(
a+b*arcsin(c*x))^2+3/8*x*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))
^2/(-c^2*x^2+1)+1/8*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^3/b/
c/(-c^2*x^2+1)^(3/2)+1/8*b*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x
))*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.43, antiderivative size = 362, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 9, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.281, Rules used = {4673, 4649, 4647, 4641, 4627, 321, 216, 4677, 195}

$$\frac{(cdx+d)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^3}{8bc\left(1-c^2x^2\right)^{3/2}}+\frac{3x(cdx+d)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{8\left(1-c^2x^2\right)}+\frac{b\sqrt{1-c^2x^2}\,(cdx+d)^{3/2}(\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -(b^2*x*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2))/32 - (15*b^2*x*(d + c*d*x)^(3/
2)*(e - c*e*x)^(3/2))/(64*(1 - c^2*x^2)) + (9*b^2*(d + c*d*x)^(3/2)*(e - c*
e*x)^(3/2)*ArcSin[c*x])/(64*c*(1 - c^2*x^2)^(3/2)) - (3*b*c*x^2*(d + c*d*x)
^(3/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x]))/(8*(1 - c^2*x^2)^(3/2)) + (b*
(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/
(8*c) + (x*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2)/4 + (
3*x*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2)/(8*(1 - c^2*
x^2)) + ((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^3)/(8*b*c*
(1 - c^2*x^2)^(3/2))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (d+cdx)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx = \frac{\left((d+cdx)^{3/2}(e-cex)^{3/2}\right)\int\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\left(1-c^2x^2\right)^{3/2}}$$

$$= \frac{1}{4}x(d+cdx)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2 + \frac{\left(3(d+cdx)^{3/2}(e\right.}{}$$

$$= \frac{b(d+cdx)^{3/2}(e-cex)^{3/2}\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{8c} + \frac{1}{4}x(d+c$$

$$= -\frac{1}{32}b^2x(d+cdx)^{3/2}(e-cex)^{3/2} - \frac{3bcx^2(d+cdx)^{3/2}(e-cex)^{3/2}\left(\right.}{8\left(1-c^2x^2\right)^{3/2}}$$

$$= -\frac{1}{32}b^2x(d+cdx)^{3/2}(e-cex)^{3/2} - \frac{15b^2x(d+cdx)^{3/2}(e-cex)^{3/2}}{64\left(1-c^2x^2\right)} -$$

$$= -\frac{1}{32}b^2x(d+cdx)^{3/2}(e-cex)^{3/2} - \frac{15b^2x(d+cdx)^{3/2}(e-cex)^{3/2}}{64\left(1-c^2x^2\right)} -$$

Mathematica [A] time = 2.06, size = 373, normalized size = 1.03

$$de\sqrt{cdx+d}\,\sqrt{e-cex}\left(160a^2cx\sqrt{1-c^2x^2} - 64a^2c^3x^3\sqrt{1-c^2x^2} + 64ab\cos\left(2\sin^{-1}(cx)\right) + 4ab\cos\left(4\sin^{-1}(cx)\right) -\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (32*b^2*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^3 - 96*a^2*d^(3/2)*
e^(3/2)*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(Sqr
t[d]*Sqrt[e]*(-1 + c^2*x^2))] + 8*b*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Arc
Sin[c*x]^2*(12*a + 8*b*Sin[2*ArcSin[c*x]] + b*Sin[4*ArcSin[c*x]]) + d*e*Sqr
t[d + c*d*x]*Sqrt[e - c*e*x]*(160*a^2*c*x*Sqrt[1 - c^2*x^2] - 64*a^2*c^3*x^
3*Sqrt[1 - c^2*x^2] + 64*a*b*Cos[2*ArcSin[c*x]] + 4*a*b*Cos[4*ArcSin[c*x]]
- 32*b^2*Sin[2*ArcSin[c*x]] - b^2*Sin[4*ArcSin[c*x]]) + 4*b*d*e*Sqrt[d + c*
d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]*(16*b*Cos[2*ArcSin[c*x]] + b*Cos[4*ArcSin[
c*x]] + 4*a*(8*Sin[2*ArcSin[c*x]] + Sin[4*ArcSin[c*x]])))/(256*c*Sqrt[1 - c
^2*x^2])
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(a^2c^2dex^2 - a^2de + \left(b^2c^2dex^2 - b^2de\right)\arcsin(cx)^2 + 2\left(abc^2dex^2 - abde\right)\arcsin(cx)\right)\sqrt{cdx+d}\,\sqrt{-cex}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm
="fricas")
```

```
[Out] integral(-(a^2*c^2*d*e*x^2 - a^2*d*e + (b^2*c^2*d*e*x^2 - b^2*d*e)*arcsin(c
*x)^2 + 2*(a*b*c^2*d*e*x^2 - a*b*d*e)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*
e*x + e), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm
="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(t_nostep)]Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Warning, integration of abs or sign assumes constant sign by intervals (cor
rect if the argument is real):Check [abs(t_nostep)]Warning, integration of
abs or sign assumes constant sign by intervals (correct if the argument is
real):Check [abs(t_nostep)]Simplification assuming t_nostep near 0Simplific
ation assuming t_nostep near 0Simplification assuming t_nostep near 0Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Simplification assuming t_nostep near 0Warning, integration of abs or sign
assumes constant sign by intervals (correct if the argument is real):Check
[abs(t_nostep)]Simplification assuming t_nostep near 0Simplification assumi
ng t_nostep near 0Simplification assuming t_nostep near 0Simplification ass
uming t_nostep near 0Simplification assuming t_nostep near 0Simplification
assuming t_nostep near 0Simplification assuming t_nostep near 0Simplificati
on assuming t_nostep near 0Warning, integration of abs or sign assumes cons
tant sign by intervals (correct if the argument is real):Check [abs(t_noste
p)]Warning, integration of abs or sign assumes constant sign by intervals (
correct if the argument is real):Check [abs(t_nostep)]sym2poly/r2sym(const
gen & e,const index_m & i,const vecteur & l) Error: Bad Argument Value
```

maple [F] time = 0.30, size = 0, normalized size = 0.00

$$\int \left(cdx+d\right)^{\frac{3}{2}} \left(-cex+e\right)^{\frac{3}{2}} \left(a+b\arcsin\left(cx\right)\right)^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] int((c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{8}\left(3\sqrt{-c^{2}dex^{2}+de}\,dex+\frac{3\,d^{2}e^{2}\arcsin\left(cx\right)}{\sqrt{de}\,c}+2\left(-c^{2}dex^{2}+de\right)^{\frac{3}{2}}x\right)a^{2}+\sqrt{d}\,\sqrt{e}\int -\left(\left(b^{2}c^{2}dex^{2}-b^{2}de\right)\arctan\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm
="maxima")
```

```
[Out] 1/8*(3*sqrt(-c^2*d*e*x^2 + d*e)*d*e*x + 3*d^2*e^2*arcsin(c*x)/(sqrt(d*e)*c)
 + 2*(-c^2*d*e*x^2 + d*e)^(3/2)*x)*a^2 + sqrt(d)*sqrt(e)*integrate(-((b^2*c
^2*d*e*x^2 - b^2*d*e)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b
*c^2*d*e*x^2 - a*b*d*e)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*
x + 1)*sqrt(-c*x + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(d+c\,d\,x\right)}^{3/2}\,{\left(e-c\,e\,x\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2),x)
```

```
[Out] int((a + b*asin(c*x))^2*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(3/2)*(-c*e*x+e)**(3/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Timed out
```

3.548 $\int \sqrt{d+cdx}\,(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=455

$$-\frac{bcex^2\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{1-c^2x^2}}-\frac{2bex\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)}{3\sqrt{1-c^2x^2}}+\frac{e\sqrt{cdx+d}\,\sqrt{e-cex}\,(}{6bc\sqrt{1-}}$$

```
[Out] -4/9*b^2*e*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/c-1/4*b^2*e*x*(c*d*x+d)^(1/2)*(
-c*e*x+e)^(1/2)-2/27*b^2*e*(-c^2*x^2+1)*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/c+
1/2*e*x*(a+b*arcsin(c*x))^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)+1/3*e*(-c^2*x^
2+1)*(a+b*arcsin(c*x))^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/c+1/4*b^2*e*arcsi
n(c*x)*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/c/(-c^2*x^2+1)^(1/2)-2/3*b*e*x*(a+b
*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)-1/2*b*c*e
*x^2*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)+
2/9*b*c^2*e*x^3*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^
2+1)^(1/2)+1/6*e*(a+b*arcsin(c*x))^3*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/b/c/(
-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.59, antiderivative size = 455, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 11, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.344, Rules used = {4673, 4763, 4647, 4641, 4627, 321, 216, 4677, 4645, 444, 43}

$$\frac{2bc^2ex^3\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)}{9\sqrt{1-c^2x^2}}-\frac{bcex^2\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{1-c^2x^2}}-\frac{2bex\sqrt{cdx+d}\,\sqrt{e-}}{3\sqrt{1-}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d + c*d*x]*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (-4*b^2*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(9*c) - (b^2*e*x*Sqrt[d + c*d*x]
*Sqrt[e - c*e*x])/4 - (2*b^2*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(1 - c^2*x^2
))/(27*c) + (b^2*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x])/(4*c*Sqrt[1
 - c^2*x^2]) - (2*b*e*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])
)/(3*Sqrt[1 - c^2*x^2]) - (b*c*e*x^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b
*ArcSin[c*x]))/(2*Sqrt[1 - c^2*x^2]) + (2*b*c^2*e*x^3*Sqrt[d + c*d*x]*Sqrt[
e - c*e*x]*(a + b*ArcSin[c*x]))/(9*Sqrt[1 - c^2*x^2]) + (e*x*Sqrt[d + c*d*x
]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2)/2 + (e*Sqrt[d + c*d*x]*Sqrt[e - c*
e*x]*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(3*c) + (e*Sqrt[d + c*d*x]*Sqrt[e
 - c*e*x]*(a + b*ArcSin[c*x])^3)/(6*b*c*Sqrt[1 - c^2*x^2])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
```

```
+ 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 444

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
```

```
b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int \sqrt{d+cdx}\,(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx = \frac{\left(\sqrt{d+cdx}\,\sqrt{e-cex}\right)\int(e-cex)\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(\sqrt{d+cdx}\,\sqrt{e-cex}\right)\int\left(e\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^2-cex\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(e\sqrt{d+cdx}\,\sqrt{e-cex}\right)\int\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}} - \frac{(c}{}$$

$$= \frac{1}{2}ex\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)^2 + \frac{e\sqrt{d+cdx}\,\sqrt{e-c}}{}$$

$$= -\frac{2bex\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)}{3\sqrt{1-c^2x^2}} - \frac{bcex^2\sqrt{d+cdx}}{2}$$

$$= -\frac{1}{4}b^2ex\sqrt{d+cdx}\,\sqrt{e-cex} - \frac{2bex\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\,\mathrm{si}\right.}{3\sqrt{1-c^2x^2}}$$

$$= -\frac{1}{4}b^2ex\sqrt{d+cdx}\,\sqrt{e-cex} + \frac{b^2e\sqrt{d+cdx}\,\sqrt{e-cex}\,\sin^{-1}(cx)}{4c\sqrt{1-c^2x^2}}$$

$$= -\frac{4b^2e\sqrt{d+cdx}\,\sqrt{e-cex}}{9c} - \frac{1}{4}b^2ex\sqrt{d+cdx}\,\sqrt{e-cex} - \frac{2b^2e}{}$$

Mathematica [A] time = 2.06, size = 440, normalized size = 0.97

$$\frac{e\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(-3\left(4\left(3a^2\sqrt{1-c^2x^2}\,\left(2c^2x^2-3cx-2\right)-4abcx\left(c^2x^2-3\right)+9b^2\sqrt{1-c^2x^2}\right)+9b^2\sin\left(2\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d + c*d*x]*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (36*b^2*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^3 - 108*a^2*Sqrt[d]*e
^(3/2)*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(Sqrt
[d]*Sqrt[e]*(-1 + c^2*x^2))] + 18*b*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSi
n[c*x]^2*(6*a + 3*b*Sqrt[1 - c^2*x^2] + b*Cos[3*ArcSin[c*x]] + 3*b*Sin[2*Ar
cSin[c*x]]) + e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(54*a*b*Cos[2*ArcSin[c*x]]
- 4*b^2*Cos[3*ArcSin[c*x]] - 3*(4*(9*b^2*Sqrt[1 - c^2*x^2] - 4*a*b*c*x*(-3
+ c^2*x^2) + 3*a^2*Sqrt[1 - c^2*x^2]*(-2 - 3*c*x + 2*c^2*x^2)) + 9*b^2*Sin[
2*ArcSin[c*x]])) - 6*b*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]*(-9*b*
Cos[2*ArcSin[c*x]] + 2*(9*b*c*x - 12*a*Sqrt[1 - c^2*x^2] + 12*a*c^2*x^2*Sqr
t[1 - c^2*x^2] - 9*a*Sin[2*ArcSin[c*x]] + b*Sin[3*ArcSin[c*x]])))/(216*c*Sq
rt[1 - c^2*x^2])
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(-\left(a^2cex-a^2e+\left(b^2cex-b^2e\right)\arcsin(cx)^2+2\,(abcex-abe)\arcsin(cx)\right)\sqrt{cdx+d}\,\sqrt{-cex+e}\,,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm
="fricas")
```

```
[Out] integral(-(a^2*c*e*x - a^2*e + (b^2*c*e*x - b^2*e)*arcsin(c*x)^2 + 2*(a*b*c
*e*x - a*b*e)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*e*x + e), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm
="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(t_nostep)]Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Warning, integration of abs or sign assumes constant sign by intervals (cor
rect if the argument is real):Check [abs(t_nostep)]Warning, integration of
abs or sign assumes constant sign by intervals (correct if the argument is
real):Check [abs(t_nostep)]Simplification assuming t_nostep near 0Simplific
ation assuming t_nostep near 0Simplification assuming t_nostep near 0Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Simplification assuming t_nostep near 0Warning, integration of abs or sign
assumes constant sign by intervals (correct if the argument is real):Check
[abs(t_nostep)]Simplification assuming t_nostep near 0Simplification assumi
ng t_nostep near 0Simplification assuming t_nostep near 0Simplification ass
uming t_nostep near 0Simplification assuming t_nostep near 0Simplification
assuming t_nostep near 0Simplification assuming t_nostep near 0Simplificati
on assuming t_nostep near 0Warning, integration of abs or sign assumes cons
tant sign by intervals (correct if the argument is real):Check [abs(t_noste
p)]Warning, integration of abs or sign assumes constant sign by intervals (
correct if the argument is real):Check [abs(t_nostep)]sym2poly/r2sym(const
gen & e,const index_m & i,const vecteur & l) Error: Bad Argument Value
```

maple [F] time = 0.32, size = 0, normalized size = 0.00

$$\int \sqrt{cdx+d}\,\left(-cex+e\right)^{\frac{3}{2}} \left(a+b\arcsin\left(cx\right)\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(1/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] int((c*d*x+d)^(1/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{6}\left(3\sqrt{-c^2dex^2+de}\,ex+\frac{3\,de^2\arcsin\left(cx\right)}{\sqrt{de}\,c}+\frac{2\left(-c^2dex^2+de\right)^{\frac{3}{2}}}{cd}\right)a^2+\sqrt{d}\,\sqrt{e}\int-\left(\left(b^2cex-b^2e\right)\arctan\left(cx,\sqrt{cx+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm
="maxima")
```

```
[Out] 1/6*(3*sqrt(-c^2*d*e*x^2 + d*e)*e*x + 3*d*e^2*arcsin(c*x)/(sqrt(d*e)*c) + 2
*(-c^2*d*e*x^2 + d*e)^(3/2)/(c*d))*a^2 + sqrt(d)*sqrt(e)*integrate(-((b^2*c
*e*x - b^2*e)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c*e*x -
 a*b*e)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x
 + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,\mathrm{asin}(c\,x))^2\,\sqrt{d+c\,d\,x}\,(e-c\,e\,x)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2*(d + c*d*x)^(1/2)*(e - c*e*x)^(3/2),x)
```

```
[Out] int((a + b*asin(c*x))^2*(d + c*d*x)^(1/2)*(e - c*e*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{d\,(cx+1)}\,(-e\,(cx-1))^{\frac{3}{2}}\,(a+b\,\mathrm{asin}\,(cx))^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(1/2)*(-c*e*x+e)**(3/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(sqrt(d*(c*x + 1))*(-e*(c*x - 1))**(3/2)*(a + b*asin(c*x))**2, x)
```

3.549 $\int \frac{(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+cdx}}\,dx$

Optimal. Leaf size=398

$$\frac{e^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{2bc\sqrt{cdx+d}\sqrt{e-cex}}+\frac{2e^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c\sqrt{cdx+d}\sqrt{e-cex}}-\frac{e^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{2\sqrt{cdx+d}\sqrt{e-cex}}+\frac{bce^2x^2\sqrt{1-}}{2\sqrt{cd}}$$

```
[Out] -4*b^2*e^2*(-c^2*x^2+1)/c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+1/4*b^2*e^2*x*(-
c^2*x^2+1)/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+2*e^2*(-c^2*x^2+1)*(a+b*arcsin(
c*x))^2/c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-1/2*e^2*x*(-c^2*x^2+1)*(a+b*arcs
in(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-1/4*b^2*e^2*arcsin(c*x)*(-c^2*x
^2+1)^(1/2)/c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-4*b*e^2*x*(a+b*arcsin(c*x))*
(-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+1/2*b*c*e^2*x^2*(a+b*ar
csin(c*x))*(-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+1/2*e^2*(a+b
*arcsin(c*x))^3*(-c^2*x^2+1)^(1/2)/b/c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)
```

Rubi [A] time = 0.58, antiderivative size = 398, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 9, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.281, Rules used = {4673, 4773, 3317, 3296, 2638, 3311, 32, 2635, 8}

$$\frac{e^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{2bc\sqrt{cdx+d}\sqrt{e-cex}}+\frac{2e^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c\sqrt{cdx+d}\sqrt{e-cex}}-\frac{e^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{2\sqrt{cdx+d}\sqrt{e-cex}}+\frac{bce^2x^2\sqrt{1-}}{2\sqrt{cd}}$$

Antiderivative was successfully verified.

```
[In] Int[((e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2)/Sqrt[d + c*d*x],x]
```

```
[Out] (-4*b^2*e^2*(1 - c^2*x^2))/(c*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (b^2*e^2*x
*(1 - c^2*x^2))/(4*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) - (b^2*e^2*Sqrt[1 - c^2
*x^2]*ArcSin[c*x])/(4*c*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) - (4*b*e^2*x*Sqrt[
1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (b*c*
e^2*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(2*Sqrt[d + c*d*x]*Sqrt[e -
c*e*x]) + (2*e^2*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(c*Sqrt[d + c*d*x]*Sq
rt[e - c*e*x]) - (e^2*x*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(2*Sqrt[d + c*
d*x]*Sqrt[e - c*e*x]) + (e^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3)/(2*b*
c*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rubi steps

$$\int \frac{(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+cdx}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(e-cex)^2\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\sqrt{e-cex}}$$

$$= \frac{\sqrt{1-c^2x^2}\,\mathrm{Subst}\left(\int(a+bx)^2(ce-ce\sin(x))^2\,dx, x, \sin^{-1}(cx)\right)}{c^3\sqrt{d+cdx}\sqrt{e-cex}}$$

$$= \frac{\sqrt{1-c^2x^2}\,\mathrm{Subst}\left(\int\left(c^2e^2(a+bx)^2-2c^2e^2(a+bx)^2\sin(x)+c^2e^2(a+bx)^2\right.\right.}{c^3\sqrt{d+cdx}\sqrt{e-cex}}$$

$$= \frac{e^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{d+cdx}\sqrt{e-cex}} + \frac{\left(e^2\sqrt{1-c^2x^2}\right)\mathrm{Subst}\left(\int(a+bx)^2\sin^2(x\right.}{c\sqrt{d+cdx}\sqrt{e-cex}}$$

$$= \frac{bce^2x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{d+cdx}\sqrt{e-cex}} + \frac{2e^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c\sqrt{d+cdx}\sqrt{e-cex}} - \frac{e^2}{}$$

$$= \frac{b^2e^2x\left(1-c^2x^2\right)}{4\sqrt{d+cdx}\sqrt{e-cex}} - \frac{4be^2x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d+cdx}\sqrt{e-cex}} + \frac{bce^2x^2\sqrt{1-c^2}}{2\sqrt{d+}}$$

$$= -\frac{4b^2e^2\left(1-c^2x^2\right)}{c\sqrt{d+cdx}\sqrt{e-cex}} + \frac{b^2e^2x\left(1-c^2x^2\right)}{4\sqrt{d+cdx}\sqrt{e-cex}} - \frac{b^2e^2\sqrt{1-c^2x^2}\sin^{-1}(cx)}{4c\sqrt{d+cdx}\sqrt{e-cex}} -$$

Mathematica [A] time = 2.39, size = 358, normalized size = 0.90

$$\frac{e\sqrt{cdx+d}\sqrt{e-cex}\left(-4\left(a^2(cx-4)\sqrt{1-c^2x^2}+8abcx+8b^2\sqrt{1-c^2x^2}\right)-2ab\cos\left(2\sin^{-1}(cx)\right)+b^2\sin\left(2\sin^{-1}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2)/Sqrt[d + c*d*x],x]
```

```
[Out] (4*b^2*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^3 - 12*a^2*Sqrt[d]*e^(
3/2)*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(Sqrt[d
]*Sqrt[e]*(-1 + c^2*x^2))] - 2*b*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c
*x]*(16*b*c*x + 4*a*(-4 + c*x)*Sqrt[1 - c^2*x^2] + b*Cos[2*ArcSin[c*x]]) +
2*b*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^2*(6*a + 8*b*Sqrt[1 - c^2
*x^2] - b*Sin[2*ArcSin[c*x]]) + e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(-4*(8*a*
b*c*x + 8*b^2*Sqrt[1 - c^2*x^2] + a^2*(-4 + c*x)*Sqrt[1 - c^2*x^2]) - 2*a*b
*Cos[2*ArcSin[c*x]] + b^2*Sin[2*ArcSin[c*x]]))/(8*c*d*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.63, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\left(a^2cex-a^2e+\left(b^2cex-b^2e\right)\arcsin(cx)^2+2\,(abcex-abe)\arcsin(cx)\right)\sqrt{-cex+e}}{\sqrt{cdx+d}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2),x, algorithm
="fricas")
```

```
[Out] integral(-(a^2*c*e*x - a^2*e + (b^2*c*e*x - b^2*e)*arcsin(c*x)^2 + 2*(a*b*c
*e*x - a*b*e)*arcsin(c*x))*sqrt(-c*e*x + e)/sqrt(c*d*x + d), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2),x, algorithm
="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(t_nostep)]Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Warning, integration of abs or sign assumes constant sign by intervals (cor
rect if the argument is real):Check [abs(t_nostep)]Warning, integration of
abs or sign assumes constant sign by intervals (correct if the argument is
real):Check [abs(t_nostep)]Simplification assuming t_nostep near 0Simplific
ation assuming t_nostep near 0Simplification assuming t_nostep near 0Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Simplification assuming t_nostep near 0Warning, integration of abs or sign
assumes constant sign by intervals (correct if the argument is real):Check
[abs(t_nostep)]Warning, integration of abs or sign assumes constant sign by
 intervals (correct if the argument is real):Check [abs(t_nostep)]sym2poly/
r2sym(const gen & e,const index_m & i,const vecteur & l) Error: Bad Argumen
t Value
```

maple [F] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{(-cex+e)^{\frac{3}{2}} (a+b\arcsin(cx))^2}{\sqrt{cdx+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2),x)
```

```
[Out] int((-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\left(\frac{\sqrt{-c^2dex^2+de}\,ex}{d}-\frac{3\,e^2\arcsin(cx)}{\sqrt{de}\,c}-\frac{4\,\sqrt{-c^2dex^2+de}\,e}{cd}\right)a^2-\sqrt{d}\,\sqrt{e}\int\frac{\left(\left(b^2cex-b^2e\right)\arctan\left(cx,\sqrt{cx+\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2),x, algorithm
="maxima")
```

```
[Out] -1/2*(sqrt(-c^2*d*e*x^2 + d*e)*e*x/d - 3*e^2*arcsin(c*x)/(sqrt(d*e)*c) - 4*
sqrt(-c^2*d*e*x^2 + d*e)*e/(c*d))*a^2 - sqrt(d)*sqrt(e)*integrate(((b^2*c*e
*x - b^2*e)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c*e*x - a
*b*e)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x +
 1)/(c*d*x + d), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))^2\,(e-c\,e\,x)^{3/2}}{\sqrt{d+c\,d\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(e - c*e*x)^(3/2))/(d + c*d*x)^(1/2),x)
```

```
[Out] int(((a + b*asin(c*x))^2*(e - c*e*x)^(3/2))/(d + c*d*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(-e\,(cx-1))^{\frac{3}{2}}\,(a+b\,\mathrm{asin}\,(cx))^2}{\sqrt{d\,(cx+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*e*x+e)**(3/2)*(a+b*asin(c*x))**2/(c*d*x+d)**(1/2),x)
[Out] Integral((-e*(c*x - 1))**(3/2)*(a + b*asin(c*x))**2/sqrt(d*(c*x + 1)), x)
```

3.550 $\int \frac{(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}}\,dx$

Optimal. Leaf size=714

$$\frac{2abe^3x\left(1-c^2x^2\right)^{3/2}}{(cdx+d)^{3/2}(e-cex)^{3/2}}-\frac{e^3\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^3}{bc(cdx+d)^{3/2}(e-cex)^{3/2}}-\frac{e^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{c(cdx+d)^{3/2}(e-cex)^{3/2}}-\frac{4ie^3\left(1-c^2x^2\right)^{3/2}}{c(cdx+d)^{3}}$$

```
[Out] 2*a*b*e^3*x*(-c^2*x^2+1)^(3/2)/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+2*b^2*e^3*(
-c^2*x^2+1)^2/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+2*b^2*e^3*x*(-c^2*x^2+1)^(
3/2)*arcsin(c*x)/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-4*e^3*(-c^2*x^2+1)*(a+b*a
rcsin(c*x))^2/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+4*e^3*x*(-c^2*x^2+1)*(a+b*
arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-4*I*e^3*(-c^2*x^2+1)^(3/2)*
(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-e^3*(-c^2*x^2+1)^2*(
a+b*arcsin(c*x))^2/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-e^3*(-c^2*x^2+1)^(3/2
)*(a+b*arcsin(c*x))^3/b/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-16*I*b*e^3*(-c^2
*x^2+1)^(3/2)*(a+b*arcsin(c*x))*arctan(I*c*x+(-c^2*x^2+1)^(1/2))/c/(c*d*x+d
)^(3/2)/(-c*e*x+e)^(3/2)+8*b*e^3*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))*ln(1+
(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+8*I*b^2*e^
3*(-c^2*x^2+1)^(3/2)*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/(c*d*x+d)^(
3/2)/(-c*e*x+e)^(3/2)-8*I*b^2*e^3*(-c^2*x^2+1)^(3/2)*polylog(2,I*(I*c*x+(-c
^2*x^2+1)^(1/2)))/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-4*I*b^2*e^3*(-c^2*x^2+
1)^(3/2)*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c/(c*d*x+d)^(3/2)/(-c*e*x
+e)^(3/2)
```

Rubi [A] time = 1.08, antiderivative size = 714, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 15, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.469, Rules used = {4673, 4775, 4763, 4651, 4675, 3719, 2190, 2279, 2391, 4677, 4657, 4181, 4641, 4619, 261}

$$\frac{8ib^2e^3\left(1-c^2x^2\right)^{3/2}\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{c(cdx+d)^{3/2}(e-cex)^{3/2}}-\frac{8ib^2e^3\left(1-c^2x^2\right)^{3/2}\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{c(cdx+d)^{3/2}(e-cex)^{3/2}}-\frac{4ib^2e^3\left(1-c^2x^2\right)^{3/2}}{c(cdx+}$$

Antiderivative was successfully verified.

```
[In] Int[((e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2)/(d + c*d*x)^(3/2),x]
```

```
[Out] (2*a*b*e^3*x*(1 - c^2*x^2)^(3/2))/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) + (
2*b^2*e^3*(1 - c^2*x^2)^2)/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) + (2*b^2
*e^3*x*(1 - c^2*x^2)^(3/2)*ArcSin[c*x])/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2
)) - (4*e^3*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(c*(d + c*d*x)^(3/2)*(e -
c*e*x)^(3/2)) + (4*e^3*x*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/((d + c*d*x)^
(3/2)*(e - c*e*x)^(3/2)) - ((4*I)*e^3*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x
])^2)/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) - (e^3*(1 - c^2*x^2)^2*(a + b
*ArcSin[c*x])^2)/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) - (e^3*(1 - c^2*x^
2)^(3/2)*(a + b*ArcSin[c*x])^3)/(b*c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) -
 ((16*I)*b*e^3*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c
*x])])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) + (8*b*e^3*(1 - c^2*x^2)^(3/
2)*(a + b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)
*(e - c*e*x)^(3/2)) + ((8*I)*b^2*e^3*(1 - c^2*x^2)^(3/2)*PolyLog[2, (-I)*E^
(I*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) - ((8*I)*b^2*e^3*
(1 - c^2*x^2)^(3/2)*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*(
e - c*e*x)^(3/2)) - ((4*I)*b^2*e^3*(1 - c^2*x^2)^(3/2)*PolyLog[2, -E^((2*I)
*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2))
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
```

```
NeQ[p, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
```

```
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4775

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}}\,dx = \frac{\left(1-c^2x^2\right)^{3/2}\int \frac{(e-cex)^3\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}dx}{(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= \frac{\left(1-c^2x^2\right)^{3/2}\int \left(\frac{4\left(e^3-ce^3x\right)\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}} - \frac{3e^3\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}} + \frac{ce^3x\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\right.}{(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= \frac{\left(4\left(1-c^2x^2\right)^{3/2}\right)\int \frac{\left(e^3-ce^3x\right)\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}dx}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{\left(3e^3\left(1-c^2x^2\right)^{3/2}\right)\int \frac{\left(a+b\sin^{-1}\right.}{\sqrt{1-c^2}}}{(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= -\frac{e^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{e^3\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^3}{bc(d+cdx)^{3/2}(e-cex)^{3/2}} + $$

$$= \frac{2abe^3x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{e^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{e^3\left(1-c^2x^2\right)^{3/}}{bc(d+cd}$$

$$= \frac{2abe^3x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2b^2e^3x\left(1-c^2x^2\right)^{3/2}\sin^{-1}(cx)}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{4e^3\left(1-c^2x^2\right)\left(a\right.}{c(d+cdx)^{3/}}$$

$$= \frac{2abe^3x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2b^2e^3\left(1-c^2x^2\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2b^2e^3x\left(1-c^2x^2\right)^{3/2}\text{si}}{(d+cdx)^{3/2}(e-ce}$$

$$= \frac{2abe^3x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2b^2e^3\left(1-c^2x^2\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2b^2e^3x\left(1-c^2x^2\right)^{3/2}\text{si}}{(d+cdx)^{3/2}(e-ce}$$

$$= \frac{2abe^3x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2b^2e^3\left(1-c^2x^2\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2b^2e^3x\left(1-c^2x^2\right)^{3/2}\text{si}}{(d+cdx)^{3/2}(e-ce}$$

$$= \frac{2abe^3x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2b^2e^3\left(1-c^2x^2\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2b^2e^3x\left(1-c^2x^2\right)^{3/2}\text{si}}{(d+cdx)^{3/2}(e-ce}$$

$$= \frac{2abe^3x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2b^2e^3\left(1-c^2x^2\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2b^2e^3x\left(1-c^2x^2\right)^{3/2}\text{si}}{(d+cdx)^{3/2}(e-ce}$$

Mathematica [A] time = 8.58, size = 1086, normalized size = 1.52

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2)/(d + c*d*x)^(3/2),x]
```

```
[Out] (-3*a^2*e*(5 + c*x)*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[1 - c^2*x^2]*(Cos[
ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]) + 9*a^2*Sqrt[d]*e^(3/2)*(1 + c*x)*Sqrt
[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(Sqrt[d]*Sqrt[e]
*(-1 + c^2*x^2))]*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]) - 3*a*b*e*(1 +
c*x)*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(Cos[ArcSin[c*x]/2]*(ArcSin[c*x]*(4 +
ArcSin[c*x]) - 8*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]) + ((-4 + Arc
Sin[c*x])*ArcSin[c*x] - 8*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]])*Sin
[ArcSin[c*x]/2]) - b^2*e*(1 + c*x)*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*((6 + 6*
I)*ArcSin[c*x]^2*(Cos[ArcSin[c*x]/2] + I*Sin[ArcSin[c*x]/2]) + ArcSin[c*x]^
3*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]) - (6*I)*ArcSin[c*x]*(Pi - (4*I)
*Log[1 - I*E^(I*ArcSin[c*x])])*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]) -
```

```
12*Pi*(2*Log[1 + E^((-I)*ArcSin[c*x])] + Log[1 - I*E^(I*ArcSin[c*x])] - 2*L
og[Cos[ArcSin[c*x]/2]] - Log[Sin[(Pi + 2*ArcSin[c*x])/4]])*(Cos[ArcSin[c*x]
/2] + Sin[ArcSin[c*x]/2]) + (24*I)*PolyLog[2, I*E^(I*ArcSin[c*x])]*(Cos[Arc
Sin[c*x]/2] + Sin[ArcSin[c*x]/2])) - 6*a*b*e*(1 + c*x)*Sqrt[d + c*d*x]*Sqrt
[e - c*e*x]*(ArcSin[c*x]^2*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]) - (c*x
 + 4*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]])*(Cos[ArcSin[c*x]/2] + Si
n[ArcSin[c*x]/2]) + ArcSin[c*x]*((2 + Sqrt[1 - c^2*x^2])*Cos[ArcSin[c*x]/2]
 + (-2 + Sqrt[1 - c^2*x^2])*Sin[ArcSin[c*x]/2])) - b^2*e*(1 + c*x)*Sqrt[d +
 c*d*x]*Sqrt[e - c*e*x]*(2*ArcSin[c*x]^3*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c
*x]/2]) - (6*I)*ArcSin[c*x]*(Pi - I*c*x - (4*I)*Log[1 - I*E^(I*ArcSin[c*x])
])*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]) - 6*(Sqrt[1 - c^2*x^2] + 4*Pi*
Log[1 + E^((-I)*ArcSin[c*x])] + 2*Pi*Log[1 - I*E^(I*ArcSin[c*x])] - 4*Pi*Lo
g[Cos[ArcSin[c*x]/2]] - 2*Pi*Log[Sin[(Pi + 2*ArcSin[c*x])/4]])*(Cos[ArcSin[
c*x]/2] + Sin[ArcSin[c*x]/2]) + (24*I)*PolyLog[2, I*E^(I*ArcSin[c*x])]*(Cos
[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]) + 3*ArcSin[c*x]^2*(((2 + 2*I) + Sqrt[
1 - c^2*x^2])*Cos[ArcSin[c*x]/2] + ((-2 + 2*I) + Sqrt[1 - c^2*x^2])*Sin[Arc
Sin[c*x]/2]))))/(3*c*d^2*(1 + c*x)*Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] + S
in[ArcSin[c*x]/2]))
```

fricas [F] time = 0.50, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(a^2cex - a^2e + \left(b^2cex - b^2e\right)\arcsin\left(cx\right)^2 + 2\left(abcex - abe\right)\arcsin\left(cx\right)\right)\sqrt{cdx + d}\,\sqrt{-cex + e}}{c^2d^2x^2 + 2\,cd^2x + d^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2),x, algorithm
="fricas")
```

```
[Out] integral(-(a^2*c*e*x - a^2*e + (b^2*c*e*x - b^2*e)*arcsin(c*x)^2 + 2*(a*b*c
*e*x - a*b*e)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*e*x + e)/(c^2*d^2*x^2 +
2*c*d^2*x + d^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-cex + e\right)^{\frac{3}{2}}\left(b\arcsin\left(cx\right) + a\right)^2}{\left(cdx + d\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2),x, algorithm
="giac")
```

```
[Out] integrate((-c*e*x + e)^(3/2)*(b*arcsin(c*x) + a)^2/(c*d*x + d)^(3/2), x)
```

maple [F] time = 0.29, size = 0, normalized size = 0.00

$$\int \frac{\left(-cex + e\right)^{\frac{3}{2}}\left(a + b\arcsin\left(cx\right)\right)^2}{\left(cdx + d\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2),x)
```

```
[Out] int((-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a^2\left(\frac{\left(-c^2dex^2 + de\right)^{\frac{3}{2}}}{c^3d^3x^2 + 2\,c^2d^3x + cd^3} - \frac{6\sqrt{-c^2dex^2 + de}\,e}{c^2d^2x + cd^2} - \frac{3\,e^2\arcsin\left(cx\right)}{cd^2\sqrt{\frac{e}{d}}}\right) - \sqrt{d}\,\sqrt{e}\int \frac{\left(\left(b^2cex - b^2e\right)\arctan\left(cx, \sqrt{cx\right.}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2),x, algorithm
="maxima")
```

```
[Out] a^2*((-c^2*d*e*x^2 + d*e)^(3/2)/(c^3*d^3*x^2 + 2*c^2*d^3*x + c*d^3) - 6*sqr
t(-c^2*d*e*x^2 + d*e)*e/(c^2*d^2*x + c*d^2) - 3*e^2*arcsin(c*x)/(c*d^2*sqrt
(e/d))) - sqrt(d)*sqrt(e)*integrate(((b^2*c*e*x - b^2*e)*arctan2(c*x, sqrt(
c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c*e*x - a*b*e)*arctan2(c*x, sqrt(c*x +
1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c^2*d^2*x^2 + 2*c*d^2*x +
 d^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\mathrm{asin}\,(c\,x))^2\,(e - c\,e\,x)^{3/2}}{(d + c\,d\,x)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(e - c*e*x)^(3/2))/(d + c*d*x)^(3/2),x)
```

```
[Out] int(((a + b*asin(c*x))^2*(e - c*e*x)^(3/2))/(d + c*d*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*e*x+e)**(3/2)*(a+b*asin(c*x))**2/(c*d*x+d)**(3/2),x)
```

```
[Out] Timed out
```

3.551 $\int \frac{(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{5/2}}\,dx$

Optimal. Leaf size=544

$$\frac{e^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(cdx+d)^{5/2}(e-cex)^{5/2}}+\frac{8ie^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}-\frac{32be^4\left(1-c^2x^2\right)^{5/2}\log\left(1-ie^{i\sin^{-1}(cx)}\right)}{3c(cdx+d)^{5/2}(e-cex)}$$

```
[Out] 8/3*I*e^4*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(5/2)/(-c*e*x+
e)^(5/2)+1/3*e^4*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))^3/b/c/(c*d*x+d)^(5/2)
/(-c*e*x+e)^(5/2)-8/3*b^2*e^4*(-c^2*x^2+1)^(5/2)*cot(1/4*Pi+1/2*arcsin(c*x)
)/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+8/3*e^4*(-c^2*x^2+1)^(5/2)*(a+b*arcsin
(c*x))^2*cot(1/4*Pi+1/2*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-4/3
*b*e^4*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))*csc(1/4*Pi+1/2*arcsin(c*x))^2/c
/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-2/3*e^4*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*
x))^2*cot(1/4*Pi+1/2*arcsin(c*x))*csc(1/4*Pi+1/2*arcsin(c*x))^2/c/(c*d*x+d)
^(5/2)/(-c*e*x+e)^(5/2)-32/3*b*e^4*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))*ln(
1-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+32/3*I*b
^2*e^4*(-c^2*x^2+1)^(5/2)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/(c*d*x+
d)^(5/2)/(-c*e*x+e)^(5/2)
```

Rubi [A] time = 1.15, antiderivative size = 544, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 13, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.406, Rules used = {4673, 4775, 4641, 4773, 3318, 4186, 3767, 8, 4184, 3717, 2190, 2279, 2391}

$$\frac{32ib^2e^4\left(1-c^2x^2\right)^{5/2}\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}+\frac{e^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(cdx+d)^{5/2}(e-cex)^{5/2}}+\frac{8ie^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}\right.}{3c(cdx+d)^{5/2}(e-cex)^{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2)/(d + c*d*x)^(5/2),x]
```

```
[Out] (((8*I)/3)*e^4*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2)/(c*(d + c*d*x)^(5
/2)*(e - c*e*x)^(5/2)) + (e^4*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^3)/(3
*b*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (8*b^2*e^4*(1 - c^2*x^2)^(5/2)*
Cot[Pi/4 + ArcSin[c*x]/2])/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) + (8*e
^4*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2*Cot[Pi/4 + ArcSin[c*x]/2])/(3*
c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (4*b*e^4*(1 - c^2*x^2)^(5/2)*(a +
b*ArcSin[c*x])*Csc[Pi/4 + ArcSin[c*x]/2]^2)/(3*c*(d + c*d*x)^(5/2)*(e - c*e
*x)^(5/2)) - (2*e^4*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2*Cot[Pi/4 + Ar
cSin[c*x]/2]*Csc[Pi/4 + ArcSin[c*x]/2]^2)/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x
)^(5/2)) - (32*b*e^4*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])*Log[1 - I*E^(I
*ArcSin[c*x])])/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) + (((32*I)/3)*b^2
*e^4*(1 - c^2*x^2)^(5/2)*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c*(d + c*d*x)^(5
/2)*(e - c*e*x)^(5/2))
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
```

```
e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4775

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{5/2}}\,dx = \frac{\left(1-c^2x^2\right)^{5/2}\int \frac{(e-cex)^4\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\,dx}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{\left(1-c^2x^2\right)^{5/2}\int \left(\frac{e^4\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}+\frac{4e^4\left(a+b\sin^{-1}(cx)\right)^2}{(1+cx)^2\sqrt{1-c^2x^2}}-\frac{4e^4\left(a+b\sin^{-1}(cx)\right)^2}{(1+cx)\sqrt{1-c^2x^2}}\right) dx}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{\left(e^4\left(1-c^2x^2\right)^{5/2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{\left(4e^4\left(1-c^2x^2\right)^{5/2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)}{(1+cx)^2\sqrt{1-c^2}}}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{e^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{\left(4e^4\left(1-c^2x^2\right)^{5/2}\right)\text{Subst}\left(\int \frac{(a+bx)}{c+c\sin(}\right.}{(d+cdx)^{5/2}(e-cex}$$

$$= \frac{e^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{\left(e^4\left(1-c^2x^2\right)^{5/2}\right)\text{Subst}\left(\int (a+bx)\right.}{c(d+cdx)^{5/2}(}$$

$$= \frac{e^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{4e^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{5/2}(e-c}$$

$$= \frac{4ie^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{e^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{8ie^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{e^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{8ie^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{e^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{8ie^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{e^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{8ie^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{e^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(d+cdx)^{5/2}(e-cex)^{5/2}}$$

Mathematica [B] time = 10.34, size = 1438, normalized size = 2.64

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2)/(d + c*d*x)^(5/2),x]
```

```
[Out] (Sqrt[-(e*(-1 + c*x))]*Sqrt[d*(1 + c*x)]*((-4*a^2*e)/(3*d^3*(1 + c*x)^2) +
(8*a^2*e)/(3*d^3*(1 + c*x))))/c - (a^2*e^(3/2)*ArcTan[(c*x*Sqrt[-(e*(-1 + c
*x))]*Sqrt[d*(1 + c*x)])/(Sqrt[d]*Sqrt[e]*(-1 + c*x)*(1 + c*x))])/(c*d^(5/2
)) - (a*b*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[-(d*e*(1 - c^2*x^2))]*(Cos
[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])*(Cos[ArcSin[c*x]/2]*(-8 + 6*ArcSin[c*
x] + 9*ArcSin[c*x]^2 - 84*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]) + C
os[(3*ArcSin[c*x])/2]*((14 - 3*ArcSin[c*x])*ArcSin[c*x] + 28*Log[Cos[ArcSin
[c*x]/2] + Sin[ArcSin[c*x]/2]]) + 2*(-4 + 4*ArcSin[c*x] + 6*ArcSin[c*x]^2 +
 Sqrt[1 - c^2*x^2]*(ArcSin[c*x]*(14 + 3*ArcSin[c*x]) - 28*Log[Cos[ArcSin[c*
x]/2] + Sin[ArcSin[c*x]/2]]) - 56*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/
2]])*Sin[ArcSin[c*x]/2]))/(6*c*d^3*(-1 + c*x)*Sqrt[(-d - c*d*x)*(e - c*e*x)
]*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^4) - (a*b*e*Sqrt[d + c*d*x]*Sqr
t[e - c*e*x]*Sqrt[-(d*e*(1 - c^2*x^2))]*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*
x]/2])*(Cos[(3*ArcSin[c*x])/2]*(ArcSin[c*x] + 2*Log[Cos[ArcSin[c*x]/2] + Si
n[ArcSin[c*x]/2]]) - Cos[ArcSin[c*x]/2]*(4 + 3*ArcSin[c*x] + 6*Log[Cos[ArcS
in[c*x]/2] + Sin[ArcSin[c*x]/2]]) + 2*(-2 + 2*ArcSin[c*x] + Sqrt[1 - c^2*x^
2]*ArcSin[c*x] - 4*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]] - 2*Sqrt[1
- c^2*x^2]*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]])*Sin[ArcSin[c*x]/2]
))/(3*c*d^3*(-1 + c*x)*Sqrt[(-d - c*d*x)*(e - c*e*x)]*(Cos[ArcSin[c*x]/2] +
 Sin[ArcSin[c*x]/2])^4) - (b^2*e*(-1 + c*x)*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]
*Sqrt[-(d*e*(1 - c^2*x^2))]*((-I)*Pi*ArcSin[c*x] + (1 + I)*ArcSin[c*x]^2 -
4*Pi*Log[1 + E^((-I)*ArcSin[c*x])] - 2*(Pi + 2*ArcSin[c*x])*Log[1 - I*E^(I*
ArcSin[c*x])] + 4*Pi*Log[Cos[ArcSin[c*x]/2]] + 2*Pi*Log[Sin[(Pi + 2*ArcSin[
c*x])/4]] + (4*I)*PolyLog[2, I*E^(I*ArcSin[c*x])] + (4*ArcSin[c*x]^2*Sin[Ar
cSin[c*x]/2])/(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^3 - (2*ArcSin[c*x]*
(2 + ArcSin[c*x]))/(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^2 - (2*(-4 + A
rcSin[c*x]^2)*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])
))/(3*c*d^3*Sqrt[(-d - c*d*x)*(e - c*e*x)]*Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*
x]/2] - Sin[ArcSin[c*x]/2])^2) + (b^2*e*(-1 + c*x)*Sqrt[d + c*d*x]*Sqrt[e -
 c*e*x]*Sqrt[-(d*e*(1 - c^2*x^2))]*((7*I)*Pi*ArcSin[c*x] - (7 + 7*I)*ArcSin
[c*x]^2 - ArcSin[c*x]^3 + 28*Pi*Log[1 + E^((-I)*ArcSin[c*x])] + 14*(Pi + 2*
ArcSin[c*x])*Log[1 - I*E^(I*ArcSin[c*x])] - 28*Pi*Log[Cos[ArcSin[c*x]/2]] -
 14*Pi*Log[Sin[(Pi + 2*ArcSin[c*x])/4]] - (28*I)*PolyLog[2, I*E^(I*ArcSin[c
*x])] - (4*ArcSin[c*x]^2*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] + Sin[ArcS
in[c*x]/2])^3 + (2*ArcSin[c*x]*(2 + ArcSin[c*x]))/(Cos[ArcSin[c*x]/2] + Sin
[ArcSin[c*x]/2])^2 + (2*(-4 + 7*ArcSin[c*x]^2)*Sin[ArcSin[c*x]/2])/(Cos[Arc
Sin[c*x]/2] + Sin[ArcSin[c*x]/2])))/(3*c*d^3*Sqrt[(-d - c*d*x)*(e - c*e*x)]
*Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^2)
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(a^2cex - a^2e + \left(b^2cex - b^2e\right)\arcsin\left(cx\right)^2 + 2\left(abcex - abe\right)\arcsin\left(cx\right)\right)\sqrt{cdx + d}\,\sqrt{-cex + e}}{c^3d^3x^3 + 3\,c^2d^3x^2 + 3\,cd^3x + d^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2),x, algorithm
="fricas")
```

```
[Out] integral(-(a^2*c*e*x - a^2*e + (b^2*c*e*x - b^2*e)*arcsin(c*x)^2 + 2*(a*b*c
*e*x - a*b*e)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*e*x + e)/(c^3*d^3*x^3 +
3*c^2*d^3*x^2 + 3*c*d^3*x + d^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(-cex+e)^{\frac{3}{2}}(b \arcsin(cx)+a)^2}{(cdx+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2),x, algorithm
="giac")
```

```
[Out] integrate((-c*e*x + e)^(3/2)*(b*arcsin(c*x) + a)^2/(c*d*x + d)^(5/2), x)
```

maple [F] time = 0.29, size = 0, normalized size = 0.00

$$\int \frac{(-cex+e)^{\frac{3}{2}}\,(a+b\arcsin(cx))^2}{(cdx+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2),x)
```

```
[Out] int((-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{3}a^2\left(\frac{\left(-c^2dex^2+de\right)^{\frac{3}{2}}}{c^4d^4x^3+3\,c^3d^4x^2+3\,c^2d^4x+cd^4}+\frac{2\sqrt{-c^2dex^2+de}\,e}{c^3d^3x^2+2\,c^2d^3x+cd^3}-\frac{7\sqrt{-c^2dex^2+de}\,e}{c^2d^3x+cd^3}-\frac{3\,e^2\arcsin(cx)}{cd^3\sqrt{\frac{e}{d}}}\right)-\sqrt{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2),x, algorithm
="maxima")
```

```
[Out] -1/3*a^2*((-c^2*d*e*x^2 + d*e)^(3/2)/(c^4*d^4*x^3 + 3*c^3*d^4*x^2 + 3*c^2*d
^4*x + c*d^4) + 2*sqrt(-c^2*d*e*x^2 + d*e)*e/(c^3*d^3*x^2 + 2*c^2*d^3*x + c
*d^3) - 7*sqrt(-c^2*d*e*x^2 + d*e)*e/(c^2*d^3*x + c*d^3) - 3*e^2*arcsin(c*x
)/(c*d^3*sqrt(e/d))) - sqrt(d)*sqrt(e)*integrate(((b^2*c*e*x - b^2*e)*arcta
n2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c*e*x - a*b*e)*arctan2(c*x
, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c^3*d^3*x^3
+ 3*c^2*d^3*x^2 + 3*c*d^3*x + d^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))^2\,(e-c\,e\,x)^{3/2}}{(d+c\,d\,x)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(e - c*e*x)^(3/2))/(d + c*d*x)^(5/2),x)
```

```
[Out] int(((a + b*asin(c*x))^2*(e - c*e*x)^(3/2))/(d + c*d*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*e*x+e)**(3/2)*(a+b*asin(c*x))**2/(c*d*x+d)**(5/2),x)
```

```
[Out] Timed out
```

3.552 $\int (d+cdx)^{5/2}(e-cex)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=502

$$\frac{5(cdx+d)^{5/2}(e-cex)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{48bc\left(1-c^2x^2\right)^{5/2}}+\frac{5x(cdx+d)^{5/2}(e-cex)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{24\left(1-c^2x^2\right)}+\frac{5x(cdx+d)^{5/2}(e-cex)^{5/2}}{16\left(1-c\right.}$$

```
[Out] -1/108*b^2*x*(c*d*x+d)^(5/2)*(-c*e*x+e)^(5/2)-245/1152*b^2*x*(c*d*x+d)^(5/2
)*(-c*e*x+e)^(5/2)/(-c^2*x^2+1)^2-65/1728*b^2*x*(c*d*x+d)^(5/2)*(-c*e*x+e)^
(5/2)/(-c^2*x^2+1)+115/1152*b^2*(c*d*x+d)^(5/2)*(-c*e*x+e)^(5/2)*arcsin(c*x
)/c/(-c^2*x^2+1)^(5/2)-5/16*b*c*x^2*(c*d*x+d)^(5/2)*(-c*e*x+e)^(5/2)*(a+b*a
rcsin(c*x))/(-c^2*x^2+1)^(5/2)+1/6*x*(c*d*x+d)^(5/2)*(-c*e*x+e)^(5/2)*(a+b*
arcsin(c*x))^2+5/16*x*(c*d*x+d)^(5/2)*(-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2/
(-c^2*x^2+1)^2+5/24*x*(c*d*x+d)^(5/2)*(-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2/
(-c^2*x^2+1)+5/48*(c*d*x+d)^(5/2)*(-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^3/b/c/
(-c^2*x^2+1)^(5/2)+5/48*b*(c*d*x+d)^(5/2)*(-c*e*x+e)^(5/2)*(a+b*arcsin(c*x)
)/c/(-c^2*x^2+1)^(1/2)+1/18*b*(c*d*x+d)^(5/2)*(-c*e*x+e)^(5/2)*(a+b*arcsin(
c*x))*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.57, antiderivative size = 502, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 9, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.281, Rules used = {4673, 4649, 4647, 4641, 4627, 321, 216, 4677, 195}

$$\frac{5(cdx+d)^{5/2}(e-cex)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{48bc\left(1-c^2x^2\right)^{5/2}}+\frac{5x(cdx+d)^{5/2}(e-cex)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{24\left(1-c^2x^2\right)}+\frac{5x(cdx+d)^{5/2}(e-cex)^{5/2}}{16\left(1-c\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -(b^2*x*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2))/108 - (245*b^2*x*(d + c*d*x)^(
5/2)*(e - c*e*x)^(5/2))/(1152*(1 - c^2*x^2)^2) - (65*b^2*x*(d + c*d*x)^(5/2
)*(e - c*e*x)^(5/2))/(1728*(1 - c^2*x^2)) + (115*b^2*(d + c*d*x)^(5/2)*(e -
 c*e*x)^(5/2)*ArcSin[c*x])/(1152*c*(1 - c^2*x^2)^(5/2)) - (5*b*c*x^2*(d + c
*d*x)^(5/2)*(e - c*e*x)^(5/2)*(a + b*ArcSin[c*x]))/(16*(1 - c^2*x^2)^(5/2))
 + (5*b*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)*(a + b*ArcSin[c*x]))/(48*c*Sqrt
[1 - c^2*x^2]) + (b*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)*Sqrt[1 - c^2*x^2]*(
a + b*ArcSin[c*x]))/(18*c) + (x*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)*(a + b*
ArcSin[c*x])^2)/6 + (5*x*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)*(a + b*ArcSin[
c*x])^2)/(16*(1 - c^2*x^2)^2) + (5*x*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)*(a
 + b*ArcSin[c*x])^2)/(24*(1 - c^2*x^2)) + (5*(d + c*d*x)^(5/2)*(e - c*e*x)^
(5/2)*(a + b*ArcSin[c*x])^3)/(48*b*c*(1 - c^2*x^2)^(5/2))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (d+cdx)^{5/2}(e-cex)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx = \frac{\left((d+cdx)^{5/2}(e-cex)^{5/2}\right)\int \left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\left(1-c^2x^2\right)^{5/2}}$$

$$= \frac{1}{6}x(d+cdx)^{5/2}(e-cex)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2 + \frac{\left(5(d+cdx)^{5/2}(e\right.}{}$$

$$= \frac{b(d+cdx)^{5/2}(e-cex)^{5/2}\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{18c} + \frac{1}{6}x(d+c$$

$$= -\frac{1}{108}b^2x(d+cdx)^{5/2}(e-cex)^{5/2} + \frac{5b(d+cdx)^{5/2}(e-cex)^{5/2}\left(a\right.}{48c\sqrt{1-c^2x^2}}$$

$$= -\frac{1}{108}b^2x(d+cdx)^{5/2}(e-cex)^{5/2} - \frac{65b^2x(d+cdx)^{5/2}(e-cex)^{5/2}}{1728\left(1-c^2x^2\right)}$$

$$= -\frac{1}{108}b^2x(d+cdx)^{5/2}(e-cex)^{5/2} - \frac{245b^2x(d+cdx)^{5/2}(e-cex)^{5/}}{1152\left(1-c^2x^2\right)^2}$$

$$= -\frac{1}{108}b^2x(d+cdx)^{5/2}(e-cex)^{5/2} - \frac{245b^2x(d+cdx)^{5/2}(e-cex)^{5/}}{1152\left(1-c^2x^2\right)^2}$$

Mathematica [A] time = 3.13, size = 450, normalized size = 0.90

$$\frac{d^2e^2\left(\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(9504a^2cx\sqrt{1-c^2x^2}+2304a^2c^5x^5\sqrt{1-c^2x^2}-7488a^2c^3x^3\sqrt{1-c^2x^2}+3240ab\cos\left(2\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (d^2*e^2*(1440*b^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^3 - 4320*a^2
*Sqrt[d]*Sqrt[e]*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c*e
*x])/(Sqrt[d]*Sqrt[e]*(-1 + c^2*x^2))] + 12*b*Sqrt[d + c*d*x]*Sqrt[e - c*e*
x]*ArcSin[c*x]*(270*b*Cos[2*ArcSin[c*x]] + 27*b*Cos[4*ArcSin[c*x]] + 2*b*Co
s[6*ArcSin[c*x]] + 540*a*Sin[2*ArcSin[c*x]] + 108*a*Sin[4*ArcSin[c*x]] + 12
*a*Sin[6*ArcSin[c*x]]) + 72*b*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^2
*(60*a + 45*b*Sin[2*ArcSin[c*x]] + 9*b*Sin[4*ArcSin[c*x]] + b*Sin[6*ArcSin[
c*x]]) + Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(9504*a^2*c*x*Sqrt[1 - c^2*x^2] -
7488*a^2*c^3*x^3*Sqrt[1 - c^2*x^2] + 2304*a^2*c^5*x^5*Sqrt[1 - c^2*x^2] + 3
240*a*b*Cos[2*ArcSin[c*x]] + 324*a*b*Cos[4*ArcSin[c*x]] + 24*a*b*Cos[6*ArcS
in[c*x]] - 1620*b^2*Sin[2*ArcSin[c*x]] - 81*b^2*Sin[4*ArcSin[c*x]] - 4*b^2*
Sin[6*ArcSin[c*x]])))/(13824*c*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a^2c^4d^2e^2x^4-2\,a^2c^2d^2e^2x^2+a^2d^2e^2+\left(b^2c^4d^2e^2x^4-2\,b^2c^2d^2e^2x^2+b^2d^2e^2\right)\arcsin\left(cx\right)^2+2\left(abc^4d^2e^2x\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm
="fricas")
```

```
[Out] integral((a^2*c^4*d^2*e^2*x^4 - 2*a^2*c^2*d^2*e^2*x^2 + a^2*d^2*e^2 + (b^2*
c^4*d^2*e^2*x^4 - 2*b^2*c^2*d^2*e^2*x^2 + b^2*d^2*e^2)*arcsin(c*x)^2 + 2*(a
*b*c^4*d^2*e^2*x^4 - 2*a*b*c^2*d^2*e^2*x^2 + a*b*d^2*e^2)*arcsin(c*x))*sqrt
(c*d*x + d)*sqrt(-c*e*x + e), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm
="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(t_nostep)]Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Warning, integration of abs or sign assumes constant sign by intervals (cor
rect if the argument is real):Check [abs(t_nostep)]Warning, integration of
abs or sign assumes constant sign by intervals (correct if the argument is
real):Check [abs(t_nostep)]Simplification assuming t_nostep near 0Simplific
ation assuming t_nostep near 0Simplification assuming t_nostep near 0Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Simplification assuming t_nostep near 0Warning, integration of abs or sign
assumes constant sign by intervals (correct if the argument is real):Check
[abs(t_nostep)]Simplification assuming t_nostep near 0Simplification assumi
ng t_nostep near 0Simplification assuming t_nostep near 0Simplification ass
uming t_nostep near 0Simplification assuming t_nostep near 0Simplification
assuming t_nostep near 0Simplification assuming t_nostep near 0Simplificati
on assuming t_nostep near 0Warning, integration of abs or sign assumes cons
tant sign by intervals (correct if the argument is real):Check [abs(t_noste
p)]Simplification assuming t_nostep near 0Simplification assuming t_nostep
near 0Simplification assuming t_nostep near 0Simplification assuming t_nost
ep near 0Simplification assuming t_nostep near 0Simplification assuming t_n
ostep near 0Simplification assuming t_nostep near 0Simplification assuming
t_nostep near 0Warning, integration of abs or sign assumes constant sign by
 intervals (correct if the argument is real):Check [abs(t_nostep)]Warning,
integration of abs or sign assumes constant sign by intervals (correct if t
he argument is real):Check [abs(t_nostep)]sym2poly/r2sym(const gen & e,cons
t index_m & i,const vecteur & l) Error: Bad Argument Value
```

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int (cdx+d)^{\frac{5}{2}} (-cex+e)^{\frac{5}{2}} (a+b\arcsin(cx))^2\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(5/2)*(-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] int((c*d*x+d)^(5/2)*(-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{48}\left(15\sqrt{-c^2dex^2+de}\,d^2e^2x+\frac{15\,d^3e^3\arcsin(cx)}{\sqrt{de}\,c}+10\left(-c^2dex^2+de\right)^{\frac{3}{2}}dex+8\left(-c^2dex^2+de\right)^{\frac{5}{2}}x\right)a^2+\sqrt{d}\,\sqrt{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm
="maxima")
```

```
[Out] 1/48*(15*sqrt(-c^2*d*e*x^2 + d*e)*d^2*e^2*x + 15*d^3*e^3*arcsin(c*x)/(sqrt(
d*e)*c) + 10*(-c^2*d*e*x^2 + d*e)^(3/2)*d*e*x + 8*(-c^2*d*e*x^2 + d*e)^(5/2
)*x)*a^2 + sqrt(d)*sqrt(e)*integrate(((b^2*c^4*d^2*e^2*x^4 - 2*b^2*c^2*d^2*
e^2*x^2 + b^2*d^2*e^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*
b*c^4*d^2*e^2*x^4 - 2*a*b*c^2*d^2*e^2*x^2 + a*b*d^2*e^2)*arctan2(c*x, sqrt(
c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a + b\,\mathrm{asin}\,(c\,x))^2\,(d + c\,d\,x)^{5/2}\,(e - c\,e\,x)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2),x)
```

```
[Out] int((a + b*asin(c*x))^2*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(5/2)*(-c*e*x+e)**(5/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Timed out
```

3.553 $\int (d+cdx)^{3/2}(e-cex)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=697

$$-\frac{3bcex^2(cdx+d)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{8\left(1-c^2x^2\right)^{3/2}}+\frac{3ex(cdx+d)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{8\left(1-c^2x^2\right)}-\frac{2bex(cdx+d)}{}$$

```
[Out] -8/225*b^2*e*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)/c-1/32*b^2*e*x*(c*d*x+d)^(3/2
)*(-c*e*x+e)^(3/2)-16/75*b^2*e*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)/c/(-c^2*x^2
+1)-15/64*b^2*e*x*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)/(-c^2*x^2+1)-2/125*b^2*e
*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(-c^2*x^2+1)/c+9/64*b^2*e*(c*d*x+d)^(3/2)
*(-c*e*x+e)^(3/2)*arcsin(c*x)/c/(-c^2*x^2+1)^(3/2)-2/5*b*e*x*(c*d*x+d)^(3/2
)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))/(-c^2*x^2+1)^(3/2)-3/8*b*c*e*x^2*(c*d*
x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))/(-c^2*x^2+1)^(3/2)+4/15*b*c^2
*e*x^3*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))/(-c^2*x^2+1)^(3/2
)-2/25*b*c^4*e*x^5*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))/(-c^2
*x^2+1)^(3/2)+1/4*e*x*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2+
3/8*e*x*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/(-c^2*x^2+1)+1
/5*e*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2/c+1/
8*e*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^3/b/c/(-c^2*x^2+1)^(
3/2)+1/8*b*e*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))*(-c^2*x^2+1
)^(1/2)/c
```

Rubi [A] time = 0.79, antiderivative size = 697, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 15, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.469, Rules used = {4673, 4763, 4649, 4647, 4641, 4627, 321, 216, 4677, 195, 194, 4645, 12, 1247, 698}

$$-\frac{2bc^4ex^5(cdx+d)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{25\left(1-c^2x^2\right)^{3/2}}+\frac{4bc^2ex^3(cdx+d)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{15\left(1-c^2x^2\right)^{3/2}}-\frac{3bcex^2(c}{}$$

Antiderivative was successfully verified.

```
[In] Int[(d + c*d*x)^(3/2)*(e - c*e*x)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (-8*b^2*e*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2))/(225*c) - (b^2*e*x*(d + c*d*
x)^(3/2)*(e - c*e*x)^(3/2))/32 - (16*b^2*e*(d + c*d*x)^(3/2)*(e - c*e*x)^(3
/2))/(75*c*(1 - c^2*x^2)) - (15*b^2*e*x*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)
)/(64*(1 - c^2*x^2)) - (2*b^2*e*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(1 - c^
2*x^2))/(125*c) + (9*b^2*e*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*ArcSin[c*x])
/(64*c*(1 - c^2*x^2)^(3/2)) - (2*b*e*x*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*
(a + b*ArcSin[c*x]))/(5*(1 - c^2*x^2)^(3/2)) - (3*b*c*e*x^2*(d + c*d*x)^(3/
2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x]))/(8*(1 - c^2*x^2)^(3/2)) + (4*b*c^
2*e*x^3*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x]))/(15*(1 - c
^2*x^2)^(3/2)) - (2*b*c^4*e*x^5*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(a + b*
ArcSin[c*x]))/(25*(1 - c^2*x^2)^(3/2)) + (b*e*(d + c*d*x)^(3/2)*(e - c*e*x)
^(3/2)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(8*c) + (e*x*(d + c*d*x)^(3/2
)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2)/4 + (3*e*x*(d + c*d*x)^(3/2)*(e
- c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2)/(8*(1 - c^2*x^2)) + (e*(d + c*d*x)^(3
/2)*(e - c*e*x)^(3/2)*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(5*c) + (e*(d +
c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^3)/(8*b*c*(1 - c^2*x^2)^
(3/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] && !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 698

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 1247

```
Int[(x_)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(
p_.), x_Symbol] :> Dist[1/2, Subst[Int[(d + e*x)^q*(a + b*x + c*x^2)^p, x],
 x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int (d+cdx)^{3/2}(e-cex)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx = \frac{\left((d+cdx)^{3/2}(e-cex)^{3/2}\right)\int (e-cex)\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx\right.}{\left(1-c^2x^2\right)^{3/2}}$$

$$= \frac{\left((d+cdx)^{3/2}(e-cex)^{3/2}\right)\int \left(e\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2 - \right.}{\left(1-c^2x^2\right)^{3/2}}$$

$$= \frac{\left(e(d+cdx)^{3/2}(e-cex)^{3/2}\right)\int \left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\left(1-c^2x^2\right)^{3/2}}$$

$$= \frac{1}{4}ex(d+cdx)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2 + \frac{e(d+cdx)^{3/2}(e-}{}$$

$$= -\frac{2bex(d+cdx)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{5\left(1-c^2x^2\right)^{3/2}} + \frac{4bc^2ex^3(d+c}{}$$

$$= -\frac{1}{32}b^2ex(d+cdx)^{3/2}(e-cex)^{3/2} - \frac{2bex(d+cdx)^{3/2}(e-cex)^{3/2}\left(\right.}{5\left(1-c^2x^2\right)^{3/2}}$$

$$= -\frac{1}{32}b^2ex(d+cdx)^{3/2}(e-cex)^{3/2} - \frac{15b^2ex(d+cdx)^{3/2}(e-cex)^{3/2}}{64\left(1-c^2x^2\right)}$$

$$= -\frac{1}{32}b^2ex(d+cdx)^{3/2}(e-cex)^{3/2} - \frac{15b^2ex(d+cdx)^{3/2}(e-cex)^{3/2}}{64\left(1-c^2x^2\right)}$$

$$= -\frac{8b^2e(d+cdx)^{3/2}(e-cex)^{3/2}}{225c} - \frac{1}{32}b^2ex(d+cdx)^{3/2}(e-cex)^{3/2} -$$

Mathematica [A] time = 4.13, size = 574, normalized size = 0.82

$$\frac{de^2\left(\sqrt{cdx+d}\,\sqrt{e-cex}\left(-15\left(-480a^2\sqrt{1-c^2x^2}\left(8c^4x^4-10c^3x^3-16c^2x^2+25cx+8\right)+512abcx\left(3c^4x^4-10c^2x\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + c*d*x)^(3/2)*(e - c*e*x)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (d*e^2*(36000*b^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^3 - 108000*a^
2*Sqrt[d]*Sqrt[e]*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c*
e*x])/(Sqrt[d]*Sqrt[e]*(-1 + c^2*x^2))] + 1800*b*Sqrt[d + c*d*x]*Sqrt[e - c
*e*x]*ArcSin[c*x]^2*(10*b*Cos[3*ArcSin[c*x]] + 2*b*Cos[5*ArcSin[c*x]] + 5*(
12*a + 4*b*Sqrt[1 - c^2*x^2] + 8*b*Sin[2*ArcSin[c*x]] + b*Sin[4*ArcSin[c*x]
])) + Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(72000*a*b*Cos[2*ArcSin[c*x]] - 4000*
b^2*Cos[3*ArcSin[c*x]] + 4500*a*b*Cos[4*ArcSin[c*x]] - 288*b^2*Cos[5*ArcSin
[c*x]] - 15*(4800*b^2*Sqrt[1 - c^2*x^2] + 512*a*b*c*x*(15 - 10*c^2*x^2 + 3*
c^4*x^4) - 480*a^2*Sqrt[1 - c^2*x^2]*(8 + 25*c*x - 16*c^2*x^2 - 10*c^3*x^3
+ 8*c^4*x^4) + 2400*b^2*Sin[2*ArcSin[c*x]] + 75*b^2*Sin[4*ArcSin[c*x]])) +
60*b*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]*(1200*b*Cos[2*ArcSin[c*x]]
 + 75*b*Cos[4*ArcSin[c*x]] + 4*(-300*b*c*x + 480*a*Sqrt[1 - c^2*x^2] - 960*
a*c^2*x^2*Sqrt[1 - c^2*x^2] + 480*a*c^4*x^4*Sqrt[1 - c^2*x^2] + 600*a*Sin[2
```

```
*ArcSin[c*x]] - 50*b*Sin[3*ArcSin[c*x]] + 75*a*Sin[4*ArcSin[c*x]] - 6*b*Sin
[5*ArcSin[c*x]]])))/(288000*c*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a^2c^3de^2x^3 - a^2c^2de^2x^2 - a^2cde^2x + a^2de^2 + \left(b^2c^3de^2x^3 - b^2c^2de^2x^2 - b^2cde^2x + b^2de^2\right)\arcsin(cx)^2\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm
="fricas")
```

```
[Out] integral((a^2*c^3*d*e^2*x^3 - a^2*c^2*d*e^2*x^2 - a^2*c*d*e^2*x + a^2*d*e^2
 + (b^2*c^3*d*e^2*x^3 - b^2*c^2*d*e^2*x^2 - b^2*c*d*e^2*x + b^2*d*e^2)*arcs
in(c*x)^2 + 2*(a*b*c^3*d*e^2*x^3 - a*b*c^2*d*e^2*x^2 - a*b*c*d*e^2*x + a*b*
d*e^2)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*e*x + e), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm
="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(t_nostep)]Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Warning, integration of abs or sign assumes constant sign by intervals (cor
rect if the argument is real):Check [abs(t_nostep)]Warning, integration of
abs or sign assumes constant sign by intervals (correct if the argument is
real):Check [abs(t_nostep)]Simplification assuming t_nostep near 0Simplific
ation assuming t_nostep near 0Simplification assuming t_nostep near 0Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Simplification assuming t_nostep near 0Warning, integration of abs or sign
assumes constant sign by intervals (correct if the argument is real):Check
[abs(t_nostep)]Simplification assuming t_nostep near 0Simplification assumi
ng t_nostep near 0Simplification assuming t_nostep near 0Simplification ass
uming t_nostep near 0Simplification assuming t_nostep near 0Simplification
assuming t_nostep near 0Simplification assuming t_nostep near 0Simplificati
on assuming t_nostep near 0Warning, integration of abs or sign assumes cons
tant sign by intervals (correct if the argument is real):Check [abs(t_noste
p)]Simplification assuming t_nostep near 0Simplification assuming t_nostep
near 0Simplification assuming t_nostep near 0Simplification assuming t_nost
ep near 0Simplification assuming t_nostep near 0Simplification assuming t_n
ostep near 0Simplification assuming t_nostep near 0Simplification assuming
t_nostep near 0Warning, integration of abs or sign assumes constant sign by
 intervals (correct if the argument is real):Check [abs(t_nostep)]Simplific
ation assuming t_nostep near 0Simplification assuming t_nostep near 0Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Simplification assuming t_nostep near 0Simplification assuming t_nostep nea
r 0Warning, integration of abs or sign assumes constant sign by intervals (
correct if the argument is real):Check [abs(t_nostep)]Warning, integration
of abs or sign assumes constant sign by intervals (correct if the argument
is real):Check [abs(t_nostep)]sym2poly/r2sym(const gen & e,const index_m &
i,const vecteur & l) Error: Bad Argument Value
```

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int (cdx+d)^{\frac{3}{2}} (-cex+e)^{\frac{5}{2}} (a+b\arcsin(cx))^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(3/2)*(-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] int((c*d*x+d)^(3/2)*(-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{40}\left(15\sqrt{-c^2dex^2+de}\,de^2x+\frac{15\,d^2e^3\arcsin(cx)}{\sqrt{de}\,c}+10\left(-c^2dex^2+de\right)^{\frac{3}{2}}ex+\frac{8\left(-c^2dex^2+de\right)^{\frac{5}{2}}}{cd}\right)a^2+\sqrt{d}\sqrt{e}\int\left(\left(b^2\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm
="maxima")
```

```
[Out] 1/40*(15*sqrt(-c^2*d*e*x^2 + d*e)*d*e^2*x + 15*d^2*e^3*arcsin(c*x)/(sqrt(d*
e)*c) + 10*(-c^2*d*e*x^2 + d*e)^(3/2)*e*x + 8*(-c^2*d*e*x^2 + d*e)^(5/2)/(c
*d))*a^2 + sqrt(d)*sqrt(e)*integrate(((b^2*c^3*d*e^2*x^3 - b^2*c^2*d*e^2*x^
2 - b^2*c*d*e^2*x + b^2*d*e^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2
 + 2*(a*b*c^3*d*e^2*x^3 - a*b*c^2*d*e^2*x^2 - a*b*c*d*e^2*x + a*b*d*e^2)*ar
ctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,\mathrm{asin}(c\,x))^2\,(d+c\,d\,x)^{3/2}\,(e-c\,e\,x)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2*(d + c*d*x)^(3/2)*(e - c*e*x)^(5/2),x)
```

```
[Out] int((a + b*asin(c*x))^2*(d + c*d*x)^(3/2)*(e - c*e*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(3/2)*(-c*e*x+e)**(5/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Timed out
```

3.554 $\int \sqrt{d+cdx}\,(e-cex)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=613

$$\frac{1}{4}c^2e^2x^3\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)^2-\frac{3bce^2x^2\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)}{8\sqrt{1-c^2x^2}}-\frac{4be^2x\sqrt{cdx+d}\,\sqrt{}}{3}$$

```
[Out] -8/9*b^2*e^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/c-15/64*b^2*e^2*x*(c*d*x+d)^(
1/2)*(-c*e*x+e)^(1/2)-1/32*b^2*c^2*e^2*x^3*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)
-4/27*b^2*e^2*(-c^2*x^2+1)*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/c+3/8*e^2*x*(a+
b*arcsin(c*x))^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)+1/4*c^2*e^2*x^3*(a+b*arcs
in(c*x))^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)+2/3*e^2*(-c^2*x^2+1)*(a+b*arcsi
n(c*x))^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/c+15/64*b^2*e^2*arcsin(c*x)*(c*d
*x+d)^(1/2)*(-c*e*x+e)^(1/2)/c/(-c^2*x^2+1)^(1/2)-4/3*b*e^2*x*(a+b*arcsin(c
*x))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)-3/8*b*c*e^2*x^2*(a
+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)+4/9*b*c
^2*e^2*x^3*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^
(1/2)-1/8*b*c^3*e^2*x^4*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/
(-c^2*x^2+1)^(1/2)+5/24*e^2*(a+b*arcsin(c*x))^3*(c*d*x+d)^(1/2)*(-c*e*x+e)^
(1/2)/b/c/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 1.00, antiderivative size = 613, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 13, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.406, Rules used = {4673, 4763, 4647, 4641, 4627, 321, 216, 4677, 4645, 444, 43, 4697, 4707}

$$-\frac{bc^3e^2x^4\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)}{8\sqrt{1-c^2x^2}}+\frac{1}{4}c^2e^2x^3\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)^2+\frac{4bc^2e^2x^3\sqrt{cdx}}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d + c*d*x]*(e - c*e*x)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (-8*b^2*e^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(9*c) - (15*b^2*e^2*x*Sqrt[d +
 c*d*x]*Sqrt[e - c*e*x])/64 - (b^2*c^2*e^2*x^3*Sqrt[d + c*d*x]*Sqrt[e - c*e
*x])/32 - (4*b^2*e^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(1 - c^2*x^2))/(27*c)
+ (15*b^2*e^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x])/(64*c*Sqrt[1 - c
^2*x^2]) - (4*b*e^2*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x]))/
(3*Sqrt[1 - c^2*x^2]) - (3*b*c*e^2*x^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a +
 b*ArcSin[c*x]))/(8*Sqrt[1 - c^2*x^2]) + (4*b*c^2*e^2*x^3*Sqrt[d + c*d*x]*S
qrt[e - c*e*x]*(a + b*ArcSin[c*x]))/(9*Sqrt[1 - c^2*x^2]) - (b*c^3*e^2*x^4*
Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x]))/(8*Sqrt[1 - c^2*x^2])
+ (3*e^2*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2)/8 + (c^2*
e^2*x^3*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2)/4 + (2*e^2*S
qrt[d + c*d*x]*Sqrt[e - c*e*x]*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(3*c) +
 (5*e^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^3)/(24*b*c*Sqrt
[1 - c^2*x^2])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 444

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
```

```
, 0] && NeQ[p, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int \sqrt{d+cdx}\,(e-cex)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx = \frac{\left(\sqrt{d+cdx}\,\sqrt{e-cex}\right)\int (e-cex)^2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{\left(\sqrt{d+cdx}\,\sqrt{e-cex}\right)\int \left(e^2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^2 - 2ce^2x\sqrt{}\right.}{\sqrt{1}}$$

$$= \frac{\left(e^2\sqrt{d+cdx}\,\sqrt{e-cex}\right)\int \sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}} - \frac{(2ce}{}$$

$$= \frac{1}{2}e^2x\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)^2 + \frac{1}{4}c^2e^2x^3\sqrt{d+cdx}\,\sqrt{}$$

$$= -\frac{4be^2x\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)}{3\sqrt{1-c^2x^2}} - \frac{bce^2x^2\sqrt{d+cdx}\,\sqrt{}}{2\sqrt{}}$$

$$= -\frac{1}{4}b^2e^2x\sqrt{d+cdx}\,\sqrt{e-cex} - \frac{1}{32}b^2c^2e^2x^3\sqrt{d+cdx}\,\sqrt{e-cex} - \frac{4}{}$$

$$= -\frac{15}{64}b^2e^2x\sqrt{d+cdx}\,\sqrt{e-cex} - \frac{1}{32}b^2c^2e^2x^3\sqrt{d+cdx}\,\sqrt{e-cex} +$$

$$= -\frac{8b^2e^2\sqrt{d+cdx}\,\sqrt{e-cex}}{9c} - \frac{15}{64}b^2e^2x\sqrt{d+cdx}\,\sqrt{e-cex} - \frac{1}{32}b^2$$

Mathematica [A] time = 2.59, size = 555, normalized size = 0.91

$$\frac{e^2\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(3\left(-1536a^2c^2x^2\sqrt{1-c^2x^2} + 864a^2cx\sqrt{1-c^2x^2} + 1536a^2\sqrt{1-c^2x^2} + 576a^2c^3x^3\sqrt{1-c^2x^2}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d + c*d*x]*(e - c*e*x)^(5/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (1440*b^2*e^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^3 - 4320*a^2*Sqrt
[d]*e^(5/2)*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/
(Sqrt[d]*Sqrt[e]*(-1 + c^2*x^2))] - 12*b*e^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x
]*ArcSin[c*x]*(576*b*c*x - 768*a*Sqrt[1 - c^2*x^2] + 768*a*c^2*x^2*Sqrt[1 -
 c^2*x^2] - 144*b*Cos[2*ArcSin[c*x]] + 9*b*Cos[4*ArcSin[c*x]] - 288*a*Sin[2
*ArcSin[c*x]] + 64*b*Sin[3*ArcSin[c*x]] + 36*a*Sin[4*ArcSin[c*x]]) + 72*b*e
^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^2*(60*a + 48*b*Sqrt[1 - c^2*
x^2] + 16*b*Cos[3*ArcSin[c*x]] + 24*b*Sin[2*ArcSin[c*x]] - 3*b*Sin[4*ArcSin
[c*x]]) + e^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(1728*a*b*Cos[2*ArcSin[c*x]]
- 256*b^2*Cos[3*ArcSin[c*x]] + 3*(-3072*a*b*c*x + 1024*a*b*c^3*x^3 + 1536*a
^2*Sqrt[1 - c^2*x^2] - 2304*b^2*Sqrt[1 - c^2*x^2] + 864*a^2*c*x*Sqrt[1 - c^
2*x^2] - 1536*a^2*c^2*x^2*Sqrt[1 - c^2*x^2] + 576*a^2*c^3*x^3*Sqrt[1 - c^2*
x^2] - 36*a*b*Cos[4*ArcSin[c*x]] - 288*b^2*Sin[2*ArcSin[c*x]] + 9*b^2*Sin[4
*ArcSin[c*x]])))/(6912*c*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(a^2c^2e^2x^2 - 2\,a^2ce^2x + a^2e^2 + \left(b^2c^2e^2x^2 - 2\,b^2ce^2x + b^2e^2\right)\arcsin(cx)^2 + 2\left(abc^2e^2x^2 - 2\,abce^2x + abe^2\right)\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm
="fricas")
```

```
[Out] integral((a^2*c^2*e^2*x^2 - 2*a^2*c*e^2*x + a^2*e^2 + (b^2*c^2*e^2*x^2 - 2*
b^2*c*e^2*x + b^2*e^2)*arcsin(c*x)^2 + 2*(a*b*c^2*e^2*x^2 - 2*a*b*c*e^2*x +
 a*b*e^2)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*e*x + e), x)
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm
="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(t_nostep)]Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Warning, integration of abs or sign assumes constant sign by intervals (cor
rect if the argument is real):Check [abs(t_nostep)]Warning, integration of
abs or sign assumes constant sign by intervals (correct if the argument is
real):Check [abs(t_nostep)]Simplification assuming t_nostep near 0Simplific
ation assuming t_nostep near 0Simplification assuming t_nostep near 0Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Simplification assuming t_nostep near 0Warning, integration of abs or sign
assumes constant sign by intervals (correct if the argument is real):Check
[abs(t_nostep)]Simplification assuming t_nostep near 0Simplification assumi
ng t_nostep near 0Simplification assuming t_nostep near 0Simplification ass
uming t_nostep near 0Simplification assuming t_nostep near 0Simplification
assuming t_nostep near 0Simplification assuming t_nostep near 0Simplificati
on assuming t_nostep near 0Warning, integration of abs or sign assumes cons
tant sign by intervals (correct if the argument is real):Check [abs(t_noste
p)]Warning, integration of abs or sign assumes constant sign by intervals (
correct if the argument is real):Check [abs(t_nostep)]sym2poly/r2sym(const
gen & e,const index_m & i,const vecteur & l) Error: Bad Argument Value
```

maple [**F**] time = 0.32, size = 0, normalized size = 0.00

$$\int \sqrt{cdx+d}\,\left(-cex+e\right)^{\frac{5}{2}}\left(a+b\arcsin\left(cx\right)\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(1/2)*(-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] int((c*d*x+d)^(1/2)*(-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2,x)
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{24}\left(15\sqrt{-c^{2}dex^{2}+de}\,e^{2}x+\frac{15\,de^{3}\arcsin\left(cx\right)}{\sqrt{de}\,c}-\frac{6\left(-c^{2}dex^{2}+de\right)^{\frac{3}{2}}ex}{d}+\frac{16\left(-c^{2}dex^{2}+de\right)^{\frac{3}{2}}e}{cd}\right)a^{2}+\sqrt{d}\sqrt{e}\int\Big(\Big($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2,x, algorithm
="maxima")
```

```
[Out] 1/24*(15*sqrt(-c^2*d*e*x^2 + d*e)*e^2*x + 15*d*e^3*arcsin(c*x)/(sqrt(d*e)*c
) - 6*(-c^2*d*e*x^2 + d*e)^(3/2)*e*x/d + 16*(-c^2*d*e*x^2 + d*e)^(3/2)*e/(c
*d))*a^2 + sqrt(d)*sqrt(e)*integrate(((b^2*c^2*e^2*x^2 - 2*b^2*c*e^2*x + b^
2*e^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c^2*e^2*x^2 -
2*a*b*c*e^2*x + a*b*e^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c
*x + 1)*sqrt(-c*x + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a + b \operatorname{asin}(c x))^2 \sqrt{d + c d x} \, (e - c e x)^{5/2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2*(d + c*d*x)^(1/2)*(e - c*e*x)^(5/2),x)
```

```
[Out] int((a + b*asin(c*x))^2*(d + c*d*x)^(1/2)*(e - c*e*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(1/2)*(-c*e*x+e)**(5/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Timed out
```

3.555 $\int \frac{(e-cex)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+cdx}}\,dx$

Optimal. Leaf size=559

$$\frac{5e^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{6bc\sqrt{cdx+d}\sqrt{e-cex}}+\frac{ce^3x^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{3\sqrt{cdx+d}\sqrt{e-cex}}-\frac{3e^3x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{2\sqrt{cdx+d}\sqrt{e-cex}}+\frac{11e^3}{}$$

```
[Out] -68/9*b^2*e^3*(-c^2*x^2+1)/c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+3/4*b^2*e^3*x
*(-c^2*x^2+1)/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+2/27*b^2*e^3*(-c^2*x^2+1)^2/
c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+11/3*e^3*(-c^2*x^2+1)*(a+b*arcsin(c*x))^
2/c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-3/2*e^3*x*(-c^2*x^2+1)*(a+b*arcsin(c*x
))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+1/3*c*e^3*x^2*(-c^2*x^2+1)*(a+b*arcsi
n(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-3/4*b^2*e^3*arcsin(c*x)*(-c^2*x^
2+1)^(1/2)/c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-22/3*b*e^3*x*(a+b*arcsin(c*x)
)*(-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+3/2*b*c*e^3*x^2*(a+b*
arcsin(c*x))*(-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-2/9*b*c^2*
e^3*x^3*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/
2)+5/6*e^3*(a+b*arcsin(c*x))^3*(-c^2*x^2+1)^(1/2)/b/c/(c*d*x+d)^(1/2)/(-c*e
*x+e)^(1/2)
```

Rubi [A] time = 0.69, antiderivative size = 559, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 10, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312, Rules used = {4673, 4773, 3317, 3296, 2638, 3311, 32, 2635, 8, 2633}

$$\frac{5e^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{6bc\sqrt{cdx+d}\sqrt{e-cex}}+\frac{ce^3x^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{3\sqrt{cdx+d}\sqrt{e-cex}}-\frac{3e^3x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{2\sqrt{cdx+d}\sqrt{e-cex}}+\frac{11e^3}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e - c*e*x)^(5/2)*(a + b*ArcSin[c*x])^2)/Sqrt[d + c*d*x],x]
```

```
[Out] (-68*b^2*e^3*(1 - c^2*x^2))/(9*c*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (3*b^2*
e^3*x*(1 - c^2*x^2))/(4*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (2*b^2*e^3*(1 -
c^2*x^2)^2)/(27*c*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) - (3*b^2*e^3*Sqrt[1 - c^
2*x^2]*ArcSin[c*x])/(4*c*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) - (22*b*e^3*x*Sqr
t[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(3*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (
3*b*c*e^3*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(2*Sqrt[d + c*d*x]*Sqr
t[e - c*e*x]) - (2*b*c^2*e^3*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(9*
Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (11*e^3*(1 - c^2*x^2)*(a + b*ArcSin[c*x]
)^2)/(3*c*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) - (3*e^3*x*(1 - c^2*x^2)*(a + b*
ArcSin[c*x])^2)/(2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (c*e^3*x^2*(1 - c^2*x
^2)*(a + b*ArcSin[c*x])^2)/(3*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (5*e^3*Sqr
t[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3)/(6*b*c*Sqrt[d + c*d*x]*Sqrt[e - c*e*x
])
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2633

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
```

```
&& IGtQ[(n - 1)/2, 0]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rubi steps

$$\int \frac{(e-cex)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+cdx}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(e-cex)^3\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\sqrt{e-cex}}$$

$$= \frac{\sqrt{1-c^2x^2}\,\text{Subst}\left(\int (a+bx)^2(ce-ce\sin(x))^3\,dx, x, \sin^{-1}(cx)\right)}{c^4\sqrt{d+cdx}\sqrt{e-cex}}$$

$$= \frac{\sqrt{1-c^2x^2}\,\text{Subst}\left(\int \left(c^3e^3(a+bx)^2 - 3c^3e^3(a+bx)^2\sin(x) + 3c^3e^3(a+\right.\right.}{c^4\sqrt{d+cdx}\sqrt{e-ce}}$$

$$= \frac{e^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{d+cdx}\sqrt{e-cex}} - \frac{\left(e^3\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int (a+bx)^2\sin^3\right.}{c\sqrt{d+cdx}\sqrt{e-ce}}$$

$$= \frac{3bce^3x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{d+cdx}\sqrt{e-cex}} - \frac{2bc^2e^3x^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(c\right.}{9\sqrt{d+cdx}\sqrt{e-cex}}$$

$$= \frac{3b^2e^3x\left(1-c^2x^2\right)}{4\sqrt{d+cdx}\sqrt{e-cex}} - \frac{6be^3x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d+cdx}\sqrt{e-cex}} + \frac{3bce^3x^2\sqrt{1}}{2\sqrt{c}}$$

$$= -\frac{56b^2e^3\left(1-c^2x^2\right)}{9c\sqrt{d+cdx}\sqrt{e-cex}} + \frac{3b^2e^3x\left(1-c^2x^2\right)}{4\sqrt{d+cdx}\sqrt{e-cex}} + \frac{2b^2e^3\left(1-c^2x^2\right)^2}{27c\sqrt{d+cdx}\sqrt{e-ce}}$$

$$= -\frac{68b^2e^3\left(1-c^2x^2\right)}{9c\sqrt{d+cdx}\sqrt{e-cex}} + \frac{3b^2e^3x\left(1-c^2x^2\right)}{4\sqrt{d+cdx}\sqrt{e-cex}} + \frac{2b^2e^3\left(1-c^2x^2\right)^2}{27c\sqrt{d+cdx}\sqrt{e-ce}}$$

Mathematica [A] time = 3.62, size = 473, normalized size = 0.85

$$e^2\sqrt{cdx+d}\sqrt{e-cex}\left(72a^2c^2x^2\sqrt{1-c^2x^2} - 324a^2cx\sqrt{1-c^2x^2} + 792a^2\sqrt{1-c^2x^2} - 1620abcx + 12ab\sin\left(3\,\text{si}\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((e - c*e*x)^(5/2)*(a + b*ArcSin[c*x])^2)/Sqrt[d + c*d*x],x]
```

```
[Out] (180*b^2*e^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^3 - 540*a^2*Sqrt[d
]*e^(5/2)*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(S
qrt[d]*Sqrt[e]*(-1 + c^2*x^2))] - 6*b*e^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*A
rcSin[c*x]*(264*b*c*x + 8*b*c^3*x^3 - 270*a*Sqrt[1 - c^2*x^2] + 108*a*c*x*S
qrt[1 - c^2*x^2] + 27*b*Cos[2*ArcSin[c*x]] + 6*a*Cos[3*ArcSin[c*x]]) + 18*b
*e^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^2*(30*a + 45*b*Sqrt[1 - c^
2*x^2] - b*Cos[3*ArcSin[c*x]] - 9*b*Sin[2*ArcSin[c*x]]) + e^2*Sqrt[d + c*d*
x]*Sqrt[e - c*e*x]*(-1620*a*b*c*x + 792*a^2*Sqrt[1 - c^2*x^2] - 1620*b^2*Sq
rt[1 - c^2*x^2] - 324*a^2*c*x*Sqrt[1 - c^2*x^2] + 72*a^2*c^2*x^2*Sqrt[1 - c
^2*x^2] - 162*a*b*Cos[2*ArcSin[c*x]] + 4*b^2*Cos[3*ArcSin[c*x]] + 81*b^2*Si
n[2*ArcSin[c*x]] + 12*a*b*Sin[3*ArcSin[c*x]]))/(216*c*d*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.50, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(a^2c^2e^2x^2 - 2\,a^2ce^2x + a^2e^2 + \left(b^2c^2e^2x^2 - 2\,b^2ce^2x + b^2e^2\right)\arcsin(cx)^2 + 2\left(abc^2e^2x^2 - 2\,abce^2x + a\right.\right.}{\sqrt{cdx+d}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2),x, algorithm
="fricas")
```

```
[Out] integral((a^2*c^2*e^2*x^2 - 2*a^2*c*e^2*x + a^2*e^2 + (b^2*c^2*e^2*x^2 - 2*
b^2*c*e^2*x + b^2*e^2)*arcsin(c*x)^2 + 2*(a*b*c^2*e^2*x^2 - 2*a*b*c*e^2*x +
 a*b*e^2)*arcsin(c*x))*sqrt(-c*e*x + e)/sqrt(c*d*x + d), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2),x, algorithm
="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(t_nostep)]Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Warning, integration of abs or sign assumes constant sign by intervals (cor
rect if the argument is real):Check [abs(t_nostep)]Warning, integration of
abs or sign assumes constant sign by intervals (correct if the argument is
real):Check [abs(t_nostep)]Simplification assuming t_nostep near 0Simplific
ation assuming t_nostep near 0Simplification assuming t_nostep near 0Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Simplification assuming t_nostep near 0Warning, integration of abs or sign
assumes constant sign by intervals (correct if the argument is real):Check
[abs(t_nostep)]Simplification assuming t_nostep near 0Simplification assumi
ng t_nostep near 0Simplification assuming t_nostep near 0Simplification ass
uming t_nostep near 0Simplification assuming t_nostep near 0Simplification
assuming t_nostep near 0Simplification assuming t_nostep near 0Simplificati
on assuming t_nostep near 0Warning, integration of abs or sign assumes cons
tant sign by intervals (correct if the argument is real):Check [abs(t_noste
p)]Warning, integration of abs or sign assumes constant sign by intervals (
correct if the argument is real):Check [abs(t_nostep)]sym2poly/r2sym(const
gen & e,const index_m & i,const vecteur & l) Error: Bad Argument Value
```

maple [F] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{(-cex+e)^{\frac{5}{2}} (a+b\arcsin(cx))^2}{\sqrt{cdx+d}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2),x)
```

```
[Out] int((-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{6}\left(\frac{2\sqrt{-c^2dex^2+de}\,ce^2x^2}{d} - \frac{9\sqrt{-c^2dex^2+de}\,e^2x}{d} + \frac{15\,e^3\arcsin(cx)}{\sqrt{de}\,c} + \frac{22\sqrt{-c^2dex^2+de}\,e^2}{cd}\right)a^2 + \sqrt{d}\sqrt{e}\int \frac{\left(\left(b^2c\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2),x, algorithm
="maxima")
```

```
[Out] 1/6*(2*sqrt(-c^2*d*e*x^2 + d*e)*c*e^2*x^2/d - 9*sqrt(-c^2*d*e*x^2 + d*e)*e^
2*x/d + 15*e^3*arcsin(c*x)/(sqrt(d*e)*c) + 22*sqrt(-c^2*d*e*x^2 + d*e)*e^2/
```

```
(c*d))*a^2 + sqrt(d)*sqrt(e)*integrate(((b^2*c^2*e^2*x^2 - 2*b^2*c*e^2*x +
b^2*e^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c^2*e^2*x^2
- 2*a*b*c*e^2*x + a*b*e^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt
(c*x + 1)*sqrt(-c*x + 1)/(c*d*x + d), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\mathrm{asin}\,(c\,x))^2\,(e - c\,e\,x)^{5/2}}{\sqrt{d + c\,d\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(e - c*e*x)^(5/2))/(d + c*d*x)^(1/2),x)
```

```
[Out] int(((a + b*asin(c*x))^2*(e - c*e*x)^(5/2))/(d + c*d*x)^(1/2), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*e*x+e)**(5/2)*(a+b*asin(c*x))**2/(c*d*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.556 $\int \frac{(e-cex)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}}\,dx$

Optimal. Leaf size=918

$$-\frac{5\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^3e^4}{2bc(cxd+d)^{3/2}(e-cex)^{3/2}}-\frac{b^2x\left(1-c^2x^2\right)^2e^4}{4(cxd+d)^{3/2}(e-cex)^{3/2}}+\frac{8b^2\left(1-c^2x^2\right)^2e^4}{c(cxd+d)^{3/2}(e-cex)^{3/2}}+\frac{x\left(1-c^2x^2\right)^2\left(a+b\sin\right.}{2(cxd+d)^{3/2}(e-c}$$

```
[Out] 8*a*b*e^4*x*(-c^2*x^2+1)^(3/2)/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+8*b^2*e^4*(
-c^2*x^2+1)^2/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-1/4*b^2*e^4*x*(-c^2*x^2+1)
^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+1/4*b^2*e^4*(-c^2*x^2+1)^(3/2)*arcsin(c
*x)/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+8*b^2*e^4*x*(-c^2*x^2+1)^(3/2)*arcsi
n(c*x)/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-1/2*b*c*e^4*x^2*(-c^2*x^2+1)^(3/2)*
(a+b*arcsin(c*x))/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-8*e^4*(-c^2*x^2+1)*(a+b*
arcsin(c*x))^2/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+8*e^4*x*(-c^2*x^2+1)*(a+b
*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+16*I*b^2*e^4*(-c^2*x^2+1)^
(3/2)*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/(c*d*x+d)^(3/2)/(-c*e*x+e)
^(3/2)-4*e^4*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(3/2)/(-c*e*x+e
)^(3/2)+1/2*e^4*x*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*
x+e)^(3/2)-5/2*e^4*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))^3/b/c/(c*d*x+d)^(3/
2)/(-c*e*x+e)^(3/2)-8*I*e^4*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))^2/c/(c*d*x
+d)^(3/2)/(-c*e*x+e)^(3/2)+16*b*e^4*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))*ln
(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-32*I*b*
e^4*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))*arctan(I*c*x+(-c^2*x^2+1)^(1/2))/c
/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-16*I*b^2*e^4*(-c^2*x^2+1)^(3/2)*polylog(2
,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-8*I*b^2*e
^4*(-c^2*x^2+1)^(3/2)*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c/(c*d*x+d)^
(3/2)/(-c*e*x+e)^(3/2)
```

Rubi [A] time = 1.27, antiderivative size = 918, normalized size of antiderivative = 1.00, number of steps used = 28, number of rules used = 19, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.594, Rules used = {4673, 4775, 4763, 4651, 4675, 3719, 2190, 2279, 2391, 4677, 4657, 4181, 4641, 4619, 261, 4707, 4627, 321, 216}

$$-\frac{5\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^3e^4}{2bc(cxd+d)^{3/2}(e-cex)^{3/2}}-\frac{b^2x\left(1-c^2x^2\right)^2e^4}{4(cxd+d)^{3/2}(e-cex)^{3/2}}+\frac{8b^2\left(1-c^2x^2\right)^2e^4}{c(cxd+d)^{3/2}(e-cex)^{3/2}}+\frac{x\left(1-c^2x^2\right)^2\left(a+b\sin\right.}{2(cxd+d)^{3/2}(e-c}$$

Antiderivative was successfully verified.

```
[In] Int[((e - c*e*x)^(5/2)*(a + b*ArcSin[c*x])^2)/(d + c*d*x)^(3/2),x]
```

```
[Out] (8*a*b*e^4*x*(1 - c^2*x^2)^(3/2))/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) + (
8*b^2*e^4*(1 - c^2*x^2)^2)/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) - (b^2*e
^4*x*(1 - c^2*x^2)^2)/(4*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) + (b^2*e^4*(1
 - c^2*x^2)^(3/2)*ArcSin[c*x])/(4*c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) +
(8*b^2*e^4*x*(1 - c^2*x^2)^(3/2)*ArcSin[c*x])/((d + c*d*x)^(3/2)*(e - c*e*x
)^(3/2)) - (b*c*e^4*x^2*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(2*(d + c*
d*x)^(3/2)*(e - c*e*x)^(3/2)) - (8*e^4*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)
/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) + (8*e^4*x*(1 - c^2*x^2)*(a + b*Ar
cSin[c*x])^2)/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) - ((8*I)*e^4*(1 - c^2*x
^2)^(3/2)*(a + b*ArcSin[c*x])^2)/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) -
(4*e^4*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x])^2)/(c*(d + c*d*x)^(3/2)*(e - c*e
*x)^(3/2)) + (e^4*x*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x])^2)/(2*(d + c*d*x)^(
3/2)*(e - c*e*x)^(3/2)) - (5*e^4*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^3)
/(2*b*c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) - ((32*I)*b*e^4*(1 - c^2*x^2)^
(3/2)*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*(
e - c*e*x)^(3/2)) + (16*b*e^4*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])*Log[1
 + E^((2*I)*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) + ((16*I
```

```
)*b^2*e^4*(1 - c^2*x^2)^(3/2)*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(c*(d + c
*d*x)^(3/2)*(e - c*e*x)^(3/2)) - ((16*I)*b^2*e^4*(1 - c^2*x^2)^(3/2)*PolyLo
g[2, I*E^(I*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) - ((8*I)
*b^2*e^4*(1 - c^2*x^2)^(3/2)*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(c*(d + c*
d*x)^(3/2)*(e - c*e*x)^(3/2))
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
```

```
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4775

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(e-cex)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}}dx = \frac{\left(1-c^2x^2\right)^{3/2}\int \frac{(e-cex)^4\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}dx}{(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= \frac{\left(1-c^2x^2\right)^{3/2}\int \left(\frac{8\left(e^4-ce^4x\right)\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}} - \frac{7e^4\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}} + \frac{4ce^4x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}} \right.}{(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= \frac{\left(8\left(1-c^2x^2\right)^{3/2}\right)\int \frac{\left(e^4-ce^4x\right)\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}dx}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{\left(7e^4\left(1-c^2x^2\right)^{3/2}\right)\int \frac{\left(a+b\sin^{-1}\right.}{\sqrt{1-c^2}}}{(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= -\frac{4e^4\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{e^4x\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{2(d+cdx)^{3/2}(e-cex)^{3/2}} -$$

$$= \frac{8abe^4x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{bce^4x^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{2(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{4e^4\left(1-\right.}{c(d}$$

$$= \frac{8abe^4x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{b^2e^4x\left(1-c^2x^2\right)^2}{4(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{8b^2e^4x\left(1-c^2x^2\right)^{3/2}\,\mathrm{si}}{(d+cdx)^{3/2}(e-ce}$$

$$= \frac{8abe^4x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{8b^2e^4\left(1-c^2x^2\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{b^2e^4x\left(1-c^2x^2\right)^2}{4(d+cdx)^{3/2}(e-cex)}$$

$$= \frac{8abe^4x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{8b^2e^4\left(1-c^2x^2\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{b^2e^4x\left(1-c^2x^2\right)^2}{4(d+cdx)^{3/2}(e-cex)}$$

$$= \frac{8abe^4x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{8b^2e^4\left(1-c^2x^2\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{b^2e^4x\left(1-c^2x^2\right)^2}{4(d+cdx)^{3/2}(e-cex)}$$

$$= \frac{8abe^4x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{8b^2e^4\left(1-c^2x^2\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{b^2e^4x\left(1-c^2x^2\right)^2}{4(d+cdx)^{3/2}(e-cex)}$$

$$= \frac{8abe^4x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{8b^2e^4\left(1-c^2x^2\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{b^2e^4x\left(1-c^2x^2\right)^2}{4(d+cdx)^{3/2}(e-cex)}$$

Mathematica [B] time = 11.54, size = 2291, normalized size = 2.50

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((e - c*e*x)^(5/2)*(a + b*ArcSin[c*x])^2)/(d + c*d*x)^(3/2),x]
```

```
[Out] (Sqrt[-(e*(-1 + c*x))]*Sqrt[d*(1 + c*x)]*((-4*a^2*e^2)/d^2 + (a^2*c*e^2*x)/
(2*d^2) - (8*a^2*e^2)/(d^2*(1 + c*x))))/c + (15*a^2*e^(5/2)*ArcTan[(c*x*Sqr
t[-(e*(-1 + c*x))]*Sqrt[d*(1 + c*x)])/(Sqrt[d]*Sqrt[e]*(-1 + c*x)*(1 + c*x)
)])/(2*c*d^(3/2)) - (a*b*e^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[-(d*e*(1
- c^2*x^2))]*(Cos[ArcSin[c*x]/2]*(ArcSin[c*x]*(4 + ArcSin[c*x]) - 8*Log[Cos
[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]) + ((-4 + ArcSin[c*x])*ArcSin[c*x] -
8*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]])*Sin[ArcSin[c*x]/2]))/(c*d^2
*Sqrt[(-d - c*d*x)*(e - c*e*x)]*Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] + Sin
[ArcSin[c*x]/2])) - (4*a*b*e^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[-(d*e*(
1 - c^2*x^2))]*(Cos[ArcSin[c*x]/2]*(-(c*x) + 2*ArcSin[c*x] + Sqrt[1 - c^2*x
^2]*ArcSin[c*x] + ArcSin[c*x]^2 - 4*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x
```

```
]/2]]) + (-(c*x) - 2*ArcSin[c*x] + Sqrt[1 - c^2*x^2]*ArcSin[c*x] + ArcSin[c
*x]^2 - 4*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]])*Sin[ArcSin[c*x]/2])
)/(c*d^2*Sqrt[(-d - c*d*x)*(e - c*e*x)]*Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/
2] + Sin[ArcSin[c*x]/2])) - (b^2*e^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[-
(d*e*(1 - c^2*x^2))]*(Cos[ArcSin[c*x]/2]*((-6*I)*Pi*ArcSin[c*x] + (6 + 6*I)
*ArcSin[c*x]^2 + ArcSin[c*x]^3 - 24*Pi*Log[1 + E^((-I)*ArcSin[c*x])] - 12*(
Pi + 2*ArcSin[c*x])*Log[1 - I*E^(I*ArcSin[c*x])] + 24*Pi*Log[Cos[ArcSin[c*x
]/2]] + 12*Pi*Log[Sin[(Pi + 2*ArcSin[c*x])/4]]) + ((-6*I)*Pi*ArcSin[c*x] -
(6 - 6*I)*ArcSin[c*x]^2 + ArcSin[c*x]^3 - 24*Pi*Log[1 + E^((-I)*ArcSin[c*x]
)] - 12*(Pi + 2*ArcSin[c*x])*Log[1 - I*E^(I*ArcSin[c*x])] + 24*Pi*Log[Cos[A
rcSin[c*x]/2]] + 12*Pi*Log[Sin[(Pi + 2*ArcSin[c*x])/4]])*Sin[ArcSin[c*x]/2]
 + (24*I)*PolyLog[2, I*E^(I*ArcSin[c*x])]*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[
c*x]/2])))/(3*c*d^2*Sqrt[(-d - c*d*x)*(e - c*e*x)]*Sqrt[1 - c^2*x^2]*(Cos[A
rcSin[c*x]/2] + Sin[ArcSin[c*x]/2])) - (2*b^2*e^2*Sqrt[d + c*d*x]*Sqrt[e -
c*e*x]*Sqrt[-(d*e*(1 - c^2*x^2))]*(Cos[ArcSin[c*x]/2]*(3*Sqrt[1 - c^2*x^2]*
(-2 + ArcSin[c*x]^2) + 2*((-3*I)*Pi*ArcSin[c*x] - 3*c*x*ArcSin[c*x] + (3 +
3*I)*ArcSin[c*x]^2 + ArcSin[c*x]^3 - 12*Pi*Log[1 + E^((-I)*ArcSin[c*x])] -
6*Pi*Log[1 - I*E^(I*ArcSin[c*x])] - 12*ArcSin[c*x]*Log[1 - I*E^(I*ArcSin[c*
x])] + 12*Pi*Log[Cos[ArcSin[c*x]/2]] + 6*Pi*Log[Sin[(Pi + 2*ArcSin[c*x])/4]
])) + (3*Sqrt[1 - c^2*x^2]*(-2 + ArcSin[c*x]^2) + 2*((-3*I)*Pi*ArcSin[c*x]
- 3*c*x*ArcSin[c*x] - (3 - 3*I)*ArcSin[c*x]^2 + ArcSin[c*x]^3 - 12*Pi*Log[1
 + E^((-I)*ArcSin[c*x])] - 6*Pi*Log[1 - I*E^(I*ArcSin[c*x])] - 12*ArcSin[c*
x]*Log[1 - I*E^(I*ArcSin[c*x])] + 12*Pi*Log[Cos[ArcSin[c*x]/2]] + 6*Pi*Log[
Sin[(Pi + 2*ArcSin[c*x])/4]]))*Sin[ArcSin[c*x]/2] + (24*I)*PolyLog[2, I*E^(
I*ArcSin[c*x])]*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])))/(3*c*d^2*Sqrt[(
-d - c*d*x)*(e - c*e*x)]*Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] + Sin[ArcSin
[c*x]/2])) - (b^2*e^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[-(d*e*(1 - c^2*x
^2))]*((96*I)*PolyLog[2, I*E^(I*ArcSin[c*x])]*(Cos[ArcSin[c*x]/2] + Sin[Arc
Sin[c*x]/2]) + Sin[ArcSin[c*x]/2]*((-24*I)*Pi*ArcSin[c*x] - 48*c*x*ArcSin[c
*x] - (24 - 24*I)*ArcSin[c*x]^2 + 10*ArcSin[c*x]^3 + 3*Sqrt[1 - c^2*x^2]*(-
16 + c*x + 8*ArcSin[c*x]^2) - 3*ArcSin[c*x]*Cos[2*ArcSin[c*x]] - 96*Pi*Log[
1 + E^((-I)*ArcSin[c*x])] - 48*Pi*Log[1 - I*E^(I*ArcSin[c*x])] - 96*ArcSin[
c*x]*Log[1 - I*E^(I*ArcSin[c*x])] + 96*Pi*Log[Cos[ArcSin[c*x]/2]] + 48*Pi*L
og[Sin[(Pi + 2*ArcSin[c*x])/4]] - 3*ArcSin[c*x]^2*Sin[2*ArcSin[c*x]]) + Cos
[ArcSin[c*x]/2]*((-24*I)*Pi*ArcSin[c*x] - 48*c*x*ArcSin[c*x] + (24 + 24*I)*
ArcSin[c*x]^2 + 10*ArcSin[c*x]^3 + 3*Sqrt[1 - c^2*x^2]*(-16 + c*x + 8*ArcSi
n[c*x]^2) - 3*ArcSin[c*x]*Cos[2*ArcSin[c*x]] - 96*Pi*Log[1 + E^((-I)*ArcSin
[c*x])] - 48*Pi*Log[1 - I*E^(I*ArcSin[c*x])] - 96*ArcSin[c*x]*Log[1 - I*E^(
I*ArcSin[c*x])] + 96*Pi*Log[Cos[ArcSin[c*x]/2]] + 48*Pi*Log[Sin[(Pi + 2*Arc
Sin[c*x])/4]] - 3*ArcSin[c*x]^2*Sin[2*ArcSin[c*x]])))/(12*c*d^2*Sqrt[(-d -
c*d*x)*(e - c*e*x)]*Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]
/2])) - (a*b*e^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[-(d*e*(1 - c^2*x^2))]
*((15 + 14*ArcSin[c*x])*Cos[(3*ArcSin[c*x])/2] - Cos[(5*ArcSin[c*x])/2] + 2
*ArcSin[c*x]*Cos[(5*ArcSin[c*x])/2] + 4*Cos[ArcSin[c*x]/2]*(-4 + 12*ArcSin[
c*x] + 5*ArcSin[c*x]^2 - 16*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]) -
 16*Sin[ArcSin[c*x]/2] - 48*ArcSin[c*x]*Sin[ArcSin[c*x]/2] + 20*ArcSin[c*x]
^2*Sin[ArcSin[c*x]/2] - 64*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]*Sin
[ArcSin[c*x]/2] - 15*Sin[(3*ArcSin[c*x])/2] + 14*ArcSin[c*x]*Sin[(3*ArcSin[
c*x])/2] - Sin[(5*ArcSin[c*x])/2] - 2*ArcSin[c*x]*Sin[(5*ArcSin[c*x])/2]))/
(8*c*d^2*Sqrt[(-d - c*d*x)*(e - c*e*x)]*Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/
2] + Sin[ArcSin[c*x]/2]))
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(a^2c^2e^2x^2 - 2\,a^2ce^2x + a^2e^2 + \left(b^2c^2e^2x^2 - 2\,b^2ce^2x + b^2e^2\right)\arcsin\left(cx\right)^2 + 2\left(abc^2e^2x^2 - 2\,abce^2x + a\right.}{c^2d^2x^2 + 2\,cd^2x + d^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2),x, algorithm
```

```
="fricas")
```

```
[Out] integral((a^2*c^2*e^2*x^2 - 2*a^2*c*e^2*x + a^2*e^2 + (b^2*c^2*e^2*x^2 - 2*
b^2*c*e^2*x + b^2*e^2)*arcsin(c*x)^2 + 2*(a*b*c^2*e^2*x^2 - 2*a*b*c*e^2*x +
 a*b*e^2)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*e*x + e)/(c^2*d^2*x^2 + 2*c*
d^2*x + d^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(-cex+e)^{\frac{5}{2}}(b\arcsin{(cx)}+a)^2}{(cdx+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2),x, algorithm
="giac")
```

```
[Out] integrate((-c*e*x + e)^(5/2)*(b*arcsin(c*x) + a)^2/(c*d*x + d)^(3/2), x)
```

maple [F] time = 0.30, size = 0, normalized size = 0.00

$$\int \frac{(-cex+e)^{\frac{5}{2}}\,(a+b\arcsin{(cx)})^2}{(cdx+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2),x)
```

```
[Out] int((-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\left(\frac{c^2e^3x^3}{\sqrt{-c^2dex^2+de}\,d}-\frac{8\,ce^3x^2}{\sqrt{-c^2dex^2+de}\,d}-\frac{17\,e^3x}{\sqrt{-c^2dex^2+de}\,d}+\frac{15\,e^3\arcsin{(cx)}}{\sqrt{de}\,cd}+\frac{24\,e^3}{\sqrt{-c^2dex^2+de}\,cd}\right)a^2+\sqrt{d}\,\sqrt{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2),x, algorithm
="maxima")
```

```
[Out] -1/2*(c^2*e^3*x^3/(sqrt(-c^2*d*e*x^2 + d*e)*d) - 8*c*e^3*x^2/(sqrt(-c^2*d*e
*x^2 + d*e)*d) - 17*e^3*x/(sqrt(-c^2*d*e*x^2 + d*e)*d) + 15*e^3*arcsin(c*x)
/(sqrt(d*e)*c*d) + 24*e^3/(sqrt(-c^2*d*e*x^2 + d*e)*c*d))*a^2 + sqrt(d)*sqr
t(e)*integrate(((b^2*c^2*e^2*x^2 - 2*b^2*c*e^2*x + b^2*e^2)*arctan2(c*x, sq
rt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c^2*e^2*x^2 - 2*a*b*c*e^2*x + a*b*e^
2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)
/(c^2*d^2*x^2 + 2*c*d^2*x + d^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{(a+b\,\mathrm{asin}\left(c\,x\right))}^2\,{(e-c\,e\,x)}^{5/2}}{{(d+c\,d\,x)}^{3/2}} \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(e - c*e*x)^(5/2))/(d + c*d*x)^(3/2),x)
```

```
[Out] int(((a + b*asin(c*x))^2*(e - c*e*x)^(5/2))/(d + c*d*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*e*x+e)**(5/2)*(a+b*asin(c*x))**2/(c*d*x+d)**(3/2),x)
```

```
[Out] Timed out
```

3.557 $\int \frac{(e-cex)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{5/2}}\,dx$

Optimal. Leaf size=729

$$-\frac{2abe^5x\left(1-c^2x^2\right)^{5/2}}{(cdx+d)^{5/2}(e-cex)^{5/2}}+\frac{5e^5\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(cdx+d)^{5/2}(e-cex)^{5/2}}+\frac{e^5\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2}{c(cdx+d)^{5/2}(e-cex)^{5/2}}+\frac{28ie^5\left(1-c^2x^2\right)^{5}}{3c(cdx+d}$$

```
[Out] -2*a*b*e^5*x*(-c^2*x^2+1)^(5/2)/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-2*b^2*e^5*
(-c^2*x^2+1)^3/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-2*b^2*e^5*x*(-c^2*x^2+1)^
(5/2)*arcsin(c*x)/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+28/3*I*e^5*(-c^2*x^2+1)^
(5/2)*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+e^5*(-c^2*x^2+
1)^3*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+5/3*e^5*(-c^2*x
^2+1)^(5/2)*(a+b*arcsin(c*x))^3/b/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-16/3*b
^2*e^5*(-c^2*x^2+1)^(5/2)*cot(1/4*Pi+1/2*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c
*e*x+e)^(5/2)+28/3*e^5*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))^2*cot(1/4*Pi+1/
2*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-8/3*b*e^5*(-c^2*x^2+1)^(5
/2)*(a+b*arcsin(c*x))*csc(1/4*Pi+1/2*arcsin(c*x))^2/c/(c*d*x+d)^(5/2)/(-c*e
*x+e)^(5/2)-4/3*e^5*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))^2*cot(1/4*Pi+1/2*a
rcsin(c*x))*csc(1/4*Pi+1/2*arcsin(c*x))^2/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2
)-112/3*b*e^5*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))*ln(1-I*(I*c*x+(-c^2*x^2+
1)^(1/2)))/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+112/3*I*b^2*e^5*(-c^2*x^2+1)^
(5/2)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^
(5/2)
```

Rubi [A] time = 1.30, antiderivative size = 729, normalized size of antiderivative = 1.00, number of steps used = 25, number of rules used = 16, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {4673, 4775, 4641, 4677, 4619, 261, 4773, 3318, 4186, 3767, 8, 4184, 3717, 2190, 2279, 2391}

$$\frac{112ib^2e^5\left(1-c^2x^2\right)^{5/2}\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}-\frac{2abe^5x\left(1-c^2x^2\right)^{5/2}}{(cdx+d)^{5/2}(e-cex)^{5/2}}+\frac{5e^5\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(cdx+d)^{5/2}(e-cex)^{5/2}}+\frac{e^5\left(1\right.}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((e - c*e*x)^(5/2)*(a + b*ArcSin[c*x])^2)/(d + c*d*x)^(5/2),x]
```

```
[Out] (-2*a*b*e^5*x*(1 - c^2*x^2)^(5/2))/((d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) -
(2*b^2*e^5*(1 - c^2*x^2)^3)/(c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (2*b^
2*e^5*x*(1 - c^2*x^2)^(5/2)*ArcSin[c*x])/((d + c*d*x)^(5/2)*(e - c*e*x)^(5/
2)) + (((28*I)/3)*e^5*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2)/(c*(d + c*
d*x)^(5/2)*(e - c*e*x)^(5/2)) + (e^5*(1 - c^2*x^2)^3*(a + b*ArcSin[c*x])^2)
/(c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) + (5*e^5*(1 - c^2*x^2)^(5/2)*(a +
b*ArcSin[c*x])^3)/(3*b*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (16*b^2*e^5
*(1 - c^2*x^2)^(5/2)*Cot[Pi/4 + ArcSin[c*x]/2])/(3*c*(d + c*d*x)^(5/2)*(e -
 c*e*x)^(5/2)) + (28*e^5*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2*Cot[Pi/4
 + ArcSin[c*x]/2])/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (8*b*e^5*(1
- c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])*Csc[Pi/4 + ArcSin[c*x]/2]^2)/(3*c*(d +
 c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (4*e^5*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin
[c*x])^2*Cot[Pi/4 + ArcSin[c*x]/2]*Csc[Pi/4 + ArcSin[c*x]/2]^2)/(3*c*(d + c
*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (112*b*e^5*(1 - c^2*x^2)^(5/2)*(a + b*ArcS
in[c*x])*Log[1 - I*E^(I*ArcSin[c*x])])/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(
5/2)) + (((112*I)/3)*b^2*e^5*(1 - c^2*x^2)^(5/2)*PolyLog[2, I*E^(I*ArcSin[c
*x])])/(c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2))
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
```

```
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4775

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(e-cex)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{5/2}}\,dx = \frac{\left(1-c^2x^2\right)^{5/2}\int \frac{(e-cex)^5\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}dx}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{\left(1-c^2x^2\right)^{5/2}\int \left(\frac{5e^5\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}} - \frac{ce^5x\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}} + \frac{8e^5\left(a+b\sin^{-1}(cx)\right)^2}{(1+cx)^2\sqrt{1-c^2x^2}} - \right.}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{\left(5e^5\left(1-c^2x^2\right)^{5/2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}dx}{(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{\left(8e^5\left(1-c^2x^2\right)^{5/2}\right)\int \frac{\left(a+b\sin^{-1}(c\right.}{(1+cx)^2\sqrt{1-c}}}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{e^5\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{5e^5\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(d+cdx)^{5/2}(e-cex)^{5/2}} -$$

$$= -\frac{2abe^5x\left(1-c^2x^2\right)^{5/2}}{(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{e^5\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{5e^5\left(1-c\right.}{3bc(c}$$

$$= -\frac{2abe^5x\left(1-c^2x^2\right)^{5/2}}{(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{2b^2e^5x\left(1-c^2x^2\right)^{5/2}\sin^{-1}(cx)}{(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{e^5\left(1-c^2x^2\right.}{c(d+cc}$$

$$= -\frac{2abe^5x\left(1-c^2x^2\right)^{5/2}}{(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{2b^2e^5\left(1-c^2x^2\right)^3}{c(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{2b^2e^5x\left(1-c^2x^2\right)}{(d+cdx)^{5/2}(e}$$

$$= -\frac{2abe^5x\left(1-c^2x^2\right)^{5/2}}{(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{2b^2e^5\left(1-c^2x^2\right)^3}{c(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{2b^2e^5x\left(1-c^2x^2\right)}{(d+cdx)^{5/2}(e}$$

$$= -\frac{2abe^5x\left(1-c^2x^2\right)^{5/2}}{(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{2b^2e^5\left(1-c^2x^2\right)^3}{c(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{2b^2e^5x\left(1-c^2x^2\right)}{(d+cdx)^{5/2}(e}$$

$$= -\frac{2abe^5x\left(1-c^2x^2\right)^{5/2}}{(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{2b^2e^5\left(1-c^2x^2\right)^3}{c(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{2b^2e^5x\left(1-c^2x^2\right)}{(d+cdx)^{5/2}(e}$$

$$= -\frac{2abe^5x\left(1-c^2x^2\right)^{5/2}}{(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{2b^2e^5\left(1-c^2x^2\right)^3}{c(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{2b^2e^5x\left(1-c^2x^2\right)}{(d+cdx)^{5/2}(e}$$

Mathematica [B] time = 13.80, size = 2338, normalized size = 3.21

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e - c*e*x)^(5/2)*(a + b*ArcSin[c*x])^2)/(d + c*d*x)^(5/2),x]
```

```
[Out] (Sqrt[-(e*(-1 + c*x))]*Sqrt[d*(1 + c*x)]*((a^2*e^2)/d^3 - (8*a^2*e^2)/(3*d^
3*(1 + c*x)^2) + (28*a^2*e^2)/(3*d^3*(1 + c*x))))/c - (5*a^2*e^(5/2)*ArcTan
[(c*x*Sqrt[-(e*(-1 + c*x))]*Sqrt[d*(1 + c*x)])/(Sqrt[d]*Sqrt[e]*(-1 + c*x)*
(1 + c*x))])/(c*d^(5/2)) - (a*b*e^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[-(
d*e*(1 - c^2*x^2))]*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])*(Cos[ArcSin[c
*x]/2]*(-8 + 6*ArcSin[c*x] + 9*ArcSin[c*x]^2 - 84*Log[Cos[ArcSin[c*x]/2] +
Sin[ArcSin[c*x]/2]]) + Cos[(3*ArcSin[c*x])/2]*((14 - 3*ArcSin[c*x])*ArcSin[
c*x] + 28*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]) + 2*(-4 + 4*ArcSin[
c*x] + 6*ArcSin[c*x]^2 + Sqrt[1 - c^2*x^2]*(ArcSin[c*x]*(14 + 3*ArcSin[c*x]
) - 28*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]) - 56*Log[Cos[ArcSin[c*
x]/2] + Sin[ArcSin[c*x]/2]])*Sin[ArcSin[c*x]/2]))/(3*c*d^3*(-1 + c*x)*Sqrt[
(-d - c*d*x)*(e - c*e*x)]*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^4) - (a
*b*e^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[-(d*e*(1 - c^2*x^2))]*(Cos[ArcS
```

```
in[c*x]/2] - Sin[ArcSin[c*x]/2])*(Cos[(3*ArcSin[c*x])/2]*(ArcSin[c*x] + 2*L
og[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]) - Cos[ArcSin[c*x]/2]*(4 + 3*Ar
cSin[c*x] + 6*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]) + 2*(-2 + 2*Arc
Sin[c*x] + Sqrt[1 - c^2*x^2]*ArcSin[c*x] - 4*Log[Cos[ArcSin[c*x]/2] + Sin[A
rcSin[c*x]/2]] - 2*Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*
x]/2]])*Sin[ArcSin[c*x]/2]))/(3*c*d^3*(-1 + c*x)*Sqrt[(-d - c*d*x)*(e - c*e
*x)]*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^4) - (b^2*e^2*(-1 + c*x)*Sqr
t[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[-(d*e*(1 - c^2*x^2))]*((-6*c*x*ArcSin[c*x
])/Sqrt[1 - c^2*x^2] + ((13 + 13*I)*ArcSin[c*x]^2)/Sqrt[1 - c^2*x^2] + (3*A
rcSin[c*x]^3)/Sqrt[1 - c^2*x^2] + 3*(-2 + ArcSin[c*x]^2) + (13*((-I)*Pi*Arc
Sin[c*x] - 4*Pi*Log[1 + E^((-I)*ArcSin[c*x])] - 2*(Pi + 2*ArcSin[c*x])*Log[
1 - I*E^(I*ArcSin[c*x])] + 4*Pi*Log[Cos[ArcSin[c*x]/2]] + 2*Pi*Log[Sin[(Pi
+ 2*ArcSin[c*x])/4]] + (4*I)*PolyLog[2, I*E^(I*ArcSin[c*x])]))/Sqrt[1 - c^2
*x^2] + (4*ArcSin[c*x]^2*Sin[ArcSin[c*x]/2])/(Sqrt[1 - c^2*x^2]*(Cos[ArcSin
[c*x]/2] + Sin[ArcSin[c*x]/2])^3) - (2*ArcSin[c*x]*(2 + ArcSin[c*x]))/(Sqrt
[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^2) + (2*(4 - 13*Arc
Sin[c*x]^2)*Sin[ArcSin[c*x]/2])/(Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] + Si
n[ArcSin[c*x]/2]))))/(3*c*d^3*Sqrt[(-d - c*d*x)*(e - c*e*x)]*(Cos[ArcSin[c*
x]/2] - Sin[ArcSin[c*x]/2])^2) - (b^2*e^2*(-1 + c*x)*Sqrt[d + c*d*x]*Sqrt[e
 - c*e*x]*Sqrt[-(d*e*(1 - c^2*x^2))]*((-I)*Pi*ArcSin[c*x] + (1 + I)*ArcSin[
c*x]^2 - 4*Pi*Log[1 + E^((-I)*ArcSin[c*x])] - 2*(Pi + 2*ArcSin[c*x])*Log[1
- I*E^(I*ArcSin[c*x])] + 4*Pi*Log[Cos[ArcSin[c*x]/2]] + 2*Pi*Log[Sin[(Pi +
2*ArcSin[c*x])/4]] + (4*I)*PolyLog[2, I*E^(I*ArcSin[c*x])] + (4*ArcSin[c*x]
^2*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^3 - (2*Arc
Sin[c*x]*(2 + ArcSin[c*x]))/(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^2 - (
2*(-4 + ArcSin[c*x]^2)*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] + Sin[ArcSin
[c*x]/2])))/(3*c*d^3*Sqrt[(-d - c*d*x)*(e - c*e*x)]*Sqrt[1 - c^2*x^2]*(Cos[
ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^2) + (2*b^2*e^2*(-1 + c*x)*Sqrt[d + c*
d*x]*Sqrt[e - c*e*x]*Sqrt[-(d*e*(1 - c^2*x^2))]*((7*I)*Pi*ArcSin[c*x] - (7
+ 7*I)*ArcSin[c*x]^2 - ArcSin[c*x]^3 + 28*Pi*Log[1 + E^((-I)*ArcSin[c*x])]
+ 14*(Pi + 2*ArcSin[c*x])*Log[1 - I*E^(I*ArcSin[c*x])] - 28*Pi*Log[Cos[ArcS
in[c*x]/2]] - 14*Pi*Log[Sin[(Pi + 2*ArcSin[c*x])/4]] - (28*I)*PolyLog[2, I*
E^(I*ArcSin[c*x])] - (4*ArcSin[c*x]^2*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/
2] + Sin[ArcSin[c*x]/2])^3 + (2*ArcSin[c*x]*(2 + ArcSin[c*x]))/(Cos[ArcSin[
c*x]/2] + Sin[ArcSin[c*x]/2])^2 + (2*(-4 + 7*ArcSin[c*x]^2)*Sin[ArcSin[c*x]
/2])/(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])))/(3*c*d^3*Sqrt[(-d - c*d*x)
*(e - c*e*x)]*Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^2
) - (a*b*e^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[-(d*e*(1 - c^2*x^2))]*(Co
s[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])*(3*Cos[(5*ArcSin[c*x])/2] - 3*ArcSin
[c*x]*Cos[(5*ArcSin[c*x])/2] + Cos[ArcSin[c*x]/2]*(-20 + 24*ArcSin[c*x] + 2
7*ArcSin[c*x]^2 - 156*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]) + Cos[(
3*ArcSin[c*x])/2]*(9 + 35*ArcSin[c*x] - 9*ArcSin[c*x]^2 + 52*Log[Cos[ArcSin
[c*x]/2] + Sin[ArcSin[c*x]/2]]) - 20*Sin[ArcSin[c*x]/2] - 24*ArcSin[c*x]*Si
n[ArcSin[c*x]/2] + 27*ArcSin[c*x]^2*Sin[ArcSin[c*x]/2] - 156*Log[Cos[ArcSin
[c*x]/2] + Sin[ArcSin[c*x]/2]]*Sin[ArcSin[c*x]/2] - 9*Sin[(3*ArcSin[c*x])/2
] + 35*ArcSin[c*x]*Sin[(3*ArcSin[c*x])/2] + 9*ArcSin[c*x]^2*Sin[(3*ArcSin[c
*x])/2] - 52*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]*Sin[(3*ArcSin[c*x
])/2] + 3*Sin[(5*ArcSin[c*x])/2] + 3*ArcSin[c*x]*Sin[(5*ArcSin[c*x])/2]))/(
6*c*d^3*(-1 + c*x)*Sqrt[(-d - c*d*x)*(e - c*e*x)]*(Cos[ArcSin[c*x]/2] + Sin
[ArcSin[c*x]/2])^4)
```

fricas [F] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(a^2c^2e^2x^2 - 2\,a^2ce^2x + a^2e^2 + \left(b^2c^2e^2x^2 - 2\,b^2ce^2x + b^2e^2\right)\arcsin\left(cx\right)^2 + 2\left(abc^2e^2x^2 - 2\,abce^2x + abe^2\right.}{c^3d^3x^3 + 3\,c^2d^3x^2 + 3\,cd^3x + d^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2),x, algorithm
="fricas")
```

```
[Out] integral((a^2*c^2*e^2*x^2 - 2*a^2*c*e^2*x + a^2*e^2 + (b^2*c^2*e^2*x^2 - 2*
b^2*c*e^2*x + b^2*e^2)*arcsin(c*x)^2 + 2*(a*b*c^2*e^2*x^2 - 2*a*b*c*e^2*x +
 a*b*e^2)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*e*x + e)/(c^3*d^3*x^3 + 3*c^
2*d^3*x^2 + 3*c*d^3*x + d^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(-cex+e)^{\frac{5}{2}}(b\arcsin(cx)+a)^2}{(cdx+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2),x, algorithm
="giac")
```

```
[Out] integrate((-c*e*x + e)^(5/2)*(b*arcsin(c*x) + a)^2/(c*d*x + d)^(5/2), x)
```

maple [F] time = 0.29, size = 0, normalized size = 0.00

$$\int \frac{(-cex+e)^{\frac{5}{2}}(a+b\arcsin(cx))^2}{(cdx+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2),x)
```

```
[Out] int((-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{3}\left(\frac{3\left(-c^2dex^2+de\right)^{\frac{5}{2}}}{c^5d^5x^4+4c^4d^5x^3+6c^3d^5x^2+4c^2d^5x+cd^5}-\frac{5\left(-c^2dex^2+de\right)^{\frac{3}{2}}e}{c^4d^4x^3+3c^3d^4x^2+3c^2d^4x+cd^4}-\frac{10\sqrt{-c^2dex^2+de}\,e^2}{c^3d^3x^2+2c^2d^3x+cd^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*e*x+e)^(5/2)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2),x, algorithm
="maxima")
```

```
[Out] 1/3*(3*(-c^2*d*e*x^2 + d*e)^(5/2)/(c^5*d^5*x^4 + 4*c^4*d^5*x^3 + 6*c^3*d^5*
x^2 + 4*c^2*d^5*x + c*d^5) - 5*(-c^2*d*e*x^2 + d*e)^(3/2)*e/(c^4*d^4*x^3 +
3*c^3*d^4*x^2 + 3*c^2*d^4*x + c*d^4) - 10*sqrt(-c^2*d*e*x^2 + d*e)*e^2/(c^3
*d^3*x^2 + 2*c^2*d^3*x + c*d^3) + 35*sqrt(-c^2*d*e*x^2 + d*e)*e^2/(c^2*d^3*
x + c*d^3) + 15*e^3*arcsin(c*x)/(c*d^3*sqrt(e/d)))*a^2 + sqrt(d)*sqrt(e)*in
tegrate(((b^2*c^2*e^2*x^2 - 2*b^2*c*e^2*x + b^2*e^2)*arctan2(c*x, sqrt(c*x
+ 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c^2*e^2*x^2 - 2*a*b*c*e^2*x + a*b*e^2)*arct
an2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c^3*d
^3*x^3 + 3*c^2*d^3*x^2 + 3*c*d^3*x + d^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))^2\,(e-c\,e\,x)^{5/2}}{(d+c\,d\,x)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(e - c*e*x)^(5/2))/(d + c*d*x)^(5/2),x)
```

```
[Out] int(((a + b*asin(c*x))^2*(e - c*e*x)^(5/2))/(d + c*d*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-c*e*x+e)**(5/2)*(a+b*asin(c*x))**2/(c*d*x+d)**(5/2),x)
[Out] Timed out
```

3.558 $\int \frac{(d+cdx)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{e-cex}}\,dx$

Optimal. Leaf size=559

$$\frac{5d^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{6bc\sqrt{cdx+d}\sqrt{e-cex}}-\frac{cd^3x^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{3\sqrt{cdx+d}\sqrt{e-cex}}-\frac{3d^3x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{2\sqrt{cdx+d}\sqrt{e-cex}}-\frac{11d^3}{}$$

```
[Out] 68/9*b^2*d^3*(-c^2*x^2+1)/c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+3/4*b^2*d^3*x*
(-c^2*x^2+1)/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-2/27*b^2*d^3*(-c^2*x^2+1)^2/c
/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-11/3*d^3*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2
/c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-3/2*d^3*x*(-c^2*x^2+1)*(a+b*arcsin(c*x)
)^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-1/3*c*d^3*x^2*(-c^2*x^2+1)*(a+b*arcsin
(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-3/4*b^2*d^3*arcsin(c*x)*(-c^2*x^2
+1)^(1/2)/c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+22/3*b*d^3*x*(a+b*arcsin(c*x))
*(-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+3/2*b*c*d^3*x^2*(a+b*a
rcsin(c*x))*(-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+2/9*b*c^2*d
^3*x^3*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2
)+5/6*d^3*(a+b*arcsin(c*x))^3*(-c^2*x^2+1)^(1/2)/b/c/(c*d*x+d)^(1/2)/(-c*e*
x+e)^(1/2)
```

Rubi [A] time = 0.66, antiderivative size = 559, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 10, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312, Rules used = {4673, 4773, 3317, 3296, 2638, 3311, 32, 2635, 8, 2633}

$$\frac{5d^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{6bc\sqrt{cdx+d}\sqrt{e-cex}}-\frac{cd^3x^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{3\sqrt{cdx+d}\sqrt{e-cex}}-\frac{3d^3x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{2\sqrt{cdx+d}\sqrt{e-cex}}-\frac{11d^3}{}$$

Antiderivative was successfully verified.

```
[In] Int[((d + c*d*x)^(5/2)*(a + b*ArcSin[c*x])^2)/Sqrt[e - c*e*x],x]
```

```
[Out] (68*b^2*d^3*(1 - c^2*x^2))/(9*c*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (3*b^2*d
^3*x*(1 - c^2*x^2))/(4*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) - (2*b^2*d^3*(1 - c
^2*x^2)^2)/(27*c*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) - (3*b^2*d^3*Sqrt[1 - c^2
*x^2]*ArcSin[c*x])/(4*c*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (22*b*d^3*x*Sqrt
[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(3*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (3
*b*c*d^3*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(2*Sqrt[d + c*d*x]*Sqrt
[e - c*e*x]) + (2*b*c^2*d^3*x^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(9*S
qrt[d + c*d*x]*Sqrt[e - c*e*x]) - (11*d^3*(1 - c^2*x^2)*(a + b*ArcSin[c*x])
^2)/(3*c*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) - (3*d^3*x*(1 - c^2*x^2)*(a + b*A
rcSin[c*x])^2)/(2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) - (c*d^3*x^2*(1 - c^2*x^
2)*(a + b*ArcSin[c*x])^2)/(3*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (5*d^3*Sqrt
[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3)/(6*b*c*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]
)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2633

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
```

```
&& IGtQ[(n - 1)/2, 0]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rubi steps

$$\int \frac{(d+cdx)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{e-cex}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(d+cdx)^3\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\sqrt{e-cex}}$$

$$= \frac{\sqrt{1-c^2x^2}\ \text{Subst}\left(\int (a+bx)^2(cd+cd\sin(x))^3\,dx, x, \sin^{-1}(cx)\right)}{c^4\sqrt{d+cdx}\sqrt{e-cex}}$$

$$= \frac{\sqrt{1-c^2x^2}\ \text{Subst}\left(\int \left(c^3d^3(a+bx)^2+3c^3d^3(a+bx)^2\sin(x)+3c^3d^3(a+\right.\right.}{c^4\sqrt{d+cdx}\sqrt{e-c}}$$

$$= \frac{d^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{d+cdx}\sqrt{e-cex}} + \frac{\left(d^3\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int (a+bx)^2\sin\right.}{c\sqrt{d+cdx}\sqrt{e-c}}$$

$$= \frac{3bcd^3x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{d+cdx}\sqrt{e-cex}} + \frac{2bc^2d^3x^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}\right.}{9\sqrt{d+cdx}\sqrt{e-cex}}$$

$$= \frac{3b^2d^3x\left(1-c^2x^2\right)}{4\sqrt{d+cdx}\sqrt{e-cex}} + \frac{6bd^3x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d+cdx}\sqrt{e-cex}} + \frac{3bcd^3x^2\sqrt{}}{2\sqrt{}}$$

$$= \frac{56b^2d^3\left(1-c^2x^2\right)}{9c\sqrt{d+cdx}\sqrt{e-cex}} + \frac{3b^2d^3x\left(1-c^2x^2\right)}{4\sqrt{d+cdx}\sqrt{e-cex}} - \frac{2b^2d^3\left(1-c^2x^2\right)^2}{27c\sqrt{d+cdx}\sqrt{e-cex}}$$

$$= \frac{68b^2d^3\left(1-c^2x^2\right)}{9c\sqrt{d+cdx}\sqrt{e-cex}} + \frac{3b^2d^3x\left(1-c^2x^2\right)}{4\sqrt{d+cdx}\sqrt{e-cex}} - \frac{2b^2d^3\left(1-c^2x^2\right)^2}{27c\sqrt{d+cdx}\sqrt{e-cex}}$$

Mathematica [A] time = 3.85, size = 434, normalized size = 0.78

$$-\frac{d^2\left(\sqrt{cdx+d}\sqrt{e-cex}\left(6\left(6a^2\sqrt{1-c^2x^2}\left(2c^2x^2+9cx+22\right)-8abcx\left(c^2x^2+33\right)-27b^2(cx+10)\sqrt{1-c^2x^2}\right)\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + c*d*x)^(5/2)*(a + b*ArcSin[c*x])^2)/Sqrt[e - c*e*x],x]
```

```
[Out] -1/216*(d^2*(-180*b^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^3 + 540*a
^2*Sqrt[d]*Sqrt[e]*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c
*e*x])/(Sqrt[d]*Sqrt[e]*(-1 + c^2*x^2))] - 6*b*Sqrt[d + c*d*x]*Sqrt[e - c*e
*x]*ArcSin[c*x]*(-18*b + 264*b*c*x + 36*b*c^2*x^2 + 8*b*c^3*x^3 - 270*a*Sqr
t[1 - c^2*x^2] - 108*a*c*x*Sqrt[1 - c^2*x^2] - 9*b*Cos[2*ArcSin[c*x]] + 6*a
*Cos[3*ArcSin[c*x]]) + 18*b*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^2*(
-30*a + 9*b*(5 + 2*c*x)*Sqrt[1 - c^2*x^2] - b*Cos[3*ArcSin[c*x]]) + Sqrt[d
+ c*d*x]*Sqrt[e - c*e*x]*(6*(-27*b^2*(10 + c*x)*Sqrt[1 - c^2*x^2] - 8*a*b*c
*x*(33 + c^2*x^2) + 6*a^2*Sqrt[1 - c^2*x^2]*(22 + 9*c*x + 2*c^2*x^2)) + 162
*a*b*Cos[2*ArcSin[c*x]] + 4*b^2*Cos[3*ArcSin[c*x]])))/(c*e*Sqrt[1 - c^2*x^2
])
```

fricas [F] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(a^2c^2d^2x^2+2\,a^2cd^2x+a^2d^2+\left(b^2c^2d^2x^2+2\,b^2cd^2x+b^2d^2\right)\arcsin(cx)^2+2\left(abc^2d^2x^2+2\,abcd^2x\right.\right.}{cex-e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(1/2),x, algorithm
="fricas")
```

```
[Out] integral(-(a^2*c^2*d^2*x^2 + 2*a^2*c*d^2*x + a^2*d^2 + (b^2*c^2*d^2*x^2 + 2
*b^2*c*d^2*x + b^2*d^2)*arcsin(c*x)^2 + 2*(a*b*c^2*d^2*x^2 + 2*a*b*c*d^2*x
+ a*b*d^2)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*e*x + e)/(c*e*x - e), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(cdx+d)^{\frac{5}{2}}(b\arcsin(cx)+a)^2}{\sqrt{-cex+e}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(1/2),x, algorithm
="giac")
```

```
[Out] integrate((c*d*x + d)^(5/2)*(b*arcsin(c*x) + a)^2/sqrt(-c*e*x + e), x)
```

maple [F] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{(cdx+d)^{\frac{5}{2}}(a+b\arcsin(cx))^2}{\sqrt{-cex+e}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(1/2),x)
```

```
[Out] int((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{6}\left(\frac{2\sqrt{-c^2dex^2+de}\,cd^2x^2}{e}+\frac{9\sqrt{-c^2dex^2+de}\,d^2x}{e}-\frac{15\,d^3\arcsin(cx)}{\sqrt{de}\,c}+\frac{22\sqrt{-c^2dex^2+de}\,d^2}{ce}\right)a^2-\sqrt{d}\sqrt{e}\int \frac{((b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(1/2),x, algorithm
="maxima")
```

```
[Out] -1/6*(2*sqrt(-c^2*d*e*x^2 + d*e)*c*d^2*x^2/e + 9*sqrt(-c^2*d*e*x^2 + d*e)*d
^2*x/e - 15*d^3*arcsin(c*x)/(sqrt(d*e)*c) + 22*sqrt(-c^2*d*e*x^2 + d*e)*d^2
/(c*e))*a^2 - sqrt(d)*sqrt(e)*integrate(((b^2*c^2*d^2*x^2 + 2*b^2*c*d^2*x +
 b^2*d^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c^2*d^2*x^2
 + 2*a*b*c*d^2*x + a*b*d^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqr
t(c*x + 1)*sqrt(-c*x + 1)/(c*e*x - e), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))^2\,(d+c\,d\,x)^{5/2}}{\sqrt{e-c\,e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d + c*d*x)^(5/2))/(e - c*e*x)^(1/2),x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d + c*d*x)^(5/2))/(e - c*e*x)^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(5/2)*(a+b*asin(c*x))**2/(-c*e*x+e)**(1/2),x)
```

```
[Out] Timed out
```

3.559 $\int \frac{(d+cdx)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{e-cex}}\,dx$

Optimal. Leaf size=398

$$\frac{d^2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^3}{2bc\sqrt{cdx+d}\,\sqrt{e-cex}}-\frac{2d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c\sqrt{cdx+d}\,\sqrt{e-cex}}-\frac{d^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{2\sqrt{cdx+d}\,\sqrt{e-cex}}+\frac{bcd^2x^2\sqrt{\ }}{2}$$

```
[Out] 4*b^2*d^2*(-c^2*x^2+1)/c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+1/4*b^2*d^2*x*(-c
^2*x^2+1)/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-2*d^2*(-c^2*x^2+1)*(a+b*arcsin(c
*x))^2/c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-1/2*d^2*x*(-c^2*x^2+1)*(a+b*arcsi
n(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-1/4*b^2*d^2*arcsin(c*x)*(-c^2*x^
2+1)^(1/2)/c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+4*b*d^2*x*(a+b*arcsin(c*x))*(
-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+1/2*b*c*d^2*x^2*(a+b*arc
sin(c*x))*(-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+1/2*d^2*(a+b*
arcsin(c*x))^3*(-c^2*x^2+1)^(1/2)/b/c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)
```

Rubi [A] time = 0.56, antiderivative size = 398, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 9, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.281, Rules used = {4673, 4773, 3317, 3296, 2638, 3311, 32, 2635, 8}

$$\frac{d^2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^3}{2bc\sqrt{cdx+d}\,\sqrt{e-cex}}-\frac{2d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c\sqrt{cdx+d}\,\sqrt{e-cex}}-\frac{d^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{2\sqrt{cdx+d}\,\sqrt{e-cex}}+\frac{bcd^2x^2\sqrt{\ }}{2}$$

Antiderivative was successfully verified.

```
[In] Int[((d + c*d*x)^(3/2)*(a + b*ArcSin[c*x])^2)/Sqrt[e - c*e*x],x]
```

```
[Out] (4*b^2*d^2*(1 - c^2*x^2))/(c*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (b^2*d^2*x*
(1 - c^2*x^2))/(4*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) - (b^2*d^2*Sqrt[1 - c^2*
x^2]*ArcSin[c*x])/(4*c*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (4*b*d^2*x*Sqrt[1
 - c^2*x^2]*(a + b*ArcSin[c*x]))/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (b*c*d
^2*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(2*Sqrt[d + c*d*x]*Sqrt[e - c
*e*x]) - (2*d^2*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(c*Sqrt[d + c*d*x]*Sqr
t[e - c*e*x]) - (d^2*x*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(2*Sqrt[d + c*d
*x]*Sqrt[e - c*e*x]) + (d^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3)/(2*b*c
*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rubi steps

$$\int \frac{(d+cdx)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{e-cex}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(d+cdx)^2\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\sqrt{e-cex}}$$

$$= \frac{\sqrt{1-c^2x^2}\,\text{Subst}\left(\int (a+bx)^2(cd+cd\sin(x))^2\,dx, x, \sin^{-1}(cx)\right)}{c^3\sqrt{d+cdx}\sqrt{e-cex}}$$

$$= \frac{\sqrt{1-c^2x^2}\,\text{Subst}\left(\int \left(c^2d^2(a+bx)^2+2c^2d^2(a+bx)^2\sin(x)+c^2d^2(a+\right.\right.}{c^3\sqrt{d+cdx}\sqrt{e-cex}}$$

$$= \frac{d^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{d+cdx}\sqrt{e-cex}} + \frac{\left(d^2\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int (a+bx)^2\sin\right.}{c\sqrt{d+cdx}\sqrt{e-c}}$$

$$= \frac{bcd^2x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{d+cdx}\sqrt{e-cex}} - \frac{2d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c\sqrt{d+cdx}\sqrt{e-cex}}$$

$$= \frac{b^2d^2x\left(1-c^2x^2\right)}{4\sqrt{d+cdx}\sqrt{e-cex}} + \frac{4bd^2x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{\sqrt{d+cdx}\sqrt{e-cex}} + \frac{bcd^2x^2\sqrt{1}}{2\sqrt{}}$$

$$= \frac{4b^2d^2\left(1-c^2x^2\right)}{c\sqrt{d+cdx}\sqrt{e-cex}} + \frac{b^2d^2x\left(1-c^2x^2\right)}{4\sqrt{d+cdx}\sqrt{e-cex}} - \frac{b^2d^2\sqrt{1-c^2x^2}\sin^{-1}(cx}{4c\sqrt{d+cdx}\sqrt{e-cex}}$$

Mathematica [A] time = 2.38, size = 344, normalized size = 0.86

$$\frac{d\sqrt{cdx+d}\sqrt{e-cex}\left(-2a^2(cx+4)\sqrt{1-c^2x^2}+16abcx-ab\cos\left(2\sin^{-1}(cx)\right)+b^2(cx+16)\sqrt{1-c^2x^2}\right)-6a^2d}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + c*d*x)^(3/2)*(a + b*ArcSin[c*x])^2)/Sqrt[e - c*e*x],x]
```

```
[Out] (b*d*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(-4*a*(4 + c*x)*Sqrt[1 - c^2*x^2] + b*
(-1 + 16*c*x + 2*c^2*x^2))*ArcSin[c*x] - 2*b*d*Sqrt[d + c*d*x]*Sqrt[e - c*e
*x]*(-3*a + b*(4 + c*x)*Sqrt[1 - c^2*x^2])*ArcSin[c*x]^2 + 2*b^2*d*Sqrt[d +
 c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^3 - 6*a^2*d^(3/2)*Sqrt[e]*Sqrt[1 - c^2*
x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(Sqrt[d]*Sqrt[e]*(-1 + c^
2*x^2))] + d*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(16*a*b*c*x - 2*a^2*(4 + c*x)*
Sqrt[1 - c^2*x^2] + b^2*(16 + c*x)*Sqrt[1 - c^2*x^2] - a*b*Cos[2*ArcSin[c*x
]]))/(4*c*e*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(a^2cdx+a^2d+\left(b^2cdx+b^2d\right)\arcsin(cx)^2+2\left(abcdx+abd\right)\arcsin(cx)\right)\sqrt{cdx+d}\sqrt{-cex+e}}{cex-e}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(1/2),x, algorithm
="fricas")
```

```
[Out] integral(-(a^2*c*d*x + a^2*d + (b^2*c*d*x + b^2*d)*arcsin(c*x)^2 + 2*(a*b*c
*d*x + a*b*d)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*e*x + e)/(c*e*x - e), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(cdx+d)^{\frac{3}{2}}(b\arcsin(cx)+a)^2}{\sqrt{-cex+e}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(1/2),x, algorithm
="giac")
```

```
[Out] integrate((c*d*x + d)^(3/2)*(b*arcsin(c*x) + a)^2/sqrt(-c*e*x + e), x)
```

maple [F] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{(cdx+d)^{\frac{3}{2}} (a+b \arcsin(cx))^2}{\sqrt{-cex+e}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(1/2),x)
```

```
[Out] int((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\left(\frac{\sqrt{-c^2dex^2+de}\,dx}{e} - \frac{3\,d^2 \arcsin(cx)}{\sqrt{de}\,c} + \frac{4\,\sqrt{-c^2dex^2+de}\,d}{ce}\right)a^2 - \sqrt{d}\,\sqrt{e} \int \frac{\left(\left(b^2cdx+b^2d\right)\arctan\left(cx, \sqrt{cx+1}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(1/2),x, algorithm
="maxima")
```

```
[Out] -1/2*(sqrt(-c^2*d*e*x^2 + d*e)*d*x/e - 3*d^2*arcsin(c*x)/(sqrt(d*e)*c) + 4*
sqrt(-c^2*d*e*x^2 + d*e)*d/(c*e))*a^2 - sqrt(d)*sqrt(e)*integrate(((b^2*c*d
*x + b^2*d)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c*d*x + a
*b*d)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x +
 1)/(c*e*x - e), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))^2\,(d+c\,d\,x)^{3/2}}{\sqrt{e-c\,e\,x}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d + c*d*x)^(3/2))/(e - c*e*x)^(1/2),x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d + c*d*x)^(3/2))/(e - c*e*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d(cx+1))^{\frac{3}{2}} (a+b\,\mathrm{asin}(cx))^2}{\sqrt{-e(cx-1)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(3/2)*(a+b*asin(c*x))**2/(-c*e*x+e)**(1/2),x)
```

```
[Out] Integral((d*(c*x + 1))**(3/2)*(a + b*asin(c*x))**2/sqrt(-e*(c*x - 1)), x)
```

3.560 $\int \frac{\sqrt{d+cdx}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{e-cex}}\,dx$

Optimal. Leaf size=231

$$\frac{2abdx\sqrt{1-c^2x^2}}{\sqrt{cdx+d}\,\sqrt{e-cex}}+\frac{d\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{cdx+d}\,\sqrt{e-cex}}-\frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c\sqrt{cdx+d}\,\sqrt{e-cex}}+\frac{2b^2d\left(1-c^2x^2\right)}{c\sqrt{cdx+d}\,\sqrt{e-cex}}+\frac{2b}{}$$

```
[Out] 2*b^2*d*(-c^2*x^2+1)/c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-d*(-c^2*x^2+1)*(a+b
*arcsin(c*x))^2/c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+2*a*b*d*x*(-c^2*x^2+1)^(
1/2)/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+2*b^2*d*x*arcsin(c*x)*(-c^2*x^2+1)^(1
/2)/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+1/3*d*(a+b*arcsin(c*x))^3*(-c^2*x^2+1)
^(1/2)/b/c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)
```

Rubi [A] time = 0.44, antiderivative size = 231, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {4673, 4763, 4641, 4677, 4619, 261}

$$\frac{2abdx\sqrt{1-c^2x^2}}{\sqrt{cdx+d}\,\sqrt{e-cex}}+\frac{d\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{cdx+d}\,\sqrt{e-cex}}-\frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c\sqrt{cdx+d}\,\sqrt{e-cex}}+\frac{2b^2d\left(1-c^2x^2\right)}{c\sqrt{cdx+d}\,\sqrt{e-cex}}+\frac{2b}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d + c*d*x]*(a + b*ArcSin[c*x])^2)/Sqrt[e - c*e*x],x]
```

```
[Out] (2*a*b*d*x*Sqrt[1 - c^2*x^2])/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (2*b^2*d*
(1 - c^2*x^2))/(c*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (2*b^2*d*x*Sqrt[1 - c^
2*x^2]*ArcSin[c*x])/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) - (d*(1 - c^2*x^2)*(a
 + b*ArcSin[c*x])^2)/(c*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (d*Sqrt[1 - c^2*
x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int \frac{\sqrt{d+cdx}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{e-cex}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{(d+cdx)\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\,\sqrt{e-cex}}$$

$$= \frac{\sqrt{1-c^2x^2}\int \left(\frac{d\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}+\frac{cdx\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\right)dx}{\sqrt{d+cdx}\,\sqrt{e-cex}}$$

$$= \frac{\left(d\sqrt{1-c^2x^2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\,\sqrt{e-cex}} + \frac{\left(cd\sqrt{1-c^2x^2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\,\sqrt{e-cex}}$$

$$= -\frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c\sqrt{d+cdx}\,\sqrt{e-cex}} + \frac{d\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{d+cdx}\,\sqrt{e-cex}} + \frac{\left(2bd\sqrt{1\ldots\right.}{\ldots}$$

$$= \frac{2abdx\sqrt{1-c^2x^2}}{\sqrt{d+cdx}\,\sqrt{e-cex}} - \frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c\sqrt{d+cdx}\,\sqrt{e-cex}} + \frac{d\sqrt{1-c^2x^2}\left(a+b\,\mathrm{s}\ldots\right.}{3bc\sqrt{d+cdx}\,\sqrt{e\ldots}}$$

$$= \frac{2abdx\sqrt{1-c^2x^2}}{\sqrt{d+cdx}\,\sqrt{e-cex}} + \frac{2b^2dx\sqrt{1-c^2x^2}\,\sin^{-1}(cx)}{\sqrt{d+cdx}\,\sqrt{e-cex}} - \frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}\ldots\right.}{c\sqrt{d+cdx}\,\sqrt{e-ce\ldots}}$$

$$= \frac{2abdx\sqrt{1-c^2x^2}}{\sqrt{d+cdx}\,\sqrt{e-cex}} + \frac{2b^2d\left(1-c^2x^2\right)}{c\sqrt{d+cdx}\,\sqrt{e-cex}} + \frac{2b^2dx\sqrt{1-c^2x^2}\,\sin^{-1}(cx)}{\sqrt{d+cdx}\,\sqrt{e-cex}} - \ldots$$

Mathematica [A] time = 1.22, size = 298, normalized size = 1.29

$$\frac{3\sqrt{cdx+d}\,\sqrt{e-cex}\left(a^2\left(-\sqrt{1-c^2x^2}\right)+2abcx+2b^2\sqrt{1-c^2x^2}\right)-3a^2\sqrt{d}\,\sqrt{e}\,\sqrt{1-c^2x^2}\,\tan^{-1}\left(\frac{cx\sqrt{cdx+d}\,\sqrt{e-cex}}{\sqrt{d}\,\sqrt{e}\left(c^2x^2-1\right)}\right)+\ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[d + c*d*x]*(a + b*ArcSin[c*x])^2)/Sqrt[e - c*e*x],x]
```

```
[Out] (3*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(2*a*b*c*x - a^2*Sqrt[1 - c^2*x^2] + 2*b
^2*Sqrt[1 - c^2*x^2]) + 6*b*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(b*c*x - a*Sqrt
[1 - c^2*x^2])*ArcSin[c*x] + 3*b*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a - b*Sqr
t[1 - c^2*x^2])*ArcSin[c*x]^2 + b^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[
c*x]^3 - 3*a^2*Sqrt[d]*Sqrt[e]*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x
```

```
]*Sqrt[e - c*e*x])/(Sqrt[d]*Sqrt[e]*(-1 + c^2*x^2))])/(3*c*e*Sqrt[1 - c^2*x
^2])
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(b^2 \arcsin\left(cx\right)^2 + 2\,ab \arcsin\left(cx\right) + a^2\right)\sqrt{cdx + d}\,\sqrt{-cex + e}}{cex - e}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(1/2),x, algorithm
="fricas")
```

```
[Out] integral(-(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(c*d*x + d)*sqr
t(-c*e*x + e)/(c*e*x - e), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cdx + d}\left(b \arcsin\left(cx\right) + a\right)^2}{\sqrt{-cex + e}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(1/2),x, algorithm
="giac")
```

```
[Out] integrate(sqrt(c*d*x + d)*(b*arcsin(c*x) + a)^2/sqrt(-c*e*x + e), x)
```

maple [F] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cdx + d}\,\left(a + b \arcsin\left(cx\right)\right)^2}{\sqrt{-cex + e}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(1/2),x)
```

```
[Out] int((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a^2\left(\frac{d \arcsin\left(cx\right)}{ce\sqrt{\frac{d}{e}}} - \frac{\sqrt{-c^2dex^2 + de}}{ce}\right) - \sqrt{d}\,\sqrt{e}\int \frac{\left(b^2 \arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)^2 + 2\,ab \arctan\left(cx, \sqrt{cx+1}\right.\right.}{cex - e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(1/2),x, algorithm
="maxima")
```

```
[Out] a^2*(d*arcsin(c*x)/(c*e*sqrt(d/e)) - sqrt(-c^2*d*e*x^2 + d*e)/(c*e)) - sqrt
(d)*sqrt(e)*integrate((b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2
*a*b*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x +
1)/(c*e*x - e), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a + b \,\mathrm{asin}\left(c\,x\right)\right)^2\,\sqrt{d + c\,d\,x}}{\sqrt{e - c\,e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d + c*d*x)^(1/2))/(e - c*e*x)^(1/2),x)
[Out] int(((a + b*asin(c*x))^2*(d + c*d*x)^(1/2))/(e - c*e*x)^(1/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d(cx+1)}\,(a+b\operatorname{asin}(cx))^2}{\sqrt{-e(cx-1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(1/2)*(a+b*asin(c*x))**2/(-c*e*x+e)**(1/2),x)
[Out] Integral(sqrt(d*(c*x + 1))*(a + b*asin(c*x))**2/sqrt(-e*(c*x - 1)), x)
```

3.561 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+cdx}\sqrt{e-cex}}\,dx$

Optimal. Leaf size=55

$$\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{cdx+d}\sqrt{e-cex}}$$

```
[Out] 1/3*(a+b*arcsin(c*x))^3*(-c^2*x^2+1)^(1/2)/b/c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(
1/2)
```

Rubi [A] time = 0.24, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {4673, 4641}

$$\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{cdx+d}\sqrt{e-cex}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x]),x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c*Sqrt[d + c*d*x]*Sqrt[e - c
*e*x])
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+cdx}\sqrt{e-cex}}\,dx &= \frac{\sqrt{1-c^2x^2}\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\sqrt{e-cex}}\\ &= \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{d+cdx}\sqrt{e-cex}}\end{aligned}$$

Mathematica [B] time = 0.98, size = 159, normalized size = 2.89

$$\frac{-\frac{3a^2\tan^{-1}\left(\frac{cx\sqrt{cdx+d}\sqrt{e-cex}}{\sqrt{d}\sqrt{e}\left(c^2x^2-1\right)}\right)}{\sqrt{d}\sqrt{e}}+\frac{3ab\sqrt{1-c^2x^2}\sin^{-1}(cx)^2}{\sqrt{cdx+d}\sqrt{e-cex}}+\frac{b^2\sqrt{1-c^2x^2}\sin^{-1}(cx)^3}{\sqrt{cdx+d}\sqrt{e-cex}}}{3c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x]),x]
```

```
[Out] ((3*a*b*Sqrt[1 - c^2*x^2]*ArcSin[c*x]^2)/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x])
+ (b^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x]^3)/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) -
 (3*a^2*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(Sqrt[d]*Sqrt[e]*(-1 +
 c^2*x^2))])/(Sqrt[d]*Sqrt[e]))/(3*c)
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(b^2\arcsin\left(cx\right)^2+2\,ab\arcsin\left(cx\right)+a^2\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{c^2dex^2-de},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x, algorithm
="fricas")
```

```
[Out] integral(-(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(c*d*x + d)*sqr
t(-c*e*x + e)/(c^2*d*e*x^2 - d*e), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\arcsin\left(cx\right)+a\right)^2}{\sqrt{cdx+d}\,\sqrt{-cex+e}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x, algorithm
="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/(sqrt(c*d*x + d)*sqrt(-c*e*x + e)), x)
```

maple [F] time = 0.35, size = 0, normalized size = 0.00

$$\int\frac{\left(a+b\arcsin\left(cx\right)\right)^2}{\sqrt{cdx+d}\,\sqrt{-cex+e}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x)
```

maxima [A] time = 0.47, size = 53, normalized size = 0.96

$$\frac{b^2\arcsin\left(cx\right)^3}{3\,\sqrt{de}\,c}+\frac{ab\arcsin\left(cx\right)^2}{\sqrt{de}\,c}+\frac{a^2\arcsin\left(cx\right)}{\sqrt{de}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x, algorithm
="maxima")
```

```
[Out] 1/3*b^2*arcsin(c*x)^3/(sqrt(d*e)*c) + a*b*arcsin(c*x)^2/(sqrt(d*e)*c) + a^2
*arcsin(c*x)/(sqrt(d*e)*c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int\frac{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{\sqrt{d+c\,d\,x}\,\sqrt{e-c\,e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/((d + c*d*x)^(1/2)*(e - c*e*x)^(1/2)),x)
[Out] int((a + b*asin(c*x))^2/((d + c*d*x)^(1/2)*(e - c*e*x)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(cx))^2}{\sqrt{d(cx+1)}\sqrt{-e(cx-1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(c*d*x+d)**(1/2)/(-c*e*x+e)**(1/2),x)
[Out] Integral((a + b*asin(c*x))**2/(sqrt(d*(c*x + 1))*sqrt(-e*(c*x - 1))), x)
```

3.562 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}\sqrt{e-cex}}\,dx$

Optimal. Leaf size=455

$$-\frac{ie\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{c(cdx+d)^{3/2}(e-cex)^{3/2}}-\frac{e\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(cdx+d)^{3/2}(e-cex)^{3/2}}+\frac{ex\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(cdx+d)^{3/2}(e-cex)^{3/2}}+\frac{2be\left(1-c^2x\right.}{}$$

```
[Out] -e*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+e*x*
(-c^2*x^2+1)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-I*e*(-c^2
*x^2+1)^(3/2)*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-4*I*b*
e*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))*arctan(I*c*x+(-c^2*x^2+1)^(1/2))/c/(
c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+2*b*e*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))*
ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+2*I*b
^2*e*(-c^2*x^2+1)^(3/2)*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/(c*d*x+d
)^(3/2)/(-c*e*x+e)^(3/2)-2*I*b^2*e*(-c^2*x^2+1)^(3/2)*polylog(2,I*(I*c*x+(-
c^2*x^2+1)^(1/2)))/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-I*b^2*e*(-c^2*x^2+1)^
(3/2)*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c/(c*d*x+d)^(3/2)/(-c*e*x+e)
^(3/2)
```

Rubi [A] time = 0.67, antiderivative size = 455, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 11, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.344, Rules used = {4673, 4763, 4651, 4675, 3719, 2190, 2279, 2391, 4677, 4657, 4181}

$$\frac{2ib^2e\left(1-c^2x^2\right)^{3/2}\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{c(cdx+d)^{3/2}(e-cex)^{3/2}}-\frac{2ib^2e\left(1-c^2x^2\right)^{3/2}\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{c(cdx+d)^{3/2}(e-cex)^{3/2}}-\frac{ib^2e\left(1-c^2x^2\right)^{3/2}\text{PolyL}}{c(cdx+d)^{3/2}(e}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/((d + c*d*x)^(3/2)*Sqrt[e - c*e*x]),x]
```

```
[Out] -((e*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^
(3/2))) + (e*x*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/((d + c*d*x)^(3/2)*(e -
 c*e*x)^(3/2)) - (I*e*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/(c*(d + c*
d*x)^(3/2)*(e - c*e*x)^(3/2)) - ((4*I)*b*e*(1 - c^2*x^2)^(3/2)*(a + b*ArcSi
n[c*x])*ArcTan[E^(I*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2))
+ (2*b*e*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*
x])])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) + ((2*I)*b^2*e*(1 - c^2*x^2)^
(3/2)*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^
(3/2)) - ((2*I)*b^2*e*(1 - c^2*x^2)^(3/2)*PolyLog[2, I*E^(I*ArcSin[c*x])])/
(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) - (I*b^2*e*(1 - c^2*x^2)^(3/2)*Poly
Log[2, -E^((2*I)*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2))
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
```

```
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}\sqrt{e-cex}}\,dx = \frac{\left(1-c^2x^2\right)^{3/2}\int \frac{(e-cex)\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}\,dx}{(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= \frac{\left(1-c^2x^2\right)^{3/2}\int \left(\frac{e\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}-\frac{cex\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}\right)dx}{(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= \frac{\left(e\left(1-c^2x^2\right)^{3/2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}\,dx}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{\left(ce\left(1-c^2x^2\right)^{3/2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}\,dx}{(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= -\frac{e\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{ex\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{\left(2be\left(1-c^2x^2\right.\right.}{(d+cdx}$$

$$= -\frac{e\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{ex\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{\left(2be\left(1-c^2x^2\right.\right.}{}$$

$$= -\frac{e\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{ex\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{ie\left(1-c^2x^2\right)^{3/2}}{c(d+cdx}$$

$$= -\frac{e\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{ex\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{ie\left(1-c^2x^2\right)^{3/2}}{c(d+cdx}$$

$$= -\frac{e\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{ex\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{ie\left(1-c^2x^2\right)^{3/2}}{c(d+cdx}$$

$$= -\frac{e\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{ex\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{ie\left(1-c^2x^2\right)^{3/2}}{c(d+cdx}$$

Mathematica [A] time = 1.88, size = 225, normalized size = 0.49

$$-\frac{\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(a\left(acx-a+4b\sqrt{1-c^2x^2}\,\log\left(\sin\left(\frac{1}{4}\left(2\sin^{-1}(cx)+\pi\right)\right)\right)\right)+2b\sqrt{1-c^2x^2}\,\sin^{-1}(cx)\left(-a\cot\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/((d + c*d*x)^(3/2)*Sqrt[e - c*e*x]),x]
```

```
[Out] -((Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(-(b^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x]^2*(
-I + Cot[(Pi + 2*ArcSin[c*x])/4])) + 2*b*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*(-(a
*Cot[(Pi + 2*ArcSin[c*x])/4]) + 2*b*Log[1 + I/E^(I*ArcSin[c*x])]) + a*(-a +
 a*c*x + 4*b*Sqrt[1 - c^2*x^2]*Log[Sin[(Pi + 2*ArcSin[c*x])/4]]) + (4*I)*b^
2*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)/E^(I*ArcSin[c*x])]))/(c*d^2*e*(-1 + c*x
)*(1 + c*x)))
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{c^3d^2ex^3+c^2d^2ex^2-cd^2ex-d^2e},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(1/2),x, algorithm
="fricas")
```

```
[Out] integral(-(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(c*d*x + d)*sqr
t(-c*e*x + e)/(c^3*d^2*e*x^3 + c^2*d^2*e*x^2 - c*d^2*e*x - d^2*e), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b \arcsin(cx) + a)^2}{(cdx + d)^{\frac{3}{2}} \sqrt{-cex + e}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(1/2),x, algorithm
="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/((c*d*x + d)^(3/2)*sqrt(-c*e*x + e)), x)
```

maple [F] time = 0.37, size = 0, normalized size = 0.00

$$\int \frac{(a + b \arcsin(cx))^2}{(cdx + d)^{\frac{3}{2}} \sqrt{-cex + e}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(1/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{2\sqrt{-c^2dex^2 + de}\, ab \arcsin(cx)}{c^2d^2ex + cd^2e} + \frac{\frac{b^2 \int \frac{\arctan\left(cx, \sqrt{cx+1}\sqrt{-cx+1}\right)^2}{(cx+1)^{\frac{3}{2}}\sqrt{-cx+1}}\, dx}{d}}{\sqrt{d}\sqrt{e}} - \frac{\sqrt{-c^2dex^2 + de}\, a^2}{c^2d^2ex + cd^2e} + \frac{2\, ab \log(cx + 1)}{cd^{\frac{3}{2}}\sqrt{e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(1/2),x, algorithm
="maxima")
```

```
[Out] -2*sqrt(-c^2*d*e*x^2 + d*e)*a*b*arcsin(c*x)/(c^2*d^2*e*x + c*d^2*e) + b^2*i
ntegrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2/((c*d*x + d)*sqrt(c*x
 + 1)*sqrt(-c*x + 1)), x)/(sqrt(d)*sqrt(e)) - sqrt(-c^2*d*e*x^2 + d*e)*a^2/
(c^2*d^2*e*x + c*d^2*e) + 2*a*b*log(c*x + 1)/(c*d^(3/2)*sqrt(e))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b \operatorname{asin}(c\,x))^2}{(d + c\,d\,x)^{3/2}\,\sqrt{e - c\,e\,x}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/((d + c*d*x)^(3/2)*(e - c*e*x)^(1/2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/((d + c*d*x)^(3/2)*(e - c*e*x)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(cx))^2}{(d(cx + 1))^{\frac{3}{2}} \sqrt{-e(cx - 1)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(c*d*x+d)**(3/2)/(-c*e*x+e)**(1/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2/((d*(c*x + 1))**(3/2)*sqrt(-e*(c*x - 1))), x)
```

3.563 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{5/2}\sqrt{e-cex}}\,dx$

Optimal. Leaf size=896

$$\frac{c^2e^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2x^3}{3(cxd+d)^{5/2}(e-cex)^{5/2}}-\frac{bce^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)x^2}{3(cxd+d)^{5/2}(e-cex)^{5/2}}+\frac{2b^2e^2\left(1-c^2x^2\right)^2x}{3(cxd+d)^{5/2}(e-cex)^{5/2}}+\frac{2e^2\left(1-\right.}{3(}$$

```
[Out] -2/3*b^2*e^2*(-c^2*x^2+1)^2/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+2/3*b^2*e^2*
x*(-c^2*x^2+1)^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-1/3*b^2*e^2*(-c^2*x^2+1)^
(5/2)*arcsin(c*x)/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-1/3*b*e^2*(-c^2*x^2+1)
^(3/2)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+2/3*b*e^2*x*(-c
^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-1/3*b*c*
e^2*x^2*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/
2)-2/3*e^2*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5
/2)+1/3*e^2*x*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(
5/2)+1/3*c^2*e^2*x^3*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c*e
*x+e)^(5/2)+2/3*e^2*x*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-
c*e*x+e)^(5/2)-2/3*I*b^2*e^2*(-c^2*x^2+1)^(5/2)*polylog(2,I*(I*c*x+(-c^2*x^
2+1)^(1/2)))/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-4/3*I*b*e^2*(-c^2*x^2+1)^(5
/2)*(a+b*arcsin(c*x))*arctan(I*c*x+(-c^2*x^2+1)^(1/2))/c/(c*d*x+d)^(5/2)/(-
c*e*x+e)^(5/2)+2/3*b*e^2*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))*ln(1+(I*c*x+(
-c^2*x^2+1)^(1/2))^2)/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+2/3*I*b^2*e^2*(-c^
2*x^2+1)^(5/2)*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/(c*d*x+d)^(5/2)/(
-c*e*x+e)^(5/2)-1/3*I*e^2*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))^2/c/(c*d*x+d
)^(5/2)/(-c*e*x+e)^(5/2)-1/3*I*b^2*e^2*(-c^2*x^2+1)^(5/2)*polylog(2,-(I*c*x
+(-c^2*x^2+1)^(1/2))^2)/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)
```

Rubi [A] time = 1.24, antiderivative size = 896, normalized size of antiderivative = 1.00, number of steps used = 30, number of rules used = 18, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.562, Rules used = {4673, 4763, 4655, 4651, 4675, 3719, 2190, 2279, 2391, 4677, 191, 4657, 4181, 261, 4681, 4703, 288, 216}

$$\frac{c^2e^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2x^3}{3(cxd+d)^{5/2}(e-cex)^{5/2}}-\frac{bce^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)x^2}{3(cxd+d)^{5/2}(e-cex)^{5/2}}+\frac{2b^2e^2\left(1-c^2x^2\right)^2x}{3(cxd+d)^{5/2}(e-cex)^{5/2}}+\frac{2e^2\left(1-\right.}{3(}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/((d + c*d*x)^(5/2)*Sqrt[e - c*e*x]),x]
```

```
[Out] (-2*b^2*e^2*(1 - c^2*x^2)^2)/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) + (2
*b^2*e^2*x*(1 - c^2*x^2)^2)/(3*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (b^2*
e^2*(1 - c^2*x^2)^(5/2)*ArcSin[c*x])/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/
2)) - (b*e^2*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(3*c*(d + c*d*x)^(5/2
)*(e - c*e*x)^(5/2)) + (2*b*e^2*x*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x]))/
(3*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (b*c*e^2*x^2*(1 - c^2*x^2)^(3/2)*
(a + b*ArcSin[c*x]))/(3*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (2*e^2*(1 -
c^2*x^2)*(a + b*ArcSin[c*x])^2)/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) +
 (e^2*x*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(3*(d + c*d*x)^(5/2)*(e - c*e*
x)^(5/2)) + (c^2*e^2*x^3*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(3*(d + c*d*x
)^(5/2)*(e - c*e*x)^(5/2)) + (2*e^2*x*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x])^2
)/(3*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - ((I/3)*e^2*(1 - c^2*x^2)^(5/2)*
(a + b*ArcSin[c*x])^2)/(c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (((4*I)/3)
*b*e^2*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])])/(
c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) + (2*b*e^2*(1 - c^2*x^2)^(5/2)*(a +
b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(3*c*(d + c*d*x)^(5/2)*(e -
c*e*x)^(5/2)) + (((2*I)/3)*b^2*e^2*(1 - c^2*x^2)^(5/2)*PolyLog[2, (-I)*E^(I
*ArcSin[c*x])])/(c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (((2*I)/3)*b^2*e^
```

```
2*(1 - c^2*x^2)^(5/2)*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c*(d + c*d*x)^(5/2)
*(e - c*e*x)^(5/2)) - ((I/3)*b^2*e^2*(1 - c^2*x^2)^(5/2)*PolyLog[2, -E^((2*
I)*ArcSin[c*x])])/(c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2))
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
```

```
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4681

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^F
racPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c
^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d,
 e, f, m, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] &
& NeQ[m, -1]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{5/2}\sqrt{e-cex}}\,dx = \frac{\left(1-c^2x^2\right)^{5/2}\int \frac{(e-cex)^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\,dx}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{\left(1-c^2x^2\right)^{5/2}\int\left(\frac{e^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}-\frac{2ce^2x\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}+\frac{c^2e^2x^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\right)dx}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{\left(e^2\left(1-c^2x^2\right)^{5/2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\,dx}{(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{\left(2ce^2\left(1-c^2x^2\right)^{5/2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\,dx}{(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{(c\cdots}{\cdots}$$

$$= -\frac{2e^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{e^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{c^2e^2x^3\left(1-\cdots\right.}{3(d+\cdots}$$

$$= -\frac{be^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{2be^2x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{bce^2x^{\cdots}}{\cdots}$$

$$= -\frac{2b^2e^2\left(1-c^2x^2\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{2b^2e^2x\left(1-c^2x^2\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{be^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin\cdots\right.}{3c(d+cdx)^{5/2}(e-cex\cdots}$$

$$= -\frac{2b^2e^2\left(1-c^2x^2\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{2b^2e^2x\left(1-c^2x^2\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{b^2e^2\left(1-c^2x^2\right)^{5/2}\sin^{-1}(cx\cdots}{3c(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= -\frac{2b^2e^2\left(1-c^2x^2\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{2b^2e^2x\left(1-c^2x^2\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{b^2e^2\left(1-c^2x^2\right)^{5/2}\sin^{-1}(cx\cdots}{3c(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= -\frac{2b^2e^2\left(1-c^2x^2\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{2b^2e^2x\left(1-c^2x^2\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{b^2e^2\left(1-c^2x^2\right)^{5/2}\sin^{-1}(cx\cdots}{3c(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= -\frac{2b^2e^2\left(1-c^2x^2\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{2b^2e^2x\left(1-c^2x^2\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{b^2e^2\left(1-c^2x^2\right)^{5/2}\sin^{-1}(cx\cdots}{3c(d+cdx)^{5/2}(e-cex)^{5/2}}$$

Mathematica [A] time = 7.59, size = 540, normalized size = 0.60

$$\frac{\sqrt{d(cx+1)}\sqrt{-e(cx-1)}\left(-\frac{a^2}{3d^3e(cx+1)}-\frac{a^2}{3d^3e(cx+1)^2}\right)}{c}+\frac{ab\sqrt{1-c^2x^2}\sqrt{cdx+d}\sqrt{e-cex}\left(2\sin\left(\frac{1}{2}\sin^{-1}(cx)\right)\left(\sqrt{1-\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/((d + c*d*x)^(5/2)*Sqrt[e - c*e*x]),x]
```

```
[Out] (Sqrt[-(e*(-1 + c*x))]*Sqrt[d*(1 + c*x)]*(-1/3*a^2/(d^3*e*(1 + c*x)^2) - a^
2/(3*d^3*e*(1 + c*x))))/c + (b^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[1 - c
^2*x^2]*(Cot[(Pi + 2*ArcSin[c*x])/4]*(4 + 2*ArcSin[c*x]^2 + ArcSin[c*x]^2*C
sc[(Pi + 2*ArcSin[c*x])/4]^2) + 2*ArcSin[c*x]*((-I)*ArcSin[c*x] + Csc[(Pi +
 2*ArcSin[c*x])/4]^2 - 4*Log[1 + I/E^(I*ArcSin[c*x])]) - (8*I)*PolyLog[2, (
-I)/E^(I*ArcSin[c*x])]))/(6*c*d^2*Sqrt[(-d - c*d*x)*(e - c*e*x)]*Sqrt[-(d*e
*(1 - c^2*x^2))]) + (a*b*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[1 - c^2*x^2]*
(Cos[ArcSin[c*x]/2]*(2 + 3*ArcSin[c*x] - 6*Log[Cos[ArcSin[c*x]/2] + Sin[Arc
Sin[c*x]/2]]) + Cos[(3*ArcSin[c*x])/2]*(ArcSin[c*x] + 2*Log[Cos[ArcSin[c*x]
/2] + Sin[ArcSin[c*x]/2]]) + 2*(1 - ArcSin[c*x] + Sqrt[1 - c^2*x^2]*(ArcSin
[c*x] - 2*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]) - 4*Log[Cos[ArcSin[
c*x]/2] + Sin[ArcSin[c*x]/2]])*Sin[ArcSin[c*x]/2]))/(3*c*d^2*Sqrt[(-d - c*d
*x)*(e - c*e*x)]*Sqrt[-(d*e*(1 - c^2*x^2))]*(Cos[ArcSin[c*x]/2] + Sin[ArcSi
n[c*x]/2])^3)
```

fricas [F] time = 1.13, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{c^4d^3ex^4+2\,c^3d^3ex^3-2\,cd^3ex-d^3e},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(1/2),x, algorithm
="fricas")
```

```
[Out] integral(-(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(c*d*x + d)*sqr
t(-c*e*x + e)/(c^4*d^3*e*x^4 + 2*c^3*d^3*e*x^3 - 2*c*d^3*e*x - d^3*e), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(b\arcsin(cx)+a)^2}{(cdx+d)^{\frac{5}{2}}\sqrt{-cex+e}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(1/2),x, algorithm
="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/((c*d*x + d)^(5/2)*sqrt(-c*e*x + e)), x)
```

maple [F] time = 0.37, size = 0, normalized size = 0.00

$$\int\frac{(a+b\arcsin(cx))^2}{(cdx+d)^{\frac{5}{2}}\sqrt{-cex+e}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(1/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{2}{3}\,abc\left(\frac{1}{c^3d^{\frac{5}{2}}\sqrt{e}\,x+c^2d^{\frac{5}{2}}\sqrt{e}}-\frac{\log\left(cx+1\right)}{c^2d^{\frac{5}{2}}\sqrt{e}}\right)-\frac{2}{3}\,ab\left(\frac{\sqrt{-c^2dex^2+de}}{c^3d^3ex^2+2\,c^2d^3ex+cd^3e}+\frac{\sqrt{-c^2dex^2+de}}{c^2d^3ex+cd^3e}\right)\arcsin\left(cx\right)-\frac{1}{3}\,a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(1/2),x, algorithm
="maxima")
```

```
[Out] -2/3*a*b*c*(1/(c^3*d^(5/2)*sqrt(e)*x + c^2*d^(5/2)*sqrt(e)) - log(c*x + 1)/
(c^2*d^(5/2)*sqrt(e))) - 2/3*a*b*(sqrt(-c^2*d*e*x^2 + d*e)/(c^3*d^3*e*x^2 +
 2*c^2*d^3*e*x + c*d^3*e) + sqrt(-c^2*d*e*x^2 + d*e)/(c^2*d^3*e*x + c*d^3*e
))*arcsin(c*x) - 1/3*a^2*(sqrt(-c^2*d*e*x^2 + d*e)/(c^3*d^3*e*x^2 + 2*c^2*d
^3*e*x + c*d^3*e) + sqrt(-c^2*d*e*x^2 + d*e)/(c^2*d^3*e*x + c*d^3*e)) + b^2
*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2/((c^2*d^2*x^2 + 2*c
*d^2*x + d^2)*sqrt(c*x + 1)*sqrt(-c*x + 1)), x)/(sqrt(d)*sqrt(e))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{{\left(d+c\,d\,x\right)}^{5/2}\,\sqrt{e-c\,e\,x}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/((d + c*d*x)^(5/2)*(e - c*e*x)^(1/2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/((d + c*d*x)^(5/2)*(e - c*e*x)^(1/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(c*d*x+d)**(5/2)/(-c*e*x+e)**(1/2),x)
```

```
[Out] Timed out
```

3.564 $\int \frac{(d+cdx)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{(e-cex)^{3/2}}\,dx$

Optimal. Leaf size=918

$$-\frac{5\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^3d^4}{2bc(cxd+d)^{3/2}(e-cex)^{3/2}}-\frac{b^2x\left(1-c^2x^2\right)^2d^4}{4(cxd+d)^{3/2}(e-cex)^{3/2}}-\frac{8b^2\left(1-c^2x^2\right)^2d^4}{c(cxd+d)^{3/2}(e-cex)^{3/2}}+\frac{x\left(1-c^2x^2\right)^2\left(a+b\right.}{2(cxd+d)^{3/2}(e}$$

```
[Out] -8*a*b*d^4*x*(-c^2*x^2+1)^(3/2)/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-8*b^2*d^4*
(-c^2*x^2+1)^2/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-1/4*b^2*d^4*x*(-c^2*x^2+1
)^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+1/4*b^2*d^4*(-c^2*x^2+1)^(3/2)*arcsin(
c*x)/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-8*b^2*d^4*x*(-c^2*x^2+1)^(3/2)*arcs
in(c*x)/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-1/2*b*c*d^4*x^2*(-c^2*x^2+1)^(3/2)
*(a+b*arcsin(c*x))/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+8*d^4*(-c^2*x^2+1)*(a+b
*arcsin(c*x))^2/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+8*d^4*x*(-c^2*x^2+1)*(a+
b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-8*I*d^4*(-c^2*x^2+1)^(3/2
)*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+4*d^4*(-c^2*x^2+1)
^2*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+1/2*d^4*x*(-c^2*x
^2+1)^2*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-5/2*d^4*(-c^2*
x^2+1)^(3/2)*(a+b*arcsin(c*x))^3/b/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+16*I*
b^2*d^4*(-c^2*x^2+1)^(3/2)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/(c*d*x
+d)^(3/2)/(-c*e*x+e)^(3/2)+16*b*d^4*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))*ln
(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+32*I*b*
d^4*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))*arctan(I*c*x+(-c^2*x^2+1)^(1/2))/c
/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-8*I*b^2*d^4*(-c^2*x^2+1)^(3/2)*polylog(2,
-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-16*I*b^2*
d^4*(-c^2*x^2+1)^(3/2)*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/(c*d*x+d)
^(3/2)/(-c*e*x+e)^(3/2)
```

Rubi [A] time = 1.28, antiderivative size = 918, normalized size of antiderivative = 1.00, number of steps used = 28, number of rules used = 19, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.594, Rules used = {4673, 4775, 4763, 4651, 4675, 3719, 2190, 2279, 2391, 4677, 4657, 4181, 4641, 4619, 261, 4707, 4627, 321, 216}

$$-\frac{5\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^3d^4}{2bc(cxd+d)^{3/2}(e-cex)^{3/2}}-\frac{b^2x\left(1-c^2x^2\right)^2d^4}{4(cxd+d)^{3/2}(e-cex)^{3/2}}-\frac{8b^2\left(1-c^2x^2\right)^2d^4}{c(cxd+d)^{3/2}(e-cex)^{3/2}}+\frac{x\left(1-c^2x^2\right)^2\left(a+b\right.}{2(cxd+d)^{3/2}(e}$$

Antiderivative was successfully verified.

```
[In] Int[((d + c*d*x)^(5/2)*(a + b*ArcSin[c*x])^2)/(e - c*e*x)^(3/2),x]
```

```
[Out] (-8*a*b*d^4*x*(1 - c^2*x^2)^(3/2))/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) -
(8*b^2*d^4*(1 - c^2*x^2)^2)/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) - (b^2*
d^4*x*(1 - c^2*x^2)^2)/(4*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) + (b^2*d^4*(
1 - c^2*x^2)^(3/2)*ArcSin[c*x])/(4*c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) -
 (8*b^2*d^4*x*(1 - c^2*x^2)^(3/2)*ArcSin[c*x])/((d + c*d*x)^(3/2)*(e - c*e*
x)^(3/2)) - (b*c*d^4*x^2*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(2*(d + c
*d*x)^(3/2)*(e - c*e*x)^(3/2)) + (8*d^4*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2
)/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) + (8*d^4*x*(1 - c^2*x^2)*(a + b*A
rcSin[c*x])^2)/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) - ((8*I)*d^4*(1 - c^2*
x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) +
 (4*d^4*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x])^2)/(c*(d + c*d*x)^(3/2)*(e - c*
e*x)^(3/2)) + (d^4*x*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x])^2)/(2*(d + c*d*x)^
(3/2)*(e - c*e*x)^(3/2)) - (5*d^4*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^3
)/(2*b*c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) + ((32*I)*b*d^4*(1 - c^2*x^2)
^(3/2)*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*
(e - c*e*x)^(3/2)) + (16*b*d^4*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])*Log[
1 + E^((2*I)*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) - ((16*
```

```
I)*b^2*d^4*(1 - c^2*x^2)^(3/2)*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(c*(d +
c*d*x)^(3/2)*(e - c*e*x)^(3/2)) + ((16*I)*b^2*d^4*(1 - c^2*x^2)^(3/2)*PolyL
og[2, I*E^(I*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) - ((8*I
)*b^2*d^4*(1 - c^2*x^2)^(3/2)*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(c*(d + c
*d*x)^(3/2)*(e - c*e*x)^(3/2))
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
```

```
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4775

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(d+cdx)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{(e-cex)^{3/2}}\,dx = \frac{\left(1-c^2x^2\right)^{3/2}\int \frac{(d+cdx)^4\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}dx}{(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= \frac{\left(1-c^2x^2\right)^{3/2}\int\left(\frac{8\left(d^4+cd^4x\right)\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}} - \frac{7d^4\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}} - \frac{4cd^4x\left(a+b\sin^{-1}\right.}{\sqrt{1-c^2x^2}}\right.}{(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= \frac{\left(8\left(1-c^2x^2\right)^{3/2}\right)\int \frac{\left(d^4+cd^4x\right)\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}dx}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{\left(7d^4\left(1-c^2x^2\right)^{3/2}\right)\int \frac{(a+b}{}}{(d+cdx)^{3/2}(e-ce}$$

$$= \frac{4d^4\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{d^4x\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{2(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= -\frac{8abd^4x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{bcd^4x^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{2(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{4d^4}{}$$

$$= -\frac{8abd^4x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{b^2d^4x\left(1-c^2x^2\right)^2}{4(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{8b^2d^4x\left(1-c^2x^2\right.}{(d+cdx)^{3/2}(}$$

$$= -\frac{8abd^4x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{8b^2d^4\left(1-c^2x^2\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{b^2d^4x\left(1-c^2\right.}{4(d+cdx)^{3/2}(e-}$$

$$= -\frac{8abd^4x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{8b^2d^4\left(1-c^2x^2\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{b^2d^4x\left(1-c^2\right.}{4(d+cdx)^{3/2}(e-}$$

$$= -\frac{8abd^4x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{8b^2d^4\left(1-c^2x^2\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{b^2d^4x\left(1-c^2\right.}{4(d+cdx)^{3/2}(e-}$$

$$= -\frac{8abd^4x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{8b^2d^4\left(1-c^2x^2\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{b^2d^4x\left(1-c^2\right.}{4(d+cdx)^{3/2}(e-}$$

$$= -\frac{8abd^4x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{8b^2d^4\left(1-c^2x^2\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{b^2d^4x\left(1-c^2\right.}{4(d+cdx)^{3/2}(e-}$$

Mathematica [B] time = 14.57, size = 2041, normalized size = 2.22

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((d + c*d*x)^(5/2)*(a + b*ArcSin[c*x])^2)/(e - c*e*x)^(3/2),x]
```

```
[Out] (Sqrt[-(e*(-1 + c*x))]*Sqrt[d*(1 + c*x)]*((4*a^2*d^2)/e^2 + (a^2*c*d^2*x)/(
2*e^2) - (8*a^2*d^2)/(e^2*(-1 + c*x))))/c + (15*a^2*d^(5/2)*ArcTan[(c*x*Sqr
t[-(e*(-1 + c*x))]*Sqrt[d*(1 + c*x)])/(Sqrt[d]*Sqrt[e]*(-1 + c*x)*(1 + c*x)
)])/(2*c*e^(3/2)) - (a*b*d^2*(1 + c*x)*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt
[-(d*e*(1 - c^2*x^2))]*(Cos[ArcSin[c*x]/2]*((-4 + ArcSin[c*x])*ArcSin[c*x]
- 8*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]]) - (ArcSin[c*x]*(4 + ArcSi
n[c*x]) - 8*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]])*Sin[ArcSin[c*x]/2
]))/(c*e^2*Sqrt[(-d - c*d*x)*(e - c*e*x)]*Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x
]/2] - Sin[ArcSin[c*x]/2])*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^2) + (
4*a*b*d^2*(1 + c*x)*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[-(d*e*(1 - c^2*x^2
))]*(Cos[ArcSin[c*x]/2]*(-(c*x) + 2*ArcSin[c*x] + Sqrt[1 - c^2*x^2]*ArcSin[
```

```
c*x] - ArcSin[c*x]^2 + 4*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]]) + (c
*x + 2*ArcSin[c*x] - Sqrt[1 - c^2*x^2]*ArcSin[c*x] + ArcSin[c*x]^2 - 4*Log[
Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]])*Sin[ArcSin[c*x]/2]))/(c*e^2*Sqrt[
(-d - c*d*x)*(e - c*e*x)]*Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] - Sin[ArcSi
n[c*x]/2])*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^2) - (b^2*d^2*(1 + c*x
)*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[-(d*e*(1 - c^2*x^2))]*((-18*I)*Pi*Ar
cSin[c*x] - (6 - 6*I)*ArcSin[c*x]^2 + ArcSin[c*x]^3 - 24*Pi*Log[1 + E^((-I)
*ArcSin[c*x])] + 12*(Pi - 2*ArcSin[c*x])*Log[1 + I*E^(I*ArcSin[c*x])] + 24*
Pi*Log[Cos[ArcSin[c*x]/2]] - 12*Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] + (24*
I)*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] - (12*ArcSin[c*x]^2*Sin[ArcSin[c*x]/2
])/(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])))/(3*c*e^2*Sqrt[(-d - c*d*x)*(
e - c*e*x)]*Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^2)
- (b^2*d^2*(1 + c*x)*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[-(d*e*(1 - c^2*x^
2))]*((96*c*x*ArcSin[c*x])/Sqrt[1 - c^2*x^2] - ((48 - 48*I)*ArcSin[c*x]^2)/
Sqrt[1 - c^2*x^2] + (20*ArcSin[c*x]^3)/Sqrt[1 - c^2*x^2] - 48*(-2 + ArcSin[
c*x]^2) - 6*c*x*(-1 + 2*ArcSin[c*x]^2) - (6*ArcSin[c*x]*Cos[2*ArcSin[c*x]])
/Sqrt[1 - c^2*x^2] + (48*((-3*I)*Pi*ArcSin[c*x] - 4*Pi*Log[1 + E^((-I)*ArcS
in[c*x])] + 2*(Pi - 2*ArcSin[c*x])*Log[1 + I*E^(I*ArcSin[c*x])] + 4*Pi*Log[
Cos[ArcSin[c*x]/2]] - 2*Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] + (4*I)*PolyLo
g[2, (-I)*E^(I*ArcSin[c*x])]))/Sqrt[1 - c^2*x^2] - (96*ArcSin[c*x]^2*Sin[Ar
cSin[c*x]/2])/(Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]))
))/(24*c*e^2*Sqrt[(-d - c*d*x)*(e - c*e*x)]*(Cos[ArcSin[c*x]/2] + Sin[ArcSi
n[c*x]/2])^2) - (2*b^2*d^2*(1 + c*x)*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[-
(d*e*(1 - c^2*x^2))]*(6 + (6*c*x*ArcSin[c*x])/Sqrt[1 - c^2*x^2] - 3*ArcSin[
c*x]^2 - ((6 - 6*I)*ArcSin[c*x]^2)/Sqrt[1 - c^2*x^2] + (2*ArcSin[c*x]^3)/Sq
rt[1 - c^2*x^2] + (6*((-3*I)*Pi*ArcSin[c*x] - 4*Pi*Log[1 + E^((-I)*ArcSin[c
*x])] + 2*(Pi - 2*ArcSin[c*x])*Log[1 + I*E^(I*ArcSin[c*x])] + 4*Pi*Log[Cos[
ArcSin[c*x]/2]] - 2*Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] + (4*I)*PolyLog[2,
 (-I)*E^(I*ArcSin[c*x])]))/Sqrt[1 - c^2*x^2] - (12*ArcSin[c*x]^2*Sin[ArcSin
[c*x]/2])/(Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]))))/(
3*c*e^2*Sqrt[(-d - c*d*x)*(e - c*e*x)]*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x
]/2])^2) + (a*b*d^2*(1 + c*x)*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[-(d*e*(1
 - c^2*x^2))]*((-15 + 14*ArcSin[c*x])*Cos[(3*ArcSin[c*x])/2] + Cos[(5*ArcSi
n[c*x])/2] + 2*ArcSin[c*x]*Cos[(5*ArcSin[c*x])/2] + Cos[ArcSin[c*x]/2]*(16
+ 48*ArcSin[c*x] - 20*ArcSin[c*x]^2 + 64*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSi
n[c*x]/2]]) - 16*Sin[ArcSin[c*x]/2] + 48*ArcSin[c*x]*Sin[ArcSin[c*x]/2] + 2
0*ArcSin[c*x]^2*Sin[ArcSin[c*x]/2] - 64*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin
[c*x]/2]]*Sin[ArcSin[c*x]/2] - 15*Sin[(3*ArcSin[c*x])/2] - 14*ArcSin[c*x]*S
in[(3*ArcSin[c*x])/2] - Sin[(5*ArcSin[c*x])/2] + 2*ArcSin[c*x]*Sin[(5*ArcSi
n[c*x])/2]))/(8*c*e^2*Sqrt[(-d - c*d*x)*(e - c*e*x)]*Sqrt[1 - c^2*x^2]*(Cos
[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]
/2])^2)
```

fricas [F] time = 1.06, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(a^2c^2d^2x^2 + 2\,a^2cd^2x + a^2d^2 + \left(b^2c^2d^2x^2 + 2\,b^2cd^2x + b^2d^2\right)\arcsin\left(cx\right)^2 + 2\left(abc^2d^2x^2 + 2\,abcd^2x + ab\right.\right.}{c^2e^2x^2 - 2\,ce^2x + e^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(3/2),x, algorithm
="fricas")
```

```
[Out] integral((a^2*c^2*d^2*x^2 + 2*a^2*c*d^2*x + a^2*d^2 + (b^2*c^2*d^2*x^2 + 2*
b^2*c*d^2*x + b^2*d^2)*arcsin(c*x)^2 + 2*(a*b*c^2*d^2*x^2 + 2*a*b*c*d^2*x +
 a*b*d^2)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*e*x + e)/(c^2*e^2*x^2 - 2*c*
e^2*x + e^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(cdx+d)^{\frac{5}{2}}(b\arcsin(cx)+a)^2}{(-cex+e)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(3/2),x, algorithm
="giac")
```

```
[Out] integrate((c*d*x + d)^(5/2)*(b*arcsin(c*x) + a)^2/(-c*e*x + e)^(3/2), x)
```

maple [F] time = 0.30, size = 0, normalized size = 0.00

$$\int \frac{(cdx+d)^{\frac{5}{2}}\left(a+b\arcsin(cx)\right)^2}{(-cex+e)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(3/2),x)
```

```
[Out] int((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\left(\frac{c^2d^3x^3}{\sqrt{-c^2dex^2+de}\,e}+\frac{8\,cd^3x^2}{\sqrt{-c^2dex^2+de}\,e}-\frac{17\,d^3x}{\sqrt{-c^2dex^2+de}\,e}+\frac{15\,d^3\arcsin(cx)}{\sqrt{de}\,ce}-\frac{24\,d^3}{\sqrt{-c^2dex^2+de}\,ce}\right)a^2+\sqrt{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(3/2),x, algorithm
="maxima")
```

```
[Out] -1/2*(c^2*d^3*x^3/(sqrt(-c^2*d*e*x^2 + d*e)*e) + 8*c*d^3*x^2/(sqrt(-c^2*d*e
*x^2 + d*e)*e) - 17*d^3*x/(sqrt(-c^2*d*e*x^2 + d*e)*e) + 15*d^3*arcsin(c*x)
/(sqrt(d*e)*c*e) - 24*d^3/(sqrt(-c^2*d*e*x^2 + d*e)*c*e))*a^2 + sqrt(d)*sqr
t(e)*integrate(((b^2*c^2*d^2*x^2 + 2*b^2*c*d^2*x + b^2*d^2)*arctan2(c*x, sq
rt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c^2*d^2*x^2 + 2*a*b*c*d^2*x + a*b*d^
2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)
/(c^2*e^2*x^2 - 2*c*e^2*x + e^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(d+c\,d\,x\right)}^{5/2}}{{\left(e-c\,e\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d + c*d*x)^(5/2))/(e - c*e*x)^(3/2),x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d + c*d*x)^(5/2))/(e - c*e*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(5/2)*(a+b*asin(c*x))**2/(-c*e*x+e)**(3/2),x)
```

```
[Out] Timed out
```

3.565 $\int \frac{(d+cdx)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{(e-cex)^{3/2}}\,dx$

Optimal. Leaf size=713

$$-\frac{2abd^3x\left(1-c^2x^2\right)^{3/2}}{(cdx+d)^{3/2}(e-cex)^{3/2}}-\frac{d^3\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^3}{bc(cdx+d)^{3/2}(e-cex)^{3/2}}+\frac{d^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{c(cdx+d)^{3/2}(e-cex)^{3/2}}-\frac{4id^3\left(1-c^2x^2\right)^{3/2}}{c(cdx+d)^{3/2}}$$

```
[Out] -2*a*b*d^3*x*(-c^2*x^2+1)^(3/2)/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-2*b^2*d^3*
(-c^2*x^2+1)^2/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-2*b^2*d^3*x*(-c^2*x^2+1)^
(3/2)*arcsin(c*x)/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+4*d^3*(-c^2*x^2+1)*(a+b*
arcsin(c*x))^2/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+4*d^3*x*(-c^2*x^2+1)*(a+b
*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-4*I*d^3*(-c^2*x^2+1)^(3/2)
*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+d^3*(-c^2*x^2+1)^2*
(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-d^3*(-c^2*x^2+1)^(3/
2)*(a+b*arcsin(c*x))^3/b/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+16*I*b*d^3*(-c^
2*x^2+1)^(3/2)*(a+b*arcsin(c*x))*arctan(I*c*x+(-c^2*x^2+1)^(1/2))/c/(c*d*x+
d)^(3/2)/(-c*e*x+e)^(3/2)+8*b*d^3*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))*ln(1
+(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-8*I*b^2*d
^3*(-c^2*x^2+1)^(3/2)*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/(c*d*x+d)^
(3/2)/(-c*e*x+e)^(3/2)+8*I*b^2*d^3*(-c^2*x^2+1)^(3/2)*polylog(2,I*(I*c*x+(-
c^2*x^2+1)^(1/2)))/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-4*I*b^2*d^3*(-c^2*x^2
+1)^(3/2)*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c/(c*d*x+d)^(3/2)/(-c*e*
x+e)^(3/2)
```

Rubi [A] time = 1.05, antiderivative size = 713, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 15, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}} = 0.469$, Rules used = {4673, 4775, 4763, 4651, 4675, 3719, 2190, 2279, 2391, 4677, 4657, 4181, 4641, 4619, 261}

$$-\frac{8ib^2d^3\left(1-c^2x^2\right)^{3/2}\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{c(cdx+d)^{3/2}(e-cex)^{3/2}}+\frac{8ib^2d^3\left(1-c^2x^2\right)^{3/2}\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{c(cdx+d)^{3/2}(e-cex)^{3/2}}-\frac{4ib^2d^3\left(1-c^2x^2\right)^{3/2}}{c(cdx+d}$$

Antiderivative was successfully verified.

```
[In] Int[((d + c*d*x)^(3/2)*(a + b*ArcSin[c*x])^2)/(e - c*e*x)^(3/2),x]
```

```
[Out] (-2*a*b*d^3*x*(1 - c^2*x^2)^(3/2))/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) -
(2*b^2*d^3*(1 - c^2*x^2)^2)/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) - (2*b^
2*d^3*x*(1 - c^2*x^2)^(3/2)*ArcSin[c*x])/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/
2)) + (4*d^3*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(c*(d + c*d*x)^(3/2)*(e -
 c*e*x)^(3/2)) + (4*d^3*x*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/((d + c*d*x)
^(3/2)*(e - c*e*x)^(3/2)) - ((4*I)*d^3*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*
x])^2)/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) + (d^3*(1 - c^2*x^2)^2*(a +
b*ArcSin[c*x])^2)/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) - (d^3*(1 - c^2*x
^2)^(3/2)*(a + b*ArcSin[c*x])^3)/(b*c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2))
+ ((16*I)*b*d^3*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[
c*x])])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) + (8*b*d^3*(1 - c^2*x^2)^(3
/2)*(a + b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2
)*(e - c*e*x)^(3/2)) - ((8*I)*b^2*d^3*(1 - c^2*x^2)^(3/2)*PolyLog[2, (-I)*E
^(I*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) + ((8*I)*b^2*d^3
*(1 - c^2*x^2)^(3/2)*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*
(e - c*e*x)^(3/2)) - ((4*I)*b^2*d^3*(1 - c^2*x^2)^(3/2)*PolyLog[2, -E^((2*I
)*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2))
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
```

```
NeQ[p, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
```

```
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4775

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(d+cdx)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{(e-cex)^{3/2}}dx = \frac{\left(1-c^2x^2\right)^{3/2}\int \frac{(d+cdx)^3\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}dx}{(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= \frac{\left(1-c^2x^2\right)^{3/2}\int \left(\frac{4\left(d^3+cd^3x\right)\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}} - \frac{3d^3\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}} - \frac{cd^3x\left(a+b\sin^{-1}\right.}{\sqrt{1-c^2x^2}}\right.}{(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= \frac{\left(4\left(1-c^2x^2\right)^{3/2}\right)\int \frac{\left(d^3+cd^3x\right)\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}dx}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{\left(3d^3\left(1-c^2x^2\right)^{3/2}\right)\int \frac{(a+b}{\sqrt{}}}{(d+cdx)^{3/2}(e-ce}$$

$$= \frac{d^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{d^3\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^3}{bc(d+cdx)^{3/2}(e-cex)^{3/2}} +$$

$$= -\frac{2abd^3x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{d^3\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{d^3\left(1-c\right.}{bc(}$$

$$= -\frac{2abd^3x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{2b^2d^3x\left(1-c^2x^2\right)^{3/2}\sin^{-1}(cx)}{(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{4d^3\left(1-c^2\right.}{c(d+}$$

$$= -\frac{2abd^3x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{2b^2d^3\left(1-c^2x^2\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{2b^2d^3x\left(1-c^2x^2\right.}{(d+cdx)^{3/2}(e}$$

$$= -\frac{2abd^3x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{2b^2d^3\left(1-c^2x^2\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{2b^2d^3x\left(1-c^2x^2\right.}{(d+cdx)^{3/2}(e}$$

$$= -\frac{2abd^3x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{2b^2d^3\left(1-c^2x^2\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{2b^2d^3x\left(1-c^2x^2\right.}{(d+cdx)^{3/2}(e}$$

$$= -\frac{2abd^3x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{2b^2d^3\left(1-c^2x^2\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{2b^2d^3x\left(1-c^2x^2\right.}{(d+cdx)^{3/2}(e}$$

$$= -\frac{2abd^3x\left(1-c^2x^2\right)^{3/2}}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{2b^2d^3\left(1-c^2x^2\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{2b^2d^3x\left(1-c^2x^2\right.}{(d+cdx)^{3/2}(e}$$

Mathematica [A] time = 10.99, size = 1255, normalized size = 1.76

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((d + c*d*x)^(3/2)*(a + b*ArcSin[c*x])^2)/(e - c*e*x)^(3/2),x]
```

```
[Out] (Sqrt[-(e*(-1 + c*x))]*Sqrt[d*(1 + c*x)]*((a^2*d)/e^2 - (4*a^2*d)/(e^2*(-1
+ c*x))))/c + (3*a^2*d^(3/2)*ArcTan[(c*x*Sqrt[-(e*(-1 + c*x))]*Sqrt[d*(1 +
c*x)])/(Sqrt[d]*Sqrt[e]*(-1 + c*x)*(1 + c*x))])/(c*e^(3/2)) - (a*b*d*(1 + c
*x)*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[-(d*e*(1 - c^2*x^2))]*(Cos[ArcSin[
c*x]/2]*((-4 + ArcSin[c*x])*ArcSin[c*x] - 8*Log[Cos[ArcSin[c*x]/2] - Sin[Ar
cSin[c*x]/2]]) - (ArcSin[c*x]*(4 + ArcSin[c*x]) - 8*Log[Cos[ArcSin[c*x]/2]
- Sin[ArcSin[c*x]/2]])*Sin[ArcSin[c*x]/2]))/(c*e^2*Sqrt[(-d - c*d*x)*(e - c
*e*x)]*Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])*(Cos[Arc
Sin[c*x]/2] + Sin[ArcSin[c*x]/2])^2) + (2*a*b*d*(1 + c*x)*Sqrt[d + c*d*x]*S
qrt[e - c*e*x]*Sqrt[-(d*e*(1 - c^2*x^2))]*(Cos[ArcSin[c*x]/2]*(-(c*x) + 2*A
rcSin[c*x] + Sqrt[1 - c^2*x^2]*ArcSin[c*x] - ArcSin[c*x]^2 + 4*Log[Cos[ArcS
```

```
in[c*x]/2] - Sin[ArcSin[c*x]/2]]) + (c*x + 2*ArcSin[c*x] - Sqrt[1 - c^2*x^2
]*ArcSin[c*x] + ArcSin[c*x]^2 - 4*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/
2]])*Sin[ArcSin[c*x]/2]))/(c*e^2*Sqrt[(-d - c*d*x)*(e - c*e*x)]*Sqrt[1 - c^
2*x^2]*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])*(Cos[ArcSin[c*x]/2] + Sin[
ArcSin[c*x]/2])^2) - (b^2*d*(1 + c*x)*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[
-(d*e*(1 - c^2*x^2))]*((-18*I)*Pi*ArcSin[c*x] - (6 - 6*I)*ArcSin[c*x]^2 + A
rcSin[c*x]^3 - 24*Pi*Log[1 + E^((-I)*ArcSin[c*x])] + 12*(Pi - 2*ArcSin[c*x]
)*Log[1 + I*E^(I*ArcSin[c*x])] + 24*Pi*Log[Cos[ArcSin[c*x]/2]] - 12*Pi*Log[
-Cos[(Pi + 2*ArcSin[c*x])/4]] + (24*I)*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] -
 (12*ArcSin[c*x]^2*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x
]/2])))/(3*c*e^2*Sqrt[(-d - c*d*x)*(e - c*e*x)]*Sqrt[1 - c^2*x^2]*(Cos[ArcS
in[c*x]/2] + Sin[ArcSin[c*x]/2])^2) - (b^2*d*(1 + c*x)*Sqrt[d + c*d*x]*Sqrt
[e - c*e*x]*Sqrt[-(d*e*(1 - c^2*x^2))]*(6 + (6*c*x*ArcSin[c*x])/Sqrt[1 - c^
2*x^2] - 3*ArcSin[c*x]^2 - ((6 - 6*I)*ArcSin[c*x]^2)/Sqrt[1 - c^2*x^2] + (2
*ArcSin[c*x]^3)/Sqrt[1 - c^2*x^2] + (6*((-3*I)*Pi*ArcSin[c*x] - 4*Pi*Log[1
+ E^((-I)*ArcSin[c*x])] + 2*(Pi - 2*ArcSin[c*x])*Log[1 + I*E^(I*ArcSin[c*x]
)] + 4*Pi*Log[Cos[ArcSin[c*x]/2]] - 2*Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]]
+ (4*I)*PolyLog[2, (-I)*E^(I*ArcSin[c*x])]))/Sqrt[1 - c^2*x^2] - (12*ArcSin
[c*x]^2*Sin[ArcSin[c*x]/2])/(Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] - Sin[Ar
cSin[c*x]/2]))))/(3*c*e^2*Sqrt[(-d - c*d*x)*(e - c*e*x)]*(Cos[ArcSin[c*x]/2
] + Sin[ArcSin[c*x]/2])^2)
```

fricas [F] time = 1.60, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(a^2cdx + a^2d + \left(b^2cdx + b^2d\right)\arcsin\left(cx\right)^2 + 2\left(abcdx + abd\right)\arcsin\left(cx\right)\right)\sqrt{cdx + d}\,\sqrt{-cex + e}}{c^2e^2x^2 - 2\,ce^2x + e^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(3/2),x, algorithm
="fricas")
```

```
[Out] integral((a^2*c*d*x + a^2*d + (b^2*c*d*x + b^2*d)*arcsin(c*x)^2 + 2*(a*b*c*
d*x + a*b*d)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*e*x + e)/(c^2*e^2*x^2 - 2
*c*e^2*x + e^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(cdx + d)^{\frac{3}{2}}(b\arcsin\left(cx\right) + a)^2}{(-cex + e)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(3/2),x, algorithm
="giac")
```

```
[Out] integrate((c*d*x + d)^(3/2)*(b*arcsin(c*x) + a)^2/(-c*e*x + e)^(3/2), x)
```

maple [F] time = 0.30, size = 0, normalized size = 0.00

$$\int \frac{(cdx + d)^{\frac{3}{2}}\,(a + b\arcsin\left(cx\right))^2}{(-cex + e)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(3/2),x)
```

```
[Out] int((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-a^2\left(\frac{\left(-c^2dex^2+de\right)^{\frac{3}{2}}}{c^3e^3x^2-2\,c^2e^3x+ce^3}+\frac{6\,\sqrt{-c^2dex^2+de}\,d}{c^2e^2x-ce^2}+\frac{3\,d^2\arcsin\left(cx\right)}{ce^2\sqrt{\frac{d}{e}}}\right)+\sqrt{d}\,\sqrt{e}\int\frac{\left(\left(b^2cdx+b^2d\right)\arctan\left(cx,\sqrt{c\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(3/2),x, algorithm
="maxima")
```

```
[Out] -a^2*((-c^2*d*e*x^2 + d*e)^(3/2)/(c^3*e^3*x^2 - 2*c^2*e^3*x + c*e^3) + 6*sq
rt(-c^2*d*e*x^2 + d*e)*d/(c^2*e^2*x - c*e^2) + 3*d^2*arcsin(c*x)/(c*e^2*sqr
t(d/e))) + sqrt(d)*sqrt(e)*integrate(((b^2*c*d*x + b^2*d)*arctan2(c*x, sqrt
(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c*d*x + a*b*d)*arctan2(c*x, sqrt(c*x +
 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c^2*e^2*x^2 - 2*c*e^2*x
+ e^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(d+c\,d\,x\right)}^{3/2}}{{\left(e-c\,e\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d + c*d*x)^(3/2))/(e - c*e*x)^(3/2),x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d + c*d*x)^(3/2))/(e - c*e*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(3/2)*(a+b*asin(c*x))**2/(-c*e*x+e)**(3/2),x)
```

```
[Out] Timed out
```

3.566 $\int \frac{\sqrt{d+cdx}\left(a+b\sin^{-1}(cx)\right)^2}{(e-cex)^{3/2}}\,dx$

Optimal. Leaf size=530

$$-\frac{d^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(cdx+d)^{3/2}(e-cex)^{3/2}}-\frac{2id^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{c(cdx+d)^{3/2}(e-cex)^{3/2}}+\frac{2d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(cdx+d)^{3/2}(e-cex)^{3/2}}+\frac{2d^2}{}$$

```
[Out] 2*d^2*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+2
*d^2*x*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-2*
I*d^2*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(
3/2)-1/3*d^2*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))^3/b/c/(c*d*x+d)^(3/2)/(-c
*e*x+e)^(3/2)+8*I*b*d^2*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))*arctan(I*c*x+(
-c^2*x^2+1)^(1/2))/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+4*b*d^2*(-c^2*x^2+1)^
(3/2)*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c/(c*d*x+d)^(3/2
)/(-c*e*x+e)^(3/2)-4*I*b^2*d^2*(-c^2*x^2+1)^(3/2)*polylog(2,-I*(I*c*x+(-c^2
*x^2+1)^(1/2)))/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+4*I*b^2*d^2*(-c^2*x^2+1)
^(3/2)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/(c*d*x+d)^(3/2)/(-c*e*x+e)
^(3/2)-2*I*b^2*d^2*(-c^2*x^2+1)^(3/2)*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))
^2)/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)
```

Rubi [A] time = 0.91, antiderivative size = 530, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 13, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.406, Rules used = {4673, 4775, 4763, 4651, 4675, 3719, 2190, 2279, 2391, 4677, 4657, 4181, 4641}

$$-\frac{4ib^2d^2\left(1-c^2x^2\right)^{3/2}\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{c(cdx+d)^{3/2}(e-cex)^{3/2}}+\frac{4ib^2d^2\left(1-c^2x^2\right)^{3/2}\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{c(cdx+d)^{3/2}(e-cex)^{3/2}}-\frac{2ib^2d^2\left(1-c^2x^2\right)^{3/2}}{c(cdx+}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d + c*d*x]*(a + b*ArcSin[c*x])^2)/(e - c*e*x)^(3/2),x]
```

```
[Out] (2*d^2*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(c*(d + c*d*x)^(3/2)*(e - c*e*x
)^(3/2)) + (2*d^2*x*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/((d + c*d*x)^(3/2)
*(e - c*e*x)^(3/2)) - ((2*I)*d^2*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)
/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) - (d^2*(1 - c^2*x^2)^(3/2)*(a + b*
ArcSin[c*x])^3)/(3*b*c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) + ((8*I)*b*d^2*
(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])])/(c*(d +
c*d*x)^(3/2)*(e - c*e*x)^(3/2)) + (4*b*d^2*(1 - c^2*x^2)^(3/2)*(a + b*ArcSi
n[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3
/2)) - ((4*I)*b^2*d^2*(1 - c^2*x^2)^(3/2)*PolyLog[2, (-I)*E^(I*ArcSin[c*x])
])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) + ((4*I)*b^2*d^2*(1 - c^2*x^2)^(
3/2)*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2
)) - ((2*I)*b^2*d^2*(1 - c^2*x^2)^(3/2)*PolyLog[2, -E^((2*I)*ArcSin[c*x])])
/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2))
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
```

```
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
```

```
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rule 4775

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{\sqrt{d+cdx}\left(a+b\sin^{-1}(cx)\right)^2}{(e-cex)^{3/2}}dx = \frac{\left(1-c^2x^2\right)^{3/2}\int \frac{(d+cdx)^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}dx}{(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= \frac{\left(1-c^2x^2\right)^{3/2}\int \left(\frac{2\left(d^2+cd^2x\right)\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}} - \frac{d^2\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\right)dx}{(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= \frac{\left(2\left(1-c^2x^2\right)^{3/2}\right)\int \frac{\left(d^2+cd^2x\right)\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}dx}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{\left(d^2\left(1-c^2x^2\right)^{3/2}\right)\int \frac{(a+b\sin}{\sqrt{1-}}}{(d+cdx)^{3/2}(e-cex)}$$

$$= -\frac{d^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{\left(2\left(1-c^2x^2\right)^{3/2}\right)\int\left(\frac{d^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}\right.}{(d+cdx)^{3/2}(e-}$$

$$= -\frac{d^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{\left(2d^2\left(1-c^2x^2\right)^{3/2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}}{(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= \frac{2d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2d^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} -$$

$$= \frac{2d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2d^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} -$$

$$= \frac{2d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2d^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} -$$

$$= \frac{2d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2d^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} -$$

$$= \frac{2d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2d^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} -$$

$$= \frac{2d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2d^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} -$$

Mathematica [A] time = 6.58, size = 513, normalized size = 0.97

$$-\frac{-3a^2\sqrt{d}\sqrt{e}\tan^{-1}\left(\frac{cx\sqrt{cdx+d}\sqrt{e-cex}}{\sqrt{d}\sqrt{e}\left(c^2x^2-1\right)}\right) + \frac{6a^2\sqrt{cdx+d}\sqrt{e-cex}}{cx-1} + \frac{3ab(cx+1)\sqrt{cdx+d}\sqrt{e-cex}\left(\cos\left(\frac{1}{2}\sin^{-1}(cx)\right)\left(\left(\sin^{-1}(cx)-4\right)\sin^{-1}(cx\right.\right.}{\sqrt{1-c^2x^2}\left(\right.}}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Sqrt[d + c*d*x]*(a + b*ArcSin[c*x])^2)/(e - c*e*x)^(3/2),x]
```

```
[Out] -1/3*((6*a^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(-1 + c*x) - 3*a^2*Sqrt[d]*Sq
rt[e]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(Sqrt[d]*Sqrt[e]*(-1 + c
^2*x^2))] + (3*a*b*(1 + c*x)*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(Cos[ArcSin[c*
x]/2]*((-4 + ArcSin[c*x])*ArcSin[c*x] - 8*Log[Cos[ArcSin[c*x]/2] - Sin[ArcS
in[c*x]/2]]) - (ArcSin[c*x]*(4 + ArcSin[c*x]) - 8*Log[Cos[ArcSin[c*x]/2] -
Sin[ArcSin[c*x]/2]])*Sin[ArcSin[c*x]/2]))/(Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*
x]/2] - Sin[ArcSin[c*x]/2])*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^2) +
```

```
(b^2*(1 + c*x)*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*((-18*I)*Pi*ArcSin[c*x] - (6
 - 6*I)*ArcSin[c*x]^2 + ArcSin[c*x]^3 - 24*Pi*Log[1 + E^((-I)*ArcSin[c*x])]
 + 12*(Pi - 2*ArcSin[c*x])*Log[1 + I*E^(I*ArcSin[c*x])] + 24*Pi*Log[Cos[Arc
Sin[c*x]/2]] - 12*Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] + (24*I)*PolyLog[2,
(-I)*E^(I*ArcSin[c*x])] - (12*ArcSin[c*x]^2*Sin[ArcSin[c*x]/2])/(Cos[ArcSin
[c*x]/2] - Sin[ArcSin[c*x]/2])))/(Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] + S
in[ArcSin[c*x]/2])^2))/(c*e^2)
```

fricas [F] time = 1.16, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b^{2} \arcsin\left(cx\right)^{2} + 2\,ab \arcsin\left(cx\right) + a^{2}\right)\sqrt{cdx + d}\,\sqrt{-cex + e}}{c^{2}e^{2}x^{2} - 2\,ce^{2}x + e^{2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(3/2),x, algorithm
="fricas")
```

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(c*d*x + d)*sqrt
(-c*e*x + e)/(c^2*e^2*x^2 - 2*c*e^2*x + e^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cdx + d}\left(b \arcsin\left(cx\right) + a\right)^{2}}{\left(-cex + e\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(3/2),x, algorithm
="giac")
```

```
[Out] integrate(sqrt(c*d*x + d)*(b*arcsin(c*x) + a)^2/(-c*e*x + e)^(3/2), x)
```

maple [F] time = 0.30, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cdx + d}\;\left(a + b \arcsin\left(cx\right)\right)^{2}}{\left(-cex + e\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(3/2),x)
```

```
[Out] int((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-a^{2}\left(\frac{2\sqrt{-c^{2}dex^{2} + de}}{c^{2}e^{2}x - ce^{2}} + \frac{d \arcsin\left(cx\right)}{ce^{2}\sqrt{\frac{d}{e}}}\right) + \sqrt{d}\,\sqrt{e}\int \frac{\left(b^{2} \arctan\left(cx, \sqrt{cx + 1}\,\sqrt{-cx + 1}\right)^{2} + 2\,ab \arctan\left(cx, \sqrt{cx + 1}\right.\right.}{c^{2}e^{2}x^{2} - 2\,ce^{2}x + e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(3/2),x, algorithm
="maxima")
```

```
[Out] -a^2*(2*sqrt(-c^2*d*e*x^2 + d*e)/(c^2*e^2*x - c*e^2) + d*arcsin(c*x)/(c*e^2
*sqrt(d/e))) + sqrt(d)*sqrt(e)*integrate((b^2*arctan2(c*x, sqrt(c*x + 1)*sq
rt(-c*x + 1))^2 + 2*a*b*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*
x + 1)*sqrt(-c*x + 1)/(c^2*e^2*x^2 - 2*c*e^2*x + e^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^2\,\sqrt{d+c\,d\,x}}{{\left(e-c\,e\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d + c*d*x)^(1/2))/(e - c*e*x)^(3/2),x)
[Out] int(((a + b*asin(c*x))^2*(d + c*d*x)^(1/2))/(e - c*e*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d\left(cx+1\right)}\,\left(a+b\operatorname{asin}\left(cx\right)\right)^{2}}{\left(-e\left(cx-1\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(1/2)*(a+b*asin(c*x))**2/(-c*e*x+e)**(3/2),x)
[Out] Integral(sqrt(d*(c*x + 1))*(a + b*asin(c*x))**2/(-e*(c*x - 1))**(3/2), x)
```

3.567 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+cdx}\,(e-cex)^{3/2}}\,dx$

Optimal. Leaf size=454

$$-\frac{id\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{c(cdx+d)^{3/2}(e-cex)^{3/2}}+\frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(cdx+d)^{3/2}(e-cex)^{3/2}}+\frac{dx\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(cdx+d)^{3/2}(e-cex)^{3/2}}+\frac{2bd\left(1-c^2\right.}{}$$

```
[Out] d*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+d*x*(
-c^2*x^2+1)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-I*d*(-c^2*
x^2+1)^(3/2)*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+4*I*b*d
*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))*arctan(I*c*x+(-c^2*x^2+1)^(1/2))/c/(c
*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+2*b*d*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))*l
n(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-2*I*b^
2*d*(-c^2*x^2+1)^(3/2)*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/(c*d*x+d)
^(3/2)/(-c*e*x+e)^(3/2)+2*I*b^2*d*(-c^2*x^2+1)^(3/2)*polylog(2,I*(I*c*x+(-c
^2*x^2+1)^(1/2)))/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-I*b^2*d*(-c^2*x^2+1)^(
3/2)*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^
(3/2)
```

Rubi [A] time = 0.66, antiderivative size = 454, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 11, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.344, Rules used = {4673, 4763, 4651, 4675, 3719, 2190, 2279, 2391, 4677, 4657, 4181}

$$-\frac{2ib^2d\left(1-c^2x^2\right)^{3/2}\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{c(cdx+d)^{3/2}(e-cex)^{3/2}}+\frac{2ib^2d\left(1-c^2x^2\right)^{3/2}\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{c(cdx+d)^{3/2}(e-cex)^{3/2}}-\frac{ib^2d\left(1-c^2x^2\right)^{3/2}\text{Poly}}{c(cdx+d)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(Sqrt[d + c*d*x]*(e - c*e*x)^(3/2)),x]
```

```
[Out] (d*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3
/2)) + (d*x*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/((d + c*d*x)^(3/2)*(e - c*
e*x)^(3/2)) - (I*d*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/(c*(d + c*d*x
)^(3/2)*(e - c*e*x)^(3/2)) + ((4*I)*b*d*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c
*x])*ArcTan[E^(I*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) + (
2*b*d*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])
])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) - ((2*I)*b^2*d*(1 - c^2*x^2)^(3/
2)*PolyLog[2, (-I)*E^(I*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/
2)) + ((2*I)*b^2*d*(1 - c^2*x^2)^(3/2)*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c*
(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) - (I*b^2*d*(1 - c^2*x^2)^(3/2)*PolyLog
[2, -E^((2*I)*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2))
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
```

```
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+cdx}\,(e-cex)^{3/2}}\,dx = \frac{\left(1-c^2x^2\right)^{3/2}\int \frac{(d+cdx)\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}\,dx}{(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= \frac{\left(1-c^2x^2\right)^{3/2}\int \left(\frac{d\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}+\frac{cdx\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}\right)dx}{(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= \frac{\left(d\left(1-c^2x^2\right)^{3/2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}\,dx}{(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{\left(cd\left(1-c^2x^2\right)^{3/2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}\,dx}{(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= \frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{dx\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{\left(2bd\left(1-c^2x^2\right)\right.}{(d+cdx)}$$

$$= \frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{dx\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{\left(2bd\left(1-c^2x^2\right)\right.}{}$$

$$= \frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{dx\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{id\left(1-c^2x^2\right)^{3/2}}{c(d+cdx)}$$

$$= \frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{dx\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{id\left(1-c^2x^2\right)^{3/2}}{c(d+cdx)}$$

$$= \frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{dx\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{id\left(1-c^2x^2\right)^{3/2}}{c(d+cdx)}$$

$$= \frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{dx\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{id\left(1-c^2x^2\right)^{3/2}}{c(d+cdx)}$$

Mathematica [A] time = 1.81, size = 221, normalized size = 0.49

$$-\frac{\sqrt{cdx+d}\,\sqrt{e-cex}\left(2b\sqrt{1-c^2x^2}\,\sin^{-1}(cx)\left(a\tan\left(\frac{1}{4}\left(2\sin^{-1}(cx)+\pi\right)\right)+2b\log\left(1+ie^{i\sin^{-1}(cx)}\right)\right)+a\left(acx+a\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(Sqrt[d + c*d*x]*(e - c*e*x)^(3/2)),x]
```

```
[Out] -((Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a*(a + a*c*x + 4*b*Sqrt[1 - c^2*x^2]*Lo
g[Cos[(Pi + 2*ArcSin[c*x])/4]]) - (4*I)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, (-
I)*E^(I*ArcSin[c*x])] + b^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x]^2*(-I + Tan[(Pi +
 2*ArcSin[c*x])/4]) + 2*b*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*(2*b*Log[1 + I*E^(I
*ArcSin[c*x])] + a*Tan[(Pi + 2*ArcSin[c*x])/4])))/(c*d*e^2*(-1 + c*x)*(1 +
c*x)))
```

fricas [F] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b^2\arcsin(cx)^2+2ab\arcsin(cx)+a^2\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{c^3de^2x^3-c^2de^2x^2-cde^2x+de^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(3/2),x, algorithm
="fricas")
```

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(c*d*x + d)*sqrt
(-c*e*x + e)/(c^3*d*e^2*x^3 - c^2*d*e^2*x^2 - c*d*e^2*x + d*e^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b \arcsin(cx) + a)^2}{\sqrt{cdx + d}\,(-cex + e)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(3/2),x, algorithm
="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/(sqrt(c*d*x + d)*(-c*e*x + e)^(3/2)), x)
```

maple [F] time = 0.37, size = 0, normalized size = 0.00

$$\int \frac{(a + b \arcsin(cx))^2}{\sqrt{cdx + d}\;(-cex + e)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(3/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{2\sqrt{-c^2dex^2 + de}\,ab \arcsin(cx)}{c^2de^2x - cde^2} - \frac{\frac{b^2 \int \frac{\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)^2}{\sqrt{cx+1}\,(cx-1)\,\sqrt{-cx+1}}\,dx}{e}}{\sqrt{d}\,\sqrt{e}} - \frac{\sqrt{-c^2dex^2 + de}\,a^2}{c^2de^2x - cde^2} + \frac{2\,ab \log(cx - 1)}{c\sqrt{d}\,e^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(3/2),x, algorithm
="maxima")
```

```
[Out] -2*sqrt(-c^2*d*e*x^2 + d*e)*a*b*arcsin(c*x)/(c^2*d*e^2*x - c*d*e^2) - b^2*i
ntegrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2/((c*e*x - e)*sqrt(c*x
 + 1)*sqrt(-c*x + 1)), x)/(sqrt(d)*sqrt(e)) - sqrt(-c^2*d*e*x^2 + d*e)*a^2/
(c^2*d*e^2*x - c*d*e^2) + 2*a*b*log(c*x - 1)/(c*sqrt(d)*e^(3/2))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b \,\mathrm{asin}(c\,x))^2}{\sqrt{d + c\,d\,x}\;(e - c\,e\,x)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/((d + c*d*x)^(1/2)*(e - c*e*x)^(3/2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/((d + c*d*x)^(1/2)*(e - c*e*x)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(c*d*x+d)**(1/2)/(-c*e*x+e)**(3/2),x)
```

```
[Out] Timed out
```

3.568 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}}\,dx$

Optimal. Leaf size=217

$$-\frac{i\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{c(cdx+d)^{3/2}(e-cex)^{3/2}}+\frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(cdx+d)^{3/2}(e-cex)^{3/2}}+\frac{2b\left(1-c^2x^2\right)^{3/2}\log\left(1+e^{2i\sin^{-1}(cx)}\right)\left(a+b\right.}{c(cdx+d)^{3/2}(e-cex)^{3/2}}$$

```
[Out] x*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-I*(-c^2
*x^2+1)^(3/2)*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+2*b*(-
c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c/(c*
d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-I*b^2*(-c^2*x^2+1)^(3/2)*polylog(2,-(I*c*x+(-
c^2*x^2+1)^(1/2))^2)/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)
```

Rubi [A] time = 0.38, antiderivative size = 217, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.219, Rules used = {4673, 4651, 4675, 3719, 2190, 2279, 2391}

$$-\frac{ib^2\left(1-c^2x^2\right)^{3/2}\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{c(cdx+d)^{3/2}(e-cex)^{3/2}}-\frac{i\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{c(cdx+d)^{3/2}(e-cex)^{3/2}}+\frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(cdx+d)^{3/2}(e-cex)^{3/2}}+$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)),x]
```

```
[Out] (x*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2
)) - (I*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/(c*(d + c*d*x)^(3/2)*(e
- c*e*x)^(3/2)) + (2*b*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])*Log[1 + E^((
2*I)*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) - (I*b^2*(1 - c
^2*x^2)^(3/2)*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*(e -
 c*e*x)^(3/2))
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}}\,dx = \frac{\left(1-c^2x^2\right)^{3/2}\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}\,dx}{(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= \frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{\left(2bc\left(1-c^2x^2\right)^{3/2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{1-c^2x^2}\,dx}{(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= \frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{\left(2b\left(1-c^2x^2\right)^{3/2}\right)\text{Subst}\left(\int (a+bx)\tan(x)\,dx, x,\right.}{c(d+cdx)^{3/2}(e-cex)^{3/2}}$$

$$= \frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{i\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{\left(4ib\left(1-c^2x\right.\right.}{}$$

$$= \frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{i\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2b\left(1-c^2x^2\right)}{}$$

$$= \frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{i\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2b\left(1-c^2x^2\right)}{}$$

$$= \frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{i\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2b\left(1-c^2x^2\right)}{}$$

Mathematica [B] time = 1.31, size = 550, normalized size = 2.53

$$\frac{a^2cx + 2ab\sqrt{1-c^2x^2}\log\left(\cos\left(\frac{1}{2}\sin^{-1}(cx)\right) - \sin\left(\frac{1}{2}\sin^{-1}(cx)\right)\right) + 2ab\sqrt{1-c^2x^2}\log\left(\sin\left(\frac{1}{2}\sin^{-1}(cx)\right) + \cos\left(\frac{1}{2}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)),x]
```

```
[Out] (a^2*c*x + 2*a*b*c*x*ArcSin[c*x] + (2*I)*b^2*Pi*Sqrt[1 - c^2*x^2]*ArcSin[c*
x] + b^2*c*x*ArcSin[c*x]^2 - I*b^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x]^2 + 4*b^2*
Pi*Sqrt[1 - c^2*x^2]*Log[1 + E^((-I)*ArcSin[c*x])] + b^2*Pi*Sqrt[1 - c^2*x^
```

```
2]*Log[1 - I*E^(I*ArcSin[c*x])] + 2*b^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*Log[1
 - I*E^(I*ArcSin[c*x])] - b^2*Pi*Sqrt[1 - c^2*x^2]*Log[1 + I*E^(I*ArcSin[c*
x])] + 2*b^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*Log[1 + I*E^(I*ArcSin[c*x])] - 4
*b^2*Pi*Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*x]/2]] + b^2*Pi*Sqrt[1 - c^2*x^2
]*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] + 2*a*b*Sqrt[1 - c^2*x^2]*Log[Cos[ArcSi
n[c*x]/2] - Sin[ArcSin[c*x]/2]] + 2*a*b*Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*
x]/2] + Sin[ArcSin[c*x]/2]] - b^2*Pi*Sqrt[1 - c^2*x^2]*Log[Sin[(Pi + 2*ArcS
in[c*x])/4]] - (2*I)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)*E^(I*ArcSin[c*x]
)] - (2*I)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c*d*e*Sq
rt[d + c*d*x]*Sqrt[e - c*e*x])
```

fricas [F] time = 0.71, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b^2\arcsin(cx)^2 + 2\,ab\arcsin(cx) + a^2\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{c^4d^2e^2x^4 - 2\,c^2d^2e^2x^2 + d^2e^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x, algorithm
="fricas")
```

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(c*d*x + d)*sqrt
(-c*e*x + e)/(c^4*d^2*e^2*x^4 - 2*c^2*d^2*e^2*x^2 + d^2*e^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b\arcsin(cx) + a)^2}{(cdx+d)^{\frac{3}{2}}(-cex+e)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x, algorithm
="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/((c*d*x + d)^(3/2)*(-c*e*x + e)^(3/2)), x)
```

maple [F] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin(cx))^2}{(cdx+d)^{\frac{3}{2}}\,(-cex+e)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\frac{b^2\int\frac{\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)^2}{(cx+1)^{\frac{3}{2}}(cx-1)\sqrt{-cx+1}}\,dx}{de}}{\sqrt{d}\,\sqrt{e}} + \frac{2\,abx\arcsin(cx)}{\sqrt{-c^2dex^2+de}\,de} + \frac{a^2x}{\sqrt{-c^2dex^2+de}\,de} - \frac{ab\sqrt{\frac{1}{de}}\log\left(x^2 - \frac{1}{c^2}\right)}{cde}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x, algorithm
="maxima")
```

```
[Out] -b^2*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2/((c^2*d*e*x^2 -
 d*e)*sqrt(c*x + 1)*sqrt(-c*x + 1)), x)/(sqrt(d)*sqrt(e)) + 2*a*b*x*arcsin(
```

```
c*x)/(sqrt(-c^2*d*e*x^2 + d*e)*d*e) + a^2*x/(sqrt(-c^2*d*e*x^2 + d*e)*d*e)
- a*b*sqrt(1/(d*e))*log(x^2 - 1/c^2)/(c*d*e)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b \operatorname{asin}(c x))^2}{(d + c d x)^{3/2} (e - c e x)^{3/2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(c*d*x+d)**(3/2)/(-c*e*x+e)**(3/2),x)
```

```
[Out] Timed out
```

3.569 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{5/2}(e-cex)^{3/2}}\,dx$

Optimal. Leaf size=709

$$-\frac{2ie\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}+\frac{2ex\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{3(cdx+d)^{5/2}(e-cex)^{5/2}}-\frac{be\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}+\frac{be\ldots}{}$$

```
[Out] -1/3*b^2*e*(-c^2*x^2+1)^2/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+1/3*b^2*e*x*(-
c^2*x^2+1)^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-1/3*b*e*(-c^2*x^2+1)^(3/2)*(a
+b*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+1/3*b*e*x*(-c^2*x^2+1)^(
3/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-1/3*e*(-c^2*x^2+1)*
(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+1/3*e*x*(-c^2*x^2+1)
*(a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+2/3*e*x*(-c^2*x^2+1)^
2*(a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-2/3*I*e*(-c^2*x^2+1)
^(5/2)*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-2/3*I*b*e*(-c
^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))*arctan(I*c*x+(-c^2*x^2+1)^(1/2))/c/(c*d*x
+d)^(5/2)/(-c*e*x+e)^(5/2)+4/3*b*e*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))*ln(
1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+1/3*I*b^
2*e*(-c^2*x^2+1)^(5/2)*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/(c*d*x+d)
^(5/2)/(-c*e*x+e)^(5/2)-1/3*I*b^2*e*(-c^2*x^2+1)^(5/2)*polylog(2,I*(I*c*x+(
-c^2*x^2+1)^(1/2)))/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-2/3*I*b^2*e*(-c^2*x^
2+1)^(5/2)*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c/(c*d*x+d)^(5/2)/(-c*e
*x+e)^(5/2)
```

Rubi [A] time = 0.84, antiderivative size = 709, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 14, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.438, Rules used = {4673, 4763, 4655, 4651, 4675, 3719, 2190, 2279, 2391, 4677, 191, 4657, 4181, 261}

$$\frac{ib^2e\left(1-c^2x^2\right)^{5/2}\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}-\frac{ib^2e\left(1-c^2x^2\right)^{5/2}\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}-\frac{2ib^2e\left(1-c^2x^2\right)^{5/2}\text{Poly}\ldots}{3c(cdx+d)^{5/2}\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/((d + c*d*x)^(5/2)*(e - c*e*x)^(3/2)),x]
```

```
[Out] -(b^2*e*(1 - c^2*x^2)^2)/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) + (b^2*e
*x*(1 - c^2*x^2)^2)/(3*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (b*e*(1 - c^2
*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2))
+ (b*e*x*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(3*(d + c*d*x)^(5/2)*(e -
 c*e*x)^(5/2)) - (e*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(3*c*(d + c*d*x)^(
5/2)*(e - c*e*x)^(5/2)) + (e*x*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(3*(d +
 c*d*x)^(5/2)*(e - c*e*x)^(5/2)) + (2*e*x*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x
])^2)/(3*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (((2*I)/3)*e*(1 - c^2*x^2)^
(5/2)*(a + b*ArcSin[c*x])^2)/(c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (((2
*I)/3)*b*e*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])
])/(c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) + (4*b*e*(1 - c^2*x^2)^(5/2)*(a
+ b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(3*c*(d + c*d*x)^(5/2)*(e
- c*e*x)^(5/2)) + ((I/3)*b^2*e*(1 - c^2*x^2)^(5/2)*PolyLog[2, (-I)*E^(I*Arc
Sin[c*x])])/(c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - ((I/3)*b^2*e*(1 - c^2
*x^2)^(5/2)*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c*(d + c*d*x)^(5/2)*(e - c*e*
x)^(5/2)) - (((2*I)/3)*b^2*e*(1 - c^2*x^2)^(5/2)*PolyLog[2, -E^((2*I)*ArcSi
n[c*x])])/(c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2))
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{5/2}(e-cex)^{3/2}}\,dx = \frac{\left(1-c^2x^2\right)^{5/2}\int \frac{(e-cex)\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}dx}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{\left(1-c^2x^2\right)^{5/2}\int \left(\frac{e\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}} - \frac{cex\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\right)dx}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{\left(e\left(1-c^2x^2\right)^{5/2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}dx}{(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{\left(ce\left(1-c^2x^2\right)^{5/2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}dx}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= -\frac{e\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{ex\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{\left(2e\left(1-c^2x^{2}\right.\right.}{3(d+}$$

$$= -\frac{be\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{bex\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{e\left(1-c\right.}{3c(d}$$

$$= -\frac{b^2e\left(1-c^2x^2\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{b^2ex\left(1-c^2x^2\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{be\left(1-c^2x^2\right)^{3/2}\left(a+b\sin\right.}{3c(d+cdx)^{5/2}(e-ce}$$

$$= -\frac{b^2e\left(1-c^2x^2\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{b^2ex\left(1-c^2x^2\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{be\left(1-c^2x^2\right)^{3/2}\left(a+b\sin\right.}{3c(d+cdx)^{5/2}(e-ce}$$

$$= -\frac{b^2e\left(1-c^2x^2\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{b^2ex\left(1-c^2x^2\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{be\left(1-c^2x^2\right)^{3/2}\left(a+b\sin\right.}{3c(d+cdx)^{5/2}(e-ce}$$

$$= -\frac{b^2e\left(1-c^2x^2\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{b^2ex\left(1-c^2x^2\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{be\left(1-c^2x^2\right)^{3/2}\left(a+b\sin\right.}{3c(d+cdx)^{5/2}(e-ce}$$

$$= -\frac{b^2e\left(1-c^2x^2\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{b^2ex\left(1-c^2x^2\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{be\left(1-c^2x^2\right)^{3/2}\left(a+b\sin\right.}{3c(d+cdx)^{5/2}(e-ce}$$

Mathematica [A] time = 8.33, size = 739, normalized size = 1.04

$$\frac{\sqrt{d(cx+1)}\sqrt{-e(cx-1)}\left(-\frac{a^2}{4d^3e^2(cx-1)} - \frac{5a^2}{12d^3e^2(cx+1)} - \frac{a^2}{6d^3e^2(cx+1)^2}\right)}{c} + \frac{ab\sqrt{cdx+d}\sqrt{e-cex}\left(2\sin^{-1}(cx)\left(\cos\left(2\sin^{-1}\right.\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/((d + c*d*x)^(5/2)*(e - c*e*x)^(3/2)),x]
```

```
[Out] (Sqrt[-(e*(-1 + c*x))]*Sqrt[d*(1 + c*x)]*(-1/4*a^2/(d^3*e^2*(-1 + c*x)) - a
^2/(6*d^3*e^2*(1 + c*x)^2) - (5*a^2)/(12*d^3*e^2*(1 + c*x))))/c + (a*b*Sqrt
[d + c*d*x]*Sqrt[e - c*e*x]*(2*ArcSin[c*x]*(-2*c*x + Cos[2*ArcSin[c*x]]) -
Sqrt[1 - c^2*x^2]*(-1 + 3*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] + 5*
Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]] + c*x*(3*Log[Cos[ArcSin[c*x]/2
] - Sin[ArcSin[c*x]/2]] + 5*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]])))
)/(3*c*d^2*e*Sqrt[(-d - c*d*x)*(e - c*e*x)]*Sqrt[-(d*e*(1 - c^2*x^2))]*(Cos
[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^2) + (b^2*Sqrt[d + c*d*x]*Sqrt[e - c*
e*x]*Sqrt[1 - c^2*x^2]*((-7*I)*Pi*ArcSin[c*x] + (1 + 4*I)*ArcSin[c*x]^2 - 1
6*Pi*Log[1 + E^((-I)*ArcSin[c*x])] - 5*(Pi + 2*ArcSin[c*x])*Log[1 - I*E^(I*
```

```
ArcSin[c*x])] + 3*(Pi - 2*ArcSin[c*x])*Log[1 + I*E^(I*ArcSin[c*x])] + 16*Pi
*Log[Cos[ArcSin[c*x]/2]] - 3*Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] + 5*Pi*Lo
g[Sin[(Pi + 2*ArcSin[c*x])/4]] + (6*I)*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] +
 (10*I)*PolyLog[2, I*E^(I*ArcSin[c*x])] - (3*ArcSin[c*x]^2*Sin[ArcSin[c*x]/
2])/(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]) - (2*ArcSin[c*x]^2*Sin[ArcSin
[c*x]/2])/(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^3 + (ArcSin[c*x]*(2 + A
rcSin[c*x]))/(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^2 - ((4 + 5*ArcSin[c
*x]^2)*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])))/(6*c
*d^2*e*Sqrt[(-d - c*d*x)*(e - c*e*x)]*Sqrt[-(d*e*(1 - c^2*x^2))])
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{c^5d^3e^2x^5+c^4d^3e^2x^4-2\,c^3d^3e^2x^3-2\,c^2d^3e^2x^2+cd^3e^2x+d^3e^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(3/2),x, algorithm
="fricas")
```

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(c*d*x + d)*sqrt
(-c*e*x + e)/(c^5*d^3*e^2*x^5 + c^4*d^3*e^2*x^4 - 2*c^3*d^3*e^2*x^3 - 2*c^2
*d^3*e^2*x^2 + c*d^3*e^2*x + d^3*e^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(b\arcsin(cx)+a)^2}{(cdx+d)^{\frac{5}{2}}(-cex+e)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(3/2),x, algorithm
="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/((c*d*x + d)^(5/2)*(-c*e*x + e)^(3/2)), x)
```

maple [F] time = 0.37, size = 0, normalized size = 0.00

$$\int\frac{(a+b\arcsin(cx))^2}{(cdx+d)^{\frac{5}{2}}\,(-cex+e)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(3/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{6}\,abc\left(\frac{2\,\sqrt{d}\,\sqrt{e}}{c^3d^3e^2x+c^2d^3e^2}-\frac{5\,\log(cx+1)}{c^2d^{\frac{5}{2}}e^{\frac{3}{2}}}-\frac{3\,\log(cx-1)}{c^2d^{\frac{5}{2}}e^{\frac{3}{2}}}\right)-\frac{2}{3}\,ab\left(\frac{1}{\sqrt{-c^2dex^2+de}\,c^2d^2ex+\sqrt{-c^2dex^2+de}\,cd^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(3/2),x, algorithm
="maxima")
```

```
[Out] -1/6*a*b*c*(2*sqrt(d)*sqrt(e)/(c^3*d^3*e^2*x + c^2*d^3*e^2) - 5*log(c*x + 1
)/(c^2*d^(5/2)*e^(3/2)) - 3*log(c*x - 1)/(c^2*d^(5/2)*e^(3/2))) - 2/3*a*b*(
```

```
1/(sqrt(-c^2*d*e*x^2 + d*e)*c^2*d^2*e*x + sqrt(-c^2*d*e*x^2 + d*e)*c*d^2*e)
 - 2*x/(sqrt(-c^2*d*e*x^2 + d*e)*d^2*e))*arcsin(c*x) - 1/3*a^2*(1/(sqrt(-c^
2*d*e*x^2 + d*e)*c^2*d^2*e*x + sqrt(-c^2*d*e*x^2 + d*e)*c*d^2*e) - 2*x/(sqr
t(-c^2*d*e*x^2 + d*e)*d^2*e)) - b^2*integrate(arctan2(c*x, sqrt(c*x + 1)*sq
rt(-c*x + 1))^2/((c^3*d^2*e*x^3 + c^2*d^2*e*x^2 - c*d^2*e*x - d^2*e)*sqrt(c
*x + 1)*sqrt(-c*x + 1)), x)/(sqrt(d)*sqrt(e))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))^2}{(d+c\,d\,x)^{5/2}\,(e-c\,e\,x)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/((d + c*d*x)^(5/2)*(e - c*e*x)^(3/2)),x)
[Out] int((a + b*asin(c*x))^2/((d + c*d*x)^(5/2)*(e - c*e*x)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(c*d*x+d)**(5/2)/(-c*e*x+e)**(3/2),x)
[Out] Timed out
```

3.570 $\int \frac{(d+cdx)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{(e-cex)^{5/2}}\,dx$

Optimal. Leaf size=730

$$\frac{2abd^5x\left(1-c^2x^2\right)^{5/2}}{(cdx+d)^{5/2}(e-cex)^{5/2}}+\frac{5d^5\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(cdx+d)^{5/2}(e-cex)^{5/2}}-\frac{d^5\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2}{c(cdx+d)^{5/2}(e-cex)^{5/2}}-\frac{28id^5\left(1-c^2x^2\right.}{3c(cdx+}$$

```
[Out] 2*a*b*d^5*x*(-c^2*x^2+1)^(5/2)/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+2*b^2*d^5*(
-c^2*x^2+1)^3/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+2*b^2*d^5*x*(-c^2*x^2+1)^(
5/2)*arcsin(c*x)/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-28/3*I*d^5*(-c^2*x^2+1)^(
5/2)*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-d^5*(-c^2*x^2+1
)^3*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+5/3*d^5*(-c^2*x^
2+1)^(5/2)*(a+b*arcsin(c*x))^3/b/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-112/3*b
*d^5*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))*ln(1-I/(I*c*x+(-c^2*x^2+1)^(1/2))
)/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-112/3*I*b^2*d^5*(-c^2*x^2+1)^(5/2)*pol
ylog(2,I/(I*c*x+(-c^2*x^2+1)^(1/2)))/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-8/3
*b*d^5*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))*sec(1/4*Pi+1/2*arcsin(c*x))^2/c
/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+16/3*b^2*d^5*(-c^2*x^2+1)^(5/2)*tan(1/4*P
i+1/2*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-28/3*d^5*(-c^2*x^2+1)
^(5/2)*(a+b*arcsin(c*x))^2*tan(1/4*Pi+1/2*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-
c*e*x+e)^(5/2)+4/3*d^5*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))^2*sec(1/4*Pi+1/
2*arcsin(c*x))^2*tan(1/4*Pi+1/2*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(
5/2)
```

Rubi [A] time = 1.29, antiderivative size = 730, normalized size of antiderivative = 1.00, number of steps used = 25, number of rules used = 16, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {4673, 4775, 4641, 4677, 4619, 261, 4773, 3318, 4186, 3767, 8, 4184, 3717, 2190, 2279, 2391}

$$-\frac{112ib^2d^5\left(1-c^2x^2\right)^{5/2}\text{PolyLog}\left(2,ie^{-i\sin^{-1}(cx)}\right)}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}+\frac{2abd^5x\left(1-c^2x^2\right)^{5/2}}{(cdx+d)^{5/2}(e-cex)^{5/2}}+\frac{5d^5\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(cdx+d)^{5/2}(e-cex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + c*d*x)^(5/2)*(a + b*ArcSin[c*x])^2)/(e - c*e*x)^(5/2),x]
```

```
[Out] (2*a*b*d^5*x*(1 - c^2*x^2)^(5/2))/((d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) + (
2*b^2*d^5*(1 - c^2*x^2)^3)/(c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) + (2*b^2
*d^5*x*(1 - c^2*x^2)^(5/2)*ArcSin[c*x])/((d + c*d*x)^(5/2)*(e - c*e*x)^(5/2
)) - (((28*I)/3)*d^5*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2)/(c*(d + c*d
*x)^(5/2)*(e - c*e*x)^(5/2)) - (d^5*(1 - c^2*x^2)^3*(a + b*ArcSin[c*x])^2)/
(c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) + (5*d^5*(1 - c^2*x^2)^(5/2)*(a + b
*ArcSin[c*x])^3)/(3*b*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (112*b*d^5*(
1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])*Log[1 - I/E^(I*ArcSin[c*x])])/(3*c*(
d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (((112*I)/3)*b^2*d^5*(1 - c^2*x^2)^(5
/2)*PolyLog[2, I/E^(I*ArcSin[c*x])])/(c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)
) - (8*b*d^5*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])*Sec[Pi/4 + ArcSin[c*x]
/2]^2)/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) + (16*b^2*d^5*(1 - c^2*x^2
)^(5/2)*Tan[Pi/4 + ArcSin[c*x]/2])/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)
) - (28*d^5*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2*Tan[Pi/4 + ArcSin[c*x
]/2])/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) + (4*d^5*(1 - c^2*x^2)^(5/2
)*(a + b*ArcSin[c*x])^2*Sec[Pi/4 + ArcSin[c*x]/2]^2*Tan[Pi/4 + ArcSin[c*x]/
2])/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2))
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
```

```
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4775

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(d+cdx)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{(e-cex)^{5/2}}\,dx = \frac{\left(1-c^2x^2\right)^{5/2}\int \frac{(d+cdx)^5\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\,dx}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{\left(1-c^2x^2\right)^{5/2}\int \left(\frac{5d^5\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}} + \frac{cd^5x\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}} + \frac{8d^5\left(a+b\sin^{-1}(cx)\right)^2}{(-1+cx)^2\sqrt{1-c^2x^2}} + \cdots\right.}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{\left(5d^5\left(1-c^2x^2\right)^{5/2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{\left(8d^5\left(1-c^2x^2\right)^{5/2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right.}{(-1+cx)^2\sqrt{1-c^2}}}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= -\frac{d^5\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{5d^5\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(d+cdx)^{5/2}(e-cex)^{5/2}} + \cdots$$

$$= \frac{2abd^5x\left(1-c^2x^2\right)^{5/2}}{(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{d^5\left(1-c^2x^2\right)^3\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{5d^5\left(1-c^2x^2\right.}{3bc(d+\cdots}$$

$$= \frac{2abd^5x\left(1-c^2x^2\right)^{5/2}}{(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{2b^2d^5x\left(1-c^2x^2\right)^{5/2}\sin^{-1}(cx)}{(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{d^5\left(1-c^2x^2\right)^3(\cdots}{c(d+cdx)^{5\cdots}}$$

$$= \frac{2abd^5x\left(1-c^2x^2\right)^{5/2}}{(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{2b^2d^5\left(1-c^2x^2\right)^3}{c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{2b^2d^5x\left(1-c^2x^2\right)^{5/2}\cdots}{(d+cdx)^{5/2}(e-c\cdots}$$

$$= \frac{2abd^5x\left(1-c^2x^2\right)^{5/2}}{(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{2b^2d^5\left(1-c^2x^2\right)^3}{c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{2b^2d^5x\left(1-c^2x^2\right)^{5/2}\cdots}{(d+cdx)^{5/2}(e-c\cdots}$$

$$= \frac{2abd^5x\left(1-c^2x^2\right)^{5/2}}{(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{2b^2d^5\left(1-c^2x^2\right)^3}{c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{2b^2d^5x\left(1-c^2x^2\right)^{5/2}\cdots}{(d+cdx)^{5/2}(e-c\cdots}$$

$$= \frac{2abd^5x\left(1-c^2x^2\right)^{5/2}}{(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{2b^2d^5\left(1-c^2x^2\right)^3}{c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{2b^2d^5x\left(1-c^2x^2\right)^{5/2}\cdots}{(d+cdx)^{5/2}(e-c\cdots}$$

$$= \frac{2abd^5x\left(1-c^2x^2\right)^{5/2}}{(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{2b^2d^5\left(1-c^2x^2\right)^3}{c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{2b^2d^5x\left(1-c^2x^2\right)^{5/2}\cdots}{(d+cdx)^{5/2}(e-c\cdots}$$

Mathematica [B] time = 13.29, size = 2312, normalized size = 3.17

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d + c*d*x)^(5/2)*(a + b*ArcSin[c*x])^2)/(e - c*e*x)^(5/2),x]
```

```
[Out] (Sqrt[-(e*(-1 + c*x))]*Sqrt[d*(1 + c*x)]*(-((a^2*d^2)/e^3) + (8*a^2*d^2)/(3
*e^3*(-1 + c*x)^2) + (28*a^2*d^2)/(3*e^3*(-1 + c*x))))/c - (5*a^2*d^(5/2)*A
rcTan[(c*x*Sqrt[-(e*(-1 + c*x))]*Sqrt[d*(1 + c*x)])/(Sqrt[d]*Sqrt[e]*(-1 +
c*x)*(1 + c*x))]])/(c*e^(5/2)) + (a*b*d^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sq
rt[-(d*e*(1 - c^2*x^2))]*(Cos[ArcSin[c*x]/2]*(-4 + 3*ArcSin[c*x] - 6*Log[Co
s[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]]) - Cos[(3*ArcSin[c*x])/2]*(ArcSin[c*
x] - 2*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]]) + 2*(2 + 2*ArcSin[c*x]
 + Sqrt[1 - c^2*x^2]*ArcSin[c*x] + 4*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*
x]/2]] + 2*Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]])*
Sin[ArcSin[c*x]/2]))/(3*c*e^3*Sqrt[(-d - c*d*x)*(e - c*e*x)]*(Cos[ArcSin[c*
x]/2] - Sin[ArcSin[c*x]/2])^4*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])) +
(a*b*d^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[-(d*e*(1 - c^2*x^2))]*(Cos[Ar
cSin[c*x]/2]*(-8 - 6*ArcSin[c*x] + 9*ArcSin[c*x]^2 - 84*Log[Cos[ArcSin[c*x]
```

```
/2] - Sin[ArcSin[c*x]/2]]) + Cos[(3*ArcSin[c*x])/2]*(-(ArcSin[c*x]*(14 + 3*
ArcSin[c*x])) + 28*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]]) + 2*(4 + 4
*ArcSin[c*x] - 6*ArcSin[c*x]^2 + 56*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x
]/2]] + Sqrt[1 - c^2*x^2]*((14 - 3*ArcSin[c*x])*ArcSin[c*x] + 28*Log[Cos[Ar
cSin[c*x]/2] - Sin[ArcSin[c*x]/2]]))*Sin[ArcSin[c*x]/2]))/(3*c*e^3*Sqrt[(-d
 - c*d*x)*(e - c*e*x)]*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^4*(Cos[Arc
Sin[c*x]/2] + Sin[ArcSin[c*x]/2])) + (b^2*d^2*(1 + c*x)*Sqrt[d + c*d*x]*Sqr
t[e - c*e*x]*Sqrt[-(d*e*(1 - c^2*x^2))]*((-3*I)*Pi*ArcSin[c*x] + (4*ArcSin[
c*x])/(-1 + c*x) - (1 - I)*ArcSin[c*x]^2 - (2*ArcSin[c*x]^2)/(-1 + c*x) - 4
*Pi*Log[1 + E^((-I)*ArcSin[c*x])] + 2*Pi*Log[1 + I*E^(I*ArcSin[c*x])] - 4*A
rcSin[c*x]*Log[1 + I*E^(I*ArcSin[c*x])] + 4*Pi*Log[Cos[ArcSin[c*x]/2]] - 2*
Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] + (4*I)*PolyLog[2, (-I)*E^(I*ArcSin[c*
x])] + (2*(4 + ArcSin[c*x]^2 + c*x*(-4 + ArcSin[c*x]^2))*Sin[ArcSin[c*x]/2]
)/(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^3))/(3*c*e^3*Sqrt[(-d - c*d*x)*
(e - c*e*x)]*Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^2)
 + (b^2*d^2*(1 + c*x)*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[-(d*e*(1 - c^2*x
^2))]*(6 + (6*c*x*ArcSin[c*x])/Sqrt[1 - c^2*x^2] - (2*(-2 + ArcSin[c*x])*Ar
cSin[c*x])/((-1 + c*x)*Sqrt[1 - c^2*x^2]) - 3*ArcSin[c*x]^2 - ((13 - 13*I)*
ArcSin[c*x]^2)/Sqrt[1 - c^2*x^2] + (3*ArcSin[c*x]^3)/Sqrt[1 - c^2*x^2] + (1
3*((-3*I)*Pi*ArcSin[c*x] - 4*Pi*Log[1 + E^((-I)*ArcSin[c*x])] + 2*(Pi - 2*A
rcSin[c*x])*Log[1 + I*E^(I*ArcSin[c*x])] + 4*Pi*Log[Cos[ArcSin[c*x]/2]] - 2
*Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] + (4*I)*PolyLog[2, (-I)*E^(I*ArcSin[c
*x])]))/Sqrt[1 - c^2*x^2] + (4*ArcSin[c*x]^2*Sin[ArcSin[c*x]/2])/(Sqrt[1 -
c^2*x^2]*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^3) + (2*(4 - 13*ArcSin[c
*x]^2)*Sin[ArcSin[c*x]/2])/(Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] - Sin[Arc
Sin[c*x]/2]))))/(3*c*e^3*Sqrt[(-d - c*d*x)*(e - c*e*x)]*(Cos[ArcSin[c*x]/2]
 + Sin[ArcSin[c*x]/2])^2) + (2*b^2*d^2*(1 + c*x)*Sqrt[d + c*d*x]*Sqrt[e - c
*e*x]*Sqrt[-(d*e*(1 - c^2*x^2))]*((-21*I)*Pi*ArcSin[c*x] - (2*(-2 + ArcSin[
c*x])*ArcSin[c*x])/(-1 + c*x) - (7 - 7*I)*ArcSin[c*x]^2 + ArcSin[c*x]^3 - 2
8*Pi*Log[1 + E^((-I)*ArcSin[c*x])] + 14*(Pi - 2*ArcSin[c*x])*Log[1 + I*E^(I
*ArcSin[c*x])] + 28*Pi*Log[Cos[ArcSin[c*x]/2]] - 14*Pi*Log[-Cos[(Pi + 2*Arc
Sin[c*x])/4]] + (28*I)*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] + (4*ArcSin[c*x]^
2*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^3 + (2*(4 -
 7*ArcSin[c*x]^2)*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]
/2])))/(3*c*e^3*Sqrt[(-d - c*d*x)*(e - c*e*x)]*Sqrt[1 - c^2*x^2]*(Cos[ArcSi
n[c*x]/2] + Sin[ArcSin[c*x]/2])^2) + (a*b*d^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*
x]*Sqrt[-(d*e*(1 - c^2*x^2))]*(3*Cos[(5*ArcSin[c*x])/2] + 3*ArcSin[c*x]*Cos
[(5*ArcSin[c*x])/2] + Cos[ArcSin[c*x]/2]*(-20 - 24*ArcSin[c*x] + 27*ArcSin[
c*x]^2 - 156*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]]) + Cos[(3*ArcSin[
c*x])/2]*(9 - 35*ArcSin[c*x] - 9*ArcSin[c*x]^2 + 52*Log[Cos[ArcSin[c*x]/2]
- Sin[ArcSin[c*x]/2]]) + 20*Sin[ArcSin[c*x]/2] - 24*ArcSin[c*x]*Sin[ArcSin[
c*x]/2] - 27*ArcSin[c*x]^2*Sin[ArcSin[c*x]/2] + 156*Log[Cos[ArcSin[c*x]/2]
- Sin[ArcSin[c*x]/2]]*Sin[ArcSin[c*x]/2] + 9*Sin[(3*ArcSin[c*x])/2] + 35*Ar
cSin[c*x]*Sin[(3*ArcSin[c*x])/2] - 9*ArcSin[c*x]^2*Sin[(3*ArcSin[c*x])/2] +
 52*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]]*Sin[(3*ArcSin[c*x])/2] - 3
*Sin[(5*ArcSin[c*x])/2] + 3*ArcSin[c*x]*Sin[(5*ArcSin[c*x])/2]))/(6*c*e^3*S
qrt[(-d - c*d*x)*(e - c*e*x)]*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^4*(
Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]))
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(a^2c^2d^2x^2 + 2\,a^2cd^2x + a^2d^2 + \left(b^2c^2d^2x^2 + 2\,b^2cd^2x + b^2d^2\right)\arcsin\left(cx\right)^2 + 2\left(abc^2d^2x^2 + 2\,abcd^2x\right.\right.}{c^3e^3x^3 - 3\,c^2e^3x^2 + 3\,ce^3x - e^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(5/2),x, algorithm
="fricas")
```

```
[Out] integral(-(a^2*c^2*d^2*x^2 + 2*a^2*c*d^2*x + a^2*d^2 + (b^2*c^2*d^2*x^2 + 2
*b^2*c*d^2*x + b^2*d^2)*arcsin(c*x)^2 + 2*(a*b*c^2*d^2*x^2 + 2*a*b*c*d^2*x
```

```
+ a*b*d^2)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*e*x + e)/(c^3*e^3*x^3 - 3*c
^2*e^3*x^2 + 3*c*e^3*x - e^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(cdx+d)^{\frac{5}{2}}(b\arcsin(cx)+a)^2}{(-cex+e)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(5/2),x, algorithm
="giac")
```

```
[Out] integrate((c*d*x + d)^(5/2)*(b*arcsin(c*x) + a)^2/(-c*e*x + e)^(5/2), x)
```

maple [F] time = 0.30, size = 0, normalized size = 0.00

$$\int \frac{(cdx+d)^{\frac{5}{2}}\,(a+b\arcsin(cx))^2}{(-cex+e)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(5/2),x)
```

```
[Out] int((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{3}\left(\frac{3\left(-c^2dex^2+de\right)^{\frac{5}{2}}}{c^5e^5x^4-4\,c^4e^5x^3+6\,c^3e^5x^2-4\,c^2e^5x+ce^5}+\frac{5\left(-c^2dex^2+de\right)^{\frac{3}{2}}d}{c^4e^4x^3-3\,c^3e^4x^2+3\,c^2e^4x-ce^4}-\frac{10\sqrt{-c^2dex^2+de}\,d^2}{c^3e^3x^2-2\,c^2e^3x+ce^3}-35\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(5/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(5/2),x, algorithm
="maxima")
```

```
[Out] -1/3*(3*(-c^2*d*e*x^2 + d*e)^(5/2)/(c^5*e^5*x^4 - 4*c^4*e^5*x^3 + 6*c^3*e^5
*x^2 - 4*c^2*e^5*x + c*e^5) + 5*(-c^2*d*e*x^2 + d*e)^(3/2)*d/(c^4*e^4*x^3 -
 3*c^3*e^4*x^2 + 3*c^2*e^4*x - c*e^4) - 10*sqrt(-c^2*d*e*x^2 + d*e)*d^2/(c^
3*e^3*x^2 - 2*c^2*e^3*x + c*e^3) - 35*sqrt(-c^2*d*e*x^2 + d*e)*d^2/(c^2*e^3
*x - c*e^3) - 15*d^3*arcsin(c*x)/(c*e^3*sqrt(d/e)))*a^2 - sqrt(d)*sqrt(e)*i
ntegrate(((b^2*c^2*d^2*x^2 + 2*b^2*c*d^2*x + b^2*d^2)*arctan2(c*x, sqrt(c*x
 + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c^2*d^2*x^2 + 2*a*b*c*d^2*x + a*b*d^2)*arc
tan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c^3*
e^3*x^3 - 3*c^2*e^3*x^2 + 3*c*e^3*x - e^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))^2\,(d+c\,d\,x)^{5/2}}{(e-c\,e\,x)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d + c*d*x)^(5/2))/(e - c*e*x)^(5/2),x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d + c*d*x)^(5/2))/(e - c*e*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(5/2)*(a+b*asin(c*x))**2/(-c*e*x+e)**(5/2),x)
```

```
[Out] Timed out
```

3.571 $\int \frac{(d+cdx)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{(e-cex)^{5/2}}\,dx$

Optimal. Leaf size=544

$$\frac{d^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(cdx+d)^{5/2}(e-cex)^{5/2}}-\frac{8id^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}-\frac{32bd^4\left(1-c^2x^2\right)^{5/2}\log\left(1-ie^{-i\sin^{-1}(cx)}\right)}{3c(cdx+d)^{5/2}(e-cex)^{5/}}$$

```
[Out] -8/3*I*d^4*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(5/2)/(-c*e*x
+e)^(5/2)+1/3*d^4*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))^3/b/c/(c*d*x+d)^(5/2
)/(-c*e*x+e)^(5/2)-32/3*b*d^4*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))*ln(1-I/(
I*c*x+(-c^2*x^2+1)^(1/2)))/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-32/3*I*b^2*d^
4*(-c^2*x^2+1)^(5/2)*polylog(2,I/(I*c*x+(-c^2*x^2+1)^(1/2)))/c/(c*d*x+d)^(5
/2)/(-c*e*x+e)^(5/2)-4/3*b*d^4*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))*sec(1/4
*Pi+1/2*arcsin(c*x))^2/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+8/3*b^2*d^4*(-c^2
*x^2+1)^(5/2)*tan(1/4*Pi+1/2*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2
)-8/3*d^4*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))^2*tan(1/4*Pi+1/2*arcsin(c*x)
)/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+2/3*d^4*(-c^2*x^2+1)^(5/2)*(a+b*arcsin
(c*x))^2*sec(1/4*Pi+1/2*arcsin(c*x))^2*tan(1/4*Pi+1/2*arcsin(c*x))/c/(c*d*x
+d)^(5/2)/(-c*e*x+e)^(5/2)
```

Rubi [A] time = 1.14, antiderivative size = 544, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 13, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.406, Rules used = {4673, 4775, 4641, 4773, 3318, 4186, 3767, 8, 4184, 3717, 2190, 2279, 2391}

$$-\frac{32ib^2d^4\left(1-c^2x^2\right)^{5/2}\text{PolyLog}\left(2,ie^{-i\sin^{-1}(cx)}\right)}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}+\frac{d^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(cdx+d)^{5/2}(e-cex)^{5/2}}-\frac{8id^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-}\right.}{3c(cdx+d)^{5/2}(e-cex)^{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + c*d*x)^(3/2)*(a + b*ArcSin[c*x])^2)/(e - c*e*x)^(5/2),x]
```

```
[Out] (((-8*I)/3)*d^4*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2)/(c*(d + c*d*x)^(
5/2)*(e - c*e*x)^(5/2)) + (d^4*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^3)/(
3*b*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (32*b*d^4*(1 - c^2*x^2)^(5/2)*
(a + b*ArcSin[c*x])*Log[1 - I/E^(I*ArcSin[c*x])])/(3*c*(d + c*d*x)^(5/2)*(e
 - c*e*x)^(5/2)) - (((32*I)/3)*b^2*d^4*(1 - c^2*x^2)^(5/2)*PolyLog[2, I/E^(
I*ArcSin[c*x]])])/(c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (4*b*d^4*(1 - c^
2*x^2)^(5/2)*(a + b*ArcSin[c*x])*Sec[Pi/4 + ArcSin[c*x]/2]^2)/(3*c*(d + c*d
*x)^(5/2)*(e - c*e*x)^(5/2)) + (8*b^2*d^4*(1 - c^2*x^2)^(5/2)*Tan[Pi/4 + Ar
cSin[c*x]/2])/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (8*d^4*(1 - c^2*x
^2)^(5/2)*(a + b*ArcSin[c*x])^2*Tan[Pi/4 + ArcSin[c*x]/2])/(3*c*(d + c*d*x)
^(5/2)*(e - c*e*x)^(5/2)) + (2*d^4*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^
2*Sec[Pi/4 + ArcSin[c*x]/2]^2*Tan[Pi/4 + ArcSin[c*x]/2])/(3*c*(d + c*d*x)^(
5/2)*(e - c*e*x)^(5/2))
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
```

```
e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4775

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(d+cdx)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{(e-cex)^{5/2}}\,dx = \frac{\left(1-c^2x^2\right)^{5/2}\int \frac{(d+cdx)^4\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\,dx}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{\left(1-c^2x^2\right)^{5/2}\int \left(\frac{d^4\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}+\frac{4d^4\left(a+b\sin^{-1}(cx)\right)^2}{(-1+cx)^2\sqrt{1-c^2x^2}}+\frac{4d^4\left(a+b\sin^{-1}(cx)\right)^2}{(-1+cx)\sqrt{1-c^2x^2}}\right)dx}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{\left(d^4\left(1-c^2x^2\right)^{5/2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{\left(4d^4\left(1-c^2x^2\right)^{5/2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(-1+cx)^2\sqrt{1-c^2x^2}}}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{d^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{\left(4d^4\left(1-c^2x^2\right)^{5/2}\right)\mathrm{Subst}\left(\int \frac{(a+bx)^2}{-c+c\sin(x}\right.}{(d+cdx)^{5/2}(e-cex)^5}$$

$$= \frac{d^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{\left(d^4\left(1-c^2x^2\right)^{5/2}\right)\mathrm{Subst}\left(\int (a+bx)^2\right.}{c(d+cdx)^{5/2}(e-}$$

$$= \frac{d^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{4bd^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)\mathrm{se}}{3c(d+cdx)^{5/2}(e-ce}$$

$$= -\frac{4id^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{d^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= -\frac{8id^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{d^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= -\frac{8id^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{d^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= -\frac{8id^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{d^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= -\frac{8id^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{d^4\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc(d+cdx)^{5/2}(e-cex)^{5/2}}$$

Mathematica [B] time = 10.23, size = 1419, normalized size = 2.61

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d + c*d*x)^(3/2)*(a + b*ArcSin[c*x])^2)/(e - c*e*x)^(5/2),x]
```

```
[Out] (Sqrt[-(e*(-1 + c*x))]*Sqrt[d*(1 + c*x)]*((4*a^2*d)/(3*e^3*(-1 + c*x)^2) +
(8*a^2*d)/(3*e^3*(-1 + c*x))))/c - (a^2*d^(3/2)*ArcTan[(c*x*Sqrt[-(e*(-1 +
c*x))]*Sqrt[d*(1 + c*x)])/(Sqrt[d]*Sqrt[e]*(-1 + c*x)*(1 + c*x))])/(c*e^(5/
2)) + (a*b*d*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[-(d*e*(1 - c^2*x^2))]*(Co
s[ArcSin[c*x]/2]*(-4 + 3*ArcSin[c*x] - 6*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSi
n[c*x]/2]]) - Cos[(3*ArcSin[c*x])/2]*(ArcSin[c*x] - 2*Log[Cos[ArcSin[c*x]/2
] - Sin[ArcSin[c*x]/2]]) + 2*(2 + 2*ArcSin[c*x] + Sqrt[1 - c^2*x^2]*ArcSin[
c*x] + 4*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] + 2*Sqrt[1 - c^2*x^2]
*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]])*Sin[ArcSin[c*x]/2]))/(3*c*e^
3*Sqrt[(-d - c*d*x)*(e - c*e*x)]*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^
4*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])) + (a*b*d*Sqrt[d + c*d*x]*Sqrt[
e - c*e*x]*Sqrt[-(d*e*(1 - c^2*x^2))]*(Cos[ArcSin[c*x]/2]*(-8 - 6*ArcSin[c*
x] + 9*ArcSin[c*x]^2 - 84*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]]) + C
os[(3*ArcSin[c*x])/2]*(-(ArcSin[c*x]*(14 + 3*ArcSin[c*x])) + 28*Log[Cos[Arc
Sin[c*x]/2] - Sin[ArcSin[c*x]/2]]) + 2*(4 + 4*ArcSin[c*x] - 6*ArcSin[c*x]^2
 + 56*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] + Sqrt[1 - c^2*x^2]*((14
 - 3*ArcSin[c*x])*ArcSin[c*x] + 28*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]
/2]]))*Sin[ArcSin[c*x]/2]))/(6*c*e^3*Sqrt[(-d - c*d*x)*(e - c*e*x)]*(Cos[Ar
cSin[c*x]/2] - Sin[ArcSin[c*x]/2])^4*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/
2])) + (b^2*d*(1 + c*x)*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[-(d*e*(1 - c^2
*x^2))]*((-3*I)*Pi*ArcSin[c*x] + (4*ArcSin[c*x])/(-1 + c*x) - (1 - I)*ArcSi
n[c*x]^2 - (2*ArcSin[c*x]^2)/(-1 + c*x) - 4*Pi*Log[1 + E^((-I)*ArcSin[c*x])
] + 2*Pi*Log[1 + I*E^(I*ArcSin[c*x])] - 4*ArcSin[c*x]*Log[1 + I*E^(I*ArcSin
[c*x])] + 4*Pi*Log[Cos[ArcSin[c*x]/2]] - 2*Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])
/4]] + (4*I)*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] + (2*(4 + ArcSin[c*x]^2 + c
*x*(-4 + ArcSin[c*x]^2))*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] - Sin[ArcS
in[c*x]/2])^3))/(3*c*e^3*Sqrt[(-d - c*d*x)*(e - c*e*x)]*Sqrt[1 - c^2*x^2]*(
Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^2) + (b^2*d*(1 + c*x)*Sqrt[d + c*d
*x]*Sqrt[e - c*e*x]*Sqrt[-(d*e*(1 - c^2*x^2))]*((-21*I)*Pi*ArcSin[c*x] - (2
*(-2 + ArcSin[c*x])*ArcSin[c*x])/(-1 + c*x) - (7 - 7*I)*ArcSin[c*x]^2 + Arc
Sin[c*x]^3 - 28*Pi*Log[1 + E^((-I)*ArcSin[c*x])] + 14*(Pi - 2*ArcSin[c*x])*
Log[1 + I*E^(I*ArcSin[c*x])] + 28*Pi*Log[Cos[ArcSin[c*x]/2]] - 14*Pi*Log[-C
os[(Pi + 2*ArcSin[c*x])/4]] + (28*I)*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] + (
4*ArcSin[c*x]^2*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2
])^3 + (2*(4 - 7*ArcSin[c*x]^2)*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] - S
in[ArcSin[c*x]/2])))/(3*c*e^3*Sqrt[(-d - c*d*x)*(e - c*e*x)]*Sqrt[1 - c^2*x
^2]*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^2)
```

fricas [F] time = 0.52, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(a^2cdx + a^2d + \left(b^2cdx + b^2d\right)\arcsin\left(cx\right)^2 + 2\left(abcdx + abd\right)\arcsin\left(cx\right)\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{c^3e^3x^3 - 3\,c^2e^3x^2 + 3\,ce^3x - e^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(5/2),x, algorithm
="fricas")
```

```
[Out] integral(-(a^2*c*d*x + a^2*d + (b^2*c*d*x + b^2*d)*arcsin(c*x)^2 + 2*(a*b*c
*d*x + a*b*d)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*e*x + e)/(c^3*e^3*x^3 -
3*c^2*e^3*x^2 + 3*c*e^3*x - e^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(cdx+d)^{\frac{3}{2}}(b\arcsin(cx)+a)^2}{(-cex+e)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(5/2),x, algorithm
="giac")
```

```
[Out] integrate((c*d*x + d)^(3/2)*(b*arcsin(c*x) + a)^2/(-c*e*x + e)^(5/2), x)
```

maple [F] time = 0.30, size = 0, normalized size = 0.00

$$\int \frac{(cdx+d)^{\frac{3}{2}}(a+b\arcsin(cx))^2}{(-cex+e)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(5/2),x)
```

```
[Out] int((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{3}a^2\left(\frac{\left(-c^2dex^2+de\right)^{\frac{3}{2}}}{c^4e^4x^3-3\,c^3e^4x^2+3\,c^2e^4x-ce^4}-\frac{2\,\sqrt{-c^2dex^2+de}\,d}{c^3e^3x^2-2\,c^2e^3x+ce^3}-\frac{7\,\sqrt{-c^2dex^2+de}\,d}{c^2e^3x-ce^3}-\frac{3\,d^2\arcsin(cx)}{ce^3\sqrt{\frac{d}{e}}}\right)-\sqrt{d}\,\sqrt{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(5/2),x, algorithm
="maxima")
```

```
[Out] -1/3*a^2*((-c^2*d*e*x^2 + d*e)^(3/2)/(c^4*e^4*x^3 - 3*c^3*e^4*x^2 + 3*c^2*e
^4*x - c*e^4) - 2*sqrt(-c^2*d*e*x^2 + d*e)*d/(c^3*e^3*x^2 - 2*c^2*e^3*x + c
*e^3) - 7*sqrt(-c^2*d*e*x^2 + d*e)*d/(c^2*e^3*x - c*e^3) - 3*d^2*arcsin(c*x
)/(c*e^3*sqrt(d/e))) - sqrt(d)*sqrt(e)*integrate(((b^2*c*d*x + b^2*d)*arcta
n2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c*d*x + a*b*d)*arctan2(c*x
, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c^3*e^3*x^3
- 3*c^2*e^3*x^2 + 3*c*e^3*x - e^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))^2\,(d+c\,d\,x)^{3/2}}{(e-c\,e\,x)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d + c*d*x)^(3/2))/(e - c*e*x)^(5/2),x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d + c*d*x)^(3/2))/(e - c*e*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(3/2)*(a+b*asin(c*x))**2/(-c*e*x+e)**(5/2),x)
```

```
[Out] Timed out
```

3.572 $\int \frac{\sqrt{d+cdx}\left(a+b\sin^{-1}(cx)\right)^2}{(e-cex)^{5/2}}\,dx$

Optimal. Leaf size=486

$$-\frac{id^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}-\frac{4bd^3\left(1-c^2x^2\right)^{5/2}\log\left(1-ie^{-i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}-\frac{d^3\left(1-c^2x^2\right)^{5/2}}{}$$

```
[Out] -1/3*I*d^3*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(5/2)/(-c*e*x
+e)^(5/2)-4/3*b*d^3*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))*ln(1-I/(I*c*x+(-c^
2*x^2+1)^(1/2)))/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-4/3*I*b^2*d^3*(-c^2*x^2
+1)^(5/2)*polylog(2,I/(I*c*x+(-c^2*x^2+1)^(1/2)))/c/(c*d*x+d)^(5/2)/(-c*e*x
+e)^(5/2)-2/3*b*d^3*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))*sec(1/4*Pi+1/2*arc
sin(c*x))^2/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+4/3*b^2*d^3*(-c^2*x^2+1)^(5/
2)*tan(1/4*Pi+1/2*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-1/3*d^3*(
-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))^2*tan(1/4*Pi+1/2*arcsin(c*x))/c/(c*d*x+
d)^(5/2)/(-c*e*x+e)^(5/2)+1/3*d^3*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))^2*se
c(1/4*Pi+1/2*arcsin(c*x))^2*tan(1/4*Pi+1/2*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(
-c*e*x+e)^(5/2)
```

Rubi [A] time = 1.07, antiderivative size = 486, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 12, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {4673, 4775, 4773, 3318, 4186, 3767, 8, 4184, 3717, 2190, 2279, 2391}

$$-\frac{4ib^2d^3\left(1-c^2x^2\right)^{5/2}\text{PolyLog}\left(2,ie^{-i\sin^{-1}(cx)}\right)}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}-\frac{id^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}-\frac{4bd^3\left(1-c^2x^2\right)^{5/2}\log\left(1-\right.}{3c(cdx+d}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d + c*d*x]*(a + b*ArcSin[c*x])^2)/(e - c*e*x)^(5/2),x]
```

```
[Out] ((-I/3)*d^3*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2)/(c*(d + c*d*x)^(5/2)
*(e - c*e*x)^(5/2)) - (4*b*d^3*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])*Log[
1 - I/E^(I*ArcSin[c*x])])/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (((4*
I)/3)*b^2*d^3*(1 - c^2*x^2)^(5/2)*PolyLog[2, I/E^(I*ArcSin[c*x])])/(c*(d +
c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (2*b*d^3*(1 - c^2*x^2)^(5/2)*(a + b*ArcSi
n[c*x])*Sec[Pi/4 + ArcSin[c*x]/2]^2)/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/
2)) + (4*b^2*d^3*(1 - c^2*x^2)^(5/2)*Tan[Pi/4 + ArcSin[c*x]/2])/(3*c*(d + c
*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (d^3*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x
])^2*Tan[Pi/4 + ArcSin[c*x]/2])/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) +
 (d^3*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2*Sec[Pi/4 + ArcSin[c*x]/2]^2
*Tan[Pi/4 + ArcSin[c*x]/2])/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2))
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
```

```
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4773

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.))/Sq
rt[(d_) + (e_.)*(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int
[(a + b*x)^n*(c*f + g*Sin[x])^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 d, e, f, g, n}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && GtQ[d, 0] && (Gt
Q[m, 0] || IGtQ[n, 0])
```

Rule 4775

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x]
)^n/Sqrt[d + e*x^2], (f + g*x)^m*(d + e*x^2)^(p + 1/2), x], x] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && EqQ[c^2*d + e, 0] && IntegerQ[m] && ILtQ[p + 1/2,
 0] && GtQ[d, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{\sqrt{d+cdx}\left(a+b\sin^{-1}(cx)\right)^2}{(e-cex)^{5/2}}\,dx = \frac{\left(1-c^2x^2\right)^{5/2}\int \frac{(d+cdx)^3\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\,dx}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{\left(1-c^2x^2\right)^{5/2}\int\left(\frac{2d^3\left(a+b\sin^{-1}(cx)\right)^2}{(-1+cx)^2\sqrt{1-c^2x^2}}+\frac{d^3\left(a+b\sin^{-1}(cx)\right)^2}{(-1+cx)\sqrt{1-c^2x^2}}\right)dx}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{\left(d^3\left(1-c^2x^2\right)^{5/2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(-1+cx)\sqrt{1-c^2x^2}}\,dx}{(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{\left(2d^3\left(1-c^2x^2\right)^{5/2}\right)\int \frac{\left(a+b\sin^{-1}(cx\right.}{(-1+cx)^2\sqrt{1-c\right.}}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{\left(d^3\left(1-c^2x^2\right)^{5/2}\right)\text{Subst}\left(\int \frac{(a+bx)^2}{-c+c\sin(x)}\,dx, x, \sin^{-1}(cx)\right)}{(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{\left(2cd^3\left(1-c^2x^2\right)\right.}{}$$

$$= -\frac{\left(d^3\left(1-c^2x^2\right)^{5/2}\right)\text{Subst}\left(\int (a+bx)^2\csc^2\left(\frac{\pi}{4}-\frac{x}{2}\right)dx, x, \sin^{-1}(cx)\right)}{2c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{(}{}$$

$$= -\frac{2bd^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)\sec^2\left(\frac{\pi}{4}+\frac{1}{2}\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{d^3\left(1-c^2\right.}{}$$

$$= -\frac{id^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{2bd^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx\right)}{3c(d+cdx)^{5/2}(e-}$$

$$= -\frac{id^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{4b^2d^3\left(1-c^2x^2\right)^{5/2}\cot\left(\frac{\pi}{4}-\frac{1}{2}\sin\right.}{3c(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= -\frac{id^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{4b^2d^3\left(1-c^2x^2\right)^{5/2}\cot\left(\frac{\pi}{4}-\frac{1}{2}\sin\right.}{3c(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= -\frac{id^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{4b^2d^3\left(1-c^2x^2\right)^{5/2}\cot\left(\frac{\pi}{4}-\frac{1}{2}\sin\right.}{3c(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= -\frac{id^3\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{4b^2d^3\left(1-c^2x^2\right)^{5/2}\cot\left(\frac{\pi}{4}-\frac{1}{2}\sin\right.}{3c(d+cdx)^{5/2}(e-cex)^{5/2}}$$

Mathematica [A] time = 8.36, size = 687, normalized size = 1.41

$$\frac{\sqrt{d(cx+1)}\sqrt{-e(cx-1)}\left(\frac{a^2}{3e^3(cx-1)}+\frac{2a^2}{3e^3(cx-1)^2}\right)}{c} + \frac{ab\sqrt{cdx+d}\sqrt{e-cex}\sqrt{-de\left(1-c^2x^2\right)}\left(2\sin\left(\frac{1}{2}\sin^{-1}(cx)\right)\left(\sqrt{\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Sqrt[d + c*d*x]*(a + b*ArcSin[c*x])^2)/(e - c*e*x)^(5/2),x]
```

[Out] (Sqrt[-(e*(-1 + c*x))]*Sqrt[d*(1 + c*x)]*((2*a^2)/(3*e^3*(-1 + c*x)^2) + a^2/(3*e^3*(-1 + c*x))))/c + (a*b*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[-(d*e*(1 - c^2*x^2))]*(Cos[ArcSin[c*x]/2]*(-4 + 3*ArcSin[c*x] - 6*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]]) - Cos[(3*ArcSin[c*x])/2]*(ArcSin[c*x] - 2*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]]) + 2*(2 + 2*ArcSin[c*x] + Sqrt[1 - c^2*x^2]*ArcSin[c*x] + 4*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] + 2*Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]])*Sin[ArcSin[c*x]/2]))/(3*c*e^3*Sqrt[(-d - c*d*x)*(e - c*e*x)]*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^4*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])) + (b^2*(1 + c*x)*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[-(d*e*(1 - c^2*x^2))]*((-3*I)*Pi*ArcSin[c*x] + (4*ArcSin[c*x])/(-1 + c*x) - (1 - I)*ArcSin[c*x]^2 - (2*ArcSin[c*x]^2)/(-1 + c*x) - 4*Pi*Log[1 + E^((-I)*ArcSin[c*x])] + 2*Pi*Log[1 + I*E^(I*ArcSin[c*x])] - 4*ArcSin[c*x]*Log[1 + I*E^(I*ArcSin[c*x])] + 4*Pi*Log[Cos[ArcSin[c*x]/2]] - 2*Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] + (4*I)*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] + (2*(4 + ArcSin[c*x]^2 + c*x*(-4 + ArcSin[c*x]^2))*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^3))/(3*c*e^3*Sqrt[(-d - c*d*x)*(e - c*e*x)]*Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2])^2)

fricas [F] time = 0.50, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(b^2 \arcsin\left(cx\right)^2 + 2\,ab \arcsin\left(cx\right) + a^2\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{c^3e^3x^3 - 3\,c^2e^3x^2 + 3\,ce^3x - e^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(5/2),x, algorithm="fricas")

[Out] integral(-(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(c*d*x + d)*sqrt(-c*e*x + e)/(c^3*e^3*x^3 - 3*c^2*e^3*x^2 + 3*c*e^3*x - e^3), x)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cdx+d}\,(b \arcsin\left(cx\right) + a)^2}{(-cex+e)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(5/2),x, algorithm="giac")

[Out] integrate(sqrt(c*d*x + d)*(b*arcsin(c*x) + a)^2/(-c*e*x + e)^(5/2), x)

maple [F] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cdx+d}\,\left(a + b \arcsin\left(cx\right)\right)^2}{(-cex+e)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(5/2),x)

[Out] int((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(5/2),x)

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(a+b*arcsin(c*x))^2/(-c*e*x+e)^(5/2),x, algorithm
="maxima")
```

```
[Out] Timed out
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\mathrm{asin}\,(c\,x))^2\,\sqrt{d + c\,d\,x}}{(e - c\,e\,x)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d + c*d*x)^(1/2))/(e - c*e*x)^(5/2),x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d + c*d*x)^(1/2))/(e - c*e*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(1/2)*(a+b*asin(c*x))**2/(-c*e*x+e)**(5/2),x)
```

```
[Out] Timed out
```

3.573 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+cdx}\,(e-cex)^{5/2}}\,dx$

Optimal. Leaf size=896

$$\frac{c^2d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2x^3}{3(cxd+d)^{5/2}(e-cex)^{5/2}}-\frac{bcd^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)x^2}{3(cxd+d)^{5/2}(e-cex)^{5/2}}+\frac{2b^2d^2\left(1-c^2x^2\right)^2x}{3(cxd+d)^{5/2}(e-cex)^{5/2}}+\frac{2d^2\left(1-c\right.}{3(cx}$$

```
[Out] 2/3*b^2*d^2*(-c^2*x^2+1)^2/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+2/3*b^2*d^2*x
*(-c^2*x^2+1)^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-1/3*b^2*d^2*(-c^2*x^2+1)^(
5/2)*arcsin(c*x)/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-1/3*b*d^2*(-c^2*x^2+1)^
(3/2)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-2/3*b*d^2*x*(-c^
2*x^2+1)^(3/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-1/3*b*c*d
^2*x^2*(-c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2
)+2/3*d^2*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/
2)+1/3*d^2*x*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5
/2)+1/3*c^2*d^2*x^3*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c*e*
x+e)^(5/2)+2/3*d^2*x*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c
*e*x+e)^(5/2)-2/3*I*b^2*d^2*(-c^2*x^2+1)^(5/2)*polylog(2,-I*(I*c*x+(-c^2*x^
2+1)^(1/2)))/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+2/3*I*b^2*d^2*(-c^2*x^2+1)^
(5/2)*polylog(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^
(5/2)+2/3*b*d^2*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+
1)^(1/2))^2)/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-1/3*I*b^2*d^2*(-c^2*x^2+1)^
(5/2)*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c/(c*d*x+d)^(5/2)/(-c*e*x+e)
^(5/2)+4/3*I*b*d^2*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))*arctan(I*c*x+(-c^2*
x^2+1)^(1/2))/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-1/3*I*d^2*(-c^2*x^2+1)^(5/
2)*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)
```

Rubi [A] time = 1.23, antiderivative size = 896, normalized size of antiderivative = 1.00, number of steps used = 30, number of rules used = 18, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.562, Rules used = {4673, 4763, 4655, 4651, 4675, 3719, 2190, 2279, 2391, 4677, 191, 4657, 4181, 261, 4681, 4703, 288, 216}

$$\frac{c^2d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2x^3}{3(cxd+d)^{5/2}(e-cex)^{5/2}}-\frac{bcd^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)x^2}{3(cxd+d)^{5/2}(e-cex)^{5/2}}+\frac{2b^2d^2\left(1-c^2x^2\right)^2x}{3(cxd+d)^{5/2}(e-cex)^{5/2}}+\frac{2d^2\left(1-c\right.}{3(cx}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(Sqrt[d + c*d*x]*(e - c*e*x)^(5/2)),x]
```

```
[Out] (2*b^2*d^2*(1 - c^2*x^2)^2)/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) + (2*
b^2*d^2*x*(1 - c^2*x^2)^2)/(3*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (b^2*d
^2*(1 - c^2*x^2)^(5/2)*ArcSin[c*x])/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2
)) - (b*d^2*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(3*c*(d + c*d*x)^(5/2)
*(e - c*e*x)^(5/2)) - (2*b*d^2*x*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(
3*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (b*c*d^2*x^2*(1 - c^2*x^2)^(3/2)*(
a + b*ArcSin[c*x]))/(3*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) + (2*d^2*(1 - c
^2*x^2)*(a + b*ArcSin[c*x])^2)/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) +
(d^2*x*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(3*(d + c*d*x)^(5/2)*(e - c*e*x
)^(5/2)) + (c^2*d^2*x^3*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(3*(d + c*d*x)
^(5/2)*(e - c*e*x)^(5/2)) + (2*d^2*x*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x])^2)
/(3*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - ((I/3)*d^2*(1 - c^2*x^2)^(5/2)*(
a + b*ArcSin[c*x])^2)/(c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) + (((4*I)/3)*
b*d^2*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])])/(c
*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) + (2*b*d^2*(1 - c^2*x^2)^(5/2)*(a + b
*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(3*c*(d + c*d*x)^(5/2)*(e - c
*e*x)^(5/2)) - (((2*I)/3)*b^2*d^2*(1 - c^2*x^2)^(5/2)*PolyLog[2, (-I)*E^(I*
ArcSin[c*x])])/(c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) + (((2*I)/3)*b^2*d^2
```

```
*(1 - c^2*x^2)^(5/2)*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c*(d + c*d*x)^(5/2)*
(e - c*e*x)^(5/2)) - ((I/3)*b^2*d^2*(1 - c^2*x^2)^(5/2)*PolyLog[2, -E^((2*I
)*ArcSin[c*x])])/(c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2))
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 288

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^
(n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*n*(p + 1)), x] - Dist[(c^
n*(m - n + 1))/(b*n*(p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^(p + 1), x], x]
 /; FreeQ[{a, b, c}, x] && IGtQ[n, 0] && LtQ[p, -1] && GtQ[m + 1, n] &&  !I
LtQ[(m + n*(p + 1) + 1)/n, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
```

```
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4681

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^F
racPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c
^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d,
 e, f, m, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] &
& NeQ[m, -1]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+cdx}\,(e-cex)^{5/2}}\,dx = \frac{\left(1-c^2x^2\right)^{5/2}\int \frac{(d+cdx)^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\,dx}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{\left(1-c^2x^2\right)^{5/2}\int \left(\frac{d^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}+\frac{2cd^2x\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}+\frac{c^2d^2x^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\right)dx}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{\left(d^2\left(1-c^2x^2\right)^{5/2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\,dx}{(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{\left(2cd^2\left(1-c^2x^2\right)^{5/2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\,dx}{(d+cdx)^{5/2}(e-cex)^{5/2}} -$$

$$= \frac{2d^2\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{d^2x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{c^2d^2x^3\,(1}{3(d}$$

$$= -\frac{bd^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{2bd^2x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{bc}{}$$

$$= \frac{2b^2d^2\left(1-c^2x^2\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{2b^2d^2x\left(1-c^2x^2\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{bd^2\left(1-c^2x^2\right)^{3/2}\left(a+b\,\mathrm{s}\right.}{3c(d+cdx)^{5/2}(e-ce}$$

$$= \frac{2b^2d^2\left(1-c^2x^2\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{2b^2d^2x\left(1-c^2x^2\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{b^2d^2\left(1-c^2x^2\right)^{5/2}\sin^{-1}(c}{3c(d+cdx)^{5/2}(e-cex)^{5}}$$

$$= \frac{2b^2d^2\left(1-c^2x^2\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{2b^2d^2x\left(1-c^2x^2\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{b^2d^2\left(1-c^2x^2\right)^{5/2}\sin^{-1}(c}{3c(d+cdx)^{5/2}(e-cex)^{5}}$$

$$= \frac{2b^2d^2\left(1-c^2x^2\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{2b^2d^2x\left(1-c^2x^2\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{b^2d^2\left(1-c^2x^2\right)^{5/2}\sin^{-1}(c}{3c(d+cdx)^{5/2}(e-cex)^{5}}$$

$$= \frac{2b^2d^2\left(1-c^2x^2\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{2b^2d^2x\left(1-c^2x^2\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{b^2d^2\left(1-c^2x^2\right)^{5/2}\sin^{-1}(c}{3c(d+cdx)^{5/2}(e-cex)^{5}}$$

Mathematica [A] time = 7.29, size = 388, normalized size = 0.43

$$\sqrt{cdx+d}\,\sqrt{e-cex}\left(-\frac{2a^2(cx-2)}{(cx-1)^2}+\frac{2ab\left(2\sin\left(\frac{1}{2}\sin^{-1}(cx)\right)\left(-\left(\left(\sqrt{1-c^2x^2}-1\right)\sin^{-1}(cx)\right)-2\left(\sqrt{1-c^2x^2}+2\right)\log\left(\cos\left(\frac{1}{2}\sin^{-1}(cx)\right)-\sin\left(\frac{1}{2}\sin^{-1}(cx\right.\right.\right.\right.}{}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(Sqrt[d + c*d*x]*(e - c*e*x)^(5/2)),x]
```

```
[Out] (Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*((-2*a^2*(-2 + c*x))/(-1 + c*x)^2 + (2*a*b
*(Cos[(3*ArcSin[c*x])/2]*(ArcSin[c*x] - 2*Log[Cos[ArcSin[c*x]/2] - Sin[ArcS
in[c*x]/2]]) + Cos[ArcSin[c*x]/2]*(-2 + 3*ArcSin[c*x] + 6*Log[Cos[ArcSin[c*
x]/2] - Sin[ArcSin[c*x]/2]]) + 2*(1 - (-1 + Sqrt[1 - c^2*x^2])*ArcSin[c*x]
- 2*(2 + Sqrt[1 - c^2*x^2])*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]])*S
in[ArcSin[c*x]/2]))/(Sqrt[1 - c^2*x^2]*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x
]/2])^3) + (b^2*((-8*I)*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] + ArcSin[c*x]*(8
*Log[1 + I*E^(I*ArcSin[c*x])] - 2*Sec[(Pi + 2*ArcSin[c*x])/4]^2) + 4*Tan[(P
i + 2*ArcSin[c*x])/4] + ArcSin[c*x]^2*(-2*I + (2 + Sec[(Pi + 2*ArcSin[c*x])
/4]^2)*Tan[(Pi + 2*ArcSin[c*x])/4])))/Sqrt[1 - c^2*x^2]))/(6*c*d*e^3)
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{c^4de^3x^4-2\,c^3de^3x^3+2\,cde^3x-de^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(5/2),x, algorithm
="fricas")
```

```
[Out] integral(-(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(c*d*x + d)*sqr
t(-c*e*x + e)/(c^4*d*e^3*x^4 - 2*c^3*d*e^3*x^3 + 2*c*d*e^3*x - d*e^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(b\arcsin(cx)+a)^2}{\sqrt{cdx+d}\,(-cex+e)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(5/2),x, algorithm
="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/(sqrt(c*d*x + d)*(-c*e*x + e)^(5/2)), x)
```

maple [F] time = 0.38, size = 0, normalized size = 0.00

$$\int\frac{(a+b\arcsin(cx))^2}{\sqrt{cdx+d}\;(-cex+e)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(5/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2}{3}\,abc\left(\frac{1}{c^3\sqrt{d}\,e^{\frac{5}{2}}x-c^2\sqrt{d}\,e^{\frac{5}{2}}}+\frac{\log(cx-1)}{c^2\sqrt{d}\,e^{\frac{5}{2}}}\right)+\frac{2}{3}\,ab\left(\frac{\sqrt{-c^2dex^2+de}}{c^3de^3x^2-2\,c^2de^3x+cde^3}-\frac{\sqrt{-c^2dex^2+de}}{c^2de^3x-cde^3}\right)\arcsin(cx)+\frac{1}{3}\,a^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(5/2),x, algorithm
="maxima")
```

```
[Out] 2/3*a*b*c*(1/(c^3*sqrt(d)*e^(5/2)*x - c^2*sqrt(d)*e^(5/2)) + log(c*x - 1)/(
c^2*sqrt(d)*e^(5/2))) + 2/3*a*b*(sqrt(-c^2*d*e*x^2 + d*e)/(c^3*d*e^3*x^2 -
2*c^2*d*e^3*x + c*d*e^3) - sqrt(-c^2*d*e*x^2 + d*e)/(c^2*d*e^3*x - c*d*e^3)
)*arcsin(c*x) + 1/3*a^2*(sqrt(-c^2*d*e*x^2 + d*e)/(c^3*d*e^3*x^2 - 2*c^2*d*
e^3*x + c*d*e^3) - sqrt(-c^2*d*e*x^2 + d*e)/(c^2*d*e^3*x - c*d*e^3)) + b^2*
integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2/((c^2*e^2*x^2 - 2*c*
e^2*x + e^2)*sqrt(c*x + 1)*sqrt(-c*x + 1)), x)/(sqrt(d)*sqrt(e))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\operatorname{asin}(c\,x))^2}{\sqrt{d + c\,d\,x}\,(e - c\,e\,x)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/((d + c*d*x)^(1/2)*(e - c*e*x)^(5/2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/((d + c*d*x)^(1/2)*(e - c*e*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(c*d*x+d)**(1/2)/(-c*e*x+e)**(5/2),x)
```

```
[Out] Timed out
```

3.574 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{5/2}}\,dx$

Optimal. Leaf size=709

$$-\frac{2id\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}+\frac{2dx\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{3(cdx+d)^{5/2}(e-cex)^{5/2}}-\frac{bd\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}-\frac{bdx(}{}$$

```
[Out] 1/3*b^2*d*(-c^2*x^2+1)^2/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+1/3*b^2*d*x*(-c
^2*x^2+1)^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-1/3*b*d*(-c^2*x^2+1)^(3/2)*(a+
b*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-1/3*b*d*x*(-c^2*x^2+1)^(3
/2)*(a+b*arcsin(c*x))/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+1/3*d*(-c^2*x^2+1)*(
a+b*arcsin(c*x))^2/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+1/3*d*x*(-c^2*x^2+1)*
(a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+2/3*d*x*(-c^2*x^2+1)^2
*(a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-2/3*I*d*(-c^2*x^2+1)^
(5/2)*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+2/3*I*b*d*(-c^
2*x^2+1)^(5/2)*(a+b*arcsin(c*x))*arctan(I*c*x+(-c^2*x^2+1)^(1/2))/c/(c*d*x+
d)^(5/2)/(-c*e*x+e)^(5/2)+4/3*b*d*(-c^2*x^2+1)^(5/2)*(a+b*arcsin(c*x))*ln(1
+(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-1/3*I*b^2
*d*(-c^2*x^2+1)^(5/2)*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))/c/(c*d*x+d)^
(5/2)/(-c*e*x+e)^(5/2)+1/3*I*b^2*d*(-c^2*x^2+1)^(5/2)*polylog(2,I*(I*c*x+(-
c^2*x^2+1)^(1/2)))/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-2/3*I*b^2*d*(-c^2*x^2
+1)^(5/2)*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c/(c*d*x+d)^(5/2)/(-c*e*
x+e)^(5/2)
```

Rubi [A] time = 0.84, antiderivative size = 709, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 14, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.438, Rules used = {4673, 4763, 4655, 4651, 4675, 3719, 2190, 2279, 2391, 4677, 191, 4657, 4181, 261}

$$-\frac{ib^2d\left(1-c^2x^2\right)^{5/2}\text{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}+\frac{ib^2d\left(1-c^2x^2\right)^{5/2}\text{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}-\frac{2ib^2d\left(1-c^2x^2\right)^{5/2}\text{PolyI}}{3c(cdx+d)^{5/2}(}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/((d + c*d*x)^(3/2)*(e - c*e*x)^(5/2)),x]
```

```
[Out] (b^2*d*(1 - c^2*x^2)^2)/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) + (b^2*d*
x*(1 - c^2*x^2)^2)/(3*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (b*d*(1 - c^2*
x^2)^(3/2)*(a + b*ArcSin[c*x]))/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) -
 (b*d*x*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(3*(d + c*d*x)^(5/2)*(e -
c*e*x)^(5/2)) + (d*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(3*c*(d + c*d*x)^(5
/2)*(e - c*e*x)^(5/2)) + (d*x*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(3*(d +
c*d*x)^(5/2)*(e - c*e*x)^(5/2)) + (2*d*x*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x]
)^2)/(3*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (((2*I)/3)*d*(1 - c^2*x^2)^(
5/2)*(a + b*ArcSin[c*x])^2)/(c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) + (((2*
I)/3)*b*d*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])]
)/(c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) + (4*b*d*(1 - c^2*x^2)^(5/2)*(a +
 b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(3*c*(d + c*d*x)^(5/2)*(e -
 c*e*x)^(5/2)) - ((I/3)*b^2*d*(1 - c^2*x^2)^(5/2)*PolyLog[2, (-I)*E^(I*ArcS
in[c*x])])/(c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) + ((I/3)*b^2*d*(1 - c^2*
x^2)^(5/2)*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c*(d + c*d*x)^(5/2)*(e - c*e*x
)^(5/2)) - (((2*I)/3)*b^2*d*(1 - c^2*x^2)^(5/2)*PolyLog[2, -E^((2*I)*ArcSin
[c*x])])/(c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2))
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4763

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_) + (g_.)*(x_))^(m_.)*((d_
) + (e_.)*(x_)^2)^(p_), x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^p*(a +
 b*ArcSin[c*x])^n, (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& EqQ[c^2*d + e, 0] && IGtQ[m, 0] && IntegerQ[p + 1/2] && GtQ[d, 0] && IGtQ
[n, 0] && (m == 1 || p > 0 || (n == 1 && p > -1) || (m == 2 && p < -2))
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{5/2}}\,dx = \frac{\left(1-c^2x^2\right)^{5/2}\int \frac{(d+cdx)\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}dx}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{\left(1-c^2x^2\right)^{5/2}\int \left(\frac{d\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}+\frac{cdx\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}\right)dx}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{\left(d\left(1-c^2x^2\right)^{5/2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}dx}{(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{\left(cd\left(1-c^2x^2\right)^{5/2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}dx}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{d\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{dx\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{\left(2d\left(1-c\right.\right.}{3(d}$$

$$= -\frac{bd\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{bdx\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{d(1}{3}$$

$$= \frac{b^2d\left(1-c^2x^2\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{b^2dx\left(1-c^2x^2\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{bd\left(1-c^2x^2\right)^{3/2}\left(a+b\right.}{3c(d+cdx)^{5/2}(e-}$$

$$= \frac{b^2d\left(1-c^2x^2\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{b^2dx\left(1-c^2x^2\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{bd\left(1-c^2x^2\right)^{3/2}\left(a+b\right.}{3c(d+cdx)^{5/2}(e-}$$

$$= \frac{b^2d\left(1-c^2x^2\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{b^2dx\left(1-c^2x^2\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{bd\left(1-c^2x^2\right)^{3/2}\left(a+b\right.}{3c(d+cdx)^{5/2}(e-}$$

$$= \frac{b^2d\left(1-c^2x^2\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{b^2dx\left(1-c^2x^2\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{bd\left(1-c^2x^2\right)^{3/2}\left(a+b\right.}{3c(d+cdx)^{5/2}(e-}$$

$$= \frac{b^2d\left(1-c^2x^2\right)^2}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{b^2dx\left(1-c^2x^2\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{bd\left(1-c^2x^2\right)^{3/2}\left(a+b\right.}{3c(d+cdx)^{5/2}(e-}$$

Mathematica [A] time = 8.45, size = 764, normalized size = 1.08

$$\frac{\sqrt{d(cx+1)}\sqrt{-e(cx-1)}\left(-\frac{5a^2}{12d^2e^3(cx-1)}-\frac{a^2}{4d^2e^3(cx+1)}+\frac{a^2}{6d^2e^3(cx-1)^2}\right)}{c} - \frac{ab\sqrt{1-c^2x^2}\sqrt{cdx+d}\sqrt{e-cex}\left(\sqrt{1-c^2x^2}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/((d + c*d*x)^(3/2)*(e - c*e*x)^(5/2)),x]
```

```
[Out] (Sqrt[-(e*(-1 + c*x))]*Sqrt[d*(1 + c*x)]*(a^2/(6*d^2*e^3*(-1 + c*x)^2) - (5
*a^2)/(12*d^2*e^3*(-1 + c*x)) - a^2/(4*d^2*e^3*(1 + c*x))))/c - (a*b*Sqrt[d
 + c*d*x]*Sqrt[e - c*e*x]*Sqrt[1 - c^2*x^2]*(2*ArcSin[c*x]*(2*c*x + Cos[2*A
rcSin[c*x]]) + Sqrt[1 - c^2*x^2]*(-1 + 5*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSi
n[c*x]/2]] + 3*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]] - c*x*(5*Log[Co
s[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] + 3*Log[Cos[ArcSin[c*x]/2] + Sin[Arc
Sin[c*x]/2]]))))/(3*c*d*e^2*Sqrt[(-d - c*d*x)*(e - c*e*x)]*Sqrt[-(d*e*(1 -
c^2*x^2))]*(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^3*(Cos[ArcSin[c*x]/2]
+ Sin[ArcSin[c*x]/2])) - (b^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[1 - c^2*
x^2]*((9*I)*Pi*ArcSin[c*x] - ((-2 + ArcSin[c*x])*ArcSin[c*x])/(-1 + c*x) +
```

```
(1 - 4*I)*ArcSin[c*x]^2 + 16*Pi*Log[1 + E^((-I)*ArcSin[c*x])] + 3*(Pi + 2*A
rcSin[c*x])*Log[1 - I*E^(I*ArcSin[c*x])] - 5*(Pi - 2*ArcSin[c*x])*Log[1 + I
*E^(I*ArcSin[c*x])] - 16*Pi*Log[Cos[ArcSin[c*x]/2]] + 5*Pi*Log[-Cos[(Pi + 2
*ArcSin[c*x])/4]] - 3*Pi*Log[Sin[(Pi + 2*ArcSin[c*x])/4]] - (10*I)*PolyLog[
2, (-I)*E^(I*ArcSin[c*x])] - (6*I)*PolyLog[2, I*E^(I*ArcSin[c*x])] + (2*Arc
Sin[c*x]^2*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2])^3
+ ((4 + 5*ArcSin[c*x]^2)*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] - Sin[ArcS
in[c*x]/2]) + (3*ArcSin[c*x]^2*Sin[ArcSin[c*x]/2])/(Cos[ArcSin[c*x]/2] + Si
n[ArcSin[c*x]/2])))/(6*c*d*e^2*Sqrt[(-d - c*d*x)*(e - c*e*x)]*Sqrt[-(d*e*(1
 - c^2*x^2))])
```

fricas [F] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(b^2 \arcsin(cx)^2 + 2\,ab\arcsin(cx) + a^2\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{c^5d^2e^3x^5 - c^4d^2e^3x^4 - 2\,c^3d^2e^3x^3 + 2\,c^2d^2e^3x^2 + cd^2e^3x - d^2e^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(5/2),x, algorithm
="fricas")
```

```
[Out] integral(-(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(c*d*x + d)*sqr
t(-c*e*x + e)/(c^5*d^2*e^3*x^5 - c^4*d^2*e^3*x^4 - 2*c^3*d^2*e^3*x^3 + 2*c^
2*d^2*e^3*x^2 + c*d^2*e^3*x - d^2*e^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b\arcsin(cx) + a)^2}{(cdx+d)^{\frac{3}{2}}(-cex+e)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(5/2),x, algorithm
="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/((c*d*x + d)^(3/2)*(-c*e*x + e)^(5/2)), x)
```

maple [F] time = 0.37, size = 0, normalized size = 0.00

$$\int \frac{(a + b\arcsin(cx))^2}{(cdx+d)^{\frac{3}{2}}\,(-cex+e)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(5/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{6}\,abc\left(\frac{2\sqrt{d}\sqrt{e}}{c^3d^2e^3x - c^2d^2e^3} + \frac{3\log(cx+1)}{c^2d^{\frac{3}{2}}e^{\frac{5}{2}}} + \frac{5\log(cx-1)}{c^2d^{\frac{3}{2}}e^{\frac{5}{2}}}\right) - \frac{2}{3}\,ab\left(\frac{1}{\sqrt{-c^2dex^2+de}\,c^2de^2x - \sqrt{-c^2dex^2+de}\,cde^2} - \right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(5/2),x, algorithm
="maxima")
```

```
[Out] 1/6*a*b*c*(2*sqrt(d)*sqrt(e)/(c^3*d^2*e^3*x - c^2*d^2*e^3) + 3*log(c*x + 1)
/(c^2*d^(3/2)*e^(5/2)) + 5*log(c*x - 1)/(c^2*d^(3/2)*e^(5/2))) - 2/3*a*b*(1
/(sqrt(-c^2*d*e*x^2 + d*e)*c^2*d*e^2*x - sqrt(-c^2*d*e*x^2 + d*e)*c*d*e^2)
- 2*x/(sqrt(-c^2*d*e*x^2 + d*e)*d*e^2))*arcsin(c*x) - 1/3*a^2*(1/(sqrt(-c^2
*d*e*x^2 + d*e)*c^2*d*e^2*x - sqrt(-c^2*d*e*x^2 + d*e)*c*d*e^2) - 2*x/(sqrt
(-c^2*d*e*x^2 + d*e)*d*e^2)) + b^2*integrate(arctan2(c*x, sqrt(c*x + 1)*sqr
t(-c*x + 1))^2/((c^3*d*e^2*x^3 - c^2*d*e^2*x^2 - c*d*e^2*x + d*e^2)*sqrt(c*
x + 1)*sqrt(-c*x + 1)), x)/(sqrt(d)*sqrt(e))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}\,(c\,x))^2}{(d+c\,d\,x)^{3/2}\,(e-c\,e\,x)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/((d + c*d*x)^(3/2)*(e - c*e*x)^(5/2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/((d + c*d*x)^(3/2)*(e - c*e*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(c*d*x+d)**(3/2)/(-c*e*x+e)**(5/2),x)
```

```
[Out] Timed out
```

3.575 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{5/2}(e-cex)^{5/2}}\,dx$

Optimal. Leaf size=366

$$-\frac{2i\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}+\frac{2x\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{3(cdx+d)^{5/2}(e-cex)^{5/2}}-\frac{b\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}+\frac{x\left(1-c^2\right.}{3(cdx}$$

```
[Out] 1/3*b^2*x*(-c^2*x^2+1)^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-1/3*b*(-c^2*x^2+1
)^(3/2)*(a+b*arcsin(c*x))/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+1/3*x*(-c^2*x^
2+1)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+2/3*x*(-c^2*x^2+1
)^2*(a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)-2/3*I*(-c^2*x^2+1)
^(5/2)*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)+4/3*b*(-c^2*x
^2+1)^(5/2)*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c/(c*d*x+d
)^(5/2)/(-c*e*x+e)^(5/2)-2/3*I*b^2*(-c^2*x^2+1)^(5/2)*polylog(2,-(I*c*x+(-c
^2*x^2+1)^(1/2))^2)/c/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2)
```

Rubi [A] time = 0.47, antiderivative size = 366, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 10, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312, Rules used = {4673, 4655, 4651, 4675, 3719, 2190, 2279, 2391, 4677, 191}

$$-\frac{2ib^2\left(1-c^2x^2\right)^{5/2}\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}-\frac{2i\left(1-c^2x^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}{3c(cdx+d)^{5/2}(e-cex)^{5/2}}+\frac{2x\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{3(cdx+d)^{5/2}(e-cex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/((d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)),x]
```

```
[Out] (b^2*x*(1 - c^2*x^2)^2)/(3*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) - (b*(1 - c
^2*x^2)^(3/2)*(a + b*ArcSin[c*x]))/(3*c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)
) + (x*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(3*(d + c*d*x)^(5/2)*(e - c*e*x
)^(5/2)) + (2*x*(1 - c^2*x^2)^2*(a + b*ArcSin[c*x])^2)/(3*(d + c*d*x)^(5/2)
*(e - c*e*x)^(5/2)) - (((2*I)/3)*(1 - c^2*x^2)^(5/2)*(a + b*ArcSin[c*x])^2)
/(c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)) + (4*b*(1 - c^2*x^2)^(5/2)*(a + b*
ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(3*c*(d + c*d*x)^(5/2)*(e - c*
e*x)^(5/2)) - (((2*I)/3)*b^2*(1 - c^2*x^2)^(5/2)*PolyLog[2, -E^((2*I)*ArcSi
n[c*x])])/(c*(d + c*d*x)^(5/2)*(e - c*e*x)^(5/2))
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4655

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_), x_
Symbol] :> -Simp[(x*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*d*(p + 1)
), x] + (Dist[(2*p + 3)/(2*d*(p + 1)), Int[(d + e*x^2)^(p + 1)*(a + b*ArcSi
n[c*x])^n, x], x] + Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*(p
 + 1)*(1 - c^2*x^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcS
in[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0]
 && GtQ[n, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{5/2}(e-cex)^{5/2}}\,dx = \frac{\left(1-c^2x^2\right)^{5/2}\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{5/2}}dx}{(d+cdx)^{5/2}(e-cex)^{5/2}}$$

$$= \frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{\left(2\left(1-c^2x^2\right)^{5/2}\right)\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}dx}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{\left(2bc\left(1-\right.\right.}{3(d}$$

$$= -\frac{b\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{2x\left(1-c^2x^2\right.}{3(d+c}$$

$$= \frac{b^2x\left(1-c^2x^2\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{b\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{x\left(1-c^2x^2\right)\left(a+b\,\mathrm{s}\right.}{3(d+cdx)^{5/2}(e-}$$

$$= \frac{b^2x\left(1-c^2x^2\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{b\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{x\left(1-c^2x^2\right)\left(a+b\,\mathrm{s}\right.}{3(d+cdx)^{5/2}(e-}$$

$$= \frac{b^2x\left(1-c^2x^2\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{b\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{x\left(1-c^2x^2\right)\left(a+b\,\mathrm{s}\right.}{3(d+cdx)^{5/2}(e-}$$

$$= \frac{b^2x\left(1-c^2x^2\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{b\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{x\left(1-c^2x^2\right)\left(a+b\,\mathrm{s}\right.}{3(d+cdx)^{5/2}(e-}$$

$$= \frac{b^2x\left(1-c^2x^2\right)^2}{3(d+cdx)^{5/2}(e-cex)^{5/2}} - \frac{b\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}{3c(d+cdx)^{5/2}(e-cex)^{5/2}} + \frac{x\left(1-c^2x^2\right)\left(a+b\,\mathrm{s}\right.}{3(d+cdx)^{5/2}(e-}$$

Mathematica [**A**] time = 9.75, size = 722, normalized size = 1.97

$$4a^2cx\left(3-2c^2x^2\right)+4ab\left(\sqrt{1-c^2x^2}\left(2\log\left(\cos\left(\tfrac{1}{2}\sin^{-1}(cx)\right)-\sin\left(\tfrac{1}{2}\sin^{-1}(cx)\right)\right)+2\log\left(\sin\left(\tfrac{1}{2}\sin^{-1}(cx)\right)+\mathrm{co}\right.\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/((d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)),x]
```

```
[Out] (4*a^2*c*x*(3 - 2*c^2*x^2) + b^2*(c*x + 6*c*x*ArcSin[c*x]^2 + (4*I)*Pi*ArcS
in[c*x]*Cos[3*ArcSin[c*x]] - (2*I)*ArcSin[c*x]^2*Cos[3*ArcSin[c*x]] + 8*Pi*
Cos[3*ArcSin[c*x]]*Log[1 + E^((-I)*ArcSin[c*x])] + 2*Pi*Cos[3*ArcSin[c*x]]*
Log[1 - I*E^(I*ArcSin[c*x])] + 4*ArcSin[c*x]*Cos[3*ArcSin[c*x]]*Log[1 - I*E
^(I*ArcSin[c*x])] - 2*Pi*Cos[3*ArcSin[c*x]]*Log[1 + I*E^(I*ArcSin[c*x])] +
4*ArcSin[c*x]*Cos[3*ArcSin[c*x]]*Log[1 + I*E^(I*ArcSin[c*x])] - 8*Pi*Cos[3*
ArcSin[c*x]]*Log[Cos[ArcSin[c*x]/2]] + 2*Pi*Cos[3*ArcSin[c*x]]*Log[-Cos[(Pi
 + 2*ArcSin[c*x])/4]] + 2*Sqrt[1 - c^2*x^2]*((-3*I)*ArcSin[c*x]^2 + ArcSin[
c*x]*(-2 + (6*I)*Pi + 6*Log[1 - I*E^(I*ArcSin[c*x])] + 6*Log[1 + I*E^(I*Arc
Sin[c*x])]) + 3*Pi*(4*Log[1 + E^((-I)*ArcSin[c*x])] + Log[1 - I*E^(I*ArcSin
[c*x])] - Log[1 + I*E^(I*ArcSin[c*x])] - 4*Log[Cos[ArcSin[c*x]/2]] + Log[-C
os[(Pi + 2*ArcSin[c*x])/4]] - Log[Sin[(Pi + 2*ArcSin[c*x])/4]])) - 2*Pi*Cos
[3*ArcSin[c*x]]*Log[Sin[(Pi + 2*ArcSin[c*x])/4]] - (16*I)*(1 - c^2*x^2)^(3/
2)*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] - (16*I)*(1 - c^2*x^2)^(3/2)*PolyLog[
2, I*E^(I*ArcSin[c*x])] + Sin[3*ArcSin[c*x]] + 2*ArcSin[c*x]^2*Sin[3*ArcSin
[c*x]]) + 4*a*b*(Sqrt[1 - c^2*x^2]*(-1 + 2*Log[Cos[ArcSin[c*x]/2] - Sin[Arc
Sin[c*x]/2]] + 2*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]] + 2*Cos[2*Arc
Sin[c*x]]*(Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] + Log[Cos[ArcSin[c*
x]/2] + Sin[ArcSin[c*x]/2]])) + ArcSin[c*x]*(3*c*x + Sin[3*ArcSin[c*x]])))/
(12*d^2*e^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(c - c^3*x^2))
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{c^6d^3e^3x^6-3\,c^4d^3e^3x^4+3\,c^2d^3e^3x^2-d^3e^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2),x, algorithm
="fricas")
```

```
[Out] integral(-(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(c*d*x + d)*sqr
t(-c*e*x + e)/(c^6*d^3*e^3*x^6 - 3*c^4*d^3*e^3*x^4 + 3*c^2*d^3*e^3*x^2 - d^
3*e^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b\arcsin(cx)+a)^2}{(cdx+d)^{\frac{5}{2}}(-cex+e)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2),x, algorithm
="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/((c*d*x + d)^(5/2)*(-c*e*x + e)^(5/2)), x)
```

maple [F] time = 0.37, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin(cx))^2}{(cdx+d)^{\frac{5}{2}}\,(-cex+e)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{3}\,abc\left(\frac{1}{c^4d^{\frac{5}{2}}e^{\frac{5}{2}}x^2-c^2d^{\frac{5}{2}}e^{\frac{5}{2}}}+\frac{2\,\log(cx+1)}{c^2d^{\frac{5}{2}}e^{\frac{5}{2}}}+\frac{2\,\log(cx-1)}{c^2d^{\frac{5}{2}}e^{\frac{5}{2}}}\right)+\frac{2}{3}\,ab\left(\frac{x}{\left(-c^2dex^2+de\right)^{\frac{3}{2}}de}+\frac{2\,x}{\sqrt{-c^2dex^2+de}\,d^2e^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(5/2)/(-c*e*x+e)^(5/2),x, algorithm
="maxima")
```

```
[Out] 1/3*a*b*c*(1/(c^4*d^(5/2)*e^(5/2)*x^2 - c^2*d^(5/2)*e^(5/2)) + 2*log(c*x +
1)/(c^2*d^(5/2)*e^(5/2)) + 2*log(c*x - 1)/(c^2*d^(5/2)*e^(5/2))) + 2/3*a*b*
(x/((-c^2*d*e*x^2 + d*e)^(3/2)*d*e) + 2*x/(sqrt(-c^2*d*e*x^2 + d*e)*d^2*e^2
))*arcsin(c*x) + 1/3*a^2*(x/((-c^2*d*e*x^2 + d*e)^(3/2)*d*e) + 2*x/(sqrt(-c
^2*d*e*x^2 + d*e)*d^2*e^2)) + b^2*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt
(-c*x + 1))^2/((c^4*d^2*e^2*x^4 - 2*c^2*d^2*e^2*x^2 + d^2*e^2)*sqrt(c*x + 1
)*sqrt(-c*x + 1)), x)/(sqrt(d)*sqrt(e))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))^2}{(d+c\,d\,x)^{5/2}\,(e-c\,e\,x)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/((d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/((d + c*d*x)^(5/2)*(e - c*e*x)^(5/2)), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(c*d*x+d)**(5/2)/(-c*e*x+e)**(5/2),x)
```

```
[Out] Timed out
```

3.576 $\int x^2\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=351

$$\frac{bx^2\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)}{8c\sqrt{1-c^2x^2}}-\frac{bcx^4\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)}{8\sqrt{1-c^2x^2}}-\frac{x\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(a+\right.}{8c^2}$$

```
[Out] 1/64*b^2*x*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/c^2-1/32*b^2*x^3*(c*d*x+d)^(1/2
)*(-c*e*x+e)^(1/2)-1/8*x*(a+b*arcsin(c*x))^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/
2)/c^2+1/4*x^3*(a+b*arcsin(c*x))^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)-1/64*b^
2*arcsin(c*x)*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/c^3/(-c^2*x^2+1)^(1/2)+1/8*b
*x^2*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/c/(-c^2*x^2+1)^(1/2
)-1/8*b*c*x^4*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+
1)^(1/2)+1/24*(a+b*arcsin(c*x))^3*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/b/c^3/(-
c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.70, antiderivative size = 351, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {4739, 4697, 4707, 4641, 4627, 321, 216}

$$-\frac{bcx^4\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)}{8\sqrt{1-c^2x^2}}+\frac{bx^2\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)}{8c\sqrt{1-c^2x^2}}+\frac{\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(a+\right.}{24bc^3\sqrt{1-c^2}}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (b^2*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(64*c^2) - (b^2*x^3*Sqrt[d + c*d*x]
*Sqrt[e - c*e*x])/32 - (b^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x])/(6
4*c^3*Sqrt[1 - c^2*x^2]) + (b*x^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*Ar
cSin[c*x]))/(8*c*Sqrt[1 - c^2*x^2]) - (b*c*x^4*Sqrt[d + c*d*x]*Sqrt[e - c*e
*x]*(a + b*ArcSin[c*x]))/(8*Sqrt[1 - c^2*x^2]) - (x*Sqrt[d + c*d*x]*Sqrt[e
- c*e*x]*(a + b*ArcSin[c*x])^2)/(8*c^2) + (x^3*Sqrt[d + c*d*x]*Sqrt[e - c*e
*x]*(a + b*ArcSin[c*x])^2)/4 + (Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcS
in[c*x])^3)/(24*b*c^3*Sqrt[1 - c^2*x^2])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((h_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_))^(p_)*((f_) + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((-((d^2*g)/e))^I
ntPart[q]*(d + e*x)^FracPart[q]*(f + g*x)^FracPart[q])/(1 - c^2*x^2)^FracPa
rt[q], Int[(h*x)^m*(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, h, m, n}, x] && EqQ[e*f + d*g, 0] &&
 EqQ[c^2*d^2 - e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rubi steps

$$\int x^2\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)^2\,dx=\frac{\left(\sqrt{d+cdx}\,\sqrt{e-cex}\right)\int x^2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\sqrt{1-c^2x^2}}$$

$$=\frac{1}{4}x^3\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)^2+\frac{\left(\sqrt{d+cdx}\,\sqrt{e-cex}\right.}{4\sqrt{1-}}$$

$$=-\frac{bcx^4\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)}{8\sqrt{1-c^2x^2}}-\frac{x\sqrt{d+cdx}\,\sqrt{e-ce}}{8}$$

$$=-\frac{1}{32}b^2x^3\sqrt{d+cdx}\,\sqrt{e-cex}+\frac{bx^2\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin\right.}{8c\sqrt{1-c^2x^2}}$$

$$=\frac{b^2x\sqrt{d+cdx}\,\sqrt{e-cex}}{64c^2}-\frac{1}{32}b^2x^3\sqrt{d+cdx}\,\sqrt{e-cex}+\frac{bx^2\sqrt{d+}}{}$$

$$=\frac{b^2x\sqrt{d+cdx}\,\sqrt{e-cex}}{64c^2}-\frac{1}{32}b^2x^3\sqrt{d+cdx}\,\sqrt{e-cex}-\frac{b^2\sqrt{d+c}}{6}$$

Mathematica [A] time = 1.19, size = 297, normalized size = 0.85

$$3\sqrt{cdx+d}\sqrt{e-cex}\left(32a^2cx\sqrt{1-c^2x^2}\left(2c^2x^2-1\right)-4ab\cos\left(4\sin^{-1}(cx)\right)+b^2\sin\left(4\sin^{-1}(cx)\right)\right)-96a^2\sqrt{d}\sqrt{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (32*b^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^3 - 96*a^2*Sqrt[d]*Sqrt
[e]*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(Sqrt[d]
*Sqrt[e]*(-1 + c^2*x^2))] - 12*b*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x
]*(b*Cos[4*ArcSin[c*x]] + 4*a*Sin[4*ArcSin[c*x]]) - 24*b*Sqrt[d + c*d*x]*Sq
rt[e - c*e*x]*ArcSin[c*x]^2*(-4*a + b*Sin[4*ArcSin[c*x]]) + 3*Sqrt[d + c*d*
x]*Sqrt[e - c*e*x]*(32*a^2*c*x*Sqrt[1 - c^2*x^2]*(-1 + 2*c^2*x^2) - 4*a*b*C
os[4*ArcSin[c*x]] + b^2*Sin[4*ArcSin[c*x]]))/(768*c^3*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b^2x^2\arcsin(cx)^2+2\,abx^2\arcsin(cx)+a^2x^2\right)\sqrt{cdx+d}\sqrt{-cex+e},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2,x, algor
ithm="fricas")
```

```
[Out] integral((b^2*x^2*arcsin(c*x)^2 + 2*a*b*x^2*arcsin(c*x) + a^2*x^2)*sqrt(c*d
*x + d)*sqrt(-c*e*x + e), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2,x, algor
ithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(t_nostep)]Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Simplification assuming t_nostep near 0Simplification assuming t_nostep nea
r 0Simplification assuming t_nostep near 0Simplification assuming t_nostep
near 0Warning, integration of abs or sign assumes constant sign by interval
s (correct if the argument is real):Check [abs(t_nostep)]Warning, integrati
on of abs or sign assumes constant sign by intervals (correct if the argume
nt is real):Check [abs(t_nostep)]sym2poly/r2sym(const gen & e,const index_m
 & i,const vecteur & l) Error: Bad Argument Value
```

maple [F] time = 1.00, size = 0, normalized size = 0.00

$$\int x^2\sqrt{cdx+d}\,\sqrt{-cex+e}\,\left(a+b\arcsin(cx)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] int(x^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{8}a^2\left(\frac{\sqrt{-c^2dex^2+de}\,x}{c^2}+\frac{de\arcsin(cx)}{\sqrt{de}\,c^3}-\frac{2\left(-c^2dex^2+de\right)^{\frac{3}{2}}x}{c^2de}\right)+\sqrt{d}\,\sqrt{e}\int\left(b^2x^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2,x, algor
ithm="maxima")
```

```
[Out] 1/8*a^2*(sqrt(-c^2*d*e*x^2 + d*e)*x/c^2 + d*e*arcsin(c*x)/(sqrt(d*e)*c^3) -
 2*(-c^2*d*e*x^2 + d*e)^(3/2)*x/(c^2*d*e)) + sqrt(d)*sqrt(e)*integrate((b^2
*x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a*b*x^2*arctan2(c*x,
sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,(a+b\,\mathrm{asin}(c\,x))^2\,\sqrt{d+c\,d\,x}\,\sqrt{e-c\,e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c*x))^2*(d + c*d*x)^(1/2)*(e - c*e*x)^(1/2),x)
```

```
[Out] int(x^2*(a + b*asin(c*x))^2*(d + c*d*x)^(1/2)*(e - c*e*x)^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(c*d*x+d)**(1/2)*(-c*e*x+e)**(1/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Timed out
```

3.577 $\int x\sqrt{d+cdx}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=225

$$\frac{2bx\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)}{3c\sqrt{1-c^2x^2}}-\frac{\left(1-c^2x^2\right)\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^2}{3c^2}-\frac{2bcx^3\sqrt{cdx+d}\sqrt{e}}{9\sqrt{}}$$

```
[Out] 4/9*b^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/c^2+2/27*b^2*(-c^2*x^2+1)*(c*d*x+d
)^(1/2)*(-c*e*x+e)^(1/2)/c^2-1/3*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2*(c*d*x+d)
^(1/2)*(-c*e*x+e)^(1/2)/c^2+2/3*b*x*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*e
*x+e)^(1/2)/c/(-c^2*x^2+1)^(1/2)-2/9*b*c*x^3*(a+b*arcsin(c*x))*(c*d*x+d)^(1
/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.39, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {4739, 4677, 4645, 444, 43}

$$-\frac{2bcx^3\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)}{9\sqrt{1-c^2x^2}}+\frac{2bx\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)}{3c\sqrt{1-c^2x^2}}-\frac{\left(1-c^2x^2\right)\sqrt{cdx+d}\sqrt{}}{}$$

Antiderivative was successfully verified.

```
[In] Int[x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (4*b^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(9*c^2) + (2*b^2*Sqrt[d + c*d*x]*Sq
rt[e - c*e*x]*(1 - c^2*x^2))/(27*c^2) + (2*b*x*Sqrt[d + c*d*x]*Sqrt[e - c*e
*x]*(a + b*ArcSin[c*x]))/(3*c*Sqrt[1 - c^2*x^2]) - (2*b*c*x^3*Sqrt[d + c*d*
x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x]))/(9*Sqrt[1 - c^2*x^2]) - (Sqrt[d + c
*d*x]*Sqrt[e - c*e*x]*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(3*c^2)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 444

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
```

```
, 0] && NeQ[p, -1]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((h_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_))^(p_)*((f_) + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((-((d^2*g)/e))^I
ntPart[q]*(d + e*x)^FracPart[q]*(f + g*x)^FracPart[q])/(1 - c^2*x^2)^FracPa
rt[q], Int[(h*x)^m*(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, h, m, n}, x] && EqQ[e*f + d*g, 0] &&
 EqQ[c^2*d^2 - e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rubi steps

$$\int x\sqrt{d+cdx}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^2 dx = \frac{\left(\sqrt{d+cdx}\sqrt{e-cex}\right)\int x\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2 dx}{\sqrt{1-c^2x^2}}$$

$$= -\frac{\sqrt{d+cdx}\sqrt{e-cex}\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{3c^2} + \frac{\left(2b\sqrt{d+cdx}\right.}{}$$

$$= \frac{2bx\sqrt{d+cdx}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)}{3c\sqrt{1-c^2x^2}} - \frac{2bcx^3\sqrt{d+cdx}\sqrt{e-c}}{9\sqrt{1-}}$$

$$= \frac{2bx\sqrt{d+cdx}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)}{3c\sqrt{1-c^2x^2}} - \frac{2bcx^3\sqrt{d+cdx}\sqrt{e-c}}{9\sqrt{1-}}$$

$$= \frac{2bx\sqrt{d+cdx}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)}{3c\sqrt{1-c^2x^2}} - \frac{2bcx^3\sqrt{d+cdx}\sqrt{e-c}}{9\sqrt{1-}}$$

$$= \frac{4b^2\sqrt{d+cdx}\sqrt{e-cex}}{9c^2} + \frac{2b^2\sqrt{d+cdx}\sqrt{e-cex}\left(1-c^2x^2\right)}{27c^2} + \frac{2bx}{}$$

Mathematica [A] time = 0.58, size = 178, normalized size = 0.79

$$\frac{\sqrt{cdx+d}\sqrt{e-cex}\left(9a^2\left(c^2x^2-1\right)^2+6abcx\sqrt{1-c^2x^2}\left(c^2x^2-3\right)+6b\sin^{-1}(cx)\left(3a\left(c^2x^2-1\right)^2+bcx\sqrt{1-c^2x^2}\right.\right.}{27c^2\left(c^2x^2-1\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(6*a*b*c*x*Sqrt[1 - c^2*x^2]*(-3 + c^2*x^2
) + 9*a^2*(-1 + c^2*x^2)^2 - 2*b^2*(7 - 8*c^2*x^2 + c^4*x^4) + 6*b*(b*c*x*S
qrt[1 - c^2*x^2]*(-3 + c^2*x^2) + 3*a*(-1 + c^2*x^2)^2)*ArcSin[c*x] + 9*b^2
*(-1 + c^2*x^2)^2*ArcSin[c*x]^2))/(27*c^2*(-1 + c^2*x^2))
```

fricas [A] time = 0.44, size = 197, normalized size = 0.88

$$\frac{\left(\left(9\,a^2-2\,b^2\right)c^4x^4-2\left(9\,a^2-8\,b^2\right)c^2x^2+9\left(b^2c^4x^4-2\,b^2c^2x^2+b^2\right)\arcsin(cx)^2+9\,a^2-14\,b^2+18\left(abc^4x^4-2\,a\right.\right.}{27\left(c^4x^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2,x, algorit
hm="fricas")
```

```
[Out] 1/27*((9*a^2 - 2*b^2)*c^4*x^4 - 2*(9*a^2 - 8*b^2)*c^2*x^2 + 9*(b^2*c^4*x^4
- 2*b^2*c^2*x^2 + b^2)*arcsin(c*x)^2 + 9*a^2 - 14*b^2 + 18*(a*b*c^4*x^4 - 2
*a*b*c^2*x^2 + a*b)*arcsin(c*x) + 6*(a*b*c^3*x^3 - 3*a*b*c*x + (b^2*c^3*x^3
 - 3*b^2*c*x)*arcsin(c*x))*sqrt(-c^2*x^2 + 1))*sqrt(c*d*x + d)*sqrt(-c*e*x
+ e)/(c^4*x^2 - c^2)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2,x, algorit
hm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(t_nostep)]Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Simplification assuming t_nostep near 0Simplification assuming t_nostep nea
r 0Simplification assuming t_nostep near 0Simplification assuming t_nostep
near 0Warning, integration of abs or sign assumes constant sign by interval
s (correct if the argument is real):Check [abs(t_nostep)]Simplification ass
uming t_nostep near 0Simplification assuming t_nostep near 0Simplification
assuming t_nostep near 0Simplification assuming t_nostep near 0Simplificati
on assuming t_nostep near 0Simplification assuming t_nostep near 0Simplific
ation assuming t_nostep near 0Simplification assuming t_nostep near 0Warnin
g, integration of abs or sign assumes constant sign by intervals (correct i
f the argument is real):Check [abs(t_nostep)]Warning, integration of abs or
 sign assumes constant sign by intervals (correct if the argument is real):
Check [abs(t_nostep)]sym2poly/r2sym(const gen & e,const index_m & i,const v
ecteur & l) Error: Bad Argument Value
```

maple [F] time = 0.56, size = 0, normalized size = 0.00

$$\int x\sqrt{cdx+d}\,\sqrt{-cex+e}\,\left(a+b\arcsin\left(cx\right)\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] int(x*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 1.35, size = 233, normalized size = 1.04

$$-\frac{2}{27}b^{2}\left(\frac{\sqrt{-c^{2}x^{2}+1}\,d^{\frac{3}{2}}e^{\frac{3}{2}}x^{2}-\frac{7\sqrt{-c^{2}x^{2}+1}\,d^{\frac{3}{2}}e^{\frac{3}{2}}}{c^{2}}}{de}+\frac{3\left(c^{2}d^{\frac{3}{2}}e^{\frac{3}{2}}x^{3}-3\,d^{\frac{3}{2}}e^{\frac{3}{2}}x\right)\arcsin\left(cx\right)}{cde}\right)-\frac{\left(-c^{2}dex^{2}+de\right)^{\frac{3}{2}}b^{2}\,\mathrm{arcsi}}{3\,c^{2}de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2,x, algorit
hm="maxima")
```

```
[Out] -2/27*b^2*((sqrt(-c^2*x^2 + 1)*d^(3/2)*e^(3/2)*x^2 - 7*sqrt(-c^2*x^2 + 1)*d
^(3/2)*e^(3/2)/c^2)/(d*e) + 3*(c^2*d^(3/2)*e^(3/2)*x^3 - 3*d^(3/2)*e^(3/2)*
x)*arcsin(c*x)/(c*d*e)) - 1/3*(-c^2*d*e*x^2 + d*e)^(3/2)*b^2*arcsin(c*x)^2/
```

```
(c^2*d*e) - 2/3*(-c^2*d*e*x^2 + d*e)^(3/2)*a*b*arcsin(c*x)/(c^2*d*e) - 2/9*
(c^2*d^(3/2)*e^(3/2)*x^3 - 3*d^(3/2)*e^(3/2)*x)*a*b/(c*d*e) - 1/3*(-c^2*d*e
*x^2 + d*e)^(3/2)*a^2/(c^2*d*e)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x\,(a+b\,\mathrm{asin}\,(c\,x))^2\,\sqrt{d+c\,d\,x}\,\sqrt{e-c\,e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c*x))^2*(d + c*d*x)^(1/2)*(e - c*e*x)^(1/2),x)
[Out] int(x*(a + b*asin(c*x))^2*(d + c*d*x)^(1/2)*(e - c*e*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x\sqrt{d\,(cx+1)}\,\sqrt{-e\,(cx-1)}\,\left(a+b\,\mathrm{asin}\,(cx)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*d*x+d)**(1/2)*(-c*e*x+e)**(1/2)*(a+b*asin(c*x))**2,x)
[Out] Integral(x*sqrt(d*(c*x + 1))*sqrt(-e*(c*x - 1))*(a + b*asin(c*x))**2, x)
```

3.578 $\int \sqrt{d+cdx}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^2 dx$

Optimal. Leaf size=222

$$\frac{\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^3}{6bc\sqrt{1-c^2x^2}}-\frac{bcx^2\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{1-c^2x^2}}+\frac{1}{2}x\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\right.$$

```
[Out] -1/4*b^2*x*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)+1/2*x*(c*d*x+d)^(1/2)*(-c*e*x+e
)^(1/2)*(a+b*arcsin(c*x))^2+1/4*b^2*arcsin(c*x)*(c*d*x+d)^(1/2)*(-c*e*x+e)^
(1/2)/c/(-c^2*x^2+1)^(1/2)-1/2*b*c*x^2*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-
c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)+1/6*(a+b*arcsin(c*x))^3*(c*d*x+d)^(1/2)*(
-c*e*x+e)^(1/2)/b/c/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.29, antiderivative size = 222, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {4673, 4647, 4641, 4627, 321, 216}

$$\frac{\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^3}{6bc\sqrt{1-c^2x^2}}-\frac{bcx^2\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{1-c^2x^2}}+\frac{1}{2}x\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\right.$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -(b^2*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/4 + (b^2*Sqrt[d + c*d*x]*Sqrt[e -
c*e*x]*ArcSin[c*x])/(4*c*Sqrt[1 - c^2*x^2]) - (b*c*x^2*Sqrt[d + c*d*x]*Sqrt
[e - c*e*x]*(a + b*ArcSin[c*x]))/(2*Sqrt[1 - c^2*x^2]) + (x*Sqrt[d + c*d*x]
*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2)/2 + (Sqrt[d + c*d*x]*Sqrt[e - c*e*x
]*(a + b*ArcSin[c*x])^3)/(6*b*c*Sqrt[1 - c^2*x^2])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rubi steps

$$\int \sqrt{d+cdx}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^2 dx = \frac{\left(\sqrt{d+cdx}\sqrt{e-cex}\right)\int\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2 dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{1}{2}x\sqrt{d+cdx}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^2 + \frac{\left(\sqrt{d+cdx}\sqrt{e-cex}\right)\int}{2\sqrt{1-c^2}}$$

$$= -\frac{bcx^2\sqrt{d+cdx}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{1-c^2x^2}} + \frac{1}{2}x\sqrt{d+cdx}\sqrt{e-ce}$$

$$= -\frac{1}{4}b^2x\sqrt{d+cdx}\sqrt{e-cex} - \frac{bcx^2\sqrt{d+cdx}\sqrt{e-cex}\left(a+b\sin^{-1}(c\right.}{2\sqrt{1-c^2x^2}}$$

$$= -\frac{1}{4}b^2x\sqrt{d+cdx}\sqrt{e-cex} + \frac{b^2\sqrt{d+cdx}\sqrt{e-cex}\sin^{-1}(cx)}{4c\sqrt{1-c^2x^2}} - \frac{bcx^2}{}$$

Mathematica [A] time = 0.83, size = 288, normalized size = 1.30

$$\frac{3\sqrt{cdx+d}\sqrt{e-cex}\left(4a^2cx\sqrt{1-c^2x^2}+2ab\cos\left(2\sin^{-1}(cx)\right)-b^2\sin\left(2\sin^{-1}(cx)\right)\right)-12a^2\sqrt{d}\sqrt{e}\sqrt{1-c^2x^2}\tan}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (4*b^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^3 - 12*a^2*Sqrt[d]*Sqrt[
e]*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(Sqrt[d]*
Sqrt[e]*(-1 + c^2*x^2))] + 6*b*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]*
(b*Cos[2*ArcSin[c*x]] + 2*a*Sin[2*ArcSin[c*x]]) + 6*b*Sqrt[d + c*d*x]*Sqrt[
e - c*e*x]*ArcSin[c*x]^2*(2*a + b*Sin[2*ArcSin[c*x]]) + 3*Sqrt[d + c*d*x]*S
qrt[e - c*e*x]*(4*a^2*c*x*Sqrt[1 - c^2*x^2] + 2*a*b*Cos[2*ArcSin[c*x]] - b^
2*Sin[2*ArcSin[c*x]]))/(24*c*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.41, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)\sqrt{cdx+d}\sqrt{-cex+e},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2,x, algorithm
="fricas")
```

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(c*d*x + d)*sqrt
(-c*e*x + e), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2,x, algorithm
="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(t_nostep)]Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Warning, integration of abs or sign assumes constant sign by intervals (cor
rect if the argument is real):Check [abs(t_nostep)]Warning, integration of
abs or sign assumes constant sign by intervals (correct if the argument is
real):Check [abs(t_nostep)]Simplification assuming t_nostep near 0Simplific
ation assuming t_nostep near 0Simplification assuming t_nostep near 0Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Simplification assuming t_nostep near 0Warning, integration of abs or sign
assumes constant sign by intervals (correct if the argument is real):Check
[abs(t_nostep)]Warning, integration of abs or sign assumes constant sign by
 intervals (correct if the argument is real):Check [abs(t_nostep)]sym2poly/
r2sym(const gen & e,const index_m & i,const vecteur & l) Error: Bad Argumen
t Value
```

maple [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{cdx+d}\,\sqrt{-cex+e}\,\left(a+b\arcsin\left(cx\right)\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] int((c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\left(\sqrt{-c^2dex^2+de}\,x+\frac{de\arcsin\left(cx\right)}{\sqrt{de}\,c}\right)a^2+\sqrt{d}\,\sqrt{e}\int\left(b^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)^2+2\,ab\arctan\left(cx,\sqrt{c\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2,x, algorithm
="maxima")
```

```
[Out] 1/2*(sqrt(-c^2*d*e*x^2 + d*e)*x + d*e*arcsin(c*x)/(sqrt(d*e)*c))*a^2 + sqrt
(d)*sqrt(e)*integrate((b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2
*a*b*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x +
1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,\sqrt{d+c\,d\,x}\,\sqrt{e-c\,e\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2*(d + c*d*x)^(1/2)*(e - c*e*x)^(1/2),x)
```

```
[Out] int((a + b*asin(c*x))^2*(d + c*d*x)^(1/2)*(e - c*e*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{d\left(cx+1\right)}\sqrt{-e\left(cx-1\right)}\left(a+b\operatorname{asin}\left(cx\right)\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(1/2)*(-c*e*x+e)**(1/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(sqrt(d*(c*x + 1))*sqrt(-e*(c*x - 1))*(a + b*asin(c*x))**2, x)
```

3.579 $\int \frac{\sqrt{d+cdx}\,\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^2}{x}\,dx$

Optimal. Leaf size=432

$$\frac{2ib\sqrt{cdx+d}\,\sqrt{e-cex}\,\text{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}-\frac{2ib\sqrt{cdx+d}\,\sqrt{e-cex}\,\text{Li}_2\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx\right.}{\sqrt{1-c^2x^2}}$$

```
[Out] -2*b^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)+(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a
+b*arcsin(c*x))^2-2*a*b*c*x*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(
1/2)-2*b^2*c*x*arcsin(c*x)*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1
/2)-2*(a+b*arcsin(c*x))^2*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))*(c*d*x+d)^(1/2)
*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)+2*I*b*(a+b*arcsin(c*x))*polylog(2,-I*c
*x-(-c^2*x^2+1)^(1/2))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)-
2*I*b*(a+b*arcsin(c*x))*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))*(c*d*x+d)^(1/2)
*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)-2*b^2*polylog(3,-I*c*x-(-c^2*x^2+1)^(1
/2))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)+2*b^2*polylog(3,I*
c*x+(-c^2*x^2+1)^(1/2))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.68, antiderivative size = 432, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 9, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.257, Rules used = {4739, 4697, 4709, 4183, 2531, 2282, 6589, 4619, 261}

$$\frac{2ib\sqrt{cdx+d}\,\sqrt{e-cex}\,\text{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}-\frac{2ib\sqrt{cdx+d}\,\sqrt{e-cex}\,\text{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right.}{\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2)/x,x]
```

```
[Out] -2*b^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x] - (2*a*b*c*x*Sqrt[d + c*d*x]*Sqrt[e
 - c*e*x])/Sqrt[1 - c^2*x^2] - (2*b^2*c*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Ar
cSin[c*x])/Sqrt[1 - c^2*x^2] + Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSi
n[c*x])^2 - (2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2*ArcTan
h[E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] + ((2*I)*b*Sqrt[d + c*d*x]*Sqrt[e -
 c*e*x]*(a + b*ArcSin[c*x])*PolyLog[2, -E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^
2] - ((2*I)*b*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])*PolyLog[2
, E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] - (2*b^2*Sqrt[d + c*d*x]*Sqrt[e - c
*e*x]*PolyLog[3, -E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] + (2*b^2*Sqrt[d + c
*d*x]*Sqrt[e - c*e*x]*PolyLog[3, E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2]
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
```

```
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((h_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_))^(p_)*((f_) + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((-((d^2*g)/e))^I
ntPart[q]*(d + e*x)^FracPart[q]*(f + g*x)^FracPart[q])/(1 - c^2*x^2)^FracPa
rt[q], Int[(h*x)^m*(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, h, m, n}, x] && EqQ[e*f + d*g, 0] &&
 EqQ[c^2*d^2 - e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)^2}{x}\,dx = \frac{\left(\sqrt{d+cdx}\,\sqrt{e-cex}\right)\int \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{x}\,dx}{\sqrt{1-c^2x^2}}$$

$$= \sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)^2 + \frac{\left(\sqrt{d+cdx}\,\sqrt{e-cex}\right)\int}{\sqrt{1-c^2x}}$$

$$= -\frac{2abcx\sqrt{d+cdx}\,\sqrt{e-cex}}{\sqrt{1-c^2x^2}} + \sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx\right.$$

$$= -\frac{2abcx\sqrt{d+cdx}\,\sqrt{e-cex}}{\sqrt{1-c^2x^2}} - \frac{2b^2cx\sqrt{d+cdx}\,\sqrt{e-cex}\,\sin^{-1}(cx}{\sqrt{1-c^2x^2}}$$

$$= -2b^2\sqrt{d+cdx}\,\sqrt{e-cex} - \frac{2abcx\sqrt{d+cdx}\,\sqrt{e-cex}}{\sqrt{1-c^2x^2}} - \frac{2b^2cx\sqrt{d}}{}$$

$$= -2b^2\sqrt{d+cdx}\,\sqrt{e-cex} - \frac{2abcx\sqrt{d+cdx}\,\sqrt{e-cex}}{\sqrt{1-c^2x^2}} - \frac{2b^2cx\sqrt{d}}{}$$

$$= -2b^2\sqrt{d+cdx}\,\sqrt{e-cex} - \frac{2abcx\sqrt{d+cdx}\,\sqrt{e-cex}}{\sqrt{1-c^2x^2}} - \frac{2b^2cx\sqrt{d}}{}$$

Mathematica [A] time = 2.31, size = 434, normalized size = 1.00

$$a^2\sqrt{cdx+d}\,\sqrt{e-cex}+a^2\sqrt{d}\,\sqrt{e}\,\log(cx)-a^2\sqrt{d}\,\sqrt{e}\,\log\left(\sqrt{d}\,\sqrt{e}\,\sqrt{cdx+d}\,\sqrt{e-cex}+de\right)-\frac{2ab\sqrt{cdx+d}\,\sqrt{e-ce}}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2)/x,x]
```

```
[Out] a^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x] + a^2*Sqrt[d]*Sqrt[e]*Log[c*x] - a^2*Sq
rt[d]*Sqrt[e]*Log[d*e + Sqrt[d]*Sqrt[e]*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]] -
(2*a*b*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(c*x - Sqrt[1 - c^2*x^2]*ArcSin[c*x]
 - ArcSin[c*x]*Log[1 - E^(I*ArcSin[c*x])] + ArcSin[c*x]*Log[1 + E^(I*ArcSin
[c*x])] - I*PolyLog[2, -E^(I*ArcSin[c*x])] + I*PolyLog[2, E^(I*ArcSin[c*x])
]))/Sqrt[1 - c^2*x^2] - (b^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(2*Sqrt[1 - c^
2*x^2] + 2*c*x*ArcSin[c*x] - Sqrt[1 - c^2*x^2]*ArcSin[c*x]^2 - ArcSin[c*x]^
2*Log[1 - E^(I*ArcSin[c*x])] + ArcSin[c*x]^2*Log[1 + E^(I*ArcSin[c*x])] - (
2*I)*ArcSin[c*x]*PolyLog[2, -E^(I*ArcSin[c*x])] + (2*I)*ArcSin[c*x]*PolyLog
[2, E^(I*ArcSin[c*x])] + 2*PolyLog[3, -E^(I*ArcSin[c*x])] - 2*PolyLog[3, E^
(I*ArcSin[c*x])]))/Sqrt[1 - c^2*x^2]
```

fricas [F] time = 0.47, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2/x,x, algorit
hm="fricas")
```

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(c*d*x + d)*sqrt
(-c*e*x + e)/x, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cdx+d}\,\sqrt{-cex+e}\,(b\arcsin(cx)+a)^2}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2/x,x, algorit
hm="giac")
```

```
[Out] integrate(sqrt(c*d*x + d)*sqrt(-c*e*x + e)*(b*arcsin(c*x) + a)^2/x, x)
```

maple [F] time = 0.44, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cdx+d}\,\sqrt{-cex+e}\,\left(a+b\arcsin(cx)\right)^2}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2/x,x)
```

```
[Out] int((c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2/x,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\left(\frac{de\log\left(\frac{2\,de}{|x|}+\frac{2\sqrt{-c^2dex^2+de}\,\sqrt{de}}{|x|}\right)}{\sqrt{de}}-\sqrt{-c^2dex^2+de}\right)a^2+\sqrt{d}\,\sqrt{e}\int\frac{\left(b^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)^2+2\,ab\,\mathrm{arc}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2/x,x, algorit
hm="maxima")
```

```
[Out] -(d*e*log(2*d*e/abs(x) + 2*sqrt(-c^2*d*e*x^2 + d*e)*sqrt(d*e)/abs(x))/sqrt(
d*e) - sqrt(-c^2*d*e*x^2 + d*e))*a^2 + sqrt(d)*sqrt(e)*integrate((b^2*arcta
n2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a*b*arctan2(c*x, sqrt(c*x + 1)*
sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/x, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,\sqrt{d+c\,d\,x}\,\sqrt{e-c\,e\,x}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d + c*d*x)^(1/2)*(e - c*e*x)^(1/2))/x,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d + c*d*x)^(1/2)*(e - c*e*x)^(1/2))/x, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(1/2)*(-c*e*x+e)**(1/2)*(a+b*asin(c*x))**2/x,x)
```

```
[Out] Timed out
```

3.580 $\int \frac{\sqrt{d+cdx}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^2}{x^2}\,dx$

Optimal. Leaf size=257

$$-\frac{c\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^3}{3b\sqrt{1-c^2x^2}}-\frac{ic\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}+\frac{2bc\sqrt{cdx+d}\sqrt{e-cex}\log}{\sqrt{}}$$

```
[Out] -(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2/x-I*c*(a+b*arcsin(c*x
))^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)-1/3*c*(a+b*arcsin(
c*x))^3*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/b/(-c^2*x^2+1)^(1/2)+2*b*c*(a+b*ar
csin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1
/2)/(-c^2*x^2+1)^(1/2)-I*b^2*c*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(c*d
*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.59, antiderivative size = 257, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.229$, Rules used = {4739, 4693, 4625, 3717, 2190, 2279, 2391, 4641}

$$-\frac{ib^2c\sqrt{cdx+d}\sqrt{e-cex}\,\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)}{\sqrt{1-c^2x^2}}-\frac{c\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^3}{3b\sqrt{1-c^2x^2}}-\frac{ic\sqrt{cdx+d}\sqrt{e-ce}}{\sqrt{1-}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2)/x^2,x]
```

```
[Out] -((Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2)/x) - (I*c*Sqrt[d
+ c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2)/Sqrt[1 - c^2*x^2] - (c*Sqrt
[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^3)/(3*b*Sqrt[1 - c^2*x^2])
+ (2*b*c*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])*Log[1 - E^((2*
I)*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] - (I*b^2*c*Sqrt[d + c*d*x]*Sqrt[e - c*e
*x]*PolyLog[2, E^((2*I)*ArcSin[c*x])])/Sqrt[1 - c^2*x^2]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4693

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(b*c*n*Sqrt[d + e*x^2])/(f*(m + 1)*Sqr
t[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1), x], x] + Di
st[(c^2*Sqrt[d + e*x^2])/(f^2*(m + 1)*Sqrt[1 - c^2*x^2]), Int[((f*x)^(m + 2
)*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x]) /; FreeQ[{a, b, c, d, e
, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && LtQ[m, -1]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((h_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_))^(p_)*((f_) + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((-((d^2*g)/e))^I
ntPart[q]*(d + e*x)^FracPart[q]*(f + g*x)^FracPart[q])/(1 - c^2*x^2)^FracPa
rt[q], Int[(h*x)^m*(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, h, m, n}, x] && EqQ[e*f + d*g, 0] &&
 EqQ[c^2*d^2 - e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rubi steps

$$\int \frac{\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)^2}{x^2}\,dx = \frac{\left(\sqrt{d+cdx}\,\sqrt{e-cex}\right)\int \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{x^2}\,dx}{\sqrt{1-c^2x^2}}$$

$$= -\frac{\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)^2}{x} + \frac{\left(2bc\sqrt{d+cdx}\,\sqrt{e-cex}\right)}{\sqrt{1-c^2x}}$$

$$= -\frac{\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)^2}{x} - \frac{c\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+\right.}{3b\sqrt{1-c^2x}}$$

$$= -\frac{\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)^2}{x} - \frac{ic\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a\right.}{\sqrt{1-c^2x^2}}$$

$$= -\frac{\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)^2}{x} - \frac{ic\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a\right.}{\sqrt{1-c^2x^2}}$$

$$= -\frac{\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)^2}{x} - \frac{ic\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a\right.}{\sqrt{1-c^2x^2}}$$

$$= -\frac{\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)^2}{x} - \frac{ic\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a\right.}{\sqrt{1-c^2x^2}}$$

Mathematica [A] time = 1.25, size = 374, normalized size = 1.46

$$-3a^2\sqrt{1-c^2x^2}\,\sqrt{cdx+d}\,\sqrt{e-cex}+3a^2c\sqrt{d}\,\sqrt{e}\,x\sqrt{1-c^2x^2}\,\tan^{-1}\left(\frac{cx\sqrt{cdx+d}\,\sqrt{e-cex}}{\sqrt{d}\,\sqrt{e}\,(c^2x^2-1)}\right)-3ib\sqrt{cdx+d}\,\sqrt{e-cex}\,\mathrm{s}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2)/x^2,x]
```

```
[Out] (-3*a^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[1 - c^2*x^2] - (3*I)*b*Sqrt[d
 + c*d*x]*Sqrt[e - c*e*x]*((-I)*a*c*x + b*c*x - I*b*Sqrt[1 - c^2*x^2])*ArcSi
n[c*x]^2 - b^2*c*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^3 + 3*a^2*c*
Sqrt[d]*Sqrt[e]*x*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c*
e*x])/(Sqrt[d]*Sqrt[e]*(-1 + c^2*x^2))] + 6*b*Sqrt[d + c*d*x]*Sqrt[e - c*e*
x]*ArcSin[c*x]*(-(a*Sqrt[1 - c^2*x^2]) + b*c*x*Log[1 - E^((2*I)*ArcSin[c*x]
)]) + 6*a*b*c*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Log[c*x] - (3*I)*b^2*c*x*Sq
rt[d + c*d*x]*Sqrt[e - c*e*x]*PolyLog[2, E^((2*I)*ArcSin[c*x])])/(3*x*Sqrt[
1 - c^2*x^2])
```

fricas [F] time = 0.44, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2/x^2,x, algor
ithm="fricas")
```

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(c*d*x + d)*sqrt
(-c*e*x + e)/x^2, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\sqrt{cdx+d}\,\sqrt{-cex+e}\,(b\arcsin(cx)+a)^2}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2/x^2,x, algor
ithm="giac")
```

```
[Out] integrate(sqrt(c*d*x + d)*sqrt(-c*e*x + e)*(b*arcsin(c*x) + a)^2/x^2, x)
```

maple [F] time = 1.00, size = 0, normalized size = 0.00

$$\int\frac{\sqrt{cdx+d}\,\sqrt{-cex+e}\,\left(a+b\arcsin(cx)\right)^2}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2/x^2,x)
```

```
[Out] int((c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2/x^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\left(\frac{cde\arcsin(cx)}{\sqrt{de}}+\frac{\sqrt{-c^2dex^2+de}}{x}\right)a^2+\sqrt{d}\,\sqrt{e}\int\frac{\left(b^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)^2+2\,ab\arctan\left(cx,\sqrt{cx\right.\right.}{x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(a+b*arcsin(c*x))^2/x^2,x, algor
ithm="maxima")
```

```
[Out] -(c*d*e*arcsin(c*x)/sqrt(d*e) + sqrt(-c^2*d*e*x^2 + d*e)/x)*a^2 + sqrt(d)*s
qrt(e)*integrate((b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a*b*
arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/x^
2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b \operatorname{asin}(c x))^2 \sqrt{d + c d x} \sqrt{e - c e x}}{x^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d + c*d*x)^(1/2)*(e - c*e*x)^(1/2))/x^2,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d + c*d*x)^(1/2)*(e - c*e*x)^(1/2))/x^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d (cx + 1)} \sqrt{-e (cx - 1)} (a + b \operatorname{asin}(cx))^2}{x^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(1/2)*(-c*e*x+e)**(1/2)*(a+b*asin(c*x))**2/x**2,x)
```

```
[Out] Integral(sqrt(d*(c*x + 1))*sqrt(-e*(c*x - 1))*(a + b*asin(c*x))**2/x**2, x)
```

3.581 $\int x^2(d+cdx)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=509

$$\frac{bdex^2\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)}{16c\sqrt{1-c^2x^2}}-\frac{7bcdex^4\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)}{48\sqrt{1-c^2x^2}}+\frac{1}{6}dex^3\left(1-c^2x^2\right)\sqrt{c}$$

```
[Out] -7/1152*b^2*d*e*x*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/c^2-43/1728*b^2*d*e*x^3*
(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)+1/108*b^2*c^2*d*e*x^5*(c*d*x+d)^(1/2)*(-c*
e*x+e)^(1/2)-1/16*d*e*x*(a+b*arcsin(c*x))^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2
)/c^2+1/8*d*e*x^3*(a+b*arcsin(c*x))^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)+1/6*
d*e*x^3*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)+7
/1152*b^2*d*e*arcsin(c*x)*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/c^3/(-c^2*x^2+1)
^(1/2)+1/16*b*d*e*x^2*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/c/
(-c^2*x^2+1)^(1/2)-7/48*b*c*d*e*x^4*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*e
*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)+1/18*b*c^3*d*e*x^6*(a+b*arcsin(c*x))*(c*d*x+
d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)+1/48*d*e*(a+b*arcsin(c*x))^3*(
c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/b/c^3/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 1.03, antiderivative size = 509, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 12, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.343, Rules used = {4739, 4699, 4697, 4707, 4641, 4627, 321, 216, 14, 4687, 12, 459}

$$\frac{bc^3dex^6\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)}{18\sqrt{1-c^2x^2}}-\frac{7bcdex^4\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)}{48\sqrt{1-c^2x^2}}+\frac{1}{6}dex^3\left(1-c^2x^2\right)$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (-7*b^2*d*e*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(1152*c^2) - (43*b^2*d*e*x^3
*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/1728 + (b^2*c^2*d*e*x^5*Sqrt[d + c*d*x]*S
qrt[e - c*e*x])/108 + (7*b^2*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x
])/(1152*c^3*Sqrt[1 - c^2*x^2]) + (b*d*e*x^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x
]*(a + b*ArcSin[c*x]))/(16*c*Sqrt[1 - c^2*x^2]) - (7*b*c*d*e*x^4*Sqrt[d + c
*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x]))/(48*Sqrt[1 - c^2*x^2]) + (b*c^3*
d*e*x^6*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x]))/(18*Sqrt[1 - c
^2*x^2]) - (d*e*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2)/(1
6*c^2) + (d*e*x^3*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2)/8
+ (d*e*x^3*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(1 - c^2*x^2)*(a + b*ArcSin[c*x]
)^2)/6 + (d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^3)/(48*b*
c^3*Sqrt[1 - c^2*x^2])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 459

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_)), x_Symbol] :> Simp[(d*(e*x)^(m + 1)*(a + b*x^n)^(p + 1))/(b*e*(m + n*(p
 + 1) + 1)), x] - Dist[(a*d*(m + 1) - b*c*(m + n*(p + 1) + 1))/(b*(m + n*(p
 + 1) + 1)), Int[(e*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, d, e, m,
n, p}, x] && NeQ[b*c - a*d, 0] && NeQ[m + n*(p + 1) + 1, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4687

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_)*((d_) + (e_.)*(x_)
^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist[
a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x
^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] &&
 IGtQ[p, 0]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((h_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_))^(p_)*((f_) + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((-((d^2*g)/e))^I
ntPart[q]*(d + e*x)^FracPart[q]*(f + g*x)^FracPart[q])/(1 - c^2*x^2)^FracPa
rt[q], Int[(h*x)^m*(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, h, m, n}, x] && EqQ[e*f + d*g, 0] &&
 EqQ[c^2*d^2 - e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rubi steps

$$\int x^2(d+cdx)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx = \frac{\left(de\sqrt{d+cdx}\,\sqrt{e-cex}\right)\int x^2\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right.}{\sqrt{1-c^2x^2}}$$

$$= \frac{1}{6}dex^3\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2+$$

$$= -\frac{bcdex^4\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)}{12\sqrt{1-c^2x^2}}+\frac{bc^3dex^6\sqrt{}}{}$$

$$= -\frac{7bcdex^4\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)}{48\sqrt{1-c^2x^2}}+\frac{bc^3dex^6}{}$$

$$= -\frac{1}{64}b^2dex^3\sqrt{d+cdx}\,\sqrt{e-cex}+\frac{1}{108}b^2c^2dex^5\sqrt{d+cdx}\,\sqrt{}$$

$$= \frac{b^2dex\sqrt{d+cdx}\,\sqrt{e-cex}}{128c^2}-\frac{43b^2dex^3\sqrt{d+cdx}\,\sqrt{e-cex}}{1728}-$$

$$= -\frac{7b^2dex\sqrt{d+cdx}\,\sqrt{e-cex}}{1152c^2}-\frac{43b^2dex^3\sqrt{d+cdx}\,\sqrt{e-ce}}{1728}$$

$$= -\frac{7b^2dex\sqrt{d+cdx}\,\sqrt{e-cex}}{1152c^2}-\frac{43b^2dex^3\sqrt{d+cdx}\,\sqrt{e-ce}}{1728}$$

Mathematica [A] time = 2.18, size = 452, normalized size = 0.89

$$de\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(-864a^2cx\sqrt{1-c^2x^2}-2304a^2c^5x^5\sqrt{1-c^2x^2}+4032a^2c^3x^3\sqrt{1-c^2x^2}+216ab\cos\left(2\sin\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (288*b^2*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^3 - 864*a^2*d^(3/2
)*e^(3/2)*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(S
```

```
qrt[d]*Sqrt[e]*(-1 + c^2*x^2))] - 12*b*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*
ArcSin[c*x]*(-18*b*Cos[2*ArcSin[c*x]] + 9*b*Cos[4*ArcSin[c*x]] + 2*b*Cos[6*
ArcSin[c*x]] - 36*a*Sin[2*ArcSin[c*x]] + 36*a*Sin[4*ArcSin[c*x]] + 12*a*Sin
[6*ArcSin[c*x]]) - 72*b*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^2*(
-12*a - 3*b*Sin[2*ArcSin[c*x]] + 3*b*Sin[4*ArcSin[c*x]] + b*Sin[6*ArcSin[c*
x]]) + d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(-864*a^2*c*x*Sqrt[1 - c^2*x^2]
+ 4032*a^2*c^3*x^3*Sqrt[1 - c^2*x^2] - 2304*a^2*c^5*x^5*Sqrt[1 - c^2*x^2] +
 216*a*b*Cos[2*ArcSin[c*x]] - 108*a*b*Cos[4*ArcSin[c*x]] - 24*a*b*Cos[6*Arc
Sin[c*x]] - 108*b^2*Sin[2*ArcSin[c*x]] + 27*b^2*Sin[4*ArcSin[c*x]] + 4*b^2*
Sin[6*ArcSin[c*x]]))/(13824*c^3*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(a^2c^2dex^4 - a^2dex^2 + \left(b^2c^2dex^4 - b^2dex^2\right)\arcsin(cx)^2 + 2\left(abc^2dex^4 - abdex^2\right)\arcsin(cx)\right)\sqrt{cdx+d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x, algor
ithm="fricas")
```

```
[Out] integral(-(a^2*c^2*d*e*x^4 - a^2*d*e*x^2 + (b^2*c^2*d*e*x^4 - b^2*d*e*x^2)*
arcsin(c*x)^2 + 2*(a*b*c^2*d*e*x^4 - a*b*d*e*x^2)*arcsin(c*x))*sqrt(c*d*x +
 d)*sqrt(-c*e*x + e), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x, algor
ithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(t_nostep)]Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Simplification assuming t_nostep near 0Simplification assuming t_nostep nea
r 0Simplification assuming t_nostep near 0Simplification assuming t_nostep
near 0Warning, integration of abs or sign assumes constant sign by interval
s (correct if the argument is real):Check [abs(t_nostep)]Warning, integrati
on of abs or sign assumes constant sign by intervals (correct if the argume
nt is real):Check [abs(t_nostep)]sym2poly/r2sym(const gen & e,const index_m
 & i,const vecteur & l) Error: Bad Argument Value
```

maple [F] time = 1.05, size = 0, normalized size = 0.00

$$\int x^2 (cdx+d)^{\frac{3}{2}} (-cex+e)^{\frac{3}{2}} (a+b\arcsin(cx))^2\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] int(x^2*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{48}\left(\frac{3\sqrt{-c^2dex^2+de}\,dex}{c^2} + \frac{3\,d^2e^2\arcsin(cx)}{\sqrt{de}\,c^3} + \frac{2\left(-c^2dex^2+de\right)^{\frac{3}{2}}x}{c^2} - \frac{8\left(-c^2dex^2+de\right)^{\frac{5}{2}}x}{c^2de}\right)a^2 + \sqrt{d}\sqrt{e}\int -\left(\left(b^2c\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x, algor
ithm="maxima")
```

```
[Out] 1/48*(3*sqrt(-c^2*d*e*x^2 + d*e)*d*e*x/c^2 + 3*d^2*e^2*arcsin(c*x)/(sqrt(d*
e)*c^3) + 2*(-c^2*d*e*x^2 + d*e)^(3/2)*x/c^2 - 8*(-c^2*d*e*x^2 + d*e)^(5/2)
*x/(c^2*d*e))*a^2 + sqrt(d)*sqrt(e)*integrate(-((b^2*c^2*d*e*x^4 - b^2*d*e*
x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c^2*d*e*x^4 - a*
b*d*e*x^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-
c*x + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,(a+b\,\mathrm{asin}\left(c\,x\right))^2\,(d+c\,d\,x)^{3/2}\,(e-c\,e\,x)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c*x))^2*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2),x)
```

```
[Out] int(x^2*(a + b*asin(c*x))^2*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(c*d*x+d)**(3/2)*(-c*e*x+e)**(3/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Timed out
```

3.582 $\int x(d+cdx)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=338

$$\frac{2bdex\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)}{5c\sqrt{1-c^2x^2}}-\frac{de\left(1-c^2x^2\right)^2\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)^2}{5c^2}-\frac{4bcdex^3\sqrt{cdx+}}{}$$

```
[Out] 16/75*b^2*d*e*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/c^2+8/225*b^2*d*e*(-c^2*x^2+
1)*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/c^2+2/125*b^2*d*e*(-c^2*x^2+1)^2*(c*d*x
+d)^(1/2)*(-c*e*x+e)^(1/2)/c^2-1/5*d*e*(-c^2*x^2+1)^2*(a+b*arcsin(c*x))^2*(
c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/c^2+2/5*b*d*e*x*(a+b*arcsin(c*x))*(c*d*x+d)
^(1/2)*(-c*e*x+e)^(1/2)/c/(-c^2*x^2+1)^(1/2)-4/15*b*c*d*e*x^3*(a+b*arcsin(c
*x))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)+2/25*b*c^3*d*e*x^5
*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.51, antiderivative size = 338, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.212$, Rules used = {4739, 4677, 194, 4645, 12, 1247, 698}

$$\frac{2bc^3dex^5\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)}{25\sqrt{1-c^2x^2}}-\frac{4bcdex^3\sqrt{cdx+d}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)}{15\sqrt{1-c^2x^2}}+\frac{2bdex\sqrt{cdx+d}\sqrt{e}}{5c\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[x*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (16*b^2*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(75*c^2) + (8*b^2*d*e*Sqrt[d +
 c*d*x]*Sqrt[e - c*e*x]*(1 - c^2*x^2))/(225*c^2) + (2*b^2*d*e*Sqrt[d + c*d*
x]*Sqrt[e - c*e*x]*(1 - c^2*x^2)^2)/(125*c^2) + (2*b*d*e*x*Sqrt[d + c*d*x]*
Sqrt[e - c*e*x]*(a + b*ArcSin[c*x]))/(5*c*Sqrt[1 - c^2*x^2]) - (4*b*c*d*e*x
^3*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x]))/(15*Sqrt[1 - c^2*x^
2]) + (2*b*c^3*d*e*x^5*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x]))
/(25*Sqrt[1 - c^2*x^2]) - (d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(1 - c^2*x^2
)^2*(a + b*ArcSin[c*x])^2)/(5*c^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 698

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 1247

```
Int[(x_)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(
p_.), x_Symbol] :> Dist[1/2, Subst[Int[(d + e*x)^q*(a + b*x + c*x^2)^p, x],
 x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x]
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((h_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_))^(p_)*((f_) + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((-((d^2*g)/e))^I
ntPart[q]*(d + e*x)^FracPart[q]*(f + g*x)^FracPart[q])/(1 - c^2*x^2)^FracPa
rt[q], Int[(h*x)^m*(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, h, m, n}, x] && EqQ[e*f + d*g, 0] &&
 EqQ[c^2*d^2 - e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rubi steps

$$\int x(d+cdx)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx = \frac{\left(de\sqrt{d+cdx}\,\sqrt{e-cex}\right)\int x\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}$$

$$= -\frac{de\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(1-c^2x^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}{5c^2} + \frac{(2b}{}$$

$$= \frac{2bdex\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)}{5c\sqrt{1-c^2x^2}} - \frac{4bcdex^3\sqrt{d+}}{}$$

$$= \frac{2bdex\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)}{5c\sqrt{1-c^2x^2}} - \frac{4bcdex^3\sqrt{d+}}{}$$

$$= \frac{2bdex\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)}{5c\sqrt{1-c^2x^2}} - \frac{4bcdex^3\sqrt{d+}}{}$$

$$= \frac{2bdex\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)}{5c\sqrt{1-c^2x^2}} - \frac{4bcdex^3\sqrt{d+}}{}$$

$$= \frac{16b^2de\sqrt{d+cdx}\,\sqrt{e-cex}}{75c^2} + \frac{8b^2de\sqrt{d+cdx}\,\sqrt{e-cex}\,(1-}{225c^2}$$

Mathematica [A] time = 0.81, size = 207, normalized size = 0.61

$$-\frac{de\sqrt{cdx+d}\,\sqrt{e-cex}\left(225a^2\left(c^2x^2-1\right)^3+30abcx\sqrt{1-c^2x^2}\left(3c^4x^4-10c^2x^2+15\right)+30b\sin^{-1}(cx)\left(15a\left(c^2x\right.\right.\right.}{11}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -1/1125*(d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(225*a^2*(-1 + c^2*x^2)^3 + 30
*a*b*c*x*Sqrt[1 - c^2*x^2]*(15 - 10*c^2*x^2 + 3*c^4*x^4) + 2*b^2*(149 - 187
*c^2*x^2 + 47*c^4*x^4 - 9*c^6*x^6) + 30*b*(15*a*(-1 + c^2*x^2)^3 + b*c*x*Sq
rt[1 - c^2*x^2]*(15 - 10*c^2*x^2 + 3*c^4*x^4))*ArcSin[c*x] + 225*b^2*(-1 +
c^2*x^2)^3*ArcSin[c*x]^2))/(c^2*(-1 + c^2*x^2))
```

fricas [A] time = 0.73, size = 302, normalized size = 0.89

$$-\frac{\left(9\left(25\,a^2-2\,b^2\right)c^6dex^6-\left(675\,a^2-94\,b^2\right)c^4dex^4+\left(675\,a^2-374\,b^2\right)c^2dex^2-\left(225\,a^2-298\,b^2\right)de+225\left(b^2c^6de\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x, algorit
hm="fricas")
```

```
[Out] -1/1125*(9*(25*a^2 - 2*b^2)*c^6*d*e*x^6 - (675*a^2 - 94*b^2)*c^4*d*e*x^4 +
(675*a^2 - 374*b^2)*c^2*d*e*x^2 - (225*a^2 - 298*b^2)*d*e + 225*(b^2*c^6*d*
e*x^6 - 3*b^2*c^4*d*e*x^4 + 3*b^2*c^2*d*e*x^2 - b^2*d*e)*arcsin(c*x)^2 + 45
0*(a*b*c^6*d*e*x^6 - 3*a*b*c^4*d*e*x^4 + 3*a*b*c^2*d*e*x^2 - a*b*d*e)*arcsi
n(c*x) + 30*(3*a*b*c^5*d*e*x^5 - 10*a*b*c^3*d*e*x^3 + 15*a*b*c*d*e*x + (3*b
^2*c^5*d*e*x^5 - 10*b^2*c^3*d*e*x^3 + 15*b^2*c*d*e*x)*arcsin(c*x))*sqrt(-c^
2*x^2 + 1))*sqrt(c*d*x + d)*sqrt(-c*e*x + e)/(c^4*x^2 - c^2)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x, algorit
hm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(t_nostep)]Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Simplification assuming t_nostep near 0Simplification assuming t_nostep nea
r 0Simplification assuming t_nostep near 0Simplification assuming t_nostep
near 0Warning, integration of abs or sign assumes constant sign by interval
s (correct if the argument is real):Check [abs(t_nostep)]Simplification ass
uming t_nostep near 0Simplification assuming t_nostep near 0Simplification
assuming t_nostep near 0Simplification assuming t_nostep near 0Simplificati
on assuming t_nostep near 0Simplification assuming t_nostep near 0Simplific
ation assuming t_nostep near 0Simplification assuming t_nostep near 0Warnin
g, integration of abs or sign assumes constant sign by intervals (correct i
f the argument is real):Check [abs(t_nostep)]Simplification assuming t_nost
ep near 0Simplification assuming t_nostep near 0Simplification assuming t_n
ostep near 0Simplification assuming t_nostep near 0Simplification assuming
t_nostep near 0Simplification assuming t_nostep near 0Simplification assumi
ng t_nostep near 0Simplification assuming t_nostep near 0Warning, integrati
on of abs or sign assumes constant sign by intervals (correct if the argume
nt is real):Check [abs(t_nostep)]Warning, integration of abs or sign assume
s constant sign by intervals (correct if the argument is real):Check [abs(t
_nostep)]sym2poly/r2sym(const gen & e,const index_m & i,const vecteur & l)
Error: Bad Argument Value
```

maple [F] time = 0.57, size = 0, normalized size = 0.00

$$\int x\left(cdx+d\right)^{\frac{3}{2}}\left(-cex+e\right)^{\frac{3}{2}}\left(a+b\arcsin\left(cx\right)\right)^{2}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] int(x*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 1.54, size = 290, normalized size = 0.86

$$\frac{2}{1125}b^{2}\left(\frac{9\sqrt{-c^{2}x^{2}+1}\,c^{2}d^{\frac{5}{2}}e^{\frac{5}{2}}x^{4}-38\sqrt{-c^{2}x^{2}+1}\,d^{\frac{5}{2}}e^{\frac{5}{2}}x^{2}+\frac{149\sqrt{-c^{2}x^{2}+1}\,d^{\frac{5}{2}}e^{\frac{5}{2}}}{c^{2}}}{de}+\frac{15\left(3\,c^{4}d^{\frac{5}{2}}e^{\frac{5}{2}}x^{5}-10\,c^{2}d^{\frac{5}{2}}e^{\frac{5}{2}}x^{3}+\right.}{cde}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x, algorit
hm="maxima")
```

```
[Out] 2/1125*b^2*((9*sqrt(-c^2*x^2 + 1)*c^2*d^(5/2)*e^(5/2)*x^4 - 38*sqrt(-c^2*x^
2 + 1)*d^(5/2)*e^(5/2)*x^2 + 149*sqrt(-c^2*x^2 + 1)*d^(5/2)*e^(5/2)/c^2)/(d
*e) + 15*(3*c^4*d^(5/2)*e^(5/2)*x^5 - 10*c^2*d^(5/2)*e^(5/2)*x^3 + 15*d^(5/
2)*e^(5/2)*x)*arcsin(c*x)/(c*d*e)) - 1/5*(-c^2*d*e*x^2 + d*e)^(5/2)*b^2*arc
sin(c*x)^2/(c^2*d*e) - 2/5*(-c^2*d*e*x^2 + d*e)^(5/2)*a*b*arcsin(c*x)/(c^2*
d*e) - 1/5*(-c^2*d*e*x^2 + d*e)^(5/2)*a^2/(c^2*d*e) + 2/75*(3*c^4*d^(5/2)*e
^(5/2)*x^5 - 10*c^2*d^(5/2)*e^(5/2)*x^3 + 15*d^(5/2)*e^(5/2)*x)*a*b/(c*d*e)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(d+c\,d\,x\right)}^{3/2}\,{\left(e-c\,e\,x\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c*x))^2*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2),x)
```

```
[Out] int(x*(a + b*asin(c*x))^2*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*d*x+d)**(3/2)*(-c*e*x+e)**(3/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Timed out
```

3.583 $\int (d+cdx)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=362

$$\frac{(cdx+d)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^3}{8bc\left(1-c^2x^2\right)^{3/2}}+\frac{3x(cdx+d)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{8\left(1-c^2x^2\right)}+\frac{b\sqrt{1-c^2x^2}\,(cdx+d)^{3/2}(\ldots}{\ldots}$$

```
[Out] -1/32*b^2*x*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)-15/64*b^2*x*(c*d*x+d)^(3/2)*(-
c*e*x+e)^(3/2)/(-c^2*x^2+1)+9/64*b^2*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*arcsi
n(c*x)/c/(-c^2*x^2+1)^(3/2)-3/8*b*c*x^2*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a
+b*arcsin(c*x))/(-c^2*x^2+1)^(3/2)+1/4*x*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(
a+b*arcsin(c*x))^2+3/8*x*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))
^2/(-c^2*x^2+1)+1/8*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^3/b/
c/(-c^2*x^2+1)^(3/2)+1/8*b*(c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x
))*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.42, antiderivative size = 362, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 9, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.281, Rules used = {4673, 4649, 4647, 4641, 4627, 321, 216, 4677, 195}

$$\frac{(cdx+d)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^3}{8bc\left(1-c^2x^2\right)^{3/2}}+\frac{3x(cdx+d)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{8\left(1-c^2x^2\right)}+\frac{b\sqrt{1-c^2x^2}\,(cdx+d)^{3/2}(\ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -(b^2*x*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2))/32 - (15*b^2*x*(d + c*d*x)^(3/
2)*(e - c*e*x)^(3/2))/(64*(1 - c^2*x^2)) + (9*b^2*(d + c*d*x)^(3/2)*(e - c*
e*x)^(3/2)*ArcSin[c*x])/(64*c*(1 - c^2*x^2)^(3/2)) - (3*b*c*x^2*(d + c*d*x)
^(3/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x]))/(8*(1 - c^2*x^2)^(3/2)) + (b*
(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/
(8*c) + (x*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2)/4 + (
3*x*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2)/(8*(1 - c^2*
x^2)) + ((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^3)/(8*b*c*
(1 - c^2*x^2)^(3/2))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4649

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Simp[(x*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n)/(2*p + 1), x] + (D
ist[(2*d*p)/(2*p + 1), Int[(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x
] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/((2*p + 1)*(1 - c^2*x
^2)^FracPart[p]), Int[x*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
 GtQ[p, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (d+cdx)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx = \frac{\left((d+cdx)^{3/2}(e-cex)^{3/2}\right)\int \left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2\,dx}{\left(1-c^2x^2\right)^{3/2}}$$

$$= \frac{1}{4}x(d+cdx)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2 + \frac{\left(3(d+cdx)^{3/2}(e\right.}{}$$

$$= \frac{b(d+cdx)^{3/2}(e-cex)^{3/2}\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{8c} + \frac{1}{4}x(d+c$$

$$= -\frac{1}{32}b^2x(d+cdx)^{3/2}(e-cex)^{3/2} - \frac{3bcx^2(d+cdx)^{3/2}(e-cex)^{3/2}\left(\right.}{8\left(1-c^2x^2\right)^{3/2}}$$

$$= -\frac{1}{32}b^2x(d+cdx)^{3/2}(e-cex)^{3/2} - \frac{15b^2x(d+cdx)^{3/2}(e-cex)^{3/2}}{64\left(1-c^2x^2\right)} -$$

$$= -\frac{1}{32}b^2x(d+cdx)^{3/2}(e-cex)^{3/2} - \frac{15b^2x(d+cdx)^{3/2}(e-cex)^{3/2}}{64\left(1-c^2x^2\right)} -$$

Mathematica [A] time = 1.28, size = 373, normalized size = 1.03

$$de\sqrt{cdx+d}\sqrt{e-cex}\left(160a^2cx\sqrt{1-c^2x^2} - 64a^2c^3x^3\sqrt{1-c^2x^2} + 64ab\cos\left(2\sin^{-1}(cx)\right) + 4ab\cos\left(4\sin^{-1}(cx)\right) -\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (32*b^2*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^3 - 96*a^2*d^(3/2)*
e^(3/2)*Sqrt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(Sqr
t[d]*Sqrt[e]*(-1 + c^2*x^2))] + 8*b*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Arc
Sin[c*x]^2*(12*a + 8*b*Sin[2*ArcSin[c*x]] + b*Sin[4*ArcSin[c*x]]) + d*e*Sqr
t[d + c*d*x]*Sqrt[e - c*e*x]*(160*a^2*c*x*Sqrt[1 - c^2*x^2] - 64*a^2*c^3*x^
3*Sqrt[1 - c^2*x^2] + 64*a*b*Cos[2*ArcSin[c*x]] + 4*a*b*Cos[4*ArcSin[c*x]]
- 32*b^2*Sin[2*ArcSin[c*x]] - b^2*Sin[4*ArcSin[c*x]]) + 4*b*d*e*Sqrt[d + c*
d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]*(16*b*Cos[2*ArcSin[c*x]] + b*Cos[4*ArcSin[
c*x]] + 4*a*(8*Sin[2*ArcSin[c*x]] + Sin[4*ArcSin[c*x]])))/(256*c*Sqrt[1 - c
^2*x^2])
```

fricas [F] time = 0.63, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(a^2c^2dex^2 - a^2de + \left(b^2c^2dex^2 - b^2de\right)\arcsin(cx)^2 + 2\left(abc^2dex^2 - abde\right)\arcsin(cx)\right)\sqrt{cdx+d}\sqrt{-cex\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm
="fricas")
```

```
[Out] integral(-(a^2*c^2*d*e*x^2 - a^2*d*e + (b^2*c^2*d*e*x^2 - b^2*d*e)*arcsin(c
*x)^2 + 2*(a*b*c^2*d*e*x^2 - a*b*d*e)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*
e*x + e), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm
="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(t_nostep)]Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Warning, integration of abs or sign assumes constant sign by intervals (cor
rect if the argument is real):Check [abs(t_nostep)]Warning, integration of
abs or sign assumes constant sign by intervals (correct if the argument is
real):Check [abs(t_nostep)]Simplification assuming t_nostep near 0Simplific
ation assuming t_nostep near 0Simplification assuming t_nostep near 0Simpli
fication assuming t_nostep near 0Simplification assuming t_nostep near 0Sim
plification assuming t_nostep near 0Simplification assuming t_nostep near 0
Simplification assuming t_nostep near 0Warning, integration of abs or sign
assumes constant sign by intervals (correct if the argument is real):Check
[abs(t_nostep)]Simplification assuming t_nostep near 0Simplification assumi
ng t_nostep near 0Simplification assuming t_nostep near 0Simplification ass
uming t_nostep near 0Simplification assuming t_nostep near 0Simplification
assuming t_nostep near 0Simplification assuming t_nostep near 0Simplificati
on assuming t_nostep near 0Warning, integration of abs or sign assumes cons
tant sign by intervals (correct if the argument is real):Check [abs(t_noste
p)]Warning, integration of abs or sign assumes constant sign by intervals (
correct if the argument is real):Check [abs(t_nostep)]sym2poly/r2sym(const
gen & e,const index_m & i,const vecteur & l) Error: Bad Argument Value
```

maple [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (cdx+d)^{\frac{3}{2}} (-cex+e)^{\frac{3}{2}} (a+b\arcsin(cx))^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] int((c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{8}\left(3\sqrt{-c^2dex^2+de}\,dex+\frac{3\,d^2e^2\arcsin(cx)}{\sqrt{de}\,c}+2\left(-c^2dex^2+de\right)^{\frac{3}{2}}x\right)a^2+\sqrt{d}\,\sqrt{e}\int -\left(\left(b^2c^2dex^2-b^2de\right)\arctan\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2,x, algorithm
="maxima")
```

```
[Out] 1/8*(3*sqrt(-c^2*d*e*x^2 + d*e)*d*e*x + 3*d^2*e^2*arcsin(c*x)/(sqrt(d*e)*c)
 + 2*(-c^2*d*e*x^2 + d*e)^(3/2)*x)*a^2 + sqrt(d)*sqrt(e)*integrate(-((b^2*c
^2*d*e*x^2 - b^2*d*e)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b
*c^2*d*e*x^2 - a*b*d*e)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*
x + 1)*sqrt(-c*x + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,\mathrm{asin}(c\,x))^2\,(d+c\,d\,x)^{3/2}\,(e-c\,e\,x)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2),x)
```

```
[Out] int((a + b*asin(c*x))^2*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(3/2)*(-c*e*x+e)**(3/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Timed out
```

3.584 $\int \frac{(d+cdx)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{x}\,dx$

Optimal. Leaf size=647

$$\frac{2ibde\sqrt{cdx+d}\,\sqrt{e-cex}\,\mathrm{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}-\frac{2ibde\sqrt{cdx+d}\,\sqrt{e-cex}\,\mathrm{Li}_2\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-}\right.}{\sqrt{1-c^2x^2}}$$

```
[Out] -22/9*b^2*d*e*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)-2/27*b^2*d*e*(-c^2*x^2+1)*(c
*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)+d*e*(a+b*arcsin(c*x))^2*(c*d*x+d)^(1/2)*(-c*
e*x+e)^(1/2)+1/3*d*e*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2*(c*d*x+d)^(1/2)*(-c*e
*x+e)^(1/2)-2*a*b*c*d*e*x*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/
2)-2*b^2*c*d*e*x*arcsin(c*x)*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^
(1/2)-2/3*b*c*d*e*x*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^
2*x^2+1)^(1/2)+2/9*b*c^3*d*e*x^3*(a+b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*e*x+
e)^(1/2)/(-c^2*x^2+1)^(1/2)-2*d*e*(a+b*arcsin(c*x))^2*arctanh(I*c*x+(-c^2*x
^2+1)^(1/2))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)+2*I*b*d*e*
(a+b*arcsin(c*x))*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))*(c*d*x+d)^(1/2)*(-c*
e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)-2*I*b*d*e*(a+b*arcsin(c*x))*polylog(2,I*c*x
+(-c^2*x^2+1)^(1/2))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)-2*
b^2*d*e*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/
2)/(-c^2*x^2+1)^(1/2)+2*b^2*d*e*polylog(3,I*c*x+(-c^2*x^2+1)^(1/2))*(c*d*x+
d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.94, antiderivative size = 647, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 13, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.371$, Rules used = {4739, 4699, 4697, 4709, 4183, 2531, 2282, 6589, 4619, 261, 4645, 444, 43}

$$\frac{2ibde\sqrt{cdx+d}\,\sqrt{e-cex}\,\mathrm{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}-\frac{2ibde\sqrt{cdx+d}\,\sqrt{e-cex}\,\mathrm{PolyLog}\left(2,e^{i\sin^{-}}\right.}{\sqrt{1-c^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2)/x,x]
```

```
[Out] (-22*b^2*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/9 - (2*a*b*c*d*e*x*Sqrt[d + c
*d*x]*Sqrt[e - c*e*x])/Sqrt[1 - c^2*x^2] - (2*b^2*d*e*Sqrt[d + c*d*x]*Sqrt[
e - c*e*x]*(1 - c^2*x^2))/27 - (2*b^2*c*d*e*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*
x]*ArcSin[c*x])/Sqrt[1 - c^2*x^2] - (2*b*c*d*e*x*Sqrt[d + c*d*x]*Sqrt[e - c
*e*x]*(a + b*ArcSin[c*x]))/(3*Sqrt[1 - c^2*x^2]) + (2*b*c^3*d*e*x^3*Sqrt[d
+ c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x]))/(9*Sqrt[1 - c^2*x^2]) + d*e*S
qrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2 + (d*e*Sqrt[d + c*d*x]
*Sqrt[e - c*e*x]*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/3 - (2*d*e*Sqrt[d + c
*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2*ArcTanh[E^(I*ArcSin[c*x])])/Sqr
t[1 - c^2*x^2] + ((2*I)*b*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin
[c*x])*PolyLog[2, -E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] - ((2*I)*b*d*e*Sqr
t[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])*PolyLog[2, E^(I*ArcSin[c*x
])])/Sqrt[1 - c^2*x^2] - (2*b^2*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*PolyLog
[3, -E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] + (2*b^2*d*e*Sqrt[d + c*d*x]*Sqr
t[e - c*e*x]*PolyLog[3, E^(I*ArcSin[c*x])])/Sqrt[1 - c^2*x^2]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 444

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4645

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4697

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*Sqrt[(d_) +
(e_.)*(x_)^2], x_Symbol] :> Simp[((f*x)^(m + 1)*Sqrt[d + e*x^2]*(a + b*ArcS
in[c*x])^n)/(f*(m + 2)), x] + (Dist[Sqrt[d + e*x^2]/((m + 2)*Sqrt[1 - c^2*x
^2]), Int[((f*x)^m*(a + b*ArcSin[c*x])^n)/Sqrt[1 - c^2*x^2], x], x] - Dist[
(b*c*n*Sqrt[d + e*x^2])/(f*(m + 2)*Sqrt[1 - c^2*x^2]), Int[(f*x)^(m + 1)*(a
 + b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && Eq
Q[c^2*d + e, 0] && GtQ[n, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4699

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 2*p + 1)), x] + (Dist[(2*d*p)/(m + 2*p + 1), Int[(f*x)^
m*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPart
[p]*(d + e*x^2)^FracPart[p])/(f*(m + 2*p + 1)*(1 - c^2*x^2)^FracPart[p]), I
nt[(f*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x
]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] &&
GtQ[p, 0] &&  !LtQ[m, -1] && (RationalQ[m] || EqQ[n, 1])
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((h_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_))^(p_)*((f_) + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((-((d^2*g)/e))^I
ntPart[q]*(d + e*x)^FracPart[q]*(f + g*x)^FracPart[q])/(1 - c^2*x^2)^FracPa
rt[q], Int[(h*x)^m*(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, h, m, n}, x] && EqQ[e*f + d*g, 0] &&
 EqQ[c^2*d^2 - e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(d+cdx)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{x}dx = \frac{\left(de\sqrt{d+cdx}\sqrt{e-cex}\right)\int \frac{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{x}dx}{\sqrt{1-c^2x^2}}$$

$$= \frac{1}{3}de\sqrt{d+cdx}\sqrt{e-cex}\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2 + \frac{\left(de\sqrt{d+\right.}{}$$

$$= -\frac{2bcdex\sqrt{d+cdx}\sqrt{e-cex}\left(a+b\sin^{-1}(cx)\right)}{3\sqrt{1-c^2x^2}} + \frac{2bc^3dex^3\sqrt{d+}{}$$

$$= -\frac{2abcdex\sqrt{d+cdx}\sqrt{e-cex}}{\sqrt{1-c^2x^2}} - \frac{2bcdex\sqrt{d+cdx}\sqrt{e-cex}\left(a+\right.}{3\sqrt{1-c^2x^2}}$$

$$= -\frac{2abcdex\sqrt{d+cdx}\sqrt{e-cex}}{\sqrt{1-c^2x^2}} - \frac{2b^2cdex\sqrt{d+cdx}\sqrt{e-cex}\sin}{\sqrt{1-c^2x^2}}$$

$$= -\frac{22}{9}b^2de\sqrt{d+cdx}\sqrt{e-cex} - \frac{2abcdex\sqrt{d+cdx}\sqrt{e-cex}}{\sqrt{1-c^2x^2}} - \frac{2}{27}$$

$$= -\frac{22}{9}b^2de\sqrt{d+cdx}\sqrt{e-cex} - \frac{2abcdex\sqrt{d+cdx}\sqrt{e-cex}}{\sqrt{1-c^2x^2}} - \frac{2}{27}$$

$$= -\frac{22}{9}b^2de\sqrt{d+cdx}\sqrt{e-cex} - \frac{2abcdex\sqrt{d+cdx}\sqrt{e-cex}}{\sqrt{1-c^2x^2}} - \frac{2}{27}$$

Mathematica [A] time = 4.12, size = 632, normalized size = 0.98

$$-\frac{1}{3}a^2de\left(c^2x^2-4\right)\sqrt{cdx+d}\sqrt{e-cex}+a^2d^{3/2}e^{3/2}\log(cx)-a^2d^{3/2}e^{3/2}\log\left(\sqrt{d}\sqrt{e}\sqrt{cdx+d}\sqrt{e-cex}+de\right)-\frac{2abde}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2)/x,x]
```

```
[Out] -1/3*(a^2*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(-4 + c^2*x^2)) + (2*a*b*d*e*
Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(-3*c*x + c^3*x^3 + 3*(1 - c^2*x^2)^(3/2)*A
rcSin[c*x]))/(9*Sqrt[1 - c^2*x^2]) + a^2*d^(3/2)*e^(3/2)*Log[c*x] - a^2*d^(
3/2)*e^(3/2)*Log[d*e + Sqrt[d]*Sqrt[e]*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]] - (
2*a*b*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(c*x - Sqrt[1 - c^2*x^2]*ArcSin[c
*x] - ArcSin[c*x]*Log[1 - E^(I*ArcSin[c*x])] + ArcSin[c*x]*Log[1 + E^(I*Arc
Sin[c*x])] - I*PolyLog[2, -E^(I*ArcSin[c*x])] + I*PolyLog[2, E^(I*ArcSin[c*
x])]))/Sqrt[1 - c^2*x^2] - (b^2*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(2*Sqrt
[1 - c^2*x^2] + 2*c*x*ArcSin[c*x] - Sqrt[1 - c^2*x^2]*ArcSin[c*x]^2 - ArcSi
n[c*x]^2*Log[1 - E^(I*ArcSin[c*x])] + ArcSin[c*x]^2*Log[1 + E^(I*ArcSin[c*x
])] - (2*I)*ArcSin[c*x]*PolyLog[2, -E^(I*ArcSin[c*x])] + (2*I)*ArcSin[c*x]*
PolyLog[2, E^(I*ArcSin[c*x])] + 2*PolyLog[3, -E^(I*ArcSin[c*x])] - 2*PolyLo
g[3, E^(I*ArcSin[c*x])]))/Sqrt[1 - c^2*x^2] + (b^2*d*e*Sqrt[d + c*d*x]*Sqrt
[e - c*e*x]*(27*Sqrt[1 - c^2*x^2]*(-2 + ArcSin[c*x]^2) + (-2 + 9*ArcSin[c*x
]^2)*Cos[3*ArcSin[c*x]] - 6*ArcSin[c*x]*(9*c*x + Sin[3*ArcSin[c*x]])))/(108
*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.68, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(a^2c^2dex^2-a^2de+\left(b^2c^2dex^2-b^2de\right)\arcsin(cx)^2+2\left(abc^2dex^2-abde\right)\arcsin(cx)\right)\sqrt{cdx+d}\sqrt{-cex}}{x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/x,x, algorit
hm="fricas")
```

```
[Out] integral(-(a^2*c^2*d*e*x^2 - a^2*d*e + (b^2*c^2*d*e*x^2 - b^2*d*e)*arcsin(c
*x)^2 + 2*(a*b*c^2*d*e*x^2 - a*b*d*e)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*
e*x + e)/x, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(cdx+d)^{\frac{3}{2}}(-cex+e)^{\frac{3}{2}}(b\arcsin(cx)+a)^2}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/x,x, algorit
hm="giac")
```

```
[Out] integrate((c*d*x + d)^(3/2)*(-c*e*x + e)^(3/2)*(b*arcsin(c*x) + a)^2/x, x)
```

maple [F] time = 0.43, size = 0, normalized size = 0.00

$$\int \frac{(cdx+d)^{\frac{3}{2}}(-cex+e)^{\frac{3}{2}}(a+b\arcsin(cx))^2}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/x,x)
```

```
[Out] int((c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/x,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{3}\left(\frac{3\,d^2e^2\log\left(\frac{2\,de}{|x|}+\frac{2\,\sqrt{-c^2dex^2+de}\,\sqrt{de}}{|x|}\right)}{\sqrt{de}}-3\,\sqrt{-c^2dex^2+de}\,de-\left(-c^2dex^2+de\right)^{\frac{3}{2}}\right)a^2-\sqrt{d}\,\sqrt{e}\int\frac{\left(\left(b^2c^2dex^2-b\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/x,x, algorit
hm="maxima")
```

```
[Out] -1/3*(3*d^2*e^2*log(2*d*e/abs(x) + 2*sqrt(-c^2*d*e*x^2 + d*e)*sqrt(d*e)/abs
(x))/sqrt(d*e) - 3*sqrt(-c^2*d*e*x^2 + d*e)*d*e - (-c^2*d*e*x^2 + d*e)^(3/2
))*a^2 - sqrt(d)*sqrt(e)*integrate(((b^2*c^2*d*e*x^2 - b^2*d*e)*arctan2(c*x
, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a*b*c^2*d*e*x^2 - a*b*d*e)*arctan2(c
*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/x, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))^2\,(d+c\,d\,x)^{3/2}\,(e-c\,e\,x)^{3/2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2))/x,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2))/x, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(3/2)*(-c*e*x+e)**(3/2)*(a+b*asin(c*x))**2/x,x)
```

```
[Out] Timed out
```

3.585 $\int \frac{(d+cdx)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{x^2}\,dx$

Optimal. Leaf size=505

$$-\frac{cde\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)^3}{2b\sqrt{1-c^2x^2}}-\frac{icde\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}+bcde\sqrt{1-c^2x^2}\,\sqrt{cdx+}$$

```
[Out] 1/4*b^2*c^2*d*e*x*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)-3/2*c^2*d*e*x*(a+b*arcsi
n(c*x))^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)-d*e*(-c^2*x^2+1)*(a+b*arcsin(c*x
))^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/x-5/4*b^2*c*d*e*arcsin(c*x)*(c*d*x+d)
^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)+3/2*b*c^3*d*e*x^2*(a+b*arcsin(c*
x))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)-I*c*d*e*(a+b*arcsin
(c*x))^2*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)-1/2*c*d*e*(a+b
*arcsin(c*x))^3*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/b/(-c^2*x^2+1)^(1/2)+2*b*c
*d*e*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(c*d*x+d)^(1/2)*(
-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)-I*b^2*c*d*e*polylog(2,(I*c*x+(-c^2*x^2+1
)^(1/2))^2)*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)/(-c^2*x^2+1)^(1/2)+b*c*d*e*(a+
b*arcsin(c*x))*(c*d*x+d)^(1/2)*(-c*e*x+e)^(1/2)*(-c^2*x^2+1)^(1/2)
```

Rubi [A] time = 0.81, antiderivative size = 505, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 14, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {4739, 4695, 4647, 4641, 4627, 321, 216, 4683, 4625, 3717, 2190, 2279, 2391, 195}

$$-\frac{ib^2cde\sqrt{cdx+d}\,\sqrt{e-cex}\,\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)}{\sqrt{1-c^2x^2}}+\frac{3bc^3dex^2\sqrt{cdx+d}\,\sqrt{e-cex}\,\left(a+b\sin^{-1}(cx)\right)}{2\sqrt{1-c^2x^2}}-cde\sqrt{cdx+}$$

Antiderivative was successfully verified.

```
[In] Int[((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2)/x^2,x]
```

```
[Out] (b^2*c^2*d*e*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/4 - (5*b^2*c*d*e*Sqrt[d + c
*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x])/(4*Sqrt[1 - c^2*x^2]) + (3*b*c^3*d*e*x^2
*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x]))/(2*Sqrt[1 - c^2*x^2])
 + b*c*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[
c*x]) - (3*c^2*d*e*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2)
/2 - (I*c*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])^2)/Sqrt[1
 - c^2*x^2] - (d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(1 - c^2*x^2)*(a + b*Arc
Sin[c*x])^2)/x - (c*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a + b*ArcSin[c*x])
^3)/(2*b*Sqrt[1 - c^2*x^2]) + (2*b*c*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(a
 + b*ArcSin[c*x])*Log[1 - E^((2*I)*ArcSin[c*x])])/Sqrt[1 - c^2*x^2] - (I*b^
2*c*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*PolyLog[2, E^((2*I)*ArcSin[c*x])])/
Sqrt[1 - c^2*x^2]
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4647

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(x*Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^n)/2, x] + (Dist[Sqrt
[d + e*x^2]/(2*Sqrt[1 - c^2*x^2]), Int[(a + b*ArcSin[c*x])^n/Sqrt[1 - c^2*x
^2], x], x] - Dist[(b*c*n*Sqrt[d + e*x^2])/(2*Sqrt[1 - c^2*x^2]), Int[x*(a
+ b*ArcSin[c*x])^(n - 1), x], x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d
 + e, 0] && GtQ[n, 0]
```

Rule 4683

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.))/(x_),
x_Symbol] :> Simp[((d + e*x^2)^p*(a + b*ArcSin[c*x]))/(2*p), x] + (Dist[d,
Int[((d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x]))/x, x], x] - Dist[(b*c*d^p)/(2
*p), Int[(1 - c^2*x^2)^(p - 1/2), x], x]) /; FreeQ[{a, b, c, d, e}, x] && E
qQ[c^2*d + e, 0] && IGtQ[p, 0]
```

Rule 4695

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_.), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^p*(a + b*ArcS
in[c*x])^n)/(f*(m + 1)), x] + (-Dist[(2*e*p)/(f^2*(m + 1)), Int[(f*x)^(m +
2)*(d + e*x^2)^(p - 1)*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*c*n*d^IntPar
t[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f
*x)^(m + 1)*(1 - c^2*x^2)^(p - 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x]) /;
 FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[p, 0
] && LtQ[m, -1]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((h_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_))^(p_)*((f_) + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((-((d^2*g)/e))^I
ntPart[q]*(d + e*x)^FracPart[q]*(f + g*x)^FracPart[q])/(1 - c^2*x^2)^FracPa
rt[q], Int[(h*x)^m*(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, h, m, n}, x] && EqQ[e*f + d*g, 0] &&
 EqQ[c^2*d^2 - e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rubi steps

$$\int \frac{(d+cdx)^{3/2}(e-cex)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{x^2}\,dx = \frac{\left(de\sqrt{d+cdx}\,\sqrt{e-cex}\right)\int \frac{\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{x^2}\,dx}{\sqrt{1-c^2x^2}}$$

$$= -\frac{de\sqrt{d+cdx}\,\sqrt{e-cex}\,\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{x} + \frac{(2bc\ldots}{\ldots}$$

$$= bcde\sqrt{d+cdx}\,\sqrt{e-cex}\,\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right) - \frac{3}{2}c^2de\ldots$$

$$= -\frac{1}{2}b^2c^2dex\sqrt{d+cdx}\,\sqrt{e-cex} + \frac{3bc^3dex^2\sqrt{d+cdx}\,\sqrt{e-ce\ldots}}{2\sqrt{1-c^2x\ldots}}$$

$$= \frac{1}{4}b^2c^2dex\sqrt{d+cdx}\,\sqrt{e-cex} - \frac{b^2cde\sqrt{d+cdx}\,\sqrt{e-cex}\,\sin\ldots}{2\sqrt{1-c^2x^2}}$$

$$= \frac{1}{4}b^2c^2dex\sqrt{d+cdx}\,\sqrt{e-cex} - \frac{5b^2cde\sqrt{d+cdx}\,\sqrt{e-cex}\,\sin\ldots}{4\sqrt{1-c^2x^2}}$$

$$= \frac{1}{4}b^2c^2dex\sqrt{d+cdx}\,\sqrt{e-cex} - \frac{5b^2cde\sqrt{d+cdx}\,\sqrt{e-cex}\,\sin\ldots}{4\sqrt{1-c^2x^2}}$$

$$= \frac{1}{4}b^2c^2dex\sqrt{d+cdx}\,\sqrt{e-cex} - \frac{5b^2cde\sqrt{d+cdx}\,\sqrt{e-cex}\,\sin\ldots}{4\sqrt{1-c^2x^2}}$$

Mathematica [A] time = 2.25, size = 538, normalized size = 1.07

$$12a^2cd^{3/2}e^{3/2}x\sqrt{1-c^2x^2}\tan^{-1}\left(\frac{cx\sqrt{cdx+d}\sqrt{e-cex}}{\sqrt{d}\sqrt{e}\left(c^2x^2-1\right)}\right)-4a^2c^2dex^2\sqrt{1-c^2x^2}\sqrt{cdx+d}\sqrt{e-cex}-8a^2de\sqrt{1-c^2x^2}\sqrt{cd}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)*(a + b*ArcSin[c*x])^2)/x^2,x
]
```

```
[Out] (-8*a^2*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[1 - c^2*x^2] - 4*a^2*c^2*d
*e*x^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sqrt[1 - c^2*x^2] - 4*b^2*c*d*e*x*Sq
rt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^3 + 12*a^2*c*d^(3/2)*e^(3/2)*x*Sq
rt[1 - c^2*x^2]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(Sqrt[d]*Sqrt[
e]*(-1 + c^2*x^2))] - 2*a*b*c*d*e*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Cos[2*A
rcSin[c*x]] + 16*a*b*c*d*e*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Log[c*x] - (8*
I)*b^2*c*d*e*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*PolyLog[2, E^((2*I)*ArcSin[c
*x])] + b^2*c*d*e*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*Sin[2*ArcSin[c*x]] - 2*
b*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]*(8*a*Sqrt[1 - c^2*x^2] +
b*c*x*Cos[2*ArcSin[c*x]] - 8*b*c*x*Log[1 - E^((2*I)*ArcSin[c*x])] + 2*a*c*x
*Sin[2*ArcSin[c*x]]) - 2*b*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcSin[c*x]^
2*(6*a*c*x + (4*I)*b*c*x + 4*b*Sqrt[1 - c^2*x^2] + b*c*x*Sin[2*ArcSin[c*x]]
))/(8*x*Sqrt[1 - c^2*x^2])
```

fricas [F] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(a^2c^2dex^2-a^2de+\left(b^2c^2dex^2-b^2de\right)\arcsin\left(cx\right)^2+2\left(abc^2dex^2-abde\right)\arcsin\left(cx\right)\right)\sqrt{cdx+d}\sqrt{-cex}}{x^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/x^2,x, algor
ithm="fricas")
```

```
[Out] integral(-(a^2*c^2*d*e*x^2 - a^2*d*e + (b^2*c^2*d*e*x^2 - b^2*d*e)*arcsin(c
*x)^2 + 2*(a*b*c^2*d*e*x^2 - a*b*d*e)*arcsin(c*x))*sqrt(c*d*x + d)*sqrt(-c*
e*x + e)/x^2, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(cdx+d)^{\frac{3}{2}}(-cex+e)^{\frac{3}{2}}(b\arcsin\left(cx\right)+a)^2}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/x^2,x, algor
ithm="giac")
```

```
[Out] integrate((c*d*x + d)^(3/2)*(-c*e*x + e)^(3/2)*(b*arcsin(c*x) + a)^2/x^2, x
)
```

maple [F] time = 1.02, size = 0, normalized size = 0.00

$$\int\frac{(cdx+d)^{\frac{3}{2}}\,(-cex+e)^{\frac{3}{2}}\,(a+b\arcsin\left(cx\right))^2}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/x^2,x)
```

```
[Out] int((c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/x^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\left(3\sqrt{-c^2dex^2+de}\,c^2dex+\frac{3\,cd^2e^2\arcsin(cx)}{\sqrt{de}}+\frac{2\left(-c^2dex^2+de\right)^{\frac{3}{2}}}{x}\right)a^2-\sqrt{d}\,\sqrt{e}\int\frac{\left(\left(b^2c^2dex^2-b^2de\right)\operatorname{arcta}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)^(3/2)*(-c*e*x+e)^(3/2)*(a+b*arcsin(c*x))^2/x^2,x, algor
ithm="maxima")
```

```
[Out] -1/2*(3*sqrt(-c^2*d*e*x^2 + d*e)*c^2*d*e*x + 3*c*d^2*e^2*arcsin(c*x)/sqrt(d
*e) + 2*(-c^2*d*e*x^2 + d*e)^(3/2)/x)*a^2 - sqrt(d)*sqrt(e)*integrate(((b^2
*c^2*d*e*x^2 - b^2*d*e)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*(a
*b*c^2*d*e*x^2 - a*b*d*e)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(
c*x + 1)*sqrt(-c*x + 1)/x^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(d+c\,d\,x\right)}^{3/2}\,{\left(e-c\,e\,x\right)}^{3/2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))^2*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2))/x^2,x)
```

```
[Out] int(((a + b*asin(c*x))^2*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2))/x^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x+d)**(3/2)*(-c*e*x+e)**(3/2)*(a+b*asin(c*x))**2/x**2,x)
```

```
[Out] Timed out
```

3.586 $\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+cdx}\,\sqrt{e-cex}}\,dx$

Optimal. Leaf size=250

$$-\frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{2c^2\sqrt{cdx+d}\,\sqrt{e-cex}}+\frac{bx^2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{2c\sqrt{cdx+d}\,\sqrt{e-cex}}+\frac{\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^3}{6bc^3\sqrt{cdx+d}\,\sqrt{e-cex}}+\frac{b^2x\left(1-c^2\right.}{4c^2\sqrt{cdx+d}\,\sqrt{\ }}$$

```
[Out] 1/4*b^2*x*(-c^2*x^2+1)/c^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-1/2*x*(-c^2*x^2
+1)*(a+b*arcsin(c*x))^2/c^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-1/4*b^2*arcsin
(c*x)*(-c^2*x^2+1)^(1/2)/c^3/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+1/2*b*x^2*(a+
b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+1/6*(a
+b*arcsin(c*x))^3*(-c^2*x^2+1)^(1/2)/b/c^3/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)
```

Rubi [A] time = 0.58, antiderivative size = 250, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.171, Rules used = {4739, 4707, 4641, 4627, 321, 216}

$$\frac{\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^3}{6bc^3\sqrt{cdx+d}\,\sqrt{e-cex}}-\frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{2c^2\sqrt{cdx+d}\,\sqrt{e-cex}}+\frac{bx^2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{2c\sqrt{cdx+d}\,\sqrt{e-cex}}+\frac{b^2x\left(1-c^2x^2\right.}{4c^2\sqrt{cdx+d}\,\sqrt{e\ }}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*ArcSin[c*x])^2)/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x]),x]
```

```
[Out] (b^2*x*(1 - c^2*x^2))/(4*c^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) - (b^2*Sqrt[1
 - c^2*x^2]*ArcSin[c*x])/(4*c^3*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (b*x^2*S
qrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(2*c*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])
 - (x*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(2*c^2*Sqrt[d + c*d*x]*Sqrt[e -
c*e*x]) + (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3)/(6*b*c^3*Sqrt[d + c*d*x
]*Sqrt[e - c*e*x])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((h_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_))^(p_)*((f_) + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((-((d^2*g)/e))^I
ntPart[q]*(d + e*x)^FracPart[q]*(f + g*x)^FracPart[q])/(1 - c^2*x^2)^FracPa
rt[q], Int[(h*x)^m*(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, h, m, n}, x] && EqQ[e*f + d*g, 0] &&
 EqQ[c^2*d^2 - e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rubi steps

$$\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+cdx}\,\sqrt{e-cex}}\,dx=\frac{\sqrt{1-c^2x^2}\int\frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\,\sqrt{e-cex}}$$

$$=-\frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{2c^2\sqrt{d+cdx}\,\sqrt{e-cex}}+\frac{\sqrt{1-c^2x^2}\int\frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{2c^2\sqrt{d+cdx}\,\sqrt{e-cex}}+\frac{\left(b\sqrt{1-c^2x^2}\right.}{c\sqrt{d}}$$

$$=\frac{bx^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c\sqrt{d+cdx}\,\sqrt{e-cex}}-\frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{2c^2\sqrt{d+cdx}\,\sqrt{e-cex}}+\frac{\sqrt{1-c^2x^2}\,(a}{6bc^3\sqrt{d+}}$$

$$=\frac{b^2x\left(1-c^2x^2\right)}{4c^2\sqrt{d+cdx}\,\sqrt{e-cex}}+\frac{bx^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{2c\sqrt{d+cdx}\,\sqrt{e-cex}}-\frac{x\left(1-c^2x^2\right)\left(a+b\sin\right.}{2c^2\sqrt{d+cdx}\,\sqrt{e}}$$

$$=\frac{b^2x\left(1-c^2x^2\right)}{4c^2\sqrt{d+cdx}\,\sqrt{e-cex}}-\frac{b^2\sqrt{1-c^2x^2}\,\sin^{-1}(cx)}{4c^3\sqrt{d+cdx}\,\sqrt{e-cex}}+\frac{bx^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx\right.}{2c\sqrt{d+cdx}\,\sqrt{e-cex}}$$

Mathematica [A] time = 1.31, size = 326, normalized size = 1.30

$$-3\sqrt{d}\sqrt{e}\left(a^2\left(4cx-4c^3x^3\right)+ab\sqrt{1-c^2x^2}+ab\cos\left(3\sin^{-1}(cx)\right)+2b^2cx\left(c^2x^2-1\right)\right)-12a^2\sqrt{cdx+d}\,\sqrt{e-ce}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(a + b*ArcSin[c*x])^2)/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x]),x]
```

```
[Out] (12*b*Sqrt[d]*Sqrt[e]*(a*Sqrt[1 - c^2*x^2] + b*c*x*(-1 + c^2*x^2))*ArcSin[c
*x]^2 + 4*b^2*Sqrt[d]*Sqrt[e]*Sqrt[1 - c^2*x^2]*ArcSin[c*x]^3 - 12*a^2*Sqrt
[d + c*d*x]*Sqrt[e - c*e*x]*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(S
qrt[d]*Sqrt[e]*(-1 + c^2*x^2))] - 3*Sqrt[d]*Sqrt[e]*(a*b*Sqrt[1 - c^2*x^2]
+ 2*b^2*c*x*(-1 + c^2*x^2) + a^2*(4*c*x - 4*c^3*x^3) + a*b*Cos[3*ArcSin[c*x
]]) - 3*b*Sqrt[d]*Sqrt[e]*ArcSin[c*x]*(2*a*c*x + b*Sqrt[1 - c^2*x^2] + b*Co
s[3*ArcSin[c*x]] + 2*a*Sin[3*ArcSin[c*x]]))/(24*c^3*Sqrt[d]*Sqrt[e]*Sqrt[d
+ c*d*x]*Sqrt[e - c*e*x])
```

fricas [F] time = 0.57, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(b^2x^2\arcsin(cx)^2+2\,abx^2\arcsin(cx)+a^2x^2\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{c^2dex^2-de},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x, algor
ithm="fricas")
```

```
[Out] integral(-(b^2*x^2*arcsin(c*x)^2 + 2*a*b*x^2*arcsin(c*x) + a^2*x^2)*sqrt(c*
d*x + d)*sqrt(-c*e*x + e)/(c^2*d*e*x^2 - d*e), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b\arcsin(cx)+a)^2x^2}{\sqrt{cdx+d}\,\sqrt{-cex+e}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x, algor
ithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2*x^2/(sqrt(c*d*x + d)*sqrt(-c*e*x + e)), x)
```

maple [F] time = 0.67, size = 0, normalized size = 0.00

$$\int \frac{x^2\,(a+b\arcsin(cx))^2}{\sqrt{cdx+d}\,\sqrt{-cex+e}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x)
```

```
[Out] int(x^2*(a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\,a^2\left(\frac{\sqrt{-c^2dex^2+de}\,x}{c^2de}-\frac{\arcsin(cx)}{\sqrt{de}\,c^3}\right)-\sqrt{d}\,\sqrt{e}\int \frac{\left(b^2x^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)^2+2\,abx^2\arctan\left(cx,\sqrt{c\right.\right.}}{c^2dex^2-de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x, algor
ithm="maxima")
```

```
[Out] -1/2*a^2*(sqrt(-c^2*d*e*x^2 + d*e)*x/(c^2*d*e) - arcsin(c*x)/(sqrt(d*e)*c^3
)) - sqrt(d)*sqrt(e)*integrate((b^2*x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*
x + 1))^2 + 2*a*b*x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x
+ 1)*sqrt(-c*x + 1)/(c^2*d*e*x^2 - d*e), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2\,(a+b\,\mathrm{asin}(c\,x))^2}{\sqrt{d+c\,d\,x}\,\sqrt{e-c\,e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*asin(c*x))^2)/((d + c*d*x)^(1/2)*(e - c*e*x)^(1/2)),x)
```

```
[Out] int((x^2*(a + b*asin(c*x))^2)/((d + c*d*x)^(1/2)*(e - c*e*x)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2 (a + b \operatorname{asin}(cx))^2}{\sqrt{d (cx + 1)} \sqrt{-e (cx - 1)}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(c*x))**2/(c*d*x+d)**(1/2)/(-c*e*x+e)**(1/2),x)
```

```
[Out] Integral(x**2*(a + b*asin(c*x))**2/(sqrt(d*(c*x + 1))*sqrt(-e*(c*x - 1))),
x)
```

3.587 $\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+cdx}\sqrt{e-cex}}\,dx$

Optimal. Leaf size=177

$$\frac{2abx\sqrt{1-c^2x^2}}{c\sqrt{cdx+d}\sqrt{e-cex}}-\frac{\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c^2\sqrt{cdx+d}\sqrt{e-cex}}+\frac{2b^2\left(1-c^2x^2\right)}{c^2\sqrt{cdx+d}\sqrt{e-cex}}+\frac{2b^2x\sqrt{1-c^2x^2}\sin^{-1}(cx)}{c\sqrt{cdx+d}\sqrt{e-cex}}$$

```
[Out] 2*b^2*(-c^2*x^2+1)/c^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-(-c^2*x^2+1)*(a+b*a
rcsin(c*x))^2/c^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+2*a*b*x*(-c^2*x^2+1)^(1/
2)/c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+2*b^2*x*arcsin(c*x)*(-c^2*x^2+1)^(1/2
)/c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)
```

Rubi [A] time = 0.38, antiderivative size = 177, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {4739, 4677, 4619, 261}

$$\frac{2abx\sqrt{1-c^2x^2}}{c\sqrt{cdx+d}\sqrt{e-cex}}-\frac{\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c^2\sqrt{cdx+d}\sqrt{e-cex}}+\frac{2b^2\left(1-c^2x^2\right)}{c^2\sqrt{cdx+d}\sqrt{e-cex}}+\frac{2b^2x\sqrt{1-c^2x^2}\sin^{-1}(cx)}{c\sqrt{cdx+d}\sqrt{e-cex}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*ArcSin[c*x])^2)/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x]),x]
```

```
[Out] (2*a*b*x*Sqrt[1 - c^2*x^2])/(c*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (2*b^2*(1
 - c^2*x^2))/(c^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (2*b^2*x*Sqrt[1 - c^2*
x^2]*ArcSin[c*x])/(c*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) - ((1 - c^2*x^2)*(a +
 b*ArcSin[c*x])^2)/(c^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((h_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_))^(p_)*((f_) + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((-((d^2*g)/e))^I
ntPart[q]*(d + e*x)^FracPart[q]*(f + g*x)^FracPart[q])/(1 - c^2*x^2)^FracPa
rt[q], Int[(h*x)^m*(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, h, m, n}, x] && EqQ[e*f + d*g, 0] &&
 EqQ[c^2*d^2 - e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rubi steps

$$\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+cdx}\sqrt{e-cex}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\sqrt{e-cex}}$$

$$= -\frac{\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c^2\sqrt{d+cdx}\sqrt{e-cex}} + \frac{\left(2b\sqrt{1-c^2x^2}\right)\int \left(a+b\sin^{-1}(cx)\right)\,dx}{c\sqrt{d+cdx}\sqrt{e-cex}}$$

$$= \frac{2abx\sqrt{1-c^2x^2}}{c\sqrt{d+cdx}\sqrt{e-cex}} - \frac{\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c^2\sqrt{d+cdx}\sqrt{e-cex}} + \frac{\left(2b^2\sqrt{1-c^2x^2}\right)\int \sin^{-1}(c}{c\sqrt{d+cdx}\sqrt{e-cex}}$$

$$= \frac{2abx\sqrt{1-c^2x^2}}{c\sqrt{d+cdx}\sqrt{e-cex}} + \frac{2b^2x\sqrt{1-c^2x^2}\sin^{-1}(cx)}{c\sqrt{d+cdx}\sqrt{e-cex}} - \frac{\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{c^2\sqrt{d+cdx}\sqrt{e-cex}} -$$

$$= \frac{2abx\sqrt{1-c^2x^2}}{c\sqrt{d+cdx}\sqrt{e-cex}} + \frac{2b^2\left(1-c^2x^2\right)}{c^2\sqrt{d+cdx}\sqrt{e-cex}} + \frac{2b^2x\sqrt{1-c^2x^2}\sin^{-1}(cx)}{c\sqrt{d+cdx}\sqrt{e-cex}} - \frac{(1-c}{c^2}$$

Mathematica [A] time = 0.67, size = 150, normalized size = 0.85

$$-\frac{\sqrt{cdx+d}\sqrt{e-cex}\left(a^2\left(c^2x^2-1\right)+2abcx\sqrt{1-c^2x^2}+2b\sin^{-1}(cx)\left(a\left(c^2x^2-1\right)+bcx\sqrt{1-c^2x^2}\right)-2b^2\left(c^2x\right.\right.}{c^2de(cx-1)(cx+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*ArcSin[c*x])^2)/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x]),x]
```

```
[Out] -((Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*(2*a*b*c*x*Sqrt[1 - c^2*x^2] + a^2*(-1 +
 c^2*x^2) - 2*b^2*(-1 + c^2*x^2) + 2*b*(b*c*x*Sqrt[1 - c^2*x^2] + a*(-1 + c
^2*x^2))*ArcSin[c*x] + b^2*(-1 + c^2*x^2)*ArcSin[c*x]^2))/(c^2*d*e*(-1 + c*
x)*(1 + c*x)))
```

fricas [A] time = 0.53, size = 138, normalized size = 0.78

$$-\frac{\left(\left(a^2-2\,b^2\right)c^2x^2+\left(b^2c^2x^2-b^2\right)\arcsin\left(cx\right)^2-a^2+2\,b^2+2\left(abc^2x^2-ab\right)\arcsin\left(cx\right)+2\left(b^2cx\arcsin\left(cx\right)+\right.\right.}{c^4dex^2-c^2de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x, algorit
hm="fricas")
```

```
[Out] -((a^2 - 2*b^2)*c^2*x^2 + (b^2*c^2*x^2 - b^2)*arcsin(c*x)^2 - a^2 + 2*b^2 +
 2*(a*b*c^2*x^2 - a*b)*arcsin(c*x) + 2*(b^2*c*x*arcsin(c*x) + a*b*c*x)*sqrt
(-c^2*x^2 + 1))*sqrt(c*d*x + d)*sqrt(-c*e*x + e)/(c^4*d*e*x^2 - c^2*d*e)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\arcsin\left(cx\right)+a\right)^2 x}{\sqrt{cdx+d}\sqrt{-cex+e}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x, algorit
hm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2*x/(sqrt(c*d*x + d)*sqrt(-c*e*x + e)), x)
```

maple [F] time = 0.80, size = 0, normalized size = 0.00

$$\int \frac{x\left(a+b\arcsin\left(cx\right)\right)^{2}}{\sqrt{cdx+d}\,\sqrt{-cex+e}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x)
```

```
[Out] int(x*(a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x)
```

maxima [A] time = 0.61, size = 157, normalized size = 0.89

$$2\,b^{2}\left(\frac{x\arcsin\left(cx\right)}{c\sqrt{d}\,\sqrt{e}}+\frac{\sqrt{-c^{2}x^{2}+1}}{c^{2}\sqrt{d}\,\sqrt{e}}\right)+\frac{2\,abx}{c\sqrt{d}\,\sqrt{e}}-\frac{\sqrt{-c^{2}dex^{2}+de}\,b^{2}\arcsin\left(cx\right)^{2}}{c^{2}de}-\frac{2\,\sqrt{-c^{2}dex^{2}+de}\,ab\arcsin\left(cx\right)}{c^{2}de}-\frac{\sqrt{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x, algorit
hm="maxima")
```

```
[Out] 2*b^2*(x*arcsin(c*x)/(c*sqrt(d)*sqrt(e)) + sqrt(-c^2*x^2 + 1)/(c^2*sqrt(d)*
sqrt(e))) + 2*a*b*x/(c*sqrt(d)*sqrt(e)) - sqrt(-c^2*d*e*x^2 + d*e)*b^2*arcs
in(c*x)^2/(c^2*d*e) - 2*sqrt(-c^2*d*e*x^2 + d*e)*a*b*arcsin(c*x)/(c^2*d*e)
- sqrt(-c^2*d*e*x^2 + d*e)*a^2/(c^2*d*e)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x\,{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}{\sqrt{d+c\,d\,x}\,\sqrt{e-c\,e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*asin(c*x))^2)/((d + c*d*x)^(1/2)*(e - c*e*x)^(1/2)),x)
```

```
[Out] int((x*(a + b*asin(c*x))^2)/((d + c*d*x)^(1/2)*(e - c*e*x)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\left(a+b\,\mathrm{asin}\left(cx\right)\right)^{2}}{\sqrt{d\left(cx+1\right)}\,\sqrt{-e\left(cx-1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(c*x))**2/(c*d*x+d)**(1/2)/(-c*e*x+e)**(1/2),x)
```

```
[Out] Integral(x*(a + b*asin(c*x))**2/(sqrt(d*(c*x + 1))*sqrt(-e*(c*x - 1))), x)
```

3.588 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+cdx}\sqrt{e-cex}}\,dx$

Optimal. Leaf size=55

$$\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{cdx+d}\sqrt{e-cex}}$$

```
[Out] 1/3*(a+b*arcsin(c*x))^3*(-c^2*x^2+1)^(1/2)/b/c/(c*d*x+d)^(1/2)/(-c*e*x+e)^(
1/2)
```

Rubi [A] time = 0.23, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {4673, 4641}

$$\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{cdx+d}\sqrt{e-cex}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x]),x]
```

```
[Out] (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c*Sqrt[d + c*d*x]*Sqrt[e - c
*e*x])
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+cdx}\sqrt{e-cex}}\,dx &= \frac{\sqrt{1-c^2x^2}\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\sqrt{e-cex}}\\ &= \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc\sqrt{d+cdx}\sqrt{e-cex}}\end{aligned}$$

Mathematica [B] time = 0.68, size = 159, normalized size = 2.89

$$\frac{-\frac{3a^2\tan^{-1}\left(\frac{cx\sqrt{cdx+d}\sqrt{e-cex}}{\sqrt{d}\sqrt{e}\left(c^2x^2-1\right)}\right)}{\sqrt{d}\sqrt{e}}+\frac{3ab\sqrt{1-c^2x^2}\sin^{-1}(cx)^2}{\sqrt{cdx+d}\sqrt{e-cex}}+\frac{b^2\sqrt{1-c^2x^2}\sin^{-1}(cx)^3}{\sqrt{cdx+d}\sqrt{e-cex}}}{3c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x]),x]
```

```
[Out] ((3*a*b*Sqrt[1 - c^2*x^2]*ArcSin[c*x]^2)/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x])
+ (b^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x]^3)/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) -
 (3*a^2*ArcTan[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(Sqrt[d]*Sqrt[e]*(-1 +
 c^2*x^2))])/(Sqrt[d]*Sqrt[e]))/(3*c)
```

fricas [F] time = 0.78, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(b^2 \arcsin\left(cx\right)^2 + 2\,ab\arcsin\left(cx\right) + a^2\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{c^2dex^2 - de}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x, algorithm
="fricas")
```

```
[Out] integral(-(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(c*d*x + d)*sqr
t(-c*e*x + e)/(c^2*d*e*x^2 - d*e), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\arcsin\left(cx\right) + a\right)^2}{\sqrt{cdx+d}\,\sqrt{-cex+e}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x, algorithm
="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/(sqrt(c*d*x + d)*sqrt(-c*e*x + e)), x)
```

maple [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b\arcsin\left(cx\right)\right)^2}{\sqrt{cdx+d}\,\sqrt{-cex+e}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x)
```

maxima [A] time = 0.50, size = 53, normalized size = 0.96

$$\frac{b^2\arcsin\left(cx\right)^3}{3\,\sqrt{de}\,c} + \frac{ab\arcsin\left(cx\right)^2}{\sqrt{de}\,c} + \frac{a^2\arcsin\left(cx\right)}{\sqrt{de}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x, algorithm
="maxima")
```

```
[Out] 1/3*b^2*arcsin(c*x)^3/(sqrt(d*e)*c) + a*b*arcsin(c*x)^2/(sqrt(d*e)*c) + a^2
*arcsin(c*x)/(sqrt(d*e)*c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\left(a + b\,\mathrm{asin}\left(c\,x\right)\right)^2}{\sqrt{d + c\,d\,x}\,\sqrt{e - c\,e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/((d + c*d*x)^(1/2)*(e - c*e*x)^(1/2)),x)
[Out] int((a + b*asin(c*x))^2/((d + c*d*x)^(1/2)*(e - c*e*x)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(cx))^2}{\sqrt{d(cx+1)}\sqrt{-e(cx-1)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(c*d*x+d)**(1/2)/(-c*e*x+e)**(1/2),x)
[Out] Integral((a + b*asin(c*x))**2/(sqrt(d*(c*x + 1))*sqrt(-e*(c*x - 1))), x)
```

3.589 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\sqrt{d+cdx}\,\sqrt{e-cex}}\,dx$

Optimal. Leaf size=287

$$\frac{2ib\sqrt{1-c^2x^2}\,\mathrm{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{cdx+d}\,\sqrt{e-cex}}-\frac{2ib\sqrt{1-c^2x^2}\,\mathrm{Li}_2\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{cdx+d}\,\sqrt{e-cex}}-\frac{2\sqrt{1-c^2x^2}\,\tanh}{\sqrt{}}$$

```
[Out] -2*(a+b*arcsin(c*x))^2*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)
/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+2*I*b*(a+b*arcsin(c*x))*polylog(2,-I*c*x-
(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-2*I
*b*(a+b*arcsin(c*x))*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)
/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-2*b^2*polylog(3,-I*c*x-(-c^2*x^2+1)^(1/2)
)*(-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+2*b^2*polylog(3,I*c*x
+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)
```

Rubi [A] time = 0.58, antiderivative size = 287, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.171, Rules used = {4739, 4709, 4183, 2531, 2282, 6589}

$$\frac{2ib\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{cdx+d}\,\sqrt{e-cex}}-\frac{2ib\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{\sqrt{cdx+d}\,\sqrt{e-cex}}-$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]),x]
```

```
[Out] (-2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2*ArcTanh[E^(I*ArcSin[c*x])])/(Sq
rt[d + c*d*x]*Sqrt[e - c*e*x]) + ((2*I)*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c
*x])*PolyLog[2, -E^(I*ArcSin[c*x])])/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) - ((
2*I)*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*PolyLog[2, E^(I*ArcSin[c*x])])
/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) - (2*b^2*Sqrt[1 - c^2*x^2]*PolyLog[3, -E
^(I*ArcSin[c*x])])/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (2*b^2*Sqrt[1 - c^2*
x^2]*PolyLog[3, E^(I*ArcSin[c*x])])/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x])
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] && !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] && !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((h_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_))^(p_)*((f_) + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((-((d^2*g)/e))^I
ntPart[q]*(d + e*x)^FracPart[q]*(f + g*x)^FracPart[q])/(1 - c^2*x^2)^FracPa
rt[q], Int[(h*x)^m*(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, h, m, n}, x] && EqQ[e*f + d*g, 0] &&
 EqQ[c^2*d^2 - e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\sqrt{d+cdx}\,\sqrt{e-cex}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\,\sqrt{e-cex}}$$

$$= \frac{\sqrt{1-c^2x^2}\,\text{Subst}\left(\int (a+bx)^2\csc(x)\,dx, x, \sin^{-1}(cx)\right)}{\sqrt{d+cdx}\,\sqrt{e-cex}}$$

$$= -\frac{2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^2\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{\sqrt{d+cdx}\,\sqrt{e-cex}} - \frac{\left(2b\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int (a\right.}{\sqrt{d+}}$$

$$= -\frac{2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^2\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{\sqrt{d+cdx}\,\sqrt{e-cex}} + \frac{2ib\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(\right.}{\sqrt{d+cdx}\,\sqrt{e}}$$

$$= -\frac{2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^2\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{\sqrt{d+cdx}\,\sqrt{e-cex}} + \frac{2ib\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(\right.}{\sqrt{d+cdx}\,\sqrt{e}}$$

$$= -\frac{2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^2\tanh^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{\sqrt{d+cdx}\,\sqrt{e-cex}} + \frac{2ib\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(\right.}{\sqrt{d+cdx}\,\sqrt{e}}$$

Mathematica [A] time = 1.45, size = 336, normalized size = 1.17

$$\frac{a^2\log(cx)}{\sqrt{d}\,\sqrt{e}} - \frac{a^2\log\left(\sqrt{d}\,\sqrt{e}\,\sqrt{cdx+d}\,\sqrt{e-cex}+de\right)}{\sqrt{d}\,\sqrt{e}} + \frac{2ab\sqrt{1-c^2x^2}\,\left(i\text{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)-i\text{Li}_2\left(e^{i\sin^{-1}(cx)}\right)+\sin\right.}{\sqrt{cdx+d}\,\sqrt{e}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]),x]
```

```
[Out] (a^2*Log[c*x])/(Sqrt[d]*Sqrt[e]) - (a^2*Log[d*e + Sqrt[d]*Sqrt[e]*Sqrt[d +
c*d*x]*Sqrt[e - c*e*x]])/(Sqrt[d]*Sqrt[e]) + (2*a*b*Sqrt[1 - c^2*x^2]*(ArcS
in[c*x]*(Log[1 - E^(I*ArcSin[c*x])] - Log[1 + E^(I*ArcSin[c*x])]) + I*PolyL
og[2, -E^(I*ArcSin[c*x])] - I*PolyLog[2, E^(I*ArcSin[c*x])]))/(Sqrt[d + c*d
```

```
*x]*Sqrt[e - c*e*x]) + (b^2*Sqrt[1 - c^2*x^2]*(ArcSin[c*x]^2*Log[1 - E^(I*A
rcSin[c*x])] - ArcSin[c*x]^2*Log[1 + E^(I*ArcSin[c*x])] + (2*I)*ArcSin[c*x]
*PolyLog[2, -E^(I*ArcSin[c*x])] - (2*I)*ArcSin[c*x]*PolyLog[2, E^(I*ArcSin[
c*x])] - 2*PolyLog[3, -E^(I*ArcSin[c*x])] + 2*PolyLog[3, E^(I*ArcSin[c*x])]
))/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x])
```

fricas [F] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(b^2 \arcsin\left(cx\right)^2 + 2\,ab \arcsin\left(cx\right) + a^2\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{c^2dex^3 - dex}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x, algorit
hm="fricas")
```

```
[Out] integral(-(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(c*d*x + d)*sqr
t(-c*e*x + e)/(c^2*d*e*x^3 - d*e*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b \arcsin\left(cx\right) + a\right)^2}{\sqrt{cdx+d}\,\sqrt{-cex+e}\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x, algorit
hm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/(sqrt(c*d*x + d)*sqrt(-c*e*x + e)*x), x)
```

maple [F] time = 0.42, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \arcsin\left(cx\right)\right)^2}{x\sqrt{cdx+d}\,\sqrt{-cex+e}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2/x/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{a^2 \log\left(\frac{2\,de}{|x|} + \frac{2\,\sqrt{-c^2dex^2+de}\,\sqrt{de}}{|x|}\right)}{\sqrt{de}} - \sqrt{d}\,\sqrt{e}\int \frac{\left(b^2 \arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)^2 + 2\,ab \arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx\right.\right.}{c^2dex^3 - dex}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x, algorit
hm="maxima")
```

```
[Out] -a^2*log(2*d*e/abs(x) + 2*sqrt(-c^2*d*e*x^2 + d*e)*sqrt(d*e)/abs(x))/sqrt(d
*e) - sqrt(d)*sqrt(e)*integrate((b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x +
 1))^2 + 2*a*b*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sq
rt(-c*x + 1)/(c^2*d*e*x^3 - d*e*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a + b \operatorname{asin}\left(c\,x\right)\right)^2}{x\,\sqrt{d + c\,d\,x}\,\sqrt{e - c\,e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x*(d + c*d*x)^(1/2)*(e - c*e*x)^(1/2)),x)
[Out] int((a + b*asin(c*x))^2/(x*(d + c*d*x)^(1/2)*(e - c*e*x)^(1/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x/(c*d*x+d)**(1/2)/(-c*e*x+e)**(1/2),x)
[Out] Timed out
```

3.590 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^2\sqrt{d+cdx}\sqrt{e-cex}}\,dx$

Optimal. Leaf size=214

$$-\frac{\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{x\sqrt{cdx+d}\sqrt{e-cex}}-\frac{ic\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{cdx+d}\sqrt{e-cex}}+\frac{2bc\sqrt{1-c^2x^2}\log\left(1-e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx\right.}{\sqrt{cdx+d}\sqrt{e-cex}}$$

```
[Out] -(-c^2*x^2+1)*(a+b*arcsin(c*x))^2/x/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-I*c*(a
+b*arcsin(c*x))^2*(-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+2*b*c
*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/(c
*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-I*b^2*c*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))
^2)*(-c^2*x^2+1)^(1/2)/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)
```

Rubi [A] time = 0.58, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {4739, 4681, 4625, 3717, 2190, 2279, 2391}

$$-\frac{ib^2c\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)}{\sqrt{cdx+d}\sqrt{e-cex}}-\frac{\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{x\sqrt{cdx+d}\sqrt{e-cex}}-\frac{ic\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{cdx+d}\sqrt{e-cex}}+\frac{2bc\sqrt{1-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]),x]
```

```
[Out] ((-I)*c*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(Sqrt[d + c*d*x]*Sqrt[e -
c*e*x]) - ((1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/(x*Sqrt[d + c*d*x]*Sqrt[e -
 c*e*x]) + (2*b*c*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 - E^((2*I)*Ar
cSin[c*x])])/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) - (I*b^2*c*Sqrt[1 - c^2*x^2]
*PolyLog[2, E^((2*I)*ArcSin[c*x])])/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x])
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4681

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] - Dist[(b*c*n*d^IntPart[p]*(d + e*x^2)^F
racPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart[p]), Int[(f*x)^(m + 1)*(1 - c
^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1), x], x] /; FreeQ[{a, b, c, d,
 e, f, m, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && EqQ[m + 2*p + 3, 0] &
& NeQ[m, -1]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((h_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_))^(p_)*((f_) + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((-((d^2*g)/e))^I
ntPart[q]*(d + e*x)^FracPart[q]*(f + g*x)^FracPart[q])/(1 - c^2*x^2)^FracPa
rt[q], Int[(h*x)^m*(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, h, m, n}, x] && EqQ[e*f + d*g, 0] &&
 EqQ[c^2*d^2 - e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^2\sqrt{d+cdx}\,\sqrt{e-cex}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^2\sqrt{1-c^2x^2}}\,dx}{\sqrt{d+cdx}\,\sqrt{e-cex}}$$

$$= -\frac{\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{x\sqrt{d+cdx}\,\sqrt{e-cex}} + \frac{\left(2bc\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{x}\,dx}{\sqrt{d+cdx}\,\sqrt{e-cex}}$$

$$= -\frac{\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{x\sqrt{d+cdx}\,\sqrt{e-cex}} + \frac{\left(2bc\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int (a+bx)\cot(x)\,dx, x,\right.}{\sqrt{d+cdx}\,\sqrt{e-cex}}$$

$$= -\frac{ic\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+cdx}\,\sqrt{e-cex}} - \frac{\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{x\sqrt{d+cdx}\,\sqrt{e-cex}} - \frac{\left(4ibc\sqrt{1-c^2\right.}{}$$

$$= -\frac{ic\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+cdx}\,\sqrt{e-cex}} - \frac{\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{x\sqrt{d+cdx}\,\sqrt{e-cex}} + \frac{2bc\sqrt{1-c^2x^2}}{}$$

$$= -\frac{ic\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+cdx}\,\sqrt{e-cex}} - \frac{\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{x\sqrt{d+cdx}\,\sqrt{e-cex}} + \frac{2bc\sqrt{1-c^2x^2}}{}$$

$$= -\frac{ic\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+cdx}\,\sqrt{e-cex}} - \frac{\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{x\sqrt{d+cdx}\,\sqrt{e-cex}} + \frac{2bc\sqrt{1-c^2x^2}}{}$$

Mathematica [A] time = 1.18, size = 189, normalized size = 0.88

$$\frac{a\left(ac^2x^2-a+2bcx\sqrt{1-c^2x^2}\,\log(cx)\right)+2b\sin^{-1}(cx)\left(ac^2x^2-a+bcx\sqrt{1-c^2x^2}\,\log\left(1-e^{2i\sin^{-1}(cx)}\right)\right)-ib^2cx}{x\sqrt{cdx+d}\,\sqrt{e-cex}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]),x]
```

```
[Out] (b^2*(-1 + c^2*x^2 - I*c*x*Sqrt[1 - c^2*x^2])*ArcSin[c*x]^2 + 2*b*ArcSin[c*
x]*(-a + a*c^2*x^2 + b*c*x*Sqrt[1 - c^2*x^2]*Log[1 - E^((2*I)*ArcSin[c*x])]
) + a*(-a + a*c^2*x^2 + 2*b*c*x*Sqrt[1 - c^2*x^2]*Log[c*x]) - I*b^2*c*x*Sqr
t[1 - c^2*x^2]*PolyLog[2, E^((2*I)*ArcSin[c*x])])/(x*Sqrt[d + c*d*x]*Sqrt[e
 - c*e*x])
```

fricas [F] time = 0.66, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\left(b^2 \arcsin\left(cx\right)^2 + 2\,ab \arcsin\left(cx\right) + a^2\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{c^2dex^4 - dex^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x, algor
ithm="fricas")
```

```
[Out] integral(-(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(c*d*x + d)*sqr
t(-c*e*x + e)/(c^2*d*e*x^4 - d*e*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b \arcsin\left(cx\right) + a\right)^2}{\sqrt{cdx+d}\,\sqrt{-cex+e}\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x, algor
ithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/(sqrt(c*d*x + d)*sqrt(-c*e*x + e)*x^2), x)
```

maple [F] time = 1.29, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \arcsin\left(cx\right)\right)^2}{x^2\sqrt{cdx+d}\,\sqrt{-cex+e}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2/x^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\left(\frac{(-1)^{-2\,c^2dex^2+2\,de}de\log\left(-2\,c^2de+\frac{2\,de}{x^2}\right)}{\sqrt{de}} + de\sqrt{\frac{1}{de}}\,\log\left(x^2-\frac{1}{c^2}\right)\right)abc}{de} + \frac{-\frac{\frac{1}{4}\left(7\,\sqrt{cx+1}\,\sqrt{-cx+1}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)^2+4\,x\int\frac{9\,\sqrt{cx+1}\,\cdots}{\cdots}\right.}{\cdots}}{\sqrt{\cdots}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^2/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2),x, algor
ithm="maxima")
```

```
[Out] -((-1)^(-2*c^2*d*e*x^2 + 2*d*e)*d*e*log(-2*c^2*d*e + 2*d*e/x^2)/sqrt(d*e) +
 d*e*sqrt(1/(d*e))*log(x^2 - 1/c^2))*a*b*c/(d*e) + b^2*integrate(arctan2(c*
x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2/(sqrt(c*x + 1)*sqrt(-c*x + 1)*x^2), x)/(
sqrt(d)*sqrt(e)) - 2*sqrt(-c^2*d*e*x^2 + d*e)*a*b*arcsin(c*x)/(d*e*x) - sqr
t(-c^2*d*e*x^2 + d*e)*a^2/(d*e*x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\operatorname{asin}(c\,x))^2}{x^2\,\sqrt{d+c\,d\,x}\,\sqrt{e-c\,e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x^2*(d + c*d*x)^(1/2)*(e - c*e*x)^(1/2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/(x^2*(d + c*d*x)^(1/2)*(e - c*e*x)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+b\operatorname{asin}(cx))^2}{x^2\sqrt{d\,(cx+1)}\,\sqrt{-e\,(cx-1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x**2/(c*d*x+d)**(1/2)/(-c*e*x+e)**(1/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2/(x**2*sqrt(d*(c*x + 1))*sqrt(-e*(c*x - 1))),
x)
```

3.591 $\int \frac{x^2(a+b\sin^{-1}(cx))^2}{(d+cdx)^{3/2}(e-cex)^{3/2}}\,dx$

Optimal. Leaf size=295

$$\frac{x\left(a+b\sin^{-1}(cx)\right)^2}{c^2de\sqrt{cdx+d}\,\sqrt{e-cex}}-\frac{\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^3}{3bc^3de\sqrt{cdx+d}\,\sqrt{e-cex}}-\frac{i\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{c^3de\sqrt{cdx+d}\,\sqrt{e-cex}}+\frac{2b\sqrt{1-c^2x^2}\,\log\left(1+e^{2is\ldots}\right.}{c^3de\sqrt{cdx+\ldots}}$$

```
[Out] x*(a+b*arcsin(c*x))^2/c^2/d/e/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-I*(a+b*arcsi
n(c*x))^2*(-c^2*x^2+1)^(1/2)/c^3/d/e/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-1/3*(
a+b*arcsin(c*x))^3*(-c^2*x^2+1)^(1/2)/b/c^3/d/e/(c*d*x+d)^(1/2)/(-c*e*x+e)^
(1/2)+2*b*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)
^(1/2)/c^3/d/e/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-I*b^2*polylog(2,-(I*c*x+(-c
^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/c^3/d/e/(c*d*x+d)^(1/2)/(-c*e*x+e)^(
1/2)
```

Rubi [A] time = 0.74, antiderivative size = 295, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.229, Rules used = {4739, 4703, 4641, 4675, 3719, 2190, 2279, 2391}

$$-\frac{ib^2\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{c^3de\sqrt{cdx+d}\,\sqrt{e-cex}}-\frac{\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^3}{3bc^3de\sqrt{cdx+d}\,\sqrt{e-cex}}-\frac{i\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)^2}{c^3de\sqrt{cdx+d}\,\sqrt{e-cex}}+\frac{2b\sqrt{1-c\ldots}}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*ArcSin[c*x])^2)/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)),x]
```

```
[Out] (x*(a + b*ArcSin[c*x])^2)/(c^2*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) - (I*Sq
rt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(c^3*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*
e*x]) - (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^3)/(3*b*c^3*d*e*Sqrt[d + c*d
*x]*Sqrt[e - c*e*x]) + (2*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*Log[1 + E
^((2*I)*ArcSin[c*x])])/(c^3*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) - (I*b^2*S
qrt[1 - c^2*x^2]*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(c^3*d*e*Sqrt[d + c*d*
x]*Sqrt[e - c*e*x])
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
```

```
[m, 0]
```

Rule 4641

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Simp[(a + b*ArcSin[c*x])^(n + 1)/(b*c*Sqrt[d]*(n + 1)), x] /; Fre
eQ[{a, b, c, d, e, n}, x] && EqQ[c^2*d + e, 0] && GtQ[d, 0] && NeQ[n, -1]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4703

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[(f*(f*x)^(m - 1)*(d + e*x^2)^(p + 1)*(a +
 b*ArcSin[c*x])^n)/(2*e*(p + 1)), x] + (-Dist[(f^2*(m - 1))/(2*e*(p + 1)),
Int[(f*x)^(m - 2)*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[
(b*f*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1 - c^2*x^2)^Fra
cPart[p]), Int[(f*x)^(m - 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[
n, 0] && LtQ[p, -1] && GtQ[m, 1]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((h_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_))^(p_)*((f_) + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((-((d^2*g)/e))^I
ntPart[q]*(d + e*x)^FracPart[q]*(f + g*x)^FracPart[q])/(1 - c^2*x^2)^FracPa
rt[q], Int[(h*x)^m*(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, h, m, n}, x] && EqQ[e*f + d*g, 0] &&
 EqQ[c^2*d^2 - e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rubi steps

$$\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}dx}{de\sqrt{d+cdx}\sqrt{e-cex}}$$

$$= \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{c^2de\sqrt{d+cdx}\sqrt{e-cex}} - \frac{\sqrt{1-c^2x^2}\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{1-c^2x^2}}dx}{c^2de\sqrt{d+cdx}\sqrt{e-cex}} - \frac{\left(2b\sqrt{1-c^2x^2}\right)\int \frac{x(a+b}{1}}{cde\sqrt{d+cdx}\sqrt{e}}$$

$$= \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{c^2de\sqrt{d+cdx}\sqrt{e-cex}} - \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^3}{3bc^3de\sqrt{d+cdx}\sqrt{e-cex}} - \frac{\left(2b\sqrt{1-c^2x^2}\right)\text{Subst}(}{c^3de\sqrt{}}$$

$$= \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{c^2de\sqrt{d+cdx}\sqrt{e-cex}} - \frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{c^3de\sqrt{d+cdx}\sqrt{e-cex}} - \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-}\right.}{3bc^3de\sqrt{d+cdx}\sqrt{e}}$$

$$= \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{c^2de\sqrt{d+cdx}\sqrt{e-cex}} - \frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{c^3de\sqrt{d+cdx}\sqrt{e-cex}} - \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-}\right.}{3bc^3de\sqrt{d+cdx}\sqrt{e}}$$

$$= \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{c^2de\sqrt{d+cdx}\sqrt{e-cex}} - \frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{c^3de\sqrt{d+cdx}\sqrt{e-cex}} - \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-}\right.}{3bc^3de\sqrt{d+cdx}\sqrt{e}}$$

$$= \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{c^2de\sqrt{d+cdx}\sqrt{e-cex}} - \frac{i\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{c^3de\sqrt{d+cdx}\sqrt{e-cex}} - \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-}\right.}{3bc^3de\sqrt{d+cdx}\sqrt{e}}$$

Mathematica [B] time = 2.60, size = 636, normalized size = 2.16

$$\frac{3a^2\sqrt{e}\sqrt{cdx+d}\sqrt{e-cex}\tan^{-1}\left(\frac{cx\sqrt{cdx+d}\sqrt{e-cex}}{\sqrt{d}\sqrt{e}\left(c^2x^2-1\right)}\right)+3a^2c\sqrt{d}\,ex+3ab\sqrt{d}\,e\left(\sqrt{1-c^2x^2}\left(2\left(\log\left(\cos\left(\frac{1}{2}\sin^{-1}(cx)\right)-\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(a + b*ArcSin[c*x])^2)/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2))
,x]
```

```
[Out] (3*a^2*c*Sqrt[d]*e*x + 3*a^2*Sqrt[e]*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]*ArcTan
[(c*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(Sqrt[d]*Sqrt[e]*(-1 + c^2*x^2))] +
3*a*b*Sqrt[d]*e*(2*c*x*ArcSin[c*x] + Sqrt[1 - c^2*x^2]*(-ArcSin[c*x]^2 + 2*
(Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]] + Log[Cos[ArcSin[c*x]/2] + Si
n[ArcSin[c*x]/2]]))) + b^2*Sqrt[d]*e*((6*I)*Pi*Sqrt[1 - c^2*x^2]*ArcSin[c*x
] + 3*c*x*ArcSin[c*x]^2 - (3*I)*Sqrt[1 - c^2*x^2]*ArcSin[c*x]^2 - Sqrt[1 -
c^2*x^2]*ArcSin[c*x]^3 + 12*Pi*Sqrt[1 - c^2*x^2]*Log[1 + E^((-I)*ArcSin[c*x
])] + 3*Pi*Sqrt[1 - c^2*x^2]*Log[1 - I*E^(I*ArcSin[c*x])] + 6*Sqrt[1 - c^2*
x^2]*ArcSin[c*x]*Log[1 - I*E^(I*ArcSin[c*x])] - 3*Pi*Sqrt[1 - c^2*x^2]*Log[
1 + I*E^(I*ArcSin[c*x])] + 6*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*Log[1 + I*E^(I*A
rcSin[c*x])] - 12*Pi*Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*x]/2]] + 3*Pi*Sqrt[
1 - c^2*x^2]*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] - 3*Pi*Sqrt[1 - c^2*x^2]*Log
[Sin[(Pi + 2*ArcSin[c*x])/4]] - (6*I)*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)*E^(
I*ArcSin[c*x])] - (6*I)*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])]))
/(3*c^3*d^(3/2)*e^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])
```

fricas [F] time = 1.24, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b^2x^2\arcsin\left(cx\right)^2+2\,abx^2\arcsin\left(cx\right)+a^2x^2\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{c^4d^2e^2x^4-2\,c^2d^2e^2x^2+d^2e^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x, algor
ithm="fricas")
```

```
[Out] integral((b^2*x^2*arcsin(c*x)^2 + 2*a*b*x^2*arcsin(c*x) + a^2*x^2)*sqrt(c*d
*x + d)*sqrt(-c*e*x + e)/(c^4*d^2*e^2*x^4 - 2*c^2*d^2*e^2*x^2 + d^2*e^2), x
)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b \arcsin(cx) + a)^2 x^2}{(cdx + d)^{\frac{3}{2}}(-cex + e)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x, algor
ithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2*x^2/((c*d*x + d)^(3/2)*(-c*e*x + e)^(3/2)),
 x)
```

maple [F] time = 0.66, size = 0, normalized size = 0.00

$$\int \frac{x^2 (a + b \arcsin(cx))^2}{(cdx + d)^{\frac{3}{2}} (-cex + e)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x)
```

```
[Out] int(x^2*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a^2\left(\frac{x}{\sqrt{-c^2dex^2 + de}\,c^2de} - \frac{\arcsin(cx)}{\sqrt{de}\,c^3de}\right) + \sqrt{d}\sqrt{e}\int \frac{\left(b^2x^2 \arctan\left(cx, \sqrt{cx+1}\sqrt{-cx+1}\right)^2 + 2\,abx^2 \arctan\left(cx,\right.\right.}{c^4d^2e^2x^4 - 2\,c^2d^2e^2x^2 +}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x, algor
ithm="maxima")
```

```
[Out] a^2*(x/(sqrt(-c^2*d*e*x^2 + d*e)*c^2*d*e) - arcsin(c*x)/(sqrt(d*e)*c^3*d*e)
) + sqrt(d)*sqrt(e)*integrate((b^2*x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x
 + 1))^2 + 2*a*b*x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x +
 1)*sqrt(-c*x + 1)/(c^4*d^2*e^2*x^4 - 2*c^2*d^2*e^2*x^2 + d^2*e^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2\,(a + b\,\mathrm{asin}(c\,x))^2}{(d + c\,d\,x)^{3/2}\,(e - c\,e\,x)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*asin(c*x))^2)/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)),x)
```

```
[Out] int((x^2*(a + b*asin(c*x))^2)/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(c*x))**2/(c*d*x+d)**(3/2)/(-c*e*x+e)**(3/2),x)
```

```
[Out] Timed out
```

3.592 $\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}}\,dx$

Optimal. Leaf size=244

$$\frac{4ib\sqrt{1-c^2x^2}\,\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{c^2de\sqrt{cdx+d}\,\sqrt{e-cex}}+\frac{\left(a+b\sin^{-1}(cx)\right)^2}{c^2de\sqrt{cdx+d}\,\sqrt{e-cex}}-\frac{2ib^2\sqrt{1-c^2x^2}\,\mathrm{Li}_2\left(-ie^{i\sin^{-1}(cx)}\right)}{c^2de\sqrt{cdx+d}\,\sqrt{e-cex}}+\cdots$$

```
[Out] (a+b*arcsin(c*x))^2/c^2/d/e/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+4*I*b*(a+b*arc
sin(c*x))*arctan(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/c^2/d/e/(c*d*
x+d)^(1/2)/(-c*e*x+e)^(1/2)-2*I*b^2*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2))
)*(-c^2*x^2+1)^(1/2)/c^2/d/e/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+2*I*b^2*polyl
og(2,I*(I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/c^2/d/e/(c*d*x+d)^(1/
2)/(-c*e*x+e)^(1/2)
```

Rubi [A] time = 0.49, antiderivative size = 244, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {4739, 4677, 4657, 4181, 2279, 2391}

$$-\frac{2ib^2\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,-ie^{i\sin^{-1}(cx)}\right)}{c^2de\sqrt{cdx+d}\,\sqrt{e-cex}}+\frac{2ib^2\sqrt{1-c^2x^2}\,\mathrm{PolyLog}\left(2,ie^{i\sin^{-1}(cx)}\right)}{c^2de\sqrt{cdx+d}\,\sqrt{e-cex}}+\frac{4ib\sqrt{1-c^2x^2}\,\tan^{-1}\left(e^{i\sin^{-1}\cdots}\right.}{c^2de\sqrt{cdx+d}\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*ArcSin[c*x])^2)/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)),x]
```

```
[Out] (a + b*ArcSin[c*x])^2/(c^2*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + ((4*I)*b*
Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])])/(c^2*d*e*S
qrt[d + c*d*x]*Sqrt[e - c*e*x]) - ((2*I)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, (
-I)*E^(I*ArcSin[c*x])])/(c^2*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + ((2*I)*
b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c^2*d*e*Sqrt[d + c*
d*x]*Sqrt[e - c*e*x])
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((h_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_))^(p_)*((f_) + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((-((d^2*g)/e))^I
ntPart[q]*(d + e*x)^FracPart[q]*(f + g*x)^FracPart[q])/(1 - c^2*x^2)^FracPa
rt[q], Int[(h*x)^m*(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, h, m, n}, x] && EqQ[e*f + d*g, 0] &&
 EqQ[c^2*d^2 - e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rubi steps

$$\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{x\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}\,dx}{de\sqrt{d+cdx}\,\sqrt{e-cex}}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2}{c^2de\sqrt{d+cdx}\,\sqrt{e-cex}} - \frac{\left(2b\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{1-c^2x^2}\,dx}{cde\sqrt{d+cdx}\,\sqrt{e-cex}}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2}{c^2de\sqrt{d+cdx}\,\sqrt{e-cex}} - \frac{\left(2b\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int (a+bx)\sec(x)\,dx, x, \sin^{-1}(cx\right.}{c^2de\sqrt{d+cdx}\,\sqrt{e-cex}}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2}{c^2de\sqrt{d+cdx}\,\sqrt{e-cex}} + \frac{4ib\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{c^2de\sqrt{d+cdx}\,\sqrt{e-cex}} + \frac{(2b}{}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2}{c^2de\sqrt{d+cdx}\,\sqrt{e-cex}} + \frac{4ib\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{c^2de\sqrt{d+cdx}\,\sqrt{e-cex}} - \frac{(2i}{}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2}{c^2de\sqrt{d+cdx}\,\sqrt{e-cex}} + \frac{4ib\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{c^2de\sqrt{d+cdx}\,\sqrt{e-cex}} - \frac{2ib}{}$$

Mathematica [A] time = 1.35, size = 453, normalized size = 1.86

$$\frac{a^2 + 2ab\sqrt{1-c^2x^2}\log\left(\cos\left(\frac{1}{2}\sin^{-1}(cx)\right)-\sin\left(\frac{1}{2}\sin^{-1}(cx)\right)\right) - 2ab\sqrt{1-c^2x^2}\log\left(\sin\left(\frac{1}{2}\sin^{-1}(cx)\right)+\cos\left(\frac{1}{2}\sin\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*ArcSin[c*x])^2)/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)),x
]
```

```
[Out] (a^2 + 2*a*b*ArcSin[c*x] + I*b^2*Pi*Sqrt[1 - c^2*x^2]*ArcSin[c*x] + b^2*Arc
Sin[c*x]^2 - b^2*Pi*Sqrt[1 - c^2*x^2]*Log[1 - I*E^(I*ArcSin[c*x])] - 2*b^2*
Sqrt[1 - c^2*x^2]*ArcSin[c*x]*Log[1 - I*E^(I*ArcSin[c*x])] - b^2*Pi*Sqrt[1
- c^2*x^2]*Log[1 + I*E^(I*ArcSin[c*x])] + 2*b^2*Sqrt[1 - c^2*x^2]*ArcSin[c*
x]*Log[1 + I*E^(I*ArcSin[c*x])] + b^2*Pi*Sqrt[1 - c^2*x^2]*Log[-Cos[(Pi + 2
```

```
*ArcSin[c*x])/4]] + 2*a*b*Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*x]/2] - Sin[Ar
cSin[c*x]/2]] - 2*a*b*Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin
[c*x]/2]] + b^2*Pi*Sqrt[1 - c^2*x^2]*Log[Sin[(Pi + 2*ArcSin[c*x])/4]] - (2*
I)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] + (2*I)*b^2*Sqr
t[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c^2*d*e*Sqrt[d + c*d*x]*Sq
rt[e - c*e*x])
```

fricas [F] time = 0.50, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b^{2} x \arcsin\left(cx\right)^{2} + 2\, abx \arcsin\left(cx\right) + a^{2} x\right)\sqrt{cdx + d}\,\sqrt{-cex + e}}{c^{4} d^{2} e^{2} x^{4} - 2\, c^{2} d^{2} e^{2} x^{2} + d^{2} e^{2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x, algorit
hm="fricas")
```

```
[Out] integral((b^2*x*arcsin(c*x)^2 + 2*a*b*x*arcsin(c*x) + a^2*x)*sqrt(c*d*x + d
)*sqrt(-c*e*x + e)/(c^4*d^2*e^2*x^4 - 2*c^2*d^2*e^2*x^2 + d^2*e^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b \arcsin\left(cx\right) + a\right)^{2} x}{\left(cdx + d\right)^{\frac{3}{2}} \left(-cex + e\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x, algorit
hm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2*x/((c*d*x + d)^(3/2)*(-c*e*x + e)^(3/2)), x
)
```

maple [F] time = 0.85, size = 0, normalized size = 0.00

$$\int \frac{x \left(a + b \arcsin\left(cx\right)\right)^{2}}{\left(cdx + d\right)^{\frac{3}{2}} \left(-cex + e\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x)
```

```
[Out] int(x*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\sqrt{d}\,\sqrt{e} \int \frac{\left(b^{2} x \arctan\left(cx, \sqrt{cx + 1}\,\sqrt{-cx + 1}\right)^{2} + 2\, abx \arctan\left(cx, \sqrt{cx + 1}\,\sqrt{-cx + 1}\right)\right)\sqrt{cx + 1}\,\sqrt{-cx + 1}}{c^{4} d^{2} e^{2} x^{4} - 2\, c^{2} d^{2} e^{2} x^{2} + d^{2} e^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x, algorit
hm="maxima")
```

```
[Out] sqrt(d)*sqrt(e)*integrate((b^2*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))
^2 + 2*a*b*x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt
(-c*x + 1)/(c^4*d^2*e^2*x^4 - 2*c^2*d^2*e^2*x^2 + d^2*e^2), x) + a^2/(sqrt(
-c^2*d*e*x^2 + d*e)*c^2*d*e)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x\,(a+b\,\mathrm{asin}\,(c\,x))^2}{(d+c\,d\,x)^{3/2}\,(e-c\,e\,x)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*asin(c*x))^2)/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)),x)
[Out] int((x*(a + b*asin(c*x))^2)/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(c*x))**2/(c*d*x+d)**(3/2)/(-c*e*x+e)**(3/2),x)
[Out] Timed out
```

3.593 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}}\,dx$

Optimal. Leaf size=217

$$-\frac{i\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{c(cdx+d)^{3/2}(e-cex)^{3/2}}+\frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(cdx+d)^{3/2}(e-cex)^{3/2}}+\frac{2b\left(1-c^2x^2\right)^{3/2}\log\left(1+e^{2i\sin^{-1}(cx)}\right)\left(a+b\right.}{c(cdx+d)^{3/2}(e-cex)^{3/2}}$$

```
[Out] x*(-c^2*x^2+1)*(a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-I*(-c^2
*x^2+1)^(3/2)*(a+b*arcsin(c*x))^2/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)+2*b*(-
c^2*x^2+1)^(3/2)*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))^2)/c/(c*
d*x+d)^(3/2)/(-c*e*x+e)^(3/2)-I*b^2*(-c^2*x^2+1)^(3/2)*polylog(2,-(I*c*x+(-
c^2*x^2+1)^(1/2))^2)/c/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2)
```

Rubi [A] time = 0.38, antiderivative size = 217, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.219, Rules used = {4673, 4651, 4675, 3719, 2190, 2279, 2391}

$$-\frac{ib^2\left(1-c^2x^2\right)^{3/2}\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{c(cdx+d)^{3/2}(e-cex)^{3/2}}-\frac{i\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{c(cdx+d)^{3/2}(e-cex)^{3/2}}+\frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(cdx+d)^{3/2}(e-cex)^{3/2}}+$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)),x]
```

```
[Out] (x*(1 - c^2*x^2)*(a + b*ArcSin[c*x])^2)/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2
)) - (I*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])^2)/(c*(d + c*d*x)^(3/2)*(e
 - c*e*x)^(3/2)) + (2*b*(1 - c^2*x^2)^(3/2)*(a + b*ArcSin[c*x])*Log[1 + E^((
2*I)*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)) - (I*b^2*(1 - c
^2*x^2)^(3/2)*PolyLog[2, -E^((2*I)*ArcSin[c*x])])/(c*(d + c*d*x)^(3/2)*(e -
 c*e*x)^(3/2))
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4673

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(p_)*((f_)
 + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((d + e*x)^q*(f + g*x)^q)/(1 - c^2*x
^2)^q, Int[(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n, x], x]
/; FreeQ[{a, b, c, d, e, f, g, n}, x] && EqQ[e*f + d*g, 0] && EqQ[c^2*d^2 -
 e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}}\,dx &= \frac{\left(1-c^2x^2\right)^{3/2}\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(1-c^2x^2\right)^{3/2}}\,dx}{(d+cdx)^{3/2}(e-cex)^{3/2}}\\
&= \frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{\left(2bc\left(1-c^2x^2\right)^{3/2}\right)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{1-c^2x^2}\,dx}{(d+cdx)^{3/2}(e-cex)^{3/2}}\\
&= \frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{\left(2b\left(1-c^2x^2\right)^{3/2}\right)\text{Subst}\left(\int (a+bx)\tan(x)\,dx, x,\right.}{c(d+cdx)^{3/2}(e-cex)^{3/2}}\\
&= \frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{i\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{\left(4ib\left(1-c^2x\right.\right.}{}\\
&= \frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{i\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2b\left(1-c^2x^2\right)}{}\\
&= \frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{i\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2b\left(1-c^2x^2\right)}{}\\
&= \frac{x\left(1-c^2x^2\right)\left(a+b\sin^{-1}(cx)\right)^2}{(d+cdx)^{3/2}(e-cex)^{3/2}} - \frac{i\left(1-c^2x^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}{c(d+cdx)^{3/2}(e-cex)^{3/2}} + \frac{2b\left(1-c^2x^2\right)}{}
\end{aligned}$$

Mathematica [B] time = 0.76, size = 550, normalized size = 2.53

$$\frac{a^2cx+2ab\sqrt{1-c^2x^2}\log\left(\cos\left(\frac{1}{2}\sin^{-1}(cx)\right)-\sin\left(\frac{1}{2}\sin^{-1}(cx)\right)\right)+2ab\sqrt{1-c^2x^2}\log\left(\sin\left(\frac{1}{2}\sin^{-1}(cx)\right)+\cos\left(\frac{1}{2}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)),x]
```

```
[Out] (a^2*c*x + 2*a*b*c*x*ArcSin[c*x] + (2*I)*b^2*Pi*Sqrt[1 - c^2*x^2]*ArcSin[c*
x] + b^2*c*x*ArcSin[c*x]^2 - I*b^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x]^2 + 4*b^2*
Pi*Sqrt[1 - c^2*x^2]*Log[1 + E^((-I)*ArcSin[c*x])] + b^2*Pi*Sqrt[1 - c^2*x^
```

```
2]*Log[1 - I*E^(I*ArcSin[c*x])] + 2*b^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*Log[1
 - I*E^(I*ArcSin[c*x])] - b^2*Pi*Sqrt[1 - c^2*x^2]*Log[1 + I*E^(I*ArcSin[c*
x])] + 2*b^2*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*Log[1 + I*E^(I*ArcSin[c*x])] - 4
*b^2*Pi*Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*x]/2]] + b^2*Pi*Sqrt[1 - c^2*x^2
]*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]] + 2*a*b*Sqrt[1 - c^2*x^2]*Log[Cos[ArcSi
n[c*x]/2] - Sin[ArcSin[c*x]/2]] + 2*a*b*Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*
x]/2] + Sin[ArcSin[c*x]/2]] - b^2*Pi*Sqrt[1 - c^2*x^2]*Log[Sin[(Pi + 2*ArcS
in[c*x])/4]] - (2*I)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)*E^(I*ArcSin[c*x]
)] - (2*I)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])])/(c*d*e*Sq
rt[d + c*d*x]*Sqrt[e - c*e*x])
```

fricas [F] time = 0.78, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b^2 \arcsin\left(cx\right)^2 + 2\,ab\arcsin\left(cx\right) + a^2\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{c^4d^2e^2x^4 - 2\,c^2d^2e^2x^2 + d^2e^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x, algorithm
="fricas")
```

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(c*d*x + d)*sqrt
(-c*e*x + e)/(c^4*d^2*e^2*x^4 - 2*c^2*d^2*e^2*x^2 + d^2*e^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\arcsin\left(cx\right) + a\right)^2}{\left(cdx+d\right)^{\frac{3}{2}}\left(-cex+e\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x, algorithm
="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/((c*d*x + d)^(3/2)*(-c*e*x + e)^(3/2)), x)
```

maple [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b\arcsin\left(cx\right)\right)^2}{\left(cdx+d\right)^{\frac{3}{2}}\left(-cex+e\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x, algorithm
="maxima")
```

```
[Out] Timed out
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a + b\,\mathrm{asin}\left(c\,x\right)\right)^2}{\left(d + c\,d\,x\right)^{3/2}\,\left(e - c\,e\,x\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/((d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(c*d*x+d)**(3/2)/(-c*e*x+e)**(3/2),x)
```

```
[Out] Timed out
```

3.594 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x(d+cdx)^{3/2}(e-cex)^{3/2}}\,dx$

Optimal. Leaf size=548

$$\frac{2ib\sqrt{1-c^2x^2}\,\text{Li}_2\left(-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{de\sqrt{cdx+d}\sqrt{e-cex}}-\frac{2ib\sqrt{1-c^2x^2}\,\text{Li}_2\left(e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{de\sqrt{cdx+d}\sqrt{e-cex}}+\frac{4ib\sqrt{1-c^2x^2}}{\cdots}$$

```
[Out] (a+b*arcsin(c*x))^2/d/e/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+4*I*b*(a+b*arcsin(
c*x))*arctan(I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/d/e/(c*d*x+d)^(1/
2)/(-c*e*x+e)^(1/2)-2*(a+b*arcsin(c*x))^2*arctanh(I*c*x+(-c^2*x^2+1)^(1/2))
*(-c^2*x^2+1)^(1/2)/d/e/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+2*I*b*(a+b*arcsin(
c*x))*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/d/e/(c*d*x+d)
^(1/2)/(-c*e*x+e)^(1/2)-2*I*b^2*polylog(2,-I*(I*c*x+(-c^2*x^2+1)^(1/2)))*(-
c^2*x^2+1)^(1/2)/d/e/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+2*I*b^2*polylog(2,I*(
I*c*x+(-c^2*x^2+1)^(1/2)))*(-c^2*x^2+1)^(1/2)/d/e/(c*d*x+d)^(1/2)/(-c*e*x+e
)^(1/2)-2*I*b*(a+b*arcsin(c*x))*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x
^2+1)^(1/2)/d/e/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-2*b^2*polylog(3,-I*c*x-(-c
^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/d/e/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+2*
b^2*polylog(3,I*c*x+(-c^2*x^2+1)^(1/2))*(-c^2*x^2+1)^(1/2)/d/e/(c*d*x+d)^(1
/2)/(-c*e*x+e)^(1/2)
```

Rubi [A] time = 0.85, antiderivative size = 548, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 11, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.314$, Rules used = {4739, 4705, 4709, 4183, 2531, 2282, 6589, 4657, 4181, 2279, 2391}

$$\frac{2ib\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{de\sqrt{cdx+d}\sqrt{e-cex}}-\frac{2ib\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,e^{i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{de\sqrt{cdx+d}\sqrt{e-cex}}\cdots$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)),x]
```

```
[Out] (a + b*ArcSin[c*x])^2/(d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + ((4*I)*b*Sqrt
[1 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcTan[E^(I*ArcSin[c*x])])/(d*e*Sqrt[d +
c*d*x]*Sqrt[e - c*e*x]) - (2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2*ArcTan
h[E^(I*ArcSin[c*x])])/(d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + ((2*I)*b*Sqrt
[1 - c^2*x^2]*(a + b*ArcSin[c*x])*PolyLog[2, -E^(I*ArcSin[c*x])])/(d*e*Sqrt
[d + c*d*x]*Sqrt[e - c*e*x]) - ((2*I)*b^2*Sqrt[1 - c^2*x^2]*PolyLog[2, (-I)
*E^(I*ArcSin[c*x])])/(d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + ((2*I)*b^2*Sqr
t[1 - c^2*x^2]*PolyLog[2, I*E^(I*ArcSin[c*x])])/(d*e*Sqrt[d + c*d*x]*Sqrt[e
 - c*e*x]) - ((2*I)*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*PolyLog[2, E^(I
*ArcSin[c*x])])/(d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) - (2*b^2*Sqrt[1 - c^2
*x^2]*PolyLog[3, -E^(I*ArcSin[c*x])])/(d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])
 + (2*b^2*Sqrt[1 - c^2*x^2]*PolyLog[3, E^(I*ArcSin[c*x])])/(d*e*Sqrt[d + c*
d*x]*Sqrt[e - c*e*x])
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
```

```
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4657

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> Dist[1/(c*d), Subst[Int[(a + b*x)^n*Sec[x], x], x, ArcSin[c*x]], x] /
; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4705

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> -Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a +
b*ArcSin[c*x])^n)/(2*d*f*(p + 1)), x] + (Dist[(m + 2*p + 3)/(2*d*(p + 1)),
Int[(f*x)^m*(d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n, x], x] + Dist[(b*c*n
*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*f*(p + 1)*(1 - c^2*x^2)^FracPart[
p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
0] && LtQ[p, -1] &&  !GtQ[m, 1] && (IntegerQ[m] || IntegerQ[p] || EqQ[n, 1]
)
```

Rule 4709

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_))/Sqrt[(d_) + (e_.)*
(x_)^2], x_Symbol] :> Dist[1/(c^(m + 1)*Sqrt[d]), Subst[Int[(a + b*x)^n*Sin
[x]^m, x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d +
e, 0] && GtQ[d, 0] && IGtQ[n, 0] && IntegerQ[m]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((h_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_))^(p_)*((f_) + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((-((d^2*g)/e))^I
ntPart[q]*(d + e*x)^FracPart[q]*(f + g*x)^FracPart[q])/(1 - c^2*x^2)^FracPa
rt[q], Int[(h*x)^m*(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, h, m, n}, x] && EqQ[e*f + d*g, 0] &&
 EqQ[c^2*d^2 - e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x(d+cdx)^{3/2}(e-cex)^{3/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\left(1-c^2x^2\right)^{3/2}}\,dx}{de\sqrt{d+cdx}\sqrt{e-cex}}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2}{de\sqrt{d+cdx}\sqrt{e-cex}} + \frac{\sqrt{1-c^2x^2}\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x\sqrt{1-c^2x^2}}\,dx}{de\sqrt{d+cdx}\sqrt{e-cex}} - \frac{\left(2bc\sqrt{1-c^2x^2}\right)\int \frac{a\cdots}{\cdots}}{de\sqrt{d+cdx}\sqrt{e\cdots}}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2}{de\sqrt{d+cdx}\sqrt{e-cex}} + \frac{\sqrt{1-c^2x^2}\,\mathrm{Subst}\left(\int (a+bx)^2\csc(x)\,dx, x, \sin^{-1}(cx)\right)}{de\sqrt{d+cdx}\sqrt{e-cex}}\cdots$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2}{de\sqrt{d+cdx}\sqrt{e-cex}} + \frac{4ib\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{de\sqrt{d+cdx}\sqrt{e-cex}} - \cdots$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2}{de\sqrt{d+cdx}\sqrt{e-cex}} + \frac{4ib\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{de\sqrt{d+cdx}\sqrt{e-cex}} - \cdots$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2}{de\sqrt{d+cdx}\sqrt{e-cex}} + \frac{4ib\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{de\sqrt{d+cdx}\sqrt{e-cex}} - \cdots$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2}{de\sqrt{d+cdx}\sqrt{e-cex}} + \frac{4ib\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)\tan^{-1}\left(e^{i\sin^{-1}(cx)}\right)}{de\sqrt{d+cdx}\sqrt{e-cex}} - \cdots$$

Mathematica [A] time = 5.76, size = 877, normalized size = 1.60

$$\frac{\sqrt{d}\sqrt{e}\log(cx)a^2 - \sqrt{d}\sqrt{e}\log\left(de+\sqrt{d}\sqrt{cxd+d}\sqrt{e-cex}\sqrt{e}\right)a^2 - \frac{\sqrt{cxd+d}\sqrt{e-cex}\,a^2}{c^2x^2-1} + \frac{2bde\left(\sqrt{1-c^2x^2}\log\left(1-e^{i\sin^{-1}(c\cdots}\right.\right.}{\cdots}\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)),x]
```

```
[Out] (-((a^2*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])/(-1 + c^2*x^2)) + a^2*Sqrt[d]*Sqrt
[e]*Log[c*x] - a^2*Sqrt[d]*Sqrt[e]*Log[d*e + Sqrt[d]*Sqrt[e]*Sqrt[d + c*d*x
]*Sqrt[e - c*e*x]] + (2*a*b*d*e*(ArcSin[c*x] + Sqrt[1 - c^2*x^2]*ArcSin[c*x
]*Log[1 - E^(I*ArcSin[c*x])] - Sqrt[1 - c^2*x^2]*ArcSin[c*x]*Log[1 + E^(I*A
rcSin[c*x])] + Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2
]] - Sqrt[1 - c^2*x^2]*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]] + I*Sqr
t[1 - c^2*x^2]*PolyLog[2, -E^(I*ArcSin[c*x])] - I*Sqrt[1 - c^2*x^2]*PolyLog
```

```
[2, E^(I*ArcSin[c*x])]))/(Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (b^2*d*e*(I*Pi
*Sqrt[1 - c^2*x^2]*ArcSin[c*x] + ArcSin[c*x]^2 + Sqrt[1 - c^2*x^2]*ArcSin[c
*x]^2*Log[1 - E^(I*ArcSin[c*x])] - Pi*Sqrt[1 - c^2*x^2]*Log[1 - I*E^(I*ArcS
in[c*x])] - 2*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*Log[1 - I*E^(I*ArcSin[c*x])] -
Pi*Sqrt[1 - c^2*x^2]*Log[1 + I*E^(I*ArcSin[c*x])] + 2*Sqrt[1 - c^2*x^2]*Arc
Sin[c*x]*Log[1 + I*E^(I*ArcSin[c*x])] - Sqrt[1 - c^2*x^2]*ArcSin[c*x]^2*Log
[1 + E^(I*ArcSin[c*x])] + Pi*Sqrt[1 - c^2*x^2]*Log[-Cos[(Pi + 2*ArcSin[c*x]
)/4]] + Pi*Sqrt[1 - c^2*x^2]*Log[Sin[(Pi + 2*ArcSin[c*x])/4]] + (2*I)*Sqrt[
1 - c^2*x^2]*ArcSin[c*x]*PolyLog[2, -E^(I*ArcSin[c*x])] - (2*I)*Sqrt[1 - c^
2*x^2]*PolyLog[2, (-I)*E^(I*ArcSin[c*x])] + (2*I)*Sqrt[1 - c^2*x^2]*PolyLog
[2, I*E^(I*ArcSin[c*x])] - (2*I)*Sqrt[1 - c^2*x^2]*ArcSin[c*x]*PolyLog[2, E
^(I*ArcSin[c*x])] - 2*Sqrt[1 - c^2*x^2]*PolyLog[3, -E^(I*ArcSin[c*x])] + 2*
Sqrt[1 - c^2*x^2]*PolyLog[3, E^(I*ArcSin[c*x])]))/(Sqrt[d + c*d*x]*Sqrt[e -
 c*e*x]))/(d^2*e^2)
```

fricas [F] time = 0.70, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b^2\arcsin\left(cx\right)^2+2\,ab\arcsin\left(cx\right)+a^2\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{c^4d^2e^2x^5-2\,c^2d^2e^2x^3+d^2e^2x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x, algorit
hm="fricas")
```

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(c*d*x + d)*sqrt
(-c*e*x + e)/(c^4*d^2*e^2*x^5 - 2*c^2*d^2*e^2*x^3 + d^2*e^2*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\arcsin\left(cx\right)+a\right)^2}{\left(cdx+d\right)^{\frac{3}{2}}\left(-cex+e\right)^{\frac{3}{2}}x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x, algorit
hm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/((c*d*x + d)^(3/2)*(-c*e*x + e)^(3/2)*x), x
)
```

maple [F] time = 0.43, size = 0, normalized size = 0.00

$$\int\frac{\left(a+b\arcsin\left(cx\right)\right)^2}{x\left(cdx+d\right)^{\frac{3}{2}}\left(-cex+e\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2/x/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-a^2\left(\frac{\log\left(\frac{2\,de}{|x|}+\frac{2\,\sqrt{-c^2dex^2+de}\,\sqrt{de}}{|x|}\right)}{\sqrt{de}\,de}-\frac{1}{\sqrt{-c^2dex^2+de}\,de}\right)+\sqrt{d}\,\sqrt{e}\int\frac{\left(b^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)^2+2\,ab\,\mathrm{arc}\right.}{c^4d^2e^2x^5-2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x, algorit
hm="maxima")
```

```
[Out] -a^2*(log(2*d*e/abs(x) + 2*sqrt(-c^2*d*e*x^2 + d*e)*sqrt(d*e)/abs(x))/(sqrt
(d*e)*d*e) - 1/(sqrt(-c^2*d*e*x^2 + d*e)*d*e)) + sqrt(d)*sqrt(e)*integrate(
(b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a*b*arctan2(c*x, sqrt
(c*x + 1)*sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)/(c^4*d^2*e^2*x^5 -
2*c^2*d^2*e^2*x^3 + d^2*e^2*x), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\mathrm{asin}\,(c\,x))^2}{x\,(d + c\,d\,x)^{3/2}\,(e - c\,e\,x)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)),x)
```

```
[Out] int((a + b*asin(c*x))^2/(x*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x/(c*d*x+d)**(3/2)/(-c*e*x+e)**(3/2),x)
```

```
[Out] Timed out
```

3.595 $\int \frac{(a+b\sin^{-1}(cx))^2}{x^2(d+cdx)^{3/2}(e-cex)^{3/2}}\,dx$

Optimal. Leaf size=396

$$-\frac{2ic\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)^2}{de\sqrt{cdx+d}\sqrt{e-cex}}+\frac{4bc\sqrt{1-c^2x^2}\log\left(1+e^{2i\sin^{-1}(cx)}\right)\left(a+b\sin^{-1}(cx)\right)}{de\sqrt{cdx+d}\sqrt{e-cex}}-\frac{4bc\sqrt{1-c^2x^2}\tanh^{-1}\left(e^2\right.}{de\sqrt{cdx+}$$

```
[Out] -(a+b*arcsin(c*x))^2/d/e/x/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)+2*c^2*x*(a+b*ar
csin(c*x))^2/d/e/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-2*I*c*(a+b*arcsin(c*x))^2
*(-c^2*x^2+1)^(1/2)/d/e/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-4*b*c*(a+b*arcsin(
c*x))*arctanh((I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/d/e/(c*d*x+d
)^(1/2)/(-c*e*x+e)^(1/2)+4*b*c*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(
1/2))^2)*(-c^2*x^2+1)^(1/2)/d/e/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)-I*b^2*c*po
lylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x^2+1)^(1/2)/d/e/(c*d*x+d)^(1/
2)/(-c*e*x+e)^(1/2)-I*b^2*c*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)*(-c^2*x
^2+1)^(1/2)/d/e/(c*d*x+d)^(1/2)/(-c*e*x+e)^(1/2)
```

Rubi [A] time = 0.86, antiderivative size = 396, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 11, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.314, Rules used = {4739, 4701, 4651, 4675, 3719, 2190, 2279, 2391, 4679, 4419, 4183}

$$-\frac{ib^2c\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,-e^{2i\sin^{-1}(cx)}\right)}{de\sqrt{cdx+d}\sqrt{e-cex}}-\frac{ib^2c\sqrt{1-c^2x^2}\,\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)}{de\sqrt{cdx+d}\sqrt{e-cex}}-\frac{2ic\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{de\sqrt{cdx+d}\sqrt{e-cex}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(x^2*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)),x]
```

```
[Out] -((a + b*ArcSin[c*x])^2/(d*e*x*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])) + (2*c^2*x
*(a + b*ArcSin[c*x])^2)/(d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) - ((2*I)*c*Sq
rt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^2)/(d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]
) - (4*b*c*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])*ArcTanh[E^((2*I)*ArcSin[c*
x])])/(d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) + (4*b*c*Sqrt[1 - c^2*x^2]*(a +
 b*ArcSin[c*x])*Log[1 + E^((2*I)*ArcSin[c*x])])/(d*e*Sqrt[d + c*d*x]*Sqrt[e
 - c*e*x]) - (I*b^2*c*Sqrt[1 - c^2*x^2]*PolyLog[2, -E^((2*I)*ArcSin[c*x])])
/(d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x]) - (I*b^2*c*Sqrt[1 - c^2*x^2]*PolyLog
[2, E^((2*I)*ArcSin[c*x])])/(d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e*x])
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4419

```
Int[Csc[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Dist[2^n, Int[(c + d*x)^m*Csc[2*a + 2*b*x]^n,
 x], x] /; FreeQ[{a, b, c, d, m}, x] && IntegerQ[n] && RationalQ[m]
```

Rule 4651

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)^2)^(3/2), x
_Symbol] :> Simp[(x*(a + b*ArcSin[c*x])^n)/(d*Sqrt[d + e*x^2]), x] - Dist[(
b*c*n)/Sqrt[d], Int[(x*(a + b*ArcSin[c*x])^(n - 1))/(d + e*x^2), x], x] /;
FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0] && GtQ[d, 0]
```

Rule 4675

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> -Dist[e^(-1), Subst[Int[(a + b*x)^n*Tan[x], x], x, ArcSin[c*x]
], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4679

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((x_)*((d_) + (e_.)*(x_)^2)),
x_Symbol] :> Dist[1/d, Subst[Int[(a + b*x)^n/(Cos[x]*Sin[x]), x], x, ArcSin
[c*x]], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[c^2*d + e, 0] && IGtQ[n, 0]
```

Rule 4701

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_)*((d_) + (e_.
)*(x_)^2)^(p_), x_Symbol] :> Simp[((f*x)^(m + 1)*(d + e*x^2)^(p + 1)*(a + b
*ArcSin[c*x])^n)/(d*f*(m + 1)), x] + (Dist[(c^2*(m + 2*p + 3))/(f^2*(m + 1)
), Int[(f*x)^(m + 2)*(d + e*x^2)^p*(a + b*ArcSin[c*x])^n, x], x] - Dist[(b*
c*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(f*(m + 1)*(1 - c^2*x^2)^FracPart
[p]), Int[(f*x)^(m + 1)*(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n - 1)
, x], x]) /; FreeQ[{a, b, c, d, e, f, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n,
 0] && LtQ[m, -1] && IntegerQ[m]
```

Rule 4739

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((h_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_))^(p_)*((f_) + (g_.)*(x_))^(q_), x_Symbol] :> Dist[((-((d^2*g)/e))^I
ntPart[q]*(d + e*x)^FracPart[q]*(f + g*x)^FracPart[q])/(1 - c^2*x^2)^FracPa
rt[q], Int[(h*x)^m*(d + e*x)^(p - q)*(1 - c^2*x^2)^q*(a + b*ArcSin[c*x])^n,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, h, m, n}, x] && EqQ[e*f + d*g, 0] &&
 EqQ[c^2*d^2 - e^2, 0] && HalfIntegerQ[p, q] && GeQ[p - q, 0]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^2(d+cdx)^{3/2}(e-cex)^{3/2}}\,dx = \frac{\sqrt{1-c^2x^2}\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{x^2\left(1-c^2x^2\right)^{3/2}}\,dx}{de\sqrt{d+cdx}\sqrt{e-cex}}$$

$$= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{dex\sqrt{d+cdx}\sqrt{e-cex}} + \frac{\left(2bc\sqrt{1-c^2x^2}\right)\int \frac{a+b\sin^{-1}(cx)}{x\left(1-c^2x^2\right)}\,dx}{de\sqrt{d+cdx}\sqrt{e-cex}} + \frac{\left(2c^2\sqrt{1-c^2x^2}\right)}{de\sqrt{d+c}}$$

$$= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{dex\sqrt{d+cdx}\sqrt{e-cex}} + \frac{2c^2x\left(a+b\sin^{-1}(cx)\right)^2}{de\sqrt{d+cdx}\sqrt{e-cex}} + \frac{\left(2bc\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int\right.}{de\sqrt{}}$$

$$= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{dex\sqrt{d+cdx}\sqrt{e-cex}} + \frac{2c^2x\left(a+b\sin^{-1}(cx)\right)^2}{de\sqrt{d+cdx}\sqrt{e-cex}} + \frac{\left(4bc\sqrt{1-c^2x^2}\right)\text{Subst}\left(\int\right.}{de\sqrt{d+}}$$

$$= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{dex\sqrt{d+cdx}\sqrt{e-cex}} + \frac{2c^2x\left(a+b\sin^{-1}(cx)\right)^2}{de\sqrt{d+cdx}\sqrt{e-cex}} - \frac{2ic\sqrt{1-c^2x^2}\left(a+b\sin^{-1}\right.}{de\sqrt{d+cdx}\sqrt{e-ce}}$$

$$= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{dex\sqrt{d+cdx}\sqrt{e-cex}} + \frac{2c^2x\left(a+b\sin^{-1}(cx)\right)^2}{de\sqrt{d+cdx}\sqrt{e-cex}} - \frac{2ic\sqrt{1-c^2x^2}\left(a+b\sin^{-1}\right.}{de\sqrt{d+cdx}\sqrt{e-ce}}$$

$$= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{dex\sqrt{d+cdx}\sqrt{e-cex}} + \frac{2c^2x\left(a+b\sin^{-1}(cx)\right)^2}{de\sqrt{d+cdx}\sqrt{e-cex}} - \frac{2ic\sqrt{1-c^2x^2}\left(a+b\sin^{-1}\right.}{de\sqrt{d+cdx}\sqrt{e-ce}}$$

$$= -\frac{\left(a+b\sin^{-1}(cx)\right)^2}{dex\sqrt{d+cdx}\sqrt{e-cex}} + \frac{2c^2x\left(a+b\sin^{-1}(cx)\right)^2}{de\sqrt{d+cdx}\sqrt{e-cex}} - \frac{2ic\sqrt{1-c^2x^2}\left(a+b\sin^{-1}\right.}{de\sqrt{d+cdx}\sqrt{e-ce}}$$

Mathematica [A] time = 2.59, size = 564, normalized size = 1.42

$$\frac{c\csc\left(\frac{1}{2}\sin^{-1}(cx)\right)\sec\left(\frac{1}{2}\sin^{-1}(cx)\right)\left(4a^2c^2x^2-2a^2+2ab\log(cx)\sin\left(2\sin^{-1}(cx)\right)-4ab\sin^{-1}(cx)\cos\left(2\sin^{-1}(c\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(x^2*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)),x
]
```

```
[Out] (c*Csc[ArcSin[c*x]/2]*Sec[ArcSin[c*x]/2]*(-2*a^2 + 4*a^2*c^2*x^2 - 4*a*b*Ar
cSin[c*x]*Cos[2*ArcSin[c*x]] - 2*b^2*ArcSin[c*x]^2*Cos[2*ArcSin[c*x]] + (2*
I)*b^2*Pi*ArcSin[c*x]*Sin[2*ArcSin[c*x]] - (2*I)*b^2*ArcSin[c*x]^2*Sin[2*Ar
cSin[c*x]] + 4*b^2*Pi*Log[1 + E^((-I)*ArcSin[c*x])]*Sin[2*ArcSin[c*x]] + b^
2*Pi*Log[1 - I*E^(I*ArcSin[c*x])]*Sin[2*ArcSin[c*x]] + 2*b^2*ArcSin[c*x]*Lo
g[1 - I*E^(I*ArcSin[c*x])]*Sin[2*ArcSin[c*x]] - b^2*Pi*Log[1 + I*E^(I*ArcSi
n[c*x])]*Sin[2*ArcSin[c*x]] + 2*b^2*ArcSin[c*x]*Log[1 + I*E^(I*ArcSin[c*x])
]*Sin[2*ArcSin[c*x]] + 2*b^2*ArcSin[c*x]*Log[1 - E^((2*I)*ArcSin[c*x])]*Sin
[2*ArcSin[c*x]] + 2*a*b*Log[c*x]*Sin[2*ArcSin[c*x]] - 4*b^2*Pi*Log[Cos[ArcS
in[c*x]/2]]*Sin[2*ArcSin[c*x]] + b^2*Pi*Log[-Cos[(Pi + 2*ArcSin[c*x])/4]]*S
in[2*ArcSin[c*x]] + 2*a*b*Log[Cos[ArcSin[c*x]/2] - Sin[ArcSin[c*x]/2]]*Sin[
2*ArcSin[c*x]] + 2*a*b*Log[Cos[ArcSin[c*x]/2] + Sin[ArcSin[c*x]/2]]*Sin[2*A
rcSin[c*x]] - b^2*Pi*Log[Sin[(Pi + 2*ArcSin[c*x])/4]]*Sin[2*ArcSin[c*x]] -
(2*I)*b^2*PolyLog[2, (-I)*E^(I*ArcSin[c*x])]*Sin[2*ArcSin[c*x]] - (2*I)*b^2
*PolyLog[2, I*E^(I*ArcSin[c*x])]*Sin[2*ArcSin[c*x]] - I*b^2*PolyLog[2, E^((
2*I)*ArcSin[c*x])]*Sin[2*ArcSin[c*x]]))/(4*d*e*Sqrt[d + c*d*x]*Sqrt[e - c*e
*x])
```

fricas [F] time = 0.57, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b^2\arcsin\left(cx\right)^2+2\,ab\arcsin\left(cx\right)+a^2\right)\sqrt{cdx+d}\,\sqrt{-cex+e}}{c^4d^2e^2x^6-2\,c^2d^2e^2x^4+d^2e^2x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x, algor
ithm="fricas")
```

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(c*d*x + d)*sqrt
(-c*e*x + e)/(c^4*d^2*e^2*x^6 - 2*c^2*d^2*e^2*x^4 + d^2*e^2*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(b\arcsin\left(cx\right)+a\right)^2}{\left(cdx+d\right)^{\frac{3}{2}}\left(-cex+e\right)^{\frac{3}{2}}x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x, algor
ithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/((c*d*x + d)^(3/2)*(-c*e*x + e)^(3/2)*x^2),
 x)
```

maple [F] time = 1.27, size = 0, normalized size = 0.00

$$\int\frac{\left(a+b\arcsin\left(cx\right)\right)^2}{x^2\left(cdx+d\right)^{\frac{3}{2}}\left(-cex+e\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/x^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2/x^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$abc\left(\frac{\log\left(cx+1\right)}{d^{\frac{3}{2}}e^{\frac{3}{2}}}+\frac{\log\left(cx-1\right)}{d^{\frac{3}{2}}e^{\frac{3}{2}}}+\frac{2\,\log(x)}{d^{\frac{3}{2}}e^{\frac{3}{2}}}\right)+2\,ab\left(\frac{2\,c^2x}{\sqrt{-c^2dex^2+de}\,de}-\frac{1}{\sqrt{-c^2dex^2+de}\,dex}\right)\arcsin\left(cx\right)+a^2\left(-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/x^2/(c*d*x+d)^(3/2)/(-c*e*x+e)^(3/2),x, algor
ithm="maxima")
```

```
[Out] a*b*c*(log(c*x + 1)/(d^(3/2)*e^(3/2)) + log(c*x - 1)/(d^(3/2)*e^(3/2)) + 2*
log(x)/(d^(3/2)*e^(3/2))) + 2*a*b*(2*c^2*x/(sqrt(-c^2*d*e*x^2 + d*e)*d*e) -
 1/(sqrt(-c^2*d*e*x^2 + d*e)*d*e*x))*arcsin(c*x) + a^2*(2*c^2*x/(sqrt(-c^2*
d*e*x^2 + d*e)*d*e) - 1/(sqrt(-c^2*d*e*x^2 + d*e)*d*e*x)) - b^2*integrate(a
rctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2/((c^2*d*e*x^4 - d*e*x^2)*sqrt(c
*x + 1)*sqrt(-c*x + 1)), x)/(sqrt(d)*sqrt(e))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^2}{x^2\,\left(d+c\,d\,x\right)^{3/2}\,\left(e-c\,e\,x\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(x^2*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)),x)
[Out] int((a + b*asin(c*x))^2/(x^2*(d + c*d*x)^(3/2)*(e - c*e*x)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/x**2/(c*d*x+d)**(3/2)/(-c*e*x+e)**(3/2),x)
[Out] Timed out
```

3.596 $\int x^4 \left(d + ex^2\right) \left(a + b \sin^{-1}(cx)\right) dx$

Optimal. Leaf size=152

$$\frac{1}{5}dx^5\left(a+b\sin^{-1}(cx)\right)+\frac{1}{7}ex^7\left(a+b\sin^{-1}(cx)\right)+\frac{b\left(1-c^2x^2\right)^{5/2}\left(7c^2d+15e\right)}{175c^7}-\frac{b\left(1-c^2x^2\right)^{3/2}\left(14c^2d+15e\right)}{105c^7}+\frac{b\sqrt{}}{}$$

```
[Out] -1/105*b*(14*c^2*d+15*e)*(-c^2*x^2+1)^(3/2)/c^7+1/175*b*(7*c^2*d+15*e)*(-c^
2*x^2+1)^(5/2)/c^7-1/49*b*e*(-c^2*x^2+1)^(7/2)/c^7+1/5*d*x^5*(a+b*arcsin(c*
x))+1/7*e*x^7*(a+b*arcsin(c*x))+1/35*b*(7*c^2*d+5*e)*(-c^2*x^2+1)^(1/2)/c^7
```

Rubi [A] time = 0.15, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {14, 4731, 12, 446, 77}

$$\frac{1}{5}dx^5\left(a+b\sin^{-1}(cx)\right)+\frac{1}{7}ex^7\left(a+b\sin^{-1}(cx)\right)+\frac{b\left(1-c^2x^2\right)^{5/2}\left(7c^2d+15e\right)}{175c^7}-\frac{b\left(1-c^2x^2\right)^{3/2}\left(14c^2d+15e\right)}{105c^7}+\frac{b\sqrt{}}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(d + e*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*(7*c^2*d + 5*e)*Sqrt[1 - c^2*x^2])/(35*c^7) - (b*(14*c^2*d + 15*e)*(1 -
c^2*x^2)^(3/2))/(105*c^7) + (b*(7*c^2*d + 15*e)*(1 - c^2*x^2)^(5/2))/(175*c
^7) - (b*e*(1 - c^2*x^2)^(7/2))/(49*c^7) + (d*x^5*(a + b*ArcSin[c*x]))/5 +
(e*x^7*(a + b*ArcSin[c*x]))/7
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 446

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p
*(c + d*x)^q, x], x, x^n], x] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[
b*c - a*d, 0] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_
)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist
[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*
x^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[c^2*d + e, 0] &
```

```
& IntegerQ[p] && (GtQ[p, 0] || (IGtQ[(m - 1)/2, 0] && LeQ[m + p, 0]))
```

Rubi steps

$$\begin{aligned}\int x^4\left(d+ex^2\right)\left(a+b\sin^{-1}(cx)\right)dx&=\frac{1}{5}dx^5\left(a+b\sin^{-1}(cx)\right)+\frac{1}{7}ex^7\left(a+b\sin^{-1}(cx)\right)-(bc)\int\frac{x^5\left(7d+5ex^2\right)}{35\sqrt{1-c^2x^2}}dx\\&=\frac{1}{5}dx^5\left(a+b\sin^{-1}(cx)\right)+\frac{1}{7}ex^7\left(a+b\sin^{-1}(cx)\right)-\frac{1}{35}(bc)\int\frac{x^5\left(7d+5ex^2\right)}{\sqrt{1-c^2x^2}}\\&=\frac{1}{5}dx^5\left(a+b\sin^{-1}(cx)\right)+\frac{1}{7}ex^7\left(a+b\sin^{-1}(cx)\right)-\frac{1}{70}(bc)\,\text{Subst}\left(\int\frac{x^2(7d}{\sqrt{1-}}\right.\\&=\frac{1}{5}dx^5\left(a+b\sin^{-1}(cx)\right)+\frac{1}{7}ex^7\left(a+b\sin^{-1}(cx)\right)-\frac{1}{70}(bc)\,\text{Subst}\left(\int\left(\frac{7c^2d}{c^6\sqrt{1}}\right.\right.\\&=\frac{b\left(7c^2d+5e\right)\sqrt{1-c^2x^2}}{35c^7}-\frac{b\left(14c^2d+15e\right)\left(1-c^2x^2\right)^{3/2}}{105c^7}+\frac{b\left(7c^2d+15e\right)(}{175c^7}\end{aligned}$$

Mathematica [A] time = 0.14, size = 115, normalized size = 0.76

$$\frac{105ax^5\left(7d+5ex^2\right)+\frac{b\sqrt{1-c^2x^2}\left(3c^6\left(49dx^4+25ex^6\right)+2c^4\left(98dx^2+45ex^4\right)+8c^2\left(49d+15ex^2\right)+240e\right)}{c^7}+105bx^5\sin^{-1}(cx)\left(7d+5ex^2\right)}{3675}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(d + e*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (105*a*x^5*(7*d + 5*e*x^2) + (b*Sqrt[1 - c^2*x^2]*(240*e + 8*c^2*(49*d + 15
*e*x^2) + 2*c^4*(98*d*x^2 + 45*e*x^4) + 3*c^6*(49*d*x^4 + 25*e*x^6)))/c^7 +
 105*b*x^5*(7*d + 5*e*x^2)*ArcSin[c*x])/3675
```

fricas [A] time = 0.60, size = 128, normalized size = 0.84

$$\frac{525\,ac^7ex^7+735\,ac^7dx^5+105\left(5\,bc^7ex^7+7\,bc^7dx^5\right)\arcsin(cx)+\left(75\,bc^6ex^6+3\left(49\,bc^6d+30\,bc^4e\right)x^4+392\,bc^2}{3675\,c^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/3675*(525*a*c^7*e*x^7 + 735*a*c^7*d*x^5 + 105*(5*b*c^7*e*x^7 + 7*b*c^7*d*
x^5)*arcsin(c*x) + (75*b*c^6*e*x^6 + 3*(49*b*c^6*d + 30*b*c^4*e)*x^4 + 392*
b*c^2*d + 4*(49*b*c^4*d + 30*b*c^2*e)*x^2 + 240*b*e)*sqrt(-c^2*x^2 + 1))/c^
7
```

giac [B] time = 0.42, size = 325, normalized size = 2.14

$$\frac{1}{7}ax^7e+\frac{1}{5}adx^5+\frac{\left(c^2x^2-1\right)^2bdx\arcsin(cx)}{5c^4}+\frac{2\left(c^2x^2-1\right)bdx\arcsin(cx)}{5c^4}+\frac{\left(c^2x^2-1\right)^3bx\arcsin(cx)e}{7c^6}+\frac{bdx\arcsin}{5c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/7*a*x^7*e + 1/5*a*d*x^5 + 1/5*(c^2*x^2 - 1)^2*b*d*x*arcsin(c*x)/c^4 + 2/5
*(c^2*x^2 - 1)*b*d*x*arcsin(c*x)/c^4 + 1/7*(c^2*x^2 - 1)^3*b*x*arcsin(c*x)*
```

```
e/c^6 + 1/5*b*d*x*arcsin(c*x)/c^4 + 3/7*(c^2*x^2 - 1)^2*b*x*arcsin(c*x)*e/c
^6 + 1/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*d/c^5 + 3/7*(c^2*x^2 - 1)*b*
x*arcsin(c*x)*e/c^6 - 2/15*(-c^2*x^2 + 1)^(3/2)*b*d/c^5 + 1/49*(c^2*x^2 - 1
)^3*sqrt(-c^2*x^2 + 1)*b*e/c^7 + 1/7*b*x*arcsin(c*x)*e/c^6 + 1/5*sqrt(-c^2*
x^2 + 1)*b*d/c^5 + 3/35*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*e/c^7 - 1/7*(-
c^2*x^2 + 1)^(3/2)*b*e/c^7 + 1/7*sqrt(-c^2*x^2 + 1)*b*e/c^7
```

maple [A] time = 0.01, size = 201, normalized size = 1.32

$$\frac{\frac{a\left(\frac{1}{7}e\,c^7x^7+\frac{1}{5}c^7x^5d\right)}{c^2}+\frac{b\left(\frac{\arcsin(cx)e\,c^7x^7}{7}+\frac{\arcsin(cx)c^7x^5d}{5}-\frac{e\left(-\frac{c^6x^6\sqrt{-c^2x^2+1}}{7}-\frac{6c^4x^4\sqrt{-c^2x^2+1}}{35}-\frac{8c^2x^2\sqrt{-c^2x^2+1}}{35}-\frac{16\sqrt{-c^2x^2+1}}{35}\right)}{7}-\frac{c^2d\left(-\frac{c^4x^4\sqrt{-c^2x^2+1}}{5}-4\right.}{}}{c^2}}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(e*x^2+d)*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c^5*(a/c^2*(1/7*e*c^7*x^7+1/5*c^7*x^5*d)+b/c^2*(1/7*arcsin(c*x)*e*c^7*x^7
+1/5*arcsin(c*x)*c^7*x^5*d-1/7*e*(-1/7*c^6*x^6*(-c^2*x^2+1)^(1/2)-6/35*c^4*
x^4*(-c^2*x^2+1)^(1/2)-8/35*c^2*x^2*(-c^2*x^2+1)^(1/2)-16/35*(-c^2*x^2+1)^(
1/2))-1/5*c^2*d*(-1/5*c^4*x^4*(-c^2*x^2+1)^(1/2)-4/15*c^2*x^2*(-c^2*x^2+1)^
(1/2)-8/15*(-c^2*x^2+1)^(1/2))))
```

maxima [A] time = 1.08, size = 183, normalized size = 1.20

$$\frac{1}{7}\,aex^7+\frac{1}{5}\,adx^5+\frac{1}{75}\left(15\,x^5\arcsin\left(cx\right)+\left(\frac{3\,\sqrt{-c^2x^2+1}\,x^4}{c^2}+\frac{4\,\sqrt{-c^2x^2+1}\,x^2}{c^4}+\frac{8\,\sqrt{-c^2x^2+1}}{c^6}\right)c\right)bd+\frac{1}{245}\left(35\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/7*a*e*x^7 + 1/5*a*d*x^5 + 1/75*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1
)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*b*d
 + 1/245*(35*x^7*arcsin(c*x) + (5*sqrt(-c^2*x^2 + 1)*x^6/c^2 + 6*sqrt(-c^2*
x^2 + 1)*x^4/c^4 + 8*sqrt(-c^2*x^2 + 1)*x^2/c^6 + 16*sqrt(-c^2*x^2 + 1)/c^8
)*c)*b*e
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^4\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\left(e\,x^2+d\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a + b*asin(c*x))*(d + e*x^2),x)
```

```
[Out] int(x^4*(a + b*asin(c*x))*(d + e*x^2), x)
```

sympy [A] time = 5.69, size = 223, normalized size = 1.47

$$\begin{cases}\frac{adx^5}{5}+\frac{aex^7}{7}+\frac{bdx^5\,\mathrm{asin}\,(cx)}{5}+\frac{bex^7\,\mathrm{asin}\,(cx)}{7}+\frac{bdx^4\sqrt{-c^2x^2+1}}{25c}+\frac{bex^6\sqrt{-c^2x^2+1}}{49c}+\frac{4bdx^2\sqrt{-c^2x^2+1}}{75c^3}+\frac{6bex^4\sqrt{-c^2x^2+1}}{245c^3}+\frac{8bd\sqrt{-c^2}}{75c} \\ a\left(\frac{dx^5}{5}+\frac{ex^7}{7}\right)\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(e*x**2+d)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d*x**5/5 + a*e*x**7/7 + b*d*x**5*asin(c*x)/5 + b*e*x**7*asin(c
*x)/7 + b*d*x**4*sqrt(-c**2*x**2 + 1)/(25*c) + b*e*x**6*sqrt(-c**2*x**2 + 1
)/(49*c) + 4*b*d*x**2*sqrt(-c**2*x**2 + 1)/(75*c**3) + 6*b*e*x**4*sqrt(-c**
2*x**2 + 1)/(245*c**3) + 8*b*d*sqrt(-c**2*x**2 + 1)/(75*c**5) + 8*b*e*x**2*
sqrt(-c**2*x**2 + 1)/(245*c**5) + 16*b*e*sqrt(-c**2*x**2 + 1)/(245*c**7), N
e(c, 0)), (a*(d*x**5/5 + e*x**7/7), True))
```

3.597 $\int x^3 \left(d+ex^2\right) \left(a+b\sin^{-1}(cx)\right) dx$

Optimal. Leaf size=149

$$\frac{1}{4}dx^4\left(a+b\sin^{-1}(cx)\right)+\frac{1}{6}ex^6\left(a+b\sin^{-1}(cx)\right)+\frac{bex^5\sqrt{1-c^2x^2}}{36c}-\frac{b\left(9c^2d+5e\right)\sin^{-1}(cx)}{96c^6}+\frac{bx\sqrt{1-c^2x^2}\left(9c^2d-\right.}{96c^5}$$

```
[Out] -1/96*b*(9*c^2*d+5*e)*arcsin(c*x)/c^6+1/4*d*x^4*(a+b*arcsin(c*x))+1/6*e*x^6
*(a+b*arcsin(c*x))+1/96*b*(9*c^2*d+5*e)*x*(-c^2*x^2+1)^(1/2)/c^5+1/144*b*(9
*c^2*d+5*e)*x^3*(-c^2*x^2+1)^(1/2)/c^3+1/36*b*e*x^5*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.12, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.316, Rules used = {14, 4731, 12, 459, 321, 216}

$$\frac{1}{4}dx^4\left(a+b\sin^{-1}(cx)\right)+\frac{1}{6}ex^6\left(a+b\sin^{-1}(cx)\right)+\frac{bx^3\sqrt{1-c^2x^2}\left(9c^2d+5e\right)}{144c^3}+\frac{bx\sqrt{1-c^2x^2}\left(9c^2d+5e\right)}{96c^5}-\frac{b\left(9c^2d\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(d + e*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*(9*c^2*d + 5*e)*x*Sqrt[1 - c^2*x^2])/(96*c^5) + (b*(9*c^2*d + 5*e)*x^3*S
qrt[1 - c^2*x^2])/(144*c^3) + (b*e*x^5*Sqrt[1 - c^2*x^2])/(36*c) - (b*(9*c^
2*d + 5*e)*ArcSin[c*x])/(96*c^6) + (d*x^4*(a + b*ArcSin[c*x]))/4 + (e*x^6*(
a + b*ArcSin[c*x]))/6
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 459

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_)), x_Symbol] :> Simp[(d*(e*x)^(m + 1)*(a + b*x^n)^(p + 1))/(b*e*(m + n*(p
 + 1) + 1)), x] - Dist[(a*d*(m + 1) - b*c*(m + n*(p + 1) + 1))/(b*(m + n*(p
 + 1) + 1)), Int[(e*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, d, e, m,
n, p}, x] && NeQ[b*c - a*d, 0] && NeQ[m + n*(p + 1) + 1, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_
)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist
[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*
x^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[c^2*d + e, 0] &
& IntegerQ[p] && (GtQ[p, 0] || (IGtQ[(m - 1)/2, 0] && LeQ[m + p, 0]))
```

Rubi steps

$$\int x^3\left(d+ex^2\right)\left(a+b\sin^{-1}(cx)\right)dx = \frac{1}{4}dx^4\left(a+b\sin^{-1}(cx)\right)+\frac{1}{6}ex^6\left(a+b\sin^{-1}(cx)\right)-(bc)\int\frac{x^4\left(3d+2ex^2\right)}{12\sqrt{1-c^2x^2}}\,dx$$
$$= \frac{1}{4}dx^4\left(a+b\sin^{-1}(cx)\right)+\frac{1}{6}ex^6\left(a+b\sin^{-1}(cx)\right)-\frac{1}{12}(bc)\int\frac{x^4\left(3d+2ex^2\right)}{\sqrt{1-c^2x^2}}$$
$$= \frac{bex^5\sqrt{1-c^2x^2}}{36c}+\frac{1}{4}dx^4\left(a+b\sin^{-1}(cx)\right)+\frac{1}{6}ex^6\left(a+b\sin^{-1}(cx)\right)-\frac{1}{36}\left(bc\right.$$
$$= \frac{b\left(9c^2d+5e\right)x^3\sqrt{1-c^2x^2}}{144c^3}+\frac{bex^5\sqrt{1-c^2x^2}}{36c}+\frac{1}{4}dx^4\left(a+b\sin^{-1}(cx)\right)+\frac{1}{6}$$
$$= \frac{b\left(9c^2d+5e\right)x\sqrt{1-c^2x^2}}{96c^5}+\frac{b\left(9c^2d+5e\right)x^3\sqrt{1-c^2x^2}}{144c^3}+\frac{bex^5\sqrt{1-c^2x^2}}{36c}+$$
$$= \frac{b\left(9c^2d+5e\right)x\sqrt{1-c^2x^2}}{96c^5}+\frac{b\left(9c^2d+5e\right)x^3\sqrt{1-c^2x^2}}{144c^3}+\frac{bex^5\sqrt{1-c^2x^2}}{36c}-$$

Mathematica [A] time = 0.09, size = 116, normalized size = 0.78

$$\frac{24ac^6x^4\left(3d+2ex^2\right)+3b\sin^{-1}(cx)\left(8c^6\left(3dx^4+2ex^6\right)-9c^2d-5e\right)+bcx\sqrt{1-c^2x^2}\left(2c^4\left(9dx^2+4ex^4\right)+c^2\left(27d\right.\right.}{288c^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(d + e*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (24*a*c^6*x^4*(3*d + 2*e*x^2) + b*c*x*Sqrt[1 - c^2*x^2]*(15*e + c^2*(27*d +
 10*e*x^2) + 2*c^4*(9*d*x^2 + 4*e*x^4)) + 3*b*(-9*c^2*d - 5*e + 8*c^6*(3*d*
x^4 + 2*e*x^6))*ArcSin[c*x])/(288*c^6)
```

fricas [A] time = 0.54, size = 124, normalized size = 0.83

$$\frac{48\,ac^6ex^6+72\,ac^6dx^4+3\left(16\,bc^6ex^6+24\,bc^6dx^4-9\,bc^2d-5\,be\right)\arcsin\left(cx\right)+\left(8\,bc^5ex^5+2\left(9\,bc^5d+5\,bc^3e\right)x^3\right.}{288\,c^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/288*(48*a*c^6*e*x^6 + 72*a*c^6*d*x^4 + 3*(16*b*c^6*e*x^6 + 24*b*c^6*d*x^4
 - 9*b*c^2*d - 5*b*e)*arcsin(c*x) + (8*b*c^5*e*x^5 + 2*(9*b*c^5*d + 5*b*c^3
*e)*x^3 + 3*(9*b*c^3*d + 5*b*c*e)*x)*sqrt(-c^2*x^2 + 1))/c^6
```

giac [A] time = 0.29, size = 262, normalized size = 1.76

$$\frac{1}{6}ax^6e+\frac{1}{4}adx^4-\frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}bdx}{16\,c^3}+\frac{\left(c^2x^2-1\right)^2bd\arcsin\left(cx\right)}{4\,c^4}+\frac{5\sqrt{-c^2x^2+1}\,bdx}{32\,c^3}+\frac{\left(c^2x^2-1\right)^2\sqrt{-c^2x^2+1}\,bxe}{36\,c^5}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/6*a*x^6*e + 1/4*a*d*x^4 - 1/16*(-c^2*x^2 + 1)^(3/2)*b*d*x/c^3 + 1/4*(c^2*
x^2 - 1)^2*b*d*arcsin(c*x)/c^4 + 5/32*sqrt(-c^2*x^2 + 1)*b*d*x/c^3 + 1/36*(
c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*x*e/c^5 + 1/2*(c^2*x^2 - 1)*b*d*arcsin(
c*x)/c^4 + 1/6*(c^2*x^2 - 1)^3*b*arcsin(c*x)*e/c^6 - 13/144*(-c^2*x^2 + 1)^
(3/2)*b*x*e/c^5 + 5/32*b*d*arcsin(c*x)/c^4 + 1/2*(c^2*x^2 - 1)^2*b*arcsin(c
*x)*e/c^6 + 11/96*sqrt(-c^2*x^2 + 1)*b*x*e/c^5 + 1/2*(c^2*x^2 - 1)*b*arcsin
(c*x)*e/c^6 + 11/96*b*arcsin(c*x)*e/c^6
```

maple [A] time = 0.01, size = 177, normalized size = 1.19

$$\frac{\frac{a\left(\frac{1}{6}e\,c^{6}x^{6}+\frac{1}{4}x^{4}c^{6}d\right)}{c^{2}}+\frac{b\left(\frac{\arcsin(cx)e\,c^{6}x^{6}}{6}+\frac{\arcsin(cx)c^{6}x^{4}d}{4}-\frac{e\left(-\frac{c^{5}x^{5}\sqrt{-c^{2}x^{2}+1}}{6}-\frac{5c^{3}x^{3}\sqrt{-c^{2}x^{2}+1}}{24}-\frac{5cx\sqrt{-c^{2}x^{2}+1}}{16}+\frac{5\arcsin(cx)}{16}\right)}{6}-\frac{c^{2}d\left(-\frac{c^{3}x^{3}\sqrt{-c^{2}x^{2}+1}}{4}-\frac{3cx\sqrt{\cdots}}{\cdots}\right.}{4}\right.}{c^{2}}}{c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(e*x^2+d)*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c^4*(a/c^2*(1/6*e*c^6*x^6+1/4*x^4*c^6*d)+b/c^2*(1/6*arcsin(c*x)*e*c^6*x^6
+1/4*arcsin(c*x)*c^6*x^4*d-1/6*e*(-1/6*c^5*x^5*(-c^2*x^2+1)^(1/2)-5/24*c^3*
x^3*(-c^2*x^2+1)^(1/2)-5/16*c*x*(-c^2*x^2+1)^(1/2)+5/16*arcsin(c*x))-1/4*c^
2*d*(-1/4*c^3*x^3*(-c^2*x^2+1)^(1/2)-3/8*c*x*(-c^2*x^2+1)^(1/2)+3/8*arcsin(
c*x))))
```

maxima [A] time = 0.51, size = 163, normalized size = 1.09

$$\frac{1}{6}\,aex^{6}+\frac{1}{4}\,adx^{4}+\frac{1}{32}\left(8\,x^{4}\arcsin\left(cx\right)+\left(\frac{2\,\sqrt{-c^{2}x^{2}+1}\,x^{3}}{c^{2}}+\frac{3\,\sqrt{-c^{2}x^{2}+1}\,x}{c^{4}}-\frac{3\,\arcsin\left(cx\right)}{c^{5}}\right)c\right)bd+\frac{1}{288}\left(48\,x^{6}\cdots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/6*a*e*x^6 + 1/4*a*d*x^4 + 1/32*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)
*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c*x)/c^5)*c)*b*d + 1/288*(
48*x^6*arcsin(c*x) + (8*sqrt(-c^2*x^2 + 1)*x^5/c^2 + 10*sqrt(-c^2*x^2 + 1)*
x^3/c^4 + 15*sqrt(-c^2*x^2 + 1)*x/c^6 - 15*arcsin(c*x)/c^7)*c)*b*e
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^{3}\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\left(e\,x^{2}+d\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + b*asin(c*x))*(d + e*x^2),x)
```

```
[Out] int(x^3*(a + b*asin(c*x))*(d + e*x^2), x)
```

sympy [A] time = 3.69, size = 206, normalized size = 1.38

$$\begin{cases}\frac{adx^{4}}{4}+\frac{aex^{6}}{6}+\frac{bdx^{4}\operatorname{asin}\left(cx\right)}{4}+\frac{bex^{6}\operatorname{asin}\left(cx\right)}{6}+\frac{bdx^{3}\sqrt{-c^{2}x^{2}+1}}{16c}+\frac{bex^{5}\sqrt{-c^{2}x^{2}+1}}{36c}+\frac{3bdx\sqrt{-c^{2}x^{2}+1}}{32c^{3}}+\frac{5bex^{3}\sqrt{-c^{2}x^{2}+1}}{144c^{3}}-\frac{3bd\operatorname{asin}(\cdots}{32c^{4}} \\ a\left(\frac{dx^{4}}{4}+\frac{ex^{6}}{6}\right)\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(e*x**2+d)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d*x**4/4 + a*e*x**6/6 + b*d*x**4*asin(c*x)/4 + b*e*x**6*asin(c
*x)/6 + b*d*x**3*sqrt(-c**2*x**2 + 1)/(16*c) + b*e*x**5*sqrt(-c**2*x**2 + 1
)/(36*c) + 3*b*d*x*sqrt(-c**2*x**2 + 1)/(32*c**3) + 5*b*e*x**3*sqrt(-c**2*x
**2 + 1)/(144*c**3) - 3*b*d*asin(c*x)/(32*c**4) + 5*b*e*x*sqrt(-c**2*x**2 +
 1)/(96*c**5) - 5*b*e*asin(c*x)/(96*c**6), Ne(c, 0)), (a*(d*x**4/4 + e*x**6
/6), True))
```

3.598 $\int x^2 \left(d+ex^2\right) \left(a+b\sin^{-1}(cx)\right) \, dx$

Optimal. Leaf size=120

$$\frac{1}{3}dx^3\left(a+b\sin^{-1}(cx)\right)+\frac{1}{5}ex^5\left(a+b\sin^{-1}(cx)\right)-\frac{b\left(1-c^2x^2\right)^{3/2}\left(5c^2d+6e\right)}{45c^5}+\frac{b\sqrt{1-c^2x^2}\left(5c^2d+3e\right)}{15c^5}+\frac{be\left(1-c\right.}{25\ldots}$$

```
[Out] -1/45*b*(5*c^2*d+6*e)*(-c^2*x^2+1)^(3/2)/c^5+1/25*b*e*(-c^2*x^2+1)^(5/2)/c^
5+1/3*d*x^3*(a+b*arcsin(c*x))+1/5*e*x^5*(a+b*arcsin(c*x))+1/15*b*(5*c^2*d+3
*e)*(-c^2*x^2+1)^(1/2)/c^5
```

Rubi [A] time = 0.13, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {14, 4731, 12, 446, 77}

$$\frac{1}{3}dx^3\left(a+b\sin^{-1}(cx)\right)+\frac{1}{5}ex^5\left(a+b\sin^{-1}(cx)\right)-\frac{b\left(1-c^2x^2\right)^{3/2}\left(5c^2d+6e\right)}{45c^5}+\frac{b\sqrt{1-c^2x^2}\left(5c^2d+3e\right)}{15c^5}+\frac{be\left(1-c\right.}{25\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(d + e*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*(5*c^2*d + 3*e)*Sqrt[1 - c^2*x^2])/(15*c^5) - (b*(5*c^2*d + 6*e)*(1 - c^
2*x^2)^(3/2))/(45*c^5) + (b*e*(1 - c^2*x^2)^(5/2))/(25*c^5) + (d*x^3*(a + b
*ArcSin[c*x]))/3 + (e*x^5*(a + b*ArcSin[c*x]))/5
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 446

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p
*(c + d*x)^q, x], x, x^n], x] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[
b*c - a*d, 0] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_
)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist
[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*
x^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[c^2*d + e, 0] &
```

```
& IntegerQ[p] && (GtQ[p, 0] || (IGtQ[(m - 1)/2, 0] && LeQ[m + p, 0]))
```

Rubi steps

$$\int x^2 \left(d+ex^2\right)\left(a+b\sin^{-1}(cx)\right)\,dx = \frac{1}{3}dx^3\left(a+b\sin^{-1}(cx)\right)+\frac{1}{5}ex^5\left(a+b\sin^{-1}(cx)\right)-(bc)\int\frac{x^3\left(5d+3ex^2\right)}{15\sqrt{1-c^2x^2}}\,dx$$
$$=\frac{1}{3}dx^3\left(a+b\sin^{-1}(cx)\right)+\frac{1}{5}ex^5\left(a+b\sin^{-1}(cx)\right)-\frac{1}{15}(bc)\int\frac{x^3\left(5d+3ex^2\right)}{\sqrt{1-c^2x^2}}$$
$$=\frac{1}{3}dx^3\left(a+b\sin^{-1}(cx)\right)+\frac{1}{5}ex^5\left(a+b\sin^{-1}(cx)\right)-\frac{1}{30}(bc)\,\mathrm{Subst}\left(\int\frac{x(5d+}{\sqrt{1-}}\right.$$
$$=\frac{1}{3}dx^3\left(a+b\sin^{-1}(cx)\right)+\frac{1}{5}ex^5\left(a+b\sin^{-1}(cx)\right)-\frac{1}{30}(bc)\,\mathrm{Subst}\left(\int\left(\frac{5c^2d}{c^4\sqrt{1}}\right.\right.$$
$$=\frac{b\left(5c^2d+3e\right)\sqrt{1-c^2x^2}}{15c^5}-\frac{b\left(5c^2d+6e\right)\left(1-c^2x^2\right)^{3/2}}{45c^5}+\frac{be\left(1-c^2x^2\right)^{5/2}}{25c^5}+$$

Mathematica [A] time = 0.10, size = 96, normalized size = 0.80

$$\frac{1}{225}\left(15ax^3\left(5d+3ex^2\right)+\frac{b\sqrt{1-c^2x^2}\left(c^4\left(25dx^2+9ex^4\right)+2c^2\left(25d+6ex^2\right)+24e\right)}{c^5}+15bx^3\sin^{-1}(cx)\left(5d+3ex^2\right)\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(d + e*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (15*a*x^3*(5*d + 3*e*x^2) + (b*Sqrt[1 - c^2*x^2]*(24*e + 2*c^2*(25*d + 6*e*
x^2) + c^4*(25*d*x^2 + 9*e*x^4)))/c^5 + 15*b*x^3*(5*d + 3*e*x^2)*ArcSin[c*x
])/225
```

fricas [A] time = 0.63, size = 107, normalized size = 0.89

$$\frac{45\,ac^5ex^5+75\,ac^5dx^3+15\left(3\,bc^5ex^5+5\,bc^5dx^3\right)\arcsin(cx)+\left(9\,bc^4ex^4+50\,bc^2d+\left(25\,bc^4d+12\,bc^2e\right)x^2+24\,b\right.}{225\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/225*(45*a*c^5*e*x^5 + 75*a*c^5*d*x^3 + 15*(3*b*c^5*e*x^5 + 5*b*c^5*d*x^3)
*arcsin(c*x) + (9*b*c^4*e*x^4 + 50*b*c^2*d + (25*b*c^4*d + 12*b*c^2*e)*x^2
+ 24*b*e)*sqrt(-c^2*x^2 + 1))/c^5
```

giac [B] time = 0.46, size = 217, normalized size = 1.81

$$\frac{1}{5}ax^5e+\frac{1}{3}adx^3+\frac{\left(c^2x^2-1\right)bdx\arcsin(cx)}{3c^2}+\frac{bdx\arcsin(cx)}{3c^2}+\frac{\left(c^2x^2-1\right)^2bx\arcsin(cx)e}{5c^4}+\frac{2\left(c^2x^2-1\right)bx\arcsin(c}{5c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/5*a*x^5*e + 1/3*a*d*x^3 + 1/3*(c^2*x^2 - 1)*b*d*x*arcsin(c*x)/c^2 + 1/3*b
*d*x*arcsin(c*x)/c^2 + 1/5*(c^2*x^2 - 1)^2*b*x*arcsin(c*x)*e/c^4 + 2/5*(c^2
*x^2 - 1)*b*x*arcsin(c*x)*e/c^4 - 1/9*(-c^2*x^2 + 1)^(3/2)*b*d/c^3 + 1/5*b*
```

```
x*arcsin(c*x)*e/c^4 + 1/3*sqrt(-c^2*x^2 + 1)*b*d/c^3 + 1/25*(c^2*x^2 - 1)^2
*sqrt(-c^2*x^2 + 1)*b*e/c^5 - 2/15*(-c^2*x^2 + 1)^(3/2)*b*e/c^5 + 1/5*sqrt(
-c^2*x^2 + 1)*b*e/c^5
```

maple [A] time = 0.00, size = 161, normalized size = 1.34

$$\frac{\frac{a\left(\frac{1}{5}e\,c^5x^5+\frac{1}{3}c^5d\,x^3\right)}{c^2}+\frac{b\left(\frac{\arcsin(cx)e\,c^5x^5}{5}+\frac{\arcsin(cx)c^5d\,x^3}{3}-\frac{e\left(-\frac{c^4x^4\sqrt{-c^2x^2+1}}{5}-\frac{4c^2x^2\sqrt{-c^2x^2+1}}{15}-\frac{8\sqrt{-c^2x^2+1}}{15}\right)}{5}-\frac{c^2d\left(-\frac{c^2x^2\sqrt{-c^2x^2+1}}{3}-\frac{2\sqrt{-c^2x^2+1}}{3}\right)}{3}\right)}{c^2}}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(e*x^2+d)*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c^3*(a/c^2*(1/5*e*c^5*x^5+1/3*c^5*d*x^3)+b/c^2*(1/5*arcsin(c*x)*e*c^5*x^5
+1/3*arcsin(c*x)*c^5*d*x^3-1/5*e*(-1/5*c^4*x^4*(-c^2*x^2+1)^(1/2)-4/15*c^2*
x^2*(-c^2*x^2+1)^(1/2)-8/15*(-c^2*x^2+1)^(1/2))-1/3*c^2*d*(-1/3*c^2*x^2*(-c
^2*x^2+1)^(1/2)-2/3*(-c^2*x^2+1)^(1/2))))
```

maxima [A] time = 0.59, size = 142, normalized size = 1.18

$$\frac{1}{5}aex^5+\frac{1}{3}adx^3+\frac{1}{9}\left(3x^3\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2}+\frac{2\sqrt{-c^2x^2+1}}{c^4}\right)\right)bd+\frac{1}{75}\left(15x^5\arcsin(cx)+\left(\frac{3\sqrt{-c^2}}{}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/5*a*e*x^5 + 1/3*a*d*x^3 + 1/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*
x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*d + 1/75*(15*x^5*arcsin(c*x) + (3*sq
rt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 +
 1)/c^6)*c)*b*e
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^2\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\left(e\,x^2+d\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c*x))*(d + e*x^2),x)
```

```
[Out] int(x^2*(a + b*asin(c*x))*(d + e*x^2), x)
```

sympy [A] time = 2.05, size = 172, normalized size = 1.43

$$\begin{cases} \frac{adx^3}{3}+\frac{aex^5}{5}+\frac{bdx^3\operatorname{asin}(cx)}{3}+\frac{bex^5\operatorname{asin}(cx)}{5}+\frac{bdx^2\sqrt{-c^2x^2+1}}{9c}+\frac{bex^4\sqrt{-c^2x^2+1}}{25c}+\frac{2bd\sqrt{-c^2x^2+1}}{9c^3}+\frac{4bex^2\sqrt{-c^2x^2+1}}{75c^3}+\frac{8be\sqrt{-c^2x^2}}{75c^5} \\ a\left(\frac{dx^3}{3}+\frac{ex^5}{5}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(e*x**2+d)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d*x**3/3 + a*e*x**5/5 + b*d*x**3*asin(c*x)/3 + b*e*x**5*asin(c
*x)/5 + b*d*x**2*sqrt(-c**2*x**2 + 1)/(9*c) + b*e*x**4*sqrt(-c**2*x**2 + 1)
/(25*c) + 2*b*d*sqrt(-c**2*x**2 + 1)/(9*c**3) + 4*b*e*x**2*sqrt(-c**2*x**2
+ 1)/(75*c**3) + 8*b*e*sqrt(-c**2*x**2 + 1)/(75*c**5), Ne(c, 0)), (a*(d*x**
3/3 + e*x**5/5), True))
```

3.599 $\int x\left(d+ex^2\right)\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=122

$$\frac{\left(d+ex^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{4e}+\frac{bx\sqrt{1-c^2x^2}\left(d+ex^2\right)}{16c}-\frac{b\left(8c^4d^2+8c^2de+3e^2\right)\sin^{-1}(cx)}{32c^4e}+\frac{3bx\sqrt{1-c^2x^2}\left(2c^2d+e\right.}{32c^3}$$

[Out] -1/32*b*(8*c^4*d^2+8*c^2*d*e+3*e^2)*arcsin(c*x)/c^4/e+1/4*(e*x^2+d)^2*(a+b*arcsin(c*x))/e+3/32*b*(2*c^2*d+e)*x*(-c^2*x^2+1)^(1/2)/c^3+1/16*b*x*(e*x^2+d)*(-c^2*x^2+1)^(1/2)/c

Rubi [A] time = 0.09, antiderivative size = 122, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235, Rules used = {4729, 416, 388, 216}

$$\frac{\left(d+ex^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{4e}-\frac{b\left(8c^4d^2+8c^2de+3e^2\right)\sin^{-1}(cx)}{32c^4e}+\frac{bx\sqrt{1-c^2x^2}\left(d+ex^2\right)}{16c}+\frac{3bx\sqrt{1-c^2x^2}\left(2c^2d+e\right.}{32c^3}$$

Antiderivative was successfully verified.

```
[In] Int[x*(d + e*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (3*b*(2*c^2*d + e)*x*Sqrt[1 - c^2*x^2])/(32*c^3) + (b*x*Sqrt[1 - c^2*x^2]*(
d + e*x^2))/(16*c) - (b*(8*c^4*d^2 + 8*c^2*d*e + 3*e^2)*ArcSin[c*x])/(32*c^
4*e) + ((d + e*x^2)^2*(a + b*ArcSin[c*x]))/(4*e)
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 388

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_)), x_Symbol] :> Si
mp[(d*x*(a + b*x^n)^(p + 1))/(b*(n*(p + 1) + 1)), x] - Dist[(a*d - b*c*(n*(
p + 1) + 1))/(b*(n*(p + 1) + 1)), Int[(a + b*x^n)^p, x], x] /; FreeQ[{a, b,
 c, d, n}, x] && NeQ[b*c - a*d, 0] && NeQ[n*(p + 1) + 1, 0]
```

Rule 416

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Simp[(d*x*(a + b*x^n)^(p + 1)*(c + d*x^n)^(q - 1))/(b*(n*(p + q) + 1)),
x] + Dist[1/(b*(n*(p + q) + 1)), Int[(a + b*x^n)^p*(c + d*x^n)^(q - 2)*Simp
[c*(b*c*(n*(p + q) + 1) - a*d) + d*(b*c*(n*(p + 2*q - 1) + 1) - a*d*(n*(q -
 1) + 1))*x^n, x], x], x] /; FreeQ[{a, b, c, d, n, p}, x] && NeQ[b*c - a*d,
 0] && GtQ[q, 1] && NeQ[n*(p + q) + 1, 0] &&  !IGtQ[p, 1] && IntBinomialQ[a
, b, c, d, n, p, q, x]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x]))/(2*e*(p + 1)), x]
 - Dist[(b*c)/(2*e*(p + 1)), Int[(d + e*x^2)^(p + 1)/Sqrt[1 - c^2*x^2], x],
 x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[c^2*d + e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int x\left(d+ex^2\right)\left(a+b\sin^{-1}(cx)\right)\,dx = \frac{\left(d+ex^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{4e} - \frac{(bc)\int\frac{\left(d+ex^2\right)^2}{\sqrt{1-c^2x^2}}\,dx}{4e}$$
$$= \frac{bx\sqrt{1-c^2x^2}\left(d+ex^2\right)}{16c} + \frac{\left(d+ex^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{4e} + \frac{b\int\frac{-d\left(4c^2d+e\right)-3e(}{\sqrt{1-c^2}}}{16ce}$$
$$= \frac{3b\left(2c^2d+e\right)x\sqrt{1-c^2x^2}}{32c^3} + \frac{bx\sqrt{1-c^2x^2}\left(d+ex^2\right)}{16c} + \frac{\left(d+ex^2\right)^2\left(a+b\,\mathrm{s}\right.}{4e}$$
$$= \frac{3b\left(2c^2d+e\right)x\sqrt{1-c^2x^2}}{32c^3} + \frac{bx\sqrt{1-c^2x^2}\left(d+ex^2\right)}{16c} - \frac{b\left(8c^4d^2+8c^2de+\right.}{32c^4}$$

Mathematica [A] time = 0.07, size = 95, normalized size = 0.78

$$\frac{cx\left(8ac^3x\left(2d+ex^2\right)+b\sqrt{1-c^2x^2}\left(2c^2\left(4d+ex^2\right)+3e\right)\right)+b\sin^{-1}(cx)\left(8c^4\left(2dx^2+ex^4\right)-8c^2d-3e\right)}{32c^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d + e*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (c*x*(8*a*c^3*x*(2*d + e*x^2) + b*Sqrt[1 - c^2*x^2]*(3*e + 2*c^2*(4*d + e*x
^2))) + b*(-8*c^2*d - 3*e + 8*c^4*(2*d*x^2 + e*x^4))*ArcSin[c*x])/(32*c^4)
```

fricas [A] time = 0.64, size = 102, normalized size = 0.84

$$\frac{8\,ac^4ex^4+16\,ac^4dx^2+\left(8\,bc^4ex^4+16\,bc^4dx^2-8\,bc^2d-3\,be\right)\arcsin\left(cx\right)+\left(2\,bc^3ex^3+\left(8\,bc^3d+3\,bce\right)x\right)\sqrt{-c^2}}{32\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/32*(8*a*c^4*e*x^4 + 16*a*c^4*d*x^2 + (8*b*c^4*e*x^4 + 16*b*c^4*d*x^2 - 8*
b*c^2*d - 3*b*e)*arcsin(c*x) + (2*b*c^3*e*x^3 + (8*b*c^3*d + 3*b*c*e)*x)*sq
rt(-c^2*x^2 + 1))/c^4
```

giac [A] time = 0.32, size = 174, normalized size = 1.43

$$\frac{1}{4}ax^4e+\frac{\sqrt{-c^2x^2+1}\,bdx}{4\,c}+\frac{\left(c^2x^2-1\right)bd\arcsin\left(cx\right)}{2\,c^2}-\frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}bxe}{16\,c^3}+\frac{\left(c^2x^2-1\right)ad}{2\,c^2}+\frac{bd\arcsin\left(cx\right)}{4\,c^2}+\frac{\left(c^2x^2-1\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/4*a*x^4*e + 1/4*sqrt(-c^2*x^2 + 1)*b*d*x/c + 1/2*(c^2*x^2 - 1)*b*d*arcsin
(c*x)/c^2 - 1/16*(-c^2*x^2 + 1)^(3/2)*b*x*e/c^3 + 1/2*(c^2*x^2 - 1)*a*d/c^2
 + 1/4*b*d*arcsin(c*x)/c^2 + 1/4*(c^2*x^2 - 1)^2*b*arcsin(c*x)*e/c^4 + 5/32
*sqrt(-c^2*x^2 + 1)*b*x*e/c^3 + 1/2*(c^2*x^2 - 1)*b*arcsin(c*x)*e/c^4 + 5/3
2*b*arcsin(c*x)*e/c^4
```

maple [A] time = 0.00, size = 137, normalized size = 1.12

$$\frac{\frac{a\left(\frac{1}{4}ec^4x^4+\frac{1}{2}x^2c^4d\right)}{c^2}+\frac{b\left(\frac{\arcsin(cx)ec^4x^4}{4}+\frac{\arcsin(cx)c^4dx^2}{2}-\frac{e\left(-\frac{c^3x^3\sqrt{-c^2x^2+1}}{4}-\frac{3cx\sqrt{-c^2x^2+1}}{8}+\frac{3\arcsin(cx)}{8}\right)}{4}-\frac{c^2d\left(-\frac{cx\sqrt{-c^2x^2+1}}{2}+\frac{\arcsin(cx)}{2}\right)}{2}\right)}{c^2}}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x^2+d)*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c^2*(a/c^2*(1/4*e*c^4*x^4+1/2*x^2*c^4*d)+b/c^2*(1/4*arcsin(c*x)*e*c^4*x^4
+1/2*arcsin(c*x)*c^4*d*x^2-1/4*e*(-1/4*c^3*x^3*(-c^2*x^2+1)^(1/2)-3/8*c*x*(
-c^2*x^2+1)^(1/2)+3/8*arcsin(c*x))-1/2*c^2*d*(-1/2*c*x*(-c^2*x^2+1)^(1/2)+1
/2*arcsin(c*x))))
```

maxima [A] time = 1.24, size = 122, normalized size = 1.00

$$\frac{1}{4}aex^4+\frac{1}{2}adx^2+\frac{1}{4}\left(2x^2\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}\,x}{c^2}-\frac{\arcsin(cx)}{c^3}\right)\right)bd+\frac{1}{32}\left(8x^4\arcsin(cx)+\left(\frac{2\sqrt{-c^2x^2+1}\,x}{c^2}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/4*a*e*x^4 + 1/2*a*d*x^2 + 1/4*(2*x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*
x/c^2 - arcsin(c*x)/c^3))*b*d + 1/32*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2
+ 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c*x)/c^5)*c)*b*e
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\,(a+b\,\mathrm{asin}(c\,x))\,\left(e\,x^2+d\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c*x))*(d + e*x^2),x)
```

```
[Out] int(x*(a + b*asin(c*x))*(d + e*x^2), x)
```

sympy [A] time = 1.14, size = 153, normalized size = 1.25

$$\begin{cases} \frac{adx^2}{2}+\frac{aex^4}{4}+\frac{bdx^2\operatorname{asin}(cx)}{2}+\frac{bex^4\operatorname{asin}(cx)}{4}+\frac{bdx\sqrt{-c^2x^2+1}}{4c}+\frac{bex^3\sqrt{-c^2x^2+1}}{16c}-\frac{bd\operatorname{asin}(cx)}{4c^2}+\frac{3bex\sqrt{-c^2x^2+1}}{32c^3}-\frac{3be\operatorname{asin}(cx)}{32c^4} & \text{for} \\ a\left(\frac{dx^2}{2}+\frac{ex^4}{4}\right) & \text{oth} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x**2+d)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d*x**2/2 + a*e*x**4/4 + b*d*x**2*asin(c*x)/2 + b*e*x**4*asin(c
*x)/4 + b*d*x*sqrt(-c**2*x**2 + 1)/(4*c) + b*e*x**3*sqrt(-c**2*x**2 + 1)/(1
6*c) - b*d*asin(c*x)/(4*c**2) + 3*b*e*x*sqrt(-c**2*x**2 + 1)/(32*c**3) - 3*
b*e*asin(c*x)/(32*c**4), Ne(c, 0)), (a*(d*x**2/2 + e*x**4/4), True))
```

3.600 $\int (d+ex^2)\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=81

$$dx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}ex^3\left(a+b\sin^{-1}(cx)\right)+\frac{b\sqrt{1-c^2x^2}\left(3c^2d+e\right)}{3c^3}-\frac{be\left(1-c^2x^2\right)^{3/2}}{9c^3}$$

```
[Out] -1/9*b*e*(-c^2*x^2+1)^(3/2)/c^3+d*x*(a+b*arcsin(c*x))+1/3*e*x^3*(a+b*arcsin
(c*x))+1/3*b*(3*c^2*d+e)*(-c^2*x^2+1)^(1/2)/c^3
```

Rubi [A] time = 0.07, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.188$, Rules used = {4665, 444, 43}

$$dx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}ex^3\left(a+b\sin^{-1}(cx)\right)+\frac{b\sqrt{1-c^2x^2}\left(3c^2d+e\right)}{3c^3}-\frac{be\left(1-c^2x^2\right)^{3/2}}{9c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*(3*c^2*d + e)*Sqrt[1 - c^2*x^2])/(3*c^3) - (b*e*(1 - c^2*x^2)^(3/2))/(9*
c^3) + d*x*(a + b*ArcSin[c*x]) + (e*x^3*(a + b*ArcSin[c*x]))/3
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 444

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 4665

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && NeQ[c^2*d + e, 0] && (IGtQ[p, 0] || ILtQ[p + 1/2, 0]
)
```

Rubi steps

$$\begin{aligned}\int (d+ex^2)\left(a+b\sin^{-1}(cx)\right)\,dx &= dx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}ex^3\left(a+b\sin^{-1}(cx)\right)-(bc)\int \frac{x\left(d+\frac{ex^2}{3}\right)}{\sqrt{1-c^2x^2}}\,dx\\ &= dx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}ex^3\left(a+b\sin^{-1}(cx)\right)-\frac{1}{2}(bc)\,\text{Subst}\left(\int \frac{d+\frac{ex}{3}}{\sqrt{1-c^2x}}\right.\\ &= dx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}ex^3\left(a+b\sin^{-1}(cx)\right)-\frac{1}{2}(bc)\,\text{Subst}\left(\int\left(\frac{3c^2d+}{3c^2\sqrt{1-}}\right.\right.\\ &= \frac{b\left(3c^2d+e\right)\sqrt{1-c^2x^2}}{3c^3}-\frac{be\left(1-c^2x^2\right)^{3/2}}{9c^3}+dx\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}ex^3\left(a\right.\end{aligned}$$

Mathematica [A] time = 0.08, size = 71, normalized size = 0.88

$$\frac{1}{9}\left(3ax\left(3d+ex^2\right)+\frac{b\sqrt{1-c^2x^2}\left(c^2\left(9d+ex^2\right)+2e\right)}{c^3}+3bx\sin^{-1}(cx)\left(3d+ex^2\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (3*a*x*(3*d + e*x^2) + (b*Sqrt[1 - c^2*x^2]*(2*e + c^2*(9*d + e*x^2)))/c^3
+ 3*b*x*(3*d + e*x^2)*ArcSin[c*x])/9
```

fricas [A] time = 0.94, size = 82, normalized size = 1.01

$$\frac{3\,ac^3ex^3+9\,ac^3dx+3\left(bc^3ex^3+3\,bc^3dx\right)\arcsin\left(cx\right)+\left(bc^2ex^2+9\,bc^2d+2\,be\right)\sqrt{-c^2x^2+1}}{9\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/9*(3*a*c^3*e*x^3 + 9*a*c^3*d*x + 3*(b*c^3*e*x^3 + 3*b*c^3*d*x)*arcsin(c*x
) + (b*c^2*e*x^2 + 9*b*c^2*d + 2*b*e)*sqrt(-c^2*x^2 + 1))/c^3
```

giac [A] time = 0.28, size = 114, normalized size = 1.41

$$\frac{1}{3}\,ax^3e+bdx\arcsin\left(cx\right)+adx+\frac{\left(c^2x^2-1\right)bx\arcsin\left(cx\right)e}{3\,c^2}+\frac{bx\arcsin\left(cx\right)e}{3\,c^2}+\frac{\sqrt{-c^2x^2+1}\,bd}{c}-\frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}be}{9\,c^3}+\frac{\sqrt{-c}\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/3*a*x^3*e + b*d*x*arcsin(c*x) + a*d*x + 1/3*(c^2*x^2 - 1)*b*x*arcsin(c*x)
*e/c^2 + 1/3*b*x*arcsin(c*x)*e/c^2 + sqrt(-c^2*x^2 + 1)*b*d/c - 1/9*(-c^2*x
^2 + 1)^(3/2)*b*e/c^3 + 1/3*sqrt(-c^2*x^2 + 1)*b*e/c^3
```

maple [A] time = 0.00, size = 111, normalized size = 1.37

$$\frac{\frac{a\left(\frac{1}{3}c^3x^3e+c^3dx\right)}{c^2}+\frac{b\left(\frac{\arcsin(cx)c^3x^3e}{3}+\arcsin(cx)c^3dx-\frac{e\left(-\frac{c^2x^2\sqrt{-c^2x^2+1}}{3}-\frac{2\sqrt{-c^2x^2+1}}{3}\right)}{3}+c^2d\sqrt{-c^2x^2+1}\right)}{c^2}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c*(a/c^2*(1/3*c^3*x^3*e+c^3*d*x)+b/c^2*(1/3*arcsin(c*x)*c^3*x^3*e+arcsin(
c*x)*c^3*d*x-1/3*e*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-c^2*x^2+1)^(1/2))
+c^2*d*(-c^2*x^2+1)^(1/2)))
```

maxima [A] time = 0.49, size = 91, normalized size = 1.12

$$\frac{1}{3}\,aex^3+\frac{1}{9}\left(3\,x^3\arcsin\left(cx\right)+c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2}+\frac{2\sqrt{-c^2x^2+1}}{c^4}\right)\right)be+adx+\frac{\left(cx\arcsin\left(cx\right)+\sqrt{-c^2x^2+1}\right)bd}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/3*a*e*x^3 + 1/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sq
rt(-c^2*x^2 + 1)/c^4))*b*e + a*d*x + (c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))
*b*d/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\begin{cases} b\,e\left(\frac{\sqrt{\frac{1}{c^2}-x^2}\,\left(\frac{2}{c^2}+x^2\right)}{9}+\frac{x^3\,\mathrm{asin}(c\,x)}{3}\right)+\frac{a\,x\,\left(e\,x^2+3\,d\right)}{3}+\frac{b\,d\,\left(\sqrt{1-c^2\,x^2}+c\,x\,\mathrm{asin}(c\,x)\right)}{c} & \text{if}\ \ 0<c\\ \int (a+b\,\mathrm{asin}\,(c\,x))\,\left(e\,x^2+d\right)\,dx & \text{if}\ \ \neg 0<c \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(d + e*x^2),x)
```

```
[Out] piecewise(0 < c, b*e*(((1/c^2 - x^2)^(1/2)*(2/c^2 + x^2))/9 + (x^3*asin(c*x
))/3) + (a*x*(3*d + e*x^2))/3 + (b*d*((- c^2*x^2 + 1)^(1/2) + c*x*asin(c*x)
))/c, ~0 < c, int((a + b*asin(c*x))*(d + e*x^2), x))
```

sympy [A] time = 0.55, size = 109, normalized size = 1.35

$$\begin{cases} adx+\frac{aex^3}{3}+bdx\,\mathrm{asin}\,(cx)+\frac{bex^3\,\mathrm{asin}\,(cx)}{3}+\frac{bd\sqrt{-c^2x^2+1}}{c}+\frac{bex^2\sqrt{-c^2x^2+1}}{9c}+\frac{2be\sqrt{-c^2x^2+1}}{9c^3} & \text{for}\ c\neq 0\\ a\left(dx+\frac{ex^3}{3}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d*x + a*e*x**3/3 + b*d*x*asin(c*x) + b*e*x**3*asin(c*x)/3 + b*
d*sqrt(-c**2*x**2 + 1)/c + b*e*x**2*sqrt(-c**2*x**2 + 1)/(9*c) + 2*b*e*sqrt
(-c**2*x**2 + 1)/(9*c**3), Ne(c, 0)), (a*(d*x + e*x**3/3), True))
```

3.601 $\int \frac{(d+ex^2)(a+b\sin^{-1}(cx))}{x}\,dx$

Optimal. Leaf size=132

$$d\log(x)\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}ex^2\left(a+b\sin^{-1}(cx)\right)+\frac{bex\sqrt{1-c^2x^2}}{4c}-\frac{be\sin^{-1}(cx)}{4c^2}-\frac{1}{2}ibd\text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right)-\frac{1}{2}ibd\sin^{-1}$$

```
[Out] -1/4*b*e*arcsin(c*x)/c^2-1/2*I*b*d*arcsin(c*x)^2+1/2*e*x^2*(a+b*arcsin(c*x)
)+b*d*arcsin(c*x)*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))^2)-b*d*arcsin(c*x)*ln(x)+
d*(a+b*arcsin(c*x))*ln(x)-1/2*I*b*d*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)
+1/4*b*e*x*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.24, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 12, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.632, Rules used = {14, 4731, 12, 6742, 321, 216, 2326, 4625, 3717, 2190, 2279, 2391}

$$-\frac{1}{2}ibd\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)+d\log(x)\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}ex^2\left(a+b\sin^{-1}(cx)\right)+\frac{bex\sqrt{1-c^2x^2}}{4c}-\frac{be\sin^{-1}(cx)}{4c^2}-\frac{1}{2}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x^2)*(a + b*ArcSin[c*x]))/x,x]
```

```
[Out] (b*e*x*Sqrt[1 - c^2*x^2])/(4*c) - (b*e*ArcSin[c*x])/(4*c^2) - (I/2)*b*d*Arc
Sin[c*x]^2 + (e*x^2*(a + b*ArcSin[c*x]))/2 + b*d*ArcSin[c*x]*Log[1 - E^((2*
I)*ArcSin[c*x])] - b*d*ArcSin[c*x]*Log[x] + d*(a + b*ArcSin[c*x])*Log[x] -
(I/2)*b*d*PolyLog[2, E^((2*I)*ArcSin[c*x])]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
```

```
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2326

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/Sqrt[(d_) + (e_.)*(x_)^2], x_Symb
ol] :> Simp[(ArcSin[(Rt[-e, 2]*x)/Sqrt[d]]*(a + b*Log[c*x^n]))/Rt[-e, 2], x
] - Dist[(b*n)/Rt[-e, 2], Int[ArcSin[(Rt[-e, 2]*x)/Sqrt[d]]/x, x], x] /; Fr
eeQ[{a, b, c, d, e, n}, x] && GtQ[d, 0] && NegQ[e]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_
)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist
[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*
x^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[c^2*d + e, 0] &
& IntegerQ[p] && (GtQ[p, 0] || (IGtQ[(m - 1)/2, 0] && LeQ[m + p, 0]))
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(d+ex^2)(a+b\sin^{-1}(cx))}{x}\,dx = \frac{1}{2}ex^2\left(a+b\sin^{-1}(cx)\right)+d\left(a+b\sin^{-1}(cx)\right)\log(x)-(bc)\int\frac{ex^2+2d\log(x)}{2\sqrt{1-c^2x^2}}\,d$$
$$= \frac{1}{2}ex^2\left(a+b\sin^{-1}(cx)\right)+d\left(a+b\sin^{-1}(cx)\right)\log(x)-\frac{1}{2}(bc)\int\frac{ex^2+2d\log(x)}{\sqrt{1-c^2x^2}}$$
$$= \frac{1}{2}ex^2\left(a+b\sin^{-1}(cx)\right)+d\left(a+b\sin^{-1}(cx)\right)\log(x)-\frac{1}{2}(bc)\int\left(\frac{ex^2}{\sqrt{1-c^2x^2}}+\right.$$
$$= \frac{1}{2}ex^2\left(a+b\sin^{-1}(cx)\right)+d\left(a+b\sin^{-1}(cx)\right)\log(x)-(bcd)\int\frac{\log(x)}{\sqrt{1-c^2x^2}}\,dx-$$
$$= \frac{bex\sqrt{1-c^2x^2}}{4c}+\frac{1}{2}ex^2\left(a+b\sin^{-1}(cx)\right)-bd\sin^{-1}(cx)\log(x)+d\left(a+b\sin^{-1}\right.$$
$$= \frac{bex\sqrt{1-c^2x^2}}{4c}-\frac{be\sin^{-1}(cx)}{4c^2}+\frac{1}{2}ex^2\left(a+b\sin^{-1}(cx)\right)-bd\sin^{-1}(cx)\log(x)+$$
$$= \frac{bex\sqrt{1-c^2x^2}}{4c}-\frac{be\sin^{-1}(cx)}{4c^2}-\frac{1}{2}ibd\sin^{-1}(cx)^2+\frac{1}{2}ex^2\left(a+b\sin^{-1}(cx)\right)-bd$$
$$= \frac{bex\sqrt{1-c^2x^2}}{4c}-\frac{be\sin^{-1}(cx)}{4c^2}-\frac{1}{2}ibd\sin^{-1}(cx)^2+\frac{1}{2}ex^2\left(a+b\sin^{-1}(cx)\right)+bd$$
$$= \frac{bex\sqrt{1-c^2x^2}}{4c}-\frac{be\sin^{-1}(cx)}{4c^2}-\frac{1}{2}ibd\sin^{-1}(cx)^2+\frac{1}{2}ex^2\left(a+b\sin^{-1}(cx)\right)+bd$$
$$= \frac{bex\sqrt{1-c^2x^2}}{4c}-\frac{be\sin^{-1}(cx)}{4c^2}-\frac{1}{2}ibd\sin^{-1}(cx)^2+\frac{1}{2}ex^2\left(a+b\sin^{-1}(cx)\right)+bd$$

Mathematica [A] time = 0.21, size = 108, normalized size = 0.82

$$\frac{1}{2}\left(2ad\log(x)+aex^2+\frac{be\left(cx\sqrt{1-c^2x^2}-\sin^{-1}(cx)\right)}{2c^2}-ibd\left(\sin^{-1}(cx)^2+\text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right)\right)+2bd\sin^{-1}(cx)\log\left(1\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x^2)*(a + b*ArcSin[c*x]))/x,x]
```

```
[Out] (a*e*x^2 + (b*e*(c*x*Sqrt[1 - c^2*x^2] - ArcSin[c*x]))/(2*c^2) + b*e*x^2*Ar
cSin[c*x] + 2*b*d*ArcSin[c*x]*Log[1 - E^((2*I)*ArcSin[c*x])] + 2*a*d*Log[x]
 - I*b*d*(ArcSin[c*x]^2 + PolyLog[2, E^((2*I)*ArcSin[c*x])]))/2
```

fricas [F] time = 0.67, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{aex^2+ad+\left(bex^2+bd\right)\arcsin(cx)}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)*(a+b*arcsin(c*x))/x,x, algorithm="fricas")
```

```
[Out] integral((a*e*x^2 + a*d + (b*e*x^2 + b*d)*arcsin(c*x))/x, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(ex^2+d\right)\left(b\arcsin(cx)+a\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)*(a+b*arcsin(c*x))/x,x, algorithm="giac")
```

```
[Out] integrate((e*x^2 + d)*(b*arcsin(c*x) + a)/x, x)
```

maple [A] time = 0.26, size = 167, normalized size = 1.27

$$\frac{a\,x^2 e}{2}+da\ln(cx)-\frac{ibd\arcsin(cx)^2}{2}+db\arcsin(cx)\ln\left(1-icx-\sqrt{-c^2x^2+1}\right)+db\arcsin(cx)\ln\left(1+icx+\sqrt{-c^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)*(a+b*arcsin(c*x))/x,x)
```

```
[Out] 1/2*a*x^2*e+d*a*ln(c*x)-1/2*I*b*d*arcsin(c*x)^2+d*b*arcsin(c*x)*ln(1-I*c*x-
(-c^2*x^2+1)^(1/2))+d*b*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-I*d*b*po
lylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))-I*d*b*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2)
)-1/4*b/c^2*arcsin(c*x)*e*cos(2*arcsin(c*x))+1/8*b/c^2*e*sin(2*arcsin(c*x))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\,aex^2+ad\log(x)+\int\frac{\left(bex^2+bd\right)\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)*(a+b*arcsin(c*x))/x,x, algorithm="maxima")
```

```
[Out] 1/2*a*e*x^2 + a*d*log(x) + integrate((b*e*x^2 + b*d)*arctan2(c*x, sqrt(c*x
+ 1)*sqrt(-c*x + 1))/x, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{(a+b\,\mathrm{asin}(c\,x))\,\left(e\,x^2+d\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d + e*x^2))/x,x)
```

```
[Out] int(((a + b*asin(c*x))*(d + e*x^2))/x, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(a+b\,\mathrm{asin}(cx))\left(d+ex^2\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)*(a+b*asin(c*x))/x,x)
```

```
[Out] Integral((a + b*asin(c*x))*(d + e*x**2)/x, x)
```

3.602 $\int \frac{(d+ex^2)(a+b\sin^{-1}(cx))}{x^2} dx$

Optimal. Leaf size=66

$$-\frac{d(a+b\sin^{-1}(cx))}{x}+ex(a+b\sin^{-1}(cx))-bcd\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)+\frac{be\sqrt{1-c^2x^2}}{c}$$

```
[Out] -d*(a+b*arcsin(c*x))/x+e*x*(a+b*arcsin(c*x))-b*c*d*arctanh((-c^2*x^2+1)^(1/
2))+b*e*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.08, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.316$, Rules used = $\{14, 4731, 446, 80, 63, 208\}$

$$-\frac{d(a+b\sin^{-1}(cx))}{x}+ex(a+b\sin^{-1}(cx))-bcd\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)+\frac{be\sqrt{1-c^2x^2}}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x^2)*(a + b*ArcSin[c*x]))/x^2,x]
```

```
[Out] (b*e*Sqrt[1 - c^2*x^2])/c - (d*(a + b*ArcSin[c*x]))/x + e*x*(a + b*ArcSin[c
*x]) - b*c*d*ArcTanh[Sqrt[1 - c^2*x^2]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 446

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p
*(c + d*x)^q, x], x, x^n], x] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[
b*c - a*d, 0] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_
)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist
[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*
x^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[c^2*d + e, 0] &
& IntegerQ[p] && (GtQ[p, 0] || (IGtQ[(m - 1)/2, 0] && LeQ[m + p, 0]))
```

Rubi steps

$$\int \frac{\left(d+ex^2\right)\left(a+b\sin^{-1}(cx)\right)}{x^2}\,dx = -\frac{d\left(a+b\sin^{-1}(cx)\right)}{x} + ex\left(a+b\sin^{-1}(cx)\right) - (bc)\int \frac{-d+ex^2}{x\sqrt{1-c^2x^2}}\,dx$$

$$= -\frac{d\left(a+b\sin^{-1}(cx)\right)}{x} + ex\left(a+b\sin^{-1}(cx)\right) - \frac{1}{2}(bc)\,\text{Subst}\left(\int \frac{-d+ex}{x\sqrt{1-c^2x}}\,d\right.$$

$$= \frac{be\sqrt{1-c^2x^2}}{c} - \frac{d\left(a+b\sin^{-1}(cx)\right)}{x} + ex\left(a+b\sin^{-1}(cx)\right) + \frac{1}{2}(bcd)\,\text{Subst}\left(\right.$$

$$= \frac{be\sqrt{1-c^2x^2}}{c} - \frac{d\left(a+b\sin^{-1}(cx)\right)}{x} + ex\left(a+b\sin^{-1}(cx)\right) - \frac{(bd)\,\text{Subst}\left(\int\right.}{}$$

$$= \frac{be\sqrt{1-c^2x^2}}{c} - \frac{d\left(a+b\sin^{-1}(cx)\right)}{x} + ex\left(a+b\sin^{-1}(cx)\right) - bcd\tanh^{-1}\left(\sqrt{}\right.$$

Mathematica [A] time = 0.06, size = 71, normalized size = 1.08

$$-\frac{ad}{x} + aex - bcd\tanh^{-1}\left(\sqrt{1-c^2x^2}\right) + \frac{be\sqrt{1-c^2x^2}}{c} - \frac{bd\sin^{-1}(cx)}{x} + bex\sin^{-1}(cx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x^2)*(a + b*ArcSin[c*x]))/x^2,x]
```

```
[Out] -((a*d)/x) + a*e*x + (b*e*Sqrt[1 - c^2*x^2])/c - (b*d*ArcSin[c*x])/x + b*e*
x*ArcSin[c*x] - b*c*d*ArcTanh[Sqrt[1 - c^2*x^2]]
```

fricas [A] time = 0.87, size = 103, normalized size = 1.56

$$-\frac{bc^2dx\log\left(\sqrt{-c^2x^2+1}+1\right) - bc^2dx\log\left(\sqrt{-c^2x^2+1}-1\right) - 2\,acex^2 - 2\sqrt{-c^2x^2+1}\,bex + 2\,acd - 2\left(bcex^2 - \right.}{2\,cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)*(a+b*arcsin(c*x))/x^2,x, algorithm="fricas")
```

```
[Out] -1/2*(b*c^2*d*x*log(sqrt(-c^2*x^2 + 1) + 1) - b*c^2*d*x*log(sqrt(-c^2*x^2 +
 1) - 1) - 2*a*c*e*x^2 - 2*sqrt(-c^2*x^2 + 1)*b*e*x + 2*a*c*d - 2*(b*c*e*x^
2 - b*c*d)*arcsin(c*x))/(c*x)
```

giac [B] time = 1.71, size = 1036, normalized size = 15.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)*(a+b*arcsin(c*x))/x^2,x, algorithm="giac")
```

```
[Out] -1/2*b*c^6*d*x^4*arcsin(c*x)/((c^4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^2*x/(
sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^4) - 1/2*a*c^6*d*x^4/((c^
```

```
4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^2*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c
^2*x^2 + 1) + 1)^4) + b*c^5*d*x^3*log(abs(c)*abs(x))/((c^4*x^3/(sqrt(-c^2*x
^2 + 1) + 1)^3 + c^2*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^3
) - b*c^5*d*x^3*log(sqrt(-c^2*x^2 + 1) + 1)/((c^4*x^3/(sqrt(-c^2*x^2 + 1) +
 1)^3 + c^2*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^3) - b*c^4
*d*x^2*arcsin(c*x)/((c^4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^2*x/(sqrt(-c^2*
x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^2) - a*c^4*d*x^2/((c^4*x^3/(sqrt(-c
^2*x^2 + 1) + 1)^3 + c^2*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) +
1)^2) + b*c^3*d*x*log(abs(c)*abs(x))/((c^4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 +
 c^2*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)) - b*c^3*d*x*log(
sqrt(-c^2*x^2 + 1) + 1)/((c^4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^2*x/(sqrt(
-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)) - 1/2*b*c^2*d*arcsin(c*x)/(c^
4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^2*x/(sqrt(-c^2*x^2 + 1) + 1)) - b*c^3*
x^3*e/((c^4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^2*x/(sqrt(-c^2*x^2 + 1) + 1)
)*(sqrt(-c^2*x^2 + 1) + 1)^3) + 2*b*c^2*x^2*arcsin(c*x)*e/((c^4*x^3/(sqrt(-
c^2*x^2 + 1) + 1)^3 + c^2*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) +
 1)^2) - 1/2*a*c^2*d/(c^4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^2*x/(sqrt(-c^2
*x^2 + 1) + 1)) + 2*a*c^2*x^2*e/((c^4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^2*
x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^2) + b*c*x*e/((c^4*x^3
/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^2*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^
2 + 1) + 1))
```

maple [A] time = 0.01, size = 79, normalized size = 1.20

$$c\left(\frac{a\left(cex-\frac{cd}{x}\right)}{c^2}+\frac{b\left(\arcsin\left(cx\right)ecx-\frac{\arcsin(cx)cd}{x}+e\sqrt{-c^2x^2+1}\;-c^2d\,\mathrm{arctanh}\left(\frac{1}{\sqrt{-c^2x^2+1}}\right)\right)}{c^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)*(a+b*arcsin(c*x))/x^2,x)
```

```
[Out] c*(a/c^2*(c*e*x-c*d/x)+b/c^2*(arcsin(c*x)*e*c*x-arcsin(c*x)*c*d/x+e*(-c^2*x
^2+1)^(1/2)-c^2*d*arctanh(1/(-c^2*x^2+1)^(1/2))))
```

maxima [A] time = 0.53, size = 79, normalized size = 1.20

$$-\left(c\log\left(\frac{2\sqrt{-c^2x^2+1}}{|x|}+\frac{2}{|x|}\right)+\frac{\arcsin\left(cx\right)}{x}\right)bd+aex+\frac{\left(cx\arcsin\left(cx\right)+\sqrt{-c^2x^2+1}\right)be}{c}-\frac{ad}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)*(a+b*arcsin(c*x))/x^2,x, algorithm="maxima")
```

```
[Out] -(c*log(2*sqrt(-c^2*x^2 + 1)/abs(x) + 2/abs(x)) + arcsin(c*x)/x)*b*d + a*e*
x + (c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*b*e/c - a*d/x
```

mupad [B] time = 0.36, size = 70, normalized size = 1.06

$$\frac{b\,e\,\left(\sqrt{1-c^2\,x^2}\;+c\,x\,\mathrm{asin}\left(c\,x\right)\right)}{c}-\frac{b\,d\,\mathrm{asin}\left(c\,x\right)}{x}-b\,c\,d\,\mathrm{atanh}\left(\frac{1}{\sqrt{1-c^2\,x^2}}\right)-\frac{a\,\left(d-e\,x^2\right)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d + e*x^2))/x^2,x)
```

```
[Out] (b*e*((1 - c^2*x^2)^(1/2) + c*x*asin(c*x)))/c - (b*d*asin(c*x))/x - b*c*d*a
tanh(1/(1 - c^2*x^2)^(1/2)) - (a*(d - e*x^2))/x
```

sympy [A] time = 3.94, size = 75, normalized size = 1.14

$$-\frac{ad}{x}+aex+bcd\left(\begin{cases}-\operatorname{acosh}\left(\frac{1}{cx}\right) & \text{for } \frac{1}{|c^2x^2|}>1\\ i\operatorname{asin}\left(\frac{1}{cx}\right) & \text{otherwise}\end{cases}\right)-\frac{bd\operatorname{asin}(cx)}{x}+be\left(\begin{cases}0 & \text{for } c=0\\ x\operatorname{asin}(cx)+\frac{\sqrt{-c^2x^2+1}}{c} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)*(a+b*asin(c*x))/x**2,x)
```

```
[Out] -a*d/x + a*e*x + b*c*d*Piecewise((-acosh(1/(c*x)), 1/Abs(c**2*x**2) > 1), (
I*asin(1/(c*x)), True)) - b*d*asin(c*x)/x + b*e*Piecewise((0, Eq(c, 0)), (x
*asin(c*x) + sqrt(-c**2*x**2 + 1)/c, True))
```

3.603 $\int \frac{(d+ex^2)(a+b\sin^{-1}(cx))}{x^3}\,dx$

Optimal. Leaf size=119

$$-\frac{d\left(a+b\sin^{-1}(cx)\right)}{2x^2}+e\log(x)\left(a+b\sin^{-1}(cx)\right)-\frac{bcd\sqrt{1-c^2x^2}}{2x}-\frac{1}{2}ibe\text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right)-\frac{1}{2}ibe\sin^{-1}(cx)^2+be\sin^{-1}(c$$

```
[Out] -1/2*I*b*e*arcsin(c*x)^2-1/2*d*(a+b*arcsin(c*x))/x^2+b*e*arcsin(c*x)*ln(1-(
I*c*x+(-c^2*x^2+1)^(1/2))^2)-b*e*arcsin(c*x)*ln(x)+e*(a+b*arcsin(c*x))*ln(x
)-1/2*I*b*e*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)-1/2*b*c*d*(-c^2*x^2+1)^
(1/2)/x
```

Rubi [A] time = 0.22, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 10, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.526, Rules used = {14, 4731, 6742, 264, 2326, 4625, 3717, 2190, 2279, 2391}

$$-\frac{1}{2}ibe\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)-\frac{d\left(a+b\sin^{-1}(cx)\right)}{2x^2}+e\log(x)\left(a+b\sin^{-1}(cx)\right)-\frac{bcd\sqrt{1-c^2x^2}}{2x}-\frac{1}{2}ibe\sin^{-1}(cx)^2+be$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x^2)*(a + b*ArcSin[c*x]))/x^3,x]
```

```
[Out] -(b*c*d*Sqrt[1 - c^2*x^2])/(2*x) - (I/2)*b*e*ArcSin[c*x]^2 - (d*(a + b*ArcS
in[c*x]))/(2*x^2) + b*e*ArcSin[c*x]*Log[1 - E^((2*I)*ArcSin[c*x])] - b*e*Ar
cSin[c*x]*Log[x] + e*(a + b*ArcSin[c*x])*Log[x] - (I/2)*b*e*PolyLog[2, E^((
2*I)*ArcSin[c*x])]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] && !LinearQ[u, x] && !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 264

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c
*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] /; FreeQ[{a, b, c, m, n,
 p}, x] && EqQ[(m + 1)/n + p + 1, 0] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2326

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/Sqrt[(d_) + (e_.)*(x_)^2], x_Symb
ol] :> Simp[(ArcSin[(Rt[-e, 2]*x)/Sqrt[d]]*(a + b*Log[c*x^n]))/Rt[-e, 2], x
] - Dist[(b*n)/Rt[-e, 2], Int[ArcSin[(Rt[-e, 2]*x)/Sqrt[d]]/x, x], x] /; Fr
```

```
eeQ[{a, b, c, d, e, n}, x] && GtQ[d, 0] && NegQ[e]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_
)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist
[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*
x^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[c^2*d + e, 0] &
& IntegerQ[p] && (GtQ[p, 0] || (IGtQ[(m - 1)/2, 0] && LeQ[m + p, 0]))
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\left(d+ex^2\right)\left(a+b\sin^{-1}(cx)\right)}{x^3}\,dx &= -\frac{d\left(a+b\sin^{-1}(cx)\right)}{2x^2}+e\left(a+b\sin^{-1}(cx)\right)\log(x)-(bc)\int \frac{-\frac{d}{2x^2}+e\log(x)}{\sqrt{1-c^2x^2}} \\
&= -\frac{d\left(a+b\sin^{-1}(cx)\right)}{2x^2}+e\left(a+b\sin^{-1}(cx)\right)\log(x)-(bc)\int \left(-\frac{d}{2x^2\sqrt{1-c^2x^2}} \right. \\
&= -\frac{d\left(a+b\sin^{-1}(cx)\right)}{2x^2}+e\left(a+b\sin^{-1}(cx)\right)\log(x)+\frac{1}{2}(bcd)\int \frac{1}{x^2\sqrt{1-c^2x^2}} \\
&= -\frac{bcd\sqrt{1-c^2x^2}}{2x}-\frac{d\left(a+b\sin^{-1}(cx)\right)}{2x^2}-be\sin^{-1}(cx)\log(x)+e\left(a+b\sin^{-1}\right. \\
&= -\frac{bcd\sqrt{1-c^2x^2}}{2x}-\frac{d\left(a+b\sin^{-1}(cx)\right)}{2x^2}-be\sin^{-1}(cx)\log(x)+e\left(a+b\sin^{-1}\right. \\
&= -\frac{bcd\sqrt{1-c^2x^2}}{2x}-\frac{1}{2}ibe\sin^{-1}(cx)^2-\frac{d\left(a+b\sin^{-1}(cx)\right)}{2x^2}-be\sin^{-1}(cx)\log(\\
&= -\frac{bcd\sqrt{1-c^2x^2}}{2x}-\frac{1}{2}ibe\sin^{-1}(cx)^2-\frac{d\left(a+b\sin^{-1}(cx)\right)}{2x^2}+be\sin^{-1}(cx)\log \\
&= -\frac{bcd\sqrt{1-c^2x^2}}{2x}-\frac{1}{2}ibe\sin^{-1}(cx)^2-\frac{d\left(a+b\sin^{-1}(cx)\right)}{2x^2}+be\sin^{-1}(cx)\log \\
&= -\frac{bcd\sqrt{1-c^2x^2}}{2x}-\frac{1}{2}ibe\sin^{-1}(cx)^2-\frac{d\left(a+b\sin^{-1}(cx)\right)}{2x^2}+be\sin^{-1}(cx)\log
\end{aligned}
$$

Mathematica [A] time = 0.13, size = 104, normalized size = 0.87

$$-\frac{ad-2aex^2\log(x)+bcdx\sqrt{1-c^2x^2}+b\sin^{-1}(cx)\left(d-2ex^2\log\left(1-e^{2i\sin^{-1}(cx)}\right)\right)+ibex^2\text{Li}_2\left(e^{2i\sin^{-1}(cx)}\right)+ibex^2}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x^2)*(a + b*ArcSin[c*x]))/x^3,x]
```

```
[Out] -1/2*(a*d + b*c*d*x*Sqrt[1 - c^2*x^2] + I*b*e*x^2*ArcSin[c*x]^2 + b*ArcSin[
c*x]*(d - 2*e*x^2*Log[1 - E^((2*I)*ArcSin[c*x])]) - 2*a*e*x^2*Log[x] + I*b*
e*x^2*PolyLog[2, E^((2*I)*ArcSin[c*x])])/x^2
```

fricas [F] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{aex^2+ad+\left(bex^2+bd\right)\arcsin(cx)}{x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)*(a+b*arcsin(c*x))/x^3,x, algorithm="fricas")
```

```
[Out] integral((a*e*x^2 + a*d + (b*e*x^2 + b*d)*arcsin(c*x))/x^3, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(ex^2+d\right)(b\arcsin(cx)+a)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)*(a+b*arcsin(c*x))/x^3,x, algorithm="giac")
```

```
[Out] integrate((e*x^2 + d)*(b*arcsin(c*x) + a)/x^3, x)
```

maple [A] time = 0.86, size = 174, normalized size = 1.46

$$ae\ln(cx)-\frac{da}{2x^2}-\frac{ibe\arcsin(cx)^2}{2}+\frac{ic^2db}{2}-\frac{bcd\sqrt{-c^2x^2+1}}{2x}-\frac{db\arcsin(cx)}{2x^2}+be\arcsin(cx)\ln\left(1+icx+\sqrt{-c^2x^2+1}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)*(a+b*arcsin(c*x))/x^3,x)
```

```
[Out] a*e*ln(c*x)-1/2*d*a/x^2-1/2*I*b*e*arcsin(c*x)^2+1/2*I*c^2*d*b-1/2*b*c*d*(-c
^2*x^2+1)^(1/2)/x-1/2*d*b*arcsin(c*x)/x^2+b*e*arcsin(c*x)*ln(1+I*c*x+(-c^2*
x^2+1)^(1/2))+b*e*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))-I*b*e*polylog(
2,-I*c*x-(-c^2*x^2+1)^(1/2))-I*b*e*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}bd\left(\frac{\sqrt{-c^2x^2+1}\,c}{x}+\frac{\arcsin(cx)}{x^2}\right)+be\int\frac{\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{x}\,dx+ae\log(x)-\frac{ad}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)*(a+b*arcsin(c*x))/x^3,x, algorithm="maxima")
```

```
[Out] -1/2*b*d*(sqrt(-c^2*x^2 + 1)*c/x + arcsin(c*x)/x^2) + b*e*integrate(arctan2
(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/x, x) + a*e*log(x) - 1/2*a*d/x^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a + b\,\mathrm{asin}\,(c\,x))\,\left(e\,x^2 + d\right)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d + e*x^2))/x^3,x)
```

```
[Out] int(((a + b*asin(c*x))*(d + e*x^2))/x^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\,\mathrm{asin}\,(cx))\left(d + ex^2\right)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)*(a+b*asin(c*x))/x**3,x)
```

```
[Out] Integral((a + b*asin(c*x))*(d + e*x**2)/x**3, x)
```

3.604 $\int \frac{(d+ex^2)(a+b\sin^{-1}(cx))}{x^4} dx$

Optimal. Leaf size=85

$$-\frac{d\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{e\left(a+b\sin^{-1}(cx)\right)}{x}-\frac{1}{6}bc\left(c^2d+6e\right)\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)-\frac{bcd\sqrt{1-c^2x^2}}{6x^2}$$

```
[Out] -1/3*d*(a+b*arcsin(c*x))/x^3-e*(a+b*arcsin(c*x))/x-1/6*b*c*(c^2*d+6*e)*arct
anh((-c^2*x^2+1)^(1/2))-1/6*b*c*d*(-c^2*x^2+1)^(1/2)/x^2
```

Rubi [A] time = 0.09, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 7, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.368, Rules used = {14, 4731, 12, 446, 78, 63, 208}

$$-\frac{d\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{e\left(a+b\sin^{-1}(cx)\right)}{x}-\frac{1}{6}bc\left(c^2d+6e\right)\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)-\frac{bcd\sqrt{1-c^2x^2}}{6x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x^2)*(a + b*ArcSin[c*x]))/x^4,x]
```

```
[Out] -(b*c*d*Sqrt[1 - c^2*x^2])/(6*x^2) - (d*(a + b*ArcSin[c*x]))/(3*x^3) - (e*(
a + b*ArcSin[c*x]))/x - (b*c*(c^2*d + 6*e)*ArcTanh[Sqrt[1 - c^2*x^2]])/6
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 446

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p
*(c + d*x)^q, x], x, x^n], x] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[
b*c - a*d, 0] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_
)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist
[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*
x^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[c^2*d + e, 0] &
& IntegerQ[p] && (GtQ[p, 0] || (IGtQ[(m - 1)/2, 0] && LeQ[m + p, 0]))
```

Rubi steps

$$\int \frac{\left(d+ex^2\right)\left(a+b\sin^{-1}(cx)\right)}{x^4}\,dx = -\frac{d\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{e\left(a+b\sin^{-1}(cx)\right)}{x}-(bc)\int \frac{-d-3ex^2}{3x^3\sqrt{1-c^2x^2}}\,dx$$

$$= -\frac{d\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{e\left(a+b\sin^{-1}(cx)\right)}{x}-\frac{1}{3}(bc)\int \frac{-d-3ex^2}{x^3\sqrt{1-c^2x^2}}\,dx$$

$$= -\frac{d\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{e\left(a+b\sin^{-1}(cx)\right)}{x}-\frac{1}{6}(bc)\,\text{Subst}\left(\int \frac{-d-3ex}{x^2\sqrt{1-c^2x}}\,d\right.$$

$$= -\frac{bcd\sqrt{1-c^2x^2}}{6x^2}-\frac{d\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{e\left(a+b\sin^{-1}(cx)\right)}{x}+\frac{1}{12}\left(bc\left(c^2d+\right.\right.$$

$$= -\frac{bcd\sqrt{1-c^2x^2}}{6x^2}-\frac{d\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{e\left(a+b\sin^{-1}(cx)\right)}{x}-\frac{\left(b\left(c^2d+6e\right)\right.}{}$$

$$= -\frac{bcd\sqrt{1-c^2x^2}}{6x^2}-\frac{d\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{e\left(a+b\sin^{-1}(cx)\right)}{x}-\frac{1}{6}bc\left(c^2d+6\right.$$

Mathematica [A] time = 0.05, size = 109, normalized size = 1.28

$$-\frac{ad}{3x^3}-\frac{ae}{x}-\frac{bcd\sqrt{1-c^2x^2}}{6x^2}-bce\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)-\frac{1}{6}bc^3d\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)-\frac{bd\sin^{-1}(cx)}{3x^3}-\frac{be\sin^{-1}(cx)}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x^2)*(a + b*ArcSin[c*x]))/x^4,x]
```

```
[Out] -1/3*(a*d)/x^3 - (a*e)/x - (b*c*d*Sqrt[1 - c^2*x^2])/(6*x^2) - (b*d*ArcSin[
c*x])/(3*x^3) - (b*e*ArcSin[c*x])/x - (b*c^3*d*ArcTanh[Sqrt[1 - c^2*x^2]])/
6 - b*c*e*ArcTanh[Sqrt[1 - c^2*x^2]]
```

fricas [A] time = 0.79, size = 115, normalized size = 1.35

$$-\frac{\left(bc^3d+6\,bce\right)x^3\log\left(\sqrt{-c^2x^2+1}+1\right)-\left(bc^3d+6\,bce\right)x^3\log\left(\sqrt{-c^2x^2+1}-1\right)+2\sqrt{-c^2x^2+1}\,bcdx+12\,ae}{12\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)*(a+b*arcsin(c*x))/x^4,x, algorithm="fricas")
```

```
[Out] -1/12*((b*c^3*d + 6*b*c*e)*x^3*log(sqrt(-c^2*x^2 + 1) + 1) - (b*c^3*d + 6*b
*c*e)*x^3*log(sqrt(-c^2*x^2 + 1) - 1) + 2*sqrt(-c^2*x^2 + 1)*b*c*d*x + 12*a
*e*x^2 + 4*a*d + 4*(3*b*e*x^2 + b*d)*arcsin(c*x))/x^3
```

giac [B] time = 4.16, size = 430, normalized size = 5.06

$$-\frac{bc^6dx^3\arcsin(cx)}{24\left(\sqrt{-c^2x^2+1}+1\right)^3}-\frac{ac^6dx^3}{24\left(\sqrt{-c^2x^2+1}+1\right)^3}+\frac{bc^5dx^2}{24\left(\sqrt{-c^2x^2+1}+1\right)^2}-\frac{bc^4dx\arcsin(cx)}{8\left(\sqrt{-c^2x^2+1}+1\right)}-\frac{ac^4dx}{8\left(\sqrt{-c^2x^2+1}+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)*(a+b*arcsin(c*x))/x^4,x, algorithm="giac")
```

```
[Out] -1/24*b*c^6*d*x^3*arcsin(c*x)/(sqrt(-c^2*x^2 + 1) + 1)^3 - 1/24*a*c^6*d*x^3
/(sqrt(-c^2*x^2 + 1) + 1)^3 + 1/24*b*c^5*d*x^2/(sqrt(-c^2*x^2 + 1) + 1)^2 -
 1/8*b*c^4*d*x*arcsin(c*x)/(sqrt(-c^2*x^2 + 1) + 1) - 1/8*a*c^4*d*x/(sqrt(-
c^2*x^2 + 1) + 1) + 1/6*b*c^3*d*log(abs(c)*abs(x)) - 1/6*b*c^3*d*log(sqrt(-
c^2*x^2 + 1) + 1) - 1/8*b*c^2*d*(sqrt(-c^2*x^2 + 1) + 1)*arcsin(c*x)/x - 1/
2*b*c^2*x*arcsin(c*x)*e/(sqrt(-c^2*x^2 + 1) + 1) - 1/8*a*c^2*d*(sqrt(-c^2*x
^2 + 1) + 1)/x - 1/2*a*c^2*x*e/(sqrt(-c^2*x^2 + 1) + 1) + b*c*e*log(abs(c)*
abs(x)) - b*c*e*log(sqrt(-c^2*x^2 + 1) + 1) - 1/24*b*c*d*(sqrt(-c^2*x^2 + 1
) + 1)^2/x^2 - 1/24*b*d*(sqrt(-c^2*x^2 + 1) + 1)^3*arcsin(c*x)/x^3 - 1/2*b*
(sqrt(-c^2*x^2 + 1) + 1)*arcsin(c*x)*e/x - 1/24*a*d*(sqrt(-c^2*x^2 + 1) + 1
)^3/x^3 - 1/2*a*(sqrt(-c^2*x^2 + 1) + 1)*e/x
```

maple [A] time = 0.01, size = 120, normalized size = 1.41

$$c^3\left(\frac{a\left(-\frac{d}{3c\,x^3}-\frac{e}{cx}\right)}{c^2}+\frac{b\left(-\frac{\arcsin(cx)d}{3c\,x^3}-\frac{\arcsin(cx)e}{cx}-e\,\mathrm{arctanh}\left(\frac{1}{\sqrt{-c^2x^2+1}}\right)+\frac{c^2d\left(-\frac{\sqrt{-c^2x^2+1}}{2c^2x^2}-\frac{\mathrm{arctanh}\left(\frac{1}{\sqrt{-c^2x^2+1}}\right)}{2}\right)}{3}\right)}{c^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)*(a+b*arcsin(c*x))/x^4,x)
```

```
[Out] c^3*(a/c^2*(-1/3/c*d/x^3-e/c/x)+b/c^2*(-1/3*arcsin(c*x)/c*d/x^3-arcsin(c*x)
*e/c/x-e*arctanh(1/(-c^2*x^2+1)^(1/2))+1/3*c^2*d*(-1/2/c^2/x^2*(-c^2*x^2+1)
^(1/2)-1/2*arctanh(1/(-c^2*x^2+1)^(1/2)))))
```

maxima [A] time = 1.21, size = 119, normalized size = 1.40

$$-\frac{1}{6}\left(\left(\left(c^2\log\left(\frac{2\sqrt{-c^2x^2+1}}{|x|}+\frac{2}{|x|}\right)+\frac{\sqrt{-c^2x^2+1}}{x^2}\right)c+\frac{2\arcsin(cx)}{x^3}\right)bd-\left(c\log\left(\frac{2\sqrt{-c^2x^2+1}}{|x|}+\frac{2}{|x|}\right)+\frac{\arcsin(c}{x}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)*(a+b*arcsin(c*x))/x^4,x, algorithm="maxima")
```

```
[Out] -1/6*((c^2*log(2*sqrt(-c^2*x^2 + 1)/abs(x) + 2/abs(x)) + sqrt(-c^2*x^2 + 1)
/x^2)*c + 2*arcsin(c*x)/x^3)*b*d - (c*log(2*sqrt(-c^2*x^2 + 1)/abs(x) + 2/a
bs(x)) + arcsin(c*x)/x)*b*e - a*e/x - 1/3*a*d/x^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))\,\left(e\,x^2+d\right)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d + e*x^2))/x^4,x)
```

```
[Out] int(((a + b*asin(c*x))*(d + e*x^2))/x^4, x)
```

sympy [A] time = 4.87, size = 170, normalized size = 2.00

$$-\frac{ad}{3x^3}-\frac{ae}{x}+\frac{bcd\left(\begin{cases}-\frac{c^2\operatorname{acosh}\left(\frac{1}{cx}\right)}{2}-\frac{c\sqrt{-1+\frac{1}{c^2x^2}}}{2x} & \text{for } \frac{1}{|c^2x^2|}>1\\ \frac{ic^2\operatorname{asin}\left(\frac{1}{cx}\right)}{2}-\frac{ic}{2x\sqrt{1-\frac{1}{c^2x^2}}}+\frac{i}{2cx^3\sqrt{1-\frac{1}{c^2x^2}}} & \text{otherwise}\end{cases}\right)}{3}+bce\left(\begin{cases}-\operatorname{acosh}\left(\frac{1}{cx}\right) & \text{for } \frac{1}{|c^2x^2|}>1\\ i\operatorname{asin}\left(\frac{1}{cx}\right) & \text{otherwise}\end{cases}\right)-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)*(a+b*asin(c*x))/x**4,x)
```

```
[Out] -a*d/(3*x**3) - a*e/x + b*c*d*Piecewise((-c**2*acosh(1/(c*x))/2 - c*sqrt(-1
 + 1/(c**2*x**2))/(2*x), 1/Abs(c**2*x**2) > 1), (I*c**2*asin(1/(c*x))/2 - I
*c/(2*x*sqrt(1 - 1/(c**2*x**2))) + I/(2*c*x**3*sqrt(1 - 1/(c**2*x**2))), Tr
ue))/3 + b*c*e*Piecewise((-acosh(1/(c*x)), 1/Abs(c**2*x**2) > 1), (I*asin(1
/(c*x)), True)) - b*d*asin(c*x)/(3*x**3) - b*e*asin(c*x)/x
```

3.605 $\int x^4 \left(d+ex^2\right)^2 \left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=241

$$\frac{1}{5}d^2x^5\left(a+b\sin^{-1}(cx)\right)+\frac{2}{7}dex^7\left(a+b\sin^{-1}(cx)\right)+\frac{1}{9}e^2x^9\left(a+b\sin^{-1}(cx)\right)-\frac{2be\left(1-c^2x^2\right)^{7/2}\left(9c^2d+14e\right)}{441c^9}+\frac{be^2\left(1\right.}{8}$$

```
[Out] -2/945*b*(63*c^4*d^2+135*c^2*d*e+70*e^2)*(-c^2*x^2+1)^(3/2)/c^9+1/525*b*(21
*c^4*d^2+90*c^2*d*e+70*e^2)*(-c^2*x^2+1)^(5/2)/c^9-2/441*b*e*(9*c^2*d+14*e)
*(-c^2*x^2+1)^(7/2)/c^9+1/81*b*e^2*(-c^2*x^2+1)^(9/2)/c^9+1/5*d^2*x^5*(a+b*
arcsin(c*x))+2/7*d*e*x^7*(a+b*arcsin(c*x))+1/9*e^2*x^9*(a+b*arcsin(c*x))+1/
315*b*(63*c^4*d^2+90*c^2*d*e+35*e^2)*(-c^2*x^2+1)^(1/2)/c^9
```

Rubi [A] time = 0.32, antiderivative size = 241, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {270, 4731, 12, 1251, 897, 1153}

$$\frac{1}{5}d^2x^5\left(a+b\sin^{-1}(cx)\right)+\frac{2}{7}dex^7\left(a+b\sin^{-1}(cx)\right)+\frac{1}{9}e^2x^9\left(a+b\sin^{-1}(cx)\right)+\frac{b\left(1-c^2x^2\right)^{5/2}\left(21c^4d^2+90c^2de+70e\right.}{525c^9}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(d + e*x^2)^2*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*(63*c^4*d^2 + 90*c^2*d*e + 35*e^2)*Sqrt[1 - c^2*x^2])/(315*c^9) - (2*b*(
63*c^4*d^2 + 135*c^2*d*e + 70*e^2)*(1 - c^2*x^2)^(3/2))/(945*c^9) + (b*(21*
c^4*d^2 + 90*c^2*d*e + 70*e^2)*(1 - c^2*x^2)^(5/2))/(525*c^9) - (2*b*e*(9*c
^2*d + 14*e)*(1 - c^2*x^2)^(7/2))/(441*c^9) + (b*e^2*(1 - c^2*x^2)^(9/2))/(
81*c^9) + (d^2*x^5*(a + b*ArcSin[c*x]))/5 + (2*d*e*x^7*(a + b*ArcSin[c*x]))
/7 + (e^2*x^9*(a + b*ArcSin[c*x]))/9
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 897

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_.) + (b_.)*(x_)
 + (c_.)*(x_)^2)^(p_.), x_Symbol] :> With[{q = Denominator[m]}, Dist[q/e, S
ubst[Int[x^(q*(m + 1) - 1)*((e*f - d*g)/e + (g*x^q)/e)^n*((c*d^2 - b*d*e +
a*e^2)/e^2 - ((2*c*d - b*e)*x^q)/e^2 + (c*x^(2*q))/e^2)^p, x], x, (d + e*x)
^(1/q)], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ
[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegersQ[n, p] && Fra
ctionQ[m]
```

Rule 1153

```
Int[((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.),
 x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^q*(a + b*x^2 + c*x^4)^p, x],
x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e
 + a*e^2, 0] && IGtQ[p, 0] && IGtQ[q, -2]
```

Rule 1251

```
Int[(x_)^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_
)^4)^(p_.), x_Symbol] :> Dist[1/2, Subst[Int[x^((m - 1)/2)*(d + e*x)^q*(a +
 b*x + c*x^2)^p, x], x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x] && Inte
gerQ[(m - 1)/2]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_
)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist
[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*
x^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[c^2*d + e, 0] &
& IntegerQ[p] && (GtQ[p, 0] || (IGtQ[(m - 1)/2, 0] && LeQ[m + p, 0]))
```

Rubi steps

$$\int x^4 \left(d+ex^2\right)^2 \left(a+b\sin^{-1}(cx)\right) dx = \frac{1}{5}d^2x^5\left(a+b\sin^{-1}(cx)\right)+\frac{2}{7}dex^7\left(a+b\sin^{-1}(cx)\right)+\frac{1}{9}e^2x^9\left(a+b\sin^{-1}\right.$$

$$= \frac{1}{5}d^2x^5\left(a+b\sin^{-1}(cx)\right)+\frac{2}{7}dex^7\left(a+b\sin^{-1}(cx)\right)+\frac{1}{9}e^2x^9\left(a+b\sin^{-1}\right.$$

$$= \frac{1}{5}d^2x^5\left(a+b\sin^{-1}(cx)\right)+\frac{2}{7}dex^7\left(a+b\sin^{-1}(cx)\right)+\frac{1}{9}e^2x^9\left(a+b\sin^{-1}\right.$$

$$= \frac{1}{5}d^2x^5\left(a+b\sin^{-1}(cx)\right)+\frac{2}{7}dex^7\left(a+b\sin^{-1}(cx)\right)+\frac{1}{9}e^2x^9\left(a+b\sin^{-1}\right.$$

$$= \frac{1}{5}d^2x^5\left(a+b\sin^{-1}(cx)\right)+\frac{2}{7}dex^7\left(a+b\sin^{-1}(cx)\right)+\frac{1}{9}e^2x^9\left(a+b\sin^{-1}\right.$$

$$= \frac{b\left(63c^4d^2+90c^2de+35e^2\right)\sqrt{1-c^2x^2}}{315c^9}-\frac{2b\left(63c^4d^2+135c^2de+70e^2\right)}{945c^9}$$

Mathematica [A] time = 0.21, size = 187, normalized size = 0.78

$$\frac{315ax^5\left(63d^2+90dex^2+35e^2x^4\right)+\frac{b\sqrt{1-c^2x^2}\left(c^8\left(3969d^2x^4+4050dex^6+1225e^2x^8\right)+4c^6\left(1323d^2x^2+1215dex^4+350e^2x^6\right)+24c^4\left(441d^2\right.\right.}{c^9}}{99225}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(d + e*x^2)^2*(a + b*ArcSin[c*x]),x]
```

```
[Out] (315*a*x^5*(63*d^2 + 90*d*e*x^2 + 35*e^2*x^4) + (b*Sqrt[1 - c^2*x^2]*(4480*
e^2 + 160*c^2*e*(81*d + 14*e*x^2) + 24*c^4*(441*d^2 + 270*d*e*x^2 + 70*e^2*
x^4) + 4*c^6*(1323*d^2*x^2 + 1215*d*e*x^4 + 350*e^2*x^6) + c^8*(3969*d^2*x^
4 + 4050*d*e*x^6 + 1225*e^2*x^8)))/c^9 + 315*b*x^5*(63*d^2 + 90*d*e*x^2 + 3
5*e^2*x^4)*ArcSin[c*x])/99225
```

fricas [A] time = 0.60, size = 219, normalized size = 0.91

$$\frac{11025\,ac^9e^2x^9+28350\,ac^9dex^7+19845\,ac^9d^2x^5+315\left(35\,bc^9e^2x^9+90\,bc^9dex^7+63\,bc^9d^2x^5\right)\arcsin\left(cx\right)+\left(1\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/99225*(11025*a*c^9*e^2*x^9 + 28350*a*c^9*d*e*x^7 + 19845*a*c^9*d^2*x^5 +
315*(35*b*c^9*e^2*x^9 + 90*b*c^9*d*e*x^7 + 63*b*c^9*d^2*x^5)*arcsin(c*x) +
(1225*b*c^8*e^2*x^8 + 10584*b*c^4*d^2 + 50*(81*b*c^8*d*e + 28*b*c^6*e^2)*x^
6 + 12960*b*c^2*d*e + 3*(1323*b*c^8*d^2 + 1620*b*c^6*d*e + 560*b*c^4*e^2)*x
^4 + 4480*b*e^2 + 4*(1323*b*c^6*d^2 + 1620*b*c^4*d*e + 560*b*c^2*e^2)*x^2)*
sqrt(-c^2*x^2 + 1))/c^9
```

giac [B] time = 0.44, size = 596, normalized size = 2.47

$$\frac{1}{9}ax^9e^2+\frac{2}{7}adx^7e+\frac{1}{5}ad^2x^5+\frac{\left(c^2x^2-1\right)^2bd^2x\arcsin\left(cx\right)}{5c^4}+\frac{2\left(c^2x^2-1\right)bd^2x\arcsin\left(cx\right)}{5c^4}+\frac{2\left(c^2x^2-1\right)^3bdx\arcsin\left(c\right.}{7c^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/9*a*x^9*e^2 + 2/7*a*d*x^7*e + 1/5*a*d^2*x^5 + 1/5*(c^2*x^2 - 1)^2*b*d^2*x
*arcsin(c*x)/c^4 + 2/5*(c^2*x^2 - 1)*b*d^2*x*arcsin(c*x)/c^4 + 2/7*(c^2*x^2
 - 1)^3*b*d*x*arcsin(c*x)*e/c^6 + 1/5*b*d^2*x*arcsin(c*x)/c^4 + 6/7*(c^2*x^
2 - 1)^2*b*d*x*arcsin(c*x)*e/c^6 + 1/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*
b*d^2/c^5 + 1/9*(c^2*x^2 - 1)^4*b*x*arcsin(c*x)*e^2/c^8 + 6/7*(c^2*x^2 - 1)
*b*d*x*arcsin(c*x)*e/c^6 - 2/15*(-c^2*x^2 + 1)^(3/2)*b*d^2/c^5 + 2/49*(c^2*
x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*b*d*e/c^7 + 4/9*(c^2*x^2 - 1)^3*b*x*arcsin(c*
x)*e^2/c^8 + 2/7*b*d*x*arcsin(c*x)*e/c^6 + 1/5*sqrt(-c^2*x^2 + 1)*b*d^2/c^5
 + 6/35*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*d*e/c^7 + 2/3*(c^2*x^2 - 1)^2*
b*x*arcsin(c*x)*e^2/c^8 + 1/81*(c^2*x^2 - 1)^4*sqrt(-c^2*x^2 + 1)*b*e^2/c^9
 - 2/7*(-c^2*x^2 + 1)^(3/2)*b*d*e/c^7 + 4/9*(c^2*x^2 - 1)*b*x*arcsin(c*x)*e
^2/c^8 + 4/63*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*b*e^2/c^9 + 2/7*sqrt(-c^2*
x^2 + 1)*b*d*e/c^7 + 1/9*b*x*arcsin(c*x)*e^2/c^8 + 2/15*(c^2*x^2 - 1)^2*sqr
t(-c^2*x^2 + 1)*b*e^2/c^9 - 4/27*(-c^2*x^2 + 1)^(3/2)*b*e^2/c^9 + 1/9*sqrt(
-c^2*x^2 + 1)*b*e^2/c^9
```

maple [A] time = 0.01, size = 339, normalized size = 1.41

$$\frac{\frac{a\left(\frac{1}{9}e^2c^9x^9+\frac{2}{7}c^9ed\,x^7+\frac{1}{5}d^2c^9x^5\right)}{c^4}+\frac{b\left(\frac{\arcsin(cx)e^2c^9x^9}{9}+\frac{2\arcsin(cx)c^9ed\,x^7}{7}+\frac{\arcsin(cx)d^2c^9x^5}{5}-\frac{e^2\left(-\frac{c^8x^8\sqrt{-c^2x^2+1}}{9}-\frac{8c^6x^6\sqrt{-c^2x^2+1}}{63}-\frac{16c^4x^4\sqrt{-c^2x^2+1}}{105}-\frac{64c^2x^2}{\cdots}\right.}{9}\right.}{\cdots}}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(e*x^2+d)^2*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c^5*(a/c^4*(1/9*e^2*c^9*x^9+2/7*c^9*e*d*x^7+1/5*d^2*c^9*x^5)+b/c^4*(1/9*a
rcsin(c*x)*e^2*c^9*x^9+2/7*arcsin(c*x)*c^9*e*d*x^7+1/5*arcsin(c*x)*d^2*c^9*
x^5-1/9*e^2*(-1/9*c^8*x^8*(-c^2*x^2+1)^(1/2)-8/63*c^6*x^6*(-c^2*x^2+1)^(1/2
)-16/105*c^4*x^4*(-c^2*x^2+1)^(1/2)-64/315*c^2*x^2*(-c^2*x^2+1)^(1/2)-128/3
15*(-c^2*x^2+1)^(1/2))-2/7*c^2*e*d*(-1/7*c^6*x^6*(-c^2*x^2+1)^(1/2)-6/35*c^
4*x^4*(-c^2*x^2+1)^(1/2)-8/35*c^2*x^2*(-c^2*x^2+1)^(1/2)-16/35*(-c^2*x^2+1)
^(1/2))-1/5*d^2*c^4*(-1/5*c^4*x^4*(-c^2*x^2+1)^(1/2)-4/15*c^2*x^2*(-c^2*x^2
+1)^(1/2)-8/15*(-c^2*x^2+1)^(1/2))))
```

maxima [A] time = 1.85, size = 314, normalized size = 1.30

$$\frac{1}{9}ae^2x^9+\frac{2}{7}adex^7+\frac{1}{5}ad^2x^5+\frac{1}{75}\left(15\,x^5\arcsin\left(cx\right)+\left(\frac{3\sqrt{-c^2x^2+1}\,x^4}{c^2}+\frac{4\sqrt{-c^2x^2+1}\,x^2}{c^4}+\frac{8\sqrt{-c^2x^2+1}}{c^6}\right)c\right)bd^2+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/9*a*e^2*x^9 + 2/7*a*d*e*x^7 + 1/5*a*d^2*x^5 + 1/75*(15*x^5*arcsin(c*x) +
(3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*
x^2 + 1)/c^6)*c)*b*d^2 + 2/245*(35*x^7*arcsin(c*x) + (5*sqrt(-c^2*x^2 + 1)*
x^6/c^2 + 6*sqrt(-c^2*x^2 + 1)*x^4/c^4 + 8*sqrt(-c^2*x^2 + 1)*x^2/c^6 + 16*
sqrt(-c^2*x^2 + 1)/c^8)*c)*b*d*e + 1/2835*(315*x^9*arcsin(c*x) + (35*sqrt(-
c^2*x^2 + 1)*x^8/c^2 + 40*sqrt(-c^2*x^2 + 1)*x^6/c^4 + 48*sqrt(-c^2*x^2 + 1
)*x^4/c^6 + 64*sqrt(-c^2*x^2 + 1)*x^2/c^8 + 128*sqrt(-c^2*x^2 + 1)/c^10)*c)
*b*e^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^4\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(e\,x^2+d\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a + b*asin(c*x))*(d + e*x^2)^2,x)
```

```
[Out] int(x^4*(a + b*asin(c*x))*(d + e*x^2)^2, x)
```

sympy [A] time = 15.97, size = 415, normalized size = 1.72

$$\begin{cases} \frac{ad^2x^5}{5} + \frac{2adex^7}{7} + \frac{ae^2x^9}{9} + \frac{bd^2x^5\operatorname{asin}(cx)}{5} + \frac{2bdex^7\operatorname{asin}(cx)}{7} + \frac{be^2x^9\operatorname{asin}(cx)}{9} + \frac{bd^2x^4\sqrt{-c^2x^2+1}}{25c} + \frac{2bdex^6\sqrt{-c^2x^2+1}}{49c} + \frac{be^2x^8\sqrt{-c^2}}{81c} \\ a\left(\frac{d^2x^5}{5} + \frac{2dex^7}{7} + \frac{e^2x^9}{9}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(e*x**2+d)**2*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d**2*x**5/5 + 2*a*d*e*x**7/7 + a*e**2*x**9/9 + b*d**2*x**5*asi
n(c*x)/5 + 2*b*d*e*x**7*asin(c*x)/7 + b*e**2*x**9*asin(c*x)/9 + b*d**2*x**4
*sqrt(-c**2*x**2 + 1)/(25*c) + 2*b*d*e*x**6*sqrt(-c**2*x**2 + 1)/(49*c) + b
*e**2*x**8*sqrt(-c**2*x**2 + 1)/(81*c) + 4*b*d**2*x**2*sqrt(-c**2*x**2 + 1)
/(75*c**3) + 12*b*d*e*x**4*sqrt(-c**2*x**2 + 1)/(245*c**3) + 8*b*e**2*x**6*
sqrt(-c**2*x**2 + 1)/(567*c**3) + 8*b*d**2*sqrt(-c**2*x**2 + 1)/(75*c**5) +
 16*b*d*e*x**2*sqrt(-c**2*x**2 + 1)/(245*c**5) + 16*b*e**2*x**4*sqrt(-c**2*
x**2 + 1)/(945*c**5) + 32*b*d*e*sqrt(-c**2*x**2 + 1)/(245*c**7) + 64*b*e**2
*x**2*sqrt(-c**2*x**2 + 1)/(2835*c**7) + 128*b*e**2*sqrt(-c**2*x**2 + 1)/(2
835*c**9), Ne(c, 0)), (a*(d**2*x**5/5 + 2*d*e*x**7/7 + e**2*x**9/9), True))
```

3.606 $\int x^3 \left(d+ex^2\right)^2 \left(a+b\sin^{-1}(cx)\right) dx$

Optimal. Leaf size=241

$$\frac{1}{4}d^2x^4\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}dex^6\left(a+b\sin^{-1}(cx)\right)+\frac{1}{8}e^2x^8\left(a+b\sin^{-1}(cx)\right)+\frac{be^2x^7\sqrt{1-c^2x^2}}{64c}+\frac{bex^5\sqrt{1-c^2x^2}\,(64c}{1152c^3}$$

```
[Out] -1/3072*b*(288*c^4*d^2+320*c^2*d*e+105*e^2)*arcsin(c*x)/c^8+1/4*d^2*x^4*(a+
b*arcsin(c*x))+1/3*d*e*x^6*(a+b*arcsin(c*x))+1/8*e^2*x^8*(a+b*arcsin(c*x))+
1/3072*b*(288*c^4*d^2+320*c^2*d*e+105*e^2)*x*(-c^2*x^2+1)^(1/2)/c^7+1/4608*
b*(288*c^4*d^2+320*c^2*d*e+105*e^2)*x^3*(-c^2*x^2+1)^(1/2)/c^5+1/1152*b*e*(
64*c^2*d+21*e)*x^5*(-c^2*x^2+1)^(1/2)/c^3+1/64*b*e^2*x^7*(-c^2*x^2+1)^(1/2)
/c
```

Rubi [A] time = 0.25, antiderivative size = 241, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 8, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.381$, Rules used = {266, 43, 4731, 12, 1267, 459, 321, 216}

$$\frac{1}{4}d^2x^4\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}dex^6\left(a+b\sin^{-1}(cx)\right)+\frac{1}{8}e^2x^8\left(a+b\sin^{-1}(cx)\right)+\frac{bx^3\sqrt{1-c^2x^2}\left(288c^4d^2+320c^2de+1\right.}{4608c^5}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(d + e*x^2)^2*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*(288*c^4*d^2 + 320*c^2*d*e + 105*e^2)*x*Sqrt[1 - c^2*x^2])/(3072*c^7) +
(b*(288*c^4*d^2 + 320*c^2*d*e + 105*e^2)*x^3*Sqrt[1 - c^2*x^2])/(4608*c^5)
+ (b*e*(64*c^2*d + 21*e)*x^5*Sqrt[1 - c^2*x^2])/(1152*c^3) + (b*e^2*x^7*Sqr
t[1 - c^2*x^2])/(64*c) - (b*(288*c^4*d^2 + 320*c^2*d*e + 105*e^2)*ArcSin[c*
x])/(3072*c^8) + (d^2*x^4*(a + b*ArcSin[c*x]))/4 + (d*e*x^6*(a + b*ArcSin[c
*x]))/3 + (e^2*x^8*(a + b*ArcSin[c*x]))/8
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
```

```
x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 459

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_)), x_Symbol] :> Simp[(d*(e*x)^(m + 1)*(a + b*x^n)^(p + 1))/(b*e*(m + n*(p
 + 1) + 1)), x] - Dist[(a*d*(m + 1) - b*c*(m + n*(p + 1) + 1))/(b*(m + n*(p
 + 1) + 1)), Int[(e*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, d, e, m,
n, p}, x] && NeQ[b*c - a*d, 0] && NeQ[m + n*(p + 1) + 1, 0]
```

Rule 1267

```
Int[((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (
c_.)*(x_)^4)^(p_.), x_Symbol] :> Simp[(c^p*(f*x)^(m + 4*p - 1)*(d + e*x^2)^
(q + 1))/(e*f^(4*p - 1)*(m + 4*p + 2*q + 1)), x] + Dist[1/(e*(m + 4*p + 2*q
 + 1)), Int[(f*x)^m*(d + e*x^2)^q*ExpandToSum[e*(m + 4*p + 2*q + 1)*((a + b
*x^2 + c*x^4)^p - c^p*x^(4*p)) - d*c^p*(m + 4*p - 1)*x^(4*p - 2), x], x], x
] /; FreeQ[{a, b, c, d, e, f, m, q}, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[p, 0
] &&  !IntegerQ[q] && NeQ[m + 4*p + 2*q + 1, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_
)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist
[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*
x^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[c^2*d + e, 0] &
& IntegerQ[p] && (GtQ[p, 0] || (IGtQ[(m - 1)/2, 0] && LeQ[m + p, 0]))
```

Rubi steps

$$\int x^3\left(d+ex^2\right)^2\left(a+b\sin^{-1}(cx)\right)dx = \frac{1}{4}d^2x^4\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}dex^6\left(a+b\sin^{-1}(cx)\right)+\frac{1}{8}e^2x^8\left(a+b\sin^{-1}\right.$$

$$= \frac{1}{4}d^2x^4\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}dex^6\left(a+b\sin^{-1}(cx)\right)+\frac{1}{8}e^2x^8\left(a+b\sin^{-1}\right.$$

$$= \frac{be^2x^7\sqrt{1-c^2x^2}}{64c}+\frac{1}{4}d^2x^4\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}dex^6\left(a+b\sin^{-1}(cx)\right)+$$

$$= \frac{be\left(64c^2d+21e\right)x^5\sqrt{1-c^2x^2}}{1152c^3}+\frac{be^2x^7\sqrt{1-c^2x^2}}{64c}+\frac{1}{4}d^2x^4\left(a+b\sin^{-1}\right.$$

$$= \frac{b\left(288c^4d^2+5e\left(64c^2d+21e\right)\right)x^3\sqrt{1-c^2x^2}}{4608c^5}+\frac{be\left(64c^2d+21e\right)x^5\sqrt{1\cdots}}{1152c^3}$$

$$= \frac{b\left(288c^4d^2+5e\left(64c^2d+21e\right)\right)x\sqrt{1-c^2x^2}}{3072c^7}+\frac{b\left(288c^4d^2+5e\left(64c^2d\cdots\right.\right.}{4608c\cdots}$$

$$= \frac{b\left(288c^4d^2+5e\left(64c^2d+21e\right)\right)x\sqrt{1-c^2x^2}}{3072c^7}+\frac{b\left(288c^4d^2+5e\left(64c^2d\cdots\right.\right.}{4608c\cdots}$$

Mathematica [A] time = 0.18, size = 190, normalized size = 0.79

$$\frac{384ac^8x^4\left(6d^2+8dex^2+3e^2x^4\right)+3b\sin^{-1}(cx)\left(128c^8\left(6d^2x^4+8dex^6+3e^2x^8\right)-288c^4d^2-320c^2de-105e^2\right)\cdots}{9\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(d + e*x^2)^2*(a + b*ArcSin[c*x]),x]
```

```
[Out] (384*a*c^8*x^4*(6*d^2 + 8*d*e*x^2 + 3*e^2*x^4) + b*c*x*Sqrt[1 - c^2*x^2]*(3
15*e^2 + 30*c^2*e*(32*d + 7*e*x^2) + 8*c^4*(108*d^2 + 80*d*e*x^2 + 21*e^2*x
^4) + 16*c^6*(36*d^2*x^2 + 32*d*e*x^4 + 9*e^2*x^6)) + 3*b*(-288*c^4*d^2 - 3
20*c^2*d*e - 105*e^2 + 128*c^8*(6*d^2*x^4 + 8*d*e*x^6 + 3*e^2*x^8))*ArcSin[
c*x])/(9216*c^8)
```

fricas [A] time = 0.42, size = 215, normalized size = 0.89

$$\frac{1152\,ac^8e^2x^8 + 3072\,ac^8dex^6 + 2304\,ac^8d^2x^4 + 3\left(384\,bc^8e^2x^8 + 1024\,bc^8dex^6 + 768\,bc^8d^2x^4 - 288\,bc^4d^2 - 320\,bc\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/9216*(1152*a*c^8*e^2*x^8 + 3072*a*c^8*d*e*x^6 + 2304*a*c^8*d^2*x^4 + 3*(3
84*b*c^8*e^2*x^8 + 1024*b*c^8*d*e*x^6 + 768*b*c^8*d^2*x^4 - 288*b*c^4*d^2 -
 320*b*c^2*d*e - 105*b*e^2)*arcsin(c*x) + (144*b*c^7*e^2*x^7 + 8*(64*b*c^7*
d*e + 21*b*c^5*e^2)*x^5 + 2*(288*b*c^7*d^2 + 320*b*c^5*d*e + 105*b*c^3*e^2)
*x^3 + 3*(288*b*c^5*d^2 + 320*b*c^3*d*e + 105*b*c*e^2)*x)*sqrt(-c^2*x^2 + 1
))/c^8
```

giac [B] time = 0.31, size = 496, normalized size = 2.06

$$\frac{1}{8}\,ax^8e^2+\frac{1}{3}\,adx^6e+\frac{1}{4}\,ad^2x^4-\frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}bd^2x}{16\,c^3}+\frac{\left(c^2x^2-1\right)^2bd^2\arcsin\left(cx\right)}{4\,c^4}+\frac{5\,\sqrt{-c^2x^2+1}\,bd^2x}{32\,c^3}+\frac{\left(c^2x^2-1\right)^2\sqrt{-c^2}}{18\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/8*a*x^8*e^2 + 1/3*a*d*x^6*e + 1/4*a*d^2*x^4 - 1/16*(-c^2*x^2 + 1)^(3/2)*b
*d^2*x/c^3 + 1/4*(c^2*x^2 - 1)^2*b*d^2*arcsin(c*x)/c^4 + 5/32*sqrt(-c^2*x^2
 + 1)*b*d^2*x/c^3 + 1/18*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*d*x*e/c^5 + 1
/2*(c^2*x^2 - 1)*b*d^2*arcsin(c*x)/c^4 + 1/3*(c^2*x^2 - 1)^3*b*d*arcsin(c*x
)*e/c^6 - 13/72*(-c^2*x^2 + 1)^(3/2)*b*d*x*e/c^5 + 5/32*b*d^2*arcsin(c*x)/c
^4 + (c^2*x^2 - 1)^2*b*d*arcsin(c*x)*e/c^6 + 1/64*(c^2*x^2 - 1)^3*sqrt(-c^2
*x^2 + 1)*b*x*e^2/c^7 + 11/48*sqrt(-c^2*x^2 + 1)*b*d*x*e/c^5 + 1/8*(c^2*x^2
 - 1)^4*b*arcsin(c*x)*e^2/c^8 + (c^2*x^2 - 1)*b*d*arcsin(c*x)*e/c^6 + 25/38
4*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*x*e^2/c^7 + 1/2*(c^2*x^2 - 1)^3*b*ar
csin(c*x)*e^2/c^8 + 11/48*b*d*arcsin(c*x)*e/c^6 - 163/1536*(-c^2*x^2 + 1)^(
3/2)*b*x*e^2/c^7 + 3/4*(c^2*x^2 - 1)^2*b*arcsin(c*x)*e^2/c^8 + 93/1024*sqrt
(-c^2*x^2 + 1)*b*x*e^2/c^7 + 1/2*(c^2*x^2 - 1)*b*arcsin(c*x)*e^2/c^8 + 93/1
024*b*arcsin(c*x)*e^2/c^8
```

maple [A] time = 0.01, size = 303, normalized size = 1.26

$$\frac{\frac{a\left(\frac{1}{8}e^2c^8x^8+\frac{1}{3}c^8ed\,x^6+\frac{1}{4}x^4c^8d^2\right)}{c^4}+\frac{b\left(\frac{\arcsin(cx)e^2c^8x^8}{8}+\frac{\arcsin(cx)c^8ed\,x^6}{3}+\frac{\arcsin(cx)d^2c^8x^4}{4}-\frac{e^2\left(-\frac{c^7x^7\sqrt{-c^2x^2+1}}{8}-\frac{7c^5x^5\sqrt{-c^2x^2+1}}{48}-\frac{35c^3x^3\sqrt{-c^2x^2+1}}{192}-\frac{35cx\sqrt{-c}}{128}\right.}{8}\right.}{}}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(e*x^2+d)^2*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c^4*(a/c^4*(1/8*e^2*c^8*x^8+1/3*c^8*e*d*x^6+1/4*x^4*c^8*d^2)+b/c^4*(1/8*a
rcsin(c*x)*e^2*c^8*x^8+1/3*arcsin(c*x)*c^8*e*d*x^6+1/4*arcsin(c*x)*d^2*c^8*
x^4-1/8*e^2*(-1/8*c^7*x^7*(-c^2*x^2+1)^(1/2)-7/48*c^5*x^5*(-c^2*x^2+1)^(1/2
```

```
)-35/192*c^3*x^3*(-c^2*x^2+1)^(1/2)-35/128*c*x*(-c^2*x^2+1)^(1/2)+35/128*ar
csin(c*x))-1/3*c^2*e*d*(-1/6*c^5*x^5*(-c^2*x^2+1)^(1/2)-5/24*c^3*x^3*(-c^2*
x^2+1)^(1/2)-5/16*c*x*(-c^2*x^2+1)^(1/2)+5/16*arcsin(c*x))-1/4*d^2*c^4*(-1/
4*c^3*x^3*(-c^2*x^2+1)^(1/2)-3/8*c*x*(-c^2*x^2+1)^(1/2)+3/8*arcsin(c*x))))
```

maxima [A] time = 0.68, size = 284, normalized size = 1.18

$$\frac{1}{8}ae^2x^8+\frac{1}{3}adex^6+\frac{1}{4}ad^2x^4+\frac{1}{32}\left(8x^4\arcsin(cx)+\left(\frac{2\sqrt{-c^2x^2+1}\,x^3}{c^2}+\frac{3\sqrt{-c^2x^2+1}\,x}{c^4}-\frac{3\arcsin(cx)}{c^5}\right)c\right)bd^2-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/8*a*e^2*x^8 + 1/3*a*d*e*x^6 + 1/4*a*d^2*x^4 + 1/32*(8*x^4*arcsin(c*x) + (
2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(c*x)/c
^5)*c)*b*d^2 + 1/144*(48*x^6*arcsin(c*x) + (8*sqrt(-c^2*x^2 + 1)*x^5/c^2 +
10*sqrt(-c^2*x^2 + 1)*x^3/c^4 + 15*sqrt(-c^2*x^2 + 1)*x/c^6 - 15*arcsin(c*x
)/c^7)*c)*b*d*e + 1/3072*(384*x^8*arcsin(c*x) + (48*sqrt(-c^2*x^2 + 1)*x^7/
c^2 + 56*sqrt(-c^2*x^2 + 1)*x^5/c^4 + 70*sqrt(-c^2*x^2 + 1)*x^3/c^6 + 105*s
qrt(-c^2*x^2 + 1)*x/c^8 - 105*arcsin(c*x)/c^9)*c)*b*e^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^3\,(a+b\,\mathrm{asin}(c\,x))\,\left(e\,x^2+d\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + b*asin(c*x))*(d + e*x^2)^2,x)
```

```
[Out] int(x^3*(a + b*asin(c*x))*(d + e*x^2)^2, x)
```

sympy [A] time = 10.80, size = 382, normalized size = 1.59

$$\begin{cases} \frac{ad^2x^4}{4}+\frac{adex^6}{3}+\frac{ae^2x^8}{8}+\frac{bd^2x^4\,\mathrm{asin}(cx)}{4}+\frac{bdex^6\,\mathrm{asin}(cx)}{3}+\frac{be^2x^8\,\mathrm{asin}(cx)}{8}+\frac{bd^2x^3\sqrt{-c^2x^2+1}}{16c}+\frac{bdex^5\sqrt{-c^2x^2+1}}{18c}+\frac{be^2x^7\sqrt{-c^2x^2+}}{64c} \\ a\left(\frac{d^2x^4}{4}+\frac{dex^6}{3}+\frac{e^2x^8}{8}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(e*x**2+d)**2*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d**2*x**4/4 + a*d*e*x**6/3 + a*e**2*x**8/8 + b*d**2*x**4*asin(
c*x)/4 + b*d*e*x**6*asin(c*x)/3 + b*e**2*x**8*asin(c*x)/8 + b*d**2*x**3*sqr
t(-c**2*x**2 + 1)/(16*c) + b*d*e*x**5*sqrt(-c**2*x**2 + 1)/(18*c) + b*e**2*
x**7*sqrt(-c**2*x**2 + 1)/(64*c) + 3*b*d**2*x*sqrt(-c**2*x**2 + 1)/(32*c**3
) + 5*b*d*e*x**3*sqrt(-c**2*x**2 + 1)/(72*c**3) + 7*b*e**2*x**5*sqrt(-c**2*
x**2 + 1)/(384*c**3) - 3*b*d**2*asin(c*x)/(32*c**4) + 5*b*d*e*x*sqrt(-c**2*
x**2 + 1)/(48*c**5) + 35*b*e**2*x**3*sqrt(-c**2*x**2 + 1)/(1536*c**5) - 5*b
*d*e*asin(c*x)/(48*c**6) + 35*b*e**2*x*sqrt(-c**2*x**2 + 1)/(1024*c**7) - 3
5*b*e**2*asin(c*x)/(1024*c**8), Ne(c, 0)), (a*(d**2*x**4/4 + d*e*x**6/3 + e
**2*x**8/8), True))
```

3.607 $\int x^2 \left(d+ex^2\right)^2 \left(a+b\sin^{-1}(cx)\right) dx$

Optimal. Leaf size=198

$$\frac{1}{3}d^2x^3\left(a+b\sin^{-1}(cx)\right)+\frac{2}{5}dex^5\left(a+b\sin^{-1}(cx)\right)+\frac{1}{7}e^2x^7\left(a+b\sin^{-1}(cx)\right)+\frac{be\left(1-c^2x^2\right)^{5/2}\left(14c^2d+15e\right)}{175c^7}-\frac{be^2\left(1\right.}{4}$$

```
[Out] -1/315*b*(35*c^4*d^2+84*c^2*d*e+45*e^2)*(-c^2*x^2+1)^(3/2)/c^7+1/175*b*e*(1
4*c^2*d+15*e)*(-c^2*x^2+1)^(5/2)/c^7-1/49*b*e^2*(-c^2*x^2+1)^(7/2)/c^7+1/3*
d^2*x^3*(a+b*arcsin(c*x))+2/5*d*e*x^5*(a+b*arcsin(c*x))+1/7*e^2*x^7*(a+b*ar
csin(c*x))+1/105*b*(35*c^4*d^2+42*c^2*d*e+15*e^2)*(-c^2*x^2+1)^(1/2)/c^7
```

Rubi [A] time = 0.22, antiderivative size = 198, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {270, 4731, 12, 1251, 771}

$$\frac{1}{3}d^2x^3\left(a+b\sin^{-1}(cx)\right)+\frac{2}{5}dex^5\left(a+b\sin^{-1}(cx)\right)+\frac{1}{7}e^2x^7\left(a+b\sin^{-1}(cx)\right)-\frac{b\left(1-c^2x^2\right)^{3/2}\left(35c^4d^2+84c^2de+45e\right.}{315c^7}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(d + e*x^2)^2*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*(35*c^4*d^2 + 42*c^2*d*e + 15*e^2)*Sqrt[1 - c^2*x^2])/(105*c^7) - (b*(35
*c^4*d^2 + 84*c^2*d*e + 45*e^2)*(1 - c^2*x^2)^(3/2))/(315*c^7) + (b*e*(14*c
^2*d + 15*e)*(1 - c^2*x^2)^(5/2))/(175*c^7) - (b*e^2*(1 - c^2*x^2)^(7/2))/(
49*c^7) + (d^2*x^3*(a + b*ArcSin[c*x]))/3 + (2*d*e*x^5*(a + b*ArcSin[c*x]))
/5 + (e^2*x^7*(a + b*ArcSin[c*x]))/7
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rule 1251

```
Int[(x_)^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_
)^4)^(p_.), x_Symbol] :> Dist[1/2, Subst[Int[x^((m - 1)/2)*(d + e*x)^q*(a +
 b*x + c*x^2)^p, x], x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x] && Inte
gerQ[(m - 1)/2]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_
)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist
[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*
```

```
x^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[c^2*d + e, 0] &
& IntegerQ[p] && (GtQ[p, 0] || (IGtQ[(m - 1)/2, 0] && LeQ[m + p, 0]))
```

Rubi steps

$$\int x^2\left(d+ex^2\right)^2\left(a+b\sin^{-1}(cx)\right)dx=\frac{1}{3}d^2x^3\left(a+b\sin^{-1}(cx)\right)+\frac{2}{5}dex^5\left(a+b\sin^{-1}(cx)\right)+\frac{1}{7}e^2x^7\left(a+b\sin^{-1}\right.$$

$$=\frac{1}{3}d^2x^3\left(a+b\sin^{-1}(cx)\right)+\frac{2}{5}dex^5\left(a+b\sin^{-1}(cx)\right)+\frac{1}{7}e^2x^7\left(a+b\sin^{-1}\right.$$

$$=\frac{1}{3}d^2x^3\left(a+b\sin^{-1}(cx)\right)+\frac{2}{5}dex^5\left(a+b\sin^{-1}(cx)\right)+\frac{1}{7}e^2x^7\left(a+b\sin^{-1}\right.$$

$$=\frac{1}{3}d^2x^3\left(a+b\sin^{-1}(cx)\right)+\frac{2}{5}dex^5\left(a+b\sin^{-1}(cx)\right)+\frac{1}{7}e^2x^7\left(a+b\sin^{-1}\right.$$

$$=\frac{b\left(35c^4d^2+42c^2de+15e^2\right)\sqrt{1-c^2x^2}}{105c^7}-\frac{b\left(35c^4d^2+84c^2de+45e^2\right)\left(1\right.}{315c^7}$$

Mathematica [A] time = 0.20, size = 158, normalized size = 0.80

$$\frac{105ax^3\left(35d^2+42dex^2+15e^2x^4\right)+\frac{b\sqrt{1-c^2x^2}\left(c^6\left(1225d^2x^2+882dex^4+225e^2x^6\right)+2c^4\left(1225d^2+588dex^2+135e^2x^4\right)+24c^2e\left(98d+15ex^2\right)\right.}{c^7}}{11025}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(d + e*x^2)^2*(a + b*ArcSin[c*x]),x]
```

```
[Out] (105*a*x^3*(35*d^2 + 42*d*e*x^2 + 15*e^2*x^4) + (b*Sqrt[1 - c^2*x^2]*(720*e
^2 + 24*c^2*e*(98*d + 15*e*x^2) + 2*c^4*(1225*d^2 + 588*d*e*x^2 + 135*e^2*x
^4) + c^6*(1225*d^2*x^2 + 882*d*e*x^4 + 225*e^2*x^6)))/c^7 + 105*b*x^3*(35*
d^2 + 42*d*e*x^2 + 15*e^2*x^4)*ArcSin[c*x])/11025
```

fricas [A] time = 0.53, size = 186, normalized size = 0.94

$$\frac{1575\,ac^7e^2x^7+4410\,ac^7dex^5+3675\,ac^7d^2x^3+105\left(15\,bc^7e^2x^7+42\,bc^7dex^5+35\,bc^7d^2x^3\right)\arcsin\left(cx\right)+\left(225\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/11025*(1575*a*c^7*e^2*x^7 + 4410*a*c^7*d*e*x^5 + 3675*a*c^7*d^2*x^3 + 105
*(15*b*c^7*e^2*x^7 + 42*b*c^7*d*e*x^5 + 35*b*c^7*d^2*x^3)*arcsin(c*x) + (22
5*b*c^6*e^2*x^6 + 2450*b*c^4*d^2 + 2352*b*c^2*d*e + 18*(49*b*c^6*d*e + 15*b
*c^4*e^2)*x^4 + 720*b*e^2 + (1225*b*c^6*d^2 + 1176*b*c^4*d*e + 360*b*c^2*e^
2)*x^2)*sqrt(-c^2*x^2 + 1))/c^7
```

giac [B] time = 0.61, size = 427, normalized size = 2.16

$$\frac{1}{7}\,ax^7e^2+\frac{2}{5}\,adx^5e+\frac{1}{3}\,ad^2x^3+\frac{\left(c^2x^2-1\right)bd^2x\arcsin\left(cx\right)}{3\,c^2}+\frac{bd^2x\arcsin\left(cx\right)}{3\,c^2}+\frac{2\left(c^2x^2-1\right)^2bdx\arcsin\left(cx\right)e}{5\,c^4}+\frac{4\left(c\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/7*a*x^7*e^2 + 2/5*a*d*x^5*e + 1/3*a*d^2*x^3 + 1/3*(c^2*x^2 - 1)*b*d^2*x*a
rcsin(c*x)/c^2 + 1/3*b*d^2*x*arcsin(c*x)/c^2 + 2/5*(c^2*x^2 - 1)^2*b*d*x*ar
csin(c*x)*e/c^4 + 4/5*(c^2*x^2 - 1)*b*d*x*arcsin(c*x)*e/c^4 - 1/9*(-c^2*x^2
 + 1)^(3/2)*b*d^2/c^3 + 1/7*(c^2*x^2 - 1)^3*b*x*arcsin(c*x)*e^2/c^6 + 2/5*b
*d*x*arcsin(c*x)*e/c^4 + 1/3*sqrt(-c^2*x^2 + 1)*b*d^2/c^3 + 2/25*(c^2*x^2 -
 1)^2*sqrt(-c^2*x^2 + 1)*b*d*e/c^5 + 3/7*(c^2*x^2 - 1)^2*b*x*arcsin(c*x)*e^
2/c^6 - 4/15*(-c^2*x^2 + 1)^(3/2)*b*d*e/c^5 + 3/7*(c^2*x^2 - 1)*b*x*arcsin(
c*x)*e^2/c^6 + 1/49*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*b*e^2/c^7 + 2/5*sqrt
(-c^2*x^2 + 1)*b*d*e/c^5 + 1/7*b*x*arcsin(c*x)*e^2/c^6 + 3/35*(c^2*x^2 - 1)
^2*sqrt(-c^2*x^2 + 1)*b*e^2/c^7 - 1/7*(-c^2*x^2 + 1)^(3/2)*b*e^2/c^7 + 1/7*
sqrt(-c^2*x^2 + 1)*b*e^2/c^7
```

maple [A] time = 0.00, size = 279, normalized size = 1.41

$$\frac{\frac{a\left(\frac{1}{7}e^2c^7x^7+\frac{2}{5}c^7ed\,x^5+\frac{1}{3}d^2c^7x^3\right)}{c^4}+\frac{b\left(\frac{\arcsin(cx)e^2c^7x^7}{7}+\frac{2\arcsin(cx)c^7ed\,x^5}{5}+\frac{\arcsin(cx)d^2c^7x^3}{3}-\frac{e^2\left(-\frac{c^6x^6\sqrt{-c^2x^2+1}}{7}-\frac{6c^4x^4\sqrt{-c^2x^2+1}}{35}-\frac{8c^2x^2\sqrt{-c^2x^2+1}}{35}-\frac{16\sqrt{-c^2x^2+1}}{35}\right.}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(e*x^2+d)^2*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c^3*(a/c^4*(1/7*e^2*c^7*x^7+2/5*c^7*e*d*x^5+1/3*d^2*c^7*x^3)+b/c^4*(1/7*a
rcsin(c*x)*e^2*c^7*x^7+2/5*arcsin(c*x)*c^7*e*d*x^5+1/3*arcsin(c*x)*d^2*c^7*
x^3-1/7*e^2*(-1/7*c^6*x^6*(-c^2*x^2+1)^(1/2)-6/35*c^4*x^4*(-c^2*x^2+1)^(1/2
)-8/35*c^2*x^2*(-c^2*x^2+1)^(1/2)-16/35*(-c^2*x^2+1)^(1/2))-2/5*c^2*e*d*(-1
/5*c^4*x^4*(-c^2*x^2+1)^(1/2)-4/15*c^2*x^2*(-c^2*x^2+1)^(1/2)-8/15*(-c^2*x^
2+1)^(1/2))-1/3*d^2*c^4*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-c^2*x^2+1)^(
1/2))))
```

maxima [A] time = 1.09, size = 253, normalized size = 1.28

$$\frac{1}{7}\,ae^2x^7+\frac{2}{5}\,adex^5+\frac{1}{3}\,ad^2x^3+\frac{1}{9}\left(3\,x^3\arcsin\left(cx\right)+c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2}+\frac{2\,\sqrt{-c^2x^2+1}}{c^4}\right)\right)bd^2+\frac{2}{75}\left(15\,x^5\arcsin\left(cx\right)+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/7*a*e^2*x^7 + 2/5*a*d*e*x^5 + 1/3*a*d^2*x^3 + 1/9*(3*x^3*arcsin(c*x) + c*
(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*d^2 + 2/75*(15*x
^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c
^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*b*d*e + 1/245*(35*x^7*arcsin(c*x) + (5*sq
rt(-c^2*x^2 + 1)*x^6/c^2 + 6*sqrt(-c^2*x^2 + 1)*x^4/c^4 + 8*sqrt(-c^2*x^2 +
 1)*x^2/c^6 + 16*sqrt(-c^2*x^2 + 1)/c^8)*c)*b*e^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^2\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(e\,x^2+d\right)}^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c*x))*(d + e*x^2)^2,x)
```

```
[Out] int(x^2*(a + b*asin(c*x))*(d + e*x^2)^2, x)
```

sympy [A] time = 5.99, size = 333, normalized size = 1.68

$$\begin{cases}\frac{ad^2x^3}{3}+\frac{2adex^5}{5}+\frac{ae^2x^7}{7}+\frac{bd^2x^3\,\mathrm{asin}\,(cx)}{3}+\frac{2bdex^5\,\mathrm{asin}\,(cx)}{5}+\frac{be^2x^7\,\mathrm{asin}\,(cx)}{7}+\frac{bd^2x^2\sqrt{-c^2x^2+1}}{9c}+\frac{2bdex^4\sqrt{-c^2x^2+1}}{25c}+\frac{be^2x^6\sqrt{-c^2x^2+1}}{49c} \\ a\left(\frac{d^2x^3}{3}+\frac{2dex^5}{5}+\frac{e^2x^7}{7}\right)\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(e*x**2+d)**2*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d**2*x**3/3 + 2*a*d*e*x**5/5 + a*e**2*x**7/7 + b*d**2*x**3*asi
n(c*x)/3 + 2*b*d*e*x**5*asin(c*x)/5 + b*e**2*x**7*asin(c*x)/7 + b*d**2*x**2
*sqrt(-c**2*x**2 + 1)/(9*c) + 2*b*d*e*x**4*sqrt(-c**2*x**2 + 1)/(25*c) + b*
e**2*x**6*sqrt(-c**2*x**2 + 1)/(49*c) + 2*b*d**2*sqrt(-c**2*x**2 + 1)/(9*c*
*3) + 8*b*d*e*x**2*sqrt(-c**2*x**2 + 1)/(75*c**3) + 6*b*e**2*x**4*sqrt(-c**
2*x**2 + 1)/(245*c**3) + 16*b*d*e*sqrt(-c**2*x**2 + 1)/(75*c**5) + 8*b*e**2
*x**2*sqrt(-c**2*x**2 + 1)/(245*c**5) + 16*b*e**2*sqrt(-c**2*x**2 + 1)/(245
*c**7), Ne(c, 0)), (a*(d**2*x**3/3 + 2*d*e*x**5/5 + e**2*x**7/7), True))
```

3.608 $\int x\left(d+ex^2\right)^2\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=183

$$\frac{\left(d+ex^2\right)^3\left(a+b\sin^{-1}(cx)\right)}{6e}+\frac{bx\sqrt{1-c^2x^2}\left(d+ex^2\right)^2}{36c}+\frac{5bx\sqrt{1-c^2x^2}\left(2c^2d+e\right)\left(d+ex^2\right)}{144c^3}-\frac{b\left(2c^2d+e\right)\left(8c^4d^2+\right.}{96}$$

```
[Out] -1/96*b*(2*c^2*d+e)*(8*c^4*d^2+8*c^2*d*e+5*e^2)*arcsin(c*x)/c^6/e+1/6*(e*x^
2+d)^3*(a+b*arcsin(c*x))/e+1/288*b*(44*c^4*d^2+44*c^2*d*e+15*e^2)*x*(-c^2*x
^2+1)^(1/2)/c^5+5/144*b*(2*c^2*d+e)*x*(e*x^2+d)*(-c^2*x^2+1)^(1/2)/c^3+1/36
*b*x*(e*x^2+d)^2*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.18, antiderivative size = 183, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {4729, 416, 528, 388, 216}

$$\frac{\left(d+ex^2\right)^3\left(a+b\sin^{-1}(cx)\right)}{6e}+\frac{bx\sqrt{1-c^2x^2}\left(44c^4d^2+44c^2de+15e^2\right)}{288c^5}-\frac{b\left(2c^2d+e\right)\left(8c^4d^2+8c^2de+5e^2\right)\sin^{-1}(cx}{96c^6e}$$

Antiderivative was successfully verified.

```
[In] Int[x*(d + e*x^2)^2*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*(44*c^4*d^2 + 44*c^2*d*e + 15*e^2)*x*Sqrt[1 - c^2*x^2])/(288*c^5) + (5*b
*(2*c^2*d + e)*x*Sqrt[1 - c^2*x^2]*(d + e*x^2))/(144*c^3) + (b*x*Sqrt[1 - c
^2*x^2]*(d + e*x^2)^2)/(36*c) - (b*(2*c^2*d + e)*(8*c^4*d^2 + 8*c^2*d*e + 5
*e^2)*ArcSin[c*x])/(96*c^6*e) + ((d + e*x^2)^3*(a + b*ArcSin[c*x]))/(6*e)
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 388

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_)), x_Symbol] :> Si
mp[(d*x*(a + b*x^n)^(p + 1))/(b*(n*(p + 1) + 1)), x] - Dist[(a*d - b*c*(n*(
p + 1) + 1))/(b*(n*(p + 1) + 1)), Int[(a + b*x^n)^p, x], x] /; FreeQ[{a, b,
 c, d, n}, x] && NeQ[b*c - a*d, 0] && NeQ[n*(p + 1) + 1, 0]
```

Rule 416

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Simp[(d*x*(a + b*x^n)^(p + 1)*(c + d*x^n)^(q - 1))/(b*(n*(p + q) + 1)),
x] + Dist[1/(b*(n*(p + q) + 1)), Int[(a + b*x^n)^p*(c + d*x^n)^(q - 2)*Simp
[c*(b*c*(n*(p + q) + 1) - a*d) + d*(b*c*(n*(p + 2*q - 1) + 1) - a*d*(n*(q -
 1) + 1))*x^n, x], x], x] /; FreeQ[{a, b, c, d, n, p}, x] && NeQ[b*c - a*d,
 0] && GtQ[q, 1] && NeQ[n*(p + q) + 1, 0] &&  !IGtQ[p, 1] && IntBinomialQ[a
, b, c, d, n, p, q, x]
```

Rule 528

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.)*((e_) + (
f_.)*(x_)^(n_)), x_Symbol] :> Simp[(f*x*(a + b*x^n)^(p + 1)*(c + d*x^n)^q)/
(b*(n*(p + q + 1) + 1)), x] + Dist[1/(b*(n*(p + q + 1) + 1)), Int[(a + b*x^
n)^p*(c + d*x^n)^(q - 1)*Simp[c*(b*e - a*f + b*e*n*(p + q + 1)) + (d*(b*e -
 a*f) + f*n*q*(b*c - a*d) + b*d*e*n*(p + q + 1))*x^n, x], x], x] /; FreeQ[{
a, b, c, d, e, f, n, p}, x] && GtQ[q, 0] && NeQ[n*(p + q + 1) + 1, 0]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x]))/(2*e*(p + 1)), x]
 - Dist[(b*c)/(2*e*(p + 1)), Int[(d + e*x^2)^(p + 1)/Sqrt[1 - c^2*x^2], x],
 x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[c^2*d + e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int x\left(d+ex^2\right)^2\left(a+b\sin^{-1}(cx)\right)\,dx=\frac{\left(d+ex^2\right)^3\left(a+b\sin^{-1}(cx)\right)}{6e}-\frac{(bc)\int\frac{\left(d+ex^2\right)^3}{\sqrt{1-c^2x^2}}\,dx}{6e}$$

$$=\frac{bx\sqrt{1-c^2x^2}\left(d+ex^2\right)^2}{36c}+\frac{\left(d+ex^2\right)^3\left(a+b\sin^{-1}(cx)\right)}{6e}+\frac{b\int\frac{\left(d+ex^2\right)\left(-d(\right.}{}}{}$$

$$=\frac{5b\left(2c^2d+e\right)x\sqrt{1-c^2x^2}\left(d+ex^2\right)}{144c^3}+\frac{bx\sqrt{1-c^2x^2}\left(d+ex^2\right)^2}{36c}+\frac{\left(d+e\right.}{}$$

$$=\frac{b\left(44c^4d^2+44c^2de+15e^2\right)x\sqrt{1-c^2x^2}}{288c^5}+\frac{5b\left(2c^2d+e\right)x\sqrt{1-c^2x^2}\left(d\right.}{144c^3}$$

$$=\frac{b\left(44c^4d^2+44c^2de+15e^2\right)x\sqrt{1-c^2x^2}}{288c^5}+\frac{5b\left(2c^2d+e\right)x\sqrt{1-c^2x^2}\left(d\right.}{144c^3}$$

Mathematica [A] time = 0.16, size = 159, normalized size = 0.87

$$\frac{cx\left(48ac^5x\left(3d^2+3dex^2+e^2x^4\right)+b\sqrt{1-c^2x^2}\left(4c^4\left(18d^2+9dex^2+2e^2x^4\right)+2c^2e\left(27d+5ex^2\right)+15e^2\right)\right)+3b}{288c^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d + e*x^2)^2*(a + b*ArcSin[c*x]),x]
```

```
[Out] (c*x*(48*a*c^5*x*(3*d^2 + 3*d*e*x^2 + e^2*x^4) + b*Sqrt[1 - c^2*x^2]*(15*e^
2 + 2*c^2*e*(27*d + 5*e*x^2) + 4*c^4*(18*d^2 + 9*d*e*x^2 + 2*e^2*x^4))) + 3
*b*(-24*c^4*d^2 - 18*c^2*d*e - 5*e^2 + 16*c^6*(3*d^2*x^2 + 3*d*e*x^4 + e^2*
x^6))*ArcSin[c*x])/(288*c^6)
```

fricas [A] time = 0.68, size = 183, normalized size = 1.00

$$\frac{48\,ac^6e^2x^6+144\,ac^6dex^4+144\,ac^6d^2x^2+3\left(16\,bc^6e^2x^6+48\,bc^6dex^4+48\,bc^6d^2x^2-24\,bc^4d^2-18\,bc^2de-5\,be\right.}{288\,c^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/288*(48*a*c^6*e^2*x^6 + 144*a*c^6*d*e*x^4 + 144*a*c^6*d^2*x^2 + 3*(16*b*c
^6*e^2*x^6 + 48*b*c^6*d*e*x^4 + 48*b*c^6*d^2*x^2 - 24*b*c^4*d^2 - 18*b*c^2*
d*e - 5*b*e^2)*arcsin(c*x) + (8*b*c^5*e^2*x^5 + 2*(18*b*c^5*d*e + 5*b*c^3*e
^2)*x^3 + 3*(24*b*c^5*d^2 + 18*b*c^3*d*e + 5*b*c*e^2)*x)*sqrt(-c^2*x^2 + 1)
)/c^6
```

giac [B] time = 0.53, size = 348, normalized size = 1.90

$$\frac{1}{6}ax^6e^2+\frac{1}{2}adx^4e+\frac{\sqrt{-c^2x^2+1}\,bd^2x}{4c}+\frac{\left(c^2x^2-1\right)bd^2\arcsin(cx)}{2c^2}-\frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}bdxe}{8c^3}+\frac{\left(c^2x^2-1\right)ad^2}{2c^2}+\frac{bd^2\arcsin}{4c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/6*a*x^6*e^2 + 1/2*a*d*x^4*e + 1/4*sqrt(-c^2*x^2 + 1)*b*d^2*x/c + 1/2*(c^2
*x^2 - 1)*b*d^2*arcsin(c*x)/c^2 - 1/8*(-c^2*x^2 + 1)^(3/2)*b*d*x*e/c^3 + 1/
2*(c^2*x^2 - 1)*a*d^2/c^2 + 1/4*b*d^2*arcsin(c*x)/c^2 + 1/2*(c^2*x^2 - 1)^2
*b*d*arcsin(c*x)*e/c^4 + 5/16*sqrt(-c^2*x^2 + 1)*b*d*x*e/c^3 + (c^2*x^2 - 1
)*b*d*arcsin(c*x)*e/c^4 + 1/36*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*x*e^2/c
^5 + 1/6*(c^2*x^2 - 1)^3*b*arcsin(c*x)*e^2/c^6 + 5/16*b*d*arcsin(c*x)*e/c^4
 - 13/144*(-c^2*x^2 + 1)^(3/2)*b*x*e^2/c^5 + 1/2*(c^2*x^2 - 1)^2*b*arcsin(c
*x)*e^2/c^6 + 11/96*sqrt(-c^2*x^2 + 1)*b*x*e^2/c^5 + 1/2*(c^2*x^2 - 1)*b*ar
csin(c*x)*e^2/c^6 + 11/96*b*arcsin(c*x)*e^2/c^6
```

maple [A] time = 0.00, size = 243, normalized size = 1.33

$$\frac{\frac{a\left(\frac{1}{6}e^{2}c^{6}x^{6}+\frac{1}{2}c^{6}ed\,x^{4}+\frac{1}{2}x^{2}c^{6}d^{2}\right)}{c^{4}}+\frac{b\left(\frac{\arcsin(cx)e^{2}c^{6}x^{6}}{6}+\frac{\arcsin(cx)c^{6}ed\,x^{4}}{2}+\frac{\arcsin(cx)d^{2}c^{6}x^{2}}{2}-\frac{e^{2}\left(-\frac{c^{5}x^{5}\sqrt{-c^{2}x^{2}+1}}{6}-\frac{5c^{3}x^{3}\sqrt{-c^{2}x^{2}+1}}{24}-\frac{5cx\sqrt{-c^{2}x^{2}+1}}{16}+\frac{5\arcsin(cx)}{16}\right)}{6}\right)}{c^{4}}}{c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x^2+d)^2*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c^2*(a/c^4*(1/6*e^2*c^6*x^6+1/2*c^6*e*d*x^4+1/2*x^2*c^6*d^2)+b/c^4*(1/6*a
rcsin(c*x)*e^2*c^6*x^6+1/2*arcsin(c*x)*c^6*e*d*x^4+1/2*arcsin(c*x)*d^2*c^6*
x^2-1/6*e^2*(-1/6*c^5*x^5*(-c^2*x^2+1)^(1/2)-5/24*c^3*x^3*(-c^2*x^2+1)^(1/2
)-5/16*c*x*(-c^2*x^2+1)^(1/2)+5/16*arcsin(c*x))-1/2*c^2*e*d*(-1/4*c^3*x^3*(
-c^2*x^2+1)^(1/2)-3/8*c*x*(-c^2*x^2+1)^(1/2)+3/8*arcsin(c*x))-1/2*d^2*c^4*(
-1/2*c*x*(-c^2*x^2+1)^(1/2)+1/2*arcsin(c*x))))
```

maxima [A] time = 0.62, size = 223, normalized size = 1.22

$$\frac{1}{6}ae^{2}x^{6}+\frac{1}{2}adex^{4}+\frac{1}{2}ad^{2}x^{2}+\frac{1}{4}\left(2x^{2}\arcsin(cx)+c\left(\frac{\sqrt{-c^{2}x^{2}+1}\,x}{c^{2}}-\frac{\arcsin(cx)}{c^{3}}\right)\right)bd^{2}+\frac{1}{16}\left(8x^{4}\arcsin(cx)+\left(2\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/6*a*e^2*x^6 + 1/2*a*d*e*x^4 + 1/2*a*d^2*x^2 + 1/4*(2*x^2*arcsin(c*x) + c*
(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c*x)/c^3))*b*d^2 + 1/16*(8*x^4*arcsin(c*
x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x/c^4 - 3*arcsin(
c*x)/c^5)*c)*b*d*e + 1/288*(48*x^6*arcsin(c*x) + (8*sqrt(-c^2*x^2 + 1)*x^5/
c^2 + 10*sqrt(-c^2*x^2 + 1)*x^3/c^4 + 15*sqrt(-c^2*x^2 + 1)*x/c^6 - 15*arcs
in(c*x)/c^7)*c)*b*e^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(e\,x^2+d\right)}^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c*x))*(d + e*x^2)^2,x)
```

```
[Out] int(x*(a + b*asin(c*x))*(d + e*x^2)^2, x)
```

sympy [**A**] time = 4.06, size = 299, normalized size = 1.63

$$\begin{cases} \frac{ad^2x^2}{2} + \frac{adex^4}{2} + \frac{ae^2x^6}{6} + \frac{bd^2x^2\,\mathrm{asin}\,(cx)}{2} + \frac{bdex^4\,\mathrm{asin}\,(cx)}{2} + \frac{be^2x^6\,\mathrm{asin}\,(cx)}{6} + \frac{bd^2x\sqrt{-c^2x^2+1}}{4c} + \frac{bdex^3\sqrt{-c^2x^2+1}}{8c} + \frac{be^2x^5\sqrt{-c^2x^2+1}}{36c} \\ a\left(\frac{d^2x^2}{2} + \frac{dex^4}{2} + \frac{e^2x^6}{6}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x**2+d)**2*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d**2*x**2/2 + a*d*e*x**4/2 + a*e**2*x**6/6 + b*d**2*x**2*asin(
c*x)/2 + b*d*e*x**4*asin(c*x)/2 + b*e**2*x**6*asin(c*x)/6 + b*d**2*x*sqrt(-
c**2*x**2 + 1)/(4*c) + b*d*e*x**3*sqrt(-c**2*x**2 + 1)/(8*c) + b*e**2*x**5*
sqrt(-c**2*x**2 + 1)/(36*c) - b*d**2*asin(c*x)/(4*c**2) + 3*b*d*e*x*sqrt(-c
**2*x**2 + 1)/(16*c**3) + 5*b*e**2*x**3*sqrt(-c**2*x**2 + 1)/(144*c**3) - 3
*b*d*e*asin(c*x)/(16*c**4) + 5*b*e**2*x*sqrt(-c**2*x**2 + 1)/(96*c**5) - 5*
b*e**2*asin(c*x)/(96*c**6), Ne(c, 0)), (a*(d**2*x**2/2 + d*e*x**4/2 + e**2*
x**6/6), True))
```

3.609 $\int \left(d+ex^2\right)^2 \left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=150

$$d^2x\left(a+b\sin^{-1}(cx)\right)+\frac{2}{3}dex^3\left(a+b\sin^{-1}(cx)\right)+\frac{1}{5}e^2x^5\left(a+b\sin^{-1}(cx)\right)-\frac{2be\left(1-c^2x^2\right)^{3/2}\left(5c^2d+3e\right)}{45c^5}+\frac{be^2\left(1-c^2\right.}{25c^5}$$

```
[Out] -2/45*b*e*(5*c^2*d+3*e)*(-c^2*x^2+1)^(3/2)/c^5+1/25*b*e^2*(-c^2*x^2+1)^(5/2
)/c^5+d^2*x*(a+b*arcsin(c*x))+2/3*d*e*x^3*(a+b*arcsin(c*x))+1/5*e^2*x^5*(a+
b*arcsin(c*x))+1/15*b*(15*c^4*d^2+10*c^2*d*e+3*e^2)*(-c^2*x^2+1)^(1/2)/c^5
```

Rubi [A] time = 0.14, antiderivative size = 150, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {194, 4665, 12, 1247, 698}

$$d^2x\left(a+b\sin^{-1}(cx)\right)+\frac{2}{3}dex^3\left(a+b\sin^{-1}(cx)\right)+\frac{1}{5}e^2x^5\left(a+b\sin^{-1}(cx)\right)+\frac{b\sqrt{1-c^2x^2}\left(15c^4d^2+10c^2de+3e^2\right)}{15c^5}-\frac{2b}{}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x^2)^2*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*(15*c^4*d^2 + 10*c^2*d*e + 3*e^2)*Sqrt[1 - c^2*x^2])/(15*c^5) - (2*b*e*(
5*c^2*d + 3*e)*(1 - c^2*x^2)^(3/2))/(45*c^5) + (b*e^2*(1 - c^2*x^2)^(5/2))/
(25*c^5) + d^2*x*(a + b*ArcSin[c*x]) + (2*d*e*x^3*(a + b*ArcSin[c*x]))/3 +
(e^2*x^5*(a + b*ArcSin[c*x]))/5
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 698

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 1247

```
Int[(x_)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(
p_.), x_Symbol] :> Dist[1/2, Subst[Int[(d + e*x)^q*(a + b*x + c*x^2)^p, x],
 x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x]
```

Rule 4665

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && NeQ[c^2*d + e, 0] && (IGtQ[p, 0] || ILtQ[p + 1/2, 0]
)
```

Rubi steps

$$\int (d+ex^2)^2 (a+b\sin^{-1}(cx))\,dx = d^2x (a+b\sin^{-1}(cx)) + \frac{2}{3}dex^3 (a+b\sin^{-1}(cx)) + \frac{1}{5}e^2x^5 (a+b\sin^{-1}(cx))$$

$$= d^2x (a+b\sin^{-1}(cx)) + \frac{2}{3}dex^3 (a+b\sin^{-1}(cx)) + \frac{1}{5}e^2x^5 (a+b\sin^{-1}(cx))$$

$$= d^2x (a+b\sin^{-1}(cx)) + \frac{2}{3}dex^3 (a+b\sin^{-1}(cx)) + \frac{1}{5}e^2x^5 (a+b\sin^{-1}(cx))$$

$$= d^2x (a+b\sin^{-1}(cx)) + \frac{2}{3}dex^3 (a+b\sin^{-1}(cx)) + \frac{1}{5}e^2x^5 (a+b\sin^{-1}(cx))$$

$$= \frac{b (15c^4d^2+10c^2de+3e^2) \sqrt{1-c^2x^2}}{15c^5} - \frac{2be (5c^2d+3e) (1-c^2x^2)^{3/2}}{45c^5} + \frac{be}{}$$

Mathematica [A] time = 0.17, size = 125, normalized size = 0.83

$$\frac{1}{225}\left(15ax (15d^2+10dex^2+3e^2x^4) + \frac{b\sqrt{1-c^2x^2} (c^4 (225d^2+50dex^2+9e^2x^4) + 4c^2e (25d+3ex^2) + 24e^2)}{c^5}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x^2)^2*(a + b*ArcSin[c*x]),x]
```

```
[Out] (15*a*x*(15*d^2 + 10*d*e*x^2 + 3*e^2*x^4) + (b*Sqrt[1 - c^2*x^2]*(24*e^2 +
4*c^2*e*(25*d + 3*e*x^2) + c^4*(225*d^2 + 50*d*e*x^2 + 9*e^2*x^4)))/c^5 + 1
5*b*x*(15*d^2 + 10*d*e*x^2 + 3*e^2*x^4)*ArcSin[c*x])/225
```

fricas [A] time = 0.66, size = 151, normalized size = 1.01

$$\frac{45\,ac^5e^2x^5 + 150\,ac^5dex^3 + 225\,ac^5d^2x + 15\,(3\,bc^5e^2x^5 + 10\,bc^5dex^3 + 15\,bc^5d^2x)\arcsin(cx) + (9\,bc^4e^2x^4 + 22}{225\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/225*(45*a*c^5*e^2*x^5 + 150*a*c^5*d*e*x^3 + 225*a*c^5*d^2*x + 15*(3*b*c^5
*e^2*x^5 + 10*b*c^5*d*e*x^3 + 15*b*c^5*d^2*x)*arcsin(c*x) + (9*b*c^4*e^2*x^
4 + 225*b*c^4*d^2 + 100*b*c^2*d*e + 24*b*e^2 + 2*(25*b*c^4*d*e + 6*b*c^2*e^
2)*x^2)*sqrt(-c^2*x^2 + 1))/c^5
```

giac [A] time = 0.31, size = 263, normalized size = 1.75

$$\frac{1}{5}ax^5e^2 + \frac{2}{3}adx^3e + bd^2x\arcsin(cx) + ad^2x + \frac{2\,(c^2x^2-1)bdx\arcsin(cx)\,e}{3\,c^2} + \frac{2\,bdx\arcsin(cx)\,e}{3\,c^2} + \frac{\sqrt{-c^2x^2+1}\,bd^2}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/5*a*x^5*e^2 + 2/3*a*d*x^3*e + b*d^2*x*arcsin(c*x) + a*d^2*x + 2/3*(c^2*x^
2 - 1)*b*d*x*arcsin(c*x)*e/c^2 + 2/3*b*d*x*arcsin(c*x)*e/c^2 + sqrt(-c^2*x^
2 + 1)*b*d^2/c + 1/5*(c^2*x^2 - 1)^2*b*x*arcsin(c*x)*e^2/c^4 - 2/9*(-c^2*x^
2 + 1)^(3/2)*b*d*e/c^3 + 2/5*(c^2*x^2 - 1)*b*x*arcsin(c*x)*e^2/c^4 + 2/3*sq
rt(-c^2*x^2 + 1)*b*d*e/c^3 + 1/5*b*x*arcsin(c*x)*e^2/c^4 + 1/25*(c^2*x^2 -
```

```
1)^2*sqrt(-c^2*x^2 + 1)*b*e^2/c^5 - 2/15*(-c^2*x^2 + 1)^(3/2)*b*e^2/c^5 + 1
/5*sqrt(-c^2*x^2 + 1)*b*e^2/c^5
```

maple [A] time = 0.00, size = 209, normalized size = 1.39

$$\frac{\frac{a\left(\frac{1}{5}e^2c^5x^5+\frac{2}{3}c^5ed\,x^3+d^2c^5x\right)}{c^4}+\frac{b\left(\frac{\arcsin(cx)e^2c^5x^5}{5}+\frac{2\arcsin(cx)c^5ed\,x^3}{3}+\arcsin(cx)d^2c^5x-\frac{e^2\left(-\frac{c^4x^4\sqrt{-c^2x^2+1}}{5}-\frac{4c^2x^2\sqrt{-c^2x^2+1}}{15}-\frac{8\sqrt{-c^2x^2+1}}{15}\right)}{5}-\frac{2c^2ed\left(-\frac{c^2x^2\sqrt{\cdots}}{\cdots}\right.}{\cdots}\right.}{c^4}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)^2*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c*(a/c^4*(1/5*e^2*c^5*x^5+2/3*c^5*e*d*x^3+d^2*c^5*x)+b/c^4*(1/5*arcsin(c*
x)*e^2*c^5*x^5+2/3*arcsin(c*x)*c^5*e*d*x^3+arcsin(c*x)*d^2*c^5*x-1/5*e^2*(-
1/5*c^4*x^4*(-c^2*x^2+1)^(1/2)-4/15*c^2*x^2*(-c^2*x^2+1)^(1/2)-8/15*(-c^2*x
^2+1)^(1/2))-2/3*c^2*e*d*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-c^2*x^2+1)^
(1/2))+d^2*c^4*(-c^2*x^2+1)^(1/2)))
```

maxima [A] time = 0.48, size = 182, normalized size = 1.21

$$\frac{1}{5}\,ae^2x^5+\frac{2}{3}\,adex^3+\frac{2}{9}\left(3\,x^3\arcsin\left(cx\right)+c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2}+\frac{2\sqrt{-c^2x^2+1}}{c^4}\right)\right)bde+\frac{1}{75}\left(15\,x^5\arcsin\left(cx\right)+\left(\frac{3\sqrt{-c^2\cdots}}{\cdots}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/5*a*e^2*x^5 + 2/3*a*d*e*x^3 + 2/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 +
 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*d*e + 1/75*(15*x^5*arcsin(c*x) +
 (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2
*x^2 + 1)/c^6)*c)*b*e^2 + a*d^2*x + (c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*
b*d^2/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(e\,x^2+d\right)}^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(d + e*x^2)^2,x)
```

```
[Out] int((a + b*asin(c*x))*(d + e*x^2)^2, x)
```

sympy [A] time = 2.27, size = 240, normalized size = 1.60

$$\begin{cases} ad^2x+\frac{2adex^3}{3}+\frac{ae^2x^5}{5}+bd^2x\,\mathrm{asin}\left(cx\right)+\frac{2bdex^3\,\mathrm{asin}\left(cx\right)}{3}+\frac{be^2x^5\,\mathrm{asin}\left(cx\right)}{5}+\frac{bd^2\sqrt{-c^2x^2+1}}{c}+\frac{2bdex^2\sqrt{-c^2x^2+1}}{9c}+\frac{be^2x^4\sqrt{-c^2x^2+\cdots}}{25c} \\ a\left(d^2x+\frac{2dex^3}{3}+\frac{e^2x^5}{5}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)**2*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d**2*x + 2*a*d*e*x**3/3 + a*e**2*x**5/5 + b*d**2*x*asin(c*x) +
 2*b*d*e*x**3*asin(c*x)/3 + b*e**2*x**5*asin(c*x)/5 + b*d**2*sqrt(-c**2*x**
2 + 1)/c + 2*b*d*e*x**2*sqrt(-c**2*x**2 + 1)/(9*c) + b*e**2*x**4*sqrt(-c**2
*x**2 + 1)/(25*c) + 4*b*d*e*sqrt(-c**2*x**2 + 1)/(9*c**3) + 4*b*e**2*x**2*s
qrt(-c**2*x**2 + 1)/(75*c**3) + 8*b*e**2*sqrt(-c**2*x**2 + 1)/(75*c**5), Ne
(c, 0)), (a*(d**2*x + 2*d*e*x**3/3 + e**2*x**5/5), True))
```

3.610 $\int \frac{(d+ex^2)^2(a+b\sin^{-1}(cx))}{x}\,dx$

Optimal. Leaf size=229

$$d^2\log(x)\left(a+b\sin^{-1}(cx)\right)+dex^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}e^2x^4\left(a+b\sin^{-1}(cx)\right)-\frac{3be^2\sin^{-1}(cx)}{32c^4}+\frac{bdex\sqrt{1-c^2x^2}}{2c}-$$

```
[Out] -1/2*b*d*e*arcsin(c*x)/c^2-3/32*b*e^2*arcsin(c*x)/c^4-1/2*I*b*d^2*arcsin(c*
x)^2+d*e*x^2*(a+b*arcsin(c*x))+1/4*e^2*x^4*(a+b*arcsin(c*x))+b*d^2*arcsin(c
*x)*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))^2)-b*d^2*arcsin(c*x)*ln(x)+d^2*(a+b*arc
sin(c*x))*ln(x)-1/2*I*b*d^2*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)+1/2*b*d
*e*x*(-c^2*x^2+1)^(1/2)/c+3/32*b*e^2*x*(-c^2*x^2+1)^(1/2)/c^3+1/16*b*e^2*x^
3*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.33, antiderivative size = 229, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 12, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.571, Rules used = {266, 43, 4731, 6742, 321, 216, 2326, 4625, 3717, 2190, 2279, 2391}

$$-\frac{1}{2}ibd^2\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)+d^2\log(x)\left(a+b\sin^{-1}(cx)\right)+dex^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}e^2x^4\left(a+b\sin^{-1}(cx)\right)+$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x^2)^2*(a + b*ArcSin[c*x]))/x,x]
```

```
[Out] (b*d*e*x*Sqrt[1 - c^2*x^2])/(2*c) + (3*b*e^2*x*Sqrt[1 - c^2*x^2])/(32*c^3)
+ (b*e^2*x^3*Sqrt[1 - c^2*x^2])/(16*c) - (b*d*e*ArcSin[c*x])/(2*c^2) - (3*b
*e^2*ArcSin[c*x])/(32*c^4) - (I/2)*b*d^2*ArcSin[c*x]^2 + d*e*x^2*(a + b*Arc
Sin[c*x]) + (e^2*x^4*(a + b*ArcSin[c*x]))/4 + b*d^2*ArcSin[c*x]*Log[1 - E^(
(2*I)*ArcSin[c*x])] - b*d^2*ArcSin[c*x]*Log[x] + d^2*(a + b*ArcSin[c*x])*Lo
g[x] - (I/2)*b*d^2*PolyLog[2, E^((2*I)*ArcSin[c*x])]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2326

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/Sqrt[(d_) + (e_.)*(x_)^2], x_Symb
ol] :> Simp[(ArcSin[(Rt[-e, 2]*x)/Sqrt[d]]*(a + b*Log[c*x^n]))/Rt[-e, 2], x
] - Dist[(b*n)/Rt[-e, 2], Int[ArcSin[(Rt[-e, 2]*x)/Sqrt[d]]/x, x], x] /; Fr
eeQ[{a, b, c, d, e, n}, x] && GtQ[d, 0] && NegQ[e]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_
)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist
[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*
x^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[c^2*d + e, 0] &
& IntegerQ[p] && (GtQ[p, 0] || (IGtQ[(m - 1)/2, 0] && LeQ[m + p, 0]))
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(d+ex^2)^2 (a+b\sin^{-1}(cx))}{x}\,dx = dex^2(a+b\sin^{-1}(cx)) + \frac{1}{4}e^2x^4(a+b\sin^{-1}(cx)) + d^2(a+b\sin^{-1}(cx))\log$$

$$= dex^2(a+b\sin^{-1}(cx)) + \frac{1}{4}e^2x^4(a+b\sin^{-1}(cx)) + d^2(a+b\sin^{-1}(cx))\log$$

$$= dex^2(a+b\sin^{-1}(cx)) + \frac{1}{4}e^2x^4(a+b\sin^{-1}(cx)) + d^2(a+b\sin^{-1}(cx))\log$$

$$= \frac{bdex\sqrt{1-c^2x^2}}{2c} + \frac{be^2x^3\sqrt{1-c^2x^2}}{16c} + dex^2(a+b\sin^{-1}(cx)) + \frac{1}{4}e^2x^4(a+$$

$$= \frac{bdex\sqrt{1-c^2x^2}}{2c} + \frac{3be^2x\sqrt{1-c^2x^2}}{32c^3} + \frac{be^2x^3\sqrt{1-c^2x^2}}{16c} - \frac{bde\sin^{-1}(cx)}{2c^2} +$$

$$= \frac{bdex\sqrt{1-c^2x^2}}{2c} + \frac{3be^2x\sqrt{1-c^2x^2}}{32c^3} + \frac{be^2x^3\sqrt{1-c^2x^2}}{16c} - \frac{bde\sin^{-1}(cx)}{2c^2} -$$

$$= \frac{bdex\sqrt{1-c^2x^2}}{2c} + \frac{3be^2x\sqrt{1-c^2x^2}}{32c^3} + \frac{be^2x^3\sqrt{1-c^2x^2}}{16c} - \frac{bde\sin^{-1}(cx)}{2c^2} -$$

$$= \frac{bdex\sqrt{1-c^2x^2}}{2c} + \frac{3be^2x\sqrt{1-c^2x^2}}{32c^3} + \frac{be^2x^3\sqrt{1-c^2x^2}}{16c} - \frac{bde\sin^{-1}(cx)}{2c^2} -$$

$$= \frac{bdex\sqrt{1-c^2x^2}}{2c} + \frac{3be^2x\sqrt{1-c^2x^2}}{32c^3} + \frac{be^2x^3\sqrt{1-c^2x^2}}{16c} - \frac{bde\sin^{-1}(cx)}{2c^2} -$$

Mathematica [A] time = 0.38, size = 184, normalized size = 0.80

$$ad^2\log(x)+adex^2+\frac{1}{4}ae^2x^4+\frac{bde\left(cx\sqrt{1-c^2x^2}-\sin^{-1}(cx)\right)}{2c^2}+\frac{be^2\left(cx\sqrt{1-c^2x^2}\left(2c^2x^2+3\right)-3\sin^{-1}(cx)\right)}{32c^4}-\frac{1}{2}ib$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x^2)^2*(a + b*ArcSin[c*x]))/x,x]
```

```
[Out] a*d*e*x^2 + (a*e^2*x^4)/4 + (b*e^2*(c*x*Sqrt[1 - c^2*x^2]*(3 + 2*c^2*x^2) -
 3*ArcSin[c*x]))/(32*c^4) + (b*d*e*(c*x*Sqrt[1 - c^2*x^2] - ArcSin[c*x]))/(
2*c^2) + b*d*e*x^2*ArcSin[c*x] + (b*e^2*x^4*ArcSin[c*x])/4 + b*d^2*ArcSin[c
*x]*Log[1 - E^((2*I)*ArcSin[c*x])] + a*d^2*Log[x] - (I/2)*b*d^2*(ArcSin[c*x
]^2 + PolyLog[2, E^((2*I)*ArcSin[c*x])])
```

fricas [F] time = 0.66, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{ae^2x^4 + 2\,adex^2 + ad^2 + \left(be^2x^4 + 2\,bdex^2 + bd^2\right)\arcsin(cx)}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2*(a+b*arcsin(c*x))/x,x, algorithm="fricas")
```

```
[Out] integral((a*e^2*x^4 + 2*a*d*e*x^2 + a*d^2 + (b*e^2*x^4 + 2*b*d*e*x^2 + b*d^
2)*arcsin(c*x))/x, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ex^2+d)^2(b\arcsin(cx)+a)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2*(a+b*arcsin(c*x))/x,x, algorithm="giac")
```

```
[Out] integrate((e*x^2 + d)^2*(b*arcsin(c*x) + a)/x, x)
```

maple [A] time = 0.33, size = 262, normalized size = 1.14

$$\frac{a e^2 x^4}{4}+aed\,x^2+a\,d^2\ln(cx)-\frac{ib\,d^2\arcsin(cx)^2}{2}+b\,d^2\arcsin(cx)\ln\left(1+icx+\sqrt{-c^2x^2+1}\right)+b\,d^2\arcsin(cx)\ln\left(1-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)^2*(a+b*arcsin(c*x))/x,x)
```

```
[Out] 1/4*a*e^2*x^4+a*e*d*x^2+a*d^2*ln(c*x)-1/2*I*b*d^2*arcsin(c*x)^2+b*d^2*arcsi
n(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+b*d^2*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^
2+1)^(1/2))-I*b*d^2*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))-I*b*d^2*polylog(2,-
I*c*x-(-c^2*x^2+1)^(1/2))+1/32*b/c^4*arcsin(c*x)*e^2*cos(4*arcsin(c*x))-1/1
28*b/c^4*e^2*sin(4*arcsin(c*x))-1/2*b/c^2*cos(2*arcsin(c*x))*arcsin(c*x)*d*
e-1/8*b/c^4*cos(2*arcsin(c*x))*arcsin(c*x)*e^2+1/4*b/c^2*sin(2*arcsin(c*x))
*d*e+1/16*b/c^4*sin(2*arcsin(c*x))*e^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{4}\,ae^2x^4+adex^2+ad^2\log(x)+\int\frac{\left(be^2x^4+2\,bdex^2+bd^2\right)\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2*(a+b*arcsin(c*x))/x,x, algorithm="maxima")
```

```
[Out] 1/4*a*e^2*x^4 + a*d*e*x^2 + a*d^2*log(x) + integrate((b*e^2*x^4 + 2*b*d*e*x
^2 + b*d^2)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/x, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{(a+b\,\mathrm{asin}(c\,x))\,\left(e\,x^2+d\right)^2}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d + e*x^2)^2)/x,x)
```

```
[Out] int(((a + b*asin(c*x))*(d + e*x^2)^2)/x, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(a+b\,\mathrm{asin}(cx))\left(d+ex^2\right)^2}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)**2*(a+b*asin(c*x))/x,x)
```

```
[Out] Integral((a + b*asin(c*x))*(d + e*x**2)**2/x, x)
```

3.611 $\int \frac{(d+ex^2)^2(a+b\sin^{-1}(cx))}{x^2}\,dx$

Optimal. Leaf size=126

$$-\frac{d^2(a+b\sin^{-1}(cx))}{x}+2dex(a+b\sin^{-1}(cx))+\frac{1}{3}e^2x^3(a+b\sin^{-1}(cx))-bcd^2\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)+\frac{be\sqrt{1-c^2x^2}}{3c}$$

```
[Out] -1/9*b*e^2*(-c^2*x^2+1)^(3/2)/c^3-d^2*(a+b*arcsin(c*x))/x+2*d*e*x*(a+b*arcs
in(c*x))+1/3*e^2*x^3*(a+b*arcsin(c*x))-b*c*d^2*arctanh((-c^2*x^2+1)^(1/2))+
1/3*b*e*(6*c^2*d+e)*(-c^2*x^2+1)^(1/2)/c^3
```

Rubi [A] time = 0.18, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {270, 4731, 1251, 897, 1153, 208}

$$-\frac{d^2(a+b\sin^{-1}(cx))}{x}+2dex(a+b\sin^{-1}(cx))+\frac{1}{3}e^2x^3(a+b\sin^{-1}(cx))-bcd^2\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)+\frac{be\sqrt{1-c^2x^2}}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x^2)^2*(a + b*ArcSin[c*x]))/x^2,x]
```

```
[Out] (b*e*(6*c^2*d + e)*Sqrt[1 - c^2*x^2])/(3*c^3) - (b*e^2*(1 - c^2*x^2)^(3/2))
/(9*c^3) - (d^2*(a + b*ArcSin[c*x]))/x + 2*d*e*x*(a + b*ArcSin[c*x]) + (e^2
*x^3*(a + b*ArcSin[c*x]))/3 - b*c*d^2*ArcTanh[Sqrt[1 - c^2*x^2]]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 897

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_.) + (b_.)*(x_)
 + (c_.)*(x_)^2)^(p_.), x_Symbol] :> With[{q = Denominator[m]}, Dist[q/e, S
ubst[Int[x^(q*(m + 1) - 1)*((e*f - d*g)/e + (g*x^q)/e)^n*((c*d^2 - b*d*e +
a*e^2)/e^2 - ((2*c*d - b*e)*x^q)/e^2 + (c*x^(2*q))/e^2)^p, x], x, (d + e*x)
^(1/q)], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ
[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegersQ[n, p] && Fra
ctionQ[m]
```

Rule 1153

```
Int[((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.),
 x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^q*(a + b*x^2 + c*x^4)^p, x],
x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e
 + a*e^2, 0] && IGtQ[p, 0] && IGtQ[q, -2]
```

Rule 1251

```
Int[(x_)^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_
)^4)^(p_.), x_Symbol] :> Dist[1/2, Subst[Int[x^((m - 1)/2)*(d + e*x)^q*(a +
 b*x + c*x^2)^p, x], x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x] && Inte
```

```
gerQ[(m - 1)/2]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_
)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist
[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*
x^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[c^2*d + e, 0] &
& IntegerQ[p] && (GtQ[p, 0] || (IGtQ[(m - 1)/2, 0] && LeQ[m + p, 0]))
```

Rubi steps

$$\int \frac{\left(d+ex^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{x^2}\,dx = -\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{x}+2dex\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}e^2x^3\left(a+b\sin^{-1}(cx)\right)-(\ldots$$

$$= -\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{x}+2dex\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}e^2x^3\left(a+b\sin^{-1}(cx)\right)-\frac{1}{2}\ldots$$

$$= -\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{x}+2dex\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}e^2x^3\left(a+b\sin^{-1}(cx)\right)+\ldots$$

$$= -\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{x}+2dex\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}e^2x^3\left(a+b\sin^{-1}(cx)\right)+\ldots$$

$$= \frac{be\left(6c^2d+e\right)\sqrt{1-c^2x^2}}{3c^3}-\frac{be^2\left(1-c^2x^2\right)^{3/2}}{9c^3}-\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{x}+2dex\left(a\ldots\right.$$

$$= \frac{be\left(6c^2d+e\right)\sqrt{1-c^2x^2}}{3c^3}-\frac{be^2\left(1-c^2x^2\right)^{3/2}}{9c^3}-\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{x}+2dex\left(a\ldots\right.$$

Mathematica [A] time = 0.15, size = 129, normalized size = 1.02

$$\frac{1}{9}\left(-\frac{9ad^2}{x}+18adex+3ae^2x^3-9bcd^2\log\left(\sqrt{1-c^2x^2}+1\right)+\frac{be\sqrt{1-c^2x^2}\left(c^2\left(18d+ex^2\right)+2e\right)}{c^3}+\frac{3b\sin^{-1}(cx)\left(-\ldots\right.}{\ldots}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x^2)^2*(a + b*ArcSin[c*x]))/x^2,x]
```

```
[Out] ((-9*a*d^2)/x + 18*a*d*e*x + 3*a*e^2*x^3 + (b*e*Sqrt[1 - c^2*x^2]*(2*e + c^
2*(18*d + e*x^2)))/c^3 + (3*b*(-3*d^2 + 6*d*e*x^2 + e^2*x^4)*ArcSin[c*x])/x
 + 9*b*c*d^2*Log[x] - 9*b*c*d^2*Log[1 + Sqrt[1 - c^2*x^2]])/9
```

fricas [A] time = 0.68, size = 172, normalized size = 1.37

$$\frac{6\,ac^3e^2x^4-9\,bc^4d^2x\log\left(\sqrt{-c^2x^2+1}+1\right)+9\,bc^4d^2x\log\left(\sqrt{-c^2x^2+1}-1\right)+36\,ac^3dex^2-18\,ac^3d^2+6\left(bc^3e^2x^4\ldots\right.}{18\,c^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2*(a+b*arcsin(c*x))/x^2,x, algorithm="fricas")
```

```
[Out] 1/18*(6*a*c^3*e^2*x^4 - 9*b*c^4*d^2*x*log(sqrt(-c^2*x^2 + 1) + 1) + 9*b*c^4
*d^2*x*log(sqrt(-c^2*x^2 + 1) - 1) + 36*a*c^3*d*e*x^2 - 18*a*c^3*d^2 + 6*(b
*c^3*e^2*x^4 + 6*b*c^3*d*e*x^2 - 3*b*c^3*d^2)*arcsin(c*x) + 2*(b*c^2*e^2*x^
3 + 2*(9*b*c^2*d*e + b*e^2)*x)*sqrt(-c^2*x^2 + 1))/(c^3*x)
```

giac [B] time = 36.87, size = 4247, normalized size = 33.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2*(a+b*arcsin(c*x))/x^2,x, algorithm="giac")
```

```
[Out] -1/2*b*c^12*d^2*x^8*arcsin(c*x)/((c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c
^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 +
c^4*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^8) - 1/2*a*c^12*d^
2*x^8/((c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1)
 + 1)^5 + 3*c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^4*x/(sqrt(-c^2*x^2 + 1)
+ 1))*(sqrt(-c^2*x^2 + 1) + 1)^8) + b*c^11*d^2*x^7*log(abs(c)*abs(x))/((c^1
0*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3
*c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^4*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt
(-c^2*x^2 + 1) + 1)^7) - b*c^11*d^2*x^7*log(sqrt(-c^2*x^2 + 1) + 1)/((c^10*
x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c
^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^4*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-
c^2*x^2 + 1) + 1)^7) - 2*b*c^10*d^2*x^6*arcsin(c*x)/((c^10*x^7/(sqrt(-c^2*x
^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^6*x^3/(sqrt(-c^
2*x^2 + 1) + 1)^3 + c^4*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1
)^6) - 2*a*c^10*d^2*x^6/((c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(
sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^4*x/(s
qrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^6) + 3*b*c^9*d^2*x^5*log(a
bs(c)*abs(x))/((c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*
x^2 + 1) + 1)^5 + 3*c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^4*x/(sqrt(-c^2*x
^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^5) - 3*b*c^9*d^2*x^5*log(sqrt(-c^2*x
^2 + 1) + 1)/((c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x
^2 + 1) + 1)^5 + 3*c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^4*x/(sqrt(-c^2*x^
2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^5) - 3*b*c^8*d^2*x^4*arcsin(c*x)/((c^
10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 +
3*c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^4*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqr
t(-c^2*x^2 + 1) + 1)^4) - 2*b*c^9*d*x^7*e/((c^10*x^7/(sqrt(-c^2*x^2 + 1) +
1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^6*x^3/(sqrt(-c^2*x^2 + 1)
 + 1)^3 + c^4*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^7) + 4*b
*c^8*d*x^6*arcsin(c*x)*e/((c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/
(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^4*x/(
sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^6) - 3*a*c^8*d^2*x^4/((c^
10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 +
3*c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^4*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqr
t(-c^2*x^2 + 1) + 1)^4) + 4*a*c^8*d*x^6*e/((c^10*x^7/(sqrt(-c^2*x^2 + 1) +
1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^6*x^3/(sqrt(-c^2*x^2 + 1)
 + 1)^3 + c^4*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^6) + 3*b
*c^7*d^2*x^3*log(abs(c)*abs(x))/((c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c
^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 +
c^4*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^3) - 3*b*c^7*d^2*x
^3*log(sqrt(-c^2*x^2 + 1) + 1)/((c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^
8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c
^4*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^3) - 2*b*c^6*d^2*x^
2*arcsin(c*x)/((c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*
x^2 + 1) + 1)^5 + 3*c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^4*x/(sqrt(-c^2*x
^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^2) - 2*b*c^7*d*x^5*e/((c^10*x^7/(sqr
t(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^6*x^3/(
sqrt(-c^2*x^2 + 1) + 1)^3 + c^4*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2
+ 1) + 1)^5) + 8*b*c^6*d*x^4*arcsin(c*x)*e/((c^10*x^7/(sqrt(-c^2*x^2 + 1) +
```

```
1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^6*x^3/(sqrt(-c^2*x^2 + 1
) + 1)^3 + c^4*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^4) - 2*
a*c^6*d^2*x^2/((c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*
x^2 + 1) + 1)^5 + 3*c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^4*x/(sqrt(-c^2*x
^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^2) - 2/9*b*c^7*x^7*e^2/((c^10*x^7/(s
qrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^6*x^3
/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^4*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^
2 + 1) + 1)^7) + 8*a*c^6*d*x^4*e/((c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*
c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 +
 c^4*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^4) + b*c^5*d^2*x*
log(abs(c)*abs(x))/((c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(
-c^2*x^2 + 1) + 1)^5 + 3*c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^4*x/(sqrt(-
c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)) - b*c^5*d^2*x*log(sqrt(-c^2*x^
2 + 1) + 1)/((c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^
2 + 1) + 1)^5 + 3*c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^4*x/(sqrt(-c^2*x^2
 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)) - 1/2*b*c^4*d^2*arcsin(c*x)/(c^10*x^7
/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^6*
x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^4*x/(sqrt(-c^2*x^2 + 1) + 1)) + 2*b*c^5*
d*x^3*e/((c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 +
1) + 1)^5 + 3*c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^4*x/(sqrt(-c^2*x^2 + 1
) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^3) + 4*b*c^4*d*x^2*arcsin(c*x)*e/((c^10*x^
7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^6
*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^4*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^
2*x^2 + 1) + 1)^2) - 1/2*a*c^4*d^2/(c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3
*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3
+ c^4*x/(sqrt(-c^2*x^2 + 1) + 1)) - 2/3*b*c^5*x^5*e^2/((c^10*x^7/(sqrt(-c^2
*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^6*x^3/(sqrt(-
c^2*x^2 + 1) + 1)^3 + c^4*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) +
 1)^5) + 8/3*b*c^4*x^4*arcsin(c*x)*e^2/((c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^
7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^6*x^3/(sqrt(-c^2*x^2 + 1) +
1)^3 + c^4*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^4) + 4*a*c^
4*d*x^2*e/((c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2
+ 1) + 1)^5 + 3*c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^4*x/(sqrt(-c^2*x^2 +
 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^2) + 8/3*a*c^4*x^4*e^2/((c^10*x^7/(sqrt(
-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^6*x^3/(sq
rt(-c^2*x^2 + 1) + 1)^3 + c^4*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 +
1) + 1)^4) + 2*b*c^3*d*x*e/((c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^
5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^4*x
/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)) + 2/3*b*c^3*x^3*e^2/((
c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5
+ 3*c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^4*x/(sqrt(-c^2*x^2 + 1) + 1))*(s
qrt(-c^2*x^2 + 1) + 1)^3) + 2/9*b*c*x*e^2/((c^10*x^7/(sqrt(-c^2*x^2 + 1) +
1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 3*c^6*x^3/(sqrt(-c^2*x^2 + 1)
 + 1)^3 + c^4*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1))
```

maple [A] time = 0.01, size = 168, normalized size = 1.33

$$c\left(\frac{a\left(\frac{e^{2}c^{3}x^{3}}{3}+2c^{3}edx-\frac{d^{2}c^{3}}{x}\right)}{c^{4}}+\frac{b\left(\frac{\arcsin(cx)e^{2}c^{3}x^{3}}{3}+2\arcsin\left(cx\right)c^{3}edx-\frac{\arcsin(cx)d^{2}c^{3}}{x}-\frac{e^{2}\left(-\frac{c^{2}x^{2}\sqrt{-c^{2}x^{2}+1}}{3}-\frac{2\sqrt{-c^{2}x^{2}+1}}{3}\right)}{3}+2\cdots\right.}{c^{4}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)^2*(a+b*arcsin(c*x))/x^2,x)
```

```
[Out] c*(a/c^4*(1/3*e^2*c^3*x^3+2*c^3*e*d*x-d^2*c^3/x)+b/c^4*(1/3*arcsin(c*x)*e^2
*c^3*x^3+2*arcsin(c*x)*c^3*e*d*x-arcsin(c*x)*d^2*c^3/x-1/3*e^2*(-1/3*c^2*x^
```

```
2*(-c^2*x^2+1)^(1/2)-2/3*(-c^2*x^2+1)^(1/2))+2*c^2*e*d*(-c^2*x^2+1)^(1/2)-d
^2*c^4*arctanh(1/(-c^2*x^2+1)^(1/2))))
```

maxima [A] time = 1.50, size = 151, normalized size = 1.20

$$\frac{1}{3}ae^2x^3 - \left(c\log\left(\frac{2\sqrt{-c^2x^2+1}}{|x|} + \frac{2}{|x|}\right) + \frac{\arcsin(cx)}{x}\right)bd^2 + \frac{1}{9}\left(3x^3\arcsin(cx) + c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2} + \frac{2\sqrt{-c^2x^2+1}}{c^4}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2*(a+b*arcsin(c*x))/x^2,x, algorithm="maxima")
```

```
[Out] 1/3*a*e^2*x^3 - (c*log(2*sqrt(-c^2*x^2 + 1)/abs(x) + 2/abs(x)) + arcsin(c*x
)/x)*b*d^2 + 1/9*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqr
t(-c^2*x^2 + 1)/c^4))*b*e^2 + 2*a*d*e*x + 2*(c*x*arcsin(c*x) + sqrt(-c^2*x^
2 + 1))*b*d*e/c - a*d^2/x
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\begin{cases} \frac{a\left(-3d^2+6dex^2+e^2x^4\right)}{3x} + be^2\left(\frac{\sqrt{\frac{1}{c^2}-x^2}\left(\frac{2}{c^2}+x^2\right)}{9} + \frac{x^3\operatorname{asin}(cx)}{3}\right) - bcd^2\operatorname{atanh}\left(\frac{1}{\sqrt{1-c^2x^2}}\right) - \frac{bd^2\operatorname{asin}(cx)}{x} + \frac{2bde\left(\sqrt{1-c^2x^2}\right.}{c} \\ \int \frac{(a+b\operatorname{asin}(cx))\left(ex^2+d\right)^2}{x^2}\,dx \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d + e*x^2)^2)/x^2,x)
```

```
[Out] piecewise(0 < c, (a*(- 3*d^2 + e^2*x^4 + 6*d*e*x^2))/(3*x) + b*e^2*(((1/c^2
 - x^2)^(1/2)*(2/c^2 + x^2))/9 + (x^3*asin(c*x))/3) - b*c*d^2*atanh(1/(- c^
2*x^2 + 1)^(1/2)) - (b*d^2*asin(c*x))/x + (2*b*d*e*((- c^2*x^2 + 1)^(1/2) +
 c*x*asin(c*x)))/c, ~0 < c, int(((a + b*asin(c*x))*(d + e*x^2)^2)/x^2, x))
```

sympy [A] time = 5.61, size = 167, normalized size = 1.33

$$-\frac{ad^2}{x} + 2adex + \frac{ae^2x^3}{3} + bcd^2\left(\begin{cases} -\operatorname{acosh}\left(\frac{1}{cx}\right) & \text{for } \frac{1}{|c^2x^2|} > 1 \\ i\operatorname{asin}\left(\frac{1}{cx}\right) & \text{otherwise} \end{cases}\right) - \frac{bce^2\left(\begin{cases} -\frac{x^2\sqrt{-c^2x^2+1}}{3c^2} - \frac{2\sqrt{-c^2x^2+1}}{3c^4} & \text{for } c \neq 0 \\ \frac{x^4}{4} & \text{otherwise} \end{cases}\right)}{3} - \frac{b}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)**2*(a+b*asin(c*x))/x**2,x)
```

```
[Out] -a*d**2/x + 2*a*d*e*x + a*e**2*x**3/3 + b*c*d**2*Piecewise((-acosh(1/(c*x))
, 1/Abs(c**2*x**2) > 1), (I*asin(1/(c*x)), True)) - b*c*e**2*Piecewise((-x*
*2*sqrt(-c**2*x**2 + 1)/(3*c**2) - 2*sqrt(-c**2*x**2 + 1)/(3*c**4), Ne(c, 0
)), (x**4/4, True))/3 - b*d**2*asin(c*x)/x + 2*b*d*e*Piecewise((0, Eq(c, 0)
), (x*asin(c*x) + sqrt(-c**2*x**2 + 1)/c, True)) + b*e**2*x**3*asin(c*x)/3
```

3.612 $\int \frac{(d+ex^2)^2(a+b\sin^{-1}(cx))}{x^3}\,dx$

Optimal. Leaf size=185

$$-\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{2x^2}+2de\log(x)\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}e^2x^2\left(a+b\sin^{-1}(cx)\right)-\frac{bcd^2\sqrt{1-c^2x^2}}{2x}+\frac{be^2x\sqrt{1-c^2x^2}}{4c}-\frac{be}{}$$

```
[Out] -1/4*b*e^2*arcsin(c*x)/c^2-I*b*d*e*arcsin(c*x)^2-1/2*d^2*(a+b*arcsin(c*x))/
x^2+1/2*e^2*x^2*(a+b*arcsin(c*x))+2*b*d*e*arcsin(c*x)*ln(1-(I*c*x+(-c^2*x^2
+1)^(1/2))^2)-2*b*d*e*arcsin(c*x)*ln(x)+2*d*e*(a+b*arcsin(c*x))*ln(x)-I*b*d
*e*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)-1/2*b*c*d^2*(-c^2*x^2+1)^(1/2)/x
+1/4*b*e^2*x*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.34, antiderivative size = 185, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 14, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667, Rules used = {266, 43, 4731, 12, 6742, 264, 321, 216, 2326, 4625, 3717, 2190, 2279, 2391}

$$-ibde\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)-\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{2x^2}+2de\log(x)\left(a+b\sin^{-1}(cx)\right)+\frac{1}{2}e^2x^2\left(a+b\sin^{-1}(cx)\right)-\frac{bcd^2\sqrt{}}{2}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x^2)^2*(a + b*ArcSin[c*x]))/x^3,x]
```

```
[Out] -(b*c*d^2*Sqrt[1 - c^2*x^2])/(2*x) + (b*e^2*x*Sqrt[1 - c^2*x^2])/(4*c) - (b
*e^2*ArcSin[c*x])/(4*c^2) - I*b*d*e*ArcSin[c*x]^2 - (d^2*(a + b*ArcSin[c*x]
))/(2*x^2) + (e^2*x^2*(a + b*ArcSin[c*x]))/2 + 2*b*d*e*ArcSin[c*x]*Log[1 -
E^((2*I)*ArcSin[c*x])] - 2*b*d*e*ArcSin[c*x]*Log[x] + 2*d*e*(a + b*ArcSin[c
*x])*Log[x] - I*b*d*e*PolyLog[2, E^((2*I)*ArcSin[c*x])]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 264

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c
*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] /; FreeQ[{a, b, c, m, n,
 p}, x] && EqQ[(m + 1)/n + p + 1, 0] && NeQ[m, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2326

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/Sqrt[(d_) + (e_.)*(x_)^2], x_Symb
ol] :> Simp[(ArcSin[(Rt[-e, 2]*x)/Sqrt[d]]*(a + b*Log[c*x^n]))/Rt[-e, 2], x
] - Dist[(b*n)/Rt[-e, 2], Int[ArcSin[(Rt[-e, 2]*x)/Sqrt[d]]/x, x], x] /; Fr
eeQ[{a, b, c, d, e, n}, x] && GtQ[d, 0] && NegQ[e]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_
)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist
[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*
x^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[c^2*d + e, 0] &
& IntegerQ[p] && (GtQ[p, 0] || (IGtQ[(m - 1)/2, 0] && LeQ[m + p, 0]))
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(d+ex^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{x^3}\,dx = -\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{2x^2}+\frac{1}{2}e^2x^2\left(a+b\sin^{-1}(cx)\right)+2de\left(a+b\sin^{-1}(cx)\right)\log($$

$$= -\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{2x^2}+\frac{1}{2}e^2x^2\left(a+b\sin^{-1}(cx)\right)+2de\left(a+b\sin^{-1}(cx)\right)\log($$

$$= -\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{2x^2}+\frac{1}{2}e^2x^2\left(a+b\sin^{-1}(cx)\right)+2de\left(a+b\sin^{-1}(cx)\right)\log($$

$$= -\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{2x^2}+\frac{1}{2}e^2x^2\left(a+b\sin^{-1}(cx)\right)+2de\left(a+b\sin^{-1}(cx)\right)\log($$

$$= -\frac{bcd^2\sqrt{1-c^2x^2}}{2x}+\frac{be^2x\sqrt{1-c^2x^2}}{4c}-\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{2x^2}+\frac{1}{2}e^2x^2\left(a+b\sin\right.$$

$$= -\frac{bcd^2\sqrt{1-c^2x^2}}{2x}+\frac{be^2x\sqrt{1-c^2x^2}}{4c}-\frac{be^2\sin^{-1}(cx)}{4c^2}-\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{2x^2}+$$

$$= -\frac{bcd^2\sqrt{1-c^2x^2}}{2x}+\frac{be^2x\sqrt{1-c^2x^2}}{4c}-\frac{be^2\sin^{-1}(cx)}{4c^2}-ibde\sin^{-1}(cx)^2-\frac{d^2\left(a\right.}{}$$

$$= -\frac{bcd^2\sqrt{1-c^2x^2}}{2x}+\frac{be^2x\sqrt{1-c^2x^2}}{4c}-\frac{be^2\sin^{-1}(cx)}{4c^2}-ibde\sin^{-1}(cx)^2-\frac{d^2\left(a\right.}{}$$

$$= -\frac{bcd^2\sqrt{1-c^2x^2}}{2x}+\frac{be^2x\sqrt{1-c^2x^2}}{4c}-\frac{be^2\sin^{-1}(cx)}{4c^2}-ibde\sin^{-1}(cx)^2-\frac{d^2\left(a\right.}{}$$

$$= -\frac{bcd^2\sqrt{1-c^2x^2}}{2x}+\frac{be^2x\sqrt{1-c^2x^2}}{4c}-\frac{be^2\sin^{-1}(cx)}{4c^2}-ibde\sin^{-1}(cx)^2-\frac{d^2\left(a\right.}{}$$

Mathematica [A] time = 0.36, size = 159, normalized size = 0.86

$$\frac{1}{4}\left(-\frac{2ad^2}{x^2}+8ade\log(x)+2ae^2x^2+b\sin^{-1}(cx)\left(-\frac{e^2}{c^2}+8de\log\left(1-e^{2i\sin^{-1}(cx)}\right)-\frac{2d^2}{x^2}+2e^2x^2\right)-\frac{2bcd^2\sqrt{1-c^2x^2}}{x}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x^2)^2*(a + b*ArcSin[c*x]))/x^3,x]
```

```
[Out] ((-2*a*d^2)/x^2 + 2*a*e^2*x^2 - (2*b*c*d^2*Sqrt[1 - c^2*x^2])/x + (b*e^2*x*
Sqrt[1 - c^2*x^2])/c - (4*I)*b*d*e*ArcSin[c*x]^2 + b*ArcSin[c*x]*(-(e^2/c^2
) - (2*d^2)/x^2 + 2*e^2*x^2 + 8*d*e*Log[1 - E^((2*I)*ArcSin[c*x])]) + 8*a*d
*e*Log[x] - (4*I)*b*d*e*PolyLog[2, E^((2*I)*ArcSin[c*x])])/4
```

fricas [F] time = 2.06, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{ae^2x^4+2\,adex^2+ad^2+\left(be^2x^4+2\,bdex^2+bd^2\right)\arcsin(cx)}{x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2*(a+b*arcsin(c*x))/x^3,x, algorithm="fricas")
```

```
[Out] integral((a*e^2*x^4 + 2*a*d*e*x^2 + a*d^2 + (b*e^2*x^4 + 2*b*d*e*x^2 + b*d^
2)*arcsin(c*x))/x^3, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(ex^2+d\right)^2(b\arcsin(cx)+a)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2*(a+b*arcsin(c*x))/x^3,x, algorithm="giac")
```

```
[Out] integrate((e*x^2 + d)^2*(b*arcsin(c*x) + a)/x^3, x)
```

maple [A] time = 0.90, size = 248, normalized size = 1.34

$$\frac{a\,x^2e^2}{2}+2aed\ln\left(cx\right)-\frac{a\,d^2}{2x^2}-ibde\arcsin\left(cx\right)^2+\frac{b\,e^2x\sqrt{-c^2x^2+1}}{4c}+\frac{b\arcsin\left(cx\right)x^2e^2}{2}-\frac{b\,e^2\arcsin\left(cx\right)}{4c^2}+\frac{ic^2b\,d^2}{2}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)^2*(a+b*arcsin(c*x))/x^3,x)
```

```
[Out] 1/2*a*x^2*e^2+2*a*e*d*ln(c*x)-1/2*a*d^2/x^2-I*b*d*e*arcsin(c*x)^2+1/4*b*e^2
*x*(-c^2*x^2+1)^(1/2)/c+1/2*b*arcsin(c*x)*x^2*e^2-1/4*b*e^2*arcsin(c*x)/c^2
+1/2*I*c^2*b*d^2-1/2*b*c*d^2*(-c^2*x^2+1)^(1/2)/x-1/2*b*arcsin(c*x)*d^2/x^2
+2*b*e*d*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+2*b*e*d*arcsin(c*x)*ln(
1-I*c*x-(-c^2*x^2+1)^(1/2))-2*I*b*e*d*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))-
2*I*b*e*d*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\,ae^2x^2-\frac{1}{2}\,bd^2\left(\frac{\sqrt{-c^2x^2+1}\,c}{x}+\frac{\arcsin\left(cx\right)}{x^2}\right)+2\,ade\log(x)-\frac{ad^2}{2\,x^2}+\int\frac{\left(be^2x^2+2\,bde\right)\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx\right.}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2*(a+b*arcsin(c*x))/x^3,x, algorithm="maxima")
```

```
[Out] 1/2*a*e^2*x^2 - 1/2*b*d^2*(sqrt(-c^2*x^2 + 1)*c/x + arcsin(c*x)/x^2) + 2*a*
d*e*log(x) - 1/2*a*d^2/x^2 + integrate((b*e^2*x^2 + 2*b*d*e)*arctan2(c*x, s
qrt(c*x + 1)*sqrt(-c*x + 1))/x, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(e\,x^2+d\right)}^2}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d + e*x^2)^2)/x^3,x)
```

```
[Out] int(((a + b*asin(c*x))*(d + e*x^2)^2)/x^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(a+b\operatorname{asin}\left(cx\right)\right)\left(d+ex^2\right)^2}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)**2*(a+b*asin(c*x))/x**3,x)
```

```
[Out] Integral((a + b*asin(c*x))*(d + e*x**2)**2/x**3, x)
```

3.613 $\int \frac{(d+ex^2)^2 (a+b\sin^{-1}(cx))}{x^4} dx$

Optimal. Leaf size=126

$$-\frac{d^2 \left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{2de \left(a+b\sin^{-1}(cx)\right)}{x}+e^2x \left(a+b\sin^{-1}(cx)\right)-\frac{bcd^2\sqrt{1-c^2x^2}}{6x^2}-\frac{1}{6}bcd \left(c^2d+12e\right)\tanh^{-1}\left(\sqrt{1}\right.$$

```
[Out] -1/3*d^2*(a+b*arcsin(c*x))/x^3-2*d*e*(a+b*arcsin(c*x))/x+e^2*x*(a+b*arcsin(
c*x))-1/6*b*c*d*(c^2*d+12*e)*arctanh((-c^2*x^2+1)^(1/2))+b*e^2*(-c^2*x^2+1)
^(1/2)/c-1/6*b*c*d^2*(-c^2*x^2+1)^(1/2)/x^2
```

Rubi [A] time = 0.20, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {270, 4731, 1251, 897, 1157, 388, 208}

$$-\frac{d^2 \left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{2de \left(a+b\sin^{-1}(cx)\right)}{x}+e^2x \left(a+b\sin^{-1}(cx)\right)-\frac{bcd^2\sqrt{1-c^2x^2}}{6x^2}-\frac{1}{6}bcd \left(c^2d+12e\right)\tanh^{-1}\left(\sqrt{1}\right.$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x^2)^2*(a + b*ArcSin[c*x]))/x^4,x]
```

```
[Out] (b*e^2*Sqrt[1 - c^2*x^2])/c - (b*c*d^2*Sqrt[1 - c^2*x^2])/(6*x^2) - (d^2*(a
 + b*ArcSin[c*x]))/(3*x^3) - (2*d*e*(a + b*ArcSin[c*x]))/x + e^2*x*(a + b*A
rcSin[c*x]) - (b*c*d*(c^2*d + 12*e)*ArcTanh[Sqrt[1 - c^2*x^2]])/6
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 388

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_)), x_Symbol] :> Si
mp[(d*x*(a + b*x^n)^(p + 1))/(b*(n*(p + 1) + 1)), x] - Dist[(a*d - b*c*(n*(
p + 1) + 1))/(b*(n*(p + 1) + 1)), Int[(a + b*x^n)^p, x], x] /; FreeQ[{a, b,
 c, d, n}, x] && NeQ[b*c - a*d, 0] && NeQ[n*(p + 1) + 1, 0]
```

Rule 897

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_.) + (b_.)*(x_)
 + (c_.)*(x_)^2)^(p_.), x_Symbol] :> With[{q = Denominator[m]}, Dist[q/e, S
ubst[Int[x^(q*(m + 1) - 1)*((e*f - d*g)/e + (g*x^q)/e)^n*((c*d^2 - b*d*e +
a*e^2)/e^2 - ((2*c*d - b*e)*x^q)/e^2 + (c*x^(2*q))/e^2)^p, x], x, (d + e*x)
^(1/q)], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ
[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegersQ[n, p] && Fra
ctionQ[m]
```

Rule 1157

```
Int[((d_) + (e_.)*(x_)^2)^(q_)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.),
x_Symbol] :> With[{Qx = PolynomialQuotient[(a + b*x^2 + c*x^4)^p, d + e*x^2
, x], R = Coeff[PolynomialRemainder[(a + b*x^2 + c*x^4)^p, d + e*x^2, x], x
```

```
, 0]}, -Simp[(R*x*(d + e*x^2)^(q + 1))/(2*d*(q + 1)), x] + Dist[1/(2*d*(q +
 1)), Int[(d + e*x^2)^(q + 1)*ExpandToSum[2*d*(q + 1)*Qx + R*(2*q + 3), x],
 x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 -
 b*d*e + a*e^2, 0] && IGtQ[p, 0] && LtQ[q, -1]
```

Rule 1251

```
Int[(x_)^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_
)^4)^(p_.), x_Symbol] :> Dist[1/2, Subst[Int[x^((m - 1)/2)*(d + e*x)^q*(a +
 b*x + c*x^2)^p, x], x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x] && Inte
gerQ[(m - 1)/2]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_
)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist
[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*
x^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[c^2*d + e, 0] &
& IntegerQ[p] && (GtQ[p, 0] || (IGtQ[(m - 1)/2, 0] && LeQ[m + p, 0]))
```

Rubi steps

$$\int \frac{\left(d+ex^2\right)^2\left(a+b\sin^{-1}(cx)\right)}{x^4}\,dx = -\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{2de\left(a+b\sin^{-1}(cx)\right)}{x}+e^2x\left(a+b\sin^{-1}(cx)\right)-(b$$

$$= -\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{2de\left(a+b\sin^{-1}(cx)\right)}{x}+e^2x\left(a+b\sin^{-1}(cx)\right)-\frac{1}{2}$$

$$b$$

$$= -\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{2de\left(a+b\sin^{-1}(cx)\right)}{x}+e^2x\left(a+b\sin^{-1}(cx)\right)+-$$

$$= -\frac{bcd^2\sqrt{1-c^2x^2}}{6x^2}-\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{2de\left(a+b\sin^{-1}(cx)\right)}{x}+e^2x\left(a\right.$$

$$= \frac{be^2\sqrt{1-c^2x^2}}{c}-\frac{bcd^2\sqrt{1-c^2x^2}}{6x^2}-\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{2de\left(a+b\sin^{-1}\right.}{x}$$

$$= \frac{be^2\sqrt{1-c^2x^2}}{c}-\frac{bcd^2\sqrt{1-c^2x^2}}{6x^2}-\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{2de\left(a+b\sin^{-1}\right.}{x}$$

Mathematica [A] time = 0.17, size = 140, normalized size = 1.11

$$\frac{1}{6}\left(-\frac{2ad^2}{x^3}-\frac{12ade}{x}+6ae^2x+6b\sqrt{1-c^2x^2}\left(\frac{e^2}{c}-\frac{cd^2}{6x^2}\right)-bcd\left(c^2d+12e\right)\log\left(\sqrt{1-c^2x^2}+1\right)+bcd\log(x)\left(c^2\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x^2)^2*(a + b*ArcSin[c*x]))/x^4,x]
```

```
[Out] ((-2*a*d^2)/x^3 - (12*a*d*e)/x + 6*a*e^2*x + 6*b*(e^2/c - (c*d^2)/(6*x^2))*
Sqrt[1 - c^2*x^2] - (2*b*(d^2 + 6*d*e*x^2 - 3*e^2*x^4)*ArcSin[c*x])/x^3 + b
*c*d*(c^2*d + 12*e)*Log[x] - b*c*d*(c^2*d + 12*e)*Log[1 + Sqrt[1 - c^2*x^2]
])/6
```

fricas [A] time = 0.74, size = 174, normalized size = 1.38

$$\frac{12\,ace^2x^4-24\,acdex^2-\left(bc^4d^2+12\,bc^2de\right)x^3\log\left(\sqrt{-c^2x^2+1}\,+1\right)+\left(bc^4d^2+12\,bc^2de\right)x^3\log\left(\sqrt{-c^2x^2+1}\,-1\right)}{12\,cx^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2*(a+b*arcsin(c*x))/x^4,x, algorithm="fricas")
```

```
[Out] 1/12*(12*a*c*e^2*x^4 - 24*a*c*d*e*x^2 - (b*c^4*d^2 + 12*b*c^2*d*e)*x^3*log(
sqrt(-c^2*x^2 + 1) + 1) + (b*c^4*d^2 + 12*b*c^2*d*e)*x^3*log(sqrt(-c^2*x^2
+ 1) - 1) - 4*a*c*d^2 + 4*(3*b*c*e^2*x^4 - 6*b*c*d*e*x^2 - b*c*d^2)*arcsin(
c*x) - 2*(b*c^2*d^2*x - 6*b*e^2*x^3)*sqrt(-c^2*x^2 + 1))/(c*x^3)
```

giac [B] time = 32.24, size = 2540, normalized size = 20.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2*(a+b*arcsin(c*x))/x^4,x, algorithm="giac")
```

```
[Out] -1/24*b*c^12*d^2*x^8*arcsin(c*x)/((c^6*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^4
*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^8) - 1/24*a*c^12*
d^2*x^8/((c^6*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^4*x^3/(sqrt(-c^2*x^2 + 1)
+ 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^8) + 1/24*b*c^11*d^2*x^7/((c^6*x^5/(sqrt(-
c^2*x^2 + 1) + 1)^5 + c^4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 +
1) + 1)^7) - 1/6*b*c^10*d^2*x^6*arcsin(c*x)/((c^6*x^5/(sqrt(-c^2*x^2 + 1) +
 1)^5 + c^4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^6) - 1
/6*a*c^10*d^2*x^6/((c^6*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^4*x^3/(sqrt(-c^2
*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^6) + 1/6*b*c^9*d^2*x^5*log(abs(c
)*abs(x))/((c^6*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^4*x^3/(sqrt(-c^2*x^2 + 1
) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^5) - 1/6*b*c^9*d^2*x^5*log(sqrt(-c^2*x^2
 + 1) + 1)/((c^6*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^4*x^3/(sqrt(-c^2*x^2 +
1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^5) + 1/24*b*c^9*d^2*x^5/((c^6*x^5/(sqrt
(-c^2*x^2 + 1) + 1)^5 + c^4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2
+ 1) + 1)^5) - 1/4*b*c^8*d^2*x^4*arcsin(c*x)/((c^6*x^5/(sqrt(-c^2*x^2 + 1)
+ 1)^5 + c^4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^4) -
b*c^8*d*x^6*arcsin(c*x)*e/((c^6*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^4*x^3/(s
qrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^6) - 1/4*a*c^8*d^2*x^4/(
(c^6*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(
sqrt(-c^2*x^2 + 1) + 1)^4) - a*c^8*d*x^6*e/((c^6*x^5/(sqrt(-c^2*x^2 + 1) +
1)^5 + c^4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^6) + 1/
6*b*c^7*d^2*x^3*log(abs(c)*abs(x))/((c^6*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c
^4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^3) + 2*b*c^7*d*
x^5*e*log(abs(c)*abs(x))/((c^6*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^4*x^3/(sq
rt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^5) - 1/6*b*c^7*d^2*x^3*lo
g(sqrt(-c^2*x^2 + 1) + 1)/((c^6*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^4*x^3/(s
qrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^3) - 2*b*c^7*d*x^5*e*log
(sqrt(-c^2*x^2 + 1) + 1)/((c^6*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^4*x^3/(sq
rt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^5) - 1/24*b*c^7*d^2*x^3/(
(c^6*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(
sqrt(-c^2*x^2 + 1) + 1)^3) - 1/6*b*c^6*d^2*x^2*arcsin(c*x)/((c^6*x^5/(sqrt(
-c^2*x^2 + 1) + 1)^5 + c^4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 +
 1) + 1)^2) - 2*b*c^6*d*x^4*arcsin(c*x)*e/((c^6*x^5/(sqrt(-c^2*x^2 + 1) + 1
)^5 + c^4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^4) - 1/6
*a*c^6*d^2*x^2/((c^6*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^4*x^3/(sqrt(-c^2*x^
2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^2) - 2*a*c^6*d*x^4*e/((c^6*x^5/(sqr
t(-c^2*x^2 + 1) + 1)^5 + c^4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2
 + 1) + 1)^4) + 2*b*c^5*d*x^3*e*log(abs(c)*abs(x))/((c^6*x^5/(sqrt(-c^2*x^2
```

```
 + 1) + 1)^5 + c^4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)
^3) - 2*b*c^5*d*x^3*e*log(sqrt(-c^2*x^2 + 1) + 1)/((c^6*x^5/(sqrt(-c^2*x^2
+ 1) + 1)^5 + c^4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^
3) - 1/24*b*c^5*d^2*x/((c^6*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^4*x^3/(sqrt(
-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)) - 1/24*b*c^4*d^2*arcsin(c*x
)/(c^6*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)
 - b*c^4*d*x^2*arcsin(c*x)*e/((c^6*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^4*x^3
/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^2) - 1/24*a*c^4*d^2/(
c^6*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3) -
b*c^5*x^5*e^2/((c^6*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^4*x^3/(sqrt(-c^2*x^2
 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^5) + 2*b*c^4*x^4*arcsin(c*x)*e^2/((c
^6*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sq
rt(-c^2*x^2 + 1) + 1)^4) - a*c^4*d*x^2*e/((c^6*x^5/(sqrt(-c^2*x^2 + 1) + 1)
^5 + c^4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^2) + 2*a*
c^4*x^4*e^2/((c^6*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^4*x^3/(sqrt(-c^2*x^2 +
 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^4) + b*c^3*x^3*e^2/((c^6*x^5/(sqrt(-c^
2*x^2 + 1) + 1)^5 + c^4*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1)
 + 1)^3)
```

maple [A] time = 0.01, size = 156, normalized size = 1.24

$$c^3\left(\frac{a\left(cx\,e^2-\frac{d^2c}{3x^3}-\frac{2ced}{x}\right)}{c^4}+\frac{b\left(\arcsin(cx)\,cx\,e^2-\frac{\arcsin(cx)d^2c}{3x^3}-\frac{2\arcsin(cx)ced}{x}+e^2\sqrt{-c^2x^2+1}+\frac{d^2c^4\left(-\frac{\sqrt{-c^2x^2+1}}{2c^2x^2}-\frac{\text{arc}\cdots}{\cdots}\right.}{3}\cdots\right.}{c^4}\cdots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)^2*(a+b*arcsin(c*x))/x^4,x)
```

```
[Out] c^3*(a/c^4*(c*x*e^2-1/3*d^2*c/x^3-2*c*e*d/x)+b/c^4*(arcsin(c*x)*c*x*e^2-1/3
*arcsin(c*x)*d^2*c/x^3-2*arcsin(c*x)*c*e*d/x+e^2*(-c^2*x^2+1)^(1/2)+1/3*d^2
*c^4*(-1/2/c^2/x^2*(-c^2*x^2+1)^(1/2)-1/2*arctanh(1/(-c^2*x^2+1)^(1/2)))-2*
c^2*e*d*arctanh(1/(-c^2*x^2+1)^(1/2))))
```

maxima [A] time = 1.07, size = 159, normalized size = 1.26

$$-\frac{1}{6}\left(\left(\left(c^2\log\left(\frac{2\sqrt{-c^2x^2+1}}{|x|}+\frac{2}{|x|}\right)+\frac{\sqrt{-c^2x^2+1}}{x^2}\right)c+\frac{2\arcsin(cx)}{x^3}\right)bd^2-2\left(c\log\left(\frac{2\sqrt{-c^2x^2+1}}{|x|}+\frac{2}{|x|}\right)+\frac{\text{arc}\cdots}{\cdots}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2*(a+b*arcsin(c*x))/x^4,x, algorithm="maxima")
```

```
[Out] -1/6*((c^2*log(2*sqrt(-c^2*x^2 + 1)/abs(x) + 2/abs(x)) + sqrt(-c^2*x^2 + 1)
/x^2)*c + 2*arcsin(c*x)/x^3)*b*d^2 - 2*(c*log(2*sqrt(-c^2*x^2 + 1)/abs(x) +
 2/abs(x)) + arcsin(c*x)/x)*b*d*e + a*e^2*x + (c*x*arcsin(c*x) + sqrt(-c^2*
x^2 + 1))*b*e^2/c - 2*a*d*e/x - 1/3*a*d^2/x^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))\,\left(e\,x^2+d\right)^2}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d + e*x^2)^2)/x^4,x)
```

```
[Out] int(((a + b*asin(c*x))*(d + e*x^2)^2)/x^4, x)
```

sympy [A] time = 6.83, size = 219, normalized size = 1.74

$$-\frac{ad^2}{3x^3}-\frac{2ade}{x}+ae^2x+\frac{bcd^2\left(\begin{cases}-\frac{c^2\operatorname{acosh}\left(\frac{1}{cx}\right)}{2}-\frac{c\sqrt{-1+\frac{1}{c^2x^2}}}{2x} & \text{for } \frac{1}{|c^2x^2|}>1\\ \frac{ic^2\operatorname{asin}\left(\frac{1}{cx}\right)}{2}-\frac{ic}{2x\sqrt{1-\frac{1}{c^2x^2}}}+\frac{i}{2cx^3\sqrt{1-\frac{1}{c^2x^2}}} & \text{otherwise}\end{cases}\right)}{3}+2bcde\left(\begin{cases}-\operatorname{acosh}\left(\frac{1}{cx}\right) & \text{for } \frac{1}{|c^2 \\ i\operatorname{asin}\left(\frac{1}{cx}\right) & \text{other}\end{cases}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)**2*(a+b*asin(c*x))/x**4,x)
```

```
[Out] -a*d**2/(3*x**3) - 2*a*d*e/x + a*e**2*x + b*c*d**2*Piecewise((-c**2*acosh(1
/(c*x))/2 - c*sqrt(-1 + 1/(c**2*x**2))/(2*x), 1/Abs(c**2*x**2) > 1), (I*c**
2*asin(1/(c*x))/2 - I*c/(2*x*sqrt(1 - 1/(c**2*x**2))) + I/(2*c*x**3*sqrt(1
- 1/(c**2*x**2))), True))/3 + 2*b*c*d*e*Piecewise((-acosh(1/(c*x)), 1/Abs(c
**2*x**2) > 1), (I*asin(1/(c*x)), True)) - b*d**2*asin(c*x)/(3*x**3) - 2*b*
d*e*asin(c*x)/x + b*e**2*Piecewise((0, Eq(c, 0)), (x*asin(c*x) + sqrt(-c**2
*x**2 + 1)/c, True))
```

3.614 $\int x^4 \left(d+ex^2\right)^3 \left(a+b\sin^{-1}(cx)\right) dx$

Optimal. Leaf size=341

$$\frac{1}{5}d^3x^5\left(a+b\sin^{-1}(cx)\right)+\frac{3}{7}d^2ex^7\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}de^2x^9\left(a+b\sin^{-1}(cx)\right)+\frac{1}{11}e^3x^{11}\left(a+b\sin^{-1}(cx)\right)+\frac{be^2\left(1\right.}{}$$

```
[Out] -1/3465*b*(462*c^6*d^3+1485*c^4*d^2*e+1540*c^2*d*e^2+525*e^3)*(-c^2*x^2+1)^
(3/2)/c^11+1/1925*b*(77*c^6*d^3+495*c^4*d^2*e+770*c^2*d*e^2+350*e^3)*(-c^2*
x^2+1)^(5/2)/c^11-1/1617*b*e*(99*c^4*d^2+308*c^2*d*e+210*e^2)*(-c^2*x^2+1)^
(7/2)/c^11+1/297*b*e^2*(11*c^2*d+15*e)*(-c^2*x^2+1)^(9/2)/c^11-1/121*b*e^3*
(-c^2*x^2+1)^(11/2)/c^11+1/5*d^3*x^5*(a+b*arcsin(c*x))+3/7*d^2*e*x^7*(a+b*a
rcsin(c*x))+1/3*d*e^2*x^9*(a+b*arcsin(c*x))+1/11*e^3*x^11*(a+b*arcsin(c*x))
+1/1155*b*(231*c^6*d^3+495*c^4*d^2*e+385*c^2*d*e^2+105*e^3)*(-c^2*x^2+1)^(1
/2)/c^11
```

Rubi [A] time = 0.43, antiderivative size = 341, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.238$, Rules used = {270, 4731, 12, 1799, 1620}

$$\frac{3}{7}d^2ex^7\left(a+b\sin^{-1}(cx)\right)+\frac{1}{5}d^3x^5\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}de^2x^9\left(a+b\sin^{-1}(cx)\right)+\frac{1}{11}e^3x^{11}\left(a+b\sin^{-1}(cx)\right)-\frac{be\left(1\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(d + e*x^2)^3*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*(231*c^6*d^3 + 495*c^4*d^2*e + 385*c^2*d*e^2 + 105*e^3)*Sqrt[1 - c^2*x^2
])/(1155*c^11) - (b*(462*c^6*d^3 + 1485*c^4*d^2*e + 1540*c^2*d*e^2 + 525*e^
3)*(1 - c^2*x^2)^(3/2))/(3465*c^11) + (b*(77*c^6*d^3 + 495*c^4*d^2*e + 770*
c^2*d*e^2 + 350*e^3)*(1 - c^2*x^2)^(5/2))/(1925*c^11) - (b*e*(99*c^4*d^2 +
308*c^2*d*e + 210*e^2)*(1 - c^2*x^2)^(7/2))/(1617*c^11) + (b*e^2*(11*c^2*d
+ 15*e)*(1 - c^2*x^2)^(9/2))/(297*c^11) - (b*e^3*(1 - c^2*x^2)^(11/2))/(121
*c^11) + (d^3*x^5*(a + b*ArcSin[c*x]))/5 + (3*d^2*e*x^7*(a + b*ArcSin[c*x])
)/7 + (d*e^2*x^9*(a + b*ArcSin[c*x]))/3 + (e^3*x^11*(a + b*ArcSin[c*x]))/11
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 1620

```
Int[(Px_)*((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol]
:> Int[ExpandIntegrand[Px*(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c
, d, m, n}, x] && PolyQ[Px, x] && (IntegersQ[m, n] || IGtQ[m, -2]) && GtQ[E
xpon[Px, x], 2]
```

Rule 1799

```
Int[(Pq_)*(x_)^(m_.)*((a_) + (b_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/2, Su
bst[Int[x^((m - 1)/2)*SubstFor[x^2, Pq, x]*(a + b*x)^p, x], x, x^2], x] /;
FreeQ[{a, b, p}, x] && PolyQ[Pq, x^2] && IntegerQ[(m - 1)/2]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_
)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist
[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*
x^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[c^2*d + e, 0] &
& IntegerQ[p] && (GtQ[p, 0] || (IGtQ[(m - 1)/2, 0] && LeQ[m + p, 0]))
```

Rubi steps

$$\int x^4 \left(d+ex^2\right)^3 \left(a+b\sin^{-1}(cx)\right) dx = \frac{1}{5}d^3x^5\left(a+b\sin^{-1}(cx)\right)+\frac{3}{7}d^2ex^7\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}de^2x^9\left(a+b\sin^{-1}\right.$$

$$= \frac{1}{5}d^3x^5\left(a+b\sin^{-1}(cx)\right)+\frac{3}{7}d^2ex^7\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}de^2x^9\left(a+b\sin^{-1}\right.$$

$$= \frac{1}{5}d^3x^5\left(a+b\sin^{-1}(cx)\right)+\frac{3}{7}d^2ex^7\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}de^2x^9\left(a+b\sin^{-1}\right.$$

$$= \frac{1}{5}d^3x^5\left(a+b\sin^{-1}(cx)\right)+\frac{3}{7}d^2ex^7\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}de^2x^9\left(a+b\sin^{-1}\right.$$

$$= \frac{b\left(231c^6d^3+495c^4d^2e+385c^2de^2+105e^3\right)\sqrt{1-c^2x^2}}{1155c^{11}} - \frac{b\left(462c^6d^3+14\right.}{}$$

Mathematica [A] time = 0.29, size = 271, normalized size = 0.79

$$\frac{3465ax^5\left(231d^3+495d^2ex^2+385de^2x^4+105e^3x^6\right)+\frac{b\sqrt{1-c^2x^2}\left(c^{10}x^4\left(160083d^3+245025d^2ex^2+148225de^2x^4+33075e^3x^6\right)+2c^8\left(10\right.\right.}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(d + e*x^2)^3*(a + b*ArcSin[c*x]),x]
```

```
[Out] (3465*a*x^5*(231*d^3 + 495*d^2*e*x^2 + 385*d*e^2*x^4 + 105*e^3*x^6) + (b*Sq
rt[1 - c^2*x^2]*(134400*e^3 + 4480*c^2*e^2*(121*d + 15*e*x^2) + 80*c^4*e*(9
801*d^2 + 3388*d*e*x^2 + 630*e^2*x^4) + 24*c^6*(17787*d^3 + 16335*d^2*e*x^2
 + 8470*d*e^2*x^4 + 1750*e^3*x^6) + c^10*x^4*(160083*d^3 + 245025*d^2*e*x^2
 + 148225*d*e^2*x^4 + 33075*e^3*x^6) + 2*c^8*(106722*d^3*x^2 + 147015*d^2*e
*x^4 + 84700*d*e^2*x^6 + 18375*e^3*x^8)))/c^11 + 3465*b*x^5*(231*d^3 + 495*
d^2*e*x^2 + 385*d*e^2*x^4 + 105*e^3*x^6)*ArcSin[c*x])/4002075
```

fricas [A] time = 0.69, size = 322, normalized size = 0.94

$$\frac{363825\,ac^{11}e^3x^{11}+1334025\,ac^{11}de^2x^9+1715175\,ac^{11}d^2ex^7+800415\,ac^{11}d^3x^5+3465\left(105\,bc^{11}e^3x^{11}+385\,bc^{11}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/4002075*(363825*a*c^11*e^3*x^11 + 1334025*a*c^11*d*e^2*x^9 + 1715175*a*c^
11*d^2*e*x^7 + 800415*a*c^11*d^3*x^5 + 3465*(105*b*c^11*e^3*x^11 + 385*b*c^
11*d*e^2*x^9 + 495*b*c^11*d^2*e*x^7 + 231*b*c^11*d^3*x^5)*arcsin(c*x) + (33
075*b*c^10*e^3*x^10 + 426888*b*c^6*d^3 + 1225*(121*b*c^10*d*e^2 + 30*b*c^8*
e^3)*x^8 + 784080*b*c^4*d^2*e + 25*(9801*b*c^10*d^2*e + 6776*b*c^8*d*e^2 +
```

```
1680*b*c^6*e^3)*x^6 + 542080*b*c^2*d*e^2 + 3*(53361*b*c^10*d^3 + 98010*b*c^
8*d^2*e + 67760*b*c^6*d*e^2 + 16800*b*c^4*e^3)*x^4 + 134400*b*e^3 + 4*(5336
1*b*c^8*d^3 + 98010*b*c^6*d^2*e + 67760*b*c^4*d*e^2 + 16800*b*c^2*e^3)*x^2)
*sqrt(-c^2*x^2 + 1))/c^11
```

giac [B] time = 0.43, size = 928, normalized size = 2.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/11*a*x^11*e^3 + 1/3*a*d*x^9*e^2 + 3/7*a*d^2*x^7*e + 1/5*a*d^3*x^5 + 1/5*(
c^2*x^2 - 1)^2*b*d^3*x*arcsin(c*x)/c^4 + 2/5*(c^2*x^2 - 1)*b*d^3*x*arcsin(c
*x)/c^4 + 3/7*(c^2*x^2 - 1)^3*b*d^2*x*arcsin(c*x)*e/c^6 + 1/5*b*d^3*x*arcsi
n(c*x)/c^4 + 9/7*(c^2*x^2 - 1)^2*b*d^2*x*arcsin(c*x)*e/c^6 + 1/25*(c^2*x^2
- 1)^2*sqrt(-c^2*x^2 + 1)*b*d^3/c^5 + 1/3*(c^2*x^2 - 1)^4*b*d*x*arcsin(c*x)
*e^2/c^8 + 9/7*(c^2*x^2 - 1)*b*d^2*x*arcsin(c*x)*e/c^6 - 2/15*(-c^2*x^2 + 1
)^(3/2)*b*d^3/c^5 + 3/49*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*b*d^2*e/c^7 + 4
/3*(c^2*x^2 - 1)^3*b*d*x*arcsin(c*x)*e^2/c^8 + 3/7*b*d^2*x*arcsin(c*x)*e/c^
6 + 1/5*sqrt(-c^2*x^2 + 1)*b*d^3/c^5 + 9/35*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 +
 1)*b*d^2*e/c^7 + 1/11*(c^2*x^2 - 1)^5*b*x*arcsin(c*x)*e^3/c^10 + 2*(c^2*x^
2 - 1)^2*b*d*x*arcsin(c*x)*e^2/c^8 + 1/27*(c^2*x^2 - 1)^4*sqrt(-c^2*x^2 + 1
)*b*d*e^2/c^9 - 3/7*(-c^2*x^2 + 1)^(3/2)*b*d^2*e/c^7 + 5/11*(c^2*x^2 - 1)^4
*b*x*arcsin(c*x)*e^3/c^10 + 4/3*(c^2*x^2 - 1)*b*d*x*arcsin(c*x)*e^2/c^8 + 4
/21*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*b*d*e^2/c^9 + 3/7*sqrt(-c^2*x^2 + 1)
*b*d^2*e/c^7 + 10/11*(c^2*x^2 - 1)^3*b*x*arcsin(c*x)*e^3/c^10 + 1/3*b*d*x*a
rcsin(c*x)*e^2/c^8 + 1/121*(c^2*x^2 - 1)^5*sqrt(-c^2*x^2 + 1)*b*e^3/c^11 +
2/5*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*d*e^2/c^9 + 10/11*(c^2*x^2 - 1)^2*
b*x*arcsin(c*x)*e^3/c^10 + 5/99*(c^2*x^2 - 1)^4*sqrt(-c^2*x^2 + 1)*b*e^3/c^
11 - 4/9*(-c^2*x^2 + 1)^(3/2)*b*d*e^2/c^9 + 5/11*(c^2*x^2 - 1)*b*x*arcsin(c
*x)*e^3/c^10 + 10/77*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*b*e^3/c^11 + 1/3*sq
rt(-c^2*x^2 + 1)*b*d*e^2/c^9 + 1/11*b*x*arcsin(c*x)*e^3/c^10 + 2/11*(c^2*x^
2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*e^3/c^11 - 5/33*(-c^2*x^2 + 1)^(3/2)*b*e^3/c^
11 + 1/11*sqrt(-c^2*x^2 + 1)*b*e^3/c^11
```

maple [A] time = 0.00, size = 497, normalized size = 1.46

$$\frac{a\left(\frac{1}{11}e^3c^{11}x^{11}+\frac{1}{3}c^{11}de^2x^9+\frac{3}{7}c^{11}d^2ex^7+\frac{1}{5}c^{11}x^5d^3\right)}{c^6}+\frac{b\left(\frac{\arcsin(cx)e^3c^{11}x^{11}}{11}+\frac{\arcsin(cx)c^{11}de^2x^9}{3}+\frac{3\arcsin(cx)c^{11}d^2ex^7}{7}+\frac{\arcsin(cx)c^{11}x^5d^3}{5}-\frac{e^3\left(-\frac{c^{10}x^{10}\sqrt{-c}}{11}\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(e*x^2+d)^3*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c^5*(a/c^6*(1/11*e^3*c^11*x^11+1/3*c^11*d*e^2*x^9+3/7*c^11*d^2*e*x^7+1/5*
c^11*x^5*d^3)+b/c^6*(1/11*arcsin(c*x)*e^3*c^11*x^11+1/3*arcsin(c*x)*c^11*d*
e^2*x^9+3/7*arcsin(c*x)*c^11*d^2*e*x^7+1/5*arcsin(c*x)*c^11*x^5*d^3-1/11*e^
3*(-1/11*c^10*x^10*(-c^2*x^2+1)^(1/2)-10/99*c^8*x^8*(-c^2*x^2+1)^(1/2)-80/6
93*c^6*x^6*(-c^2*x^2+1)^(1/2)-32/231*c^4*x^4*(-c^2*x^2+1)^(1/2)-128/693*c^2
*x^2*(-c^2*x^2+1)^(1/2)-256/693*(-c^2*x^2+1)^(1/2))-1/3*c^2*d*e^2*(-1/9*c^8
*x^8*(-c^2*x^2+1)^(1/2)-8/63*c^6*x^6*(-c^2*x^2+1)^(1/2)-16/105*c^4*x^4*(-c^
2*x^2+1)^(1/2)-64/315*c^2*x^2*(-c^2*x^2+1)^(1/2)-128/315*(-c^2*x^2+1)^(1/2)
)-3/7*c^4*d^2*e*(-1/7*c^6*x^6*(-c^2*x^2+1)^(1/2)-6/35*c^4*x^4*(-c^2*x^2+1)^
(1/2)-8/35*c^2*x^2*(-c^2*x^2+1)^(1/2)-16/35*(-c^2*x^2+1)^(1/2))-1/5*d^3*c^6
*(-1/5*c^4*x^4*(-c^2*x^2+1)^(1/2)-4/15*c^2*x^2*(-c^2*x^2+1)^(1/2)-8/15*(-c^
2*x^2+1)^(1/2))))
```

maxima [A] time = 0.75, size = 465, normalized size = 1.36

$$\frac{1}{11}ae^3x^{11}+\frac{1}{3}ade^2x^9+\frac{3}{7}ad^2ex^7+\frac{1}{5}ad^3x^5+\frac{1}{75}\left(15\,x^5\arcsin\left(cx\right)+\left(\frac{3\,\sqrt{-c^2x^2+1}\,x^4}{c^2}+\frac{4\,\sqrt{-c^2x^2+1}\,x^2}{c^4}+\frac{8\,\sqrt{-c^2x}}{c^6}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/11*a*e^3*x^11 + 1/3*a*d*e^2*x^9 + 3/7*a*d^2*e*x^7 + 1/5*a*d^3*x^5 + 1/75*
(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*
x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*b*d^3 + 3/245*(35*x^7*arcsin(c*x) +
(5*sqrt(-c^2*x^2 + 1)*x^6/c^2 + 6*sqrt(-c^2*x^2 + 1)*x^4/c^4 + 8*sqrt(-c^2*
x^2 + 1)*x^2/c^6 + 16*sqrt(-c^2*x^2 + 1)/c^8)*c)*b*d^2*e + 1/945*(315*x^9*a
rcsin(c*x) + (35*sqrt(-c^2*x^2 + 1)*x^8/c^2 + 40*sqrt(-c^2*x^2 + 1)*x^6/c^4
 + 48*sqrt(-c^2*x^2 + 1)*x^4/c^6 + 64*sqrt(-c^2*x^2 + 1)*x^2/c^8 + 128*sqrt
(-c^2*x^2 + 1)/c^10)*c)*b*d*e^2 + 1/7623*(693*x^11*arcsin(c*x) + (63*sqrt(-
c^2*x^2 + 1)*x^10/c^2 + 70*sqrt(-c^2*x^2 + 1)*x^8/c^4 + 80*sqrt(-c^2*x^2 +
1)*x^6/c^6 + 96*sqrt(-c^2*x^2 + 1)*x^4/c^8 + 128*sqrt(-c^2*x^2 + 1)*x^2/c^1
0 + 256*sqrt(-c^2*x^2 + 1)/c^12)*c)*b*e^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^4\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(e\,x^2+d\right)}^3 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a + b*asin(c*x))*(d + e*x^2)^3,x)
```

```
[Out] int(x^4*(a + b*asin(c*x))*(d + e*x^2)^3, x)
```

sympy [A] time = 38.57, size = 631, normalized size = 1.85

$$\begin{cases} \frac{ad^3x^5}{5}+\frac{3ad^2ex^7}{7}+\frac{ade^2x^9}{3}+\frac{ae^3x^{11}}{11}+\frac{bd^3x^5\,\mathrm{asin}\,(cx)}{5}+\frac{3bd^2ex^7\,\mathrm{asin}\,(cx)}{7}+\frac{bde^2x^9\,\mathrm{asin}\,(cx)}{3}+\frac{be^3x^{11}\,\mathrm{asin}\,(cx)}{11}+\frac{bd^3x^4\sqrt{-c^2x^2+1}}{25c}+\frac{3b}{} \\ a\left(\frac{d^3x^5}{5}+\frac{3d^2ex^7}{7}+\frac{de^2x^9}{3}+\frac{e^3x^{11}}{11}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(e*x**2+d)**3*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d**3*x**5/5 + 3*a*d**2*e*x**7/7 + a*d*e**2*x**9/3 + a*e**3*x**
11/11 + b*d**3*x**5*asin(c*x)/5 + 3*b*d**2*e*x**7*asin(c*x)/7 + b*d*e**2*x*
*9*asin(c*x)/3 + b*e**3*x**11*asin(c*x)/11 + b*d**3*x**4*sqrt(-c**2*x**2 +
1)/(25*c) + 3*b*d**2*e*x**6*sqrt(-c**2*x**2 + 1)/(49*c) + b*d*e**2*x**8*sqr
t(-c**2*x**2 + 1)/(27*c) + b*e**3*x**10*sqrt(-c**2*x**2 + 1)/(121*c) + 4*b*
d**3*x**2*sqrt(-c**2*x**2 + 1)/(75*c**3) + 18*b*d**2*e*x**4*sqrt(-c**2*x**2
 + 1)/(245*c**3) + 8*b*d*e**2*x**6*sqrt(-c**2*x**2 + 1)/(189*c**3) + 10*b*e
**3*x**8*sqrt(-c**2*x**2 + 1)/(1089*c**3) + 8*b*d**3*sqrt(-c**2*x**2 + 1)/(
75*c**5) + 24*b*d**2*e*x**2*sqrt(-c**2*x**2 + 1)/(245*c**5) + 16*b*d*e**2*x
**4*sqrt(-c**2*x**2 + 1)/(315*c**5) + 80*b*e**3*x**6*sqrt(-c**2*x**2 + 1)/(
7623*c**5) + 48*b*d**2*e*sqrt(-c**2*x**2 + 1)/(245*c**7) + 64*b*d*e**2*x**2
*sqrt(-c**2*x**2 + 1)/(945*c**7) + 32*b*e**3*x**4*sqrt(-c**2*x**2 + 1)/(254
1*c**7) + 128*b*d*e**2*sqrt(-c**2*x**2 + 1)/(945*c**9) + 128*b*e**3*x**2*sq
rt(-c**2*x**2 + 1)/(7623*c**9) + 256*b*e**3*sqrt(-c**2*x**2 + 1)/(7623*c**1
1), Ne(c, 0)), (a*(d**3*x**5/5 + 3*d**2*e*x**7/7 + d*e**2*x**9/3 + e**3*x**
11/11), True))
```

3.615 $\int x^3 \left(d+ex^2\right)^3 \left(a+b\sin^{-1}(cx)\right) dx$

Optimal. Leaf size=380

$$\frac{\left(d+ex^2\right)^5 \left(a+b\sin^{-1}(cx)\right)}{10e^2}-\frac{d\left(d+ex^2\right)^4 \left(a+b\sin^{-1}(cx)\right)}{8e^2}+\frac{bx\sqrt{1-c^2x^2}\left(d+ex^2\right)^4}{100ce}+\frac{bx\sqrt{1-c^2x^2}\left(11c^2d+1\right.}{1600c^3e}$$

```
[Out] 1/5120*b*(128*c^10*d^5-480*c^6*d^3*e^2-800*c^4*d^2*e^3-525*c^2*d*e^4-126*e^
5)*arcsin(c*x)/c^10/e^2-1/8*d*(e*x^2+d)^4*(a+b*arcsin(c*x))/e^2+1/10*(e*x^2
+d)^5*(a+b*arcsin(c*x))/e^2-1/76800*b*(1232*c^8*d^4-2536*c^6*d^3*e-7758*c^4
*d^2*e^2-6615*c^2*d*e^3-1890*e^4)*x*(-c^2*x^2+1)^(1/2)/c^9/e-1/38400*b*(136
*c^6*d^3-1096*c^4*d^2*e-1617*c^2*d*e^2-630*e^3)*x*(e*x^2+d)*(-c^2*x^2+1)^(1
/2)/c^7/e+1/9600*b*(26*c^4*d^2+201*c^2*d*e+126*e^2)*x*(e*x^2+d)^2*(-c^2*x^2
+1)^(1/2)/c^5/e+1/1600*b*(11*c^2*d+18*e)*x*(e*x^2+d)^3*(-c^2*x^2+1)^(1/2)/c
^3/e+1/100*b*x*(e*x^2+d)^4*(-c^2*x^2+1)^(1/2)/c/e
```

Rubi [A] time = 0.51, antiderivative size = 380, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$, Rules used = {266, 43, 4731, 12, 528, 388, 216}

$$\frac{\left(d+ex^2\right)^5 \left(a+b\sin^{-1}(cx)\right)}{10e^2}-\frac{d\left(d+ex^2\right)^4 \left(a+b\sin^{-1}(cx)\right)}{8e^2}+\frac{bx\sqrt{1-c^2x^2}\left(26c^4d^2+201c^2de+126e^2\right)\left(d+ex^2\right.}{9600c^5e}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(d + e*x^2)^3*(a + b*ArcSin[c*x]),x]
```

```
[Out] -(b*(1232*c^8*d^4 - 2536*c^6*d^3*e - 7758*c^4*d^2*e^2 - 6615*c^2*d*e^3 - 18
90*e^4)*x*Sqrt[1 - c^2*x^2])/(76800*c^9*e) - (b*(136*c^6*d^3 - 1096*c^4*d^2
*e - 1617*c^2*d*e^2 - 630*e^3)*x*Sqrt[1 - c^2*x^2]*(d + e*x^2))/(38400*c^7*
e) + (b*(26*c^4*d^2 + 201*c^2*d*e + 126*e^2)*x*Sqrt[1 - c^2*x^2]*(d + e*x^2
)^2)/(9600*c^5*e) + (b*(11*c^2*d + 18*e)*x*Sqrt[1 - c^2*x^2]*(d + e*x^2)^3)
/(1600*c^3*e) + (b*x*Sqrt[1 - c^2*x^2]*(d + e*x^2)^4)/(100*c*e) + (b*(128*c
^10*d^5 - 480*c^6*d^3*e^2 - 800*c^4*d^2*e^3 - 525*c^2*d*e^4 - 126*e^5)*ArcS
in[c*x])/(5120*c^10*e^2) - (d*(d + e*x^2)^4*(a + b*ArcSin[c*x]))/(8*e^2) +
((d + e*x^2)^5*(a + b*ArcSin[c*x]))/(10*e^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 388

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_)), x_Symbol] :> Si
mp[(d*x*(a + b*x^n)^(p + 1))/(b*(n*(p + 1) + 1)), x] - Dist[(a*d - b*c*(n*(
p + 1) + 1))/(b*(n*(p + 1) + 1)), Int[(a + b*x^n)^p, x], x] /; FreeQ[{a, b,
 c, d, n}, x] && NeQ[b*c - a*d, 0] && NeQ[n*(p + 1) + 1, 0]
```

Rule 528

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.)*((e_) + (
f_.)*(x_)^(n_)), x_Symbol] :> Simp[(f*x*(a + b*x^n)^(p + 1)*(c + d*x^n)^q)/
(b*(n*(p + q + 1) + 1)), x] + Dist[1/(b*(n*(p + q + 1) + 1)), Int[(a + b*x^
n)^p*(c + d*x^n)^(q - 1)*Simp[c*(b*e - a*f + b*e*n*(p + q + 1)) + (d*(b*e -
 a*f) + f*n*q*(b*c - a*d) + b*d*e*n*(p + q + 1))*x^n, x], x], x] /; FreeQ[{
a, b, c, d, e, f, n, p}, x] && GtQ[q, 0] && NeQ[n*(p + q + 1) + 1, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_
)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist
[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*
x^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[c^2*d + e, 0] &
& IntegerQ[p] && (GtQ[p, 0] || (IGtQ[(m - 1)/2, 0] && LeQ[m + p, 0]))
```

Rubi steps

$$\int x^3\left(d+ex^2\right)^3\left(a+b\sin^{-1}(cx)\right)dx=-\frac{d\left(d+ex^2\right)^4\left(a+b\sin^{-1}(cx)\right)}{8e^2}+\frac{\left(d+ex^2\right)^5\left(a+b\sin^{-1}(cx)\right)}{10e^2}-(bc)\int\frac{(\ldots}{\ldots}$$

$$=-\frac{d\left(d+ex^2\right)^4\left(a+b\sin^{-1}(cx)\right)}{8e^2}+\frac{\left(d+ex^2\right)^5\left(a+b\sin^{-1}(cx)\right)}{10e^2}-\frac{(bc)\int\frac{(d\ldots}{}}{\ldots}$$

$$=\frac{bx\sqrt{1-c^2x^2}\left(d+ex^2\right)^4}{100ce}-\frac{d\left(d+ex^2\right)^4\left(a+b\sin^{-1}(cx)\right)}{8e^2}+\frac{\left(d+ex^2\right)^5\left(a+\ldots\right.}{10\ldots}$$

$$=\frac{b\left(11c^2d+18e\right)x\sqrt{1-c^2x^2}\left(d+ex^2\right)^3}{1600c^3e}+\frac{bx\sqrt{1-c^2x^2}\left(d+ex^2\right)^4}{100ce}-\frac{d\left(d+\ldots\right.}{\ldots}$$

$$=\frac{b\left(26c^4d^2+201c^2de+126e^2\right)x\sqrt{1-c^2x^2}\left(d+ex^2\right)^2}{9600c^5e}+\frac{b\left(11c^2d+18e\right)x\sqrt{\ldots}}{160\ldots}$$

$$=-\frac{b\left(136c^6d^3-1096c^4d^2e-1617c^2de^2-630e^3\right)x\sqrt{1-c^2x^2}\left(d+ex^2\right)}{38400c^7e}+\frac{b\ldots}{\ldots}$$

$$=-\frac{b\left(1232c^8d^4-2536c^6d^3e-7758c^4d^2e^2-6615c^2de^3-1890e^4\right)x\sqrt{1-c^2x\ldots}}{76800c^9e}$$

$$=-\frac{b\left(1232c^8d^4-2536c^6d^3e-7758c^4d^2e^2-6615c^2de^3-1890e^4\right)x\sqrt{1-c^2x\ldots}}{76800c^9e}$$

Mathematica [A] time = 0.27, size = 276, normalized size = 0.73

$$\frac{cx\left(1920ac^9x^3\left(10d^3+20d^2ex^2+15de^2x^4+4e^3x^6\right)+b\sqrt{1-c^2x^2}\left(16c^8\left(300d^3x^2+400d^2ex^4+225de^2x^6+48e^3x\ldots\right.\right.\right.}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(d + e*x^2)^3*(a + b*ArcSin[c*x]),x]
```

```
[Out] (c*x*(1920*a*c^9*x^3*(10*d^3 + 20*d^2*e*x^2 + 15*d*e^2*x^4 + 4*e^3*x^6) + b
*Sqrt[1 - c^2*x^2]*(1890*e^3 + 315*c^2*e^2*(25*d + 4*e*x^2) + 6*c^4*e*(2000
*d^2 + 875*d*e*x^2 + 168*e^2*x^4) + 8*c^6*(900*d^3 + 1000*d^2*e*x^2 + 525*d
*e^2*x^4 + 108*e^3*x^6) + 16*c^8*(300*d^3*x^2 + 400*d^2*e*x^4 + 225*d*e^2*x
^6 + 48*e^3*x^8))) + 15*b*(-480*c^6*d^3 - 800*c^4*d^2*e - 525*c^2*d*e^2 - 1
26*e^3 + 128*c^10*x^4*(10*d^3 + 20*d^2*e*x^2 + 15*d*e^2*x^4 + 4*e^3*x^6))*A
rcSin[c*x])/(76800*c^10)
```

fricas [A] time = 0.57, size = 318, normalized size = 0.84

$$\frac{7680\,ac^{10}e^3x^{10} + 28800\,ac^{10}de^2x^8 + 38400\,ac^{10}d^2ex^6 + 19200\,ac^{10}d^3x^4 + 15\left(512\,bc^{10}e^3x^{10} + 1920\,bc^{10}de^2x^8 + \cdots\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/76800*(7680*a*c^10*e^3*x^10 + 28800*a*c^10*d*e^2*x^8 + 38400*a*c^10*d^2*e
*x^6 + 19200*a*c^10*d^3*x^4 + 15*(512*b*c^10*e^3*x^10 + 1920*b*c^10*d*e^2*x
^8 + 2560*b*c^10*d^2*e*x^6 + 1280*b*c^10*d^3*x^4 - 480*b*c^6*d^3 - 800*b*c^
4*d^2*e - 525*b*c^2*d*e^2 - 126*b*e^3)*arcsin(c*x) + (768*b*c^9*e^3*x^9 + 1
44*(25*b*c^9*d*e^2 + 6*b*c^7*e^3)*x^7 + 8*(800*b*c^9*d^2*e + 525*b*c^7*d*e^
2 + 126*b*c^5*e^3)*x^5 + 10*(480*b*c^9*d^3 + 800*b*c^7*d^2*e + 525*b*c^5*d*
e^2 + 126*b*c^3*e^3)*x^3 + 15*(480*b*c^7*d^3 + 800*b*c^5*d^2*e + 525*b*c^3*
d*e^2 + 126*b*c*e^3)*x)*sqrt(-c^2*x^2 + 1))/c^10
```

giac [B] time = 0.40, size = 793, normalized size = 2.09

$$\frac{1}{10}\,ax^{10}e^3 + \frac{3}{8}\,adx^8e^2 + \frac{1}{2}\,ad^2x^6e + \frac{1}{4}\,ad^3x^4 - \frac{\left(-c^2x^2+1\right)^{\frac{3}{2}}bd^3x}{16\,c^3} + \frac{\left(c^2x^2-1\right)^2bd^3\arcsin\left(cx\right)}{4\,c^4} + \frac{5\,\sqrt{-c^2x^2+1}\,bd^3x}{32\,c^3} + \cdots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/10*a*x^10*e^3 + 3/8*a*d*x^8*e^2 + 1/2*a*d^2*x^6*e + 1/4*a*d^3*x^4 - 1/16*
(-c^2*x^2 + 1)^(3/2)*b*d^3*x/c^3 + 1/4*(c^2*x^2 - 1)^2*b*d^3*arcsin(c*x)/c^
4 + 5/32*sqrt(-c^2*x^2 + 1)*b*d^3*x/c^3 + 1/12*(c^2*x^2 - 1)^2*sqrt(-c^2*x^
2 + 1)*b*d^2*x*e/c^5 + 1/2*(c^2*x^2 - 1)*b*d^3*arcsin(c*x)/c^4 + 1/2*(c^2*x
^2 - 1)^3*b*d^2*arcsin(c*x)*e/c^6 - 13/48*(-c^2*x^2 + 1)^(3/2)*b*d^2*x*e/c^
5 + 5/32*b*d^3*arcsin(c*x)/c^4 + 3/2*(c^2*x^2 - 1)^2*b*d^2*arcsin(c*x)*e/c^
6 + 3/64*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*b*d*x*e^2/c^7 + 11/32*sqrt(-c^2
*x^2 + 1)*b*d^2*x*e/c^5 + 3/8*(c^2*x^2 - 1)^4*b*d*arcsin(c*x)*e^2/c^8 + 3/2
*(c^2*x^2 - 1)*b*d^2*arcsin(c*x)*e/c^6 + 25/128*(c^2*x^2 - 1)^2*sqrt(-c^2*x
^2 + 1)*b*d*x*e^2/c^7 + 3/2*(c^2*x^2 - 1)^3*b*d*arcsin(c*x)*e^2/c^8 + 11/32
*b*d^2*arcsin(c*x)*e/c^6 + 1/100*(c^2*x^2 - 1)^4*sqrt(-c^2*x^2 + 1)*b*x*e^3
/c^9 - 163/512*(-c^2*x^2 + 1)^(3/2)*b*d*x*e^2/c^7 + 1/10*(c^2*x^2 - 1)^5*b*
arcsin(c*x)*e^3/c^10 + 9/4*(c^2*x^2 - 1)^2*b*d*arcsin(c*x)*e^2/c^8 + 41/800
*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*b*x*e^3/c^9 + 279/1024*sqrt(-c^2*x^2 +
1)*b*d*x*e^2/c^7 + 1/2*(c^2*x^2 - 1)^4*b*arcsin(c*x)*e^3/c^10 + 3/2*(c^2*x^
2 - 1)*b*d*arcsin(c*x)*e^2/c^8 + 171/1600*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1
)*b*x*e^3/c^9 + (c^2*x^2 - 1)^3*b*arcsin(c*x)*e^3/c^10 + 279/1024*b*d*arcsi
n(c*x)*e^2/c^8 - 149/1280*(-c^2*x^2 + 1)^(3/2)*b*x*e^3/c^9 + (c^2*x^2 - 1)^
2*b*arcsin(c*x)*e^3/c^10 + 193/2560*sqrt(-c^2*x^2 + 1)*b*x*e^3/c^9 + 1/2*(c
^2*x^2 - 1)*b*arcsin(c*x)*e^3/c^10 + 193/2560*b*arcsin(c*x)*e^3/c^10
```

maple [A] time = 0.01, size = 449, normalized size = 1.18

$$\frac{a\left(\frac{1}{10}e^3c^{10}x^{10}+\frac{3}{8}c^{10}d\,e^2x^8+\frac{1}{2}c^{10}d^2e\,x^6+\frac{1}{4}x^4c^{10}d^3\right)}{c^6}+\frac{b\left(\frac{\arcsin(cx)e^3c^{10}x^{10}}{10}+\frac{3\arcsin(cx)c^{10}d\,e^2x^8}{8}+\frac{\arcsin(cx)c^{10}d^2e\,x^6}{2}+\frac{\arcsin(cx)c^{10}x^4d^3}{4}-\frac{e^3\left(-\frac{c^9x^9\sqrt{-c^2x^2+1}}{10}\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(e*x^2+d)^3*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c^4*(a/c^6*(1/10*e^3*c^10*x^10+3/8*c^10*d*e^2*x^8+1/2*c^10*d^2*e*x^6+1/4*
x^4*c^10*d^3)+b/c^6*(1/10*arcsin(c*x)*e^3*c^10*x^10+3/8*arcsin(c*x)*c^10*d*
e^2*x^8+1/2*arcsin(c*x)*c^10*d^2*e*x^6+1/4*arcsin(c*x)*c^10*x^4*d^3-1/10*e^
3*(-1/10*c^9*x^9*(-c^2*x^2+1)^(1/2)-9/80*c^7*x^7*(-c^2*x^2+1)^(1/2)-21/160*
c^5*x^5*(-c^2*x^2+1)^(1/2)-21/128*c^3*x^3*(-c^2*x^2+1)^(1/2)-63/256*c*x*(-c
^2*x^2+1)^(1/2)+63/256*arcsin(c*x))-3/8*c^2*d*e^2*(-1/8*c^7*x^7*(-c^2*x^2+1
)^(1/2)-7/48*c^5*x^5*(-c^2*x^2+1)^(1/2)-35/192*c^3*x^3*(-c^2*x^2+1)^(1/2)-3
5/128*c*x*(-c^2*x^2+1)^(1/2)+35/128*arcsin(c*x))-1/2*c^4*d^2*e*(-1/6*c^5*x^
5*(-c^2*x^2+1)^(1/2)-5/24*c^3*x^3*(-c^2*x^2+1)^(1/2)-5/16*c*x*(-c^2*x^2+1)^
(1/2)+5/16*arcsin(c*x))-1/4*d^3*c^6*(-1/4*c^3*x^3*(-c^2*x^2+1)^(1/2)-3/8*c*
x*(-c^2*x^2+1)^(1/2)+3/8*arcsin(c*x))))
```

maxima [A] time = 1.14, size = 425, normalized size = 1.12

$$\frac{1}{10}\,ae^3x^{10}+\frac{3}{8}\,ade^2x^8+\frac{1}{2}\,ad^2ex^6+\frac{1}{4}\,ad^3x^4+\frac{1}{32}\left(8\,x^4\arcsin\left(cx\right)+\left(\frac{2\,\sqrt{-c^2x^2+1}\,x^3}{c^2}+\frac{3\,\sqrt{-c^2x^2+1}\,x}{c^4}-\frac{3\,\arcsin\left(\right.}{c^5}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/10*a*e^3*x^10 + 3/8*a*d*e^2*x^8 + 1/2*a*d^2*e*x^6 + 1/4*a*d^3*x^4 + 1/32*
(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 + 1)*x
/c^4 - 3*arcsin(c*x)/c^5)*c)*b*d^3 + 1/96*(48*x^6*arcsin(c*x) + (8*sqrt(-c^
2*x^2 + 1)*x^5/c^2 + 10*sqrt(-c^2*x^2 + 1)*x^3/c^4 + 15*sqrt(-c^2*x^2 + 1)*
x/c^6 - 15*arcsin(c*x)/c^7)*c)*b*d^2*e + 1/1024*(384*x^8*arcsin(c*x) + (48*
sqrt(-c^2*x^2 + 1)*x^7/c^2 + 56*sqrt(-c^2*x^2 + 1)*x^5/c^4 + 70*sqrt(-c^2*x
^2 + 1)*x^3/c^6 + 105*sqrt(-c^2*x^2 + 1)*x/c^8 - 105*arcsin(c*x)/c^9)*c)*b*
d*e^2 + 1/12800*(1280*x^10*arcsin(c*x) + (128*sqrt(-c^2*x^2 + 1)*x^9/c^2 +
144*sqrt(-c^2*x^2 + 1)*x^7/c^4 + 168*sqrt(-c^2*x^2 + 1)*x^5/c^6 + 210*sqrt(
-c^2*x^2 + 1)*x^3/c^8 + 315*sqrt(-c^2*x^2 + 1)*x/c^10 - 315*arcsin(c*x)/c^1
1)*c)*b*e^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^3\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(e\,x^2+d\right)}^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + b*asin(c*x))*(d + e*x^2)^3,x)
```

```
[Out] int(x^3*(a + b*asin(c*x))*(d + e*x^2)^3, x)
```

sympy [A] time = 27.78, size = 597, normalized size = 1.57

$$\begin{cases}\frac{ad^3x^4}{4}+\frac{ad^2ex^6}{2}+\frac{3ade^2x^8}{8}+\frac{ae^3x^{10}}{10}+\frac{bd^3x^4\,\mathrm{asin}\,(cx)}{4}+\frac{bd^2ex^6\,\mathrm{asin}\,(cx)}{2}+\frac{3bde^2x^8\,\mathrm{asin}\,(cx)}{8}+\frac{be^3x^{10}\,\mathrm{asin}\,(cx)}{10}+\frac{bd^3x^3\sqrt{-c^2x^2+1}}{16c}+\frac{bd}{} \\ a\left(\frac{d^3x^4}{4}+\frac{d^2ex^6}{2}+\frac{3de^2x^8}{8}+\frac{e^3x^{10}}{10}\right)\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(e*x**2+d)**3*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d**3*x**4/4 + a*d**2*e*x**6/2 + 3*a*d*e**2*x**8/8 + a*e**3*x**
10/10 + b*d**3*x**4*asin(c*x)/4 + b*d**2*e*x**6*asin(c*x)/2 + 3*b*d*e**2*x*
*8*asin(c*x)/8 + b*e**3*x**10*asin(c*x)/10 + b*d**3*x**3*sqrt(-c**2*x**2 +
1)/(16*c) + b*d**2*e*x**5*sqrt(-c**2*x**2 + 1)/(12*c) + 3*b*d*e**2*x**7*sqr
t(-c**2*x**2 + 1)/(64*c) + b*e**3*x**9*sqrt(-c**2*x**2 + 1)/(100*c) + 3*b*d
**3*x*sqrt(-c**2*x**2 + 1)/(32*c**3) + 5*b*d**2*e*x**3*sqrt(-c**2*x**2 + 1)
/(48*c**3) + 7*b*d*e**2*x**5*sqrt(-c**2*x**2 + 1)/(128*c**3) + 9*b*e**3*x**
7*sqrt(-c**2*x**2 + 1)/(800*c**3) - 3*b*d**3*asin(c*x)/(32*c**4) + 5*b*d**2
*e*x*sqrt(-c**2*x**2 + 1)/(32*c**5) + 35*b*d*e**2*x**3*sqrt(-c**2*x**2 + 1)
/(512*c**5) + 21*b*e**3*x**5*sqrt(-c**2*x**2 + 1)/(1600*c**5) - 5*b*d**2*e*
asin(c*x)/(32*c**6) + 105*b*d*e**2*x*sqrt(-c**2*x**2 + 1)/(1024*c**7) + 21*
b*e**3*x**3*sqrt(-c**2*x**2 + 1)/(1280*c**7) - 105*b*d*e**2*asin(c*x)/(1024
*c**8) + 63*b*e**3*x*sqrt(-c**2*x**2 + 1)/(2560*c**9) - 63*b*e**3*asin(c*x)
/(2560*c**10), Ne(c, 0)), (a*(d**3*x**4/4 + d**2*e*x**6/2 + 3*d*e**2*x**8/8
 + e**3*x**10/10), True))
```

3.616 $\int x^2 \left(d+ex^2\right)^3 \left(a+b\sin^{-1}(cx)\right) dx$

Optimal. Leaf size=287

$$\frac{1}{3}d^3x^3\left(a+b\sin^{-1}(cx)\right)+\frac{3}{5}d^2ex^5\left(a+b\sin^{-1}(cx)\right)+\frac{3}{7}de^2x^7\left(a+b\sin^{-1}(cx)\right)+\frac{1}{9}e^3x^9\left(a+b\sin^{-1}(cx)\right)-\frac{be^2\left(1-c^2\right.}{}$$

```
[Out] -1/945*b*(105*c^6*d^3+378*c^4*d^2*e+405*c^2*d*e^2+140*e^3)*(-c^2*x^2+1)^(3/
2)/c^9+1/525*b*e*(63*c^4*d^2+135*c^2*d*e+70*e^2)*(-c^2*x^2+1)^(5/2)/c^9-1/4
41*b*e^2*(27*c^2*d+28*e)*(-c^2*x^2+1)^(7/2)/c^9+1/81*b*e^3*(-c^2*x^2+1)^(9/
2)/c^9+1/3*d^3*x^3*(a+b*arcsin(c*x))+3/5*d^2*e*x^5*(a+b*arcsin(c*x))+3/7*d*
e^2*x^7*(a+b*arcsin(c*x))+1/9*e^3*x^9*(a+b*arcsin(c*x))+1/315*b*(105*c^6*d^
3+189*c^4*d^2*e+135*c^2*d*e^2+35*e^3)*(-c^2*x^2+1)^(1/2)/c^9
```

Rubi [A] time = 0.37, antiderivative size = 287, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {270, 4731, 12, 1799, 1620}

$$\frac{3}{5}d^2ex^5\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}d^3x^3\left(a+b\sin^{-1}(cx)\right)+\frac{3}{7}de^2x^7\left(a+b\sin^{-1}(cx)\right)+\frac{1}{9}e^3x^9\left(a+b\sin^{-1}(cx)\right)+\frac{be\left(1-c^2x\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(d + e*x^2)^3*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*(105*c^6*d^3 + 189*c^4*d^2*e + 135*c^2*d*e^2 + 35*e^3)*Sqrt[1 - c^2*x^2]
)/(315*c^9) - (b*(105*c^6*d^3 + 378*c^4*d^2*e + 405*c^2*d*e^2 + 140*e^3)*(1
 - c^2*x^2)^(3/2))/(945*c^9) + (b*e*(63*c^4*d^2 + 135*c^2*d*e + 70*e^2)*(1
- c^2*x^2)^(5/2))/(525*c^9) - (b*e^2*(27*c^2*d + 28*e)*(1 - c^2*x^2)^(7/2))
/(441*c^9) + (b*e^3*(1 - c^2*x^2)^(9/2))/(81*c^9) + (d^3*x^3*(a + b*ArcSin[
c*x]))/3 + (3*d^2*e*x^5*(a + b*ArcSin[c*x]))/5 + (3*d*e^2*x^7*(a + b*ArcSin
[c*x]))/7 + (e^3*x^9*(a + b*ArcSin[c*x]))/9
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 1620

```
Int[(Px_)*((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol]
:> Int[ExpandIntegrand[Px*(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c
, d, m, n}, x] && PolyQ[Px, x] && (IntegersQ[m, n] || IGtQ[m, -2]) && GtQ[E
xpon[Px, x], 2]
```

Rule 1799

```
Int[(Pq_)*(x_)^(m_.)*((a_) + (b_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/2, Su
bst[Int[x^((m - 1)/2)*SubstFor[x^2, Pq, x]*(a + b*x)^p, x], x, x^2], x] /;
FreeQ[{a, b, p}, x] && PolyQ[Pq, x^2] && IntegerQ[(m - 1)/2]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_
)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist
[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*
x^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[c^2*d + e, 0] &
& IntegerQ[p] && (GtQ[p, 0] || (IGtQ[(m - 1)/2, 0] && LeQ[m + p, 0]))
```

Rubi steps

$$\int x^2\left(d+ex^2\right)^3\left(a+b\sin^{-1}(cx)\right)dx=\frac{1}{3}d^3x^3\left(a+b\sin^{-1}(cx)\right)+\frac{3}{5}d^2ex^5\left(a+b\sin^{-1}(cx)\right)+\frac{3}{7}de^2x^7\left(a+b\sin$$

$$=\frac{1}{3}d^3x^3\left(a+b\sin^{-1}(cx)\right)+\frac{3}{5}d^2ex^5\left(a+b\sin^{-1}(cx)\right)+\frac{3}{7}de^2x^7\left(a+b\sin$$

$$=\frac{1}{3}d^3x^3\left(a+b\sin^{-1}(cx)\right)+\frac{3}{5}d^2ex^5\left(a+b\sin^{-1}(cx)\right)+\frac{3}{7}de^2x^7\left(a+b\sin$$

$$=\frac{1}{3}d^3x^3\left(a+b\sin^{-1}(cx)\right)+\frac{3}{5}d^2ex^5\left(a+b\sin^{-1}(cx)\right)+\frac{3}{7}de^2x^7\left(a+b\sin$$

$$=\frac{b\left(105c^6d^3+189c^4d^2e+135c^2de^2+35e^3\right)\sqrt{1-c^2x^2}}{315c^9}-\frac{b\left(105c^6d^3+3\right.}{}$$

Mathematica [A] time = 0.26, size = 231, normalized size = 0.80

$$\frac{315ax^3\left(105d^3+189d^2ex^2+135de^2x^4+35e^3x^6\right)+\frac{b\sqrt{1-c^2x^2}\left(c^8\left(11025d^3x^2+11907d^2ex^4+6075de^2x^6+1225e^3x^8\right)+2c^6\left(11025d^3\right.\right.}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(d + e*x^2)^3*(a + b*ArcSin[c*x]),x]
```

```
[Out] (315*a*x^3*(105*d^3 + 189*d^2*e*x^2 + 135*d*e^2*x^4 + 35*e^3*x^6) + (b*Sqrt
[1 - c^2*x^2]*(4480*e^3 + 80*c^2*e^2*(243*d + 28*e*x^2) + 24*c^4*e*(1323*d^
2 + 405*d*e*x^2 + 70*e^2*x^4) + 2*c^6*(11025*d^3 + 7938*d^2*e*x^2 + 3645*d*
e^2*x^4 + 700*e^3*x^6) + c^8*(11025*d^3*x^2 + 11907*d^2*e*x^4 + 6075*d*e^2*
x^6 + 1225*e^3*x^8)))/c^9 + 315*b*x^3*(105*d^3 + 189*d^2*e*x^2 + 135*d*e^2*
x^4 + 35*e^3*x^6)*ArcSin[c*x])/99225
```

fricas [A] time = 0.42, size = 277, normalized size = 0.97

$$\frac{11025\,ac^9e^3x^9+42525\,ac^9de^2x^7+59535\,ac^9d^2ex^5+33075\,ac^9d^3x^3+315\left(35\,bc^9e^3x^9+135\,bc^9de^2x^7+189\,bc\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/99225*(11025*a*c^9*e^3*x^9 + 42525*a*c^9*d*e^2*x^7 + 59535*a*c^9*d^2*e*x^
5 + 33075*a*c^9*d^3*x^3 + 315*(35*b*c^9*e^3*x^9 + 135*b*c^9*d*e^2*x^7 + 189
*b*c^9*d^2*e*x^5 + 105*b*c^9*d^3*x^3)*arcsin(c*x) + (1225*b*c^8*e^3*x^8 + 2
2050*b*c^6*d^3 + 31752*b*c^4*d^2*e + 25*(243*b*c^8*d*e^2 + 56*b*c^6*e^3)*x^
6 + 19440*b*c^2*d*e^2 + 3*(3969*b*c^8*d^2*e + 2430*b*c^6*d*e^2 + 560*b*c^4*
e^3)*x^4 + 4480*b*e^3 + (11025*b*c^8*d^3 + 15876*b*c^6*d^2*e + 9720*b*c^4*d
*e^2 + 2240*b*c^2*e^3)*x^2)*sqrt(-c^2*x^2 + 1))/c^9
```

giac [B] time = 0.47, size = 698, normalized size = 2.43

$$\frac{1}{9}ax^9e^3+\frac{3}{7}adx^7e^2+\frac{3}{5}ad^2x^5e+\frac{1}{3}ad^3x^3+\frac{(c^2x^2-1)bd^3x\arcsin(cx)}{3c^2}+\frac{bd^3x\arcsin(cx)}{3c^2}+\frac{3(c^2x^2-1)^2bd^2x\arcsin(c$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/9*a*x^9*e^3 + 3/7*a*d*x^7*e^2 + 3/5*a*d^2*x^5*e + 1/3*a*d^3*x^3 + 1/3*(c^
2*x^2 - 1)*b*d^3*x*arcsin(c*x)/c^2 + 1/3*b*d^3*x*arcsin(c*x)/c^2 + 3/5*(c^2
*x^2 - 1)^2*b*d^2*x*arcsin(c*x)*e/c^4 + 6/5*(c^2*x^2 - 1)*b*d^2*x*arcsin(c*
x)*e/c^4 - 1/9*(-c^2*x^2 + 1)^(3/2)*b*d^3/c^3 + 3/7*(c^2*x^2 - 1)^3*b*d*x*a
rcsin(c*x)*e^2/c^6 + 3/5*b*d^2*x*arcsin(c*x)*e/c^4 + 1/3*sqrt(-c^2*x^2 + 1)
*b*d^3/c^3 + 3/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*d^2*e/c^5 + 9/7*(c^2
*x^2 - 1)^2*b*d*x*arcsin(c*x)*e^2/c^6 - 2/5*(-c^2*x^2 + 1)^(3/2)*b*d^2*e/c^
5 + 1/9*(c^2*x^2 - 1)^4*b*x*arcsin(c*x)*e^3/c^8 + 9/7*(c^2*x^2 - 1)*b*d*x*a
rcsin(c*x)*e^2/c^6 + 3/49*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*b*d*e^2/c^7 +
3/5*sqrt(-c^2*x^2 + 1)*b*d^2*e/c^5 + 4/9*(c^2*x^2 - 1)^3*b*x*arcsin(c*x)*e^
3/c^8 + 3/7*b*d*x*arcsin(c*x)*e^2/c^6 + 9/35*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2
+ 1)*b*d*e^2/c^7 + 2/3*(c^2*x^2 - 1)^2*b*x*arcsin(c*x)*e^3/c^8 + 1/81*(c^2*
x^2 - 1)^4*sqrt(-c^2*x^2 + 1)*b*e^3/c^9 - 3/7*(-c^2*x^2 + 1)^(3/2)*b*d*e^2/
c^7 + 4/9*(c^2*x^2 - 1)*b*x*arcsin(c*x)*e^3/c^8 + 4/63*(c^2*x^2 - 1)^3*sqrt
(-c^2*x^2 + 1)*b*e^3/c^9 + 3/7*sqrt(-c^2*x^2 + 1)*b*d*e^2/c^7 + 1/9*b*x*arc
sin(c*x)*e^3/c^8 + 2/15*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*e^3/c^9 - 4/27
*(-c^2*x^2 + 1)^(3/2)*b*e^3/c^9 + 1/9*sqrt(-c^2*x^2 + 1)*b*e^3/c^9
```

maple [A] time = 0.00, size = 417, normalized size = 1.45

$$\frac{\frac{a\left(\frac{1}{9}e^3c^9x^9+\frac{3}{7}c^9de^2x^7+\frac{3}{5}c^9d^2ex^5+\frac{1}{3}c^9x^3d^3\right)}{c^6}+\frac{b\left(\frac{\arcsin(cx)e^3c^9x^9}{9}+\frac{3\arcsin(cx)c^9de^2x^7}{7}+\frac{3\arcsin(cx)c^9d^2ex^5}{5}+\frac{\arcsin(cx)c^9x^3d^3}{3}-\frac{e^3\left(-\frac{c^8x^8\sqrt{-c^2x^2+1}}{9}-\frac{8c^6x^6\sqrt{-}}{63}\right.}{}\right.}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(e*x^2+d)^3*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c^3*(a/c^6*(1/9*e^3*c^9*x^9+3/7*c^9*d*e^2*x^7+3/5*c^9*d^2*e*x^5+1/3*c^9*x
^3*d^3)+b/c^6*(1/9*arcsin(c*x)*e^3*c^9*x^9+3/7*arcsin(c*x)*c^9*d*e^2*x^7+3/
5*arcsin(c*x)*c^9*d^2*e*x^5+1/3*arcsin(c*x)*c^9*x^3*d^3-1/9*e^3*(-1/9*c^8*x
^8*(-c^2*x^2+1)^(1/2)-8/63*c^6*x^6*(-c^2*x^2+1)^(1/2)-16/105*c^4*x^4*(-c^2*
x^2+1)^(1/2)-64/315*c^2*x^2*(-c^2*x^2+1)^(1/2)-128/315*(-c^2*x^2+1)^(1/2))-
3/7*c^2*d*e^2*(-1/7*c^6*x^6*(-c^2*x^2+1)^(1/2)-6/35*c^4*x^4*(-c^2*x^2+1)^(1
/2)-8/35*c^2*x^2*(-c^2*x^2+1)^(1/2)-16/35*(-c^2*x^2+1)^(1/2))-3/5*c^4*d^2*e
*(-1/5*c^4*x^4*(-c^2*x^2+1)^(1/2)-4/15*c^2*x^2*(-c^2*x^2+1)^(1/2)-8/15*(-c^
2*x^2+1)^(1/2))-1/3*d^3*c^6*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-c^2*x^2+
1)^(1/2))))
```

maxima [A] time = 0.56, size = 384, normalized size = 1.34

$$\frac{1}{9}ae^3x^9+\frac{3}{7}ade^2x^7+\frac{3}{5}ad^2ex^5+\frac{1}{3}ad^3x^3+\frac{1}{9}\left(3x^3\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2}+\frac{2\sqrt{-c^2x^2+1}}{c^4}\right)\right)bd^3+\frac{1}{25}\left(15x^5a\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/9*a*e^3*x^9 + 3/7*a*d*e^2*x^7 + 3/5*a*d^2*e*x^5 + 1/3*a*d^3*x^3 + 1/9*(3*
x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4)
```

```
)*b*d^3 + 1/25*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt
(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*b*d^2*e + 3/245*(35*x
^7*arcsin(c*x) + (5*sqrt(-c^2*x^2 + 1)*x^6/c^2 + 6*sqrt(-c^2*x^2 + 1)*x^4/c
^4 + 8*sqrt(-c^2*x^2 + 1)*x^2/c^6 + 16*sqrt(-c^2*x^2 + 1)/c^8)*c)*b*d*e^2 +
 1/2835*(315*x^9*arcsin(c*x) + (35*sqrt(-c^2*x^2 + 1)*x^8/c^2 + 40*sqrt(-c^
2*x^2 + 1)*x^6/c^4 + 48*sqrt(-c^2*x^2 + 1)*x^4/c^6 + 64*sqrt(-c^2*x^2 + 1)*
x^2/c^8 + 128*sqrt(-c^2*x^2 + 1)/c^10)*c)*b*e^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(e\,x^2+d\right)}^3 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + b*asin(c*x))*(d + e*x^2)^3,x)
```

```
[Out] int(x^2*(a + b*asin(c*x))*(d + e*x^2)^3, x)
```

sympy [A] time = 16.49, size = 525, normalized size = 1.83

$$\begin{cases} \frac{ad^3x^3}{3} + \frac{3ad^2ex^5}{5} + \frac{3ade^2x^7}{7} + \frac{ae^3x^9}{9} + \frac{bd^3x^3\,\mathrm{asin}\,(cx)}{3} + \frac{3bd^2ex^5\,\mathrm{asin}\,(cx)}{5} + \frac{3bde^2x^7\,\mathrm{asin}\,(cx)}{7} + \frac{be^3x^9\,\mathrm{asin}\,(cx)}{9} + \frac{bd^3x^2\sqrt{-c^2x^2+1}}{9c} + \\ a\left(\frac{d^3x^3}{3} + \frac{3d^2ex^5}{5} + \frac{3de^2x^7}{7} + \frac{e^3x^9}{9}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(e*x**2+d)**3*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d**3*x**3/3 + 3*a*d**2*e*x**5/5 + 3*a*d*e**2*x**7/7 + a*e**3*x
**9/9 + b*d**3*x**3*asin(c*x)/3 + 3*b*d**2*e*x**5*asin(c*x)/5 + 3*b*d*e**2*
x**7*asin(c*x)/7 + b*e**3*x**9*asin(c*x)/9 + b*d**3*x**2*sqrt(-c**2*x**2 +
1)/(9*c) + 3*b*d**2*e*x**4*sqrt(-c**2*x**2 + 1)/(25*c) + 3*b*d*e**2*x**6*sq
rt(-c**2*x**2 + 1)/(49*c) + b*e**3*x**8*sqrt(-c**2*x**2 + 1)/(81*c) + 2*b*d
**3*sqrt(-c**2*x**2 + 1)/(9*c**3) + 4*b*d**2*e*x**2*sqrt(-c**2*x**2 + 1)/(2
5*c**3) + 18*b*d*e**2*x**4*sqrt(-c**2*x**2 + 1)/(245*c**3) + 8*b*e**3*x**6*
sqrt(-c**2*x**2 + 1)/(567*c**3) + 8*b*d**2*e*sqrt(-c**2*x**2 + 1)/(25*c**5)
 + 24*b*d*e**2*x**2*sqrt(-c**2*x**2 + 1)/(245*c**5) + 16*b*e**3*x**4*sqrt(-
c**2*x**2 + 1)/(945*c**5) + 48*b*d*e**2*sqrt(-c**2*x**2 + 1)/(245*c**7) + 6
4*b*e**3*x**2*sqrt(-c**2*x**2 + 1)/(2835*c**7) + 128*b*e**3*sqrt(-c**2*x**2
 + 1)/(2835*c**9), Ne(c, 0)), (a*(d**3*x**3/3 + 3*d**2*e*x**5/5 + 3*d*e**2*
x**7/7 + e**3*x**9/9), True))
```

3.617 $\int x \left(d+ex^2\right)^3 \left(a+b\sin^{-1}(cx)\right) \, dx$

Optimal. Leaf size=258

$$\frac{\left(d+ex^2\right)^4 \left(a+b\sin^{-1}(cx)\right)}{8e}+\frac{bx\sqrt{1-c^2x^2}\left(d+ex^2\right)^3}{64c}+\frac{7bx\sqrt{1-c^2x^2}\left(2c^2d+e\right)\left(d+ex^2\right)^2}{384c^3}+\frac{5bx\sqrt{1-c^2x^2}\left(2c^2d\right.}{}$$

```
[Out] -1/1024*b*(128*c^8*d^4+256*c^6*d^3*e+288*c^4*d^2*e^2+160*c^2*d*e^3+35*e^4)*
arcsin(c*x)/c^8/e+1/8*(e*x^2+d)^4*(a+b*arcsin(c*x))/e+5/3072*b*(2*c^2*d+e)*
(40*c^4*d^2+40*c^2*d*e+21*e^2)*x*(-c^2*x^2+1)^(1/2)/c^7+1/1536*b*(104*c^4*d
^2+104*c^2*d*e+35*e^2)*x*(e*x^2+d)*(-c^2*x^2+1)^(1/2)/c^5+7/384*b*(2*c^2*d+
e)*x*(e*x^2+d)^2*(-c^2*x^2+1)^(1/2)/c^3+1/64*b*x*(e*x^2+d)^3*(-c^2*x^2+1)^(
1/2)/c
```

Rubi [A] time = 0.27, antiderivative size = 258, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {4729, 416, 528, 388, 216}

$$\frac{\left(d+ex^2\right)^4 \left(a+b\sin^{-1}(cx)\right)}{8e}+\frac{bx\sqrt{1-c^2x^2}\left(104c^4d^2+104c^2de+35e^2\right)\left(d+ex^2\right)}{1536c^5}+\frac{5bx\sqrt{1-c^2x^2}\left(2c^2d+e\right)\left(40c^4\right.}{3072c^7}$$

Antiderivative was successfully verified.

```
[In] Int[x*(d + e*x^2)^3*(a + b*ArcSin[c*x]),x]
```

```
[Out] (5*b*(2*c^2*d + e)*(40*c^4*d^2 + 40*c^2*d*e + 21*e^2)*x*Sqrt[1 - c^2*x^2])/
(3072*c^7) + (b*(104*c^4*d^2 + 104*c^2*d*e + 35*e^2)*x*Sqrt[1 - c^2*x^2]*(d
 + e*x^2))/(1536*c^5) + (7*b*(2*c^2*d + e)*x*Sqrt[1 - c^2*x^2]*(d + e*x^2)^
2)/(384*c^3) + (b*x*Sqrt[1 - c^2*x^2]*(d + e*x^2)^3)/(64*c) - (b*(128*c^8*d
^4 + 256*c^6*d^3*e + 288*c^4*d^2*e^2 + 160*c^2*d*e^3 + 35*e^4)*ArcSin[c*x])
/(1024*c^8*e) + ((d + e*x^2)^4*(a + b*ArcSin[c*x]))/(8*e)
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 388

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_)), x_Symbol] :> Si
mp[(d*x*(a + b*x^n)^(p + 1))/(b*(n*(p + 1) + 1)), x] - Dist[(a*d - b*c*(n*(
p + 1) + 1))/(b*(n*(p + 1) + 1)), Int[(a + b*x^n)^p, x], x] /; FreeQ[{a, b,
 c, d, n}, x] && NeQ[b*c - a*d, 0] && NeQ[n*(p + 1) + 1, 0]
```

Rule 416

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> Simp[(d*x*(a + b*x^n)^(p + 1)*(c + d*x^n)^(q - 1))/(b*(n*(p + q) + 1)),
x] + Dist[1/(b*(n*(p + q) + 1)), Int[(a + b*x^n)^p*(c + d*x^n)^(q - 2)*Simp
[c*(b*c*(n*(p + q) + 1) - a*d) + d*(b*c*(n*(p + 2*q - 1) + 1) - a*d*(n*(q -
 1) + 1))*x^n, x], x], x] /; FreeQ[{a, b, c, d, n, p}, x] && NeQ[b*c - a*d,
 0] && GtQ[q, 1] && NeQ[n*(p + q) + 1, 0] &&  !IGtQ[p, 1] && IntBinomialQ[a
, b, c, d, n, p, q, x]
```

Rule 528

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.)*((e_) + (
f_.)*(x_)^(n_)), x_Symbol] :> Simp[(f*x*(a + b*x^n)^(p + 1)*(c + d*x^n)^q)/
(b*(n*(p + q + 1) + 1)), x] + Dist[1/(b*(n*(p + q + 1) + 1)), Int[(a + b*x^
```

```
n)^p*(c + d*x^n)^(q - 1)*Simp[c*(b*e - a*f + b*e*n*(p + q + 1)) + (d*(b*e -
 a*f) + f*n*q*(b*c - a*d) + b*d*e*n*(p + q + 1))*x^n, x], x], x] /; FreeQ[{
a, b, c, d, e, f, n, p}, x] && GtQ[q, 0] && NeQ[n*(p + q + 1) + 1, 0]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x]))/(2*e*(p + 1)), x]
 - Dist[(b*c)/(2*e*(p + 1)), Int[(d + e*x^2)^(p + 1)/Sqrt[1 - c^2*x^2], x],
 x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[c^2*d + e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int x\left(d+ex^2\right)^3\left(a+b\sin^{-1}(cx)\right)\,dx=\frac{\left(d+ex^2\right)^4\left(a+b\sin^{-1}(cx)\right)}{8e}-\frac{(bc)\int\frac{\left(d+ex^2\right)^4}{\sqrt{1-c^2x^2}}\,dx}{8e}$$

$$=\frac{bx\sqrt{1-c^2x^2}\left(d+ex^2\right)^3}{64c}+\frac{\left(d+ex^2\right)^4\left(a+b\sin^{-1}(cx)\right)}{8e}+\frac{b\int\frac{\left(d+ex^2\right)^2\left(-d\right.}{}}{}$$

$$=\frac{7b\left(2c^2d+e\right)x\sqrt{1-c^2x^2}\left(d+ex^2\right)^2}{384c^3}+\frac{bx\sqrt{1-c^2x^2}\left(d+ex^2\right)^3}{64c}+\frac{\left(d+e\right.}{}$$

$$=\frac{b\left(104c^4d^2+104c^2de+35e^2\right)x\sqrt{1-c^2x^2}\left(d+ex^2\right)}{1536c^5}+\frac{7b\left(2c^2d+e\right)x\sqrt{}}{38}$$

$$=\frac{5b\left(2c^2d+e\right)\left(40c^4d^2+40c^2de+21e^2\right)x\sqrt{1-c^2x^2}}{3072c^7}+\frac{b\left(104c^4d^2+104\right.}{}$$

$$=\frac{5b\left(2c^2d+e\right)\left(40c^4d^2+40c^2de+21e^2\right)x\sqrt{1-c^2x^2}}{3072c^7}+\frac{b\left(104c^4d^2+104\right.}{}$$

Mathematica [A] time = 0.22, size = 232, normalized size = 0.90

$$\frac{cx\left(384ac^7x\left(4d^3+6d^2ex^2+4de^2x^4+e^3x^6\right)+b\sqrt{1-c^2x^2}\left(16c^6\left(48d^3+36d^2ex^2+16de^2x^4+3e^3x^6\right)+8c^4e\left(\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d + e*x^2)^3*(a + b*ArcSin[c*x]),x]
```

```
[Out] (c*x*(384*a*c^7*x*(4*d^3 + 6*d^2*e*x^2 + 4*d*e^2*x^4 + e^3*x^6) + b*Sqrt[1
- c^2*x^2]*(105*e^3 + 10*c^2*e^2*(48*d + 7*e*x^2) + 8*c^4*e*(108*d^2 + 40*d
*e*x^2 + 7*e^2*x^4) + 16*c^6*(48*d^3 + 36*d^2*e*x^2 + 16*d*e^2*x^4 + 3*e^3*
x^6))) + 3*b*(-256*c^6*d^3 - 288*c^4*d^2*e - 160*c^2*d*e^2 - 35*e^3 + 128*c
^8*(4*d^3*x^2 + 6*d^2*e*x^4 + 4*d*e^2*x^6 + e^3*x^8))*ArcSin[c*x])/(3072*c^
8)
```

fricas [A] time = 0.68, size = 274, normalized size = 1.06

$$\frac{384\,ac^8e^3x^8+1536\,ac^8de^2x^6+2304\,ac^8d^2ex^4+1536\,ac^8d^3x^2+3\left(128\,bc^8e^3x^8+512\,bc^8de^2x^6+768\,bc^8d^2ex^4\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/3072*(384*a*c^8*e^3*x^8 + 1536*a*c^8*d*e^2*x^6 + 2304*a*c^8*d^2*e*x^4 + 1
536*a*c^8*d^3*x^2 + 3*(128*b*c^8*e^3*x^8 + 512*b*c^8*d*e^2*x^6 + 768*b*c^8*
d^2*e*x^4 + 512*b*c^8*d^3*x^2 - 256*b*c^6*d^3 - 288*b*c^4*d^2*e - 160*b*c^2
*d*e^2 - 35*b*e^3)*arcsin(c*x) + (48*b*c^7*e^3*x^7 + 8*(32*b*c^7*d*e^2 + 7*
b*c^5*e^3)*x^5 + 2*(288*b*c^7*d^2*e + 160*b*c^5*d*e^2 + 35*b*c^3*e^3)*x^3 +
 3*(256*b*c^7*d^3 + 288*b*c^5*d^2*e + 160*b*c^3*d*e^2 + 35*b*c*e^3)*x)*sqrt
(-c^2*x^2 + 1))/c^8
```

giac [B] time = 0.34, size = 585, normalized size = 2.27

$$\frac{1}{8}ax^8e^3+\frac{1}{2}adx^6e^2+\frac{3}{4}ad^2x^4e+\frac{\sqrt{-c^2x^2+1}\,bd^3x}{4c}+\frac{\left(c^2x^2-1\right)bd^3\arcsin\left(cx\right)}{2c^2}-\frac{3\left(-c^2x^2+1\right)^{\frac{3}{2}}bd^2xe}{16c^3}+\frac{\left(c^2x^2-1\right)ad^3}{2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/8*a*x^8*e^3 + 1/2*a*d*x^6*e^2 + 3/4*a*d^2*x^4*e + 1/4*sqrt(-c^2*x^2 + 1)*
b*d^3*x/c + 1/2*(c^2*x^2 - 1)*b*d^3*arcsin(c*x)/c^2 - 3/16*(-c^2*x^2 + 1)^(
3/2)*b*d^2*x*e/c^3 + 1/2*(c^2*x^2 - 1)*a*d^3/c^2 + 1/4*b*d^3*arcsin(c*x)/c^
2 + 3/4*(c^2*x^2 - 1)^2*b*d^2*arcsin(c*x)*e/c^4 + 15/32*sqrt(-c^2*x^2 + 1)*
b*d^2*x*e/c^3 + 3/2*(c^2*x^2 - 1)*b*d^2*arcsin(c*x)*e/c^4 + 1/12*(c^2*x^2 -
 1)^2*sqrt(-c^2*x^2 + 1)*b*d*x*e^2/c^5 + 1/2*(c^2*x^2 - 1)^3*b*d*arcsin(c*x
)*e^2/c^6 + 15/32*b*d^2*arcsin(c*x)*e/c^4 - 13/48*(-c^2*x^2 + 1)^(3/2)*b*d*
x*e^2/c^5 + 3/2*(c^2*x^2 - 1)^2*b*d*arcsin(c*x)*e^2/c^6 + 1/64*(c^2*x^2 - 1
)^3*sqrt(-c^2*x^2 + 1)*b*x*e^3/c^7 + 11/32*sqrt(-c^2*x^2 + 1)*b*d*x*e^2/c^5
 + 1/8*(c^2*x^2 - 1)^4*b*arcsin(c*x)*e^3/c^8 + 3/2*(c^2*x^2 - 1)*b*d*arcsin
(c*x)*e^2/c^6 + 25/384*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*x*e^3/c^7 + 1/2
*(c^2*x^2 - 1)^3*b*arcsin(c*x)*e^3/c^8 + 11/32*b*d*arcsin(c*x)*e^2/c^6 - 16
3/1536*(-c^2*x^2 + 1)^(3/2)*b*x*e^3/c^7 + 3/4*(c^2*x^2 - 1)^2*b*arcsin(c*x)
*e^3/c^8 + 93/1024*sqrt(-c^2*x^2 + 1)*b*x*e^3/c^7 + 1/2*(c^2*x^2 - 1)*b*arc
sin(c*x)*e^3/c^8 + 93/1024*b*arcsin(c*x)*e^3/c^8
```

maple [A] time = 0.00, size = 369, normalized size = 1.43

$$\frac{a\left(\frac{1}{8}e^3c^8x^8+\frac{1}{2}c^8d\,e^2x^6+\frac{3}{4}c^8d^2e\,x^4+\frac{1}{2}x^2c^8d^3\right)}{c^6}+\frac{b\left(\frac{\arcsin(cx)e^3c^8x^8}{8}+\frac{\arcsin(cx)c^8d\,e^2x^6}{2}+\frac{3\arcsin(cx)c^8d^2e\,x^4}{4}+\frac{\arcsin(cx)c^8x^2d^3}{2}-\frac{e^3\left(-\frac{c^7x^7\sqrt{-c^2x^2+1}}{8}-\frac{7c^5x^5\sqrt{-c^2}}{48}\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x^2+d)^3*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c^2*(a/c^6*(1/8*e^3*c^8*x^8+1/2*c^8*d*e^2*x^6+3/4*c^8*d^2*e*x^4+1/2*x^2*c
^8*d^3)+b/c^6*(1/8*arcsin(c*x)*e^3*c^8*x^8+1/2*arcsin(c*x)*c^8*d*e^2*x^6+3/
4*arcsin(c*x)*c^8*d^2*e*x^4+1/2*arcsin(c*x)*c^8*x^2*d^3-1/8*e^3*(-1/8*c^7*x
^7*(-c^2*x^2+1)^(1/2)-7/48*c^5*x^5*(-c^2*x^2+1)^(1/2)-35/192*c^3*x^3*(-c^2*
x^2+1)^(1/2)-35/128*c*x*(-c^2*x^2+1)^(1/2)+35/128*arcsin(c*x))-1/2*c^2*d*e^
2*(-1/6*c^5*x^5*(-c^2*x^2+1)^(1/2)-5/24*c^3*x^3*(-c^2*x^2+1)^(1/2)-5/16*c*x
*(-c^2*x^2+1)^(1/2)+5/16*arcsin(c*x))-3/4*c^4*d^2*e*(-1/4*c^3*x^3*(-c^2*x^2
+1)^(1/2)-3/8*c*x*(-c^2*x^2+1)^(1/2)+3/8*arcsin(c*x))-1/2*d^3*c^6*(-1/2*c*x
*(-c^2*x^2+1)^(1/2)+1/2*arcsin(c*x))))
```

maxima [A] time = 0.96, size = 344, normalized size = 1.33

$$\frac{1}{8}ae^3x^8+\frac{1}{2}ade^2x^6+\frac{3}{4}ad^2ex^4+\frac{1}{2}ad^3x^2+\frac{1}{4}\left(2x^2\arcsin\left(cx\right)+c\left(\frac{\sqrt{-c^2x^2+1}\,x}{c^2}-\frac{\arcsin\left(cx\right)}{c^3}\right)\right)bd^3+\frac{3}{32}\left(8x^4\arcsin\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/8*a*e^3*x^8 + 1/2*a*d*e^2*x^6 + 3/4*a*d^2*e*x^4 + 1/2*a*d^3*x^2 + 1/4*(2*
x^2*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x/c^2 - arcsin(c*x)/c^3))*b*d^3 + 3
/32*(8*x^4*arcsin(c*x) + (2*sqrt(-c^2*x^2 + 1)*x^3/c^2 + 3*sqrt(-c^2*x^2 +
1)*x/c^4 - 3*arcsin(c*x)/c^5)*c)*b*d^2*e + 1/96*(48*x^6*arcsin(c*x) + (8*sq
rt(-c^2*x^2 + 1)*x^5/c^2 + 10*sqrt(-c^2*x^2 + 1)*x^3/c^4 + 15*sqrt(-c^2*x^2
 + 1)*x/c^6 - 15*arcsin(c*x)/c^7)*c)*b*d*e^2 + 1/3072*(384*x^8*arcsin(c*x)
+ (48*sqrt(-c^2*x^2 + 1)*x^7/c^2 + 56*sqrt(-c^2*x^2 + 1)*x^5/c^4 + 70*sqrt(
-c^2*x^2 + 1)*x^3/c^6 + 105*sqrt(-c^2*x^2 + 1)*x/c^8 - 105*arcsin(c*x)/c^9)
*c)*b*e^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x\,(a+b\,\mathrm{asin}\,(c\,x))\,\left(e\,x^2+d\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*asin(c*x))*(d + e*x^2)^3,x)
```

```
[Out] int(x*(a + b*asin(c*x))*(d + e*x^2)^3, x)
```

sympy [A] time = 11.30, size = 483, normalized size = 1.87

$$\begin{cases} \frac{ad^3x^2}{2} + \frac{3ad^2ex^4}{4} + \frac{ade^2x^6}{2} + \frac{ae^3x^8}{8} + \frac{bd^3x^2\operatorname{asin}(cx)}{2} + \frac{3bd^2ex^4\operatorname{asin}(cx)}{4} + \frac{bde^2x^6\operatorname{asin}(cx)}{2} + \frac{be^3x^8\operatorname{asin}(cx)}{8} + \frac{bd^3x\sqrt{-c^2x^2+1}}{4c} + 3 \\ a\left(\frac{d^3x^2}{2} + \frac{3d^2ex^4}{4} + \frac{de^2x^6}{2} + \frac{e^3x^8}{8}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x**2+d)**3*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d**3*x**2/2 + 3*a*d**2*e*x**4/4 + a*d*e**2*x**6/2 + a*e**3*x**
8/8 + b*d**3*x**2*asin(c*x)/2 + 3*b*d**2*e*x**4*asin(c*x)/4 + b*d*e**2*x**6
*asin(c*x)/2 + b*e**3*x**8*asin(c*x)/8 + b*d**3*x*sqrt(-c**2*x**2 + 1)/(4*c
) + 3*b*d**2*e*x**3*sqrt(-c**2*x**2 + 1)/(16*c) + b*d*e**2*x**5*sqrt(-c**2*
x**2 + 1)/(12*c) + b*e**3*x**7*sqrt(-c**2*x**2 + 1)/(64*c) - b*d**3*asin(c*
x)/(4*c**2) + 9*b*d**2*e*x*sqrt(-c**2*x**2 + 1)/(32*c**3) + 5*b*d*e**2*x**3
*sqrt(-c**2*x**2 + 1)/(48*c**3) + 7*b*e**3*x**5*sqrt(-c**2*x**2 + 1)/(384*c
**3) - 9*b*d**2*e*asin(c*x)/(32*c**4) + 5*b*d*e**2*x*sqrt(-c**2*x**2 + 1)/(
32*c**5) + 35*b*e**3*x**3*sqrt(-c**2*x**2 + 1)/(1536*c**5) - 5*b*d*e**2*asi
n(c*x)/(32*c**6) + 35*b*e**3*x*sqrt(-c**2*x**2 + 1)/(1024*c**7) - 35*b*e**3
*asin(c*x)/(1024*c**8), Ne(c, 0)), (a*(d**3*x**2/2 + 3*d**2*e*x**4/4 + d*e*
*2*x**6/2 + e**3*x**8/8), True))
```

3.618 $\int (d+ex^2)^3 (a+b\sin^{-1}(cx))\,dx$

Optimal. Leaf size=225

$$d^3x\left(a+b\sin^{-1}(cx)\right)+d^2ex^3\left(a+b\sin^{-1}(cx)\right)+\frac{3}{5}de^2x^5\left(a+b\sin^{-1}(cx)\right)+\frac{1}{7}e^3x^7\left(a+b\sin^{-1}(cx)\right)+\frac{3be^2\left(1-c^2x^2\right)}{175}$$

[Out] -1/105*b*e*(35*c^4*d^2+42*c^2*d*e+15*e^2)*(-c^2*x^2+1)^(3/2)/c^7+3/175*b*e^2*(7*c^2*d+5*e)*(-c^2*x^2+1)^(5/2)/c^7-1/49*b*e^3*(-c^2*x^2+1)^(7/2)/c^7+d^3*x*(a+b*arcsin(c*x))+d^2*e*x^3*(a+b*arcsin(c*x))+3/5*d*e^2*x^5*(a+b*arcsin(c*x))+1/7*e^3*x^7*(a+b*arcsin(c*x))+1/35*b*(35*c^6*d^3+35*c^4*d^2*e+21*c^2*d*e^2+5*e^3)*(-c^2*x^2+1)^(1/2)/c^7

Rubi [A] time = 0.25, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {194, 4665, 12, 1799, 1850}

$$d^2ex^3\left(a+b\sin^{-1}(cx)\right)+d^3x\left(a+b\sin^{-1}(cx)\right)+\frac{3}{5}de^2x^5\left(a+b\sin^{-1}(cx)\right)+\frac{1}{7}e^3x^7\left(a+b\sin^{-1}(cx)\right)-\frac{be\left(1-c^2x^2\right)^{3/2}}{}$$

Antiderivative was successfully verified.

[In] Int[(d + e*x^2)^3*(a + b*ArcSin[c*x]),x]

[Out] (b*(35*c^6*d^3 + 35*c^4*d^2*e + 21*c^2*d*e^2 + 5*e^3)*Sqrt[1 - c^2*x^2])/(35*c^7) - (b*e*(35*c^4*d^2 + 42*c^2*d*e + 15*e^2)*(1 - c^2*x^2)^(3/2))/(105*c^7) + (3*b*e^2*(7*c^2*d + 5*e)*(1 - c^2*x^2)^(5/2))/(175*c^7) - (b*e^3*(1 - c^2*x^2)^(7/2))/(49*c^7) + d^3*x*(a + b*ArcSin[c*x]) + d^2*e*x^3*(a + b*ArcSin[c*x]) + (3*d*e^2*x^5*(a + b*ArcSin[c*x]))/5 + (e^3*x^7*(a + b*ArcSin[c*x]))/7

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !MatchQ[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 1799

```
Int[(Pq_)*(x_)^(m_.)*((a_) + (b_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/2, Subst[Int[x^((m - 1)/2)*SubstFor[x^2, Pq, x]*(a + b*x)^p, x], x, x^2], x] /; FreeQ[{a, b, p}, x] && PolyQ[Pq, x^2] && IntegerQ[(m - 1)/2]
```

Rule 1850

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_.), x_Symbol] :> Int[ExpandIntegrand[Pq*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, n}, x] && PolyQ[Pq, x] && (IGtQ[p, 0] || EqQ[n, 1])
```

Rule 4665

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[c^2*d + e, 0] && (IGtQ[p, 0] || ILtQ[p + 1/2, 0]
```

)

Rubi steps

$$\int \left(d+ex^2\right)^3 \left(a+b\sin^{-1}(cx)\right)\,dx = d^3x\left(a+b\sin^{-1}(cx)\right)+d^2ex^3\left(a+b\sin^{-1}(cx)\right)+\frac{3}{5}de^2x^5\left(a+b\sin^{-1}(cx)\right)$$

$$= d^3x\left(a+b\sin^{-1}(cx)\right)+d^2ex^3\left(a+b\sin^{-1}(cx)\right)+\frac{3}{5}de^2x^5\left(a+b\sin^{-1}(cx)\right)$$

$$= d^3x\left(a+b\sin^{-1}(cx)\right)+d^2ex^3\left(a+b\sin^{-1}(cx)\right)+\frac{3}{5}de^2x^5\left(a+b\sin^{-1}(cx)\right)$$

$$= d^3x\left(a+b\sin^{-1}(cx)\right)+d^2ex^3\left(a+b\sin^{-1}(cx)\right)+\frac{3}{5}de^2x^5\left(a+b\sin^{-1}(cx)\right)$$

$$= \frac{b\left(35c^6d^3+35c^4d^2e+21c^2de^2+5e^3\right)\sqrt{1-c^2x^2}}{35c^7}-\frac{be\left(35c^4d^2+42c^2de+\right.}{105c}$$

Mathematica [A] time = 0.24, size = 187, normalized size = 0.83

$$\frac{105ax\left(35d^3+35d^2ex^2+21de^2x^4+5e^3x^6\right)+\frac{b\sqrt{1-c^2x^2}\left(c^6\left(3675d^3+1225d^2ex^2+441de^2x^4+75e^3x^6\right)+2c^4e\left(1225d^2+294dex^2+45e^2x\right.\right.}{c^7}}{3675}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x^2)^3*(a + b*ArcSin[c*x]),x]
```

```
[Out] (105*a*x*(35*d^3 + 35*d^2*e*x^2 + 21*d*e^2*x^4 + 5*e^3*x^6) + (b*Sqrt[1 - c
^2*x^2]*(240*e^3 + 24*c^2*e^2*(49*d + 5*e*x^2) + 2*c^4*e*(1225*d^2 + 294*d*
e*x^2 + 45*e^2*x^4) + c^6*(3675*d^3 + 1225*d^2*e*x^2 + 441*d*e^2*x^4 + 75*e
^3*x^6)))/c^7 + 105*b*x*(35*d^3 + 35*d^2*e*x^2 + 21*d*e^2*x^4 + 5*e^3*x^6)*
ArcSin[c*x])/3675
```

fricas [A] time = 0.67, size = 229, normalized size = 1.02

$$\frac{525\,ac^7e^3x^7+2205\,ac^7de^2x^5+3675\,ac^7d^2ex^3+3675\,ac^7d^3x+105\left(5\,bc^7e^3x^7+21\,bc^7de^2x^5+35\,bc^7d^2ex^3+3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/3675*(525*a*c^7*e^3*x^7 + 2205*a*c^7*d*e^2*x^5 + 3675*a*c^7*d^2*e*x^3 + 3
675*a*c^7*d^3*x + 105*(5*b*c^7*e^3*x^7 + 21*b*c^7*d*e^2*x^5 + 35*b*c^7*d^2*
e*x^3 + 35*b*c^7*d^3*x)*arcsin(c*x) + (75*b*c^6*e^3*x^6 + 3675*b*c^6*d^3 +
2450*b*c^4*d^2*e + 1176*b*c^2*d*e^2 + 9*(49*b*c^6*d*e^2 + 10*b*c^4*e^3)*x^4
 + 240*b*e^3 + (1225*b*c^6*d^2*e + 588*b*c^4*d*e^2 + 120*b*c^2*e^3)*x^2)*sq
rt(-c^2*x^2 + 1))/c^7
```

giac [B] time = 3.98, size = 469, normalized size = 2.08

$$\frac{1}{7}ax^7e^3+\frac{3}{5}adx^5e^2+ad^2x^3e+bd^3x\arcsin(cx)+ad^3x+\frac{\left(c^2x^2-1\right)bd^2x\arcsin(cx)e}{c^2}+\frac{bd^2x\arcsin(cx)e}{c^2}+\frac{\sqrt{-c^2x^2}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/7*a*x^7*e^3 + 3/5*a*d*x^5*e^2 + a*d^2*x^3*e + b*d^3*x*arcsin(c*x) + a*d^3
*x + (c^2*x^2 - 1)*b*d^2*x*arcsin(c*x)*e/c^2 + b*d^2*x*arcsin(c*x)*e/c^2 +
sqrt(-c^2*x^2 + 1)*b*d^3/c + 3/5*(c^2*x^2 - 1)^2*b*d*x*arcsin(c*x)*e^2/c^4
- 1/3*(-c^2*x^2 + 1)^(3/2)*b*d^2*e/c^3 + 6/5*(c^2*x^2 - 1)*b*d*x*arcsin(c*x
)*e^2/c^4 + sqrt(-c^2*x^2 + 1)*b*d^2*e/c^3 + 1/7*(c^2*x^2 - 1)^3*b*x*arcsin
(c*x)*e^3/c^6 + 3/5*b*d*x*arcsin(c*x)*e^2/c^4 + 3/25*(c^2*x^2 - 1)^2*sqrt(-
c^2*x^2 + 1)*b*d*e^2/c^5 + 3/7*(c^2*x^2 - 1)^2*b*x*arcsin(c*x)*e^3/c^6 - 2/
5*(-c^2*x^2 + 1)^(3/2)*b*d*e^2/c^5 + 3/7*(c^2*x^2 - 1)*b*x*arcsin(c*x)*e^3/
c^6 + 1/49*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*b*e^3/c^7 + 3/5*sqrt(-c^2*x^2
 + 1)*b*d*e^2/c^5 + 1/7*b*x*arcsin(c*x)*e^3/c^6 + 3/35*(c^2*x^2 - 1)^2*sqrt
(-c^2*x^2 + 1)*b*e^3/c^7 - 1/7*(-c^2*x^2 + 1)^(3/2)*b*e^3/c^7 + 1/7*sqrt(-c
^2*x^2 + 1)*b*e^3/c^7
```

maple [A] time = 0.01, size = 325, normalized size = 1.44

$$\frac{\frac{a\left(\frac{1}{7}e^3c^7x^7+\frac{3}{5}c^7de^2x^5+c^7d^2ex^3+d^3c^7x\right)}{c^6}+\frac{b\left(\frac{\arcsin(cx)e^3c^7x^7}{7}+\frac{3\arcsin(cx)c^7de^2x^5}{5}+\arcsin(cx)c^7d^2ex^3+\arcsin(cx)d^3c^7x-\frac{e^3\left(-\frac{c^6x^6\sqrt{-c^2x^2+1}}{7}-\frac{6c^4x^4\sqrt{-c^2x}}{35}\right.}{}\right.}{}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)^3*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c*(a/c^6*(1/7*e^3*c^7*x^7+3/5*c^7*d*e^2*x^5+c^7*d^2*e*x^3+d^3*c^7*x)+b/c^
6*(1/7*arcsin(c*x)*e^3*c^7*x^7+3/5*arcsin(c*x)*c^7*d*e^2*x^5+arcsin(c*x)*c^
7*d^2*e*x^3+arcsin(c*x)*d^3*c^7*x-1/7*e^3*(-1/7*c^6*x^6*(-c^2*x^2+1)^(1/2)-
6/35*c^4*x^4*(-c^2*x^2+1)^(1/2)-8/35*c^2*x^2*(-c^2*x^2+1)^(1/2)-16/35*(-c^2
*x^2+1)^(1/2))-3/5*c^2*d*e^2*(-1/5*c^4*x^4*(-c^2*x^2+1)^(1/2)-4/15*c^2*x^2*
(-c^2*x^2+1)^(1/2)-8/15*(-c^2*x^2+1)^(1/2))-c^4*d^2*e*(-1/3*c^2*x^2*(-c^2*x
^2+1)^(1/2)-2/3*(-c^2*x^2+1)^(1/2))+d^3*c^6*(-c^2*x^2+1)^(1/2)))
```

maxima [A] time = 1.20, size = 292, normalized size = 1.30

$$\frac{1}{7}ae^3x^7+\frac{3}{5}ade^2x^5+ad^2ex^3+\frac{1}{3}\left(3x^3\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2}+\frac{2\sqrt{-c^2x^2+1}}{c^4}\right)\right)bd^2e+\frac{1}{25}\left(15x^5\arcsin(cx)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/7*a*e^3*x^7 + 3/5*a*d*e^2*x^5 + a*d^2*e*x^3 + 1/3*(3*x^3*arcsin(c*x) + c*
(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*d^2*e + 1/25*(15
*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2
/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*b*d*e^2 + 1/245*(35*x^7*arcsin(c*x) + (
5*sqrt(-c^2*x^2 + 1)*x^6/c^2 + 6*sqrt(-c^2*x^2 + 1)*x^4/c^4 + 8*sqrt(-c^2*x
^2 + 1)*x^2/c^6 + 16*sqrt(-c^2*x^2 + 1)/c^8)*c)*b*e^3 + a*d^3*x + (c*x*arcs
in(c*x) + sqrt(-c^2*x^2 + 1))*b*d^3/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,\mathrm{asin}\,(c\,x))\,\left(e\,x^2+d\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(d + e*x^2)^3,x)
```

```
[Out] int((a + b*asin(c*x))*(d + e*x^2)^3, x)
```

sympy [A] time = 6.28, size = 389, normalized size = 1.73

$$\begin{cases} ad^3x + ad^2ex^3 + \frac{3ade^2x^5}{5} + \frac{ae^3x^7}{7} + bd^3x\operatorname{asin}(cx) + bd^2ex^3\operatorname{asin}(cx) + \frac{3bde^2x^5\operatorname{asin}(cx)}{5} + \frac{be^3x^7\operatorname{asin}(cx)}{7} + \frac{bd^3\sqrt{-c^2x^2+} }{c} \\ a\left(d^3x + d^2ex^3 + \frac{3de^2x^5}{5} + \frac{e^3x^7}{7}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)**3*(a+b*asin(c*x)),x)
```

```
[Out] Piecewise((a*d**3*x + a*d**2*e*x**3 + 3*a*d*e**2*x**5/5 + a*e**3*x**7/7 + b
*d**3*x*asin(c*x) + b*d**2*e*x**3*asin(c*x) + 3*b*d*e**2*x**5*asin(c*x)/5 +
 b*e**3*x**7*asin(c*x)/7 + b*d**3*sqrt(-c**2*x**2 + 1)/c + b*d**2*e*x**2*sq
rt(-c**2*x**2 + 1)/(3*c) + 3*b*d*e**2*x**4*sqrt(-c**2*x**2 + 1)/(25*c) + b*
e**3*x**6*sqrt(-c**2*x**2 + 1)/(49*c) + 2*b*d**2*e*sqrt(-c**2*x**2 + 1)/(3*
c**3) + 4*b*d*e**2*x**2*sqrt(-c**2*x**2 + 1)/(25*c**3) + 6*b*e**3*x**4*sqrt
(-c**2*x**2 + 1)/(245*c**3) + 8*b*d*e**2*sqrt(-c**2*x**2 + 1)/(25*c**5) + 8
*b*e**3*x**2*sqrt(-c**2*x**2 + 1)/(245*c**5) + 16*b*e**3*sqrt(-c**2*x**2 +
1)/(245*c**7), Ne(c, 0)), (a*(d**3*x + d**2*e*x**3 + 3*d*e**2*x**5/5 + e**3
*x**7/7), True))
```

3.619 $\int \frac{(d+ex^2)^3 (a+b\sin^{-1}(cx))}{x} dx$

Optimal. Leaf size=357

$$d^3\log(x)\left(a+b\sin^{-1}(cx)\right)+\frac{3}{2}d^2ex^2\left(a+b\sin^{-1}(cx)\right)+\frac{3}{4}de^2x^4\left(a+b\sin^{-1}(cx)\right)+\frac{1}{6}e^3x^6\left(a+b\sin^{-1}(cx)\right)-\frac{5be^3\sin}{96}$$

```
[Out] -3/4*b*d^2*e*arcsin(c*x)/c^2-9/32*b*d*e^2*arcsin(c*x)/c^4-5/96*b*e^3*arcsin
(c*x)/c^6-1/2*I*b*d^3*arcsin(c*x)^2+3/2*d^2*e*x^2*(a+b*arcsin(c*x))+3/4*d*e
^2*x^4*(a+b*arcsin(c*x))+1/6*e^3*x^6*(a+b*arcsin(c*x))+b*d^3*arcsin(c*x)*ln
(1-(I*c*x+(-c^2*x^2+1)^(1/2))^2)-b*d^3*arcsin(c*x)*ln(x)+d^3*(a+b*arcsin(c*
x))*ln(x)-1/2*I*b*d^3*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)+3/4*b*d^2*e*x
*(-c^2*x^2+1)^(1/2)/c+9/32*b*d*e^2*x*(-c^2*x^2+1)^(1/2)/c^3+5/96*b*e^3*x*(-
c^2*x^2+1)^(1/2)/c^5+3/16*b*d*e^2*x^3*(-c^2*x^2+1)^(1/2)/c+5/144*b*e^3*x^3*
(-c^2*x^2+1)^(1/2)/c^3+1/36*b*e^3*x^5*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.48, antiderivative size = 357, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 13, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.619, Rules used = {266, 43, 4731, 12, 6742, 321, 216, 2326, 4625, 3717, 2190, 2279, 2391}

$$-\frac{1}{2}ibd^3\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)+\frac{3}{2}d^2ex^2\left(a+b\sin^{-1}(cx)\right)+d^3\log(x)\left(a+b\sin^{-1}(cx)\right)+\frac{3}{4}de^2x^4\left(a+b\sin^{-1}(cx)\right)+$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x^2)^3*(a + b*ArcSin[c*x]))/x,x]
```

```
[Out] (3*b*d^2*e*x*Sqrt[1 - c^2*x^2])/(4*c) + (9*b*d*e^2*x*Sqrt[1 - c^2*x^2])/(32
*c^3) + (5*b*e^3*x*Sqrt[1 - c^2*x^2])/(96*c^5) + (3*b*d*e^2*x^3*Sqrt[1 - c^
2*x^2])/(16*c) + (5*b*e^3*x^3*Sqrt[1 - c^2*x^2])/(144*c^3) + (b*e^3*x^5*Sqr
t[1 - c^2*x^2])/(36*c) - (3*b*d^2*e*ArcSin[c*x])/(4*c^2) - (9*b*d*e^2*ArcSi
n[c*x])/(32*c^4) - (5*b*e^3*ArcSin[c*x])/(96*c^6) - (I/2)*b*d^3*ArcSin[c*x]
^2 + (3*d^2*e*x^2*(a + b*ArcSin[c*x]))/2 + (3*d*e^2*x^4*(a + b*ArcSin[c*x])
)/4 + (e^3*x^6*(a + b*ArcSin[c*x]))/6 + b*d^3*ArcSin[c*x]*Log[1 - E^((2*I)*
ArcSin[c*x])] - b*d^3*ArcSin[c*x]*Log[x] + d^3*(a + b*ArcSin[c*x])*Log[x] -
 (I/2)*b*d^3*PolyLog[2, E^((2*I)*ArcSin[c*x])]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
```

```
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2326

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/Sqrt[(d_) + (e_.)*(x_)^2], x_Symb
ol] :> Simp[(ArcSin[(Rt[-e, 2]*x)/Sqrt[d]]*(a + b*Log[c*x^n]))/Rt[-e, 2], x
] - Dist[(b*n)/Rt[-e, 2], Int[ArcSin[(Rt[-e, 2]*x)/Sqrt[d]]/x, x], x] /; Fr
eeQ[{a, b, c, d, e, n}, x] && GtQ[d, 0] && NegQ[e]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_
)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist
[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*
x^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[c^2*d + e, 0] &
& IntegerQ[p] && (GtQ[p, 0] || (IGtQ[(m - 1)/2, 0] && LeQ[m + p, 0]))
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(d+ex^2\right)^3\left(a+b\sin^{-1}(cx)\right)}{x}\,dx = \frac{3}{2}d^2ex^2\left(a+b\sin^{-1}(cx)\right)+\frac{3}{4}de^2x^4\left(a+b\sin^{-1}(cx)\right)+\frac{1}{6}e^3x^6\left(a+b\sin^{-1}(cx\right.$$

$$= \frac{3}{2}d^2ex^2\left(a+b\sin^{-1}(cx)\right)+\frac{3}{4}de^2x^4\left(a+b\sin^{-1}(cx)\right)+\frac{1}{6}e^3x^6\left(a+b\sin^{-1}(cx\right.$$

$$= \frac{3}{2}d^2ex^2\left(a+b\sin^{-1}(cx)\right)+\frac{3}{4}de^2x^4\left(a+b\sin^{-1}(cx)\right)+\frac{1}{6}e^3x^6\left(a+b\sin^{-1}(cx\right.$$

$$= \frac{3}{2}d^2ex^2\left(a+b\sin^{-1}(cx)\right)+\frac{3}{4}de^2x^4\left(a+b\sin^{-1}(cx)\right)+\frac{1}{6}e^3x^6\left(a+b\sin^{-1}(cx\right.$$

$$= \frac{3bd^2ex\sqrt{1-c^2x^2}}{4c}+\frac{3bde^2x^3\sqrt{1-c^2x^2}}{16c}+\frac{be^3x^5\sqrt{1-c^2x^2}}{36c}+\frac{3}{2}d^2ex^2\left(a+b\,\mathrm{s}\right.$$

$$= \frac{3bd^2ex\sqrt{1-c^2x^2}}{4c}+\frac{9bde^2x\sqrt{1-c^2x^2}}{32c^3}+\frac{3bde^2x^3\sqrt{1-c^2x^2}}{16c}+\frac{5be^3x^3\sqrt{1-c}}{144c^3}$$

$$= \frac{3bd^2ex\sqrt{1-c^2x^2}}{4c}+\frac{9bde^2x\sqrt{1-c^2x^2}}{32c^3}+\frac{5be^3x\sqrt{1-c^2x^2}}{96c^5}+\frac{3bde^2x^3\sqrt{1-c^2}}{16c}$$

$$= \frac{3bd^2ex\sqrt{1-c^2x^2}}{4c}+\frac{9bde^2x\sqrt{1-c^2x^2}}{32c^3}+\frac{5be^3x\sqrt{1-c^2x^2}}{96c^5}+\frac{3bde^2x^3\sqrt{1-c^2}}{16c}$$

$$= \frac{3bd^2ex\sqrt{1-c^2x^2}}{4c}+\frac{9bde^2x\sqrt{1-c^2x^2}}{32c^3}+\frac{5be^3x\sqrt{1-c^2x^2}}{96c^5}+\frac{3bde^2x^3\sqrt{1-c^2}}{16c}$$

$$= \frac{3bd^2ex\sqrt{1-c^2x^2}}{4c}+\frac{9bde^2x\sqrt{1-c^2x^2}}{32c^3}+\frac{5be^3x\sqrt{1-c^2x^2}}{96c^5}+\frac{3bde^2x^3\sqrt{1-c^2}}{16c}$$

Mathematica [A] time = 0.38, size = 278, normalized size = 0.78

$$ad^3\log(x)+\frac{3}{2}ad^2ex^2+\frac{3}{4}ade^2x^4+\frac{1}{6}ae^3x^6+\frac{3bd^2e\left(cx\sqrt{1-c^2x^2}-\sin^{-1}(cx)\right)}{4c^2}+\frac{3bde^2\left(cx\sqrt{1-c^2x^2}\left(2c^2x^2+3\right)-3\,\mathrm{s}\right.}{32c^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x^2)^3*(a + b*ArcSin[c*x]))/x,x]
```

```
[Out] (3*a*d^2*e*x^2)/2 + (3*a*d*e^2*x^4)/4 + (a*e^3*x^6)/6 + (b*e^3*(c*x*Sqrt[1
- c^2*x^2]*(15 + 10*c^2*x^2 + 8*c^4*x^4) - 15*ArcSin[c*x]))/(288*c^6) + (3*
b*d*e^2*(c*x*Sqrt[1 - c^2*x^2]*(3 + 2*c^2*x^2) - 3*ArcSin[c*x]))/(32*c^4) +
 (3*b*d^2*e*(c*x*Sqrt[1 - c^2*x^2] - ArcSin[c*x]))/(4*c^2) + (3*b*d^2*e*x^2
*ArcSin[c*x])/2 + (3*b*d*e^2*x^4*ArcSin[c*x])/4 + (b*e^3*x^6*ArcSin[c*x])/6
 + b*d^3*ArcSin[c*x]*Log[1 - E^((2*I)*ArcSin[c*x])] + a*d^3*Log[x] - (I/2)*
b*d^3*(ArcSin[c*x]^2 + PolyLog[2, E^((2*I)*ArcSin[c*x])])
```

fricas [F] time = 0.53, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{ae^3x^6+3\,ade^2x^4+3\,ad^2ex^2+ad^3+\left(be^3x^6+3\,bde^2x^4+3\,bd^2ex^2+bd^3\right)\arcsin\left(cx\right)}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((e*x^2+d)^3*(a+b*arcsin(c*x))/x,x, algorithm="fricas")

[Out] integral((a*e^3*x^6 + 3*a*d*e^2*x^4 + 3*a*d^2*e*x^2 + a*d^3 + (b*e^3*x^6 + 3*b*d*e^2*x^4 + 3*b*d^2*e*x^2 + b*d^3)*arcsin(c*x))/x, x)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(ex^2+d\right)^3 (b \arcsin(cx) + a)}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((e*x^2+d)^3*(a+b*arcsin(c*x))/x,x, algorithm="giac")

[Out] integrate((e*x^2 + d)^3*(b*arcsin(c*x) + a)/x, x)

maple [A] time = 0.44, size = 391, normalized size = 1.10

$$\frac{a\,e^3x^6}{6}+\frac{3ad\,e^2x^4}{4}+\frac{3a\,d^2e\,x^2}{2}+d^3a\ln(cx)-\frac{ib\,d^3\arcsin(cx)^2}{2}+d^3b\arcsin(cx)\ln\left(1+icx+\sqrt{-c^2x^2+1}\right)+d^3b\,\mathrm{ar}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((e*x^2+d)^3*(a+b*arcsin(c*x))/x,x)

[Out] 1/6*a*e^3*x^6+3/4*a*d*e^2*x^4+3/2*a*d^2*e*x^2+d^3*a*ln(c*x)-I*d^3*b*polylog(2,-I*c*x-(-c^2*x^2+1)^(1/2))+d^3*b*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+d^3*b*arcsin(c*x)*ln(1-I*c*x-(-c^2*x^2+1)^(1/2))-1/2*I*b*d^3*arcsin(c*x)^2-I*d^3*b*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))-1/192*b/c^6*arcsin(c*x)*e^3*cos(6*arcsin(c*x))+1/1152*b/c^6*e^3*sin(6*arcsin(c*x))+3/32*b/c^4*cos(4*arcsin(c*x))*arcsin(c*x)*d*e^2+1/32*b/c^6*cos(4*arcsin(c*x))*arcsin(c*x)*e^3-3/128*b/c^4*sin(4*arcsin(c*x))*d*e^2-1/128*b/c^6*sin(4*arcsin(c*x))*e^3-3/4*b/c^2*cos(2*arcsin(c*x))*arcsin(c*x)*d^2*e-3/8*b/c^4*cos(2*arcsin(c*x))*arcsin(c*x)*d*e^2-5/64*b/c^6*cos(2*arcsin(c*x))*arcsin(c*x)*e^3+3/8*b/c^2*sin(2*arcsin(c*x))*d^2*e+3/16*b/c^4*sin(2*arcsin(c*x))*d*e^2+5/128*b/c^6*sin(2*arcsin(c*x))*e^3

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{6}\,ae^3x^6+\frac{3}{4}\,ade^2x^4+\frac{3}{2}\,ad^2ex^2+ad^3\log(x)+\int \frac{\left(be^3x^6+3\,bde^2x^4+3\,bd^2ex^2+bd^3\right)\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+}\right.}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((e*x^2+d)^3*(a+b*arcsin(c*x))/x,x, algorithm="maxima")

[Out] 1/6*a*e^3*x^6 + 3/4*a*d*e^2*x^4 + 3/2*a*d^2*e*x^2 + a*d^3*log(x) + integrate((b*e^3*x^6 + 3*b*d*e^2*x^4 + 3*b*d^2*e*x^2 + b*d^3)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/x, x)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))\,\left(e\,x^2+d\right)^3}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(((a + b*asin(c*x))*(d + e*x^2)^3)/x,x)

[Out] int(((a + b*asin(c*x))*(d + e*x^2)^3)/x, x)

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+b\operatorname{asin}(cx))\left(d+ex^2\right)^3}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)**3*(a+b*asin(c*x))/x,x)
```

```
[Out] Integral((a + b*asin(c*x))*(d + e*x**2)**3/x, x)
```

3.620 $\int \frac{(d+ex^2)^3(a+b\sin^{-1}(cx))}{x^2}\,dx$

Optimal. Leaf size=190

$$-\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{x}+3d^2ex\left(a+b\sin^{-1}(cx)\right)+de^2x^3\left(a+b\sin^{-1}(cx)\right)+\frac{1}{5}e^3x^5\left(a+b\sin^{-1}(cx)\right)-bcd^3\tanh^{-1}\left(\right.$$

```
[Out] -1/15*b*e^2*(5*c^2*d+2*e)*(-c^2*x^2+1)^(3/2)/c^5+1/25*b*e^3*(-c^2*x^2+1)^(5
/2)/c^5-d^3*(a+b*arcsin(c*x))/x+3*d^2*e*x*(a+b*arcsin(c*x))+d*e^2*x^3*(a+b*
arcsin(c*x))+1/5*e^3*x^5*(a+b*arcsin(c*x))-b*c*d^3*arctanh((-c^2*x^2+1)^(1/
2))+1/5*b*e*(15*c^4*d^2+5*c^2*d*e+e^2)*(-c^2*x^2+1)^(1/2)/c^5
```

Rubi [A] time = 0.27, antiderivative size = 190, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {270, 4731, 1799, 1620, 63, 208}

$$3d^2ex\left(a+b\sin^{-1}(cx)\right)-\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{x}+de^2x^3\left(a+b\sin^{-1}(cx)\right)+\frac{1}{5}e^3x^5\left(a+b\sin^{-1}(cx)\right)+\frac{be\sqrt{1-c^2x^2}\,(\ldots}{}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x^2)^3*(a + b*ArcSin[c*x]))/x^2,x]
```

```
[Out] (b*e*(15*c^4*d^2 + 5*c^2*d*e + e^2)*Sqrt[1 - c^2*x^2])/(5*c^5) - (b*e^2*(5*
c^2*d + 2*e)*(1 - c^2*x^2)^(3/2))/(15*c^5) + (b*e^3*(1 - c^2*x^2)^(5/2))/(2
5*c^5) - (d^3*(a + b*ArcSin[c*x]))/x + 3*d^2*e*x*(a + b*ArcSin[c*x]) + d*e^
2*x^3*(a + b*ArcSin[c*x]) + (e^3*x^5*(a + b*ArcSin[c*x]))/5 - b*c*d^3*ArcTa
nh[Sqrt[1 - c^2*x^2]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 1620

```
Int[(Px_)*((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol]
:> Int[ExpandIntegrand[Px*(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c
, d, m, n}, x] && PolyQ[Px, x] && (IntegersQ[m, n] || IGtQ[m, -2]) && GtQ[E
xpon[Px, x], 2]
```

Rule 1799

```
Int[(Pq_)*(x_)^(m_.)*((a_) + (b_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/2, Su
bst[Int[x^((m - 1)/2)*SubstFor[x^2, Pq, x]*(a + b*x)^p, x], x, x^2], x] /;
```

```
FreeQ[{a, b, p}, x] && PolyQ[Pq, x^2] && IntegerQ[(m - 1)/2]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_
)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist
[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*
x^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[c^2*d + e, 0] &
& IntegerQ[p] && (GtQ[p, 0] || (IGtQ[(m - 1)/2, 0] && LeQ[m + p, 0]))
```

Rubi steps

$$\int \frac{\left(d+ex^2\right)^3\left(a+b\sin^{-1}(cx)\right)}{x^2}\,dx = -\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{x}+3d^2ex\left(a+b\sin^{-1}(cx)\right)+de^2x^3\left(a+b\sin^{-1}(cx)\right)+$$

$$= -\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{x}+3d^2ex\left(a+b\sin^{-1}(cx)\right)+de^2x^3\left(a+b\sin^{-1}(cx)\right)+$$

$$= -\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{x}+3d^2ex\left(a+b\sin^{-1}(cx)\right)+de^2x^3\left(a+b\sin^{-1}(cx)\right)+$$

$$= \frac{be\left(15c^4d^2+5c^2de+e^2\right)\sqrt{1-c^2x^2}}{5c^5}-\frac{be^2\left(5c^2d+2e\right)\left(1-c^2x^2\right)^{3/2}}{15c^5}+\frac{be^3\left(1\right.}{2}$$

$$= \frac{be\left(15c^4d^2+5c^2de+e^2\right)\sqrt{1-c^2x^2}}{5c^5}-\frac{be^2\left(5c^2d+2e\right)\left(1-c^2x^2\right)^{3/2}}{15c^5}+\frac{be^3\left(1\right.}{2}$$

$$= \frac{be\left(15c^4d^2+5c^2de+e^2\right)\sqrt{1-c^2x^2}}{5c^5}-\frac{be^2\left(5c^2d+2e\right)\left(1-c^2x^2\right)^{3/2}}{15c^5}+\frac{be^3\left(1\right.}{2}$$

Mathematica [A] time = 0.22, size = 183, normalized size = 0.96

$$-\frac{ad^3}{x}+3ad^2ex+ade^2x^3+\frac{1}{5}ae^3x^5-bcd^3\log\left(\sqrt{1-c^2x^2}+1\right)+\frac{be\sqrt{1-c^2x^2}\left(c^4\left(225d^2+25dex^2+3e^2x^4\right)+2c^2e\left(25\right.\right.}{75c^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x^2)^3*(a + b*ArcSin[c*x]))/x^2,x]
```

```
[Out] -((a*d^3)/x) + 3*a*d^2*e*x + a*d*e^2*x^3 + (a*e^3*x^5)/5 + (b*e*Sqrt[1 - c^
2*x^2]*(8*e^2 + 2*c^2*e*(25*d + 2*e*x^2) + c^4*(225*d^2 + 25*d*e*x^2 + 3*e^
2*x^4)))/(75*c^5) + (b*(-5*d^3 + 15*d^2*e*x^2 + 5*d*e^2*x^4 + e^3*x^6)*ArcS
in[c*x])/(5*x) + b*c*d^3*Log[x] - b*c*d^3*Log[1 + Sqrt[1 - c^2*x^2]]
```

fricas [A] time = 0.76, size = 239, normalized size = 1.26

$$30\,ac^5e^3x^6+150\,ac^5de^2x^4-75\,bc^6d^3x\log\left(\sqrt{-c^2x^2+1}+1\right)+75\,bc^6d^3x\log\left(\sqrt{-c^2x^2+1}-1\right)+450\,ac^5d^2ex^2-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^3*(a+b*arcsin(c*x))/x^2,x, algorithm="fricas")
```

```
[Out] 1/150*(30*a*c^5*e^3*x^6 + 150*a*c^5*d*e^2*x^4 - 75*b*c^6*d^3*x*log(sqrt(-c^
2*x^2 + 1) + 1) + 75*b*c^6*d^3*x*log(sqrt(-c^2*x^2 + 1) - 1) + 450*a*c^5*d^
```

```
2*e*x^2 - 150*a*c^5*d^3 + 30*(b*c^5*e^3*x^6 + 5*b*c^5*d*e^2*x^4 + 15*b*c^5*
d^2*e*x^2 - 5*b*c^5*d^3)*arcsin(c*x) + 2*(3*b*c^4*e^3*x^5 + (25*b*c^4*d*e^2
 + 4*b*c^2*e^3)*x^3 + (225*b*c^4*d^2*e + 50*b*c^2*d*e^2 + 8*b*e^3)*x)*sqrt(
-c^2*x^2 + 1))/(c^5*x)
```

giac [B] time = 54.90, size = 10765, normalized size = 56.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^3*(a+b*arcsin(c*x))/x^2,x, algorithm="giac")
```

```
[Out] -1/2*b*c^18*d^3*x^12*arcsin(c*x)/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 +
5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1
)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1
) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^12) - 1
/2*a*c^18*d^3*x^12/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sq
rt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*
x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6
*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^12) + b*c^17*d^3*x^11
*log(abs(c)*abs(x))/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(s
qrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10
*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^
6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^11) - b*c^17*d^3*x^1
1*log(sqrt(-c^2*x^2 + 1) + 1)/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c
^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7
 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) +
 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^11) - 3*b*
c^16*d^3*x^10*arcsin(c*x)/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*
x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 1
0*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^
3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^10) - 3*a*c^16
*d^3*x^10/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x
^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt
(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(
-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^10) + 5*b*c^15*d^3*x^9*log(abs
(c)*abs(x))/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2
*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sq
rt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqr
t(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^9) - 5*b*c^15*d^3*x^9*log(sq
rt(-c^2*x^2 + 1) + 1)/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/
(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^
10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 +
c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^9) - 15/2*b*c^14*d
^3*x^8*arcsin(c*x)/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sq
rt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*
x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6
*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^8) - 3*b*c^15*d^2*x^1
1*e/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1
) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*
x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x
^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^11) + 6*b*c^14*d^2*x^10*arcsin(c*x)*
e/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1)
+ 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^
2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2
 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^10) - 15/2*a*c^14*d^3*x^8/((c^16*x^11/
(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^
12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5
+ 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(s
qrt(-c^2*x^2 + 1) + 1)^8) + 6*a*c^14*d^2*x^10*e/((c^16*x^11/(sqrt(-c^2*x^2
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+ 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c
^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sq
rt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 +
1) + 1)^10) + 10*b*c^13*d^3*x^7*log(abs(c)*abs(x))/((c^16*x^11/(sqrt(-c^2*x
^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt
(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/
(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2
 + 1) + 1)^7) - 10*b*c^13*d^3*x^7*log(sqrt(-c^2*x^2 + 1) + 1)/((c^16*x^11/(
sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^1
2*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 +
 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sq
rt(-c^2*x^2 + 1) + 1)^7) - 10*b*c^12*d^3*x^6*arcsin(c*x)/((c^16*x^11/(sqrt(
-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7
/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^
8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c
^2*x^2 + 1) + 1)^6) - 9*b*c^13*d^2*x^9*e/((c^16*x^11/(sqrt(-c^2*x^2 + 1) +
1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2
+ 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2
*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)
^9) + 24*b*c^12*d^2*x^8*arcsin(c*x)*e/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^
11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1
) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^
2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^8)
 - 10*a*c^12*d^3*x^6/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(
sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^1
0*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c
^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^6) - 2/3*b*c^13*d*x
^11*e^2/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2
 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-
c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c
^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^11) + 24*a*c^12*d^2*x^8*e/((c^16
*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 +
 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) +
 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) +
1))*(sqrt(-c^2*x^2 + 1) + 1)^8) + 10*b*c^11*d^3*x^5*log(abs(c)*abs(x))/((c^
16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9
 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1)
 + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1)
+ 1))*(sqrt(-c^2*x^2 + 1) + 1)^5) - 10*b*c^11*d^3*x^5*log(sqrt(-c^2*x^2 + 1
) + 1)/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2
+ 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c
^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^
2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^5) - 15/2*b*c^10*d^3*x^4*arcsin(c
*x)/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1
) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*
x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x
^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^4) - 6*b*c^11*d^2*x^7*e/((c^16*x^11/
(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^
12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5
+ 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(s
qrt(-c^2*x^2 + 1) + 1)^7) + 36*b*c^10*d^2*x^6*arcsin(c*x)*e/((c^16*x^11/(sq
rt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*
x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5
*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt
(-c^2*x^2 + 1) + 1)^6) - 15/2*a*c^10*d^3*x^4/((c^16*x^11/(sqrt(-c^2*x^2 + 1
) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*
x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(
-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1)
+ 1)^4) - 10/3*b*c^11*d*x^9*e^2/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5

*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)
^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1)
 + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^9) + 8*b
*c^10*d*x^8*arcsin(c*x)*e^2/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^1
4*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 +
 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1
)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^8) + 36*a*c^
10*d^2*x^6*e/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^
2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(s
qrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sq
rt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^6) + 5*b*c^9*d^3*x^3*log(ab
s(c)*abs(x))/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^
2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(s
qrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sq
rt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^3) - 5*b*c^9*d^3*x^3*log(sq
rt(-c^2*x^2 + 1) + 1)/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/
(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^
10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 +
c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^3) - 3*b*c^8*d^3*x
^2*arcsin(c*x)/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-
c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/
(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(
sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^2) - 8/75*b*c^11*x^11*e^3
/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) +
 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2
 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2
+ 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^11) + 8*a*c^10*d*x^8*e^2/((c^16*x^11/(s
qrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12
*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 +
5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqr
t(-c^2*x^2 + 1) + 1)^8) + 6*b*c^9*d^2*x^5*e/((c^16*x^11/(sqrt(-c^2*x^2 + 1)
 + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x
^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-
c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) +
 1)^5) + 24*b*c^8*d^2*x^4*arcsin(c*x)*e/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1
)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 +
 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*
x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^
4) - 3*a*c^8*d^3*x^2/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(
sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^1
0*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c
^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^2) - 8/3*b*c^9*d*x^
7*e^2/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 +
 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^
2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2
x^2 + 1) + 1))(sqrt(-c^2*x^2 + 1) + 1)^7) + 16*b*c^8*d*x^6*arcsin(c*x)*e^
2/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1)
+ 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^
2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2
 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^6) + 24*a*c^8*d^2*x^4*e/((c^16*x^11/(s
qrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12
*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 +
5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqr
t(-c^2*x^2 + 1) + 1)^4) + b*c^7*d^3*x*log(abs(c)*abs(x))/((c^16*x^11/(sqrt(
-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7
/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^
8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c
^2*x^2 + 1) + 1)) - b*c^7*d^3*x*log(sqrt(-c^2*x^2 + 1) + 1)/((c^16*x^11/(sq
rt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*

x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5
*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt
(-c^2*x^2 + 1) + 1)) - 1/2*b*c^6*d^3*arcsin(c*x)/(c^16*x^11/(sqrt(-c^2*x^2
+ 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c
^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sq
rt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1)) - 8/15*b*c^9*x^9*
e^3/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1
) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*
x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x
^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^9) + 16*a*c^8*d*x^6*e^2/((c^16*x^11/
(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^
12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5
+ 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(s
qrt(-c^2*x^2 + 1) + 1)^6) + 9*b*c^7*d^2*x^3*e/((c^16*x^11/(sqrt(-c^2*x^2 +
1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2
*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt
(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1)
 + 1)^3) + 6*b*c^6*d^2*x^2*arcsin(c*x)*e/((c^16*x^11/(sqrt(-c^2*x^2 + 1) +
1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2
+ 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2
*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)
^2) - 1/2*a*c^6*d^3/(c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sq
rt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*
x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6
*x/(sqrt(-c^2*x^2 + 1) + 1)) + 8/3*b*c^7*d*x^5*e^2/((c^16*x^11/(sqrt(-c^2*x
^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt
(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/
(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2
 + 1) + 1)^5) + 8*b*c^6*d*x^4*arcsin(c*x)*e^2/((c^16*x^11/(sqrt(-c^2*x^2 +
1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2
*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt
(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1)
 + 1)^4) + 6*a*c^6*d^2*x^2*e/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^
14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7
+ 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) +
1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^2) - 16/15*
b*c^7*x^7*e^3/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c
^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(
sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(s
qrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^7) + 32/5*b*c^6*x^6*arcsin
(c*x)*e^3/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x
^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt
(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(
-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^6) + 8*a*c^6*d*x^4*e^2/((c^16*
x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 +
10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) +
1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1
))*(sqrt(-c^2*x^2 + 1) + 1)^4) + 3*b*c^5*d^2*x*e/((c^16*x^11/(sqrt(-c^2*x^2
 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-
c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(s
qrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 +
 1) + 1)) + 32/5*a*c^6*x^6*e^3/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*
c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^
7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1)
+ 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^6) + 10/3
*b*c^5*d*x^3*e^2/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt
(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^
5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x
/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^3) + 16/15*b*c^5*x^5*e^

```
3/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1)
+ 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^
2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2
 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1)^5) + 2/3*b*c^3*d*x*e^2/((c^16*x^11/(sq
rt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*
x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5
*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt
(-c^2*x^2 + 1) + 1)) + 8/15*b*c^3*x^3*e^3/((c^16*x^11/(sqrt(-c^2*x^2 + 1) +
 1)^11 + 5*c^14*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2
 + 1) + 1)^7 + 10*c^10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^
2*x^2 + 1) + 1)^3 + c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1
)^3) + 8/75*b*c*x*e^3/((c^16*x^11/(sqrt(-c^2*x^2 + 1) + 1)^11 + 5*c^14*x^9/
(sqrt(-c^2*x^2 + 1) + 1)^9 + 10*c^12*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 10*c^
10*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + 5*c^8*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3 +
c^6*x/(sqrt(-c^2*x^2 + 1) + 1))*(sqrt(-c^2*x^2 + 1) + 1))
```

maple [A] time = 0.01, size = 264, normalized size = 1.39

$$c\left(\frac{a\left(\frac{e^3c^5x^5}{5}+c^5d\,e^2x^3+3c^5d^2ex-\frac{d^3c^5}{x}\right)}{c^6}+\frac{b\left(\frac{\arcsin(cx)e^3c^5x^5}{5}+\arcsin\left(cx\right)c^5d\,e^2x^3+3\arcsin\left(cx\right)c^5d^2ex-\frac{\arcsin}{}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)^3*(a+b*arcsin(c*x))/x^2,x)
```

```
[Out] c*(a/c^6*(1/5*e^3*c^5*x^5+c^5*d*e^2*x^3+3*c^5*d^2*e*x-d^3*c^5/x)+b/c^6*(1/5
*arcsin(c*x)*e^3*c^5*x^5+arcsin(c*x)*c^5*d*e^2*x^3+3*arcsin(c*x)*c^5*d^2*e*
x-arcsin(c*x)*d^3*c^5/x-1/5*e^3*(-1/5*c^4*x^4*(-c^2*x^2+1)^(1/2)-4/15*c^2*x
^2*(-c^2*x^2+1)^(1/2)-8/15*(-c^2*x^2+1)^(1/2))-c^2*d*e^2*(-1/3*c^2*x^2*(-c^
2*x^2+1)^(1/2)-2/3*(-c^2*x^2+1)^(1/2))+3*c^4*d^2*e*(-c^2*x^2+1)^(1/2)-d^3*c
^6*arctanh(1/(-c^2*x^2+1)^(1/2))))
```

maxima [A] time = 1.10, size = 241, normalized size = 1.27

$$\frac{1}{5}\,ae^3x^5+ade^2x^3-\left(c\log\left(\frac{2\sqrt{-c^2x^2+1}}{|x|}+\frac{2}{|x|}\right)+\frac{\arcsin\left(cx\right)}{x}\right)bd^3+\frac{1}{3}\left(3\,x^3\arcsin\left(cx\right)+c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2}+\frac{2\,\sqrt{}}{}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^3*(a+b*arcsin(c*x))/x^2,x, algorithm="maxima")
```

```
[Out] 1/5*a*e^3*x^5 + a*d*e^2*x^3 - (c*log(2*sqrt(-c^2*x^2 + 1)/abs(x) + 2/abs(x)
) + arcsin(c*x)/x)*b*d^3 + 1/3*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x
^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*d*e^2 + 1/75*(15*x^5*arcsin(c*x) + (3
*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^
2 + 1)/c^6)*c)*b*e^3 + 3*a*d^2*e*x + 3*(c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1
))*b*d^2*e/c - a*d^3/x
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(e\,x^2+d\right)}^3}{x^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d + e*x^2)^3)/x^2,x)
```

```
[Out] int(((a + b*asin(c*x))*(d + e*x^2)^3)/x^2, x)
```

sympy [A] time = 7.83, size = 272, normalized size = 1.43

$$-\frac{ad^3}{x}+3ad^2ex+ade^2x^3+\frac{ae^3x^5}{5}+bcd^3\left(\begin{cases}-\operatorname{acosh}\left(\frac{1}{cx}\right) & \text{for } \frac{1}{|c^2x^2|}>1\\ i\operatorname{asin}\left(\frac{1}{cx}\right) & \text{otherwise}\end{cases}\right)-bcde^2\left(\begin{cases}-\frac{x^2\sqrt{-c^2x^2+1}}{3c^2}-\frac{2\sqrt{-c^2x^2+1}}{3c^4} & \text{for } c\neq \\ \frac{x^4}{4} & \text{otherw}\end{cases}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)**3*(a+b*asin(c*x))/x**2,x)
```

```
[Out] -a*d**3/x + 3*a*d**2*e*x + a*d*e**2*x**3 + a*e**3*x**5/5 + b*c*d**3*Piecewi
se((-acosh(1/(c*x)), 1/Abs(c**2*x**2) > 1), (I*asin(1/(c*x)), True)) - b*c*
d*e**2*Piecewise((-x**2*sqrt(-c**2*x**2 + 1)/(3*c**2) - 2*sqrt(-c**2*x**2 +
 1)/(3*c**4), Ne(c, 0)), (x**4/4, True)) - b*c*e**3*Piecewise((-x**4*sqrt(-
c**2*x**2 + 1)/(5*c**2) - 4*x**2*sqrt(-c**2*x**2 + 1)/(15*c**4) - 8*sqrt(-c
**2*x**2 + 1)/(15*c**6), Ne(c, 0)), (x**6/6, True))/5 - b*d**3*asin(c*x)/x
+ 3*b*d**2*e*Piecewise((0, Eq(c, 0)), (x*asin(c*x) + sqrt(-c**2*x**2 + 1)/c
, True)) + b*d*e**2*x**3*asin(c*x) + b*e**3*x**5*asin(c*x)/5
```

3.621 $\int \frac{(d+ex^2)^3 (a+b\sin^{-1}(cx))}{x^3} \, dx$

Optimal. Leaf size=262

$$-\frac{d^3 \left(a+b\sin^{-1}(cx)\right)}{2x^2}+3d^2e\log(x)\left(a+b\sin^{-1}(cx)\right)+\frac{3}{2}de^2x^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}e^3x^4\left(a+b\sin^{-1}(cx)\right)-\frac{bcd^3\sqrt{}}{}$$

```
[Out] -3/32*b*e^2*(8*c^2*d+e)*arcsin(c*x)/c^4-3/2*I*b*d^2*e*arcsin(c*x)^2-1/2*d^3
*(a+b*arcsin(c*x))/x^2+3/2*d*e^2*x^2*(a+b*arcsin(c*x))+1/4*e^3*x^4*(a+b*arc
sin(c*x))+3*b*d^2*e*arcsin(c*x)*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))^2)-3*b*d^2*
e*arcsin(c*x)*ln(x)+3*d^2*e*(a+b*arcsin(c*x))*ln(x)-3/2*I*b*d^2*e*polylog(2
,(I*c*x+(-c^2*x^2+1)^(1/2))^2)-1/2*b*c*d^3*(-c^2*x^2+1)^(1/2)/x+3/32*b*e^2*
(8*c^2*d+e)*x*(-c^2*x^2+1)^(1/2)/c^3+1/16*b*e^3*x^3*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.78, antiderivative size = 262, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 16, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.762, Rules used = {266, 43, 4731, 12, 6742, 1807, 1584, 459, 321, 216, 2326, 4625, 3717, 2190, 2279, 2391}

$$-\frac{3}{2}ibd^2e\text{PolyLog}\left(2,e^{2i\sin^{-1}(cx)}\right)+3d^2e\log(x)\left(a+b\sin^{-1}(cx)\right)-\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{2x^2}+\frac{3}{2}de^2x^2\left(a+b\sin^{-1}(cx)\right)$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x^2)^3*(a + b*ArcSin[c*x]))/x^3,x]
```

```
[Out] -(b*c*d^3*Sqrt[1 - c^2*x^2])/(2*x) + (3*b*e^2*(8*c^2*d + e)*x*Sqrt[1 - c^2*
x^2])/(32*c^3) + (b*e^3*x^3*Sqrt[1 - c^2*x^2])/(16*c) - (3*b*e^2*(8*c^2*d +
 e)*ArcSin[c*x])/(32*c^4) - ((3*I)/2)*b*d^2*e*ArcSin[c*x]^2 - (d^3*(a + b*A
rcSin[c*x]))/(2*x^2) + (3*d*e^2*x^2*(a + b*ArcSin[c*x]))/2 + (e^3*x^4*(a +
b*ArcSin[c*x]))/4 + 3*b*d^2*e*ArcSin[c*x]*Log[1 - E^((2*I)*ArcSin[c*x])] -
3*b*d^2*e*ArcSin[c*x]*Log[x] + 3*d^2*e*(a + b*ArcSin[c*x])*Log[x] - ((3*I)/
2)*b*d^2*e*PolyLog[2, E^((2*I)*ArcSin[c*x])]
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 459

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_)), x_Symbol] :> Simp[(d*(e*x)^(m + 1)*(a + b*x^n)^(p + 1))/(b*e*(m + n*(p
 + 1) + 1)), x] - Dist[(a*d*(m + 1) - b*c*(m + n*(p + 1) + 1))/(b*(m + n*(p
 + 1) + 1)), Int[(e*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, d, e, m,
n, p}, x] && NeQ[b*c - a*d, 0] && NeQ[m + n*(p + 1) + 1, 0]
```

Rule 1584

```
Int[(u_.)*(x_)^(m_.)*((a_.)*(x_)^(p_.) + (b_.)*(x_)^(q_.))^(n_.), x_Symbol]
 :> Int[u*x^(m + n*p)*(a + b*x^(q - p))^n, x] /; FreeQ[{a, b, m, p, q}, x]
&& IntegerQ[n] && PosQ[q - p]
```

Rule 1807

```
Int[(Pq_)*((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^2)^(p_), x_Symbol] :> With[{
Q = PolynomialQuotient[Pq, c*x, x], R = PolynomialRemainder[Pq, c*x, x]}, S
imp[(R*(c*x)^(m + 1)*(a + b*x^2)^(p + 1))/(a*c*(m + 1)), x] + Dist[1/(a*c*(
m + 1)), Int[(c*x)^(m + 1)*(a + b*x^2)^p*ExpandToSum[a*c*(m + 1)*Q - b*R*(m
 + 2*p + 3)*x, x], x], x]] /; FreeQ[{a, b, c, p}, x] && PolyQ[Pq, x] && LtQ
[m, -1] && (IntegerQ[2*p] || NeQ[Expon[Pq, x], 1])
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2326

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/Sqrt[(d_) + (e_.)*(x_)^2], x_Symb
ol] :> Simp[(ArcSin[(Rt[-e, 2]*x)/Sqrt[d]]*(a + b*Log[c*x^n]))/Rt[-e, 2], x
] - Dist[(b*n)/Rt[-e, 2], Int[ArcSin[(Rt[-e, 2]*x)/Sqrt[d]]/x, x], x] /; Fr
eeQ[{a, b, c, d, e, n}, x] && GtQ[d, 0] && NegQ[e]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
```

```
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_
)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist
[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*
x^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[c^2*d + e, 0] &
& IntegerQ[p] && (GtQ[p, 0] || (IGtQ[(m - 1)/2, 0] && LeQ[m + p, 0]))
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(d+ex^2\right)^3 \left(a+b\sin^{-1}(cx)\right)}{x^3}\,dx = -\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{2x^2}+\frac{3}{2}de^2x^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}e^3x^4\left(a+b\sin^{-1}(cx\right.$$

$$= -\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{2x^2}+\frac{3}{2}de^2x^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}e^3x^4\left(a+b\sin^{-1}(cx\right.$$

$$= -\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{2x^2}+\frac{3}{2}de^2x^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}e^3x^4\left(a+b\sin^{-1}(cx\right.$$

$$= -\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{2x^2}+\frac{3}{2}de^2x^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}e^3x^4\left(a+b\sin^{-1}(cx\right.$$

$$= -\frac{bcd^3\sqrt{1-c^2x^2}}{2x}-\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{2x^2}+\frac{3}{2}de^2x^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}e^3$$

$$= -\frac{bcd^3\sqrt{1-c^2x^2}}{2x}-\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{2x^2}+\frac{3}{2}de^2x^2\left(a+b\sin^{-1}(cx)\right)+\frac{1}{4}e^3$$

$$= -\frac{bcd^3\sqrt{1-c^2x^2}}{2x}+\frac{be^3x^3\sqrt{1-c^2x^2}}{16c}-\frac{3}{2}ibd^2e\sin^{-1}(cx)^2-\frac{d^3\left(a+b\sin^{-1}\right.}{2x^2}$$

$$= -\frac{bcd^3\sqrt{1-c^2x^2}}{2x}+\frac{3be^2\left(8c^2d+e\right)x\sqrt{1-c^2x^2}}{32c^3}+\frac{be^3x^3\sqrt{1-c^2x^2}}{16c}-\frac{3}{2}ibc$$

$$= -\frac{bcd^3\sqrt{1-c^2x^2}}{2x}+\frac{3be^2\left(8c^2d+e\right)x\sqrt{1-c^2x^2}}{32c^3}+\frac{be^3x^3\sqrt{1-c^2x^2}}{16c}-\frac{3be^2}{}$$

$$= -\frac{bcd^3\sqrt{1-c^2x^2}}{2x}+\frac{3be^2\left(8c^2d+e\right)x\sqrt{1-c^2x^2}}{32c^3}+\frac{be^3x^3\sqrt{1-c^2x^2}}{16c}-\frac{3be^2}{}$$

Mathematica [A] time = 0.47, size = 220, normalized size = 0.84

$$\frac{1}{32}\left(-\frac{16ad^3}{x^2}+96ad^2e\log(x)+48ade^2x^2+8ae^3x^4-\frac{16bd^3\left(cx\sqrt{1-c^2x^2}+\sin^{-1}(cx)\right)}{x^2}+\frac{24bde^2\left(cx\sqrt{1-c^2x^2}\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x^2)^3*(a + b*ArcSin[c*x]))/x^3,x]
```

```
[Out] ((-16*a*d^3)/x^2 + 48*a*d*e^2*x^2 + 8*a*e^3*x^4 - (16*b*d^3*(c*x*Sqrt[1 - c
^2*x^2] + ArcSin[c*x]))/x^2 + (24*b*d*e^2*(c*x*Sqrt[1 - c^2*x^2] + (-1 + 2*
c^2*x^2)*ArcSin[c*x]))/c^2 + (b*e^3*(c*x*Sqrt[1 - c^2*x^2]*(3 + 2*c^2*x^2)
+ (-3 + 8*c^4*x^4)*ArcSin[c*x]))/c^4 + 96*a*d^2*e*Log[x] + 96*b*d^2*e*(ArcS
in[c*x]*Log[1 - E^((2*I)*ArcSin[c*x])] - (I/2)*(ArcSin[c*x]^2 + PolyLog[2,
E^((2*I)*ArcSin[c*x])])))/32
```

fricas [F] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{ae^3x^6 + 3\,ade^2x^4 + 3\,ad^2ex^2 + ad^3 + \left(be^3x^6 + 3\,bde^2x^4 + 3\,bd^2ex^2 + bd^3\right)\arcsin\left(cx\right)}{x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^3*(a+b*arcsin(c*x))/x^3,x, algorithm="fricas")
```

```
[Out] integral((a*e^3*x^6 + 3*a*d*e^2*x^4 + 3*a*d^2*e*x^2 + a*d^3 + (b*e^3*x^6 +
3*b*d*e^2*x^4 + 3*b*d^2*e*x^2 + b*d^3)*arcsin(c*x))/x^3, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(ex^2 + d\right)^3 \left(b\arcsin\left(cx\right) + a\right)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^3*(a+b*arcsin(c*x))/x^3,x, algorithm="giac")
```

```
[Out] integrate((e*x^2 + d)^3*(b*arcsin(c*x) + a)/x^3, x)
```

maple [A] time = 0.73, size = 360, normalized size = 1.37

$$\frac{a\,e^3x^4}{4}+\frac{3a\,x^2d\,e^2}{2}+3a\,d^2e\ln\left(cx\right)-\frac{a\,d^3}{2x^2}+3b\,d^2e\arcsin\left(cx\right)\ln\left(1+icx+\sqrt{-c^2x^2+1}\right)-\frac{b\sin\left(4\arcsin\left(cx\right)\right)e^3}{128c^4}+\frac{b\,\text{cc}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)^3*(a+b*arcsin(c*x))/x^3,x)
```

```
[Out] 1/4*a*e^3*x^4+3/2*a*x^2*d*e^2+3*a*d^2*e*ln(c*x)-1/2*a*d^3/x^2+3*b*d^2*e*arc
sin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-1/128/c^4*b*sin(4*arcsin(c*x))*e^3+
1/32/c^4*b*cos(4*arcsin(c*x))*arcsin(c*x)*e^3-3*I*b*d^2*e*polylog(2,-I*c*x-
(-c^2*x^2+1)^(1/2))+1/2*I*c^2*b*d^3+3/4/c*b*(-c^2*x^2+1)^(1/2)*x*d*e^2-3*I*
b*d^2*e*polylog(2,I*c*x+(-c^2*x^2+1)^(1/2))+3*b*d^2*e*arcsin(c*x)*ln(1-I*c*
x-(-c^2*x^2+1)^(1/2))-3/2*I*b*d^2*e*arcsin(c*x)^2-1/2*b*c*d^3*(-c^2*x^2+1)^
(1/2)/x+1/8/c^3*b*(-c^2*x^2+1)^(1/2)*x*e^3-3/4/c^2*b*arcsin(c*x)*d*e^2-1/8/
c^4*b*arcsin(c*x)*e^3+1/4/c^2*b*arcsin(c*x)*x^2*e^3+3/2*b*arcsin(c*x)*x^2*d
*e^2-1/2*b*arcsin(c*x)*d^3/x^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{4}\,ae^3x^4+\frac{3}{2}\,ade^2x^2-\frac{1}{2}\,bd^3\left(\frac{\sqrt{-c^2x^2+1}\,c}{x}+\frac{\arcsin\left(cx\right)}{x^2}\right)+3\,ad^2e\log(x)-\frac{ad^3}{2\,x^2}+\int\frac{\left(be^3x^4+3\,bde^2x^2+3\,bd^2e\right)\text{arcta}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^3*(a+b*arcsin(c*x))/x^3,x, algorithm="maxima")
```

```
[Out] 1/4*a*e^3*x^4 + 3/2*a*d*e^2*x^2 - 1/2*b*d^3*(sqrt(-c^2*x^2 + 1)*c/x + arcsi
n(c*x)/x^2) + 3*a*d^2*e*log(x) - 1/2*a*d^3/x^2 + integrate((b*e^3*x^4 + 3*b
*d*e^2*x^2 + 3*b*d^2*e)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/x, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\mathrm{asin}\,(c\,x))\,\left(e\,x^2 + d\right)^3}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d + e*x^2)^3)/x^3,x)
```

```
[Out] int(((a + b*asin(c*x))*(d + e*x^2)^3)/x^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\,\mathrm{asin}\,(cx))\,\left(d + ex^2\right)^3}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)**3*(a+b*asin(c*x))/x**3,x)
```

```
[Out] Integral((a + b*asin(c*x))*(d + e*x**2)**3/x**3, x)
```

3.622 $\int \frac{(d+ex^2)^3 (a+b\sin^{-1}(cx))}{x^4}\,dx$

Optimal. Leaf size=186

$$-\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{3d^2e\left(a+b\sin^{-1}(cx)\right)}{x}+3de^2x\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}e^3x^3\left(a+b\sin^{-1}(cx)\right)-\frac{bcd^3\sqrt{1-c^2x^2}}{6x^2}-$$

```
[Out] -1/9*b*e^3*(-c^2*x^2+1)^(3/2)/c^3-1/3*d^3*(a+b*arcsin(c*x))/x^3-3*d^2*e*(a+
b*arcsin(c*x))/x+3*d*e^2*x*(a+b*arcsin(c*x))+1/3*e^3*x^3*(a+b*arcsin(c*x))-
1/6*b*c*d^2*(c^2*d+18*e)*arctanh((-c^2*x^2+1)^(1/2))+1/3*b*e^2*(9*c^2*d+e)*
(-c^2*x^2+1)^(1/2)/c^3-1/6*b*c*d^3*(-c^2*x^2+1)^(1/2)/x^2
```

Rubi [A] time = 0.32, antiderivative size = 186, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.381$, Rules used = {270, 4731, 12, 1799, 1621, 897, 1153, 208}

$$-\frac{3d^2e\left(a+b\sin^{-1}(cx)\right)}{x}-\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{3x^3}+3de^2x\left(a+b\sin^{-1}(cx)\right)+\frac{1}{3}e^3x^3\left(a+b\sin^{-1}(cx)\right)-\frac{1}{6}bcd^2\left(c^2d+18e\right.$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x^2)^3*(a + b*ArcSin[c*x]))/x^4,x]
```

```
[Out] (b*e^2*(9*c^2*d + e)*Sqrt[1 - c^2*x^2])/(3*c^3) - (b*c*d^3*Sqrt[1 - c^2*x^2
])/(6*x^2) - (b*e^3*(1 - c^2*x^2)^(3/2))/(9*c^3) - (d^3*(a + b*ArcSin[c*x])
)/(3*x^3) - (3*d^2*e*(a + b*ArcSin[c*x]))/x + 3*d*e^2*x*(a + b*ArcSin[c*x])
 + (e^3*x^3*(a + b*ArcSin[c*x]))/3 - (b*c*d^2*(c^2*d + 18*e)*ArcTanh[Sqrt[1
 - c^2*x^2]])/6
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 897

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_.) + (b_.)*(x_)
 + (c_.)*(x_)^2)^(p_.), x_Symbol] :> With[{q = Denominator[m]}, Dist[q/e, S
ubst[Int[x^(q*(m + 1) - 1)*((e*f - d*g)/e + (g*x^q)/e)^n*((c*d^2 - b*d*e +
a*e^2)/e^2 - ((2*c*d - b*e)*x^q)/e^2 + (c*x^(2*q))/e^2)^p, x], x, (d + e*x)
^(1/q)], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ
[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegersQ[n, p] && Fra
ctionQ[m]
```

Rule 1153

```
Int[((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(p_.),
 x_Symbol] :> Int[ExpandIntegrand[(d + e*x^2)^q*(a + b*x^2 + c*x^4)^p, x],
```

```
x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e
 + a*e^2, 0] && IGtQ[p, 0] && IGtQ[q, -2]
```

Rule 1621

```
Int[(Px_)*((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :
> With[{Qx = PolynomialQuotient[Px, a + b*x, x], R = PolynomialRemainder[Px
, a + b*x, x]}, Simp[(R*(a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((m + 1)*(b*c
- a*d)), x] + Dist[1/((m + 1)*(b*c - a*d)), Int[(a + b*x)^(m + 1)*(c + d*x)
^n*ExpandToSum[(m + 1)*(b*c - a*d)*Qx - d*R*(m + n + 2), x], x], x]] /; Fre
eQ[{a, b, c, d, n}, x] && PolyQ[Px, x] && ILtQ[m, -1] && GtQ[Expon[Px, x],
2]
```

Rule 1799

```
Int[(Pq_)*(x_)^(m_.)*((a_) + (b_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/2, Su
bst[Int[x^((m - 1)/2)*SubstFor[x^2, Pq, x]*(a + b*x)^p, x], x, x^2], x] /;
FreeQ[{a, b, p}, x] && PolyQ[Pq, x^2] && IntegerQ[(m - 1)/2]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_
)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist
[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*
x^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[c^2*d + e, 0] &
& IntegerQ[p] && (GtQ[p, 0] || (IGtQ[(m - 1)/2, 0] && LeQ[m + p, 0]))
```

Rubi steps

$$\int \frac{\left(d+ex^2\right)^3\left(a+b\sin^{-1}(cx)\right)}{x^4}\,dx = -\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{3d^2e\left(a+b\sin^{-1}(cx)\right)}{x}+3de^2x\left(a+b\sin^{-1}(cx)\right)$$

$$= -\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{3d^2e\left(a+b\sin^{-1}(cx)\right)}{x}+3de^2x\left(a+b\sin^{-1}(cx)\right)$$

$$= -\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{3d^2e\left(a+b\sin^{-1}(cx)\right)}{x}+3de^2x\left(a+b\sin^{-1}(cx)\right)$$

$$= -\frac{bcd^3\sqrt{1-c^2x^2}}{6x^2}-\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{3d^2e\left(a+b\sin^{-1}(cx)\right)}{x}+3de^2x$$

$$= -\frac{bcd^3\sqrt{1-c^2x^2}}{6x^2}-\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{3d^2e\left(a+b\sin^{-1}(cx)\right)}{x}+3de^2x$$

$$= -\frac{bcd^3\sqrt{1-c^2x^2}}{6x^2}-\frac{d^3\left(a+b\sin^{-1}(cx)\right)}{3x^3}-\frac{3d^2e\left(a+b\sin^{-1}(cx)\right)}{x}+3de^2x$$

$$= \frac{be^2\left(9c^2d+e\right)\sqrt{1-c^2x^2}}{3c^3}-\frac{bcd^3\sqrt{1-c^2x^2}}{6x^2}-\frac{be^3\left(1-c^2x^2\right)^{3/2}}{9c^3}-\frac{d^3\left(a+b\right.}{}$$

$$= \frac{be^2\left(9c^2d+e\right)\sqrt{1-c^2x^2}}{3c^3}-\frac{bcd^3\sqrt{1-c^2x^2}}{6x^2}-\frac{be^3\left(1-c^2x^2\right)^{3/2}}{9c^3}-\frac{d^3\left(a+b\right.}{}$$

Mathematica [A] time = 0.30, size = 194, normalized size = 1.04

$$\frac{1}{6}\left(-\frac{2ad^3}{x^3}-\frac{18ad^2e}{x}+18ade^2x+2ae^3x^3-bcd^2\left(c^2d+18e\right)\log\left(\sqrt{1-c^2x^2}+1\right)+bcd^2\log(x)\left(c^2d+18e\right)+\frac{b\sqrt{1}}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x^2)^3*(a + b*ArcSin[c*x]))/x^4,x]
```

```
[Out] ((-2*a*d^3)/x^3 - (18*a*d^2*e)/x + 18*a*d*e^2*x + 2*a*e^3*x^3 + (b*Sqrt[1 -
 c^2*x^2]*(-3*c^4*d^3 + 4*e^3*x^2 + 2*c^2*e^2*x^2*(27*d + e*x^2)))/(3*c^3*x
^2) + (2*b*(-d^3 - 9*d^2*e*x^2 + 9*d*e^2*x^4 + e^3*x^6)*ArcSin[c*x])/x^3 +
b*c*d^2*(c^2*d + 18*e)*Log[x] - b*c*d^2*(c^2*d + 18*e)*Log[1 + Sqrt[1 - c^2
*x^2]])/6
```

fricas [A] time = 0.87, size = 246, normalized size = 1.32

$$\frac{12\,ac^3e^3x^6+108\,ac^3de^2x^4-108\,ac^3d^2ex^2-12\,ac^3d^3-3\left(bc^6d^3+18\,bc^4d^2e\right)x^3\log\left(\sqrt{-c^2x^2+1}+1\right)+3\left(bc^6d^3+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^3*(a+b*arcsin(c*x))/x^4,x, algorithm="fricas")
```

```
[Out] 1/36*(12*a*c^3*e^3*x^6 + 108*a*c^3*d*e^2*x^4 - 108*a*c^3*d^2*e*x^2 - 12*a*c
^3*d^3 - 3*(b*c^6*d^3 + 18*b*c^4*d^2*e)*x^3*log(sqrt(-c^2*x^2 + 1) + 1) + 3
*(b*c^6*d^3 + 18*b*c^4*d^2*e)*x^3*log(sqrt(-c^2*x^2 + 1) - 1) + 12*(b*c^3*e
^3*x^6 + 9*b*c^3*d*e^2*x^4 - 9*b*c^3*d^2*e*x^2 - b*c^3*d^3)*arcsin(c*x) + 2
*(2*b*c^2*e^3*x^5 - 3*b*c^4*d^3*x + 2*(27*b*c^2*d*e^2 + 2*b*e^3)*x^3)*sqrt(
-c^2*x^2 + 1))/(c^3*x^3)
```

giac [B] time = 159.58, size = 7973, normalized size = 42.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^3*(a+b*arcsin(c*x))/x^4,x, algorithm="giac")
```

```
[Out] -1/24*b*c^18*d^3*x^12*arcsin(c*x)/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3
*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5
 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^12) - 1/24*
a*c^18*d^3*x^12/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c
^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-
c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^12) + 1/24*b*c^17*d^3*x^11/((
c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7
 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^
3)*(sqrt(-c^2*x^2 + 1) + 1)^11) - 1/4*b*c^16*d^3*x^10*arcsin(c*x)/((c^12*x^
9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^
8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqr
t(-c^2*x^2 + 1) + 1)^10) - 1/4*a*c^16*d^3*x^10/((c^12*x^9/(sqrt(-c^2*x^2 +
1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^
2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1
)^10) + 1/6*b*c^15*d^3*x^9*log(abs(c)*abs(x))/((c^12*x^9/(sqrt(-c^2*x^2 + 1
) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2
 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)
^9) - 1/6*b*c^15*d^3*x^9*log(sqrt(-c^2*x^2 + 1) + 1)/((c^12*x^9/(sqrt(-c^2*
x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-
c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 +
1) + 1)^9) + 1/8*b*c^15*d^3*x^9/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c
```

^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^9) - 5/8*b*c^14*d^3*x^8*arcsin(c*x)/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^8) - 3/2*b*c^14*d^2*x^10*arcsin(c*x)*e/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^10) - 5/8*a*c^14*d^3*x^8/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^8) - 3/2*a*c^14*d^2*x^10*e/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^10) + 1/2*b*c^13*d^3*x^7*log(abs(c)*abs(x))/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^7) + 3*b*c^13*d^2*x^9*e*log(abs(c)*abs(x))/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^9) - 1/2*b*c^13*d^3*x^7*log(sqrt(-c^2*x^2 + 1) + 1)/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^7) - 3*b*c^13*d^2*x^9*e*log(sqrt(-c^2*x^2 + 1) + 1)/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^9) + 1/12*b*c^13*d^3*x^7/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^7) - 5/6*b*c^12*d^3*x^6*arcsin(c*x)/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^6) - 6*b*c^12*d^2*x^8*arcsin(c*x)*e/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^8) - 5/6*a*c^12*d^3*x^6/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^6) - 6*a*c^12*d^2*x^8*e/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^8) + 1/2*b*c^11*d^3*x^5*log(abs(c)*abs(x))/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^5) + 9*b*c^11*d^2*x^7*e*log(abs(c)*abs(x))/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^7) - 1/2*b*c^11*d^3*x^5*log(sqrt(-c^2*x^2 + 1) + 1)/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^5) - 9*b*c^11*d^2*x^7*e*log(sqrt(-c^2*x^2 + 1) + 1)/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^7) - 1/12*b*c^11*d^3*x^5/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^5) - 5/8*b*c^10*d^3*x^4*arcsin(c*x)/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^4) - 9*b*c^10*d^2*x^6*arcsin(c*x)*e/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 +

c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^6) - 5/8*a*c^10*d^3*x^4/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^4) - 3*b*c^11*d*x^9*e^2/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^9) + 6*b*c^10*d*x^8*arcsin(c*x)*e^2/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^8) - 9*a*c^10*d^2*x^6*e/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^6) + 1/6*b*c^9*d^3*x^3*log(abs(c)*abs(x))/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^3) + 9*b*c^9*d^2*x^5*e*log(abs(c)*abs(x))/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^5) - 1/6*b*c^9*d^3*x^3*log(sqrt(-c^2*x^2 + 1) + 1)/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^3) - 9*b*c^9*d^2*x^5*e*log(sqrt(-c^2*x^2 + 1) + 1)/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^5) - 1/8*b*c^9*d^3*x^3/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^3) - 1/4*b*c^8*d^3*x^2*arcsin(c*x)/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^2) + 6*a*c^10*d*x^8*e^2/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^8) - 6*b*c^8*d^2*x^4*arcsin(c*x)*e/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^4) - 1/4*a*c^8*d^3*x^2/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^2) - 3*b*c^9*d*x^7*e^2/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^7) + 12*b*c^8*d*x^6*arcsin(c*x)*e^2/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^6) - 6*a*c^8*d^2*x^4*e/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^4) + 3*b*c^7*d^2*x^3*e*log(abs(c)*abs(x))/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^3) - 3*b*c^7*d^2*x^3*e*log(sqrt(-c^2*x^2 + 1) + 1)/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^3) - 1/24*b*c^7*d^3*x/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)) - 1/24*b*c^6*d^3*arcsin(c*x)/(c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3) - 2/9*b*c^9*x^9*e^3/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1

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) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^9)
+ 12*a*c^8*d*x^6*e^2/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sq
rt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(s
qrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^6) - 3/2*b*c^6*d^2*x^2*a
rcsin(c*x)*e/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*
x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2
*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^2) - 1/24*a*c^6*d^3/(c^12*x^9/(s
qrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^
5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3) + 3*b*c^
7*d*x^5*e^2/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x
^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*
x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^5) + 6*b*c^6*d*x^4*arcsin(c*x)*e^
2/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) +
1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) +
 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^4) - 3/2*a*c^6*d^2*x^2*e/((c^12*x^9/(sqrt(-
c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sq
rt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^
2 + 1) + 1)^2) - 2/3*b*c^7*x^7*e^3/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 +
3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^
5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^7) + 8/3*b
*c^6*x^6*arcsin(c*x)*e^3/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7
/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^
3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^6) + 6*a*c^6*d*x^4*e
^2/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) +
 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1)
+ 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^4) + 8/3*a*c^6*x^6*e^3/((c^12*x^9/(sqrt(-c
^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqr
t(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2
 + 1) + 1)^6) + 3*b*c^5*d*x^3*e^2/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3
*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5
 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^3) + 2/3*b*
c^5*x^5*e^3/((c^12*x^9/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x
^2 + 1) + 1)^7 + 3*c^8*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*
x^2 + 1) + 1)^3)*(sqrt(-c^2*x^2 + 1) + 1)^5) + 2/9*b*c^3*x^3*e^3/((c^12*x^9
/(sqrt(-c^2*x^2 + 1) + 1)^9 + 3*c^10*x^7/(sqrt(-c^2*x^2 + 1) + 1)^7 + 3*c^8
*x^5/(sqrt(-c^2*x^2 + 1) + 1)^5 + c^6*x^3/(sqrt(-c^2*x^2 + 1) + 1)^3)*(sqrt
(-c^2*x^2 + 1) + 1)^3)
```

maple [A] time = 0.01, size = 249, normalized size = 1.34

$$c^{3}\left(\frac{a\left(\frac{e^{3}c^{3}x^{3}}{3}+3c^{3}xd\,e^{2}-\frac{d^{3}c^{3}}{3x^{3}}-\frac{3c^{3}d^{2}e}{x}\right)}{c^{6}}+\frac{b\left(\frac{\arcsin(cx)e^{3}c^{3}x^{3}}{3}+3\arcsin\left(cx\right)c^{3}xd\,e^{2}-\frac{\arcsin(cx)d^{3}c^{3}}{3x^{3}}-\frac{3\arcsin(cx)c^{3}d^{2}e}{x}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)^3*(a+b*arcsin(c*x))/x^4,x)
```

```
[Out] c^3*(a/c^6*(1/3*e^3*c^3*x^3+3*c^3*x*d*e^2-1/3*d^3*c^3/x^3-3*c^3*d^2*e/x)+b/
c^6*(1/3*arcsin(c*x)*e^3*c^3*x^3+3*arcsin(c*x)*c^3*x*d*e^2-1/3*arcsin(c*x)*
d^3*c^3/x^3-3*arcsin(c*x)*c^3*d^2*e/x-1/3*e^3*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1
/2)-2/3*(-c^2*x^2+1)^(1/2))+3*c^2*d*e^2*(-c^2*x^2+1)^(1/2)+1/3*d^3*c^6*(-1/
```

```
2/c^2/x^2*(-c^2*x^2+1)^(1/2)-1/2*arctanh(1/(-c^2*x^2+1)^(1/2)))-3*c^4*d^2*e
*arctanh(1/(-c^2*x^2+1)^(1/2))))
```

maxima [A] time = 0.66, size = 231, normalized size = 1.24

$$\frac{1}{3}ae^3x^3 - \frac{1}{6}\left(\left(c^2\log\left(\frac{2\sqrt{-c^2x^2+1}}{|x|} + \frac{2}{|x|}\right) + \frac{\sqrt{-c^2x^2+1}}{x^2}\right)c + \frac{2\arcsin(cx)}{x^3}\right)bd^3 - 3\left(c\log\left(\frac{2\sqrt{-c^2x^2+1}}{|x|} + \frac{2}{|x|}\right) + \right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^3*(a+b*arcsin(c*x))/x^4,x, algorithm="maxima")
```

```
[Out] 1/3*a*e^3*x^3 - 1/6*((c^2*log(2*sqrt(-c^2*x^2 + 1)/abs(x) + 2/abs(x)) + sqr
t(-c^2*x^2 + 1)/x^2)*c + 2*arcsin(c*x)/x^3)*b*d^3 - 3*(c*log(2*sqrt(-c^2*x^
2 + 1)/abs(x) + 2/abs(x)) + arcsin(c*x)/x)*b*d^2*e + 1/9*(3*x^3*arcsin(c*x)
 + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*b*e^3 + 3*a*d
*e^2*x + 3*(c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*b*d*e^2/c - 3*a*d^2*e/x -
 1/3*a*d^3/x^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a + b\,\mathrm{asin}(c\,x))\,\left(e\,x^2 + d\right)^3}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(d + e*x^2)^3)/x^4,x)
```

```
[Out] int(((a + b*asin(c*x))*(d + e*x^2)^3)/x^4, x)
```

sympy [A] time = 8.73, size = 311, normalized size = 1.67

$$-\frac{ad^3}{3x^3} - \frac{3ad^2e}{x} + 3ade^2x + \frac{ae^3x^3}{3} + \frac{bcd^3\left(\begin{cases} -\frac{c^2\operatorname{acosh}\left(\frac{1}{cx}\right)}{2} - \frac{c\sqrt{-1+\frac{1}{c^2x^2}}}{2x} & \text{for } \frac{1}{|c^2x^2|} > 1 \\ \frac{ic^2\operatorname{asin}\left(\frac{1}{cx}\right)}{2} - \frac{ic}{2x\sqrt{1-\frac{1}{c^2x^2}}} + \frac{i}{2cx^3\sqrt{1-\frac{1}{c^2x^2}}} & \text{otherwise} \end{cases}\right)}{3} + 3bcd^2e\left(\begin{cases} -\operatorname{acosh}\left(\right. \\ i\operatorname{asin}\left(\frac{1}{cx}\right. \end{cases}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)**3*(a+b*asin(c*x))/x**4,x)
```

```
[Out] -a*d**3/(3*x**3) - 3*a*d**2*e/x + 3*a*d*e**2*x + a*e**3*x**3/3 + b*c*d**3*P
iecewise((-c**2*acosh(1/(c*x))/2 - c*sqrt(-1 + 1/(c**2*x**2))/(2*x), 1/Abs(
c**2*x**2) > 1), (I*c**2*asin(1/(c*x))/2 - I*c/(2*x*sqrt(1 - 1/(c**2*x**2))
) + I/(2*c*x**3*sqrt(1 - 1/(c**2*x**2))), True))/3 + 3*b*c*d**2*e*Piecewise
((-acosh(1/(c*x)), 1/Abs(c**2*x**2) > 1), (I*asin(1/(c*x)), True)) - b*c*e*
*3*Piecewise((-x**2*sqrt(-c**2*x**2 + 1)/(3*c**2) - 2*sqrt(-c**2*x**2 + 1)/
(3*c**4), Ne(c, 0)), (x**4/4, True))/3 - b*d**3*asin(c*x)/(3*x**3) - 3*b*d*
*2*e*asin(c*x)/x + 3*b*d*e**2*Piecewise((0, Eq(c, 0)), (x*asin(c*x) + sqrt(
-c**2*x**2 + 1)/c, True)) + b*e**3*x**3*asin(c*x)/3
```

3.623 $\int \left(d+ex^2\right)^4 \left(a+b\sin^{-1}(cx)\right) dx$

Optimal. Leaf size=317

$$d^4x\left(a+b\sin^{-1}(cx)\right)+\frac{4}{3}d^3ex^3\left(a+b\sin^{-1}(cx)\right)+\frac{6}{5}d^2e^2x^5\left(a+b\sin^{-1}(cx)\right)+\frac{4}{7}de^3x^7\left(a+b\sin^{-1}(cx)\right)+\frac{1}{9}e^4x^9\left(a\right.$$

```
[Out] -4/945*b*e*(105*c^6*d^3+189*c^4*d^2*e+135*c^2*d*e^2+35*e^3)*(-c^2*x^2+1)^(3
/2)/c^9+2/525*b*e^2*(63*c^4*d^2+90*c^2*d*e+35*e^2)*(-c^2*x^2+1)^(5/2)/c^9-4
/441*b*e^3*(9*c^2*d+7*e)*(-c^2*x^2+1)^(7/2)/c^9+1/81*b*e^4*(-c^2*x^2+1)^(9/
2)/c^9+d^4*x*(a+b*arcsin(c*x))+4/3*d^3*e*x^3*(a+b*arcsin(c*x))+6/5*d^2*e^2*
x^5*(a+b*arcsin(c*x))+4/7*d*e^3*x^7*(a+b*arcsin(c*x))+1/9*e^4*x^9*(a+b*arcs
in(c*x))+1/315*b*(315*c^8*d^4+420*c^6*d^3*e+378*c^4*d^2*e^2+180*c^2*d*e^3+3
5*e^4)*(-c^2*x^2+1)^(1/2)/c^9
```

Rubi [A] time = 0.34, antiderivative size = 317, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.278$, Rules used = {194, 4665, 12, 1799, 1850}

$$\frac{6}{5}d^2e^2x^5\left(a+b\sin^{-1}(cx)\right)+\frac{4}{3}d^3ex^3\left(a+b\sin^{-1}(cx)\right)+d^4x\left(a+b\sin^{-1}(cx)\right)+\frac{4}{7}de^3x^7\left(a+b\sin^{-1}(cx)\right)+\frac{1}{9}e^4x^9\left(a\right.$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x^2)^4*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*(315*c^8*d^4 + 420*c^6*d^3*e + 378*c^4*d^2*e^2 + 180*c^2*d*e^3 + 35*e^4)
*Sqrt[1 - c^2*x^2])/(315*c^9) - (4*b*e*(105*c^6*d^3 + 189*c^4*d^2*e + 135*c
^2*d*e^2 + 35*e^3)*(1 - c^2*x^2)^(3/2))/(945*c^9) + (2*b*e^2*(63*c^4*d^2 +
90*c^2*d*e + 35*e^2)*(1 - c^2*x^2)^(5/2))/(525*c^9) - (4*b*e^3*(9*c^2*d + 7
*e)*(1 - c^2*x^2)^(7/2))/(441*c^9) + (b*e^4*(1 - c^2*x^2)^(9/2))/(81*c^9) +
 d^4*x*(a + b*ArcSin[c*x]) + (4*d^3*e*x^3*(a + b*ArcSin[c*x]))/3 + (6*d^2*e
^2*x^5*(a + b*ArcSin[c*x]))/5 + (4*d*e^3*x^7*(a + b*ArcSin[c*x]))/7 + (e^4*
x^9*(a + b*ArcSin[c*x]))/9
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 1799

```
Int[(Pq_)*(x_)^(m_.)*((a_) + (b_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[1/2, Su
bst[Int[x^((m - 1)/2)*SubstFor[x^2, Pq, x]*(a + b*x)^p, x], x, x^2], x] /;
FreeQ[{a, b, p}, x] && PolyQ[Pq, x^2] && IntegerQ[(m - 1)/2]
```

Rule 1850

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_.), x_Symbol] :> Int[ExpandIntegrand
[Pq*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, n}, x] && PolyQ[Pq, x] && (IGtQ[p
, 0] || EqQ[n, 1])
```

Rule 4665

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && NeQ[c^2*d + e, 0] && (IGtQ[p, 0] || ILtQ[p + 1/2, 0]
)
```

Rubi steps

$$\int \left(d+ex^2\right)^4 \left(a+b\sin^{-1}(cx)\right) dx = d^4x\left(a+b\sin^{-1}(cx)\right)+\frac{4}{3}d^3ex^3\left(a+b\sin^{-1}(cx)\right)+\frac{6}{5}d^2e^2x^5\left(a+b\sin^{-1}(cx)\right)$$

$$= d^4x\left(a+b\sin^{-1}(cx)\right)+\frac{4}{3}d^3ex^3\left(a+b\sin^{-1}(cx)\right)+\frac{6}{5}d^2e^2x^5\left(a+b\sin^{-1}(cx)\right)$$

$$= d^4x\left(a+b\sin^{-1}(cx)\right)+\frac{4}{3}d^3ex^3\left(a+b\sin^{-1}(cx)\right)+\frac{6}{5}d^2e^2x^5\left(a+b\sin^{-1}(cx)\right)$$

$$= d^4x\left(a+b\sin^{-1}(cx)\right)+\frac{4}{3}d^3ex^3\left(a+b\sin^{-1}(cx)\right)+\frac{6}{5}d^2e^2x^5\left(a+b\sin^{-1}(cx)\right)$$

$$= \frac{b\left(315c^8d^4+420c^6d^3e+378c^4d^2e^2+180c^2de^3+35e^4\right)\sqrt{1-c^2x^2}}{315c^9} - \frac{4be\,(10}{}$$

Mathematica [A] time = 0.34, size = 260, normalized size = 0.82

$$\frac{315ax\left(315d^4+420d^3ex^2+378d^2e^2x^4+180de^3x^6+35e^4x^8\right)+\frac{b\sqrt{1-c^2x^2}\left(c^8\left(99225d^4+44100d^3ex^2+23814d^2e^2x^4+8100de^3x^6+1\right.\right.}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x^2)^4*(a + b*ArcSin[c*x]),x]
```

```
[Out] (315*a*x*(315*d^4 + 420*d^3*e*x^2 + 378*d^2*e^2*x^4 + 180*d*e^3*x^6 + 35*e^
4*x^8) + (b*Sqrt[1 - c^2*x^2]*(4480*e^4 + 320*c^2*e^3*(81*d + 7*e*x^2) + 48
*c^4*e^2*(1323*d^2 + 270*d*e*x^2 + 35*e^2*x^4) + 8*c^6*e*(11025*d^3 + 3969*
d^2*e*x^2 + 1215*d*e^2*x^4 + 175*e^3*x^6) + c^8*(99225*d^4 + 44100*d^3*e*x^
2 + 23814*d^2*e^2*x^4 + 8100*d*e^3*x^6 + 1225*e^4*x^8)))/c^9 + 315*b*x*(315
*d^4 + 420*d^3*e*x^2 + 378*d^2*e^2*x^4 + 180*d*e^3*x^6 + 35*e^4*x^8)*ArcSin
[c*x])/99225
```

fricas [A] time = 0.60, size = 321, normalized size = 1.01

$$\frac{11025\,ac^9e^4x^9+56700\,ac^9de^3x^7+119070\,ac^9d^2e^2x^5+132300\,ac^9d^3ex^3+99225\,ac^9d^4x+315\left(35\,bc^9e^4x^9+180\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^4*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] 1/99225*(11025*a*c^9*e^4*x^9 + 56700*a*c^9*d*e^3*x^7 + 119070*a*c^9*d^2*e^2
*x^5 + 132300*a*c^9*d^3*e*x^3 + 99225*a*c^9*d^4*x + 315*(35*b*c^9*e^4*x^9 +
 180*b*c^9*d*e^3*x^7 + 378*b*c^9*d^2*e^2*x^5 + 420*b*c^9*d^3*e*x^3 + 315*b*
c^9*d^4*x)*arcsin(c*x) + (1225*b*c^8*e^4*x^8 + 99225*b*c^8*d^4 + 88200*b*c^
6*d^3*e + 63504*b*c^4*d^2*e^2 + 25920*b*c^2*d*e^3 + 100*(81*b*c^8*d*e^3 + 1
4*b*c^6*e^4)*x^6 + 4480*b*e^4 + 6*(3969*b*c^8*d^2*e^2 + 1620*b*c^6*d*e^3 +
280*b*c^4*e^4)*x^4 + 4*(11025*b*c^8*d^3*e + 7938*b*c^6*d^2*e^2 + 3240*b*c^4
*d*e^3 + 560*b*c^2*e^4)*x^2)*sqrt(-c^2*x^2 + 1))/c^9
```

giac [B] time = 1.11, size = 744, normalized size = 2.35

$$\frac{1}{9}ax^9e^4+\frac{4}{7}adx^7e^3+\frac{6}{5}ad^2x^5e^2+\frac{4}{3}ad^3x^3e+bd^4x\arcsin(cx)+ad^4x+\frac{4(c^2x^2-1)bd^3x\arcsin(cx)e}{3c^2}+\frac{4bd^3x\arcsin}{3c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^4*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] 1/9*a*x^9*e^4 + 4/7*a*d*x^7*e^3 + 6/5*a*d^2*x^5*e^2 + 4/3*a*d^3*x^3*e + b*d
^4*x*arcsin(c*x) + a*d^4*x + 4/3*(c^2*x^2 - 1)*b*d^3*x*arcsin(c*x)*e/c^2 +
4/3*b*d^3*x*arcsin(c*x)*e/c^2 + sqrt(-c^2*x^2 + 1)*b*d^4/c + 6/5*(c^2*x^2 -
 1)^2*b*d^2*x*arcsin(c*x)*e^2/c^4 - 4/9*(-c^2*x^2 + 1)^(3/2)*b*d^3*e/c^3 +
12/5*(c^2*x^2 - 1)*b*d^2*x*arcsin(c*x)*e^2/c^4 + 4/3*sqrt(-c^2*x^2 + 1)*b*d
^3*e/c^3 + 4/7*(c^2*x^2 - 1)^3*b*d*x*arcsin(c*x)*e^3/c^6 + 6/5*b*d^2*x*arcs
in(c*x)*e^2/c^4 + 6/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*d^2*e^2/c^5 + 1
2/7*(c^2*x^2 - 1)^2*b*d*x*arcsin(c*x)*e^3/c^6 - 4/5*(-c^2*x^2 + 1)^(3/2)*b*
d^2*e^2/c^5 + 1/9*(c^2*x^2 - 1)^4*b*x*arcsin(c*x)*e^4/c^8 + 12/7*(c^2*x^2 -
 1)*b*d*x*arcsin(c*x)*e^3/c^6 + 4/49*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*b*d
*e^3/c^7 + 6/5*sqrt(-c^2*x^2 + 1)*b*d^2*e^2/c^5 + 4/9*(c^2*x^2 - 1)^3*b*x*a
rcsin(c*x)*e^4/c^8 + 4/7*b*d*x*arcsin(c*x)*e^3/c^6 + 12/35*(c^2*x^2 - 1)^2*
sqrt(-c^2*x^2 + 1)*b*d*e^3/c^7 + 2/3*(c^2*x^2 - 1)^2*b*x*arcsin(c*x)*e^4/c^
8 + 1/81*(c^2*x^2 - 1)^4*sqrt(-c^2*x^2 + 1)*b*e^4/c^9 - 4/7*(-c^2*x^2 + 1)^
(3/2)*b*d*e^3/c^7 + 4/9*(c^2*x^2 - 1)*b*x*arcsin(c*x)*e^4/c^8 + 4/63*(c^2*x
^2 - 1)^3*sqrt(-c^2*x^2 + 1)*b*e^4/c^9 + 4/7*sqrt(-c^2*x^2 + 1)*b*d*e^3/c^7
 + 1/9*b*x*arcsin(c*x)*e^4/c^8 + 2/15*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b*
e^4/c^9 - 4/27*(-c^2*x^2 + 1)^(3/2)*b*e^4/c^9 + 1/9*sqrt(-c^2*x^2 + 1)*b*e^
4/c^9
```

maple [A] time = 0.00, size = 465, normalized size = 1.47

$$\frac{a\left(\frac{1}{9}e^4c^9x^9+\frac{4}{7}c^9d\,e^3x^7+\frac{6}{5}c^9d^2e^2x^5+\frac{4}{3}c^9d^3e\,x^3+c^9d^4x\right)}{c^8}+\frac{b\left(\frac{\arcsin(cx)e^4c^9x^9}{9}+\frac{4\arcsin(cx)c^9d\,e^3x^7}{7}+\frac{6\arcsin(cx)c^9d^2e^2x^5}{5}+\frac{4\arcsin(cx)c^9d^3e\,x^3}{3}+\arcsin(cx)c\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)^4*(a+b*arcsin(c*x)),x)
```

```
[Out] 1/c*(a/c^8*(1/9*e^4*c^9*x^9+4/7*c^9*d*e^3*x^7+6/5*c^9*d^2*e^2*x^5+4/3*c^9*d
^3*e*x^3+c^9*d^4*x)+b/c^8*(1/9*arcsin(c*x)*e^4*c^9*x^9+4/7*arcsin(c*x)*c^9*
d*e^3*x^7+6/5*arcsin(c*x)*c^9*d^2*e^2*x^5+4/3*arcsin(c*x)*c^9*d^3*e*x^3+arc
sin(c*x)*c^9*d^4*x-1/9*e^4*(-1/9*c^8*x^8*(-c^2*x^2+1)^(1/2)-8/63*c^6*x^6*(-
c^2*x^2+1)^(1/2)-16/105*c^4*x^4*(-c^2*x^2+1)^(1/2)-64/315*c^2*x^2*(-c^2*x^2
+1)^(1/2)-128/315*(-c^2*x^2+1)^(1/2))-4/7*c^2*d*e^3*(-1/7*c^6*x^6*(-c^2*x^2
+1)^(1/2)-6/35*c^4*x^4*(-c^2*x^2+1)^(1/2)-8/35*c^2*x^2*(-c^2*x^2+1)^(1/2)-1
6/35*(-c^2*x^2+1)^(1/2))-6/5*c^4*d^2*e^2*(-1/5*c^4*x^4*(-c^2*x^2+1)^(1/2)-4
/15*c^2*x^2*(-c^2*x^2+1)^(1/2)-8/15*(-c^2*x^2+1)^(1/2))-4/3*c^6*d^3*e*(-1/3
*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-c^2*x^2+1)^(1/2))+c^8*d^4*(-c^2*x^2+1)^(1
/2)))
```

maxima [A] time = 0.79, size = 424, normalized size = 1.34

$$\frac{1}{9}ae^4x^9+\frac{4}{7}ade^3x^7+\frac{6}{5}ad^2e^2x^5+\frac{4}{3}ad^3ex^3+\frac{4}{9}\left(3x^3\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2}+\frac{2\sqrt{-c^2x^2+1}}{c^4}\right)\right)bd^3e+\frac{2}{25}\Big($$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((e*x^2+d)^4*(a+b*arcsin(c*x)),x, algorithm="maxima")

[Out] 1/9*a*e^4*x^9 + 4/7*a*d*e^3*x^7 + 6/5*a*d^2*e^2*x^5 + 4/3*a*d^3*e*x^3 + 4/9 *(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/ c^4))*b*d^3*e + 2/25*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*b*d^2*e^2 + 4/2 45*(35*x^7*arcsin(c*x) + (5*sqrt(-c^2*x^2 + 1)*x^6/c^2 + 6*sqrt(-c^2*x^2 + 1)*x^4/c^4 + 8*sqrt(-c^2*x^2 + 1)*x^2/c^6 + 16*sqrt(-c^2*x^2 + 1)/c^8)*c)*b *d*e^3 + 1/2835*(315*x^9*arcsin(c*x) + (35*sqrt(-c^2*x^2 + 1)*x^8/c^2 + 40* sqrt(-c^2*x^2 + 1)*x^6/c^4 + 48*sqrt(-c^2*x^2 + 1)*x^4/c^6 + 64*sqrt(-c^2*x ^2 + 1)*x^2/c^8 + 128*sqrt(-c^2*x^2 + 1)/c^10)*c)*b*e^4 + a*d^4*x + (c*x*ar csin(c*x) + sqrt(-c^2*x^2 + 1))*b*d^4/c

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a + b\,\mathrm{asin}\,(c\,x))\,\left(e\,x^2 + d\right)^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a + b*asin(c*x))*(d + e*x^2)^4,x)

[Out] int((a + b*asin(c*x))*(d + e*x^2)^4, x)

sympy [A] time = 17.13, size = 593, normalized size = 1.87

$$\begin{cases} ad^4x + \frac{4ad^3ex^3}{3} + \frac{6ad^2e^2x^5}{5} + \frac{4ade^3x^7}{7} + \frac{ae^4x^9}{9} + bd^4x\,\mathrm{asin}\,(cx) + \frac{4bd^3ex^3\,\mathrm{asin}\,(cx)}{3} + \frac{6bd^2e^2x^5\,\mathrm{asin}\,(cx)}{5} + \frac{4bde^3x^7\,\mathrm{asin}\,(cx)}{7} + \frac{be^4}{} \\ a\left(d^4x + \frac{4d^3ex^3}{3} + \frac{6d^2e^2x^5}{5} + \frac{4de^3x^7}{7} + \frac{e^4x^9}{9}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((e*x**2+d)**4*(a+b*asin(c*x)),x)

[Out] Piecewise((a*d**4*x + 4*a*d**3*e*x**3/3 + 6*a*d**2*e**2*x**5/5 + 4*a*d*e**3 *x**7/7 + a*e**4*x**9/9 + b*d**4*x*asin(c*x) + 4*b*d**3*e*x**3*asin(c*x)/3 + 6*b*d**2*e**2*x**5*asin(c*x)/5 + 4*b*d*e**3*x**7*asin(c*x)/7 + b*e**4*x** 9*asin(c*x)/9 + b*d**4*sqrt(-c**2*x**2 + 1)/c + 4*b*d**3*e*x**2*sqrt(-c**2* x**2 + 1)/(9*c) + 6*b*d**2*e**2*x**4*sqrt(-c**2*x**2 + 1)/(25*c) + 4*b*d*e* *3*x**6*sqrt(-c**2*x**2 + 1)/(49*c) + b*e**4*x**8*sqrt(-c**2*x**2 + 1)/(81* c) + 8*b*d**3*e*sqrt(-c**2*x**2 + 1)/(9*c**3) + 8*b*d**2*e**2*x**2*sqrt(-c* *2*x**2 + 1)/(25*c**3) + 24*b*d*e**3*x**4*sqrt(-c**2*x**2 + 1)/(245*c**3) + 8*b*e**4*x**6*sqrt(-c**2*x**2 + 1)/(567*c**3) + 16*b*d**2*e**2*sqrt(-c**2* x**2 + 1)/(25*c**5) + 32*b*d*e**3*x**2*sqrt(-c**2*x**2 + 1)/(245*c**5) + 16 *b*e**4*x**4*sqrt(-c**2*x**2 + 1)/(945*c**5) + 64*b*d*e**3*sqrt(-c**2*x**2 + 1)/(245*c**7) + 64*b*e**4*x**2*sqrt(-c**2*x**2 + 1)/(2835*c**7) + 128*b*e **4*sqrt(-c**2*x**2 + 1)/(2835*c**9), Ne(c, 0)), (a*(d**4*x + 4*d**3*e*x**3 /3 + 6*d**2*e**2*x**5/5 + 4*d*e**3*x**7/7 + e**4*x**9/9), True))

3.624 $\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)}{d+ex^2}\,dx$

Optimal. Leaf size=653

$$\frac{(-d)^{3/2}\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e^{5/2}}-\frac{(-d)^{3/2}\left(a+b\sin^{-1}(cx)\right)\log\left(1+\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e^{5/2}}+\frac{(-d)^{3/2}\left(\ldots\right.}{\ldots}$$

```
[Out] -a*d*x/e^2-1/9*b*(-c^2*x^2+1)^(3/2)/c^3/e-b*d*x*arcsin(c*x)/e^2+1/3*x^3*(a+
b*arcsin(c*x))/e+1/2*(-d)^(3/2)*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^
(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/e^(5/2)-1/2*(-d)^(3/2)*(a+
b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2
*d+e)^(1/2)))/e^(5/2)+1/2*(-d)^(3/2)*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^
2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/e^(5/2)-1/2*(-d)^(3/2
)*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)
+(c^2*d+e)^(1/2)))/e^(5/2)+1/2*I*b*(-d)^(3/2)*polylog(2,-(I*c*x+(-c^2*x^2+1
)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/e^(5/2)-1/2*I*b*(-d)^(3/
2)*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(
1/2)))/e^(5/2)+1/2*I*b*(-d)^(3/2)*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(
1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/e^(5/2)-1/2*I*b*(-d)^(3/2)*polylog(2
,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/e^(5/
2)-b*d*(-c^2*x^2+1)^(1/2)/c/e^2+1/3*b*(-c^2*x^2+1)^(1/2)/c^3/e
```

Rubi [A] time = 1.05, antiderivative size = 653, normalized size of antiderivative = 1.00, number of steps used = 27, number of rules used = 12, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.571, Rules used = {4733, 4619, 261, 4627, 266, 43, 4667, 4741, 4521, 2190, 2279, 2391}

$$\frac{ib(-d)^{3/2}\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e^{5/2}}-\frac{ib(-d)^{3/2}\text{PolyLog}\left(2,\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e^{5/2}}+\frac{ib(-d)^{3/2}\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin\ldots}}{\sqrt{c^2d+e}+\ldots}\right)}{2e^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*ArcSin[c*x]))/(d + e*x^2),x]
```

```
[Out] -((a*d*x)/e^2) - (b*d*Sqrt[1 - c^2*x^2])/(c*e^2) + (b*Sqrt[1 - c^2*x^2])/(3
*c^3*e) - (b*(1 - c^2*x^2)^(3/2))/(9*c^3*e) - (b*d*x*ArcSin[c*x])/e^2 + (x^
3*(a + b*ArcSin[c*x]))/(3*e) + ((-d)^(3/2)*(a + b*ArcSin[c*x])*Log[1 - (Sqr
t[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(2*e^(5/2)) - ((
-d)^(3/2)*(a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt
[-d] - Sqrt[c^2*d + e])])/(2*e^(5/2)) + ((-d)^(3/2)*(a + b*ArcSin[c*x])*Log
[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(2*e^(5
/2)) - ((-d)^(3/2)*(a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/
(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(2*e^(5/2)) + ((I/2)*b*(-d)^(3/2)*PolyLo
g[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e]))])/e^(5
/2) - ((I/2)*b*(-d)^(3/2)*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[
-d] - Sqrt[c^2*d + e])])/e^(5/2) + ((I/2)*b*(-d)^(3/2)*PolyLog[2, -((Sqrt[e
]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e]))])/e^(5/2) - ((I/2)*b
*(-d)^(3/2)*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2
*d + e])])/e^(5/2)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rule 4733

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (
f*x)^m*(d + e*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[c^2*d +
 e, 0] && IGtQ[n, 0] && IntegerQ[p] && IntegerQ[m]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)}{d+ex^2}\,dx = \int \left(-\frac{d\left(a+b\sin^{-1}(cx)\right)}{e^2}+\frac{x^2\left(a+b\sin^{-1}(cx)\right)}{e}+\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{e^2\left(d+ex^2\right)}\right)dx$$

$$= -\frac{d\int\left(a+b\sin^{-1}(cx)\right)dx}{e^2}+\frac{d^2\int\frac{a+b\sin^{-1}(cx)}{d+ex^2}\,dx}{e^2}+\frac{\int x^2\left(a+b\sin^{-1}(cx)\right)dx}{e}$$

$$= -\frac{adx}{e^2}+\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{3e}-\frac{(bd)\int\sin^{-1}(cx)\,dx}{e^2}+\frac{d^2\int\left(\frac{\sqrt{-d}\left(a+b\sin^{-1}(cx)\right)}{2d\left(\sqrt{-d}-\sqrt{e}\,x\right)}+\frac{\sqrt{-}}{2}\right.}{e^2}$$

$$= -\frac{adx}{e^2}-\frac{bdx\sin^{-1}(cx)}{e^2}+\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{3e}-\frac{(-d)^{3/2}\int\frac{a+b\sin^{-1}(cx)}{\sqrt{-d}-\sqrt{e}\,x}\,dx}{2e^2}-\frac{(-d)^{3/2}}{}$$

$$= -\frac{adx}{e^2}-\frac{bd\sqrt{1-c^2x^2}}{ce^2}-\frac{bdx\sin^{-1}(cx)}{e^2}+\frac{x^3\left(a+b\sin^{-1}(cx)\right)}{3e}-\frac{(-d)^{3/2}\,\mathrm{Subst}\left(\int\right.}{}$$

$$= -\frac{adx}{e^2}-\frac{bd\sqrt{1-c^2x^2}}{ce^2}+\frac{b\sqrt{1-c^2x^2}}{3c^3e}-\frac{b\left(1-c^2x^2\right)^{3/2}}{9c^3e}-\frac{bdx\sin^{-1}(cx)}{e^2}+\frac{x^3\left(a+b\right.}{}$$

$$= -\frac{adx}{e^2}-\frac{bd\sqrt{1-c^2x^2}}{ce^2}+\frac{b\sqrt{1-c^2x^2}}{3c^3e}-\frac{b\left(1-c^2x^2\right)^{3/2}}{9c^3e}-\frac{bdx\sin^{-1}(cx)}{e^2}+\frac{x^3\left(a+b\right.}{}$$

$$= -\frac{adx}{e^2}-\frac{bd\sqrt{1-c^2x^2}}{ce^2}+\frac{b\sqrt{1-c^2x^2}}{3c^3e}-\frac{b\left(1-c^2x^2\right)^{3/2}}{9c^3e}-\frac{bdx\sin^{-1}(cx)}{e^2}+\frac{x^3\left(a+b\right.}{}$$

$$= -\frac{adx}{e^2}-\frac{bd\sqrt{1-c^2x^2}}{ce^2}+\frac{b\sqrt{1-c^2x^2}}{3c^3e}-\frac{b\left(1-c^2x^2\right)^{3/2}}{9c^3e}-\frac{bdx\sin^{-1}(cx)}{e^2}+\frac{x^3\left(a+b\right.}{}$$

Mathematica [A] time = 0.97, size = 515, normalized size = 0.79

$$\frac{ad^{3/2}\tan^{-1}\left(\frac{\sqrt{e}\,x}{\sqrt{d}}\right)}{e^{5/2}}-\frac{adx}{e^2}+\frac{ax^3}{3e}+\frac{b\left(d^{3/2}\left(-2\mathrm{Li}_2\left(\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{\sqrt{dc^2+e}-c\sqrt{d}}\right)-2\mathrm{Li}_2\left(-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{\sqrt{d}\,c+\sqrt{dc^2+e}}\right)-\sin^{-1}(cx)\left(\sin^{-1}(cx)+2i\left(\right.\right.\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^4*(a + b*ArcSin[c*x]))/(d + e*x^2),x]
```

```
[Out] -((a*d*x)/e^2) + (a*x^3)/(3*e) + (a*d^(3/2)*ArcTan[(Sqrt[e]*x)/Sqrt[d]])/e^
(5/2) + (b*((-4*d*Sqrt[e]*(Sqrt[1 - c^2*x^2] + c*x*ArcSin[c*x]))/c + (4*e^(
3/2)*(Sqrt[1 - c^2*x^2]*(2 + c^2*x^2) + 3*c^3*x^3*ArcSin[c*x]))/(9*c^3) + d
```

```
^(3/2)*(-(ArcSin[c*x]*(ArcSin[c*x] + (2*I)*(Log[1 + (Sqrt[e]*E^(I*ArcSin[c*
x]))/(c*Sqrt[d] - Sqrt[c^2*d + e])] + Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(
c*Sqrt[d] + Sqrt[c^2*d + e])]))) - 2*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))
/(-(c*Sqrt[d]) + Sqrt[c^2*d + e])] - 2*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*
x]))/(c*Sqrt[d] + Sqrt[c^2*d + e]))]) + d^(3/2)*(ArcSin[c*x]*(ArcSin[c*x] +
 (2*I)*(Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(-(c*Sqrt[d]) + Sqrt[c^2*d + e]
)] + Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e])])) +
 2*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] - Sqrt[c^2*d + e])] +
2*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e])])))/
(4*e^(5/2))
```

fricas [F] time = 0.53, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bx^4 \arcsin(cx) + ax^4}{ex^2 + d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))/(e*x^2+d),x, algorithm="fricas")
```

```
[Out] integral((b*x^4*arcsin(c*x) + a*x^4)/(e*x^2 + d), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))/(e*x^2+d),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to divide, perhaps due to rounding er
ror%%%{281474976710656,[0,8,0,0,0,256,8,72]%%%}+%%%{1125899906842624,[0,8,0
,0,0,254,7,73]%%%}+%%%{1829587348619264,[0,8,0,0,0,252,6,74]%%%}+%%%{154811
2371908608,[0,8,0,0,0,250,5,75]%%%}+%%%{721279627821056,[0,8,0,0,0,248,4,76
]%%%}+%%%{175921860444160,[0,8,0,0,0,246,3,77]%%%}+%%%{17592186044416,[0,8,
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{1916928,[0,0,8,0,8,224,4,68]%%%}+%%%{421888,[0,0,8,0,8,222,3,69]%%%}+%%%{5
7664,[0,0,8,0,8,220,2,70]%%%}+%%%{4416,[0,0,8,0,8,218,1,71]%%%}+%%%{144,[0,

0,8,0,8,216,0,72]%%%}+%%%{8388608,[0,0,7,1,7,236,10,62]%%%}+%%%{41943040,[0,0,7,1,7,234,9,63]%%%}+%%%{91226112,[0,0,7,1,7,232,8,64]%%%}+%%%{113246208,[0,0,7,1,7,230,7,65]%%%}+%%%{88506368,[0,0,7,1,7,228,6,66]%%%}+%%%{45318144,[0,0,7,1,7,226,5,67]%%%}+%%%{15335424,[0,0,7,1,7,224,4,68]%%%}+%%%{3375104,[0,0,7,1,7,222,3,69]%%%}+%%%{461312,[0,0,7,1,7,220,2,70]%%%}+%%%{35328,[0,0,7,1,7,218,1,71]%%%}+%%%{1152,[0,0,7,1,7,216,0,72]%%%}+%%%{29360128,[0,0,6,2,6,236,10,62]%%%}+%%%{146800640,[0,0,6,2,6,234,9,63]%%%}+%%%{319291392,[0,0,6,2,6,232,8,64]%%%}+%%%{396361728,[0,0,6,2,6,230,7,65]%%%}+%%%{309772288,[0,0,6,2,6,228,6,66]%%%}+%%%{158613504,[0,0,6,2,6,226,5,67]%%%}+%%%{53673984,[0,0,6,2,6,224,4,68]%%%}+%%%{11812864,[0,0,6,2,6,222,3,69]%%%}+%%%{1614592,[0,0,6,2,6,220,2,70]%%%}+%%%{123648,[0,0,6,2,6,218,1,71]%%%}+%%%{4032,[0,0,6,2,6,216,0,72]%%%}+%%%{58720256,[0,0,5,3,5,236,10,62]%%%}+%%%{293601280,[0,0,5,3,5,234,9,63]%%%}+%%%{638582784,[0,0,5,3,5,232,8,64]%%%}+%%%{792723456,[0,0,5,3,5,230,7,65]%%%}+%%%{619544576,[0,0,5,3,5,228,6,66]%%%}+%%%{317227008,[0,0,5,3,5,226,5,67]%%%}+%%%{107347968,[0,0,5,3,5,224,4,68]%%%}+%%%{23625728,[0,0,5,3,5,222,3,69]%%%}+%%%{3229184,[0,0,5,3,5,220,2,70]%%%}+%%%{247296,[0,0,5,3,5,218,1,71]%%%}+%%%{8064,[0,0,5,3,5,216,0,72]%%%}+%%%{73400320,[0,0,4,4,4,236,10,62]%%%}+%%%{367001600,[0,0,4,4,4,234,9,63]%%%}+%%%{798228480,[0,0,4,4,4,232,8,64]%%%}+%%%{990904320,[0,0,4,4,4,230,7,65]%%%}+%%%{774430720,[0,0,4,4,4,228,6,66]%%%}+%%%{396533760,[0,0,4,4,4,226,5,67]%%%}+%%%{134184960,[0,0,4,4,4,224,4,68]%%%}+%%%{29532160,[0,0,4,4,4,222,3,69]%%%}+%%%{4036480,[0,0,4,4,4,220,2,70]%%%}+%%%{309120,[0,0,4,4,4,218,1,71]%%%}+%%%{10080,[0,0,4,4,4,216,0,72]%%%}+%%%{58720256,[0,0,3,5,3,236,10,62]%%%}+%%%{293601280,[0,0,3,5,3,234,9,63]%%%}+%%%{638582784,[0,0,3,5,3,232,8,64]%%%}+%%%{792723456,[0,0,3,5,3,230,7,65]%%%}+%%%{619544576,[0,0,3,5,3,228,6,66]%%%}+%%%{317227008,[0,0,3,5,3,226,5,67]%%%}+%%%{107347968,[0,0,3,5,3,224,4,68]%%%}+%%%{23625728,[0,0,3,5,3,222,3,69]%%%}+%%%{3229184,[0,0,3,5,3,220,2,70]%%%}+%%%{247296,[0,0,3,5,3,218,1,71]%%%}+%%%{8064,[0,0,3,5,3,216,0,72]%%%}+%%%{29360128,[0,0,2,6,2,236,10,62]%%%}+%%%{146800640,[0,0,2,6,2,234,9,63]%%%}+%%%{319291392,[0,0,2,6,2,232,8,64]%%%}+%%%{396361728,[0,0,2,6,2,230,7,65]%%%}+%%%{309772288,[0,0,2,6,2,228,6,66]%%%}+%%%{158613504,[0,0,2,6,2,226,5,67]%%%}+%%%{53673984,[0,0,2,6,2,224,4,68]%%%}+%%%{11812864,[0,0,2,6,2,222,3,69]%%%}+%%%{1614592,[0,0,2,6,2,220,2,70]%%%}+%%%{123648,[0,0,2,6,2,218,1,71]%%%}+%%%{4032,[0,0,2,6,2,216,0,72]%%%}+%%%{8388608,[0,0,1,7,1,236,10,62]%%%}+%%%{41943040,[0,0,1,7,1,234,9,63]%%%}+%%%{91226112,[0,0,1,7,1,232,8,64]%%%}+%%%{113246208,[0,0,1,7,1,230,7,65]%%%}+%%%{88506368,[0,0,1,7,1,228,6,66]%%%}+%%%{45318144,[0,0,1,7,1,226,5,67]%%%}+%%%{15335424,[0,0,1,7,1,224,4,68]%%%}+%%%{3375104,[0,0,1,7,1,222,3,69]%%%}+%%%{461312,[0,0,1,7,1,220,2,70]%%%}+%%%{35328,[0,0,1,7,1,218,1,71]%%%}+%%%{1152,[0,0,1,7,1,216,0,72]%%%}+%%%{1048576,[0,0,0,8,0,236,10,62]%%%}+%%%{5242880,[0,0,0,8,0,234,9,63]%%%}+%%%{11403264,[0,0,0,8,0,232,8,64]%%%}+%%%{14155776,[0,0,0,8,0,230,7,65]%%%}+%%%{11063296,[0,0,0,8,0,228,6,66]%%%}+%%%{5664768,[0,0,0,8,0,226,5,67]%%%}+%%%{1916928,[0,0,0,8,0,224,4,68]%%%}+%%%{421888,[0,0,0,8,0,222,3,69]%%%}+%%%{57664,[0,0,0,8,0,220,2,70]%%%}+%%%{4416,[0,0,0,8,0,218,1,71]%%%}+%%%{144,[0,0,0,8,0,216,0,72]%%%} / %%%{-4096,[0,2,0,0,0,64,2,18]%%%}+%%%{-4096,[0,2,0,0,0,62,1,19]%%%}+%%%{-1024,[0,2,0,0,0,60,0,20]%%%}+%%%{-1024,[0,0,2,0,2,64,5,13]%%%}+%%%{-2560,[0,0,2,0,2,62,4,14]%%%}+%%%{-2368,[0,0,2,0,2,60,3,15]%%%}+%%%{-992,[0,0,2,0,2,58,2,16]%%%}+%%%{-184,[0,0,2,0,2,56,1,17]%%%}+%%%{-12,[0,0,2,0,2,54,0,18]%%%}+%%%{-2048,[0,0,1,1,1,64,5,13]%%%}+%%%{-5120,[0,0,1,1,1,62,4,14]%%%}+%%%{-4736,[0,0,1,1,1,60,3,15]%%%}+%%%{-1984,[0,0,1,1,1,58,2,16]%%%}+%%%{-368,[0,0,1,1,1,56,1,17]%%%}+%%%{-24,[0,0,1,1,1,54,0,18]%%%}+%%%{-1024,[0,0,0,2,0,64,5,13]%%%}+%%%{-2560,[0,0,0,2,0,62,4,14]%%%}+%%%{-2368,[0,0,0,2,0,60,3,15]%%%}+%%%{-992,[0,0,0,2,0,58,2,16]%%%}+%%%{-184,[0,0,0,2,0,56,1,17]%%%}+%%%{-12,[0,0,0,2,0,54,0,18]%%%} Error: Bad Argument Value

maple [C] time = 3.85, size = 376, normalized size = 0.58

$$\frac{a\,x^{3}}{3e}-\frac{adx}{e^{2}}+\frac{a\,d^{2}\arctan\left(\frac{ex}{\sqrt{de}}\right)}{e^{2}\sqrt{de}}-\frac{bd\sqrt{-c^{2}x^{2}+1}}{c\,e^{2}}-\frac{bdx\arcsin\left(cx\right)}{e^{2}}+\frac{b\sqrt{-c^{2}x^{2}+1}}{4c^{3}e}+\frac{b\arcsin\left(cx\right)x}{4c^{2}e}+\frac{cb\,d^{2}\left(\sum_{\_R1=\mathrm{RootOf}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*arcsin(c*x))/(e*x^2+d),x)
```

```
[Out] 1/3*a/e*x^3-a*d*x/e^2+a*d^2/e^2/(d*e)^(1/2)*arctan(e*x/(d*e)^(1/2))-b*d*(-c
^2*x^2+1)^(1/2)/c/e^2-b*d*x*arcsin(c*x)/e^2+1/4*b*(-c^2*x^2+1)^(1/2)/c^3/e+
1/4/c^2*b/e*arcsin(c*x)*x+1/2*c*b*d^2/e^2*sum(1/_R1/(_R1^2*e-2*c^2*d-e)*(I*
arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x
^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))+1/2*c*b*d^2/e^
2*sum(_R1/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/
2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c
^2*d-2*e)*_Z^2+e))-1/36/c^3*b/e*cos(3*arcsin(c*x))-1/12/c^3*b*arcsin(c*x)/e
*sin(3*arcsin(c*x))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{3}\,a\left(\frac{3\,d^{2}\arctan\left(\frac{ex}{\sqrt{de}}\right)}{\sqrt{de}\,e^{2}}+\frac{ex^{3}-3\,dx}{e^{2}}\right)+b\int\frac{x^{4}\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{ex^{2}+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))/(e*x^2+d),x, algorithm="maxima")
```

```
[Out] 1/3*a*(3*d^2*arctan(e*x/sqrt(d*e))/(sqrt(d*e)*e^2) + (e*x^3 - 3*d*x)/e^2) +
 b*integrate(x^4*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(e*x^2 + d), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{x^{4}\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{e\,x^{2}+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(a + b*asin(c*x)))/(d + e*x^2),x)
```

```
[Out] int((x^4*(a + b*asin(c*x)))/(d + e*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{x^{4}\left(a+b\,\mathrm{asin}\left(cx\right)\right)}{d+ex^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*asin(c*x))/(e*x**2+d),x)
```

```
[Out] Integral(x**4*(a + b*asin(c*x))/(d + e*x**2), x)
```

3.625 $\int \frac{x^3(a+b\sin^{-1}(cx))}{d+ex^2}\,dx$

Optimal. Leaf size=559

$$-\frac{d\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e^2}-\frac{d\left(a+b\sin^{-1}(cx)\right)\log\left(1+\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e^2}-\frac{d\left(a+b\sin^{-1}(cx)\right)}{}$$

```
[Out] -1/4*b*arcsin(c*x)/c^2/e+1/2*x^2*(a+b*arcsin(c*x))/e+1/2*I*d*(a+b*arcsin(c*
x))^2/b/e^2-1/2*d*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)
/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/e^2-1/2*d*(a+b*arcsin(c*x))*ln(1+(I*c*x+
(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/e^2-1/2*d*(a+
b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2
*d+e)^(1/2)))/e^2-1/2*d*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))*e
^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/e^2+1/2*I*b*d*polylog(2,-(I*c*x+(-
c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/e^2+1/2*I*b*d*p
olylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)
))/e^2+1/2*I*b*d*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1
/2)+(c^2*d+e)^(1/2)))/e^2+1/2*I*b*d*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^
(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/e^2+1/4*b*x*(-c^2*x^2+1)^(1/2)/c/e
```

Rubi [A] time = 0.91, antiderivative size = 559, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 9, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {4733, 4627, 321, 216, 4741, 4521, 2190, 2279, 2391}

$$\frac{ibd\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e^2}+\frac{ibd\text{PolyLog}\left(2,\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e^2}+\frac{ibd\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e^2}+\frac{ibd\text{Poly}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*ArcSin[c*x]))/(d + e*x^2),x]
```

```
[Out] (b*x*Sqrt[1 - c^2*x^2])/(4*c*e) - (b*ArcSin[c*x])/(4*c^2*e) + (x^2*(a + b*A
rcSin[c*x]))/(2*e) + ((I/2)*d*(a + b*ArcSin[c*x])^2)/(b*e^2) - (d*(a + b*Ar
cSin[c*x])*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d +
 e])])/(2*e^2) - (d*(a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))
/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(2*e^2) - (d*(a + b*ArcSin[c*x])*Log[1
- (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(2*e^2) -
(d*(a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] +
Sqrt[c^2*d + e])])/(2*e^2) + ((I/2)*b*d*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c
*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e]))])/e^2 + ((I/2)*b*d*PolyLog[2, (Sqrt
[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/e^2 + ((I/2)*b*d*
PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e]))]
)/e^2 + ((I/2)*b*d*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + S
qrt[c^2*d + e])])/e^2
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 321

```
Int[((c_.)*(x_))^(m_)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(c^(
n - 1)*(c*x)^(m - n + 1)*(a + b*x^n)^(p + 1))/(b*(m + n*p + 1)), x] - Dist[
(a*c^n*(m - n + 1))/(b*(m + n*p + 1)), Int[(c*x)^(m - n)*(a + b*x^n)^p, x],
 x] /; FreeQ[{a, b, c, p}, x] && IGtQ[n, 0] && GtQ[m, n - 1] && NeQ[m + n*p
 + 1, 0] && IntBinomialQ[a, b, c, n, m, p, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4733

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (
f*x)^m*(d + e*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[c^2*d +
 e, 0] && IGtQ[n, 0] && IntegerQ[p] && IntegerQ[m]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{x^3 \left(a+b\sin^{-1}(cx)\right)}{d+ex^2}\,dx = \int \left(\frac{x\left(a+b\sin^{-1}(cx)\right)}{e} - \frac{dx\left(a+b\sin^{-1}(cx)\right)}{e\left(d+ex^2\right)}\right)dx$$

$$= \frac{\int x\left(a+b\sin^{-1}(cx)\right)dx}{e} - \frac{d\int \frac{x(a+b\sin^{-1}(cx))}{d+ex^2}dx}{e}$$

$$= \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{2e} - \frac{(bc)\int \frac{x^2}{\sqrt{1-c^2x^2}}dx}{2e} - \frac{d\int\left(-\frac{a+b\sin^{-1}(cx)}{2\sqrt{e}\left(\sqrt{-d}-\sqrt{e}x\right)} + \frac{a+b\sin^{-1}(cx)}{2\sqrt{e}\left(\sqrt{-d}+\sqrt{e}x\right)}\right)}{e}$$

$$= \frac{bx\sqrt{1-c^2x^2}}{4ce} + \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{2e} + \frac{d\int \frac{a+b\sin^{-1}(cx)}{\sqrt{-d}-\sqrt{e}x}dx}{2e^{3/2}} - \frac{d\int \frac{a+b\sin^{-1}(cx)}{\sqrt{-d}+\sqrt{e}x}dx}{2e^{3/2}} - \cdots$$

$$= \frac{bx\sqrt{1-c^2x^2}}{4ce} - \frac{b\sin^{-1}(cx)}{4c^2e} + \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{2e} + \frac{d\,\text{Subst}\left(\int \frac{(a+bx)\cos(x)}{c\sqrt{-d}-\sqrt{e}\sin(x)}dx,\right.}{2e^{3/2}}$$

$$= \frac{bx\sqrt{1-c^2x^2}}{4ce} - \frac{b\sin^{-1}(cx)}{4c^2e} + \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{2e} + \frac{id\left(a+b\sin^{-1}(cx)\right)^2}{2be^2} + \frac{(id)\,\text{S}}{}$$

$$= \frac{bx\sqrt{1-c^2x^2}}{4ce} - \frac{b\sin^{-1}(cx)}{4c^2e} + \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{2e} + \frac{id\left(a+b\sin^{-1}(cx)\right)^2}{2be^2} - \frac{d\,(a}{}$$

$$= \frac{bx\sqrt{1-c^2x^2}}{4ce} - \frac{b\sin^{-1}(cx)}{4c^2e} + \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{2e} + \frac{id\left(a+b\sin^{-1}(cx)\right)^2}{2be^2} - \frac{d\,(a}{}$$

$$= \frac{bx\sqrt{1-c^2x^2}}{4ce} - \frac{b\sin^{-1}(cx)}{4c^2e} + \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{2e} + \frac{id\left(a+b\sin^{-1}(cx)\right)^2}{2be^2} - \frac{d\,(a}{}$$

Mathematica [A] time = 0.34, size = 454, normalized size = 0.81

$$-2ac^2d\log\left(d+ex^2\right) + 2ac^2ex^2 + b\left(ic^2d\left(2\text{Li}_2\left(\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{\sqrt{dc^2+e}-c\sqrt{d}}\right) + 2\text{Li}_2\left(-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{\sqrt{d}c+\sqrt{dc^2+e}}\right) + \sin^{-1}(cx)\left(\sin^{-1}(cx) + 2\right.\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^3*(a + b*ArcSin[c*x]))/(d + e*x^2),x]
```

```
[Out] (2*a*c^2*e*x^2 - 2*a*c^2*d*Log[d + e*x^2] + b*(e*(c*x*Sqrt[1 - c^2*x^2] + (
-1 + 2*c^2*x^2)*ArcSin[c*x]) + I*c^2*d*(ArcSin[c*x]*(ArcSin[c*x] + (2*I)*(L
og[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] - Sqrt[c^2*d + e])] + Log[1 +
 (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e])])) + 2*PolyLog[2
, (Sqrt[e]*E^(I*ArcSin[c*x]))/(-(c*Sqrt[d]) + Sqrt[c^2*d + e])] + 2*PolyLog
[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e]))]) + I*c^2*
d*(ArcSin[c*x]*(ArcSin[c*x] + (2*I)*(Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(-
(c*Sqrt[d]) + Sqrt[c^2*d + e])] + Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sq
rt[d] + Sqrt[c^2*d + e])])) + 2*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*S
qrt[d] - Sqrt[c^2*d + e])] + 2*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sq
rt[d] + Sqrt[c^2*d + e])])))/(4*c^2*e^2)
```

fricas [F] time = 0.73, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bx^3\arcsin(cx) + ax^3}{ex^2+d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(e*x^2+d),x, algorithm="fricas")
```

```
[Out] integral((b*x^3*arcsin(c*x) + a*x^3)/(e*x^2 + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b \arcsin(cx) + a)x^3}{ex^2 + d} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(e*x^2+d),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)*x^3/(e*x^2 + d), x)
```

maple [C] time = 0.92, size = 2854, normalized size = 5.11

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*arcsin(c*x))/(e*x^2+d),x)
```

```
[Out] -2*c^2*b/e^3*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e
))^(1/2)+e))*arcsin(c*x)*d^2-2*c^4*b/e^4*d^3*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/
2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsin(c*x)+I*c^4*b*polylog(2,
e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))*d^3/e
^4+I*c^2*b*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^2*
d+e))^(1/2)+e))*d^2/e^3+b/e^3*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+
2*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsin(c*x)*d*(c^2*d*(c^2*d+e))^(1/2)+1/2*b/e
/(c^2*d+e)*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))
^(1/2)+e))*arcsin(c*x)*d+2*I*c^4*b*arcsin(c*x)^2*d^3/e^4+2*I*c^2*b*arcsin(c
*x)^2*d^2/e^3-1/2*I*b*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(
c^2*d*(c^2*d+e))^(1/2)+e))*d/e^3*(c^2*d*(c^2*d+e))^(1/2)-I*b*d*arcsin(c*x)^
2/e^3*(c^2*d*(c^2*d+e))^(1/2)-1/2*I*b*arcsin(c*x)^2/e/(c^2*d+e)*d-1/4*I*b*p
olylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+
e))/e/(c^2*d+e)*d-1/4*b*arcsin(c*x)/c^2/e+1/2*a/e*x^2-1/2*a*d/e^2*ln(c^2*e*
x^2+c^2*d)+1/2*b*arcsin(c*x)/e*x^2-1/2*b/e^2*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/
2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsin(c*x)*d-5/2*I*c^2*b*d^2*
arcsin(c*x)^2/e^2/(c^2*d+e)-5/4*I*c^2*b*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/
2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))/e^2/(c^2*d+e)*d^2+1/2*b*(c^2*d
*(c^2*d+e))^(1/2)/e^2*d/(c^2*d+e)*arcsin(c*x)*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1
/2))^2/(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e))+I*b*(c^2*d*(c^2*d+e))^(1/2)/e
^2*d/(c^2*d+e)*arcsin(c*x)^2-3/2*b/e^2*d/(c^2*d+e)*ln(1-e*(I*c*x+(-c^2*x^2+
1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsin(c*x)*(c^2*d*(c^2*
d+e))^(1/2)-1/4/c^2*b/e/(c^2*d+e)*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^
2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsin(c*x)*(c^2*d*(c^2*d+e))^(1/2)+4*c^4
*b/e^3*d^3/(c^2*d+e)*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*
(c^2*d+e))^(1/2)+e))*arcsin(c*x)+5/2*c^2*b/e^2*d^2/(c^2*d+e)*ln(1-e*(I*c*x+
(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsin(c*x)+2*
c^6*b/e^4*d^4/(c^2*d+e)*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2
*d*(c^2*d+e))^(1/2)+e))*arcsin(c*x)+2*c^2*b/e^4*d^2*ln(1-e*(I*c*x+(-c^2*x^2
+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsin(c*x)*(c^2*d*(c^2
*d+e))^(1/2)+1/4/c^2*b*(c^2*d*(c^2*d+e))^(1/2)/e/(c^2*d+e)*arcsin(c*x)*ln(1
-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e))-1/4*
I*b*(c^2*d*(c^2*d+e))^(1/2)/e^2*d/(c^2*d+e)*polylog(2,e*(I*c*x+(-c^2*x^2+1)
^(1/2))^2/(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e))+3/4*I*b*polylog(2,e*(I*c*x
+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))/e^2/(c^2*d+e)
*(c^2*d*(c^2*d+e))^(1/2)*d-2*I*c^4*b*d^3*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1
/2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))/e^3/(c^2*d+e)-1/8*I/c^2*b*(c^
2*d*(c^2*d+e))^(1/2)/e/(c^2*d+e)*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(
2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e))-I*c^6*b*d^4*polylog(2,e*(I*c*x+(-c^2*
```

```
x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))/e^4/(c^2*d+e)+1/8*I/
c^2*b*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))
^(1/2)+e))/e/(c^2*d+e)*(c^2*d*(c^2*d+e))^(1/2)-2*I*c^2*b*arcsin(c*x)^2*d^2/
e^4*(c^2*d*(c^2*d+e))^(1/2)-2*I*c^6*b*d^4*arcsin(c*x)^2/e^4/(c^2*d+e)-I*c^2
*b*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1
/2)+e))*d^2/e^4*(c^2*d*(c^2*d+e))^(1/2)-4*I*c^4*b*d^3*arcsin(c*x)^2/e^3/(c^
2*d+e)-2*c^4*b/e^4*d^3/(c^2*d+e)*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2
*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsin(c*x)*(c^2*d*(c^2*d+e))^(1/2)-3*c^2*
b/e^3*d^2/(c^2*d+e)*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(
c^2*d+e))^(1/2)+e))*arcsin(c*x)*(c^2*d*(c^2*d+e))^(1/2)+I*c^4*b*d^3*polylog
(2,e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))/e^
4/(c^2*d+e)*(c^2*d*(c^2*d+e))^(1/2)+2*I*c^4*b*d^3*arcsin(c*x)^2/e^4/(c^2*d+
e)*(c^2*d*(c^2*d+e))^(1/2)+3*I*c^2*b*d^2*arcsin(c*x)^2/e^3/(c^2*d+e)*(c^2*d
*(c^2*d+e))^(1/2)+3/2*I*c^2*b*d^2*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/
(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))/e^3/(c^2*d+e)*(c^2*d*(c^2*d+e))^(1/2
)+1/4*b*x*(-c^2*x^2+1)^(1/2)/c/e+I*b*d*arcsin(c*x)^2/e^2+1/2*I*b*d/e^2*sum(
(_R1^2*e-4*c^2*d-2*e)/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^
2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=RootOf(
e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))+1/4*I*b*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2
))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))*d/e^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\,a\left(\frac{x^2}{e}-\frac{d\log\left(ex^2+d\right)}{e^2}\right)+b\int\frac{x^3\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{ex^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(e*x^2+d),x, algorithm="maxima")
```

```
[Out] 1/2*a*(x^2/e - d*log(e*x^2 + d)/e^2) + b*integrate(x^3*arctan2(c*x, sqrt(c*
x + 1)*sqrt(-c*x + 1))/(e*x^2 + d), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{x^3\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{e\,x^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*asin(c*x)))/(d + e*x^2),x)
```

```
[Out] int((x^3*(a + b*asin(c*x)))/(d + e*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{x^3\left(a+b\,\mathrm{asin}\left(cx\right)\right)}{d+ex^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*asin(c*x))/(e*x**2+d),x)
```

```
[Out] Integral(x**3*(a + b*asin(c*x))/(d + e*x**2), x)
```

3.626 $\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{d+ex^2}\,dx$

Optimal. Leaf size=579

$$\frac{\sqrt{-d}\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e^{3/2}}-\frac{\sqrt{-d}\left(a+b\sin^{-1}(cx)\right)\log\left(1+\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e^{3/2}}+\frac{\sqrt{-d}\left(a+b\sin\right.}{}$$

```
[Out] a*x/e+b*x*arcsin(c*x)/e+1/2*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2
))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))*(-d)^(1/2)/e^(3/2)-1/2*(a+b*ar
csin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e
)^(1/2)))*(-d)^(1/2)/e^(3/2)+1/2*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)
^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))*(-d)^(1/2)/e^(3/2)-1/2*(a
+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^
2*d+e)^(1/2)))*(-d)^(1/2)/e^(3/2)+1/2*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1
/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))*(-d)^(1/2)/e^(3/2)-1/2*I*b*p
olylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)
))*(-d)^(1/2)/e^(3/2)+1/2*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)
/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))*(-d)^(1/2)/e^(3/2)-1/2*I*b*polylog(2,(I*
c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))*(-d)^(1/2
)/e^(3/2)+b*(-c^2*x^2+1)^(1/2)/c/e
```

Rubi [A] time = 0.90, antiderivative size = 579, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 9, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {4733, 4619, 261, 4667, 4741, 4521, 2190, 2279, 2391}

$$\frac{ib\sqrt{-d}\,\text{PolyLog}\left(2,-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e^{3/2}}-\frac{ib\sqrt{-d}\,\text{PolyLog}\left(2,\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e^{3/2}}+\frac{ib\sqrt{-d}\,\text{PolyLog}\left(2,-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e^{3/2}}-$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*ArcSin[c*x]))/(d + e*x^2),x]
```

```
[Out] (a*x)/e + (b*Sqrt[1 - c^2*x^2])/(c*e) + (b*x*ArcSin[c*x])/e + (Sqrt[-d]*(a
+ b*ArcSin[c*x])*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c
^2*d + e])])/(2*e^(3/2)) - (Sqrt[-d]*(a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E
^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(2*e^(3/2)) + (Sqrt[-d
]*(a + b*ArcSin[c*x])*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + S
qrt[c^2*d + e])])/(2*e^(3/2)) - (Sqrt[-d]*(a + b*ArcSin[c*x])*Log[1 + (Sqrt
[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(2*e^(3/2)) + ((I
/2)*b*Sqrt[-d]*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqr
t[c^2*d + e]))])/e^(3/2) - ((I/2)*b*Sqrt[-d]*PolyLog[2, (Sqrt[e]*E^(I*ArcSi
n[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/e^(3/2) + ((I/2)*b*Sqrt[-d]*Pol
yLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e]))])/e
^(3/2) - ((I/2)*b*Sqrt[-d]*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt
[-d] + Sqrt[c^2*d + e])])/e^(3/2)
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
```

```
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rule 4733

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (
f*x)^m*(d + e*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[c^2*d +
 e, 0] && IGtQ[n, 0] && IntegerQ[p] && IntegerQ[m]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{x^2 \left(a+b\sin^{-1}(cx)\right)}{d+ex^2}\,dx = \int \left(\frac{a+b\sin^{-1}(cx)}{e} - \frac{d\left(a+b\sin^{-1}(cx)\right)}{e\left(d+ex^2\right)}\right)dx$$

$$= \frac{\int \left(a+b\sin^{-1}(cx)\right)dx}{e} - \frac{d\int \frac{a+b\sin^{-1}(cx)}{d+ex^2}\,dx}{e}$$

$$= \frac{ax}{e} + \frac{b\int \sin^{-1}(cx)\,dx}{e} - \frac{d\int \left(\frac{\sqrt{-d}\left(a+b\sin^{-1}(cx)\right)}{2d\left(\sqrt{-d}-\sqrt{e}\,x\right)} + \frac{\sqrt{-d}\left(a+b\sin^{-1}(cx)\right)}{2d\left(\sqrt{-d}+\sqrt{e}\,x\right)}\right)dx}{e}$$

$$= \frac{ax}{e} + \frac{bx\sin^{-1}(cx)}{e} - \frac{(bc)\int \frac{x}{\sqrt{1-c^2x^2}}\,dx}{e} - \frac{\sqrt{-d}\int \frac{a+b\sin^{-1}(cx)}{\sqrt{-d}-\sqrt{e}\,x}\,dx}{2e} - \frac{\sqrt{-d}\int \frac{a+b\sin^{-1}(cx)}{\sqrt{-d}+\sqrt{e}\,x}$$

$$= \frac{ax}{e} + \frac{b\sqrt{1-c^2x^2}}{ce} + \frac{bx\sin^{-1}(cx)}{e} - \frac{\sqrt{-d}\,\text{Subst}\left(\int \frac{(a+bx)\cos(x)}{c\sqrt{-d}-\sqrt{e}\,\sin(x)}\,dx, x, \sin^{-1}(cx)\right)}{2e} -$$

$$= \frac{ax}{e} + \frac{b\sqrt{1-c^2x^2}}{ce} + \frac{bx\sin^{-1}(cx)}{e} - \frac{\left(i\sqrt{-d}\right)\text{Subst}\left(\int \frac{e^{ix}(a+bx)}{ic\sqrt{-d}-\sqrt{c^2d+e}-\sqrt{e}\,e^{ix}}\,dx, x, \sin^{-1}\right.}{2e}$$

$$= \frac{ax}{e} + \frac{b\sqrt{1-c^2x^2}}{ce} + \frac{bx\sin^{-1}(cx)}{e} + \frac{\sqrt{-d}\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2e^{3/2}} -$$

$$= \frac{ax}{e} + \frac{b\sqrt{1-c^2x^2}}{ce} + \frac{bx\sin^{-1}(cx)}{e} + \frac{\sqrt{-d}\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2e^{3/2}} -$$

$$= \frac{ax}{e} + \frac{b\sqrt{1-c^2x^2}}{ce} + \frac{bx\sin^{-1}(cx)}{e} + \frac{\sqrt{-d}\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2e^{3/2}} -$$

Mathematica [A] time = 0.33, size = 456, normalized size = 0.79

$$\frac{-4ac\sqrt{d}\,\tan^{-1}\left(\frac{\sqrt{e}\,x}{\sqrt{d}}\right) + 4ac\sqrt{e}\,x + b\left(c\sqrt{d}\left(2\text{Li}_2\left(\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{\sqrt{dc^2+e}-c\sqrt{d}}\right) + 2\text{Li}_2\left(-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{\sqrt{d}\,c+\sqrt{dc^2+e}}\right) + \sin^{-1}(cx)\left(\sin^{-1}(cx) + 2i\right.\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^2*(a + b*ArcSin[c*x]))/(d + e*x^2),x]
```

```
[Out] (4*a*c*Sqrt[e]*x - 4*a*c*Sqrt[d]*ArcTan[(Sqrt[e]*x)/Sqrt[d]] + b*(4*Sqrt[e]
*(Sqrt[1 - c^2*x^2] + c*x*ArcSin[c*x]) + c*Sqrt[d]*(ArcSin[c*x]*(ArcSin[c*x
] + (2*I)*(Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] - Sqrt[c^2*d + e]
)] + Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e])])) +
 2*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(-(c*Sqrt[d]) + Sqrt[c^2*d + e])]
 + 2*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e])
)]) - c*Sqrt[d]*(ArcSin[c*x]*(ArcSin[c*x] + (2*I)*(Log[1 + (Sqrt[e]*E^(I*Ar
cSin[c*x]))/(-(c*Sqrt[d]) + Sqrt[c^2*d + e])] + Log[1 - (Sqrt[e]*E^(I*ArcSi
n[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e])])) + 2*PolyLog[2, (Sqrt[e]*E^(I*ArcS
in[c*x]))/(c*Sqrt[d] - Sqrt[c^2*d + e])] + 2*PolyLog[2, (Sqrt[e]*E^(I*ArcSi
n[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e])])))/(4*c*e^(3/2))
```

fricas [F] time = 0.54, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bx^2\arcsin(cx) + ax^2}{ex^2+d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^2*(a+b*arcsin(c*x))/(e*x^2+d),x, algorithm="fricas")

[Out] integral((b*x^2*arcsin(c*x) + a*x^2)/(e*x^2 + d), x)

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^2*(a+b*arcsin(c*x))/(e*x^2+d),x, algorithm="giac")

[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to divide, perhaps due to rounding er
ror%%%{4294967296,[0,8,0,0,0,64,8,40]%%%}+%%%{17179869184,[0,8,0,0,0,62,7,4
1]%%%}+%%%{27917287424,[0,8,0,0,0,60,6,42]%%%}+%%%{23622320128,[0,8,0,0,0,5
8,5,43]%%%}+%%%{11005853696,[0,8,0,0,0,56,4,44]%%%}+%%%{2684354560,[0,8,0,0
,0,54,3,45]%%%}+%%%{268435456,[0,8,0,0,0,52,2,46]%%%}+%%%{3221225472,[0,6,2
,0,2,64,9,37]%%%}+%%%{14495514624,[0,6,2,0,2,62,8,38]%%%}+%%%{27313307648,[
0,6,2,0,2,60,7,39]%%%}+%%%{27950841856,[0,6,2,0,2,58,6,40]%%%}+%%%{16810770
432,[0,6,2,0,2,56,5,41]%%%}+%%%{5972688896,[0,6,2,0,2,54,4,42]%%%}+%%%{1178
599424,[0,6,2,0,2,52,3,43]%%%}+%%%{106954752,[0,6,2,0,2,50,2,44]%%%}+%%%{20
97152,[0,6,2,0,2,48,1,45]%%%}+%%%{6442450944,[0,6,1,1,1,64,9,37]%%%}+%%%{28
991029248,[0,6,1,1,1,62,8,38]%%%}+%%%{54626615296,[0,6,1,1,1,60,7,39]%%%}+%
%%{55901683712,[0,6,1,1,1,58,6,40]%%%}+%%%{33621540864,[0,6,1,1,1,56,5,41]%
%%}+%%%{11945377792,[0,6,1,1,1,54,4,42]%%%}+%%%{2357198848,[0,6,1,1,1,52,3,
43]%%%}+%%%{213909504,[0,6,1,1,1,50,2,44]%%%}+%%%{4194304,[0,6,1,1,1,48,1,4
5]%%%}+%%%{3221225472,[0,6,0,2,0,64,9,37]%%%}+%%%{14495514624,[0,6,0,2,0,62
,8,38]%%%}+%%%{27313307648,[0,6,0,2,0,60,7,39]%%%}+%%%{27950841856,[0,6,0,2
,0,58,6,40]%%%}+%%%{16810770432,[0,6,0,2,0,56,5,41]%%%}+%%%{5972688896,[0,6
,0,2,0,54,4,42]%%%}+%%%{1178599424,[0,6,0,2,0,52,3,43]%%%}+%%%{106954752,[0
,6,0,2,0,50,2,44]%%%}+%%%{2097152,[0,6,0,2,0,48,1,45]%%%}+%%%{805306368,[0,
4,4,0,4,64,10,34]%%%}+%%%{4026531840,[0,4,4,0,4,62,9,35]%%%}+%%%{8623489024
,[0,4,4,0,4,60,8,36]%%%}+%%%{18446744079749349376,[0,4,4,0,4,58,7,37]%%%}+%
%%{7590641664,[0,4,4,0,4,56,6,38]%%%}+%%%{3511681024,[0,4,4,0,4,54,5,39]%%%
}+%%%{1009057792,[0,4,4,0,4,52,4,40]%%%}+%%%{169476096,[0,4,4,0,4,50,3,41]%
%%}+%%%{14385152,[0,4,4,0,4,48,2,42]%%%}+%%%{425984,[0,4,4,0,4,46,1,43]%%%}
+%%%{4096,[0,4,4,0,4,44,0,44]%%%}+%%%{3221225472,[0,4,3,1,3,64,10,34]%%%}+%
%%{16106127360,[0,4,3,1,3,62,9,35]%%%}+%%%{34493956096,[0,4,3,1,3,60,8,36]%
%%}+%%%{41339060224,[0,4,3,1,3,58,7,37]%%%}+%%%{30362566656,[0,4,3,1,3,56,6
,38]%%%}+%%%{14046724096,[0,4,3,1,3,54,5,39]%%%}+%%%{4036231168,[0,4,3,1,3,
52,4,40]%%%}+%%%{677904384,[0,4,3,1,3,50,3,41]%%%}+%%%{57540608,[0,4,3,1,3,
48,2,42]%%%}+%%%{1703936,[0,4,3,1,3,46,1,43]%%%}+%%%{16384,[0,4,3,1,3,44,0,
44]%%%}+%%%{4831838208,[0,4,2,2,2,64,10,34]%%%}+%%%{24159191040,[0,4,2,2,2,
62,9,35]%%%}+%%%{51740934144,[0,4,2,2,2,60,8,36]%%%}+%%%{184467441314231746
56,[0,4,2,2,2,58,7,37]%%%}+%%%{45543849984,[0,4,2,2,2,56,6,38]%%%}+%%%{2107
0086144,[0,4,2,2,2,54,5,39]%%%}+%%%{6054346752,[0,4,2,2,2,52,4,40]%%%}+%%%{
1016856576,[0,4,2,2,2,50,3,41]%%%}+%%%{86310912,[0,4,2,2,2,48,2,42]%%%}+%%%
{2555904,[0,4,2,2,2,46,1,43]%%%}+%%%{24576,[0,4,2,2,2,44,0,44]%%%}+%%%{3221
225472,[0,4,1,3,1,64,10,34]%%%}+%%%{16106127360,[0,4,1,3,1,62,9,35]%%%}+%%%
{34493956096,[0,4,1,3,1,60,8,36]%%%}+%%%{41339060224,[0,4,1,3,1,58,7,37]%%%
}+%%%{30362566656,[0,4,1,3,1,56,6,38]%%%}+%%%{14046724096,[0,4,1,3,1,54,5,3
9]%%%}+%%%{4036231168,[0,4,1,3,1,52,4,40]%%%}+%%%{677904384,[0,4,1,3,1,50,3
,41]%%%}+%%%{57540608,[0,4,1,3,1,48,2,42]%%%}+%%%{1703936,[0,4,1,3,1,46,1,4
3]%%%}+%%%{16384,[0,4,1,3,1,44,0,44]%%%}+%%%{805306368,[0,4,0,4,0,64,10,34]
%%%}+%%%{4026531840,[0,4,0,4,0,62,9,35]%%%}+%%%{8623489024,[0,4,0,4,0,60,8,
36]%%%}+%%%{18446744079749349376,[0,4,0,4,0,58,7,37]%%%}+%%%{7590641664,[0,
4,0,4,0,56,6,38]%%%}+%%%{3511681024,[0,4,0,4,0,54,5,39]%%%}+%%%{1009057792,
[0,4,0,4,0,52,4,40]%%%}+%%%{169476096,[0,4,0,4,0,50,3,41]%%%}+%%%{14385152,
[0,4,0,4,0,48,2,42]%%%}+%%%{425984,[0,4,0,4,0,46,1,43]%%%}+%%%{4096,[0,4,0,
4,0,44,0,44]%%%}+%%%{67108864,[0,2,6,0,6,64,11,31]%%%}+%%%{369098752,[0,2,6

,0,6,62,10,32]%%%}+%%%{884998144,[0,2,6,0,6,60,9,33]%%%}+%%%{1214251008,[0,
2,6,0,6,58,8,34]%%%}+%%%{1051459584,[0,2,6,0,6,56,7,35]%%%}+%%%{597295104,[
0,2,6,0,6,54,6,36]%%%}+%%%{223854592,[0,2,6,0,6,52,5,37]%%%}+%%%{54157312,[
0,2,6,0,6,50,4,38]%%%}+%%%{8013824,[0,2,6,0,6,48,3,39]%%%}+%%%{658432,[0,2,
6,0,6,46,2,40]%%%}+%%%{27136,[0,2,6,0,6,44,1,41]%%%}+%%%{768,[0,2,6,0,6,42,
0,42]%%%}+%%%{402653184,[0,2,5,1,5,64,11,31]%%%}+%%%{2214592512,[0,2,5,1,5,
62,10,32]%%%}+%%%{5309988864,[0,2,5,1,5,60,9,33]%%%}+%%%{7285506048,[0,2,5,
1,5,58,8,34]%%%}+%%%{6308757504,[0,2,5,1,5,56,7,35]%%%}+%%%{3583770624,[0,2
,5,1,5,54,6,36]%%%}+%%%{1343127552,[0,2,5,1,5,52,5,37]%%%}+%%%{324943872,[0
,2,5,1,5,50,4,38]%%%}+%%%{48082944,[0,2,5,1,5,48,3,39]%%%}+%%%{3950592,[0,2
,5,1,5,46,2,40]%%%}+%%%{162816,[0,2,5,1,5,44,1,41]%%%}+%%%{4608,[0,2,5,1,5,
42,0,42]%%%}+%%%{1006632960,[0,2,4,2,4,64,11,31]%%%}+%%%{5536481280,[0,2,4,
2,4,62,10,32]%%%}+%%%{13274972160,[0,2,4,2,4,60,9,33]%%%}+%%%{18213765120,[
0,2,4,2,4,58,8,34]%%%}+%%%{15771893760,[0,2,4,2,4,56,7,35]%%%}+%%%{89594265
60,[0,2,4,2,4,54,6,36]%%%}+%%%{3357818880,[0,2,4,2,4,52,5,37]%%%}+%%%{81235
9680,[0,2,4,2,4,50,4,38]%%%}+%%%{120207360,[0,2,4,2,4,48,3,39]%%%}+%%%{9876
480,[0,2,4,2,4,46,2,40]%%%}+%%%{407040,[0,2,4,2,4,44,1,41]%%%}+%%%{11520,[0
,2,4,2,4,42,0,42]%%%}+%%%{1342177280,[0,2,3,3,3,64,11,31]%%%}+%%%{738197504
0,[0,2,3,3,3,62,10,32]%%%}+%%%{17699962880,[0,2,3,3,3,60,9,33]%%%}+%%%{2428
5020160,[0,2,3,3,3,58,8,34]%%%}+%%%{21029191680,[0,2,3,3,3,56,7,35]%%%}+%%%
{11945902080,[0,2,3,3,3,54,6,36]%%%}+%%%{4477091840,[0,2,3,3,3,52,5,37]%%%}
+%%%{1083146240,[0,2,3,3,3,50,4,38]%%%}+%%%{160276480,[0,2,3,3,3,48,3,39]%%
%}+%%%{13168640,[0,2,3,3,3,46,2,40]%%%}+%%%{542720,[0,2,3,3,3,44,1,41]%%%}+
%%%{15360,[0,2,3,3,3,42,0,42]%%%}+%%%{1006632960,[0,2,2,4,2,64,11,31]%%%}+%
%%{5536481280,[0,2,2,4,2,62,10,32]%%%}+%%%{13274972160,[0,2,2,4,2,60,9,33]%
%%}+%%%{18213765120,[0,2,2,4,2,58,8,34]%%%}+%%%{15771893760,[0,2,2,4,2,56,7
,35]%%%}+%%%{8959426560,[0,2,2,4,2,54,6,36]%%%}+%%%{3357818880,[0,2,2,4,2,5
2,5,37]%%%}+%%%{812359680,[0,2,2,4,2,50,4,38]%%%}+%%%{120207360,[0,2,2,4,2,
48,3,39]%%%}+%%%{9876480,[0,2,2,4,2,46,2,40]%%%}+%%%{407040,[0,2,2,4,2,44,1
,41]%%%}+%%%{11520,[0,2,2,4,2,42,0,42]%%%}+%%%{402653184,[0,2,1,5,1,64,11,3
1]%%%}+%%%{2214592512,[0,2,1,5,1,62,10,32]%%%}+%%%{5309988864,[0,2,1,5,1,60
,9,33]%%%}+%%%{7285506048,[0,2,1,5,1,58,8,34]%%%}+%%%{6308757504,[0,2,1,5,1
,56,7,35]%%%}+%%%{3583770624,[0,2,1,5,1,54,6,36]%%%}+%%%{1343127552,[0,2,1,
5,1,52,5,37]%%%}+%%%{324943872,[0,2,1,5,1,50,4,38]%%%}+%%%{48082944,[0,2,1,
5,1,48,3,39]%%%}+%%%{3950592,[0,2,1,5,1,46,2,40]%%%}+%%%{162816,[0,2,1,5,1,
44,1,41]%%%}+%%%{4608,[0,2,1,5,1,42,0,42]%%%}+%%%{67108864,[0,2,0,6,0,64,11
,31]%%%}+%%%{369098752,[0,2,0,6,0,62,10,32]%%%}+%%%{884998144,[0,2,0,6,0,60
,9,33]%%%}+%%%{1214251008,[0,2,0,6,0,58,8,34]%%%}+%%%{1051459584,[0,2,0,6,0
,56,7,35]%%%}+%%%{597295104,[0,2,0,6,0,54,6,36]%%%}+%%%{223854592,[0,2,0,6,
0,52,5,37]%%%}+%%%{54157312,[0,2,0,6,0,50,4,38]%%%}+%%%{8013824,[0,2,0,6,0,
48,3,39]%%%}+%%%{658432,[0,2,0,6,0,46,2,40]%%%}+%%%{27136,[0,2,0,6,0,44,1,4
1]%%%}+%%%{768,[0,2,0,6,0,42,0,42]%%%}+%%%{4096,[0,0,8,0,8,52,6,34]%%%}+%%%
{12288,[0,0,8,0,8,50,5,35]%%%}+%%%{14848,[0,0,8,0,8,48,4,36]%%%}+%%%{9216,[
0,0,8,0,8,46,3,37]%%%}+%%%{3088,[0,0,8,0,8,44,2,38]%%%}+%%%{528,[0,0,8,0,8,
42,1,39]%%%}+%%%{36,[0,0,8,0,8,40,0,40]%%%}+%%%{32768,[0,0,7,1,7,52,6,34]%%
%}+%%%{98304,[0,0,7,1,7,50,5,35]%%%}+%%%{118784,[0,0,7,1,7,48,4,36]%%%}+%%%
{73728,[0,0,7,1,7,46,3,37]%%%}+%%%{24704,[0,0,7,1,7,44,2,38]%%%}+%%%{4224,[
0,0,7,1,7,42,1,39]%%%}+%%%{288,[0,0,7,1,7,40,0,40]%%%}+%%%{114688,[0,0,6,2,
6,52,6,34]%%%}+%%%{344064,[0,0,6,2,6,50,5,35]%%%}+%%%{415744,[0,0,6,2,6,48,
4,36]%%%}+%%%{258048,[0,0,6,2,6,46,3,37]%%%}+%%%{86464,[0,0,6,2,6,44,2,38]%
%%}+%%%{14784,[0,0,6,2,6,42,1,39]%%%}+%%%{1008,[0,0,6,2,6,40,0,40]%%%}+%%%{
229376,[0,0,5,3,5,52,6,34]%%%}+%%%{688128,[0,0,5,3,5,50,5,35]%%%}+%%%{83148
8,[0,0,5,3,5,48,4,36]%%%}+%%%{516096,[0,0,5,3,5,46,3,37]%%%}+%%%{172928,[0,
0,5,3,5,44,2,38]%%%}+%%%{29568,[0,0,5,3,5,42,1,39]%%%}+%%%{2016,[0,0,5,3,5,
40,0,40]%%%}+%%%{286720,[0,0,4,4,4,52,6,34]%%%}+%%%{860160,[0,0,4,4,4,50,5,
35]%%%}+%%%{1039360,[0,0,4,4,4,48,4,36]%%%}+%%%{645120,[0,0,4,4,4,46,3,37]%
%%}+%%%{216160,[0,0,4,4,4,44,2,38]%%%}+%%%{36960,[0,0,4,4,4,42,1,39]%%%}+%%
%{2520,[0,0,4,4,4,40,0,40]%%%}+%%%{229376,[0,0,3,5,3,52,6,34]%%%}+%%%{68812
8,[0,0,3,5,3,50,5,35]%%%}+%%%{831488,[0,0,3,5,3,48,4,36]%%%}+%%%{516096,[0,

0,3,5,3,46,3,37]%%%}+%%%{172928,[0,0,3,5,3,44,2,38]%%%}+%%%{29568,[0,0,3,5,3,42,1,39]%%%}+%%%{2016,[0,0,3,5,3,40,0,40]%%%}+%%%{114688,[0,0,2,6,2,52,6,34]%%%}+%%%{344064,[0,0,2,6,2,50,5,35]%%%}+%%%{415744,[0,0,2,6,2,48,4,36]%%%}+%%%{258048,[0,0,2,6,2,46,3,37]%%%}+%%%{86464,[0,0,2,6,2,44,2,38]%%%}+%%%{14784,[0,0,2,6,2,42,1,39]%%%}+%%%{1008,[0,0,2,6,2,40,0,40]%%%}+%%%{32768,[0,0,1,7,1,52,6,34]%%%}+%%%{98304,[0,0,1,7,1,50,5,35]%%%}+%%%{118784,[0,0,1,7,1,48,4,36]%%%}+%%%{73728,[0,0,1,7,1,46,3,37]%%%}+%%%{24704,[0,0,1,7,1,44,2,38]%%%}+%%%{4224,[0,0,1,7,1,42,1,39]%%%}+%%%{288,[0,0,1,7,1,40,0,40]%%%}+%%%{4096,[0,0,0,8,0,52,6,34]%%%}+%%%{12288,[0,0,0,8,0,50,5,35]%%%}+%%%{14848,[0,0,0,8,0,48,4,36]%%%}+%%%{9216,[0,0,0,8,0,46,3,37]%%%}+%%%{3088,[0,0,0,8,0,44,2,38]%%%}+%%%{528,[0,0,0,8,0,42,1,39]%%%}+%%%{36,[0,0,0,8,0,40,0,40]%%%} / %%%{-256,[0,2,0,0,0,16,2,10]%%%}+%%%{-256,[0,2,0,0,0,14,1,11]%%%}+%%%{-64,[0,2,0,0,0,12,0,12]%%%}+%%%{-64,[0,0,2,0,2,16,3,7]%%%}+%%%{-96,[0,0,2,0,2,14,2,8]%%%}+%%%{-44,[0,0,2,0,2,12,1,9]%%%}+%%%{-6,[0,0,2,0,2,10,0,10]%%%}+%%%{-128,[0,0,1,1,1,16,3,7]%%%}+%%%{-192,[0,0,1,1,1,14,2,8]%%%}+%%%{-88,[0,0,1,1,1,12,1,9]%%%}+%%%{-12,[0,0,1,1,1,10,0,10]%%%}+%%%{-64,[0,0,0,2,0,16,3,7]%%%}+%%%{-96,[0,0,0,2,0,14,2,8]%%%}+%%%{-44,[0,0,0,2,0,12,1,9]%%%}+%%%{-6,[0,0,0,2,0,10,0,10]%%%} Error: Bad Argument Value

maple [C] time = 0.63, size = 285, normalized size = 0.49

$$\frac{ax}{e}-\frac{ad\arctan\left(\frac{ex}{\sqrt{de}}\right)}{e\sqrt{de}}+\frac{b\sqrt{-c^2x^2+1}}{ce}+\frac{bx\arcsin(cx)}{e}-\frac{cbd\left(\sum_{\_R1=\mathrm{RootOf}\left(e\_Z^4+\left(-4c^2d-2e\right)\_Z^2+e\right)}\frac{i\arcsin(cx)\ln\left(\frac{\_R1-icx-\sqrt{-c^2x^2+1}}{\_R1}\right)+\ldots}{\_R1(\ldots}\right.}{2e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(c*x))/(e*x^2+d),x)
```

```
[Out] a*x/e-a*d/e/(d*e)^(1/2)*arctan(e*x/(d*e)^(1/2))+b*(-c^2*x^2+1)^(1/2)/c/e+b*
x*arcsin(c*x)/e-1/2*c*b*d/e*sum(1/_R1/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln
((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_
R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))-1/2*c*b*d/e*sum(_R1/(_R1^2*e
-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_R
1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-a\left(\frac{d\arctan\left(\frac{ex}{\sqrt{de}}\right)}{\sqrt{de}\,e}-\frac{x}{e}\right)+b\int\frac{x^2\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)}{ex^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))/(e*x^2+d),x, algorithm="maxima")
```

```
[Out] -a*(d*arctan(e*x/sqrt(d*e))/(sqrt(d*e)*e) - x/e) + b*integrate(x^2*arctan2(
c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(e*x^2 + d), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{x^2\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{e\,x^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*asin(c*x)))/(d + e*x^2),x)
```

```
[Out] int((x^2*(a + b*asin(c*x)))/(d + e*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2 (a + b \operatorname{asin}(cx))}{d + ex^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(c*x))/(e*x**2+d),x)
```

```
[Out] Integral(x**2*(a + b*asin(c*x))/(d + e*x**2), x)
```

3.627 $\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{d+ex^2}\,dx$

Optimal. Leaf size=491

$$\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e}+\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1+\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e}+\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1\right.}{2e}$$

```
[Out] -1/2*I*(a+b*arcsin(c*x))^2/b/e+1/2*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+
1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/e+1/2*(a+b*arcsin(c*x))
*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/
e+1/2*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(
1/2)+(c^2*d+e)^(1/2)))/e+1/2*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/
2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/e-1/2*I*b*polylog(2,-(I*c*x+(
-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/e-1/2*I*b*poly
log(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/
e-1/2*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^
2*d+e)^(1/2)))/e-1/2*I*b*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*
(-d)^(1/2)+(c^2*d+e)^(1/2)))/e
```

Rubi [A] time = 0.74, antiderivative size = 491, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.316, Rules used = {4733, 4741, 4521, 2190, 2279, 2391}

$$-\frac{ib\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e}-\frac{ib\text{PolyLog}\left(2,\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e}-\frac{ib\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e}-ib\text{PolyLog}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*ArcSin[c*x]))/(d + e*x^2),x]
```

```
[Out] ((-I/2)*(a + b*ArcSin[c*x])^2)/(b*e) + ((a + b*ArcSin[c*x])*Log[1 - (Sqrt[e
]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(2*e) + ((a + b*Arc
Sin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d +
e])])/(2*e) + ((a + b*ArcSin[c*x])*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c
*Sqrt[-d] + Sqrt[c^2*d + e])])/(2*e) + ((a + b*ArcSin[c*x])*Log[1 + (Sqrt[e
]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(2*e) - ((I/2)*b*Po
lyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e]))])/
e - ((I/2)*b*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^
2*d + e])])/e - ((I/2)*b*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt
[-d] + Sqrt[c^2*d + e]))])/e - ((I/2)*b*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x
]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/e
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4733

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (
f*x)^m*(d + e*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[c^2*d +
 e, 0] && IGtQ[n, 0] && IntegerQ[p] && IntegerQ[m]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{d+ex^2}\,dx = \int\left(-\frac{a+b\sin^{-1}(cx)}{2\sqrt{e}\left(\sqrt{-d}-\sqrt{e}\,x\right)}+\frac{a+b\sin^{-1}(cx)}{2\sqrt{e}\left(\sqrt{-d}+\sqrt{e}\,x\right)}\right)dx$$

$$= -\frac{\int \frac{a+b\sin^{-1}(cx)}{\sqrt{-d}-\sqrt{e}\,x}\,dx}{2\sqrt{e}}+\frac{\int \frac{a+b\sin^{-1}(cx)}{\sqrt{-d}+\sqrt{e}\,x}\,dx}{2\sqrt{e}}$$

$$= -\frac{\text{Subst}\left(\int \frac{(a+bx)\cos(x)}{c\sqrt{-d}-\sqrt{e}\,\sin(x)}\,dx,x,\sin^{-1}(cx)\right)}{2\sqrt{e}}+\frac{\text{Subst}\left(\int \frac{(a+bx)\cos(x)}{c\sqrt{-d}+\sqrt{e}\,\sin(x)}\,dx,x,\sin^{-1}(cx)\right)}{2\sqrt{e}}$$

$$= -\frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2be}-\frac{i\,\text{Subst}\left(\int \frac{e^{ix}(a+bx)}{ic\sqrt{-d}-\sqrt{c^2d+e}-\sqrt{e}\,e^{ix}}\,dx,x,\sin^{-1}(cx)\right)}{2\sqrt{e}}-\frac{i\,\text{Subst}\left(\int \frac{}{ic}\right.}{}$$

$$= -\frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2be}+\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2e}+\frac{\left(a+b\sin^{-1}(cx)\right)\text{l}}{}$$

$$= -\frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2be}+\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2e}+\frac{\left(a+b\sin^{-1}(cx)\right)\text{l}}{}$$

$$= -\frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2be}+\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2e}+\frac{\left(a+b\sin^{-1}(cx)\right)\text{l}}{}$$

Mathematica [A] time = 0.09, size = 399, normalized size = 0.81

$$-\frac{i\left(ia\log\left(d+ex^2\right)+b\text{Li}_2\left(\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{c\sqrt{d}-\sqrt{dc^2+e}}\right)+b\text{Li}_2\left(\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{\sqrt{dc^2+e}-c\sqrt{d}}\right)+b\text{Li}_2\left(-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{\sqrt{d}\,c+\sqrt{dc^2+e}}\right)+b\text{Li}_2\left(\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{\sqrt{d}\,c+\sqrt{dc^2+e}}\right)+ib\,\text{si}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x*(a + b*ArcSin[c*x]))/(d + e*x^2),x]
```

```
[Out] ((-1/2*I)*(b*ArcSin[c*x]^2 + I*b*ArcSin[c*x]*Log[1 + (Sqrt[e]*E^(I*ArcSin[c
*x]))/(c*Sqrt[d] - Sqrt[c^2*d + e])] + I*b*ArcSin[c*x]*Log[1 + (Sqrt[e]*E^(
I*ArcSin[c*x]))/(-(c*Sqrt[d]) + Sqrt[c^2*d + e])] + I*b*ArcSin[c*x]*Log[1 -
 (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e])] + I*b*ArcSin[c*
x]*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e])] + I*a
*Log[d + e*x^2] + b*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] - Sqr
t[c^2*d + e])] + b*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(-(c*Sqrt[d]) + S
qrt[c^2*d + e])] + b*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] +
Sqrt[c^2*d + e]))] + b*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] +
Sqrt[c^2*d + e])]))/e
```

fricas [F] time = 0.59, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bx\arcsin(cx) + ax}{ex^2 + d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(e*x^2+d),x, algorithm="fricas")
```

```
[Out] integral((b*x*arcsin(c*x) + a*x)/(e*x^2 + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b\arcsin(cx) + a)x}{ex^2 + d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(e*x^2+d),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)*x/(e*x^2 + d), x)
```

maple [C] time = 0.41, size = 2749, normalized size = 5.60

Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(c*x))/(e*x^2+d),x)
```

```
[Out] -1/2*b/(c^2*d+e)*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^2
*d+e))^(1/2)+e))*arcsin(c*x)+1/2*b/e*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2
*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsin(c*x)+1/4*I*b*polylog(2,e*(I*c*x
+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))/(c^2*d+e)+1/2
*I*b*arcsin(c*x)^2/(c^2*d+e)-1/4*I*b*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2))
^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))/e-I*b/e*arcsin(c*x)^2-1/2*I*b/e*s
um((_R1^2*e-4*c^2*d-2*e)/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(
-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=Root
Of(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))-b/e^2*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2
/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsin(c*x)*(c^2*d*(c^2*d+e))^(1/2)
+I*b*arcsin(c*x)^2/e^2*(c^2*d*(c^2*d+e))^(1/2)+1/2*I*b*polylog(2,e*(I*c*x+(
-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))/e^2*(c^2*d*(c^2
*d+e))^(1/2)+3/2*b/e/(c^2*d+e)*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d
+2*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsin(c*x)*(c^2*d*(c^2*d+e))^(1/2)-1/2*b*(c
^2*d*(c^2*d+e))^(1/2)/e/(c^2*d+e)*arcsin(c*x)*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1
/2))^2/(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e))-2*I*c^2*b*d*arcsin(c*x)^2/e^2
-I*c^4*b*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+
e))^(1/2)+e))*d^2/e^3-I*c^2*b*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c
```

```
^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))*d/e^2+1/2*a/e*ln(c^2*e*x^2+c^2*d)-2*I*c^
4*b*arcsin(c*x)^2*d^2/e^3-3/4*I*b*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/
(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))/e/(c^2*d+e)*(c^2*d*(c^2*d+e))^(1/2)+
1/4*I*b*(c^2*d*(c^2*d+e))^(1/2)/e/(c^2*d+e)*polylog(2,e*(I*c*x+(-c^2*x^2+1)
^(1/2))^2/(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e))-I*b*(c^2*d*(c^2*d+e))^(1/2
)/e/(c^2*d+e)*arcsin(c*x)^2+2*c^2*b/e^2*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2
/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsin(c*x)*d+2*c^4*b/e^3*ln(1-e*(I
*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsin(c*
x)*d^2+3*c^2*b/e^2*d/(c^2*d+e)*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d
+2*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsin(c*x)*(c^2*d*(c^2*d+e))^(1/2)+2*c^4*b/
e^3*d^2/(c^2*d+e)*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^
2*d+e))^(1/2)+e))*arcsin(c*x)*(c^2*d*(c^2*d+e))^(1/2)-I*c^4*b*d^2*polylog(2
,e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))/e^3/
(c^2*d+e)*(c^2*d*(c^2*d+e))^(1/2)-3/2*I*c^2*b*d*polylog(2,e*(I*c*x+(-c^2*x^
2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))/e^2/(c^2*d+e)*(c^2*d*(
c^2*d+e))^(1/2)-3*I*c^2*b*(c^2*d*(c^2*d+e))^(1/2)/e^2*d/(c^2*d+e)*arcsin(c*
x)^2-2*I*c^4*b*d^2*arcsin(c*x)^2/e^3/(c^2*d+e)*(c^2*d*(c^2*d+e))^(1/2)+1/4/
c^2*b/d/(c^2*d+e)*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^
2*d+e))^(1/2)+e))*arcsin(c*x)*(c^2*d*(c^2*d+e))^(1/2)-1/4/c^2*b*(c^2*d*(c^2
*d+e))^(1/2)/d/(c^2*d+e)*arcsin(c*x)*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2
*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e))-2*c^2*b/e^3*ln(1-e*(I*c*x+(-c^2*x^2+1)
^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsin(c*x)*d*(c^2*d*(c^2*
d+e))^(1/2)-2*c^6*b/e^3*d^3/(c^2*d+e)*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(
2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsin(c*x)-4*c^4*b/e^2*d^2/(c^2*d+e)
*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))
*arcsin(c*x)-5/2*c^2*b/e/(c^2*d+e)*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c
^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsin(c*x)*d+I*c^2*b*polylog(2,e*(I*c*x
+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))*d/e^3*(c^2*d*
(c^2*d+e))^(1/2)+I*c^6*b*d^3*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^
2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))/e^3/(c^2*d+e)+1/8*I/c^2*b*(c^2*d*(c^2*d+e
))^(1/2)/d/(c^2*d+e)*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d-2*(c
^2*d*(c^2*d+e))^(1/2)+e))-1/8*I/c^2*b*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2)
)^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))/d/(c^2*d+e)*(c^2*d*(c^2*d+e))^(1
/2)+2*I*c^2*b*arcsin(c*x)^2*d/e^3*(c^2*d*(c^2*d+e))^(1/2)+2*I*c^6*b*d^3*arc
sin(c*x)^2/e^3/(c^2*d+e)+5/4*I*c^2*b*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2))
^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))/e*d/(c^2*d+e)+4*I*c^4*b*arcsin(c*
x)^2/e^2/(c^2*d+e)*d^2+5/2*I*c^2*b*arcsin(c*x)^2/e/(c^2*d+e)*d+2*I*c^4*b*d^
2*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/
2)+e))/e^2/(c^2*d+e)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b \int \frac{x \arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)}{ex^2+d}\,dx + \frac{a \log\left(ex^2+d\right)}{2\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(e*x^2+d),x, algorithm="maxima")
```

```
[Out] b*integrate(x*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(e*x^2 + d), x) +
1/2*a*log(e*x^2 + d)/e
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{e\,x^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*asin(c*x)))/(d + e*x^2),x)
```

```
[Out] int((x*(a + b*asin(c*x)))/(d + e*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\,(a+b\,\text{asin}\,(cx))}{d+ex^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(c*x))/(e*x**2+d),x)
```

```
[Out] Integral(x*(a + b*asin(c*x))/(d + e*x**2), x)
```

3.628 $\int \frac{a+b\sin^{-1}(cx)}{d+ex^2}\,dx$

Optimal. Leaf size=541

$$\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2\sqrt{-d}\sqrt{e}}-\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1+\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2\sqrt{-d}\sqrt{e}}+\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\right.}{2\sqrt{-d}\sqrt{e}}$$

```
[Out] 1/2*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/
2)-(c^2*d+e)^(1/2)))/(-d)^(1/2)/e^(1/2)-1/2*(a+b*arcsin(c*x))*ln(1+(I*c*x+(
-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/(-d)^(1/2)/e^(
1/2)+1/2*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d
)^(1/2)+(c^2*d+e)^(1/2)))/(-d)^(1/2)/e^(1/2)-1/2*(a+b*arcsin(c*x))*ln(1+(I*
c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/(-d)^(1/2
)/e^(1/2)+1/2*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(
1/2)-(c^2*d+e)^(1/2)))/(-d)^(1/2)/e^(1/2)-1/2*I*b*polylog(2,(I*c*x+(-c^2*x^
2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/(-d)^(1/2)/e^(1/2)+1/
2*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+
e)^(1/2)))/(-d)^(1/2)/e^(1/2)-1/2*I*b*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*
e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/(-d)^(1/2)/e^(1/2)
```

Rubi [A] time = 0.74, antiderivative size = 541, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 6, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4667, 4741, 4521, 2190, 2279, 2391}

$$\frac{ib\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2\sqrt{-d}\sqrt{e}}-\frac{ib\text{PolyLog}\left(2,\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2\sqrt{-d}\sqrt{e}}+\frac{ib\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2\sqrt{-d}\sqrt{e}}-\frac{ib\text{PolyLog}\left(2,\right.}{2\sqrt{-d}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(d + e*x^2),x]
```

```
[Out] ((a + b*ArcSin[c*x])*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sq
rt[c^2*d + e])])/(2*Sqrt[-d]*Sqrt[e]) - ((a + b*ArcSin[c*x])*Log[1 + (Sqrt[
e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(2*Sqrt[-d]*Sqrt[e
]) + ((a + b*ArcSin[c*x])*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d]
 + Sqrt[c^2*d + e])])/(2*Sqrt[-d]*Sqrt[e]) - ((a + b*ArcSin[c*x])*Log[1 + (
Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(2*Sqrt[-d]*S
qrt[e]) + ((I/2)*b*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] -
 Sqrt[c^2*d + e]))])/(Sqrt[-d]*Sqrt[e]) - ((I/2)*b*PolyLog[2, (Sqrt[e]*E^(I
*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(Sqrt[-d]*Sqrt[e]) + ((I/
2)*b*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d +
e]))])/(Sqrt[-d]*Sqrt[e]) - ((I/2)*b*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))
/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(Sqrt[-d]*Sqrt[e])
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{d+ex^2}\,dx = \int \left(\frac{\sqrt{-d}\left(a+b\sin^{-1}(cx)\right)}{2d\left(\sqrt{-d}-\sqrt{e}\,x\right)}+\frac{\sqrt{-d}\left(a+b\sin^{-1}(cx)\right)}{2d\left(\sqrt{-d}+\sqrt{e}\,x\right)}\right)dx$$

$$= -\frac{\int \frac{a+b\sin^{-1}(cx)}{\sqrt{-d}-\sqrt{e}\,x}\,dx}{2\sqrt{-d}}-\frac{\int \frac{a+b\sin^{-1}(cx)}{\sqrt{-d}+\sqrt{e}\,x}\,dx}{2\sqrt{-d}}$$

$$= -\frac{\text{Subst}\left(\int \frac{(a+bx)\cos(x)}{c\sqrt{-d}-\sqrt{e}\,\sin(x)}\,dx, x, \sin^{-1}(cx)\right)}{2\sqrt{-d}}-\frac{\text{Subst}\left(\int \frac{(a+bx)\cos(x)}{c\sqrt{-d}+\sqrt{e}\,\sin(x)}\,dx, x, \sin^{-1}(cx)\right)}{2\sqrt{-d}}$$

$$= -\frac{i\,\text{Subst}\left(\int \frac{e^{ix}(a+bx)}{ic\sqrt{-d}-\sqrt{c^2d+e}-\sqrt{e}\,e^{ix}}\,dx, x, \sin^{-1}(cx)\right)}{2\sqrt{-d}}-\frac{i\,\text{Subst}\left(\int \frac{e^{ix}(a+bx)}{ic\sqrt{-d}+\sqrt{c^2d+e}-\sqrt{e}\,e^{ix}}\,dx, x,\right.}{2\sqrt{-d}}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2\sqrt{-d}\sqrt{e}}-\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1+\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2\sqrt{-d}\sqrt{e}}+$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2\sqrt{-d}\sqrt{e}}-\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1+\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2\sqrt{-d}\sqrt{e}}+$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2\sqrt{-d}\sqrt{e}}-\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1+\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2\sqrt{-d}\sqrt{e}}+$$

Mathematica [A] time = 0.44, size = 490, normalized size = 0.91

$$2a\sqrt{-d}\tan^{-1}\left(\frac{\sqrt{e}x}{\sqrt{d}}\right)-ib\sqrt{d}\,\mathrm{Li}_2\left(\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{dc^2+e}}\right)+ib\sqrt{d}\,\mathrm{Li}_2\left(\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{\sqrt{dc^2+e}-ic\sqrt{-d}}\right)+ib\sqrt{d}\,\mathrm{Li}_2\left(-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{i\sqrt{-d}c+\sqrt{dc^2+e}}\right)-ib\sqrt{d}\,\mathrm{Li}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(d + e*x^2),x]
```

```
[Out] (2*a*Sqrt[-d]*ArcTan[(Sqrt[e]*x)/Sqrt[d]] - b*Sqrt[d]*ArcSin[c*x]*Log[1 + (
Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])] + b*Sqrt[d]*Ar
cSin[c*x]*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/((-I)*c*Sqrt[-d] + Sqrt[c^2*d
 + e])] + b*Sqrt[d]*ArcSin[c*x]*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sq
rt[-d] + Sqrt[c^2*d + e])] - b*Sqrt[d]*ArcSin[c*x]*Log[1 + (Sqrt[e]*E^(I*Ar
cSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])] - I*b*Sqrt[d]*PolyLog[2, (Sqr
t[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])] + I*b*Sqrt[d]*Pol
yLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/((-I)*c*Sqrt[-d] + Sqrt[c^2*d + e])] +
I*b*Sqrt[d]*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c
^2*d + e]))] - I*b*Sqrt[d]*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt
[-d] + Sqrt[c^2*d + e])])/(2*Sqrt[-d^2]*Sqrt[e])
```

fricas [F] time = 0.50, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{b\arcsin\left(cx\right)+a}{ex^2+d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(e*x^2+d),x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(c*x) + a)/(e*x^2 + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{b\arcsin\left(cx\right)+a}{ex^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(e*x^2+d),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/(e*x^2 + d), x)
```

maple [C] time = 0.09, size = 236, normalized size = 0.44

$$\frac{a\arctan\left(\frac{ex}{\sqrt{de}}\right)}{\sqrt{de}}+\frac{cb\left(\sum_{\_R1=\mathrm{RootOf}\left(e\_Z^4+\left(-4c^2d-2e\right)\_Z^2+e\right)}\frac{i\arcsin(cx)\ln\left(\frac{\_R1-icx-\sqrt{-c^2x^2+1}}{\_R1}\right)+\mathrm{dilog}\left(\frac{\_R1-icx-\sqrt{-c^2x^2+1}}{\_R1}\right)}{\_R1\left(\_R1^2e-2c^2d-e\right)}\right)}{2}+\frac{cb\left(\sum_{\_R1=\mathrm{Roo}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(e*x^2+d),x)
```

```
[Out] a/(d*e)^(1/2)*arctan(e*x/(d*e)^(1/2))+1/2*c*b*sum(1/_R1/(_R1^2*e-2*c^2*d-e)
*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c
^2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))+1/2*c*b*su
m(_R1/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/
_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d
-2*e)*_Z^2+e))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\int \frac{\arctan\left(cx, \sqrt{cx+1}\sqrt{-cx+1}\right)}{ex^2+d}\,dx + \frac{a\arctan\left(\frac{ex}{\sqrt{de}}\right)}{\sqrt{de}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(e*x^2+d),x, algorithm="maxima")
```

```
[Out] b*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(e*x^2 + d), x) + a*
arctan(e*x/sqrt(d*e))/sqrt(d*e)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\mathrm{asin}\left(c\,x\right)}{e\,x^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(d + e*x^2),x)
```

```
[Out] int((a + b*asin(c*x))/(d + e*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\,\mathrm{asin}\left(cx\right)}{d+ex^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(e*x**2+d),x)
```

```
[Out] Integral((a + b*asin(c*x))/(d + e*x**2), x)
```

3.629 $\int \frac{a+b\sin^{-1}(cx)}{x(d+ex^2)}\,dx$

Optimal. Leaf size=518

$$-\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2d}-\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1+\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2d}-\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\right.}{2d}$$

```
[Out] (a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d-1/2*(a+b*arcsin(c*x)
)*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))
/d-1/2*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^
(1/2)-(c^2*d+e)^(1/2)))/d-1/2*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1
/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/d-1/2*(a+b*arcsin(c*x))*ln(1
+(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/d-1/2
*I*b*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d+1/2*I*b*polylog(2,-(I*c*x+(-
c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/d+1/2*I*b*polyl
og(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/d
+1/2*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2
*d+e)^(1/2)))/d+1/2*I*b*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(
-d)^(1/2)+(c^2*d+e)^(1/2)))/d
```

Rubi [A] time = 0.93, antiderivative size = 518, normalized size of antiderivative = 1.00, number of steps used = 25, number of rules used = 8, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.381$, Rules used = {4733, 4625, 3717, 2190, 2279, 2391, 4741, 4521}

$$\frac{ib\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2d}+\frac{ib\text{PolyLog}\left(2,\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2d}+\frac{ib\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2d}+\frac{ib\text{PolyLog}\left(2,\right.}{2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x*(d + e*x^2)),x]
```

```
[Out] -((a + b*ArcSin[c*x])*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - S
qrt[c^2*d + e])])/(2*d) - ((a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin
[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(2*d) - ((a + b*ArcSin[c*x])*Log
[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(2*d) -
 ((a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + S
qrt[c^2*d + e])])/(2*d) + ((a + b*ArcSin[c*x])*Log[1 - E^((2*I)*ArcSin[c*x]
)])/d + ((I/2)*b*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - S
qrt[c^2*d + e]))])/d + ((I/2)*b*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c
*Sqrt[-d] - Sqrt[c^2*d + e])])/d + ((I/2)*b*PolyLog[2, -((Sqrt[e]*E^(I*ArcS
in[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e]))])/d + ((I/2)*b*PolyLog[2, (Sqrt
[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/d - ((I/2)*b*Poly
Log[2, E^((2*I)*ArcSin[c*x])])/d
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4733

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (
f*x)^m*(d + e*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[c^2*d +
 e, 0] && IGtQ[n, 0] && IntegerQ[p] && IntegerQ[m]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x(d+ex^2)}\,dx = \int \left(\frac{a+b\sin^{-1}(cx)}{dx} - \frac{ex\left(a+b\sin^{-1}(cx)\right)}{d(d+ex^2)}\right) dx$$

$$= \frac{\int \frac{a+b\sin^{-1}(cx)}{x}\,dx}{d} - \frac{e\int \frac{x(a+b\sin^{-1}(cx))}{d+ex^2}\,dx}{d}$$

$$= \frac{\text{Subst}\left(\int (a+bx)\cot(x)\,dx, x, \sin^{-1}(cx)\right)}{d} - \frac{e\int \left(-\frac{a+b\sin^{-1}(cx)}{2\sqrt{e}\left(\sqrt{-d}-\sqrt{e}x\right)} + \frac{a+b\sin^{-1}(cx)}{2\sqrt{e}\left(\sqrt{-d}+\sqrt{e}x\right)}\right) dx}{d}$$

$$= -\frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2bd} - \frac{(2i)\,\text{Subst}\left(\int \frac{e^{2ix}(a+bx)}{1-e^{2ix}}\,dx, x, \sin^{-1}(cx)\right)}{d} + \frac{\sqrt{e}\int \frac{a+b\sin^{-1}(cx)}{\sqrt{-d}-\sqrt{e}x}\,dx}{2d} - \ldots$$

$$= -\frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2bd} + \frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-e^{2i\sin^{-1}(cx)}\right)}{d} - \frac{b\,\text{Subst}\left(\int \log\left(1-e^{2ix}\right)\ldots\right.}{d}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-e^{2i\sin^{-1}(cx)}\right)}{d} + \frac{(ib)\,\text{Subst}\left(\int \frac{\log(1-x)}{x}\,dx, x, e^{2i\sin^{-1}(cx)}\right)}{2d} + \frac{\left(i\sqrt{e}\right)\text{S}\ldots}{\ldots}$$

$$= -\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2d} - \frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1+\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2d} - \ldots$$

$$= -\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2d} - \frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1+\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2d} - \ldots$$

$$= -\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2d} - \frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1+\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2d} - \ldots$$

Mathematica [A] time = 0.76, size = 441, normalized size = 0.85

$$-\frac{a\log\left(d+ex^2\right)}{2d} + \frac{a\log(x)}{d} + \frac{b\left(i\text{Li}_2\left(\frac{\left(2dc^2+e-2\sqrt{c^2d\left(dc^2+e\right)}\right)e^{2i\sin^{-1}(cx)}}{e}\right) + i\text{Li}_2\left(\frac{\left(2dc^2+e+2\sqrt{c^2d\left(dc^2+e\right)}\right)e^{2i\sin^{-1}(cx)}}{e}\right) - 4i\sin^{-1}\ldots\right.}{\ldots}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x*(d + e*x^2)),x]
```

```
[Out] (a*Log[x])/d - (a*Log[d + e*x^2])/(2*d) + (b*((-4*I)*ArcSin[Sqrt[-((c^2*d)/
e)]]*ArcTan[(c*(c^2*d + e)*x)/(Sqrt[c^2*d*(c^2*d + e)]*Sqrt[1 - c^2*x^2])]
+ 4*ArcSin[c*x]*Log[1 - E^((2*I)*ArcSin[c*x])] - 2*ArcSin[Sqrt[-((c^2*d)/e)
]]*Log[1 - ((2*c^2*d + e - 2*Sqrt[c^2*d*(c^2*d + e)])*E^((2*I)*ArcSin[c*x])
)/e] - 2*ArcSin[c*x]*Log[1 - ((2*c^2*d + e - 2*Sqrt[c^2*d*(c^2*d + e)])*E^(
(2*I)*ArcSin[c*x]))/e] + 2*ArcSin[Sqrt[-((c^2*d)/e)]]*Log[1 - ((2*c^2*d + e
 + 2*Sqrt[c^2*d*(c^2*d + e)])*E^((2*I)*ArcSin[c*x]))/e] - 2*ArcSin[c*x]*Log
[1 - ((2*c^2*d + e + 2*Sqrt[c^2*d*(c^2*d + e)])*E^((2*I)*ArcSin[c*x]))/e] -
 (2*I)*PolyLog[2, E^((2*I)*ArcSin[c*x])] + I*PolyLog[2, ((2*c^2*d + e - 2*S
qrt[c^2*d*(c^2*d + e)])*E^((2*I)*ArcSin[c*x]))/e] + I*PolyLog[2, ((2*c^2*d
+ e + 2*Sqrt[c^2*d*(c^2*d + e)])*E^((2*I)*ArcSin[c*x]))/e]))/(4*d)
```

fricas [F] time = 0.63, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\arcsin(cx)+a}{ex^3+dx}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x/(e*x^2+d),x, algorithm="fricas")
[Out] integral((b*arcsin(c*x) + a)/(e*x^3 + d*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b \arcsin(cx) + a}{(ex^2 + d)x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x/(e*x^2+d),x, algorithm="giac")
[Out] integrate((b*arcsin(c*x) + a)/((e*x^2 + d)*x), x)
```

maple [C] time = 0.33, size = 355, normalized size = 0.69

$$-\frac{a \ln(c^2 e x^2 + c^2 d)}{2d} + \frac{a \ln(cx)}{d} + \frac{ib\left(\sum_{\_R1=\mathrm{RootOf}(e\_Z^4+(-4c^2d-2e)\_Z^2+e)} \frac{(\_R1^2 e - 4c^2 d - e)\left(i \arcsin(cx) \ln\left(\frac{\_R1 - icx - \sqrt{-c^2x^2+1}}{\_R1}\right) + \mathrm{dilog}\right.}{\_R1^2 e - 2c^2 d - e}\right.}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x/(e*x^2+d),x)
[Out] -1/2*a/d*ln(c^2*e*x^2+c^2*d)+a/d*ln(c*x)+1/4*I*b*sum((_R1^2*e-4*c^2*d-e)/(_
R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dil
og((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z
^2+e))/d+b/d*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-I*b/d*dilog(1+I*c*x
+(-c^2*x^2+1)^(1/2))+I*b*dilog(I*c*x+(-c^2*x^2+1)^(1/2))/d+1/4*I*b*sum((_R1
^2-1)/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/
_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d
-2*e)*_Z^2+e))*e/d
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2} a \left(\frac{\log(ex^2 + d)}{d} - \frac{2 \log(x)}{d} \right) + b \int \frac{\arctan\left(cx, \sqrt{cx+1}\sqrt{-cx+1}\right)}{ex^3 + dx} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x/(e*x^2+d),x, algorithm="maxima")
[Out] -1/2*a*(log(e*x^2 + d)/d - 2*log(x)/d) + b*integrate(arctan2(c*x, sqrt(c*x
+ 1)*sqrt(-c*x + 1))/(e*x^3 + d*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a + b \operatorname{asin}(c\, x)}{x\, (e\, x^2 + d)} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x*(d + e*x^2)),x)
[Out] int((a + b*asin(c*x))/(x*(d + e*x^2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b \operatorname{asin}(cx)}{x\left(d + ex^2\right)} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x/(e*x**2+d),x)
```

```
[Out] Integral((a + b*asin(c*x))/(x*(d + e*x**2)), x)
```

3.630 $\int \frac{a+b\sin^{-1}(cx)}{x^2\left(d+ex^2\right)}\,dx$

Optimal. Leaf size=579

$$\frac{\sqrt{e}\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2(-d)^{3/2}}-\frac{\sqrt{e}\left(a+b\sin^{-1}(cx)\right)\log\left(1+\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2(-d)^{3/2}}+\frac{\sqrt{e}\left(a+b\sin^{-1}\right.}{}$$

```
[Out] (-a-b*arcsin(c*x))/d/x-b*c*arctanh((-c^2*x^2+1)^(1/2))/d+1/2*(a+b*arcsin(c*
x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)
))*e^(1/2)/(-d)^(3/2)-1/2*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))
*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))*e^(1/2)/(-d)^(3/2)+1/2*(a+b*arcs
in(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^
(1/2)))*e^(1/2)/(-d)^(3/2)-1/2*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(
1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))*e^(1/2)/(-d)^(3/2)+1/2*I*b*
polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/
2)))*e^(1/2)/(-d)^(3/2)-1/2*I*b*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2
)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))*e^(1/2)/(-d)^(3/2)+1/2*I*b*polylog(2,-(
I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))*e^(1/2)
/(-d)^(3/2)-1/2*I*b*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^
(1/2)+(c^2*d+e)^(1/2)))*e^(1/2)/(-d)^(3/2)
```

Rubi [A] time = 0.92, antiderivative size = 579, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 11, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.524, Rules used = {4733, 4627, 266, 63, 208, 4667, 4741, 4521, 2190, 2279, 2391}

$$\frac{ib\sqrt{e}\,\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2(-d)^{3/2}}-\frac{ib\sqrt{e}\,\text{PolyLog}\left(2,\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2(-d)^{3/2}}+\frac{ib\sqrt{e}\,\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2(-d)^{3/2}}-\frac{ib}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x^2*(d + e*x^2)),x]
```

```
[Out] -((a + b*ArcSin[c*x])/(d*x)) - (b*c*ArcTanh[Sqrt[1 - c^2*x^2]])/d + (Sqrt[e
]*(a + b*ArcSin[c*x])*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - S
qrt[c^2*d + e])])/(2*(-d)^(3/2)) - (Sqrt[e]*(a + b*ArcSin[c*x])*Log[1 + (Sq
rt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(2*(-d)^(3/2))
+ (Sqrt[e]*(a + b*ArcSin[c*x])*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqr
t[-d] + Sqrt[c^2*d + e])])/(2*(-d)^(3/2)) - (Sqrt[e]*(a + b*ArcSin[c*x])*Lo
g[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(2*(-d
)^(3/2)) + ((I/2)*b*Sqrt[e]*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*S
qrt[-d] - Sqrt[c^2*d + e]))])/(-d)^(3/2) - ((I/2)*b*Sqrt[e]*PolyLog[2, (Sqr
t[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(-d)^(3/2) + ((I
/2)*b*Sqrt[e]*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt
[c^2*d + e]))])/(-d)^(3/2) - ((I/2)*b*Sqrt[e]*PolyLog[2, (Sqrt[e]*E^(I*ArcS
in[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(-d)^(3/2)
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rule 4733

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (
f*x)^m*(d + e*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[c^2*d +
 e, 0] && IGtQ[n, 0] && IntegerQ[p] && IntegerQ[m]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x^2\left(d+ex^2\right)}\,dx = \int \left(\frac{a+b\sin^{-1}(cx)}{dx^2} - \frac{e\left(a+b\sin^{-1}(cx)\right)}{d\left(d+ex^2\right)}\right)dx$$

$$= \frac{\int \frac{a+b\sin^{-1}(cx)}{x^2}\,dx}{d} - \frac{e\int \frac{a+b\sin^{-1}(cx)}{d+ex^2}\,dx}{d}$$

$$= -\frac{a+b\sin^{-1}(cx)}{dx} + \frac{(bc)\int \frac{1}{x\sqrt{1-c^2x^2}}\,dx}{d} - \frac{e\int \left(\frac{\sqrt{-d}\left(a+b\sin^{-1}(cx)\right)}{2d\left(\sqrt{-d}-\sqrt{e}\,x\right)} + \frac{\sqrt{-d}\left(a+b\sin^{-1}(cx)\right)}{2d\left(\sqrt{-d}+\sqrt{e}\,x\right)}\right)dx}{d}$$

$$= -\frac{a+b\sin^{-1}(cx)}{dx} + \frac{(bc)\,\text{Subst}\left(\int \frac{1}{x\sqrt{1-c^2x}}\,dx, x, x^2\right)}{2d} - \frac{e\int \frac{a+b\sin^{-1}(cx)}{\sqrt{-d}-\sqrt{e}\,x}\,dx}{2(-d)^{3/2}} - \frac{e\int \frac{a+b\sin^{-1}}{\sqrt{-d}+\sqrt{}}}{2(-d)^{3}}$$

$$= -\frac{a+b\sin^{-1}(cx)}{dx} - \frac{b\,\text{Subst}\left(\int \frac{1}{\frac{1}{c^2}-\frac{x^2}{c^2}}\,dx, x, \sqrt{1-c^2x^2}\right)}{cd} - \frac{e\,\text{Subst}\left(\int \frac{(a+bx)\cos(x)}{c\sqrt{-d}-\sqrt{e}\,\sin(x)}\,dx,\right.}{2(-d)^{3/2}}$$

$$= -\frac{a+b\sin^{-1}(cx)}{dx} - \frac{bc\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)}{d} - \frac{(ie)\,\text{Subst}\left(\int \frac{e^{ix}(a+bx)}{ic\sqrt{-d}-\sqrt{c^2d+e}-\sqrt{e}\,e^{ix}}\,dx, x, \text{si}\right.}{2(-d)^{3/2}}$$

$$= -\frac{a+b\sin^{-1}(cx)}{dx} - \frac{bc\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)}{d} + \frac{\sqrt{e}\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}\,e^{i\sin^{-1}(c}}{ic\sqrt{-d}-\sqrt{c^2d}}\right.}{2(-d)^{3/2}}$$

$$= -\frac{a+b\sin^{-1}(cx)}{dx} - \frac{bc\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)}{d} + \frac{\sqrt{e}\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}\,e^{i\sin^{-1}(c}}{ic\sqrt{-d}-\sqrt{c^2d}}\right.}{2(-d)^{3/2}}$$

$$= -\frac{a+b\sin^{-1}(cx)}{dx} - \frac{bc\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)}{d} + \frac{\sqrt{e}\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}\,e^{i\sin^{-1}(c}}{ic\sqrt{-d}-\sqrt{c^2d}}\right.}{2(-d)^{3/2}}$$

Mathematica [A] time = 0.35, size = 455, normalized size = 0.79

$$-4a\sqrt{e}\,x\tan^{-1}\left(\frac{\sqrt{e}\,x}{\sqrt{d}}\right) - 4a\sqrt{d} + b\sqrt{e}\,x\left(2\text{Li}_2\left(\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{\sqrt{dc^2+e}-c\sqrt{d}}\right) + 2\text{Li}_2\left(-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{\sqrt{d}\,c+\sqrt{dc^2+e}}\right) + \sin^{-1}(cx)\left(\sin^{-1}(cx) + 2i\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x^2*(d + e*x^2)),x]
```

```
[Out] (-4*a*Sqrt[d] - 4*a*Sqrt[e]*x*ArcTan[(Sqrt[e]*x)/Sqrt[d]] - 4*b*Sqrt[d]*(Ar
cSin[c*x] + c*x*ArcTanh[Sqrt[1 - c^2*x^2]]) + b*Sqrt[e]*x*(ArcSin[c*x]*(Arc
Sin[c*x] + (2*I)*(Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] - Sqrt[c^2
*d + e])] + Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e
])])) + 2*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(-(c*Sqrt[d]) + Sqrt[c^2*d
 + e])] + 2*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*
d + e]))]) - b*Sqrt[e]*x*(ArcSin[c*x]*(ArcSin[c*x] + (2*I)*(Log[1 + (Sqrt[e
]*E^(I*ArcSin[c*x]))/(-(c*Sqrt[d]) + Sqrt[c^2*d + e])] + Log[1 - (Sqrt[e]*E
^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e])])) + 2*PolyLog[2, (Sqrt[e]*
```

```
E^(I*ArcSin[c*x]))/(c*Sqrt[d] - Sqrt[c^2*d + e])] + 2*PolyLog[2, (Sqrt[e]*E
^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e])]))/(4*d^(3/2)*x)
```

fricas [F] time = 0.74, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\arcsin(cx)+a}{ex^4+dx^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^2/(e*x^2+d),x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(c*x) + a)/(e*x^4 + d*x^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^2/(e*x^2+d),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [C] time = 0.94, size = 363, normalized size = 0.63

$$-\frac{ae\arctan\left(\frac{ex}{\sqrt{de}}\right)}{d\sqrt{de}}-\frac{a}{dx}-\frac{b\arcsin(cx)}{dx}-\frac{be\left(\sum_{\_R1=\mathrm{RootOf}\left(e\_Z^4+\left(-4c^2d-2e\right)\_Z^2+e\right)}\frac{\left(4\_R1^2c^2d+\_R1^2e-e\right)\left(i\arcsin(cx)\ln\left(\frac{\_R1-icx-\sqrt{-c^2x^2}}{\_R1}\right.\right.}{\_R1\left(\_R1^2e-2c^2d-e\right)}\right.}{8c\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x^2/(e*x^2+d),x)
```

```
[Out] -a*e/d/(d*e)^(1/2)*arctan(e*x/(d*e)^(1/2))-a/d/x-b*arcsin(c*x)/d/x-1/8*b/c/
d^2*e*sum((4*_R1^2*c^2*d+_R1^2*e-e)/_R1/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*
ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))
/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))+1/8*b/c/d^2*e*sum((_R1^2*e
-4*c^2*d-e)/_R1/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+
1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4
+(-4*c^2*d-2*e)*_Z^2+e))-c*b/d*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+c*b/d*ln(I*c*
x+(-c^2*x^2+1)^(1/2)-1)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-a\left(\frac{e\arctan\left(\frac{ex}{\sqrt{de}}\right)}{\sqrt{de}\,d}+\frac{1}{dx}\right)+b\int\frac{\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)}{ex^4+dx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^2/(e*x^2+d),x, algorithm="maxima")
```

```
[Out] -a*(e*arctan(e*x/sqrt(d*e))/(sqrt(d*e)*d) + 1/(d*x)) + b*integrate(arctan2(
c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(e*x^4 + d*x^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{a+b\,\mathrm{asin}\left(c\,x\right)}{x^2\,\left(e\,x^2+d\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x^2*(d + e*x^2)),x)
```

```
[Out] int((a + b*asin(c*x))/(x^2*(d + e*x^2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b \operatorname{asin}(cx)}{x^2 (d + ex^2)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x**2/(e*x**2+d),x)
```

```
[Out] Integral((a + b*asin(c*x))/(x**2*(d + e*x**2)), x)
```

3.631 $\int \frac{a+b\sin^{-1}(cx)}{x^3(d+ex^2)}\,dx$

Optimal. Leaf size=573

$$\frac{e\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2d^2}+\frac{e\left(a+b\sin^{-1}(cx)\right)\log\left(1+\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2d^2}+\frac{e\left(a+b\sin^{-1}(cx)\right)\log\left(\right.}{2d^2}$$

```
[Out] 1/2*(-a-b*arcsin(c*x))/d/x^2-e*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(
1/2))^2)/d^2+1/2*e*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2
)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/d^2+1/2*e*(a+b*arcsin(c*x))*ln(1+(I*c*x
+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/d^2+1/2*e*(a
+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^
2*d+e)^(1/2)))/d^2+1/2*e*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))*
e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/d^2+1/2*I*b*e*polylog(2,(I*c*x+(-
c^2*x^2+1)^(1/2))^2)/d^2-1/2*I*b*e*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^
(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/d^2-1/2*I*b*e*polylog(2,(I*c*x+(-c^
2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/d^2-1/2*I*b*e*pol
ylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2))
)/d^2-1/2*I*b*e*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2
)+(c^2*d+e)^(1/2)))/d^2-1/2*b*c*(-c^2*x^2+1)^(1/2)/d/x
```

Rubi [A] time = 0.99, antiderivative size = 573, normalized size of antiderivative = 1.00, number of steps used = 27, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.476, Rules used = {4733, 4627, 264, 4625, 3717, 2190, 2279, 2391, 4741, 4521}

$$-\frac{ibe\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2d^2}-\frac{ibe\text{PolyLog}\left(2,\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2d^2}-\frac{ibe\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2d^2}-ibe\text{PolyLo}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x^3*(d + e*x^2)),x]
```

```
[Out] -(b*c*Sqrt[1 - c^2*x^2])/(2*d*x) - (a + b*ArcSin[c*x])/(2*d*x^2) + (e*(a +
b*ArcSin[c*x])*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2
*d + e])])/(2*d^2) + (e*(a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*
x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(2*d^2) + (e*(a + b*ArcSin[c*x])*Lo
g[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(2*d^2
) + (e*(a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d
] + Sqrt[c^2*d + e])])/(2*d^2) - (e*(a + b*ArcSin[c*x])*Log[1 - E^((2*I)*Ar
cSin[c*x])])/d^2 - ((I/2)*b*e*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c
*Sqrt[-d] - Sqrt[c^2*d + e]))])/d^2 - ((I/2)*b*e*PolyLog[2, (Sqrt[e]*E^(I*A
rcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/d^2 - ((I/2)*b*e*PolyLog[2,
 -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e]))])/d^2 - ((
I/2)*b*e*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d
+ e])])/d^2 + ((I/2)*b*e*PolyLog[2, E^((2*I)*ArcSin[c*x])])/d^2
```

Rule 264

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c
*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] /; FreeQ[{a, b, c, m, n,
 p}, x] && EqQ[(m + 1)/n + p + 1, 0] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
```

```
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4733

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (
f*x)^m*(d + e*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[c^2*d +
 e, 0] && IGtQ[n, 0] && IntegerQ[p] && IntegerQ[m]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x^3\left(d+ex^2\right)}\,dx = \int \left(\frac{a+b\sin^{-1}(cx)}{dx^3} - \frac{e\left(a+b\sin^{-1}(cx)\right)}{d^2x} + \frac{e^2x\left(a+b\sin^{-1}(cx)\right)}{d^2\left(d+ex^2\right)}\right)dx$$

$$= \frac{\int \frac{a+b\sin^{-1}(cx)}{x^3}\,dx}{d} - \frac{e\int \frac{a+b\sin^{-1}(cx)}{x}\,dx}{d^2} + \frac{e^2\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{d+ex^2}\,dx}{d^2}$$

$$= -\frac{a+b\sin^{-1}(cx)}{2dx^2} + \frac{(bc)\int \frac{1}{x^2\sqrt{1-c^2x^2}}\,dx}{2d} - \frac{e\,\text{Subst}\left(\int (a+bx)\cot(x)\,dx, x, \sin^{-1}(cx)\right)}{d^2} + \frac{e^2}{}$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{2dx} - \frac{a+b\sin^{-1}(cx)}{2dx^2} + \frac{ie\left(a+b\sin^{-1}(cx)\right)^2}{2bd^2} + \frac{(2ie)\,\text{Subst}\left(\int \frac{e^{2ix}(a+bx)}{1-e^{2ix}}\,dx, x, s\right.}{d^2}$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{2dx} - \frac{a+b\sin^{-1}(cx)}{2dx^2} + \frac{ie\left(a+b\sin^{-1}(cx)\right)^2}{2bd^2} - \frac{e\left(a+b\sin^{-1}(cx)\right)\log\left(1-e^{2i}\right.}{d^2}$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{2dx} - \frac{a+b\sin^{-1}(cx)}{2dx^2} - \frac{e\left(a+b\sin^{-1}(cx)\right)\log\left(1-e^{2i\sin^{-1}(cx)}\right)}{d^2} - \frac{(ibe)\,\text{Subst}\left(\right.}{}$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{2dx} - \frac{a+b\sin^{-1}(cx)}{2dx^2} + \frac{e\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2d^2} + \frac{e\left(a+b\,\text{s}\right.}{}$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{2dx} - \frac{a+b\sin^{-1}(cx)}{2dx^2} + \frac{e\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2d^2} + \frac{e\left(a+b\,\text{s}\right.}{}$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{2dx} - \frac{a+b\sin^{-1}(cx)}{2dx^2} + \frac{e\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2d^2} + \frac{e\left(a+b\,\text{s}\right.}{}$$

Mathematica [A] time = 2.36, size = 483, normalized size = 0.84

$$4ae\log\left(d+ex^2\right) - \frac{4ad}{x^2} - 8ae\log(x) + 2b\left(-ie\text{Li}_2\left(\frac{\left(2dc^2+e-2\sqrt{c^2d\left(dc^2+e\right)}\right)e^{2i\sin^{-1}(cx)}}{e}\right) - ie\text{Li}_2\left(\frac{\left(2dc^2+e+2\sqrt{c^2d\left(dc^2+e\right)}\right)e^{2i\sin^{-}}}{e}\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x^3*(d + e*x^2)),x]
```

```
[Out] ((-4*a*d)/x^2 - 8*a*e*Log[x] + 4*a*e*Log[d + e*x^2] + 2*b*((-2*c*d*Sqrt[1 -
 c^2*x^2])/x - (2*d*ArcSin[c*x])/x^2 + (4*I)*e*ArcSin[Sqrt[-((c^2*d)/e)]]*A
rcTan[(Sqrt[c^2*d*(c^2*d + e)]*x)/(c*d*Sqrt[1 - c^2*x^2])] - 4*e*ArcSin[c*x
]*Log[1 - E^((2*I)*ArcSin[c*x])] + 2*e*ArcSin[Sqrt[-((c^2*d)/e)]]*Log[1 - (
(2*c^2*d + e - 2*Sqrt[c^2*d*(c^2*d + e)])*E^((2*I)*ArcSin[c*x]))/e] + 2*e*A
rcSin[c*x]*Log[1 - ((2*c^2*d + e - 2*Sqrt[c^2*d*(c^2*d + e)])*E^((2*I)*ArcS
in[c*x]))/e] - 2*e*ArcSin[Sqrt[-((c^2*d)/e)]]*Log[1 - ((2*c^2*d + e + 2*Sqr
t[c^2*d*(c^2*d + e)])*E^((2*I)*ArcSin[c*x]))/e] + 2*e*ArcSin[c*x]*Log[1 - (
(2*c^2*d + e + 2*Sqrt[c^2*d*(c^2*d + e)])*E^((2*I)*ArcSin[c*x]))/e] + (2*I)
*e*PolyLog[2, E^((2*I)*ArcSin[c*x])] - I*e*PolyLog[2, ((2*c^2*d + e - 2*Sqr
t[c^2*d*(c^2*d + e)])*E^((2*I)*ArcSin[c*x]))/e] - I*e*PolyLog[2, ((2*c^2*d
+ e + 2*Sqrt[c^2*d*(c^2*d + e)])*E^((2*I)*ArcSin[c*x]))/e]))/(8*d^2)
```

fricas [F] time = 0.53, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\arcsin(cx)+a}{ex^5+dx^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(e*x^2+d),x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(c*x) + a)/(e*x^5 + d*x^3), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(e*x^2+d),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [C] time = 0.45, size = 419, normalized size = 0.73

$$\frac{ae\ln\left(c^2ex^2+c^2d\right)}{2d^2}-\frac{a}{2d\,x^2}-\frac{ae\ln\left(cx\right)}{d^2}+\frac{ic^2b}{2d}-\frac{bc\sqrt{-c^2x^2+1}}{2dx}-\frac{b\arcsin\left(cx\right)}{2d\,x^2}-\frac{ibe\left(\sum_{\_R1=\mathrm{RootOf}\left(e\_Z^4+\left(-4c^2d-2e\right)\_Z^2+e\right)}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x^3/(e*x^2+d),x)
```

```
[Out] 1/2*a*e/d^2*ln(c^2*e*x^2+c^2*d)-1/2*a/d/x^2-a/d^2*e*ln(c*x)+1/2*I*c^2*b/d-1
/2*b*c*(-c^2*x^2+1)^(1/2)/d/x-1/2*b*arcsin(c*x)/d/x^2-1/4*I*b/d^2*e*sum((_R
1^2*e-4*c^2*d-e)/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2
+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^
4+(-4*c^2*d-2*e)*_Z^2+e))-b/d^2*e*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2)
)+I*b/d^2*e*dilog(1+I*c*x+(-c^2*x^2+1)^(1/2))-I*b/d^2*e*dilog(I*c*x+(-c^2*x
^2+1)^(1/2))-1/4*I*b/d^2*e^2*sum((_R1^2-1)/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*
x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/
2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\,a\left(\frac{e\log\left(ex^2+d\right)}{d^2}-\frac{2\,e\log(x)}{d^2}-\frac{1}{dx^2}\right)+b\int\frac{\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{ex^5+dx^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(e*x^2+d),x, algorithm="maxima")
```

```
[Out] 1/2*a*(e*log(e*x^2 + d)/d^2 - 2*e*log(x)/d^2 - 1/(d*x^2)) + b*integrate(arc
tan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(e*x^5 + d*x^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{a+b\,\mathrm{asin}\left(c\,x\right)}{x^3\,\left(e\,x^2+d\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x^3*(d + e*x^2)),x)
```

```
[Out] int((a + b*asin(c*x))/(x^3*(d + e*x^2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{a+b\,\mathrm{asin}\left(cx\right)}{x^3\left(d+ex^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x**3/(e*x**2+d),x)
```

```
[Out] Integral((a + b*asin(c*x))/(x**3*(d + e*x**2)), x)
```

3.632 $\int \frac{a+b\sin^{-1}(cx)}{x^4(d+ex^2)}\,dx$

Optimal. Leaf size=649

$$\frac{e^{3/2}\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2(-d)^{5/2}}-\frac{e^{3/2}\left(a+b\sin^{-1}(cx)\right)\log\left(1+\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2(-d)^{5/2}}+\frac{e^{3/2}\left(a+b\sin^{-1}\right.}{}$$

```
[Out] 1/3*(-a-b*arcsin(c*x))/d/x^3+e*(a+b*arcsin(c*x))/d^2/x-1/6*b*c^3*arctanh((-
c^2*x^2+1)^(1/2))/d+b*c*e*arctanh((-c^2*x^2+1)^(1/2))/d^2+1/2*e^(3/2)*(a+b*
arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d
+e)^(1/2)))/(-d)^(5/2)-1/2*e^(3/2)*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+
1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/(-d)^(5/2)+1/2*e^(3/2)*
(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(
c^2*d+e)^(1/2)))/(-d)^(5/2)-1/2*e^(3/2)*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2
*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/(-d)^(5/2)+1/2*I*b
*e^(3/2)*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2
*d+e)^(1/2)))/(-d)^(5/2)-1/2*I*b*e^(3/2)*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2
))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/(-d)^(5/2)+1/2*I*b*e^(3/2)*pol
ylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2))
)/(-d)^(5/2)-1/2*I*b*e^(3/2)*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(
I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/(-d)^(5/2)-1/6*b*c*(-c^2*x^2+1)^(1/2)/d/x^
2
```

Rubi [A] time = 0.96, antiderivative size = 649, normalized size of antiderivative = 1.00, number of steps used = 29, number of rules used = 12, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.571, Rules used = {4733, 4627, 266, 51, 63, 208, 4667, 4741, 4521, 2190, 2279, 2391}

$$\frac{ibe^{3/2}\text{PolyLog}\left(2,-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2(-d)^{5/2}}-\frac{ibe^{3/2}\text{PolyLog}\left(2,\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2(-d)^{5/2}}+\frac{ibe^{3/2}\text{PolyLog}\left(2,-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2(-d)^{5/2}}-\frac{ib}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x^4*(d + e*x^2)),x]
```

```
[Out] -(b*c*Sqrt[1 - c^2*x^2])/(6*d*x^2) - (a + b*ArcSin[c*x])/(3*d*x^3) + (e*(a
+ b*ArcSin[c*x]))/(d^2*x) - (b*c^3*ArcTanh[Sqrt[1 - c^2*x^2]])/(6*d) + (b*c
*e*ArcTanh[Sqrt[1 - c^2*x^2]])/d^2 + (e^(3/2)*(a + b*ArcSin[c*x])*Log[1 - (
Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(2*(-d)^(5/2)
) - (e^(3/2)*(a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*S
qrt[-d] - Sqrt[c^2*d + e])])/(2*(-d)^(5/2)) + (e^(3/2)*(a + b*ArcSin[c*x])*
Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(2*(
-d)^(5/2)) - (e^(3/2)*(a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]
))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(2*(-d)^(5/2)) + ((I/2)*b*e^(3/2)*Pol
yLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e]))])/(
-d)^(5/2) - ((I/2)*b*e^(3/2)*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sq
rt[-d] - Sqrt[c^2*d + e])])/(-d)^(5/2) + ((I/2)*b*e^(3/2)*PolyLog[2, -((Sqr
t[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e]))])/(-d)^(5/2) - ((
I/2)*b*e^(3/2)*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[
c^2*d + e])])/(-d)^(5/2)
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
```

```
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rule 4733

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (
f*x)^m*(d + e*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[c^2*d +
 e, 0] && IGtQ[n, 0] && IntegerQ[p] && IntegerQ[m]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x^4\left(d+ex^2\right)}\,dx=\int\left(\frac{a+b\sin^{-1}(cx)}{dx^4}-\frac{e\left(a+b\sin^{-1}(cx)\right)}{d^2x^2}+\frac{e^2\left(a+b\sin^{-1}(cx)\right)}{d^2\left(d+ex^2\right)}\right)dx$$

$$=\frac{\int\frac{a+b\sin^{-1}(cx)}{x^4}\,dx}{d}-\frac{e\int\frac{a+b\sin^{-1}(cx)}{x^2}\,dx}{d^2}+\frac{e^2\int\frac{a+b\sin^{-1}(cx)}{d+ex^2}\,dx}{d^2}$$

$$=-\frac{a+b\sin^{-1}(cx)}{3dx^3}+\frac{e\left(a+b\sin^{-1}(cx)\right)}{d^2x}+\frac{(bc)\int\frac{1}{x^3\sqrt{1-c^2x^2}}\,dx}{3d}-\frac{(bce)\int\frac{1}{x\sqrt{1-c^2x^2}}\,dx}{d^2}+\cdots$$

$$=-\frac{a+b\sin^{-1}(cx)}{3dx^3}+\frac{e\left(a+b\sin^{-1}(cx)\right)}{d^2x}+\frac{(bc)\,\text{Subst}\left(\int\frac{1}{x^2\sqrt{1-c^2x}}\,dx,x,x^2\right)}{6d}-\frac{(bce)\,\text{Sub}\cdots}{\cdots}$$

$$=-\frac{bc\sqrt{1-c^2x^2}}{6dx^2}-\frac{a+b\sin^{-1}(cx)}{3dx^3}+\frac{e\left(a+b\sin^{-1}(cx)\right)}{d^2x}+\frac{\left(bc^3\right)\text{Subst}\left(\int\frac{1}{x\sqrt{1-c^2x}}\,dx,x,\cdots\right.}{12d}\cdots$$

$$=-\frac{bc\sqrt{1-c^2x^2}}{6dx^2}-\frac{a+b\sin^{-1}(cx)}{3dx^3}+\frac{e\left(a+b\sin^{-1}(cx)\right)}{d^2x}+\frac{bce\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)}{d^2}-\cdots$$

$$=-\frac{bc\sqrt{1-c^2x^2}}{6dx^2}-\frac{a+b\sin^{-1}(cx)}{3dx^3}+\frac{e\left(a+b\sin^{-1}(cx)\right)}{d^2x}-\frac{bc^3\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)}{6d}+\cdots$$

$$=-\frac{bc\sqrt{1-c^2x^2}}{6dx^2}-\frac{a+b\sin^{-1}(cx)}{3dx^3}+\frac{e\left(a+b\sin^{-1}(cx)\right)}{d^2x}-\frac{bc^3\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)}{6d}+\cdots$$

$$=-\frac{bc\sqrt{1-c^2x^2}}{6dx^2}-\frac{a+b\sin^{-1}(cx)}{3dx^3}+\frac{e\left(a+b\sin^{-1}(cx)\right)}{d^2x}-\frac{bc^3\tanh^{-1}\left(\sqrt{1-c^2x^2}\right)}{6d}+\cdots$$

Mathematica [A] time = 0.44, size = 531, normalized size = 0.82

$$\frac{ae^{3/2}\tan^{-1}\left(\frac{\sqrt{e}x}{\sqrt{d}}\right)}{d^{5/2}}+\frac{ae}{d^2x}-\frac{a}{3dx^3}+b\left(-\frac{e^{3/2}\left(2\text{Li}_2\left(\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{\sqrt{dc^2+e}-c\sqrt{d}}\right)+2\text{Li}_2\left(-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{\sqrt{d}c+\sqrt{dc^2+e}}\right)+\sin^{-1}(cx)\left(\sin^{-1}(cx)+2i\left(\text{lo}\right.\right.\right.}{4d^{5/2}}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x^4*(d + e*x^2)),x]
```

```
[Out] -1/3*a/(d*x^3) + (a*e)/(d^2*x) + (a*e^(3/2)*ArcTan[(Sqrt[e]*x)/Sqrt[d]])/d^
(5/2) + b*(-((e*(-(ArcSin[c*x]/x) - c*ArcTanh[Sqrt[1 - c^2*x^2]]))/d^2) - (
c*x*Sqrt[1 - c^2*x^2] + 2*ArcSin[c*x] + c^3*x^3*ArcTanh[Sqrt[1 - c^2*x^2]])
/(6*d*x^3) - (e^(3/2)*(ArcSin[c*x]*(ArcSin[c*x] + (2*I)*(Log[1 + (Sqrt[e]*E
^(I*ArcSin[c*x]))/(c*Sqrt[d] - Sqrt[c^2*d + e])] + Log[1 + (Sqrt[e]*E^(I*Ar
cSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e])])) + 2*PolyLog[2, (Sqrt[e]*E^(I*A
rcSin[c*x]))/(-(c*Sqrt[d]) + Sqrt[c^2*d + e])] + 2*PolyLog[2, -((Sqrt[e]*E^
(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e]))]))/(4*d^(5/2)) + (e^(3/2)*(
ArcSin[c*x]*(ArcSin[c*x] + (2*I)*(Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(-(c*
Sqrt[d]) + Sqrt[c^2*d + e])] + Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[
d] + Sqrt[c^2*d + e])])) + 2*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt
[d] - Sqrt[c^2*d + e])] + 2*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[
d] + Sqrt[c^2*d + e])]))/(4*d^(5/2)))
```

fricas [F] time = 0.66, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\arcsin(cx)+a}{ex^6+dx^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^4/(e*x^2+d),x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(c*x) + a)/(e*x^6 + d*x^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\arcsin(cx)+a}{(ex^2+d)x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^4/(e*x^2+d),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/((e*x^2 + d)*x^4), x)
```

maple [C] time = 1.03, size = 472, normalized size = 0.73

$$\frac{a\,e^2\arctan\left(\frac{ex}{\sqrt{de}}\right)}{d^2\sqrt{de}}-\frac{a}{3d\,x^3}+\frac{ae}{d^2x}-\frac{bc\sqrt{-c^2x^2+1}}{6d\,x^2}+\frac{b\arcsin(cx)\,e}{d^2x}-\frac{b\arcsin(cx)}{3d\,x^3}-\frac{b\,e^2\left(\sum_{\_R1=\text{RootOf}\left(e\_Z^4+\left(-4c^2d-2e\right)\_Z^2+\right.}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x^4/(e*x^2+d),x)
```

```
[Out] a*e^2/d^2/(d*e)^(1/2)*arctan(e*x/(d*e)^(1/2))-1/3*a/d/x^3+a/d^2*e/x-1/6*b*c
*(-c^2*x^2+1)^(1/2)/d/x^2+b*arcsin(c*x)/d^2*e/x-1/3*b*arcsin(c*x)/d/x^3-1/8
/c*b/d^3*e^2*sum((_R1^2*e-4*c^2*d-e)/_R1/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)
```

```
*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2)
)/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))-1/6*c^3*b/d*ln(1+I*c*x+(-
c^2*x^2+1)^(1/2))+1/6*c^3*b/d*ln(I*c*x+(-c^2*x^2+1)^(1/2)-1)+1/8/c*b/d^3*e^
2*sum((4*_R1^2*c^2*d+_R1^2*e-e)/_R1/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((
_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1
)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))+c*b/d^2*e*ln(1+I*c*x+(-c^2*x^2
+1)^(1/2))-c*b/d^2*e*ln(I*c*x+(-c^2*x^2+1)^(1/2)-1)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{3}\,a\left(\frac{3\,e^2\arctan\left(\frac{ex}{\sqrt{de}}\right)}{\sqrt{de}\,d^2}+\frac{3\,ex^2-d}{d^2x^3}\right)+b\int\frac{\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{ex^6+dx^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^4/(e*x^2+d),x, algorithm="maxima")
```

```
[Out] 1/3*a*(3*e^2*arctan(e*x/sqrt(d*e))/(sqrt(d*e)*d^2) + (3*e*x^2 - d)/(d^2*x^3
)) + b*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(e*x^6 + d*x^4)
, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{a+b\,\mathrm{asin}\left(c\,x\right)}{x^4\,\left(e\,x^2+d\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x^4*(d + e*x^2)),x)
```

```
[Out] int((a + b*asin(c*x))/(x^4*(d + e*x^2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{a+b\,\mathrm{asin}\left(cx\right)}{x^4\left(d+ex^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x**4/(e*x**2+d),x)
```

```
[Out] Integral((a + b*asin(c*x))/(x**4*(d + e*x**2)), x)
```

3.633 $\int \frac{x^3(a+b\sin^{-1}(cx))}{(d+ex^2)^2}\,dx$

Optimal. Leaf size=574

$$\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e^2}+\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1+\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e^2}+\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\right.}{2e^2}$$

```
[Out] 1/2*d*(a+b*arcsin(c*x))/e^2/(e*x^2+d)-1/2*I*(a+b*arcsin(c*x))^2/b/e^2+1/2*(
a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c
^2*d+e)^(1/2)))/e^2+1/2*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))*e
^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/e^2+1/2*(a+b*arcsin(c*x))*ln(1-(I*
c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/e^2+1/2*(
a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c
^2*d+e)^(1/2)))/e^2-1/2*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(
I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/e^2-1/2*I*b*polylog(2,(I*c*x+(-c^2*x^2+1)^
(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/e^2-1/2*I*b*polylog(2,-(I*
c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/e^2-1/2*I
*b*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(
1/2)))/e^2-1/2*b*c*arctan(x*(c^2*d+e)^(1/2)/d^(1/2)/(-c^2*x^2+1)^(1/2))*d^(
1/2)/e^2/(c^2*d+e)^(1/2)
```

Rubi [A] time = 0.96, antiderivative size = 574, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 9, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {4733, 4729, 377, 205, 4741, 4521, 2190, 2279, 2391}

$$-\frac{ib\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e^2}-\frac{ib\text{PolyLog}\left(2,\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e^2}-\frac{ib\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e^2}-\frac{ib\text{PolyLog}\left(2\right.}{2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*ArcSin[c*x]))/(d + e*x^2)^2,x]
```

```
[Out] (d*(a + b*ArcSin[c*x]))/(2*e^2*(d + e*x^2)) - ((I/2)*(a + b*ArcSin[c*x])^2)
/(b*e^2) - (b*c*Sqrt[d]*ArcTan[(Sqrt[c^2*d + e]*x)/(Sqrt[d]*Sqrt[1 - c^2*x^
2])])/(2*e^2*Sqrt[c^2*d + e]) + ((a + b*ArcSin[c*x])*Log[1 - (Sqrt[e]*E^(I*
ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(2*e^2) + ((a + b*ArcSin[c
*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])
/(2*e^2) + ((a + b*ArcSin[c*x])*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sq
rt[-d] + Sqrt[c^2*d + e])])/(2*e^2) + ((a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]
*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(2*e^2) - ((I/2)*b*P
olyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e]))])
/e^2 - ((I/2)*b*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt
[c^2*d + e])])/e^2 - ((I/2)*b*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c
*Sqrt[-d] + Sqrt[c^2*d + e]))])/e^2 - ((I/2)*b*PolyLog[2, (Sqrt[e]*E^(I*Arc
Sin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/e^2
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 377

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)/((c_) + (d_.)*(x_)^(n_)), x_Symbol] :> Su
bst[Int[1/(c - (b*c - a*d)*x^n), x], x, x/(a + b*x^n)^(1/n)] /; FreeQ[{a, b
```

```
, c, d}, x] && NeQ[b*c - a*d, 0] && EqQ[n*p + 1, 0] && IntegerQ[n]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x]))/(2*e*(p + 1)), x]
 - Dist[(b*c)/(2*e*(p + 1)), Int[(d + e*x^2)^(p + 1)/Sqrt[1 - c^2*x^2], x],
 x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[c^2*d + e, 0] && NeQ[p, -1]
```

Rule 4733

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (
f*x)^m*(d + e*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[c^2*d +
 e, 0] && IGtQ[n, 0] && IntegerQ[p] && IntegerQ[m]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^2}dx = \int\left(-\frac{dx\left(a+b\sin^{-1}(cx)\right)}{e\left(d+ex^2\right)^2}+\frac{x\left(a+b\sin^{-1}(cx)\right)}{e\left(d+ex^2\right)}\right)dx$$

$$= \frac{\int \frac{x(a+b\sin^{-1}(cx))}{d+ex^2}dx}{e} - \frac{d\int \frac{x(a+b\sin^{-1}(cx))}{(d+ex^2)^2}dx}{e}$$

$$= \frac{d\left(a+b\sin^{-1}(cx)\right)}{2e^2\left(d+ex^2\right)} - \frac{(bcd)\int \frac{1}{\sqrt{1-c^2x^2}\left(d+ex^2\right)}dx}{2e^2} + \frac{\int\left(-\frac{a+b\sin^{-1}(cx)}{2\sqrt{e}\left(\sqrt{-d}-\sqrt{e}x\right)}+\frac{a+b\sin^{-1}(cx)}{2\sqrt{e}\left(\sqrt{-d}+\sqrt{e}x\right)}\right.}{e}$$

$$= \frac{d\left(a+b\sin^{-1}(cx)\right)}{2e^2\left(d+ex^2\right)} - \frac{(bcd)\,\text{Subst}\left(\int \frac{1}{d-(-c^2d-e)x^2}dx, x, \frac{x}{\sqrt{1-c^2x^2}}\right)}{2e^2} - \frac{\int \frac{a+b\sin^{-1}(cx)}{\sqrt{-d}-\sqrt{e}x}dx}{2e^{3/2}} +$$

$$= \frac{d\left(a+b\sin^{-1}(cx)\right)}{2e^2\left(d+ex^2\right)} - \frac{bc\sqrt{d}\tan^{-1}\left(\frac{\sqrt{c^2d+e}\,x}{\sqrt{d}\sqrt{1-c^2x^2}}\right)}{2e^2\sqrt{c^2d+e}} - \frac{\text{Subst}\left(\int \frac{(a+bx)\cos(x)}{c\sqrt{-d}-\sqrt{e}\sin(x)}dx, x, \sin^{-1}\right.}{2e^{3/2}}$$

$$= \frac{d\left(a+b\sin^{-1}(cx)\right)}{2e^2\left(d+ex^2\right)} - \frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2be^2} - \frac{bc\sqrt{d}\tan^{-1}\left(\frac{\sqrt{c^2d+e}\,x}{\sqrt{d}\sqrt{1-c^2x^2}}\right)}{2e^2\sqrt{c^2d+e}} - \frac{i\,\text{Subst}\left(\int \frac{}{ic}\right.}{}$$

$$= \frac{d\left(a+b\sin^{-1}(cx)\right)}{2e^2\left(d+ex^2\right)} - \frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2be^2} - \frac{bc\sqrt{d}\tan^{-1}\left(\frac{\sqrt{c^2d+e}\,x}{\sqrt{d}\sqrt{1-c^2x^2}}\right)}{2e^2\sqrt{c^2d+e}} + \frac{\left(a+b\sin^{-1}\right.}{}$$

$$= \frac{d\left(a+b\sin^{-1}(cx)\right)}{2e^2\left(d+ex^2\right)} - \frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2be^2} - \frac{bc\sqrt{d}\tan^{-1}\left(\frac{\sqrt{c^2d+e}\,x}{\sqrt{d}\sqrt{1-c^2x^2}}\right)}{2e^2\sqrt{c^2d+e}} + \frac{\left(a+b\sin^{-1}\right.}{}$$

$$= \frac{d\left(a+b\sin^{-1}(cx)\right)}{2e^2\left(d+ex^2\right)} - \frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2be^2} - \frac{bc\sqrt{d}\tan^{-1}\left(\frac{\sqrt{c^2d+e}\,x}{\sqrt{d}\sqrt{1-c^2x^2}}\right)}{2e^2\sqrt{c^2d+e}} + \frac{\left(a+b\sin^{-1}\right.}{}$$

Mathematica [A] time = 1.07, size = 593, normalized size = 1.03

$$\frac{\frac{2ad}{d+ex^2}+2a\log\left(d+ex^2\right)+b\left(-i\left(2\text{Li}_2\left(\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{\sqrt{dc^2+e}-c\sqrt{d}}\right)+2\text{Li}_2\left(-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{\sqrt{d}c+\sqrt{dc^2+e}}\right)+\sin^{-1}(cx)\left(\sin^{-1}(cx)+2i\left(\log\left(1+\right.\right.\right.\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^3*(a + b*ArcSin[c*x]))/(d + e*x^2)^2,x]
```

```
[Out] ((2*a*d)/(d + e*x^2) + 2*a*Log[d + e*x^2] + b*(Sqrt[d]*(ArcSin[c*x]/(Sqrt[d
] + I*Sqrt[e]*x) - (c*ArcTan[(I*Sqrt[e] + c^2*Sqrt[d]*x)/(Sqrt[c^2*d + e]*S
qrt[1 - c^2*x^2])])/Sqrt[c^2*d + e]) - I*Sqrt[d]*(-(ArcSin[c*x]/(I*Sqrt[d]
+ Sqrt[e]*x)) - (c*ArcTanh[(Sqrt[e] + I*c^2*Sqrt[d]*x)/(Sqrt[c^2*d + e]*Sqr
t[1 - c^2*x^2])])/Sqrt[c^2*d + e]) - I*(ArcSin[c*x]*(ArcSin[c*x] + (2*I)*(L
og[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] - Sqrt[c^2*d + e])] + Log[1 +
 (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e])])) + 2*PolyLog[2
, (Sqrt[e]*E^(I*ArcSin[c*x]))/(-(c*Sqrt[d]) + Sqrt[c^2*d + e])] + 2*PolyLog
[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e]))]) - I*(Arc
Sin[c*x]*(ArcSin[c*x] + (2*I)*(Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(-(c*Sqr
```

```
t[d]) + Sqrt[c^2*d + e])] + Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d]
+ Sqrt[c^2*d + e])])) + 2*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d]
 - Sqrt[c^2*d + e])] + 2*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d]
+ Sqrt[c^2*d + e])])))/(4*e^2)
```

fricas [F] time = 0.57, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bx^3 \arcsin(cx) + ax^3}{e^2x^4 + 2\,dex^2 + d^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(e*x^2+d)^2,x, algorithm="fricas")
```

```
[Out] integral((b*x^3*arcsin(c*x) + a*x^3)/(e^2*x^4 + 2*d*e*x^2 + d^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b \arcsin(cx) + a)x^3}{\left(ex^2 + d\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(e*x^2+d)^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)*x^3/(e*x^2 + d)^2, x)
```

maple [C] time = 0.93, size = 2907, normalized size = 5.06

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*arcsin(c*x))/(e*x^2+d)^2,x)
```

```
[Out] 5/4*I*c^2*b*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d-2*(c^2*d*(c^2
*d+e))^(1/2)+e))*d/e^2/(c^2*d+e)-2*I*c^2*b*arcsin(c*x)^2*d/e^4*(c^2*d*(c^2*
d+e))^(1/2)-I*c^2*b*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d-2*(c^
2*d*(c^2*d+e))^(1/2)+e))*d/e^4*(c^2*d*(c^2*d+e))^(1/2)+5/2*I*c^2*b*arcsin(c
*x)^2*d/e^2/(c^2*d+e)+2*I*c^6*b*d^3*arcsin(c*x)^2/e^4/(c^2*d+e)+4*I*c^4*b*d
^2*arcsin(c*x)^2/e^3/(c^2*d+e)+1/2*a/e^2*ln(c^2*e*x^2+c^2*d)-1/4*I*b*(c^2*d
*(c^2*d+e))^(1/2)/e^2/(c^2*d+e)*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2
*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))-2*I*c^4*b*arcsin(c*x)^2*d^2/e^4-2*I*c^
2*b*arcsin(c*x)^2*d/e^3-I*c^4*b*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2
*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e))*d^2/e^4-I*c^2*b*polylog(2,e*(I*c*x+(-c
^2*x^2+1)^(1/2))^2/(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e))*d/e^3-3/2*b*ln(1-
e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsi
n(c*x)/e^2/(c^2*d+e)*(c^2*d*(c^2*d+e))^(1/2)+1/2*b*(c^2*d*(c^2*d+e))^(1/2)/
e^2/(c^2*d+e)*arcsin(c*x)*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c
^2*d*(c^2*d+e))^(1/2)+e))+I*b*(c^2*d*(c^2*d+e))^(1/2)/e^2/(c^2*d+e)*arcsin(
c*x)^2+1/2*c^2*b*arcsin(c*x)/e^2*d/(c^2*e*x^2+c^2*d)+2*c^2*b*ln(1-e*(I*c*x+
(-c^2*x^2+1)^(1/2))^2/(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsin(c*x)/e^
3*d+2*c^4*b*d^2*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d-2*(c^2*d*(c^2*
d+e))^(1/2)+e))*arcsin(c*x)/e^4+3/4*I*b*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/
2))^2/(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e))/e^2/(c^2*d+e)*(c^2*d*(c^2*d+e)
)^(1/2)+1/2*I*b*(c^2*d*(c^2*d+e))^(1/2)/e^2/(c^2*d+e)*arctanh(1/4*(2*(I*c*x
+(-c^2*x^2+1)^(1/2))^2*e-4*c^2*d-2*e)/(c^4*d^2+c^2*d*e)^(1/2))+1/2*c^2*a/e^
2*d/(c^2*e*x^2+c^2*d)+2*I*c^4*b*d^2*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2))^
2/(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e))/e^3/(c^2*d+e)-2*c^6*b*d^3*ln(1-e*(
I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsin(c
*x)/e^4/(c^2*d+e)-4*c^4*b*d^2*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d-
```

```
2*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsin(c*x)/e^3/(c^2*d+e)-5/2*c^2*b*ln(1-e*(I
*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsin(c*
x)*d/e^2/(c^2*d+e)+2*c^2*b*d*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d-2
*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsin(c*x)/e^4*(c^2*d*(c^2*d+e))^(1/2)+I*c^6*
b*d^3*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d-2*(c^2*d*(c^2*d+e))
^(1/2)+e))/e^4/(c^2*d+e)-1/2*b*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d
-2*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsin(c*x)/e/(c^2*d+e)+b*ln(1-e*(I*c*x+(-c^
2*x^2+1)^(1/2))^2/(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsin(c*x)/e^3*(c
^2*d*(c^2*d+e))^(1/2)+1/4*I*b*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c
^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e))/e/(c^2*d+e)-I*b*arcsin(c*x)^2/e^3*(c^2*d
*(c^2*d+e))^(1/2)-1/2*I*b*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d
-2*(c^2*d*(c^2*d+e))^(1/2)+e))/e^3*(c^2*d*(c^2*d+e))^(1/2)+1/2*I*b*arcsin(c
*x)^2/e/(c^2*d+e)+1/2*b*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d-2*(c^2
*d*(c^2*d+e))^(1/2)+e))*arcsin(c*x)/e^2-1/2*I*b/e^2*sum((_R1^2*e-4*c^2*d-2*
e)/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1
)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*
e)*_Z^2+e))-I*b*arcsin(c*x)^2/e^2-1/4*I*b*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(
1/2))^2/(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e))/e^2+2*I*c^4*b*d^2*arcsin(c*x
)^2/e^4/(c^2*d+e)*(c^2*d*(c^2*d+e))^(1/2)+I*c^4*b*d^2*polylog(2,e*(I*c*x+(-
c^2*x^2+1)^(1/2))^2/(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e))/e^4/(c^2*d+e)*(c
^2*d*(c^2*d+e))^(1/2)+1/4/c^2*b*(c^2*d*(c^2*d+e))^(1/2)/e/d/(c^2*d+e)*arcsi
n(c*x)*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/
2)+e))-2*c^4*b*d^2*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d-2*(c^2*d*(c
^2*d+e))^(1/2)+e))*arcsin(c*x)/e^4/(c^2*d+e)*(c^2*d*(c^2*d+e))^(1/2)-3*c^2*
b*d*ln(1-e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+
e))*arcsin(c*x)/e^3/(c^2*d+e)*(c^2*d*(c^2*d+e))^(1/2)-1/4/c^2*b*ln(1-e*(I*c
*x+(-c^2*x^2+1)^(1/2))^2/(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e))*arcsin(c*x)
/d/e/(c^2*d+e)*(c^2*d*(c^2*d+e))^(1/2)+1/8*I/c^2*b*polylog(2,e*(I*c*x+(-c^2
*x^2+1)^(1/2))^2/(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e))/d/e/(c^2*d+e)*(c^2*
d*(c^2*d+e))^(1/2)+3/2*I*c^2*b*d*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/2))^2/(
2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e))/e^3/(c^2*d+e)*(c^2*d*(c^2*d+e))^(1/2)
+3*I*c^2*b*d*arcsin(c*x)^2/e^3/(c^2*d+e)*(c^2*d*(c^2*d+e))^(1/2)-1/8*I/c^2*
b*(c^2*d*(c^2*d+e))^(1/2)/e/d/(c^2*d+e)*polylog(2,e*(I*c*x+(-c^2*x^2+1)^(1/
2))^2/(2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\,a\left(\frac{d}{e^3x^2+de^2}+\frac{\log\left(ex^2+d\right)}{e^2}\right)+b\int\frac{x^3\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{e^2x^4+2\,dex^2+d^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(e*x^2+d)^2,x, algorithm="maxima")
```

```
[Out] 1/2*a*(d/(e^3*x^2 + d*e^2) + log(e*x^2 + d)/e^2) + b*integrate(x^3*arctan2(
c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(e^2*x^4 + 2*d*e*x^2 + d^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{x^3\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(e\,x^2+d\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*asin(c*x)))/(d + e*x^2)^2,x)
```

```
[Out] int((x^3*(a + b*asin(c*x)))/(d + e*x^2)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{x^3\left(a+b\,\mathrm{asin}\left(cx\right)\right)}{\left(d+ex^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*asin(c*x))/(e*x**2+d)**2,x)
```

```
[Out] Integral(x**3*(a + b*asin(c*x))/(d + e*x**2)**2, x)
```

3.634 $\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^2}\,dx$

Optimal. Leaf size=86

$$\frac{-a-b\sin^{-1}(cx)}{2e\left(d+ex^2\right)}+\frac{bc\tan^{-1}\left(\frac{x\sqrt{c^2d+e}}{\sqrt{d}\sqrt{1-c^2x^2}}\right)}{2\sqrt{d}\,e\sqrt{c^2d+e}}$$

```
[Out] 1/2*(-a-b*arcsin(c*x))/e/(e*x^2+d)+1/2*b*c*arctan(x*(c^2*d+e)^(1/2)/d^(1/2)
/(-c^2*x^2+1)^(1/2))/e/d^(1/2)/(c^2*d+e)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 83, normalized size of antiderivative = 0.97, number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$, Rules used = {4729, 377, 205}

$$\frac{bc\tan^{-1}\left(\frac{x\sqrt{c^2d+e}}{\sqrt{d}\sqrt{1-c^2x^2}}\right)}{2\sqrt{d}\,e\sqrt{c^2d+e}}-\frac{a+b\sin^{-1}(cx)}{2e\left(d+ex^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*ArcSin[c*x]))/(d + e*x^2)^2,x]
```

```
[Out] -(a + b*ArcSin[c*x])/(2*e*(d + e*x^2)) + (b*c*ArcTan[(Sqrt[c^2*d + e]*x)/(S
qrt[d]*Sqrt[1 - c^2*x^2])])/(2*Sqrt[d]*e*Sqrt[c^2*d + e])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 377

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)/((c_) + (d_.)*(x_)^(n_)), x_Symbol] :> Su
bst[Int[1/(c - (b*c - a*d)*x^n), x], x, x/(a + b*x^n)^(1/n)] /; FreeQ[{a, b
, c, d}, x] && NeQ[b*c - a*d, 0] && EqQ[n*p + 1, 0] && IntegerQ[n]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x]))/(2*e*(p + 1)), x]
 - Dist[(b*c)/(2*e*(p + 1)), Int[(d + e*x^2)^(p + 1)/Sqrt[1 - c^2*x^2], x],
 x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[c^2*d + e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^2}\,dx = -\frac{a+b\sin^{-1}(cx)}{2e\left(d+ex^2\right)} + \frac{(bc)\int \frac{1}{\sqrt{1-c^2x^2}\left(d+ex^2\right)}\,dx}{2e}$$
$$= -\frac{a+b\sin^{-1}(cx)}{2e\left(d+ex^2\right)} + \frac{(bc)\,\mathrm{Subst}\left(\int \frac{1}{d-\left(-c^2d-e\right)x^2}\,dx, x, \frac{x}{\sqrt{1-c^2x^2}}\right)}{2e}$$
$$= -\frac{a+b\sin^{-1}(cx)}{2e\left(d+ex^2\right)} + \frac{bc\tan^{-1}\left(\frac{\sqrt{c^2d+e}\,x}{\sqrt{d}\sqrt{1-c^2x^2}}\right)}{2\sqrt{d}\,e\sqrt{c^2d+e}}$$

Mathematica [A] time = 0.15, size = 87, normalized size = 1.01

$$-\frac{\frac{a}{d+ex^2} - \frac{bc\tan^{-1}\left(\frac{x\sqrt{c^2d+e}}{\sqrt{d}\sqrt{1-c^2x^2}}\right)}{\sqrt{d}\sqrt{c^2d+e}} + \frac{b\sin^{-1}(cx)}{d+ex^2}}{2e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*ArcSin[c*x]))/(d + e*x^2)^2,x]
```

```
[Out] -1/2*(a/(d + e*x^2) + (b*ArcSin[c*x])/(d + e*x^2) - (b*c*ArcTan[(Sqrt[c^2*d
 + e]*x)/(Sqrt[d]*Sqrt[1 - c^2*x^2])])/(Sqrt[d]*Sqrt[c^2*d + e]))/e
```

fricas [B] time = 0.65, size = 395, normalized size = 4.59

$$\left[-\frac{4\,ac^2d^2 + 4\,ade + \left(bcex^2 + bcd\right)\sqrt{-c^2d^2-de}\,\log\left(\frac{\left(8\,c^4d^2+8\,c^2de+e^2\right)x^4-2\left(4\,c^2d^2+3\,de\right)x^2-4\sqrt{-c^2d^2-de}\,\sqrt{-c^2x^2+1}\left(\left(2\,c^2d+e\right)\right.}{e^2x^4+2\,dex^2+d^2}\right.}{8\left(c^2d^3e+d^2e^2+\left(c^2d^2e^2+de^3\right)x^2\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(e*x^2+d)^2,x, algorithm="fricas")
```

```
[Out] [-1/8*(4*a*c^2*d^2 + 4*a*d*e + (b*c*e*x^2 + b*c*d)*sqrt(-c^2*d^2 - d*e)*log
(((8*c^4*d^2 + 8*c^2*d*e + e^2)*x^4 - 2*(4*c^2*d^2 + 3*d*e)*x^2 - 4*sqrt(-c
^2*d^2 - d*e)*sqrt(-c^2*x^2 + 1)*((2*c^2*d + e)*x^3 - d*x) + d^2)/(e^2*x^4
+ 2*d*e*x^2 + d^2)) + 4*(b*c^2*d^2 + b*d*e)*arcsin(c*x))/(c^2*d^3*e + d^2*e
^2 + (c^2*d^2*e^2 + d*e^3)*x^2), -1/4*(2*a*c^2*d^2 + 2*a*d*e + (b*c*e*x^2 +
 b*c*d)*sqrt(c^2*d^2 + d*e)*arctan(1/2*sqrt(c^2*d^2 + d*e)*sqrt(-c^2*x^2 +
1)*((2*c^2*d + e)*x^2 - d)/((c^4*d^2 + c^2*d*e)*x^3 - (c^2*d^2 + d*e)*x)) +
 2*(b*c^2*d^2 + b*d*e)*arcsin(c*x))/(c^2*d^3*e + d^2*e^2 + (c^2*d^2*e^2 + d
*e^3)*x^2)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b\arcsin(cx)+a)x}{\left(ex^2+d\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(e*x^2+d)^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)*x/(e*x^2 + d)^2, x)
```

maple [B] time = 0.04, size = 414, normalized size = 4.81

$$-\frac{c^2 a}{2e\left(c^2 e\,x^2+c^2 d\right)}-\frac{c^2 b\arcsin\left(cx\right)}{2e\left(c^2 e\,x^2+c^2 d\right)}+\frac{c^2 b\ln\left(\frac{\frac{2c^2 d+2e}{e}+\frac{2\sqrt{-c^2 ed}\left(cx+\frac{\sqrt{-c^2 ed}}{e}\right)}{e}+2\sqrt{\frac{c^2 d+e}{e}}\sqrt{-\left(cx+\frac{\sqrt{-c^2 ed}}{e}\right)^2+\frac{2\sqrt{-c^2 ed}\left(cx+\frac{\sqrt{-c^2 ed}}{e}\right)}{e}+\frac{c^2 d+e}{e}}}{cx+\frac{\sqrt{-c^2 ed}}{e}}\right)}{4e\sqrt{-c^2 ed}\,\sqrt{\frac{c^2 d+e}{e}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(c*x))/(e*x^2+d)^2,x)
```

```
[Out] -1/2*c^2*a/e/(c^2*e*x^2+c^2*d)-1/2*c^2*b/e/(c^2*e*x^2+c^2*d)*arcsin(c*x)+1/
4*c^2*b/e/(-c^2*e*d)^(1/2)/((c^2*d+e)/e)^(1/2)*ln((2*(c^2*d+e)/e+2*(-c^2*e*
d)^(1/2)/e*(c*x+(-c^2*e*d)^(1/2)/e)+2*((c^2*d+e)/e)^(1/2)*(-(c*x+(-c^2*e*d)
^(1/2)/e)^2+2*(-c^2*e*d)^(1/2)/e*(c*x+(-c^2*e*d)^(1/2)/e)+(c^2*d+e)/e)^(1/2
))/(c*x+(-c^2*e*d)^(1/2)/e))-1/4*c^2*b/e/(-c^2*e*d)^(1/2)/((c^2*d+e)/e)^(1/
2)*ln((2*(c^2*d+e)/e-2*(-c^2*e*d)^(1/2)/e*(c*x-(-c^2*e*d)^(1/2)/e)+2*((c^2*
d+e)/e)^(1/2)*(-(c*x-(-c^2*e*d)^(1/2)/e)^2-2*(-c^2*e*d)^(1/2)/e*(c*x-(-c^2*
e*d)^(1/2)/e)+(c^2*d+e)/e)^(1/2))/(c*x-(-c^2*e*d)^(1/2)/e))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\left(\left(ce^2x^2+cde\right)\int\frac{e^{\left(\frac{1}{2}\log(cx+1)+\frac{1}{2}\log(-cx+1)\right)}}{c^4e^2x^6-c^2dex^2+\left(c^4de-c^2e^2\right)x^4-\left(c^2e^2x^4+\left(c^2de-e^2\right)x^2-de\right)(cx+1)(cx-1)}\,dx+\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)\right)b}{2\left(e^2x^2+de\right)}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(e*x^2+d)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(2*(c*e^2*x^2 + c*d*e)*integrate(1/2*e^(1/2*log(c*x + 1) + 1/2*log(-c*
x + 1))/(c^4*e^2*x^6 - c^2*d*e*x^2 + (c^4*d*e - c^2*e^2)*x^4 + (c^2*e^2*x^4
 + (c^2*d*e - e^2)*x^2 - d*e)*e^(log(c*x + 1) + log(-c*x + 1))), x) + arcta
n2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*b/(e^2*x^2 + d*e) - 1/2*a/(e^2*x^2 +
 d*e)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{x\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(e\,x^2+d\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*asin(c*x)))/(d + e*x^2)^2,x)
```

```
[Out] int((x*(a + b*asin(c*x)))/(d + e*x^2)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{x\left(a+b\operatorname{asin}\left(cx\right)\right)}{\left(d+ex^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(c*x))/(e*x**2+d)**2,x)
```

```
[Out] Integral(x*(a + b*asin(c*x))/(d + e*x**2)**2, x)
```

3.635 $\int \frac{a+b\sin^{-1}(cx)}{x(d+ex^2)^2}\,dx$

Optimal. Leaf size=597

$$-\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2d^2}-\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1+\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2d^2}-\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(\right.}{2d^2}$$

```
[Out] 1/2*(a+b*arcsin(c*x))/d/(e*x^2+d)+(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1
)^(1/2))^2)/d^2-1/2*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/
2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/d^2-1/2*(a+b*arcsin(c*x))*ln(1+(I*c*x+
(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/d^2-1/2*(a+b*
arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d
+e)^(1/2)))/d^2-1/2*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/
2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/d^2-1/2*I*b*polylog(2,(I*c*x+(-c^2*x^2
+1)^(1/2))^2)/d^2+1/2*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*
c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/d^2+1/2*I*b*polylog(2,(I*c*x+(-c^2*x^2+1)^(1
/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/d^2+1/2*I*b*polylog(2,-(I*c*
x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/d^2+1/2*I*b
*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/
2)))/d^2-1/2*b*c*arctan(x*(c^2*d+e)^(1/2)/d^(1/2)/(-c^2*x^2+1)^(1/2))/d^(3/
2)/(c^2*d+e)^(1/2)
```

Rubi [A] time = 1.01, antiderivative size = 597, normalized size of antiderivative = 1.00, number of steps used = 28, number of rules used = 11, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.524, Rules used = {4733, 4625, 3717, 2190, 2279, 2391, 4729, 377, 205, 4741, 4521}

$$\frac{ib\,\text{PolyLog}\left(2,-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2d^2}+\frac{ib\,\text{PolyLog}\left(2,\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2d^2}+\frac{ib\,\text{PolyLog}\left(2,-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2d^2}+\frac{ib\,\text{PolyLog}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x*(d + e*x^2)^2),x]
```

```
[Out] (a + b*ArcSin[c*x])/(2*d*(d + e*x^2)) - (b*c*ArcTan[(Sqrt[c^2*d + e]*x)/(Sq
rt[d]*Sqrt[1 - c^2*x^2])])/(2*d^(3/2)*Sqrt[c^2*d + e]) - ((a + b*ArcSin[c*x
])*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(
2*d^2) - ((a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt
[-d] - Sqrt[c^2*d + e])])/(2*d^2) - ((a + b*ArcSin[c*x])*Log[1 - (Sqrt[e]*E
^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(2*d^2) - ((a + b*ArcS
in[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e
])])/(2*d^2) + ((a + b*ArcSin[c*x])*Log[1 - E^((2*I)*ArcSin[c*x])])/d^2 + (
(I/2)*b*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d
 + e]))])/d^2 + ((I/2)*b*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-
d] - Sqrt[c^2*d + e])])/d^2 + ((I/2)*b*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*
x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e]))])/d^2 + ((I/2)*b*PolyLog[2, (Sqrt[e]
*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/d^2 - ((I/2)*b*PolyL
og[2, E^((2*I)*ArcSin[c*x])])/d^2
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 377

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)/((c_) + (d_.)*(x_)^(n_)), x_Symbol] :> Su
bst[Int[1/(c - (b*c - a*d)*x^n), x], x, x/(a + b*x^n)^(1/n)] /; FreeQ[{a, b
, c, d}, x] && NeQ[b*c - a*d, 0] && EqQ[n*p + 1, 0] && IntegerQ[n]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x]))/(2*e*(p + 1)), x]
 - Dist[(b*c)/(2*e*(p + 1)), Int[(d + e*x^2)^(p + 1)/Sqrt[1 - c^2*x^2], x],
 x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[c^2*d + e, 0] && NeQ[p, -1]
```

Rule 4733

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (
f*x)^m*(d + e*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[c^2*d +
 e, 0] && IGtQ[n, 0] && IntegerQ[p] && IntegerQ[m]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x\left(d+ex^2\right)^2}\,dx=\int\left(\frac{a+b\sin^{-1}(cx)}{d^2x}-\frac{ex\left(a+b\sin^{-1}(cx)\right)}{d\left(d+ex^2\right)^2}-\frac{ex\left(a+b\sin^{-1}(cx)\right)}{d^2\left(d+ex^2\right)}\right)dx$$

$$=\frac{\int\frac{a+b\sin^{-1}(cx)}{x}\,dx}{d^2}-\frac{e\int\frac{x\left(a+b\sin^{-1}(cx)\right)}{d+ex^2}\,dx}{d^2}-\frac{e\int\frac{x\left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^2}\,dx}{d}$$

$$=\frac{a+b\sin^{-1}(cx)}{2d\left(d+ex^2\right)}+\frac{\text{Subst}\left(\int(a+bx)\cot(x)\,dx,x,\sin^{-1}(cx)\right)}{d^2}-\frac{(bc)\int\frac{1}{\sqrt{1-c^2x^2}\left(d+ex^2\right)}\,dx}{2d}$$

$$=\frac{a+b\sin^{-1}(cx)}{2d\left(d+ex^2\right)}-\frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2bd^2}-\frac{(2i)\,\text{Subst}\left(\int\frac{e^{2ix}(a+bx)}{1-e^{2ix}}\,dx,x,\sin^{-1}(cx)\right)}{d^2}-\frac{(bc)}{}$$

$$=\frac{a+b\sin^{-1}(cx)}{2d\left(d+ex^2\right)}-\frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2bd^2}-\frac{bc\tan^{-1}\left(\frac{\sqrt{c^2d+e}\,x}{\sqrt{d}\,\sqrt{1-c^2x^2}}\right)}{2d^{3/2}\sqrt{c^2d+e}}+\frac{\left(a+b\sin^{-1}(cx)\right)\log}{d^2}$$

$$=\frac{a+b\sin^{-1}(cx)}{2d\left(d+ex^2\right)}-\frac{bc\tan^{-1}\left(\frac{\sqrt{c^2d+e}\,x}{\sqrt{d}\,\sqrt{1-c^2x^2}}\right)}{2d^{3/2}\sqrt{c^2d+e}}+\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-e^{2i\sin^{-1}(cx)}\right)}{d^2}+\frac{(ib)}{}$$

$$=\frac{a+b\sin^{-1}(cx)}{2d\left(d+ex^2\right)}-\frac{bc\tan^{-1}\left(\frac{\sqrt{c^2d+e}\,x}{\sqrt{d}\,\sqrt{1-c^2x^2}}\right)}{2d^{3/2}\sqrt{c^2d+e}}-\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2d^2}-$$

$$=\frac{a+b\sin^{-1}(cx)}{2d\left(d+ex^2\right)}-\frac{bc\tan^{-1}\left(\frac{\sqrt{c^2d+e}\,x}{\sqrt{d}\,\sqrt{1-c^2x^2}}\right)}{2d^{3/2}\sqrt{c^2d+e}}-\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2d^2}-$$

$$=\frac{a+b\sin^{-1}(cx)}{2d\left(d+ex^2\right)}-\frac{bc\tan^{-1}\left(\frac{\sqrt{c^2d+e}\,x}{\sqrt{d}\,\sqrt{1-c^2x^2}}\right)}{2d^{3/2}\sqrt{c^2d+e}}-\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2d^2}-$$

Mathematica [F] time = 3.92, size = 0, normalized size = 0.00

$$\int \frac{a+b\sin^{-1}(cx)}{x\left(d+ex^2\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x*(d + e*x^2)^2),x]
[Out] Integrate[(a + b*ArcSin[c*x])/(x*(d + e*x^2)^2), x]
```

fricas [F] time = 0.73, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\arcsin(cx)+a}{e^2x^5+2\,dex^3+d^2x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x/(e*x^2+d)^2,x, algorithm="fricas")
[Out] integral((b*arcsin(c*x) + a)/(e^2*x^5 + 2*d*e*x^3 + d^2*x), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x/(e*x^2+d)^2,x, algorithm="giac")
[Out] Timed out
```

maple [C] time = 0.42, size = 491, normalized size = 0.82

$$\frac{a\,c^{2}}{2d\left(c^{2}e\,x^{2}+c^{2}d\right)}-\frac{a\ln\left(c^{2}e\,x^{2}+c^{2}d\right)}{2d^{2}}+\frac{a\ln\left(cx\right)}{d^{2}}+\frac{b\,c^{2}\arcsin\left(cx\right)}{2d\left(c^{2}e\,x^{2}+c^{2}d\right)}+\frac{ib\sqrt{c^{2}d\left(c^{2}d+e\right)}\;\operatorname{arctanh}\left(\frac{2\left(icx+\sqrt{-c^{2}x^{2}+1}\right)^{2}e-}{4\sqrt{d^{2}c^{4}+c^{2}ed}}\right.}{2d^{2}\left(c^{2}d+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x/(e*x^2+d)^2,x)
[Out] 1/2*a*c^2/d/(c^2*e*x^2+c^2*d)-1/2*a/d^2*ln(c^2*e*x^2+c^2*d)+a/d^2*ln(c*x)+1
/2*b*c^2*arcsin(c*x)/d/(c^2*e*x^2+c^2*d)+1/2*I*b*(c^2*d*(c^2*d+e))^(1/2)/d^
2/(c^2*d+e)*arctanh(1/4*(2*(I*c*x+(-c^2*x^2+1)^(1/2))^2*e-4*c^2*d-2*e)/(c^4
*d^2+c^2*d*e)^(1/2))+1/4*I*b/d^2*sum((_R1^2*e-4*c^2*d-e)/(_R1^2*e-2*c^2*d-e
)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-
c^2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))+b/d^2*arc
sin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-I*b/d^2*dilog(1+I*c*x+(-c^2*x^2+1)^
(1/2))+I*b/d^2*dilog(I*c*x+(-c^2*x^2+1)^(1/2))+1/4*I*b/d^2*sum((_R1^2-1)/(_
R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dil
og((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z
^2+e))*e
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\,a\left(\frac{1}{dex^{2}+d^{2}}-\frac{\log\left(ex^{2}+d\right)}{d^{2}}+\frac{2\,\log(x)}{d^{2}}\right)+b\int\frac{\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{e^{2}x^{5}+2\,dex^{3}+d^{2}x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x/(e*x^2+d)^2,x, algorithm="maxima")
[Out] 1/2*a*(1/(d*e*x^2 + d^2) - log(e*x^2 + d)/d^2 + 2*log(x)/d^2) + b*integrate
(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(e^2*x^5 + 2*d*e*x^3 + d^2*x),
x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{a+b\,\mathrm{asin}\left(c\,x\right)}{x\,{\left(e\,x^{2}+d\right)}^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x*(d + e*x^2)^2),x)
[Out] int((a + b*asin(c*x))/(x*(d + e*x^2)^2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x/(e*x**2+d)**2,x)
```

```
[Out] Timed out
```

3.636 $\int \frac{a+b\sin^{-1}(cx)}{x^3(d+ex^2)^2}\,dx$

Optimal. Leaf size=632

$$\frac{e\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{d^3}+\frac{e\left(a+b\sin^{-1}(cx)\right)\log\left(1+\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{d^3}+\frac{e\left(a+b\sin^{-1}(cx)\right)\log\left(\right.}{d^3}$$

```
[Out] 1/2*(-a-b*arcsin(c*x))/d^2/x^2-1/2*e*(a+b*arcsin(c*x))/d^2/(e*x^2+d)-2*e*(a
+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^3+e*(a+b*arcsin(c*x))*
ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/d
^3+e*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1
/2)-(c^2*d+e)^(1/2)))/d^3+e*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2
))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/d^3+e*(a+b*arcsin(c*x))*ln(1+(
I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/d^3+I*b
*e*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^3-I*b*e*polylog(2,-(I*c*x+(-c^
2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/d^3-I*b*e*polylog
(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/d^3
-I*b*e*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d
+e)^(1/2)))/d^3-I*b*e*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d
)^(1/2)+(c^2*d+e)^(1/2)))/d^3+1/2*b*c*e*arctan(x*(c^2*d+e)^(1/2)/d^(1/2)/(-
c^2*x^2+1)^(1/2))/d^(5/2)/(c^2*d+e)^(1/2)-1/2*b*c*(-c^2*x^2+1)^(1/2)/d^2/x
```

Rubi [A] time = 1.04, antiderivative size = 632, normalized size of antiderivative = 1.00, number of steps used = 30, number of rules used = 13, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.619, Rules used = {4733, 4627, 264, 4625, 3717, 2190, 2279, 2391, 4729, 377, 205, 4741, 4521}

$$-\frac{ibe\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{d^3}-\frac{ibe\text{PolyLog}\left(2,\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{d^3}-\frac{ibe\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{d^3}-\frac{ibe\text{PolyLo}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x^3*(d + e*x^2)^2),x]
```

```
[Out] -(b*c*Sqrt[1 - c^2*x^2])/(2*d^2*x) - (a + b*ArcSin[c*x])/(2*d^2*x^2) - (e*(
a + b*ArcSin[c*x]))/(2*d^2*(d + e*x^2)) + (b*c*e*ArcTan[(Sqrt[c^2*d + e]*x)
/(Sqrt[d]*Sqrt[1 - c^2*x^2])])/(2*d^(5/2)*Sqrt[c^2*d + e]) + (e*(a + b*ArcS
in[c*x])*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e
])])/d^3 + (e*(a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*
Sqrt[-d] - Sqrt[c^2*d + e])])/d^3 + (e*(a + b*ArcSin[c*x])*Log[1 - (Sqrt[e]
*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/d^3 + (e*(a + b*ArcS
in[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e
])])/d^3 - (2*e*(a + b*ArcSin[c*x])*Log[1 - E^((2*I)*ArcSin[c*x])])/d^3 - (
I*b*e*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d +
 e]))])/d^3 - (I*b*e*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] -
 Sqrt[c^2*d + e])])/d^3 - (I*b*e*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(
I*c*Sqrt[-d] + Sqrt[c^2*d + e]))])/d^3 - (I*b*e*PolyLog[2, (Sqrt[e]*E^(I*Ar
cSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/d^3 + (I*b*e*PolyLog[2, E^((
2*I)*ArcSin[c*x])])/d^3
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 264

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c
*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] /; FreeQ[{a, b, c, m, n,
 p}, x] && EqQ[(m + 1)/n + p + 1, 0] && NeQ[m, -1]
```

Rule 377

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)/((c_) + (d_.)*(x_)^(n_)), x_Symbol] :> Su
bst[Int[1/(c - (b*c - a*d)*x^n), x], x, x/(a + b*x^n)^(1/n)] /; FreeQ[{a, b
, c, d}, x] && NeQ[b*c - a*d, 0] && EqQ[n*p + 1, 0] && IntegerQ[n]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x]))/(2*e*(p + 1)), x]
 - Dist[(b*c)/(2*e*(p + 1)), Int[(d + e*x^2)^(p + 1)/Sqrt[1 - c^2*x^2], x],
 x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[c^2*d + e, 0] && NeQ[p, -1]
```

Rule 4733

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (
f*x)^m*(d + e*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[c^2*d +
 e, 0] && IGtQ[n, 0] && IntegerQ[p] && IntegerQ[m]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x^3\left(d+ex^2\right)^2}\,dx = \int\left(\frac{a+b\sin^{-1}(cx)}{d^2x^3}-\frac{2e\left(a+b\sin^{-1}(cx)\right)}{d^3x}+\frac{e^2x\left(a+b\sin^{-1}(cx)\right)}{d^2\left(d+ex^2\right)^2}+\frac{2e^2x\left(a+b\sin^{-1}(cx\right.}{d^3\left(d+ex^2\right)}\right.$$

$$=\frac{\int\frac{a+b\sin^{-1}(cx)}{x^3}\,dx}{d^2}-\frac{(2e)\int\frac{a+b\sin^{-1}(cx)}{x}\,dx}{d^3}+\frac{\left(2e^2\right)\int\frac{x\left(a+b\sin^{-1}(cx)\right)}{d+ex^2}\,dx}{d^3}+\frac{e^2\int\frac{x\left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^2}\,d}{d^2}$$

$$=-\frac{a+b\sin^{-1}(cx)}{2d^2x^2}-\frac{e\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(d+ex^2\right)}+\frac{(bc)\int\frac{1}{x^2\sqrt{1-c^2x^2}}\,dx}{2d^2}-\frac{(2e)\,\mathrm{Subst}\left(\int(a+bx)\cot(\right.}{d^3}$$

$$=-\frac{bc\sqrt{1-c^2x^2}}{2d^2x}-\frac{a+b\sin^{-1}(cx)}{2d^2x^2}-\frac{e\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(d+ex^2\right)}+\frac{ie\left(a+b\sin^{-1}(cx)\right)^2}{bd^3}+\frac{(4ie)\,\mathrm{Sub}}{}$$

$$=-\frac{bc\sqrt{1-c^2x^2}}{2d^2x}-\frac{a+b\sin^{-1}(cx)}{2d^2x^2}-\frac{e\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(d+ex^2\right)}+\frac{ie\left(a+b\sin^{-1}(cx)\right)^2}{bd^3}+\frac{bce\tan^{-1}}{2d^{5/2}}$$

$$=-\frac{bc\sqrt{1-c^2x^2}}{2d^2x}-\frac{a+b\sin^{-1}(cx)}{2d^2x^2}-\frac{e\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(d+ex^2\right)}+\frac{bce\tan^{-1}\left(\frac{\sqrt{c^2d+e}\,x}{\sqrt{d}\sqrt{1-c^2x^2}}\right)}{2d^{5/2}\sqrt{c^2d+e}}-\frac{2e\left(a+\right.}{}$$

$$=-\frac{bc\sqrt{1-c^2x^2}}{2d^2x}-\frac{a+b\sin^{-1}(cx)}{2d^2x^2}-\frac{e\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(d+ex^2\right)}+\frac{bce\tan^{-1}\left(\frac{\sqrt{c^2d+e}\,x}{\sqrt{d}\sqrt{1-c^2x^2}}\right)}{2d^{5/2}\sqrt{c^2d+e}}+\frac{e\left(a+\right.}{}$$

$$=-\frac{bc\sqrt{1-c^2x^2}}{2d^2x}-\frac{a+b\sin^{-1}(cx)}{2d^2x^2}-\frac{e\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(d+ex^2\right)}+\frac{bce\tan^{-1}\left(\frac{\sqrt{c^2d+e}\,x}{\sqrt{d}\sqrt{1-c^2x^2}}\right)}{2d^{5/2}\sqrt{c^2d+e}}+\frac{e\left(a+\right.}{}$$

$$=-\frac{bc\sqrt{1-c^2x^2}}{2d^2x}-\frac{a+b\sin^{-1}(cx)}{2d^2x^2}-\frac{e\left(a+b\sin^{-1}(cx)\right)}{2d^2\left(d+ex^2\right)}+\frac{bce\tan^{-1}\left(\frac{\sqrt{c^2d+e}\,x}{\sqrt{d}\sqrt{1-c^2x^2}}\right)}{2d^{5/2}\sqrt{c^2d+e}}+\frac{e\left(a+\right.}{}$$

Mathematica [F] time = 6.44, size = 0, normalized size = 0.00

$$\int \frac{a + b\sin^{-1}(cx)}{x^3\left(d + ex^2\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x^3*(d + e*x^2)^2),x]
[Out] Integrate[(a + b*ArcSin[c*x])/(x^3*(d + e*x^2)^2), x]
```

fricas [F] time = 0.67, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\arcsin(cx) + a}{e^2x^7 + 2\,dex^5 + d^2x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(e*x^2+d)^2,x, algorithm="fricas")
[Out] integral((b*arcsin(c*x) + a)/(e^2*x^7 + 2*d*e*x^5 + d^2*x^3), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(e*x^2+d)^2,x, algorithm="giac")
[Out] Timed out
```

maple [C] time = 0.59, size = 679, normalized size = 1.07

$$-\frac{c^2ae}{2d^2\left(c^2e\,x^2 + c^2d\right)} + \frac{ae\ln\left(c^2e\,x^2 + c^2d\right)}{d^3} - \frac{a}{2d^2x^2} - \frac{2ae\ln(cx)}{d^3} - \frac{ib\sqrt{c^2d\left(c^2d + e\right)}\;\operatorname{arctanh}\left(\frac{2\left(icx + \sqrt{-c^2x^2+1}\right)^2 e - 4c^2}{4\sqrt{d^2c^4+c^2ed}}\right.}{2\left(c^2d + e\right)d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x^3/(e*x^2+d)^2,x)
[Out] -1/2*c^2*a*e/d^2/(c^2*e*x^2+c^2*d)+a*e/d^3*ln(c^2*e*x^2+c^2*d)-1/2*a/d^2/x^
2-2*a/d^3*e*ln(c*x)+1/2*I*c^4*b/(c^2*e*x^2+c^2*d)/d-1/2*I*b*(c^2*d*(c^2*d+e
))^(1/2)/(c^2*d+e)/d^3*arctanh(1/4*(2*(I*c*x+(-c^2*x^2+1)^(1/2))^2*e-4*c^2*
d-2*e)/(c^4*d^2+c^2*d*e)^(1/2))*e-1/2*c^3*b*x/(c^2*e*x^2+c^2*d)/d^2*(-c^2*x
^2+1)^(1/2)*e-1/2*c^3*b/x/(c^2*e*x^2+c^2*d)/d*(-c^2*x^2+1)^(1/2)-c^2*b*arcs
in(c*x)*e/d^2/(c^2*e*x^2+c^2*d)-1/2*c^2*b/x^2/(c^2*e*x^2+c^2*d)/d*arcsin(c*
x)-1/2*I*b/d^3*e^2*sum((_R1^2-1)/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1
-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),
_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))+1/2*I*c^4*b*x^2/(c^2*e*x^2+c^2*d)
/d^2*e-2*b/d^3*e*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-1/2*I*b/d^3*e*s
um((_R1^2*e-4*c^2*d-e)/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c
^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=RootOf
(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))+2*I*b/d^3*e*dilog(1+I*c*x+(-c^2*x^2+1)^(1/2
))-2*I*b/d^3*e*dilog(I*c*x+(-c^2*x^2+1)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}a\left(\frac{2\,ex^2 + d}{d^2ex^4 + d^3x^2} - \frac{2\,e\log\left(ex^2 + d\right)}{d^3} + \frac{4\,e\log(x)}{d^3}\right) + b\int \frac{\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)}{e^2x^7 + 2\,dex^5 + d^2x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(e*x^2+d)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a*((2*e*x^2 + d)/(d^2*e*x^4 + d^3*x^2) - 2*e*log(e*x^2 + d)/d^3 + 4*e*
log(x)/d^3) + b*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(e^2*x
^7 + 2*d*e*x^5 + d^2*x^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\mathrm{asin}\left(c\,x\right)}{x^3\,{\left(e\,x^2+d\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x^3*(d + e*x^2)^2),x)
```

```
[Out] int((a + b*asin(c*x))/(x^3*(d + e*x^2)^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x**3/(e*x**2+d)**2,x)
```

```
[Out] Timed out
```

3.637 $\int \frac{x^4(a+b\sin^{-1}(cx))}{(d+ex^2)^2}\,dx$

Optimal. Leaf size=787

$$\frac{3\sqrt{-d}\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{4e^{5/2}}-\frac{3\sqrt{-d}\left(a+b\sin^{-1}(cx)\right)\log\left(1+\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{4e^{5/2}}+\frac{3\sqrt{-d}\left(a\right.}{}$$

```
[Out] a*x/e^2+b*x*arcsin(c*x)/e^2+3/4*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^
(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))*(-d)^(1/2)/e^(5/2)-3/4*(a+
b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2
*d+e)^(1/2)))*(-d)^(1/2)/e^(5/2)+3/4*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^
2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))*(-d)^(1/2)/e^(5/2)-3/
4*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)
+(c^2*d+e)^(1/2)))*(-d)^(1/2)/e^(5/2)+3/4*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1
)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))*(-d)^(1/2)/e^(5/2)-3/4*I
*b*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(
1/2)))*(-d)^(1/2)/e^(5/2)+3/4*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(
1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))*(-d)^(1/2)/e^(5/2)-3/4*I*b*polylog(2
,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))*(-d)^
(1/2)/e^(5/2)-1/4*d*(a+b*arcsin(c*x))/e^(5/2)/((-d)^(1/2)-x*e^(1/2))+1/4*d*
(a+b*arcsin(c*x))/e^(5/2)/((-d)^(1/2)+x*e^(1/2))+1/4*b*c*d*arctanh((-c^2*x*
(-d)^(1/2)+e^(1/2))/(c^2*d+e)^(1/2)/(-c^2*x^2+1)^(1/2))/e^(5/2)/(c^2*d+e)^(
1/2)+1/4*b*c*d*arctanh((c^2*x*(-d)^(1/2)+e^(1/2))/(c^2*d+e)^(1/2)/(-c^2*x^2
+1)^(1/2))/e^(5/2)/(c^2*d+e)^(1/2)+b*(-c^2*x^2+1)^(1/2)/c/e^2
```

Rubi [A] time = 2.03, antiderivative size = 787, normalized size of antiderivative = 1.00, number of steps used = 49, number of rules used = 12, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.571, Rules used = {4733, 4619, 261, 4667, 4743, 725, 206, 4741, 4521, 2190, 2279, 2391}

$$\frac{3ib\sqrt{-d}\,\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{4e^{5/2}}-\frac{3ib\sqrt{-d}\,\text{PolyLog}\left(2,\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{4e^{5/2}}+\frac{3ib\sqrt{-d}\,\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}}}{\sqrt{c^2d+e}+ic}\right.}{4e^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*ArcSin[c*x]))/(d + e*x^2)^2,x]
```

```
[Out] (a*x)/e^2 + (b*Sqrt[1 - c^2*x^2])/(c*e^2) + (b*x*ArcSin[c*x])/e^2 - (d*(a +
 b*ArcSin[c*x]))/(4*e^(5/2)*(Sqrt[-d] - Sqrt[e]*x)) + (d*(a + b*ArcSin[c*x]
))/(4*e^(5/2)*(Sqrt[-d] + Sqrt[e]*x)) + (b*c*d*ArcTanh[(Sqrt[e] - c^2*Sqrt[
-d]*x)/(Sqrt[c^2*d + e]*Sqrt[1 - c^2*x^2])])/(4*e^(5/2)*Sqrt[c^2*d + e]) +
(b*c*d*ArcTanh[(Sqrt[e] + c^2*Sqrt[-d]*x)/(Sqrt[c^2*d + e]*Sqrt[1 - c^2*x^2
])])/(4*e^(5/2)*Sqrt[c^2*d + e]) + (3*Sqrt[-d]*(a + b*ArcSin[c*x])*Log[1 -
(Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(4*e^(5/2))
- (3*Sqrt[-d]*(a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*
Sqrt[-d] - Sqrt[c^2*d + e])])/(4*e^(5/2)) + (3*Sqrt[-d]*(a + b*ArcSin[c*x])
*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(4*
e^(5/2)) - (3*Sqrt[-d]*(a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x
]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(4*e^(5/2)) + (((3*I)/4)*b*Sqrt[-d]*
PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e]))]
)/e^(5/2) - (((3*I)/4)*b*Sqrt[-d]*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I
*c*Sqrt[-d] - Sqrt[c^2*d + e])])/e^(5/2) + (((3*I)/4)*b*Sqrt[-d]*PolyLog[2,
 -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e]))])/e^(5/2)
- (((3*I)/4)*b*Sqrt[-d]*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d
] + Sqrt[c^2*d + e])])/e^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rule 4733

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (
f*x)^m*(d + e*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[c^2*d +
 e, 0] && IGtQ[n, 0] && IntegerQ[p] && IntegerQ[m]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rubi steps

$$\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^2}\,dx = \int\left(\frac{a+b\sin^{-1}(cx)}{e^2}+\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{e^2\left(d+ex^2\right)^2}-\frac{2d\left(a+b\sin^{-1}(cx)\right)}{e^2\left(d+ex^2\right)}\right)dx$$

$$=\frac{\int\left(a+b\sin^{-1}(cx)\right)dx}{e^2}-\frac{(2d)\int\frac{a+b\sin^{-1}(cx)}{d+ex^2}\,dx}{e^2}+\frac{d^2\int\frac{a+b\sin^{-1}(cx)}{\left(d+ex^2\right)^2}\,dx}{e^2}$$

$$=\frac{ax}{e^2}+\frac{b\int\sin^{-1}(cx)\,dx}{e^2}-\frac{(2d)\int\left(\frac{\sqrt{-d}\left(a+b\sin^{-1}(cx)\right)}{2d\left(\sqrt{-d}-\sqrt{e}\,x\right)}+\frac{\sqrt{-d}\left(a+b\sin^{-1}(cx)\right)}{2d\left(\sqrt{-d}+\sqrt{e}\,x\right)}\right)dx}{e^2}+\frac{d^2\int\left(-\frac{e}{4}\cdots\right.}{}$$

$$=\frac{ax}{e^2}+\frac{bx\sin^{-1}(cx)}{e^2}-\frac{(bc)\int\frac{x}{\sqrt{1-c^2x^2}}\,dx}{e^2}-\frac{\sqrt{-d}\int\frac{a+b\sin^{-1}(cx)}{\sqrt{-d}-\sqrt{e}\,x}\,dx}{e^2}-\frac{\sqrt{-d}\int\frac{a+b\sin^{-1}(cx)}{\sqrt{-d}+\sqrt{e}\,x}}{e^2}\cdots$$

$$=\frac{ax}{e^2}+\frac{b\sqrt{1-c^2x^2}}{ce^2}+\frac{bx\sin^{-1}(cx)}{e^2}-\frac{d\left(a+b\sin^{-1}(cx)\right)}{4e^{5/2}\left(\sqrt{-d}-\sqrt{e}\,x\right)}+\frac{d\left(a+b\sin^{-1}(cx)\right)}{4e^{5/2}\left(\sqrt{-d}+\sqrt{e}\,x\right)}-\frac{\sqrt{-}\cdots}{}$$

$$=\frac{ax}{e^2}+\frac{b\sqrt{1-c^2x^2}}{ce^2}+\frac{bx\sin^{-1}(cx)}{e^2}-\frac{d\left(a+b\sin^{-1}(cx)\right)}{4e^{5/2}\left(\sqrt{-d}-\sqrt{e}\,x\right)}+\frac{d\left(a+b\sin^{-1}(cx)\right)}{4e^{5/2}\left(\sqrt{-d}+\sqrt{e}\,x\right)}-\frac{(i\sqrt{\cdots}}{}$$

$$=\frac{ax}{e^2}+\frac{b\sqrt{1-c^2x^2}}{ce^2}+\frac{bx\sin^{-1}(cx)}{e^2}-\frac{d\left(a+b\sin^{-1}(cx)\right)}{4e^{5/2}\left(\sqrt{-d}-\sqrt{e}\,x\right)}+\frac{d\left(a+b\sin^{-1}(cx)\right)}{4e^{5/2}\left(\sqrt{-d}+\sqrt{e}\,x\right)}+\frac{bc\cdots}{}$$

$$=\frac{ax}{e^2}+\frac{b\sqrt{1-c^2x^2}}{ce^2}+\frac{bx\sin^{-1}(cx)}{e^2}-\frac{d\left(a+b\sin^{-1}(cx)\right)}{4e^{5/2}\left(\sqrt{-d}-\sqrt{e}\,x\right)}+\frac{d\left(a+b\sin^{-1}(cx)\right)}{4e^{5/2}\left(\sqrt{-d}+\sqrt{e}\,x\right)}+\frac{bc\cdots}{}$$

$$=\frac{ax}{e^2}+\frac{b\sqrt{1-c^2x^2}}{ce^2}+\frac{bx\sin^{-1}(cx)}{e^2}-\frac{d\left(a+b\sin^{-1}(cx)\right)}{4e^{5/2}\left(\sqrt{-d}-\sqrt{e}\,x\right)}+\frac{d\left(a+b\sin^{-1}(cx)\right)}{4e^{5/2}\left(\sqrt{-d}+\sqrt{e}\,x\right)}+\frac{bc\cdots}{}$$

$$=\frac{ax}{e^2}+\frac{b\sqrt{1-c^2x^2}}{ce^2}+\frac{bx\sin^{-1}(cx)}{e^2}-\frac{d\left(a+b\sin^{-1}(cx)\right)}{4e^{5/2}\left(\sqrt{-d}-\sqrt{e}\,x\right)}+\frac{d\left(a+b\sin^{-1}(cx)\right)}{4e^{5/2}\left(\sqrt{-d}+\sqrt{e}\,x\right)}+\frac{bc\cdots}{}$$

$$=\frac{ax}{e^2}+\frac{b\sqrt{1-c^2x^2}}{ce^2}+\frac{bx\sin^{-1}(cx)}{e^2}-\frac{d\left(a+b\sin^{-1}(cx)\right)}{4e^{5/2}\left(\sqrt{-d}-\sqrt{e}\,x\right)}+\frac{d\left(a+b\sin^{-1}(cx)\right)}{4e^{5/2}\left(\sqrt{-d}+\sqrt{e}\,x\right)}+\frac{bc\cdots}{}$$

Mathematica [A] time = 1.56, size = 649, normalized size = 0.82

$$\frac{\frac{4ad\sqrt{e}\,x}{d+ex^2}-12a\sqrt{d}\tan^{-1}\left(\frac{\sqrt{e}\,x}{\sqrt{d}}\right)+8a\sqrt{e}\,x+b\left(3\sqrt{d}\left(2\text{Li}_2\left(\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{\sqrt{dc^2+e}-c\sqrt{d}}\right)+2\text{Li}_2\left(-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{\sqrt{d}\,c+\sqrt{dc^2+e}}\right)+\sin^{-1}(cx)\left(\sin^{-1}(c\cdots\right.\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^4*(a + b*ArcSin[c*x]))/(d + e*x^2)^2,x]
```

```
[Out] (8*a*Sqrt[e]*x + (4*a*d*Sqrt[e]*x)/(d + e*x^2) - 12*a*Sqrt[d]*ArcTan[(Sqrt[
e]*x)/Sqrt[d]] + b*((8*Sqrt[e]*(Sqrt[1 - c^2*x^2] + c*x*ArcSin[c*x]))/c + (
```

```
2*I)*d*(ArcSin[c*x]/(Sqrt[d] + I*Sqrt[e]*x) - (c*ArcTan[(I*Sqrt[e] + c^2*Sq
rt[d]*x)/(Sqrt[c^2*d + e]*Sqrt[1 - c^2*x^2])]/Sqrt[c^2*d + e]) + 2*d*(ArcS
in[c*x]/(I*Sqrt[d] + Sqrt[e]*x) + (c*ArcTanh[(Sqrt[e] + I*c^2*Sqrt[d]*x)/(S
qrt[c^2*d + e]*Sqrt[1 - c^2*x^2])]/Sqrt[c^2*d + e]) + 3*Sqrt[d]*(ArcSin[c*
x]*(ArcSin[c*x] + (2*I)*(Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] - S
qrt[c^2*d + e])] + Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^
2*d + e])])) + 2*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(-(c*Sqrt[d]) + Sqr
t[c^2*d + e])] + 2*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sq
rt[c^2*d + e]))]) - 3*Sqrt[d]*(ArcSin[c*x]*(ArcSin[c*x] + (2*I)*(Log[1 + (S
qrt[e]*E^(I*ArcSin[c*x]))/(-(c*Sqrt[d]) + Sqrt[c^2*d + e])] + Log[1 - (Sqrt
[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e])])) + 2*PolyLog[2, (Sqr
t[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] - Sqrt[c^2*d + e])] + 2*PolyLog[2, (Sqrt
[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e])])))/(8*e^(5/2))
```

fricas [F] time = 0.59, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bx^4\arcsin(cx)+ax^4}{e^2x^4+2\,dex^2+d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))/(e*x^2+d)^2,x, algorithm="fricas")
```

```
[Out] integral((b*x^4*arcsin(c*x) + a*x^4)/(e^2*x^4 + 2*d*e*x^2 + d^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(b\arcsin(cx)+a)x^4}{\left(ex^2+d\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))/(e*x^2+d)^2,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)*x^4/(e*x^2 + d)^2, x)
```

maple [C] time = 3.08, size = 1738, normalized size = 2.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*arcsin(c*x))/(e*x^2+d)^2,x)
```

```
[Out] a*x/e^2+1/2*c^2*a/e^2*d*x/(c^2*e*x^2+c^2*d)-3/2*a/e^2*d/(d*e)^(1/2)*arctan(
e*x/(d*e)^(1/2))+b*(-c^2*x^2+1)^(1/2)/c/e^2+b*x*arcsin(c*x)/e^2-c^3*b*(-(2*
c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*d^2*arctan(e*(I*c*x+(-c^2*x^2+1
)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/e^5/(c^2*d+e)*(c
^2*d*(c^2*d+e))^(1/2)-1/2*c*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1
/2)*d*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1
/2)-e)*e)^(1/2))/e^4/(c^2*d+e)*(c^2*d*(c^2*d+e))^(1/2)+c^3*b*((2*c^2*d+2*(c
^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*d^2*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/
((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/e^5/(c^2*d+e)*(c^2*d*(c^2*
d+e))^(1/2)+1/2*c*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*d*arcta
nh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(
1/2))/e^4/(c^2*d+e)*(c^2*d*(c^2*d+e))^(1/2)+1/2*c^2*b*arcsin(c*x)*d*x/e^2/(
c^2*e*x^2+c^2*d)-c^5*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*d^3*
arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)
*e)^(1/2))/e^5/(c^2*d+e)-c^3*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1
/2)*d^2*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^
(1/2)+e)*e)^(1/2))/e^4/(c^2*d+e)-c*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)
```

```
*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e)
)^(1/2)+e)*e)^(1/2))*d/e^5*(c^2*d*(c^2*d+e))^(1/2)-c^5*b*(-(2*c^2*d-2*(c^2*
d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*d^3*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2
*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/e^5/(c^2*d+e)-c^3*b*(-(2*c^2*
d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*d^2*arctan(e*(I*c*x+(-c^2*x^2+1)^(1
/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/e^4/(c^2*d+e)+c*b*(-
(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)
^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))*d/e^5*(c^2*d*(c^2
*d+e))^(1/2)-3/4*c*b/e^2*d*sum(1/_R1/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln(
(_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R
1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))-3/4*c*b/e^2*d*sum(_R1/(_R1^2*
e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_
R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e)
)+c^3*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-
c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))*d^2/e^5+
1/2*c*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-
c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))*d/e^4+c^
3*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*
x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))*d^2/e^5+1/2
*c*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2
*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))*d/e^4
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\,a\left(\frac{dx}{e^3x^2+de^2}-\frac{3\,d\arctan\left(\frac{ex}{\sqrt{de}}\right)}{\sqrt{de}\,e^2}+\frac{2\,x}{e^2}\right)+b\int\frac{x^4\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{e^2x^4+2\,dex^2+d^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))/(e*x^2+d)^2,x, algorithm="maxima")
```

```
[Out] 1/2*a*(d*x/(e^3*x^2 + d*e^2) - 3*d*arctan(e*x/sqrt(d*e))/(sqrt(d*e)*e^2) +
2*x/e^2) + b*integrate(x^4*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(e^2*
x^4 + 2*d*e*x^2 + d^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{x^4\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(e\,x^2+d\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(a + b*asin(c*x)))/(d + e*x^2)^2,x)
```

```
[Out] int((x^4*(a + b*asin(c*x)))/(d + e*x^2)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{x^4\left(a+b\,\mathrm{asin}\left(cx\right)\right)}{\left(d+ex^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*asin(c*x))/(e*x**2+d)**2,x)
```

```
[Out] Integral(x**4*(a + b*asin(c*x))/(d + e*x**2)**2, x)
```

3.638 $\int \frac{x^2(a+b\sin^{-1}(cx))}{(d+ex^2)^2}\,dx$

Optimal. Leaf size=745

$$\frac{(a+b\sin^{-1}(cx))\log\left(1-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{4\sqrt{-d}\,e^{3/2}}-\frac{(a+b\sin^{-1}(cx))\log\left(1+\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{4\sqrt{-d}\,e^{3/2}}+\frac{(a+b\sin^{-1}(cx))\log(1}{4\sqrt{-d}\,e^{3}}$$

```
[Out] 1/4*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/
2)-(c^2*d+e)^(1/2)))/e^(3/2)/(-d)^(1/2)-1/4*(a+b*arcsin(c*x))*ln(1+(I*c*x+(
-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/e^(3/2)/(-d)^(
1/2)+1/4*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d
)^(1/2)+(c^2*d+e)^(1/2)))/e^(3/2)/(-d)^(1/2)-1/4*(a+b*arcsin(c*x))*ln(1+(I*
c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/e^(3/2)/(
-d)^(1/2)+1/4*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(
1/2)-(c^2*d+e)^(1/2)))/e^(3/2)/(-d)^(1/2)-1/4*I*b*polylog(2,(I*c*x+(-c^2*x^
2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/e^(3/2)/(-d)^(1/2)+1/
4*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+
e)^(1/2)))/e^(3/2)/(-d)^(1/2)-1/4*I*b*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*
e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/e^(3/2)/(-d)^(1/2)+1/4*(a+b*arcsi
n(c*x))/e^(3/2)/((-d)^(1/2)-x*e^(1/2))+1/4*(-a-b*arcsin(c*x))/e^(3/2)/((-d)
^(1/2)+x*e^(1/2))-1/4*b*c*arctanh((-c^2*x*(-d)^(1/2)+e^(1/2))/(c^2*d+e)^(1/
2)/(-c^2*x^2+1)^(1/2))/e^(3/2)/(c^2*d+e)^(1/2)-1/4*b*c*arctanh((c^2*x*(-d)^
(1/2)+e^(1/2))/(c^2*d+e)^(1/2)/(-c^2*x^2+1)^(1/2))/e^(3/2)/(c^2*d+e)^(1/2)
```

Rubi [A] time = 1.94, antiderivative size = 745, normalized size of antiderivative = 1.00, number of steps used = 46, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.476, Rules used = {4733, 4667, 4743, 725, 206, 4741, 4521, 2190, 2279, 2391}

$$\frac{ib\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{4\sqrt{-d}\,e^{3/2}}-\frac{ib\text{PolyLog}\left(2,\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{4\sqrt{-d}\,e^{3/2}}+\frac{ib\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{4\sqrt{-d}\,e^{3/2}}-\frac{ib\text{PolyLog}(}{4}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*ArcSin[c*x]))/(d + e*x^2)^2,x]
```

```
[Out] (a + b*ArcSin[c*x])/(4*e^(3/2)*(Sqrt[-d] - Sqrt[e]*x)) - (a + b*ArcSin[c*x]
)/(4*e^(3/2)*(Sqrt[-d] + Sqrt[e]*x)) - (b*c*ArcTanh[(Sqrt[e] - c^2*Sqrt[-d]
*x)/(Sqrt[c^2*d + e]*Sqrt[1 - c^2*x^2])])/(4*e^(3/2)*Sqrt[c^2*d + e]) - (b*
c*ArcTanh[(Sqrt[e] + c^2*Sqrt[-d]*x)/(Sqrt[c^2*d + e]*Sqrt[1 - c^2*x^2])])/
(4*e^(3/2)*Sqrt[c^2*d + e]) + ((a + b*ArcSin[c*x])*Log[1 - (Sqrt[e]*E^(I*Ar
cSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(4*Sqrt[-d]*e^(3/2)) - ((a +
 b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^
2*d + e])])/(4*Sqrt[-d]*e^(3/2)) + ((a + b*ArcSin[c*x])*Log[1 - (Sqrt[e]*E^
(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(4*Sqrt[-d]*e^(3/2)) -
((a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sq
rt[c^2*d + e])])/(4*Sqrt[-d]*e^(3/2)) + ((I/4)*b*PolyLog[2, -((Sqrt[e]*E^(I
*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e]))])/(Sqrt[-d]*e^(3/2)) - ((I
/4)*b*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e
])])/(Sqrt[-d]*e^(3/2)) + ((I/4)*b*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))
/(I*c*Sqrt[-d] + Sqrt[c^2*d + e]))])/(Sqrt[-d]*e^(3/2)) - ((I/4)*b*PolyLog[
2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(Sqrt[-d]
*e^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rule 4733

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (
f*x)^m*(d + e*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[c^2*d +
 e, 0] && IGtQ[n, 0] && IntegerQ[p] && IntegerQ[m]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rubi steps

$$\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^2}\,dx = \int \left(-\frac{d\left(a+b\sin^{-1}(cx)\right)}{e\left(d+ex^2\right)^2}+\frac{a+b\sin^{-1}(cx)}{e\left(d+ex^2\right)}\right)dx$$

$$= \frac{\int \frac{a+b\sin^{-1}(cx)}{d+ex^2}\,dx}{e} - \frac{d\int \frac{a+b\sin^{-1}(cx)}{\left(d+ex^2\right)^2}\,dx}{e}$$

$$= \frac{\int \left(\frac{\sqrt{-d}\left(a+b\sin^{-1}(cx)\right)}{2d\left(\sqrt{-d}-\sqrt{e}\,x\right)}+\frac{\sqrt{-d}\left(a+b\sin^{-1}(cx)\right)}{2d\left(\sqrt{-d}+\sqrt{e}\,x\right)}\right)dx}{e} - \frac{d\int \left(-\frac{e\left(a+b\sin^{-1}(cx)\right)}{4d\left(\sqrt{-d}\,\sqrt{e}-ex\right)^2}-\frac{e\left(a+b\sin^{-1}(cx)\right)}{4d\left(\sqrt{-d}\,\sqrt{e}+ex\right)}\right.}{e}$$

$$= \frac{1}{4}\int \frac{a+b\sin^{-1}(cx)}{\left(\sqrt{-d}\,\sqrt{e}-ex\right)^2}\,dx + \frac{1}{4}\int \frac{a+b\sin^{-1}(cx)}{\left(\sqrt{-d}\,\sqrt{e}+ex\right)^2}\,dx + \frac{1}{2}\int \frac{a+b\sin^{-1}(cx)}{-de-e^2x^2}\,dx -$$

$$= \frac{a+b\sin^{-1}(cx)}{4e^{3/2}\left(\sqrt{-d}-\sqrt{e}\,x\right)} - \frac{a+b\sin^{-1}(cx)}{4e^{3/2}\left(\sqrt{-d}+\sqrt{e}\,x\right)} + \frac{1}{2}\int \left(-\frac{\sqrt{-d}\left(a+b\sin^{-1}(cx)\right)}{2de\left(\sqrt{-d}-\sqrt{e}\,x\right)} - \frac{\sqrt{-}}{2}\right.$$

$$= \frac{a+b\sin^{-1}(cx)}{4e^{3/2}\left(\sqrt{-d}-\sqrt{e}\,x\right)} - \frac{a+b\sin^{-1}(cx)}{4e^{3/2}\left(\sqrt{-d}+\sqrt{e}\,x\right)} + \frac{(bc)\,\text{Subst}\left(\int \frac{1}{c^2de+e^2-x^2}\,dx, x, \frac{-e+c^2\sqrt{}}{\sqrt{1-}}\right.}{4e}$$

$$= \frac{a+b\sin^{-1}(cx)}{4e^{3/2}\left(\sqrt{-d}-\sqrt{e}\,x\right)} - \frac{a+b\sin^{-1}(cx)}{4e^{3/2}\left(\sqrt{-d}+\sqrt{e}\,x\right)} - \frac{bc\tanh^{-1}\left(\frac{\sqrt{e}-c^2\sqrt{-d}\,x}{\sqrt{c^2d+e}\,\sqrt{1-c^2x^2}}\right)}{4e^{3/2}\sqrt{c^2d+e}} - \frac{bc\tanh}{4}$$

$$= \frac{a+b\sin^{-1}(cx)}{4e^{3/2}\left(\sqrt{-d}-\sqrt{e}\,x\right)} - \frac{a+b\sin^{-1}(cx)}{4e^{3/2}\left(\sqrt{-d}+\sqrt{e}\,x\right)} - \frac{bc\tanh^{-1}\left(\frac{\sqrt{e}-c^2\sqrt{-d}\,x}{\sqrt{c^2d+e}\,\sqrt{1-c^2x^2}}\right)}{4e^{3/2}\sqrt{c^2d+e}} - \frac{bc\tanh}{4}$$

$$= \frac{a+b\sin^{-1}(cx)}{4e^{3/2}\left(\sqrt{-d}-\sqrt{e}\,x\right)} - \frac{a+b\sin^{-1}(cx)}{4e^{3/2}\left(\sqrt{-d}+\sqrt{e}\,x\right)} - \frac{bc\tanh^{-1}\left(\frac{\sqrt{e}-c^2\sqrt{-d}\,x}{\sqrt{c^2d+e}\,\sqrt{1-c^2x^2}}\right)}{4e^{3/2}\sqrt{c^2d+e}} - \frac{bc\tanh}{4}$$

$$= \frac{a+b\sin^{-1}(cx)}{4e^{3/2}\left(\sqrt{-d}-\sqrt{e}\,x\right)} - \frac{a+b\sin^{-1}(cx)}{4e^{3/2}\left(\sqrt{-d}+\sqrt{e}\,x\right)} - \frac{bc\tanh^{-1}\left(\frac{\sqrt{e}-c^2\sqrt{-d}\,x}{\sqrt{c^2d+e}\,\sqrt{1-c^2x^2}}\right)}{4e^{3/2}\sqrt{c^2d+e}} - \frac{bc\tanh}{4}$$

$$= \frac{a+b\sin^{-1}(cx)}{4e^{3/2}\left(\sqrt{-d}-\sqrt{e}\,x\right)} - \frac{a+b\sin^{-1}(cx)}{4e^{3/2}\left(\sqrt{-d}+\sqrt{e}\,x\right)} - \frac{bc\tanh^{-1}\left(\frac{\sqrt{e}-c^2\sqrt{-d}\,x}{\sqrt{c^2d+e}\,\sqrt{1-c^2x^2}}\right)}{4e^{3/2}\sqrt{c^2d+e}} - \frac{bc\tanh}{4}$$

Mathematica [A] time = 1.19, size = 603, normalized size = 0.81

$$-\frac{4a\sqrt{e}\,x}{d+ex^2}+\frac{4a\tan^{-1}\left(\frac{\sqrt{e}\,x}{\sqrt{d}}\right)}{\sqrt{d}}+b\left(-\frac{2\mathrm{Li}_2\left(\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{\sqrt{dc^2+e}-c\sqrt{d}}\right)+2\mathrm{Li}_2\left(-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{\sqrt{d}\,c+\sqrt{dc^2+e}}\right)+\sin^{-1}(cx)\left(\sin^{-1}(cx)+2i\left(\log\left(1+\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{c\sqrt{d}-\sqrt{c^2d+e}}\right)+\log\left(1+\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{\sqrt{c^2d+e}+c\sqrt{d}}\right.\right.\right.}{\sqrt{d}}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^2*(a + b*ArcSin[c*x]))/(d + e*x^2)^2,x]
```

```
[Out] ((-4*a*Sqrt[e]*x)/(d + e*x^2) + (4*a*ArcTan[(Sqrt[e]*x)/Sqrt[d]])/Sqrt[d] +
 b*((-2*ArcSin[c*x])/(I*Sqrt[d] + Sqrt[e]*x) - (2*I)*(ArcSin[c*x]/(Sqrt[d]
+ I*Sqrt[e]*x) - (c*ArcTan[(I*Sqrt[e] + c^2*Sqrt[d]*x)/(Sqrt[c^2*d + e]*Sqr
t[1 - c^2*x^2])])/Sqrt[c^2*d + e]) - (2*c*ArcTanh[(Sqrt[e] + I*c^2*Sqrt[d]*
x)/(Sqrt[c^2*d + e]*Sqrt[1 - c^2*x^2])])/Sqrt[c^2*d + e] - (ArcSin[c*x]*(Ar
cSin[c*x] + (2*I)*(Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] - Sqrt[c^
2*d + e])] + Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d +
e])])) + 2*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(-(c*Sqrt[d]) + Sqrt[c^2*
d + e])] + 2*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2
*d + e]))])/Sqrt[d] + (ArcSin[c*x]*(ArcSin[c*x] + (2*I)*(Log[1 + (Sqrt[e]*E
^(I*ArcSin[c*x]))/(-(c*Sqrt[d]) + Sqrt[c^2*d + e])] + Log[1 - (Sqrt[e]*E^(I
*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e])])) + 2*PolyLog[2, (Sqrt[e]*E^(
I*ArcSin[c*x]))/(c*Sqrt[d] - Sqrt[c^2*d + e])] + 2*PolyLog[2, (Sqrt[e]*E^(I
*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e])])/Sqrt[d]))/(8*e^(3/2))
```

fricas [F] time = 0.70, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{bx^2\arcsin(cx)+ax^2}{e^2x^4+2\,dex^2+d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))/(e*x^2+d)^2,x, algorithm="fricas")
```

```
[Out] integral((b*x^2*arcsin(c*x) + a*x^2)/(e^2*x^4 + 2*d*e*x^2 + d^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))/(e*x^2+d)^2,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [C] time = 1.10, size = 1677, normalized size = 2.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(c*x))/(e*x^2+d)^2,x)
```

```
[Out] -1/2*c^2*a/e*x/(c^2*e*x^2+c^2*d)+1/2*a/e/(d*e)^(1/2)*arctan(e*x/(d*e)^(1/2)
)-1/2*c^2*b*arcsin(c*x)/e*x/(c^2*e*x^2+c^2*d)+1/4*c*b/e*sum(1/_R1/(_R1^2*e-
2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1
-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))+
1/4*c*b/e*sum(_R1/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^
2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z
^4+(-4*c^2*d-2*e)*_Z^2+e))+c^5*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^
```

```
(1/2)*d^2*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e)
)^(1/2)+e)*e)^(1/2))/e^4/(c^2*d+e)-c^3*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2
)+e)*e)^(1/2)*d*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^
2*d+e))^(1/2)+e)*e)^(1/2))/e^4/(c^2*d+e)*(c^2*d*(c^2*d+e))^(1/2)+c^3*b*((2*
c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(
1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/e^3/(c^2*d+e)*d-1/2*
c*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*
x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/e^3/(c^2*d+e
)*(c^2*d*(c^2*d+e))^(1/2)-c^3*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(
1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/
2)+e)*e)^(1/2))*d/e^4+c*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*a
rctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*
e)^(1/2))/e^4*(c^2*d*(c^2*d+e))^(1/2)-1/2*c*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))
^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*
(c^2*d+e))^(1/2)+e)*e)^(1/2))/e^3+c^5*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2
)+e)*e)^(1/2)*d^2*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(
c^2*d+e))^(1/2)-e)*e)^(1/2))/e^4/(c^2*d+e)+c^3*b*(-(2*c^2*d-2*(c^2*d*(c^2*d
+e))^(1/2)+e)*e)^(1/2)*d*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(
c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/e^4/(c^2*d+e)*(c^2*d*(c^2*d+e))^(1/2)+c
^3*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2
*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/e^3/(c^2*d
+e)*d+1/2*c*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*
c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/e
^3/(c^2*d+e)*(c^2*d*(c^2*d+e))^(1/2)-c^3*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(
1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c
^2*d+e))^(1/2)-e)*e)^(1/2))*d/e^4-c*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+
e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+
e))^(1/2)-e)*e)^(1/2))/e^4*(c^2*d*(c^2*d+e))^(1/2)-1/2*c*b*(-(2*c^2*d-2*(c^
2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c
^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/e^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\,a\left(\frac{x}{e^2x^2+de}-\frac{\arctan\left(\frac{ex}{\sqrt{de}}\right)}{\sqrt{de}\,e}\right)+b\int\frac{x^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{e^2x^4+2\,dex^2+d^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))/(e*x^2+d)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a*(x/(e^2*x^2 + d*e) - arctan(e*x/sqrt(d*e))/(sqrt(d*e)*e)) + b*integr
ate(x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(e^2*x^4 + 2*d*e*x^2 + d
^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{x^2\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(e\,x^2+d\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*asin(c*x)))/(d + e*x^2)^2,x)
```

```
[Out] int((x^2*(a + b*asin(c*x)))/(d + e*x^2)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{x^2\left(a+b\,\mathrm{asin}\left(cx\right)\right)}{\left(d+ex^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(c*x))/(e*x**2+d)**2,x)
```

```
[Out] Integral(x**2*(a + b*asin(c*x))/(d + e*x**2)**2, x)
```

3.639 $\int \frac{a+b\sin^{-1}(cx)}{(d+ex^2)^2}\,dx$

Optimal. Leaf size=757

$$-\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{4(-d)^{3/2}\sqrt{e}}+\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1+\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{4(-d)^{3/2}\sqrt{e}}-\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(\right.}{4(-d)^{3/}}$$

```
[Out] -1/4*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1
/2)-(c^2*d+e)^(1/2)))/(-d)^(3/2)/e^(1/2)+1/4*(a+b*arcsin(c*x))*ln(1+(I*c*x+
(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/(-d)^(3/2)/e^
(1/2)-1/4*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-
d)^(1/2)+(c^2*d+e)^(1/2)))/(-d)^(3/2)/e^(1/2)+1/4*(a+b*arcsin(c*x))*ln(1+(I
*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/(-d)^(3/
2)/e^(1/2)-1/4*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^
(1/2)-(c^2*d+e)^(1/2)))/(-d)^(3/2)/e^(1/2)+1/4*I*b*polylog(2,(I*c*x+(-c^2*x
^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/(-d)^(3/2)/e^(1/2)-1
/4*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d
+e)^(1/2)))/(-d)^(3/2)/e^(1/2)+1/4*I*b*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))
*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/(-d)^(3/2)/e^(1/2)+1/4*(-a-b*arc
sin(c*x))/d/e^(1/2)/((-d)^(1/2)-x*e^(1/2))+1/4*(a+b*arcsin(c*x))/d/e^(1/2)/
((-d)^(1/2)+x*e^(1/2))+1/4*b*c*arctanh((-c^2*x*(-d)^(1/2)+e^(1/2))/(c^2*d+e
)^(1/2)/(-c^2*x^2+1)^(1/2))/d/e^(1/2)/(c^2*d+e)^(1/2)+1/4*b*c*arctanh((c^2*
x*(-d)^(1/2)+e^(1/2))/(c^2*d+e)^(1/2)/(-c^2*x^2+1)^(1/2))/d/e^(1/2)/(c^2*d+
e)^(1/2)
```

Rubi [A] time = 0.99, antiderivative size = 757, normalized size of antiderivative = 1.00, number of steps used = 26, number of rules used = 9, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {4667, 4743, 725, 206, 4741, 4521, 2190, 2279, 2391}

$$-\frac{ib\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{4(-d)^{3/2}\sqrt{e}}+\frac{ib\text{PolyLog}\left(2,\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{4(-d)^{3/2}\sqrt{e}}-\frac{ib\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{4(-d)^{3/2}\sqrt{e}}+\frac{ib\text{PolyLog}}{4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(d + e*x^2)^2,x]
```

```
[Out] -(a + b*ArcSin[c*x])/(4*d*Sqrt[e]*(Sqrt[-d] - Sqrt[e]*x)) + (a + b*ArcSin[c
*x])/(4*d*Sqrt[e]*(Sqrt[-d] + Sqrt[e]*x)) + (b*c*ArcTanh[(Sqrt[e] - c^2*Sqr
t[-d]*x)/(Sqrt[c^2*d + e]*Sqrt[1 - c^2*x^2])])/(4*d*Sqrt[e]*Sqrt[c^2*d + e]
) + (b*c*ArcTanh[(Sqrt[e] + c^2*Sqrt[-d]*x)/(Sqrt[c^2*d + e]*Sqrt[1 - c^2*x
^2])])/(4*d*Sqrt[e]*Sqrt[c^2*d + e]) - ((a + b*ArcSin[c*x])*Log[1 - (Sqrt[e
]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(4*(-d)^(3/2)*Sqrt[
e]) + ((a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d
] - Sqrt[c^2*d + e])])/(4*(-d)^(3/2)*Sqrt[e]) - ((a + b*ArcSin[c*x])*Log[1
- (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(4*(-d)^(3
/2)*Sqrt[e]) + ((a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*
c*Sqrt[-d] + Sqrt[c^2*d + e])])/(4*(-d)^(3/2)*Sqrt[e]) - ((I/4)*b*PolyLog[2
, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e]))])/((-d)^(
3/2)*Sqrt[e]) + ((I/4)*b*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-
d] - Sqrt[c^2*d + e])])/((-d)^(3/2)*Sqrt[e]) - ((I/4)*b*PolyLog[2, -((Sqrt[
e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e]))])/((-d)^(3/2)*Sqrt[
e]) + ((I/4)*b*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[
c^2*d + e])])/((-d)^(3/2)*Sqrt[e])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{\left(d+ex^2\right)^2}\,dx = \int \left(-\frac{e\left(a+b\sin^{-1}(cx)\right)}{4d\left(\sqrt{-d}\sqrt{e}-ex\right)^2} - \frac{e\left(a+b\sin^{-1}(cx)\right)}{4d\left(\sqrt{-d}\sqrt{e}+ex\right)^2} - \frac{e\left(a+b\sin^{-1}(cx)\right)}{2d\left(-de-e^2x^2\right)}\right)dx$$

$$= -\frac{e\int \frac{a+b\sin^{-1}(cx)}{\left(\sqrt{-d}\sqrt{e}-ex\right)^2}\,dx}{4d} - \frac{e\int \frac{a+b\sin^{-1}(cx)}{\left(\sqrt{-d}\sqrt{e}+ex\right)^2}\,dx}{4d} - \frac{e\int \frac{a+b\sin^{-1}(cx)}{-de-e^2x^2}\,dx}{2d}$$

$$= -\frac{a+b\sin^{-1}(cx)}{4d\sqrt{e}\left(\sqrt{-d}-\sqrt{e}x\right)} + \frac{a+b\sin^{-1}(cx)}{4d\sqrt{e}\left(\sqrt{-d}+\sqrt{e}x\right)} + \frac{(bc)\int \frac{1}{\left(\sqrt{-d}\sqrt{e}-ex\right)\sqrt{1-c^2x^2}}\,dx}{4d} - \frac{(bc)\int}{}$$

$$= -\frac{a+b\sin^{-1}(cx)}{4d\sqrt{e}\left(\sqrt{-d}-\sqrt{e}x\right)} + \frac{a+b\sin^{-1}(cx)}{4d\sqrt{e}\left(\sqrt{-d}+\sqrt{e}x\right)} + \frac{\int \frac{a+b\sin^{-1}(cx)}{\sqrt{-d}-\sqrt{e}x}\,dx}{4(-d)^{3/2}} + \frac{\int \frac{a+b\sin^{-1}(cx)}{\sqrt{-d}+\sqrt{e}x}\,dx}{4(-d)^{3/2}} -$$

$$= -\frac{a+b\sin^{-1}(cx)}{4d\sqrt{e}\left(\sqrt{-d}-\sqrt{e}x\right)} + \frac{a+b\sin^{-1}(cx)}{4d\sqrt{e}\left(\sqrt{-d}+\sqrt{e}x\right)} + \frac{bc\tanh^{-1}\left(\frac{\sqrt{e}-c^2\sqrt{-d}x}{\sqrt{c^2d+e}\sqrt{1-c^2x^2}}\right)}{4d\sqrt{e}\sqrt{c^2d+e}} + \frac{bc\tanh}{4d}$$

$$= -\frac{a+b\sin^{-1}(cx)}{4d\sqrt{e}\left(\sqrt{-d}-\sqrt{e}x\right)} + \frac{a+b\sin^{-1}(cx)}{4d\sqrt{e}\left(\sqrt{-d}+\sqrt{e}x\right)} + \frac{bc\tanh^{-1}\left(\frac{\sqrt{e}-c^2\sqrt{-d}x}{\sqrt{c^2d+e}\sqrt{1-c^2x^2}}\right)}{4d\sqrt{e}\sqrt{c^2d+e}} + \frac{bc\tanh}{4d}$$

$$= -\frac{a+b\sin^{-1}(cx)}{4d\sqrt{e}\left(\sqrt{-d}-\sqrt{e}x\right)} + \frac{a+b\sin^{-1}(cx)}{4d\sqrt{e}\left(\sqrt{-d}+\sqrt{e}x\right)} + \frac{bc\tanh^{-1}\left(\frac{\sqrt{e}-c^2\sqrt{-d}x}{\sqrt{c^2d+e}\sqrt{1-c^2x^2}}\right)}{4d\sqrt{e}\sqrt{c^2d+e}} + \frac{bc\tanh}{4d}$$

$$= -\frac{a+b\sin^{-1}(cx)}{4d\sqrt{e}\left(\sqrt{-d}-\sqrt{e}x\right)} + \frac{a+b\sin^{-1}(cx)}{4d\sqrt{e}\left(\sqrt{-d}+\sqrt{e}x\right)} + \frac{bc\tanh^{-1}\left(\frac{\sqrt{e}-c^2\sqrt{-d}x}{\sqrt{c^2d+e}\sqrt{1-c^2x^2}}\right)}{4d\sqrt{e}\sqrt{c^2d+e}} + \frac{bc\tanh}{4d}$$

$$= -\frac{a+b\sin^{-1}(cx)}{4d\sqrt{e}\left(\sqrt{-d}-\sqrt{e}x\right)} + \frac{a+b\sin^{-1}(cx)}{4d\sqrt{e}\left(\sqrt{-d}+\sqrt{e}x\right)} + \frac{bc\tanh^{-1}\left(\frac{\sqrt{e}-c^2\sqrt{-d}x}{\sqrt{c^2d+e}\sqrt{1-c^2x^2}}\right)}{4d\sqrt{e}\sqrt{c^2d+e}} + \frac{bc\tanh}{4d}$$

Mathematica [A] time = 1.79, size = 591, normalized size = 0.78

$$\frac{1}{2}\left(\frac{a\tan^{-1}\left(\frac{\sqrt{e}x}{\sqrt{d}}\right)}{d^{3/2}\sqrt{e}} + \frac{ax}{d^2+dex^2} + \frac{b\left(\mathrm{Li}_2\left(\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{c\sqrt{d}-\sqrt{dc^2+e}}\right) - \mathrm{Li}_2\left(\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{\sqrt{dc^2+e}-c\sqrt{d}}\right) - \mathrm{Li}_2\left(-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{\sqrt{d}c+\sqrt{dc^2+e}}\right) + \mathrm{Li}_2\left(\frac{\sqrt{e}e^{i\sin^{-1}}}{\sqrt{d}c+\sqrt{dc}}\right.\right.}{}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(d + e*x^2)^2,x]
```

```
[Out] ((a*x)/(d^2 + d*e*x^2) + (a*ArcTan[(Sqrt[e]*x)/Sqrt[d]])/(d^(3/2)*Sqrt[e])
+ (b*(I*Sqrt[d]*(ArcSin[c*x]/(Sqrt[d] + I*Sqrt[e]*x) - (c*ArcTan[(I*Sqrt[e]
 + c^2*Sqrt[d]*x)/(Sqrt[c^2*d + e]*Sqrt[1 - c^2*x^2])])/Sqrt[c^2*d + e]) +
Sqrt[d]*(ArcSin[c*x]/(I*Sqrt[d] + Sqrt[e]*x) + (c*ArcTanh[(Sqrt[e] + I*c^2*
Sqrt[d]*x)/(Sqrt[c^2*d + e]*Sqrt[1 - c^2*x^2])])/Sqrt[c^2*d + e]) + I*ArcSi
n[c*x]*(Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(-(c*Sqrt[d]) + Sqrt[c^2*d + e]
)] + Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e])]) -
```

```
I*ArcSin[c*x]*(Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] - Sqrt[c^2*d
+ e])] + Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e])]
) + PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] - Sqrt[c^2*d + e])] -
 PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(-(c*Sqrt[d]) + Sqrt[c^2*d + e])] -
 PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e]))] +
 PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e])]))/(2
*d^(3/2)*Sqrt[e]))/2
```

fricas [F] time = 0.63, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b \arcsin\left(cx\right) + a}{e^2x^4 + 2\,dex^2 + d^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(e*x^2+d)^2,x, algorithm="fricas")
[Out] integral((b*arcsin(c*x) + a)/(e^2*x^4 + 2*d*e*x^2 + d^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b \arcsin\left(cx\right) + a}{\left(ex^2 + d\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(e*x^2+d)^2,x, algorithm="giac")
[Out] integrate((b*arcsin(c*x) + a)/(e*x^2 + d)^2, x)
```

maple [C] time = 0.89, size = 1687, normalized size = 2.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(e*x^2+d)^2,x)
[Out] 1/2*c^2*a*x/d/(c^2*e*x^2+c^2*d)+1/2*a/d/(d*e)^(1/2)*arctan(e*x/(d*e)^(1/2))
+1/2*c^2*b*arcsin(c*x)*x/d/(c^2*e*x^2+c^2*d)-c^5*b*((2*c^2*d+2*(c^2*d*(c^2*
d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c
^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/e^3/(c^2*d+e)*d+c^3*b*((2*c^2*d+2*(c^2*d
*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*
d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/e^3/(c^2*d+e)*(c^2*d*(c^2*d+e))^(1
/2)-c^3*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+
(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/(c^2*d
+e)/e^2+1/2*c*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(
I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/
d/(c^2*d+e)/e^2*(c^2*d*(c^2*d+e))^(1/2)+c^3*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))
^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*
(c^2*d+e))^(1/2)+e)*e)^(1/2))/e^3-c*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e
)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e
))^(1/2)+e)*e)^(1/2))/d/e^3*(c^2*d*(c^2*d+e))^(1/2)+1/2*c*b*((2*c^2*d+2*(c^
2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c
^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/d/e^2-c^5*b*(-(2*c^2*d-2*(c^2*d
*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*
d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/e^3/(c^2*d+e)*d-c^3*b*(-(2*c^2*d-2
*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((
-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/e^3/(c^2*d+e)*(c^2*d*(c^2*d
+e))^(1/2)-c^3*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*
(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2)
```

```
)/(c^2*d+e)/e^2-1/2*c*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*ar
ctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e
)^(1/2))/d/(c^2*d+e)/e^2*(c^2*d*(c^2*d+e))^(1/2)+c^3*b*(-(2*c^2*d-2*(c^2*d*
(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d
+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/e^3+c*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+
e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2
*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/d/e^3*(c^2*d*(c^2*d+e))^(1/2)+1/2*c*b*(-(2
*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(
1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/d/e^2+1/4*c*b/d*sum
(1/_R1/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))
/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*
d-2*e)*_Z^2+e))+1/4*c*b/d*sum(_R1/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R
1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1))
,_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\,a\left(\frac{x}{dex^2+d^2}+\frac{\arctan\left(\frac{ex}{\sqrt{de}}\right)}{\sqrt{de}\,d}\right)+b\int\frac{\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{e^2x^4+2\,dex^2+d^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(e*x^2+d)^2,x, algorithm="maxima")
```

```
[Out] 1/2*a*(x/(d*e*x^2 + d^2) + arctan(e*x/sqrt(d*e))/(sqrt(d*e)*d)) + b*integra
te(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(e^2*x^4 + 2*d*e*x^2 + d^2),
x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{a+b\,\mathrm{asin}\left(c\,x\right)}{{\left(e\,x^2+d\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(d + e*x^2)^2,x)
```

```
[Out] int((a + b*asin(c*x))/(d + e*x^2)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{a+b\,\mathrm{asin}\left(cx\right)}{\left(d+ex^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(e*x**2+d)**2,x)
```

```
[Out] Integral((a + b*asin(c*x))/(d + e*x**2)**2, x)
```

3.640 $\int \frac{a+b\sin^{-1}(cx)}{x^2\left(d+ex^2\right)^2}\,dx$

Optimal. Leaf size=795

$$-\frac{3\sqrt{e}\log\left(1-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{dc^2+e}}\right)\left(a+b\sin^{-1}(cx)\right)}{4(-d)^{5/2}}+\frac{3\sqrt{e}\log\left(\frac{e^{i\sin^{-1}(cx)}\sqrt{e}}{ic\sqrt{-d}-\sqrt{dc^2+e}}+1\right)\left(a+b\sin^{-1}(cx)\right)}{4(-d)^{5/2}}-\frac{3\sqrt{e}\log\left(1-\frac{\sqrt{e}}{i\sqrt{-}}\right.}{}$$

```
[Out] (-a-b*arcsin(c*x))/d^2/x-b*c*arctanh((-c^2*x^2+1)^(1/2))/d^2-3/4*(a+b*arcsi
n(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(
1/2)))*e^(1/2)/(-d)^(5/2)+3/4*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1
/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))*e^(1/2)/(-d)^(5/2)-3/4*(a+b*
arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d
+e)^(1/2)))*e^(1/2)/(-d)^(5/2)+3/4*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+
1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))*e^(1/2)/(-d)^(5/2)-3/4*
I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)
^(1/2)))*e^(1/2)/(-d)^(5/2)+3/4*I*b*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^
(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))*e^(1/2)/(-d)^(5/2)-3/4*I*b*polylog(
2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))*e^(
1/2)/(-d)^(5/2)+3/4*I*b*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(
-d)^(1/2)+(c^2*d+e)^(1/2)))*e^(1/2)/(-d)^(5/2)+1/4*(a+b*arcsin(c*x))*e^(1/2
)/d^2/((-d)^(1/2)-x*e^(1/2))-1/4*(a+b*arcsin(c*x))*e^(1/2)/d^2/((-d)^(1/2)+
x*e^(1/2))-1/4*b*c*arctanh((-c^2*x*(-d)^(1/2)+e^(1/2))/(c^2*d+e)^(1/2)/(-c^
2*x^2+1)^(1/2))*e^(1/2)/d^2/(c^2*d+e)^(1/2)-1/4*b*c*arctanh((c^2*x*(-d)^(1/
2)+e^(1/2))/(c^2*d+e)^(1/2)/(-c^2*x^2+1)^(1/2))*e^(1/2)/d^2/(c^2*d+e)^(1/2)
```

Rubi [A] time = 2.00, antiderivative size = 795, normalized size of antiderivative = 1.00, number of steps used = 50, number of rules used = 14, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667, Rules used = {4733, 4627, 266, 63, 208, 4667, 4743, 725, 206, 4741, 4521, 2190, 2279, 2391}

$$-\frac{3\sqrt{e}\log\left(1-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{dc^2+e}}\right)\left(a+b\sin^{-1}(cx)\right)}{4(-d)^{5/2}}+\frac{3\sqrt{e}\log\left(\frac{e^{i\sin^{-1}(cx)}\sqrt{e}}{ic\sqrt{-d}-\sqrt{dc^2+e}}+1\right)\left(a+b\sin^{-1}(cx)\right)}{4(-d)^{5/2}}-\frac{3\sqrt{e}\log\left(1-\frac{\sqrt{e}}{i\sqrt{-}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x^2*(d + e*x^2)^2),x]
```

```
[Out] -((a + b*ArcSin[c*x])/(d^2*x)) + (Sqrt[e]*(a + b*ArcSin[c*x]))/(4*d^2*(Sqrt
[-d] - Sqrt[e]*x)) - (Sqrt[e]*(a + b*ArcSin[c*x]))/(4*d^2*(Sqrt[-d] + Sqrt[
e]*x)) - (b*c*Sqrt[e]*ArcTanh[(Sqrt[e] - c^2*Sqrt[-d]*x)/(Sqrt[c^2*d + e]*S
qrt[1 - c^2*x^2])])/(4*d^2*Sqrt[c^2*d + e]) - (b*c*Sqrt[e]*ArcTanh[(Sqrt[e]
 + c^2*Sqrt[-d]*x)/(Sqrt[c^2*d + e]*Sqrt[1 - c^2*x^2])])/(4*d^2*Sqrt[c^2*d
+ e]) - (b*c*ArcTanh[Sqrt[1 - c^2*x^2]])/d^2 - (3*Sqrt[e]*(a + b*ArcSin[c*x
])*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(
4*(-d)^(5/2)) + (3*Sqrt[e]*(a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin
[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(4*(-d)^(5/2)) - (3*Sqrt[e]*(a +
 b*ArcSin[c*x])*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^
2*d + e])])/(4*(-d)^(5/2)) + (3*Sqrt[e]*(a + b*ArcSin[c*x])*Log[1 + (Sqrt[e
]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(4*(-d)^(5/2)) - ((
(3*I)/4)*b*Sqrt[e]*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] -
 Sqrt[c^2*d + e]))])/(-d)^(5/2) + (((3*I)/4)*b*Sqrt[e]*PolyLog[2, (Sqrt[e]*
E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(-d)^(5/2) - (((3*I)/
4)*b*Sqrt[e]*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[
c^2*d + e]))])/(-d)^(5/2) + (((3*I)/4)*b*Sqrt[e]*PolyLog[2, (Sqrt[e]*E^(I*A
rcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(-d)^(5/2)
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rule 4733

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (
f*x)^m*(d + e*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[c^2*d +
 e, 0] && IGtQ[n, 0] && IntegerQ[p] && IntegerQ[m]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x^2\left(d+ex^2\right)^2}\,dx = \int \left(\frac{a+b\sin^{-1}(cx)}{d^2x^2} - \frac{e\left(a+b\sin^{-1}(cx)\right)}{d\left(d+ex^2\right)^2} - \frac{e\left(a+b\sin^{-1}(cx)\right)}{d^2\left(d+ex^2\right)}\right)dx$$

$$= \frac{\int \frac{a+b\sin^{-1}(cx)}{x^2}\,dx}{d^2} - \frac{e\int \frac{a+b\sin^{-1}(cx)}{d+ex^2}\,dx}{d^2} - \frac{e\int \frac{a+b\sin^{-1}(cx)}{\left(d+ex^2\right)^2}\,dx}{d}$$

$$= -\frac{a+b\sin^{-1}(cx)}{d^2x} + \frac{(bc)\int \frac{1}{x\sqrt{1-c^2x^2}}\,dx}{d^2} - \frac{e\int \left(\frac{\sqrt{-d}\left(a+b\sin^{-1}(cx)\right)}{2d\left(\sqrt{-d}-\sqrt{e}\,x\right)} + \frac{\sqrt{-d}\left(a+b\sin^{-1}(cx)\right)}{2d\left(\sqrt{-d}+\sqrt{e}\,x\right)}\right)dx}{d^2}$$

$$= -\frac{a+b\sin^{-1}(cx)}{d^2x} + \frac{(bc)\,\text{Subst}\left(\int \frac{1}{x\sqrt{1-c^2x}}\,dx, x, x^2\right)}{2d^2} + \frac{e\int \frac{a+b\sin^{-1}(cx)}{\sqrt{-d}-\sqrt{e}\,x}\,dx}{2(-d)^{5/2}} + \frac{e\int \frac{a+b\sin^{-1}}{\sqrt{-d}+\sqrt{}}}{2(-d)^{5}}$$

$$= -\frac{a+b\sin^{-1}(cx)}{d^2x} + \frac{\sqrt{e}\left(a+b\sin^{-1}(cx)\right)}{4d^2\left(\sqrt{-d}-\sqrt{e}\,x\right)} - \frac{\sqrt{e}\left(a+b\sin^{-1}(cx)\right)}{4d^2\left(\sqrt{-d}+\sqrt{e}\,x\right)} - \frac{b\,\text{Subst}\left(\int \frac{1}{\frac{1}{c^2}-\frac{x^2}{c^2}}\,d\right.}{cd^2}$$

$$= -\frac{a+b\sin^{-1}(cx)}{d^2x} + \frac{\sqrt{e}\left(a+b\sin^{-1}(cx)\right)}{4d^2\left(\sqrt{-d}-\sqrt{e}\,x\right)} - \frac{\sqrt{e}\left(a+b\sin^{-1}(cx)\right)}{4d^2\left(\sqrt{-d}+\sqrt{e}\,x\right)} - \frac{bc\tanh^{-1}\left(\sqrt{1-c^2}\right.}{d^2}$$

$$= -\frac{a+b\sin^{-1}(cx)}{d^2x} + \frac{\sqrt{e}\left(a+b\sin^{-1}(cx)\right)}{4d^2\left(\sqrt{-d}-\sqrt{e}\,x\right)} - \frac{\sqrt{e}\left(a+b\sin^{-1}(cx)\right)}{4d^2\left(\sqrt{-d}+\sqrt{e}\,x\right)} - \frac{bc\sqrt{e}\tanh^{-1}\left(\frac{\sqrt{e}}{\sqrt{c^2d}}\right.}{4d^2\sqrt{c^2d+}}$$

$$= -\frac{a+b\sin^{-1}(cx)}{d^2x} + \frac{\sqrt{e}\left(a+b\sin^{-1}(cx)\right)}{4d^2\left(\sqrt{-d}-\sqrt{e}\,x\right)} - \frac{\sqrt{e}\left(a+b\sin^{-1}(cx)\right)}{4d^2\left(\sqrt{-d}+\sqrt{e}\,x\right)} - \frac{bc\sqrt{e}\tanh^{-1}\left(\frac{\sqrt{e}}{\sqrt{c^2d}}\right.}{4d^2\sqrt{c^2d+}}$$

$$= -\frac{a+b\sin^{-1}(cx)}{d^2x} + \frac{\sqrt{e}\left(a+b\sin^{-1}(cx)\right)}{4d^2\left(\sqrt{-d}-\sqrt{e}\,x\right)} - \frac{\sqrt{e}\left(a+b\sin^{-1}(cx)\right)}{4d^2\left(\sqrt{-d}+\sqrt{e}\,x\right)} - \frac{bc\sqrt{e}\tanh^{-1}\left(\frac{\sqrt{e}}{\sqrt{c^2d}}\right.}{4d^2\sqrt{c^2d+}}$$

$$= -\frac{a+b\sin^{-1}(cx)}{d^2x} + \frac{\sqrt{e}\left(a+b\sin^{-1}(cx)\right)}{4d^2\left(\sqrt{-d}-\sqrt{e}\,x\right)} - \frac{\sqrt{e}\left(a+b\sin^{-1}(cx)\right)}{4d^2\left(\sqrt{-d}+\sqrt{e}\,x\right)} - \frac{bc\sqrt{e}\tanh^{-1}\left(\frac{\sqrt{e}}{\sqrt{c^2d}}\right.}{4d^2\sqrt{c^2d+}}$$

$$= -\frac{a+b\sin^{-1}(cx)}{d^2x} + \frac{\sqrt{e}\left(a+b\sin^{-1}(cx)\right)}{4d^2\left(\sqrt{-d}-\sqrt{e}\,x\right)} - \frac{\sqrt{e}\left(a+b\sin^{-1}(cx)\right)}{4d^2\left(\sqrt{-d}+\sqrt{e}\,x\right)} - \frac{bc\sqrt{e}\tanh^{-1}\left(\frac{\sqrt{e}}{\sqrt{c^2d}}\right.}{4d^2\sqrt{c^2d+}}$$

Mathematica [A] time = 1.49, size = 672, normalized size = 0.85

$$-\frac{4a\sqrt{d}\,ex}{d+ex^2} - 12a\sqrt{e}\tan^{-1}\left(\frac{\sqrt{e}\,x}{\sqrt{d}}\right) - \frac{8a\sqrt{d}}{x} + b\left(3\sqrt{e}\left(2\text{Li}_2\left(\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{\sqrt{dc^2+e}-c\sqrt{d}}\right) + 2\text{Li}_2\left(-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{\sqrt{d}\,c+\sqrt{dc^2+e}}\right) + \sin^{-1}(cx)\left(\sin^{-1}\right.\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x^2*(d + e*x^2)^2),x]
```

```
[Out] ((-8*a*Sqrt[d])/x - (4*a*Sqrt[d]*e*x)/(d + e*x^2) - 12*a*Sqrt[e]*ArcTan[(Sq
rt[e]*x)/Sqrt[d]] + b*((-2*I)*Sqrt[d]*Sqrt[e]*(ArcSin[c*x]/(Sqrt[d] + I*Sqr
```

```
t[e]*x) - (c*ArcTan[(I*Sqrt[e] + c^2*Sqrt[d]*x)/(Sqrt[c^2*d + e]*Sqrt[1 - c
^2*x^2])])/Sqrt[c^2*d + e]) + 2*Sqrt[d]*Sqrt[e]*(-(ArcSin[c*x]/(I*Sqrt[d] +
 Sqrt[e]*x)) - (c*ArcTanh[(Sqrt[e] + I*c^2*Sqrt[d]*x)/(Sqrt[c^2*d + e]*Sqrt
[1 - c^2*x^2])])/Sqrt[c^2*d + e]) - (8*Sqrt[d]*(ArcSin[c*x] + c*x*ArcTanh[S
qrt[1 - c^2*x^2]]))/x + 3*Sqrt[e]*(ArcSin[c*x]*(ArcSin[c*x] + (2*I)*(Log[1
+ (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] - Sqrt[c^2*d + e])] + Log[1 + (Sqr
t[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e])])) + 2*PolyLog[2, (Sq
rt[e]*E^(I*ArcSin[c*x]))/(-(c*Sqrt[d]) + Sqrt[c^2*d + e])] + 2*PolyLog[2, -
((Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e]))]) - 3*Sqrt[e]*(
ArcSin[c*x]*(ArcSin[c*x] + (2*I)*(Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(-(c*
Sqrt[d]) + Sqrt[c^2*d + e])] + Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[
d] + Sqrt[c^2*d + e])])) + 2*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt
[d] - Sqrt[c^2*d + e])] + 2*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[
d] + Sqrt[c^2*d + e])])))/(8*d^(5/2))
```

fricas [F] time = 0.85, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b \arcsin(cx) + a}{e^2x^6 + 2\,dex^4 + d^2x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^2/(e*x^2+d)^2,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(c*x) + a)/(e^2*x^6 + 2*d*e*x^4 + d^2*x^2), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^2/(e*x^2+d)^2,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [C] time = 4.60, size = 1839, normalized size = 2.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x^2/(e*x^2+d)^2,x)
```

```
[Out] -1/2*a/d^2*e*c^2*x/(c^2*e*x^2+c^2*d)-3/2*a/d^2*e/(d*e)^(1/2)*arctan(e*x/(d*
e)^(1/2))-a/d^2/x-3/2*b*c^2*x*arcsin(c*x)/d^2/(c^2*e*x^2+c^2*d)*e-b*c^2/x*a
rcsin(c*x)/d/(c^2*e*x^2+c^2*d)+b*c^5*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)
*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e)
)^(1/2)+e)*e)^(1/2))/(c^2*d+e)/e^2-b*c^3*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2
)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*
d+e))^(1/2)+e)*e)^(1/2))/d/(c^2*d+e)/e^2*(c^2*d*(c^2*d+e))^(1/2)+b*c^3*((2*
c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(
1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/d/(c^2*d+e)/e-1/2*c*
b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^
2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/d^2/(c^2*d+e)/
e*(c^2*d*(c^2*d+e))^(1/2)-b*c^3*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(
1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/
2)+e)*e)^(1/2))/d/e^2+c*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*a
rctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*
e)^(1/2))/d^2/e^2*(c^2*d*(c^2*d+e))^(1/2)-1/2*c*b*((2*c^2*d+2*(c^2*d*(c^2*d
+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^
2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/d^2/e+b*c^5*(-(2*c^2*d-2*(c^2*d*(c^2*d+e)
```

```
)^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d
*(c^2*d+e))^(1/2)-e)*e)^(1/2))/(c^2*d+e)/e^2+b*c^3*(-(2*c^2*d-2*(c^2*d*(c^2
*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(
c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/d/(c^2*d+e)/e^2*(c^2*d*(c^2*d+e))^(1/2)
+b*c^3*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c
^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/d/(c^2*d
+e)/e+1/2*c*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*
c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/d
^2/(c^2*d+e)/e*(c^2*d*(c^2*d+e))^(1/2)-b*c^3*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))
^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*
(c^2*d+e))^(1/2)-e)*e)^(1/2))/d/e^2-c*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2
)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*
d+e))^(1/2)-e)*e)^(1/2))/d^2/e^2*(c^2*d*(c^2*d+e))^(1/2)-1/2*c*b*(-(2*c^2*d
-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/
((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/d^2/e+3/16*b/c/d^3*e*sum(
(_R1^2*e-4*c^2*d-e)/_R1/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-
c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=RootO
f(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))-c*b/d^2*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+c*b
/d^2*ln(I*c*x+(-c^2*x^2+1)^(1/2)-1)-3/16*b/c/d^3*e*sum((4*_R1^2*c^2*d+_R1^2
*e-e)/_R1/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/
2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c
^2*d-2*e)*_Z^2+e))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{2}\,a\left(\frac{3\,ex^2+2\,d}{d^2ex^3+d^3x}+\frac{3\,e\arctan\left(\frac{ex}{\sqrt{de}}\right)}{\sqrt{de}\,d^2}\right)+b\int\frac{\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{e^2x^6+2\,dex^4+d^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^2/(e*x^2+d)^2,x, algorithm="maxima")
```

```
[Out] -1/2*a*((3*e*x^2 + 2*d)/(d^2*e*x^3 + d^3*x) + 3*e*arctan(e*x/sqrt(d*e))/(sq
rt(d*e)*d^2)) + b*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(e^2
*x^6 + 2*d*e*x^4 + d^2*x^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{a+b\,\mathrm{asin}\left(c\,x\right)}{x^2\,{\left(e\,x^2+d\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x^2*(d + e*x^2)^2),x)
```

```
[Out] int((a + b*asin(c*x))/(x^2*(d + e*x^2)^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{a+b\,\mathrm{asin}\left(cx\right)}{x^2\left(d+ex^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x**2/(e*x**2+d)**2,x)
```

```
[Out] Integral((a + b*asin(c*x))/(x**2*(d + e*x**2)**2), x)
```

3.641 $\int \frac{x^5\left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^3}\,dx$

Optimal. Leaf size=705

$$\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e^3}+\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1+\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e^3}+\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\right.}{2e^3}$$

```
[Out] -1/4*d^2*(a+b*arcsin(c*x))/e^3/(e*x^2+d)^2+d*(a+b*arcsin(c*x))/e^3/(e*x^2+d
)-1/2*I*(a+b*arcsin(c*x))^2/b/e^3+1/2*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x
^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/e^3+1/2*(a+b*arcsin(
c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/
2)))/e^3+1/2*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c
*(-d)^(1/2)+(c^2*d+e)^(1/2)))/e^3+1/2*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x
^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/e^3-1/2*I*b*polylog(
2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/e^3
-1/2*I*b*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*
d+e)^(1/2)))/e^3-1/2*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c
*(-d)^(1/2)+(c^2*d+e)^(1/2)))/e^3-1/2*I*b*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/
2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/e^3+1/8*b*c*(2*c^2*d+e)*arcta
n(x*(c^2*d+e)^(1/2)/d^(1/2)/(-c^2*x^2+1)^(1/2))*d^(1/2)/e^3/(c^2*d+e)^(3/2)
-b*c*arctan(x*(c^2*d+e)^(1/2)/d^(1/2)/(-c^2*x^2+1)^(1/2))*d^(1/2)/e^3/(c^2*
d+e)^(1/2)+1/8*b*c*d*x*(-c^2*x^2+1)^(1/2)/e^2/(c^2*d+e)/(e*x^2+d)
```

Rubi [A] time = 1.09, antiderivative size = 705, normalized size of antiderivative = 1.00, number of steps used = 27, number of rules used = 10, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.476, Rules used = {4733, 4729, 382, 377, 205, 4741, 4521, 2190, 2279, 2391}

$$-\frac{ib\text{PolyLog}\left(2,-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e^3}-\frac{ib\text{PolyLog}\left(2,\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e^3}-\frac{ib\text{PolyLog}\left(2,-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2e^3}-\frac{ib\text{PolyLog}\left(2\right.}{2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(a + b*ArcSin[c*x]))/(d + e*x^2)^3,x]
```

```
[Out] (b*c*d*x*Sqrt[1 - c^2*x^2])/(8*e^2*(c^2*d + e)*(d + e*x^2)) - (d^2*(a + b*A
rcSin[c*x]))/(4*e^3*(d + e*x^2)^2) + (d*(a + b*ArcSin[c*x]))/(e^3*(d + e*x^
2)) - ((I/2)*(a + b*ArcSin[c*x])^2)/(b*e^3) - (b*c*Sqrt[d]*ArcTan[(Sqrt[c^2
*d + e]*x)/(Sqrt[d]*Sqrt[1 - c^2*x^2])])/(e^3*Sqrt[c^2*d + e]) + (b*c*Sqrt[
d]*(2*c^2*d + e)*ArcTan[(Sqrt[c^2*d + e]*x)/(Sqrt[d]*Sqrt[1 - c^2*x^2])])/(
8*e^3*(c^2*d + e)^(3/2)) + ((a + b*ArcSin[c*x])*Log[1 - (Sqrt[e]*E^(I*ArcSi
n[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(2*e^3) + ((a + b*ArcSin[c*x])*
Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(2*e
^3) + ((a + b*ArcSin[c*x])*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d
] + Sqrt[c^2*d + e])])/(2*e^3) + ((a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I
*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(2*e^3) - ((I/2)*b*PolyLo
g[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e]))])/e^3
- ((I/2)*b*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*
d + e])])/e^3 - ((I/2)*b*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt
[-d] + Sqrt[c^2*d + e]))])/e^3 - ((I/2)*b*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c
*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/e^3
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 377

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)/((c_) + (d_.)*(x_)^(n_)), x_Symbol] :> Su
bst[Int[1/(c - (b*c - a*d)*x^n), x], x, x/(a + b*x^n)^(1/n)] /; FreeQ[{a, b
, c, d}, x] && NeQ[b*c - a*d, 0] && EqQ[n*p + 1, 0] && IntegerQ[n]
```

Rule 382

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> -Simp[(b*x*(a + b*x^n)^(p + 1)*(c + d*x^n)^(q + 1))/(a*n*(p + 1)*(b*c -
a*d)), x] + Dist[(b*c + n*(p + 1)*(b*c - a*d))/(a*n*(p + 1)*(b*c - a*d)), I
nt[(a + b*x^n)^(p + 1)*(c + d*x^n)^q, x], x] /; FreeQ[{a, b, c, d, n, q}, x
] && NeQ[b*c - a*d, 0] && EqQ[n*(p + q + 2) + 1, 0] && (LtQ[p, -1] ||  !LtQ
[q, -1]) && NeQ[p, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x]))/(2*e*(p + 1)), x]
 - Dist[(b*c)/(2*e*(p + 1)), Int[(d + e*x^2)^(p + 1)/Sqrt[1 - c^2*x^2], x],
 x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[c^2*d + e, 0] && NeQ[p, -1]
```

Rule 4733

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (
f*x)^m*(d + e*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[c^2*d +
 e, 0] && IGtQ[n, 0] && IntegerQ[p] && IntegerQ[m]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{x^5\left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^3}\,dx = \int \left(\frac{d^2x\left(a+b\sin^{-1}(cx)\right)}{e^2\left(d+ex^2\right)^3} - \frac{2dx\left(a+b\sin^{-1}(cx)\right)}{e^2\left(d+ex^2\right)^2} + \frac{x\left(a+b\sin^{-1}(cx)\right)}{e^2\left(d+ex^2\right)}\right)dx$$

$$= \frac{\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{d+ex^2}\,dx}{e^2} - \frac{(2d)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^2}\,dx}{e^2} + \frac{d^2\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^3}\,dx}{e^2}$$

$$= -\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{4e^3\left(d+ex^2\right)^2} + \frac{d\left(a+b\sin^{-1}(cx)\right)}{e^3\left(d+ex^2\right)} - \frac{(bcd)\int \frac{1}{\sqrt{1-c^2x^2}\left(d+ex^2\right)}\,dx}{e^3} + \frac{\left(bcd^2\right)\int -}{}$$

$$= \frac{bcdx\sqrt{1-c^2x^2}}{8e^2\left(c^2d+e\right)\left(d+ex^2\right)} - \frac{d^2\left(a+b\sin^{-1}(cx)\right)}{4e^3\left(d+ex^2\right)^2} + \frac{d\left(a+b\sin^{-1}(cx)\right)}{e^3\left(d+ex^2\right)} - \frac{(bcd)\,\mathrm{Subst}\left(\int\right.}{}$$

$$= \frac{bcdx\sqrt{1-c^2x^2}}{8e^2\left(c^2d+e\right)\left(d+ex^2\right)} - \frac{d^2\left(a+b\sin^{-1}(cx)\right)}{4e^3\left(d+ex^2\right)^2} + \frac{d\left(a+b\sin^{-1}(cx)\right)}{e^3\left(d+ex^2\right)} - \frac{bc\sqrt{d}\tan^{-1}\left(\right.}{e^3\sqrt{c^2d}}$$

$$= \frac{bcdx\sqrt{1-c^2x^2}}{8e^2\left(c^2d+e\right)\left(d+ex^2\right)} - \frac{d^2\left(a+b\sin^{-1}(cx)\right)}{4e^3\left(d+ex^2\right)^2} + \frac{d\left(a+b\sin^{-1}(cx)\right)}{e^3\left(d+ex^2\right)} - \frac{i\left(a+b\sin^{-1}(\right.}{2be^3}$$

$$= \frac{bcdx\sqrt{1-c^2x^2}}{8e^2\left(c^2d+e\right)\left(d+ex^2\right)} - \frac{d^2\left(a+b\sin^{-1}(cx)\right)}{4e^3\left(d+ex^2\right)^2} + \frac{d\left(a+b\sin^{-1}(cx)\right)}{e^3\left(d+ex^2\right)} - \frac{i\left(a+b\sin^{-1}(\right.}{2be^3}$$

$$= \frac{bcdx\sqrt{1-c^2x^2}}{8e^2\left(c^2d+e\right)\left(d+ex^2\right)} - \frac{d^2\left(a+b\sin^{-1}(cx)\right)}{4e^3\left(d+ex^2\right)^2} + \frac{d\left(a+b\sin^{-1}(cx)\right)}{e^3\left(d+ex^2\right)} - \frac{i\left(a+b\sin^{-1}(\right.}{2be^3}$$

$$= \frac{bcdx\sqrt{1-c^2x^2}}{8e^2\left(c^2d+e\right)\left(d+ex^2\right)} - \frac{d^2\left(a+b\sin^{-1}(cx)\right)}{4e^3\left(d+ex^2\right)^2} + \frac{d\left(a+b\sin^{-1}(cx)\right)}{e^3\left(d+ex^2\right)} - \frac{i\left(a+b\sin^{-1}(\right.}{2be^3}$$

Mathematica [A] time = 6.92, size = 1030, normalized size = 1.46

$$-\frac{ad^2}{4e^3\left(ex^2+d\right)^2} + \frac{ad}{e^3\left(ex^2+d\right)} + \frac{a\log\left(ex^2+d\right)}{2e^3} + b\left(\frac{7\sqrt{d}\left(\frac{\sin^{-1}(cx)}{i\sqrt{e}x+\sqrt{d}} - \frac{c\tan^{-1}\left(\frac{\sqrt{d}xc^2+i\sqrt{e}}{\sqrt{dc^2+e}\sqrt{1-c^2x^2}}\right)}{\sqrt{dc^2+e}}\right)}{16e^3} - \frac{7i\sqrt{d}\left(-\frac{\sin^{-1}(cx)}{\sqrt{e}x+i\sqrt{d}} - \frac{c}{}\right.}{16}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^5*(a + b*ArcSin[c*x]))/(d + e*x^2)^3,x]
```

```
[Out] -1/4*(a*d^2)/(e^3*(d + e*x^2)^2) + (a*d)/(e^3*(d + e*x^2)) + (a*Log[d + e*x
^2])/(2*e^3) + b*((7*Sqrt[d]*(ArcSin[c*x]/(Sqrt[d] + I*Sqrt[e]*x) - (c*ArcT
an[(I*Sqrt[e] + c^2*Sqrt[d]*x)/(Sqrt[c^2*d + e]*Sqrt[1 - c^2*x^2])])/Sqrt[c
^2*d + e]))/(16*e^3) - (((7*I)/16)*Sqrt[d]*(-(ArcSin[c*x]/(I*Sqrt[d] + Sqrt
[e]*x)) - (c*ArcTanh[(Sqrt[e] + I*c^2*Sqrt[d]*x)/(Sqrt[c^2*d + e]*Sqrt[1 -
c^2*x^2])])/Sqrt[c^2*d + e]))/e^3 - (d*(-((c*Sqrt[1 - c^2*x^2])/((c^2*d + e
)*((-I)*Sqrt[d] + Sqrt[e]*x))) - ArcSin[c*x]/(Sqrt[e]*((-I)*Sqrt[d] + Sqrt[
e]*x)^2) - (I*c^3*Sqrt[d]*(Log[4] + Log[(e*Sqrt[c^2*d + e]*(Sqrt[e] - I*c^2
*Sqrt[d]*x + Sqrt[c^2*d + e]*Sqrt[1 - c^2*x^2]))/(c^3*(d + I*Sqrt[d]*Sqrt[e
]*x))]))/(Sqrt[e]*(c^2*d + e)^(3/2))))/(16*e^(5/2)) - (d*(-((c*Sqrt[1 - c^2
*x^2])/((c^2*d + e)*(I*Sqrt[d] + Sqrt[e]*x))) - ArcSin[c*x]/(Sqrt[e]*(I*Sqr
t[d] + Sqrt[e]*x)^2) + (I*c^3*Sqrt[d]*(Log[4] + Log[(e*Sqrt[c^2*d + e]*(Sqr
t[e] + I*c^2*Sqrt[d]*x + Sqrt[c^2*d + e]*Sqrt[1 - c^2*x^2]))/(c^3*(d - I*Sq
rt[d]*Sqrt[e]*x))]))/(Sqrt[e]*(c^2*d + e)^(3/2))))/(16*e^(5/2)) - ((I/4)*(A
rcSin[c*x]*(ArcSin[c*x] + (2*I)*(Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqr
t[d] - Sqrt[c^2*d + e])] + Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] +
 Sqrt[c^2*d + e])])) + 2*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(-(c*Sqrt[d
]) + Sqrt[c^2*d + e])] + 2*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt
[d] + Sqrt[c^2*d + e]))]))/e^3 - ((I/4)*(ArcSin[c*x]*(ArcSin[c*x] + (2*I)*(
Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(-(c*Sqrt[d]) + Sqrt[c^2*d + e])] + Log
[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e])])) + 2*PolyL
og[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] - Sqrt[c^2*d + e])] + 2*PolyLo
g[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e])]))/e^3)
```

fricas [F] time = 0.75, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bx^5 \arcsin(cx) + ax^5}{e^3x^6 + 3\,de^2x^4 + 3\,d^2ex^2 + d^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x))/(e*x^2+d)^3,x, algorithm="fricas")
```

```
[Out] integral((b*x^5*arcsin(c*x) + a*x^5)/(e^3*x^6 + 3*d*e^2*x^4 + 3*d^2*e*x^2 +
 d^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b \arcsin(cx) + a)x^5}{\left(ex^2 + d\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x))/(e*x^2+d)^3,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)*x^5/(e*x^2 + d)^3, x)
```

maple [C] time = 2.88, size = 5124, normalized size = 7.27

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(a+b*arcsin(c*x))/(e*x^2+d)^3,x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{4}\,a\left(\frac{4\,dex^2 + 3\,d^2}{e^5x^4 + 2\,de^4x^2 + d^2e^3} + \frac{2\,\log\left(ex^2 + d\right)}{e^3}\right) + b\int \frac{x^5 \arctan\left(cx, \sqrt{cx + 1}\,\sqrt{-cx + 1}\right)}{e^3x^6 + 3\,de^2x^4 + 3\,d^2ex^2 + d^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(a+b*arcsin(c*x))/(e*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] 1/4*a*((4*d*e*x^2 + 3*d^2)/(e^5*x^4 + 2*d*e^4*x^2 + d^2*e^3) + 2*log(e*x^2
+ d)/e^3) + b*integrate(x^5*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/(e^3
*x^6 + 3*d*e^2*x^4 + 3*d^2*e*x^2 + d^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^5\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(e\,x^2+d\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(a + b*asin(c*x)))/(d + e*x^2)^3,x)
```

```
[Out] int((x^5*(a + b*asin(c*x)))/(d + e*x^2)^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(a+b*asin(c*x))/(e*x**2+d)**3,x)
```

```
[Out] Timed out
```

3.642 $\int \frac{x^3(a+b\sin^{-1}(cx))}{(d+ex^2)^3}\,dx$

Optimal. Leaf size=153

$$\frac{x^4\left(a+b\sin^{-1}(cx)\right)}{4d\left(d+ex^2\right)^2}+\frac{bc\left(2c^2d+3e\right)\tan^{-1}\left(\frac{x\sqrt{c^2d+e}}{\sqrt{d}\sqrt{1-c^2x^2}}\right)}{8\sqrt{d}\,e^2\left(c^2d+e\right)^{3/2}}-\frac{bcx\sqrt{1-c^2x^2}}{8e\left(c^2d+e\right)\left(d+ex^2\right)}-\frac{b\sin^{-1}(cx)}{4de^2}$$

```
[Out] -1/4*b*arcsin(c*x)/d/e^2+1/4*x^4*(a+b*arcsin(c*x))/d/(e*x^2+d)^2+1/8*b*c*(2
*c^2*d+3*e)*arctan(x*(c^2*d+e)^(1/2)/d^(1/2)/(-c^2*x^2+1)^(1/2))/e^2/(c^2*d
+e)^(3/2)/d^(1/2)-1/8*b*c*x*(-c^2*x^2+1)^(1/2)/e/(c^2*d+e)/(e*x^2+d)
```

Rubi [A] time = 0.19, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 8, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.381, Rules used = {264, 4731, 12, 470, 523, 216, 377, 205}

$$\frac{x^4\left(a+b\sin^{-1}(cx)\right)}{4d\left(d+ex^2\right)^2}+\frac{bc\left(2c^2d+3e\right)\tan^{-1}\left(\frac{x\sqrt{c^2d+e}}{\sqrt{d}\sqrt{1-c^2x^2}}\right)}{8\sqrt{d}\,e^2\left(c^2d+e\right)^{3/2}}-\frac{bcx\sqrt{1-c^2x^2}}{8e\left(c^2d+e\right)\left(d+ex^2\right)}-\frac{b\sin^{-1}(cx)}{4de^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*ArcSin[c*x]))/(d + e*x^2)^3,x]
```

```
[Out] -(b*c*x*Sqrt[1 - c^2*x^2])/(8*e*(c^2*d + e)*(d + e*x^2)) - (b*ArcSin[c*x])/
(4*d*e^2) + (x^4*(a + b*ArcSin[c*x]))/(4*d*(d + e*x^2)^2) + (b*c*(2*c^2*d +
 3*e)*ArcTan[(Sqrt[c^2*d + e]*x)/(Sqrt[d]*Sqrt[1 - c^2*x^2])])/(8*Sqrt[d]*e
^2*(c^2*d + e)^(3/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 216

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSin[(Rt[-b, 2]*x)/Sqr
t[a]]/Rt[-b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && NegQ[b]
```

Rule 264

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c
*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] /; FreeQ[{a, b, c, m, n,
 p}, x] && EqQ[(m + 1)/n + p + 1, 0] && NeQ[m, -1]
```

Rule 377

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)/((c_) + (d_.)*(x_)^(n_)), x_Symbol] :> Su
bst[Int[1/(c - (b*c - a*d)*x^n), x], x, x/(a + b*x^n)^(1/n)] /; FreeQ[{a, b
, c, d}, x] && NeQ[b*c - a*d, 0] && EqQ[n*p + 1, 0] && IntegerQ[n]
```

Rule 470

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_
))^(q_), x_Symbol] :> -Simp[(a*e^(2*n - 1)*(e*x)^(m - 2*n + 1)*(a + b*x^n)^
(p + 1)*(c + d*x^n)^(q + 1))/(b*n*(b*c - a*d)*(p + 1)), x] + Dist[e^(2*n)/(
b*n*(b*c - a*d)*(p + 1)), Int[(e*x)^(m - 2*n)*(a + b*x^n)^(p + 1)*(c + d*x^
n)^q*Simp[a*c*(m - 2*n + 1) + (a*d*(m - n + n*q + 1) + b*c*n*(p + 1))*x^n,
x], x], x] /; FreeQ[{a, b, c, d, e, q}, x] && NeQ[b*c - a*d, 0] && IGtQ[n,
0] && LtQ[p, -1] && GtQ[m - n + 1, n] && IntBinomialQ[a, b, c, d, e, m, n,
p, q, x]
```

Rule 523

```
Int[((e_) + (f_.)*(x_)^(n_))/(((a_) + (b_.)*(x_)^(n_))*Sqrt[(c_) + (d_.)*(x
_)^(n_)]), x_Symbol] :> Dist[f/b, Int[1/Sqrt[c + d*x^n], x], x] + Dist[(b*e
 - a*f)/b, Int[1/((a + b*x^n)*Sqrt[c + d*x^n]), x], x] /; FreeQ[{a, b, c, d
, e, f, n}, x]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_
)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist
[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*
x^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[c^2*d + e, 0] &
& IntegerQ[p] && (GtQ[p, 0] || (IGtQ[(m - 1)/2, 0] && LeQ[m + p, 0]))
```

Rubi steps

$$\int \frac{x^3\left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^3}\,dx=\frac{x^4\left(a+b\sin^{-1}(cx)\right)}{4d\left(d+ex^2\right)^2}-(bc)\int\frac{x^4}{4d\sqrt{1-c^2x^2}\left(d+ex^2\right)^2}\,dx$$

$$=\frac{x^4\left(a+b\sin^{-1}(cx)\right)}{4d\left(d+ex^2\right)^2}-\frac{(bc)\int\frac{x^4}{\sqrt{1-c^2x^2}\left(d+ex^2\right)^2}\,dx}{4d}$$

$$=-\frac{bcx\sqrt{1-c^2x^2}}{8e\left(c^2d+e\right)\left(d+ex^2\right)}+\frac{x^4\left(a+b\sin^{-1}(cx)\right)}{4d\left(d+ex^2\right)^2}+\frac{(bc)\int\frac{d-2\left(c^2d+e\right)x^2}{\sqrt{1-c^2x^2}\left(d+ex^2\right)}\,dx}{8de\left(c^2d+e\right)}$$

$$=-\frac{bcx\sqrt{1-c^2x^2}}{8e\left(c^2d+e\right)\left(d+ex^2\right)}+\frac{x^4\left(a+b\sin^{-1}(cx)\right)}{4d\left(d+ex^2\right)^2}-\frac{(bc)\int\frac{1}{\sqrt{1-c^2x^2}}\,dx}{4de^2}+\frac{\left(bc\left(2c^2d+3e\right)\right.}{8e^2}$$

$$=-\frac{bcx\sqrt{1-c^2x^2}}{8e\left(c^2d+e\right)\left(d+ex^2\right)}-\frac{b\sin^{-1}(cx)}{4de^2}+\frac{x^4\left(a+b\sin^{-1}(cx)\right)}{4d\left(d+ex^2\right)^2}+\frac{\left(bc\left(2c^2d+3e\right)\right)\text{Subs}}{8}$$

$$=-\frac{bcx\sqrt{1-c^2x^2}}{8e\left(c^2d+e\right)\left(d+ex^2\right)}-\frac{b\sin^{-1}(cx)}{4de^2}+\frac{x^4\left(a+b\sin^{-1}(cx)\right)}{4d\left(d+ex^2\right)^2}+\frac{bc\left(2c^2d+3e\right)\tan^{-1}\left(\right.}{8\sqrt{d}\,e^2\left(c^2d+\right.}$$

Mathematica [A] time = 0.54, size = 152, normalized size = 0.99

$$-\frac{\frac{2a\left(d+2ex^2\right)+\frac{bcex\sqrt{1-c^2x^2}\left(d+ex^2\right)}{c^2d+e}}{\left(d+ex^2\right)^2}+\frac{bc\left(2c^2d+3e\right)\tan^{-1}\left(\frac{x\sqrt{c^2d+e}}{\sqrt{d}\sqrt{1-c^2x^2}}\right)}{\sqrt{d}\left(c^2d+e\right)^{3/2}}-\frac{2b\sin^{-1}(cx)\left(d+2ex^2\right)}{\left(d+ex^2\right)^2}}{8e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(a + b*ArcSin[c*x]))/(d + e*x^2)^3,x]
```

```
[Out] (-(((b*c*e*x*Sqrt[1 - c^2*x^2]*(d + e*x^2))/(c^2*d + e) + 2*a*(d + 2*e*x^2)
)/(d + e*x^2)^2) - (2*b*(d + 2*e*x^2)*ArcSin[c*x])/(d + e*x^2)^2 + (b*c*(2*
c^2*d + 3*e)*ArcTan[(Sqrt[c^2*d + e]*x)/(Sqrt[d]*Sqrt[1 - c^2*x^2])])/(Sqrt
[d]*(c^2*d + e)^(3/2)))/(8*e^2)
```

fricas [B] time = 1.17, size = 921, normalized size = 6.02

$$\left[-\frac{8\,ac^4d^4 + 16\,ac^2d^3e + 8\,ad^2e^2 + 16\left(ac^4d^3e + 2\,ac^2d^2e^2 + ade^3\right)x^2 + \left(2\,bc^3d^3 + 3\,bcd^2e + \left(2\,bc^3de^2 + 3\,bce^3\right)x \cdots}{\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(e*x^2+d)^3,x, algorithm="fricas")
```

```
[Out] [-1/32*(8*a*c^4*d^4 + 16*a*c^2*d^3*e + 8*a*d^2*e^2 + 16*(a*c^4*d^3*e + 2*a*
c^2*d^2*e^2 + a*d*e^3)*x^2 + (2*b*c^3*d^3 + 3*b*c*d^2*e + (2*b*c^3*d*e^2 +
3*b*c*e^3)*x^4 + 2*(2*b*c^3*d^2*e + 3*b*c*d*e^2)*x^2)*sqrt(-c^2*d^2 - d*e)*
log(((8*c^4*d^2 + 8*c^2*d*e + e^2)*x^4 - 2*(4*c^2*d^2 + 3*d*e)*x^2 - 4*sqrt
(-c^2*d^2 - d*e)*sqrt(-c^2*x^2 + 1)*((2*c^2*d + e)*x^3 - d*x) + d^2)/(e^2*x
^4 + 2*d*e*x^2 + d^2)) + 8*(b*c^4*d^4 + 2*b*c^2*d^3*e + b*d^2*e^2 + 2*(b*c^
4*d^3*e + 2*b*c^2*d^2*e^2 + b*d*e^3)*x^2)*arcsin(c*x) + 4*sqrt(-c^2*x^2 + 1
)*((b*c^3*d^2*e^2 + b*c*d*e^3)*x^3 + (b*c^3*d^3*e + b*c*d^2*e^2)*x))/(c^4*d
^5*e^2 + 2*c^2*d^4*e^3 + d^3*e^4 + (c^4*d^3*e^4 + 2*c^2*d^2*e^5 + d*e^6)*x^
4 + 2*(c^4*d^4*e^3 + 2*c^2*d^3*e^4 + d^2*e^5)*x^2), -1/16*(4*a*c^4*d^4 + 8*
a*c^2*d^3*e + 4*a*d^2*e^2 + 8*(a*c^4*d^3*e + 2*a*c^2*d^2*e^2 + a*d*e^3)*x^2
 + (2*b*c^3*d^3 + 3*b*c*d^2*e + (2*b*c^3*d*e^2 + 3*b*c*e^3)*x^4 + 2*(2*b*c^
3*d^2*e + 3*b*c*d*e^2)*x^2)*sqrt(c^2*d^2 + d*e)*arctan(1/2*sqrt(c^2*d^2 + d
*e)*sqrt(-c^2*x^2 + 1)*((2*c^2*d + e)*x^2 - d)/((c^4*d^2 + c^2*d*e)*x^3 - (
c^2*d^2 + d*e)*x)) + 4*(b*c^4*d^4 + 2*b*c^2*d^3*e + b*d^2*e^2 + 2*(b*c^4*d^
3*e + 2*b*c^2*d^2*e^2 + b*d*e^3)*x^2)*arcsin(c*x) + 2*sqrt(-c^2*x^2 + 1)*((
b*c^3*d^2*e^2 + b*c*d*e^3)*x^3 + (b*c^3*d^3*e + b*c*d^2*e^2)*x))/(c^4*d^5*e
^2 + 2*c^2*d^4*e^3 + d^3*e^4 + (c^4*d^3*e^4 + 2*c^2*d^2*e^5 + d*e^6)*x^4 +
2*(c^4*d^4*e^3 + 2*c^2*d^3*e^4 + d^2*e^5)*x^2)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b \arcsin(cx) + a)x^3}{\left(ex^2 + d\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(e*x^2+d)^3,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)*x^3/(e*x^2 + d)^3, x)
```

maple [B] time = 0.02, size = 1055, normalized size = 6.90

$$-\frac{c^2 a}{2e^2\left(c^2 e\,x^2 + c^2 d\right)} + \frac{c^4 a d}{4e^2\left(c^2 e\,x^2 + c^2 d\right)^2} - \frac{c^2 b \arcsin(cx)}{2e^2\left(c^2 e\,x^2 + c^2 d\right)} + \frac{c^4 b \arcsin(cx)\,d}{4e^2\left(c^2 e\,x^2 + c^2 d\right)^2} + \frac{3c^2 b \ln\left(\frac{\frac{2c^2d+2e}{e} + \frac{2\sqrt{-c^2ed}\left(cx + \frac{\sqrt{-c \cdots}}{e}\right)}{e} \cdots}{\cdots}\right)}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+b*arcsin(c*x))/(e*x^2+d)^3,x)
```

```
[Out] -1/2*c^2*a/e^2/(c^2*e*x^2+c^2*d)+1/4*c^4*a/e^2*d/(c^2*e*x^2+c^2*d)^2-1/2*c^
2*b*arcsin(c*x)/e^2/(c^2*e*x^2+c^2*d)+1/4*c^4*b*arcsin(c*x)/e^2*d/(c^2*e*x^
2+c^2*d)^2+3/16*c^2*b/e^2/(-c^2*e*d)^(1/2)/((c^2*d+e)/e)^(1/2)*ln((2*(c^2*d
+e)/e+2*(-c^2*e*d)^(1/2)/e*(c*x+(-c^2*e*d)^(1/2)/e)+2*((c^2*d+e)/e)^(1/2)*(
-(c*x+(-c^2*e*d)^(1/2)/e)^2+2*(-c^2*e*d)^(1/2)/e*(c*x+(-c^2*e*d)^(1/2)/e)+(
c^2*d+e)/e)^(1/2))/(c*x+(-c^2*e*d)^(1/2)/e))-3/16*c^2*b/e^2/(-c^2*e*d)^(1/2
)/((c^2*d+e)/e)^(1/2)*ln((2*(c^2*d+e)/e-2*(-c^2*e*d)^(1/2)/e*(c*x-(-c^2*e*d
)^(1/2)/e)+2*((c^2*d+e)/e)^(1/2)*(-(c*x-(-c^2*e*d)^(1/2)/e)^2-2*(-c^2*e*d)^
(1/2)/e*(c*x-(-c^2*e*d)^(1/2)/e)+(c^2*d+e)/e)^(1/2))/(c*x-(-c^2*e*d)^(1/2)/
e))-1/16*c^2*b/e^2/(c^2*d+e)/(c*x-(-c^2*e*d)^(1/2)/e)*(-(c*x-(-c^2*e*d)^(1/
2)/e)^2-2*(-c^2*e*d)^(1/2)/e*(c*x-(-c^2*e*d)^(1/2)/e)+(c^2*d+e)/e)^(1/2)-1/
16*c^2*b/e^3*(-c^2*e*d)^(1/2)/(c^2*d+e)/((c^2*d+e)/e)^(1/2)*ln((2*(c^2*d+e)
/e-2*(-c^2*e*d)^(1/2)/e*(c*x-(-c^2*e*d)^(1/2)/e)+2*((c^2*d+e)/e)^(1/2)*(-(c
*x-(-c^2*e*d)^(1/2)/e)^2-2*(-c^2*e*d)^(1/2)/e*(c*x-(-c^2*e*d)^(1/2)/e)+(c^2
*d+e)/e)^(1/2))/(c*x-(-c^2*e*d)^(1/2)/e))-1/16*c^2*b/e^2/(c^2*d+e)/(c*x+(-c
^2*e*d)^(1/2)/e)*(-(c*x+(-c^2*e*d)^(1/2)/e)^2+2*(-c^2*e*d)^(1/2)/e*(c*x+(-c
^2*e*d)^(1/2)/e)+(c^2*d+e)/e)^(1/2)+1/16*c^2*b/e^3*(-c^2*e*d)^(1/2)/(c^2*d+
e)/((c^2*d+e)/e)^(1/2)*ln((2*(c^2*d+e)/e+2*(-c^2*e*d)^(1/2)/e*(c*x+(-c^2*e*
d)^(1/2)/e)+2*((c^2*d+e)/e)^(1/2)*(-(c*x+(-c^2*e*d)^(1/2)/e)^2+2*(-c^2*e*d)
^(1/2)/e*(c*x+(-c^2*e*d)^(1/2)/e)+(c^2*d+e)/e)^(1/2))/(c*x+(-c^2*e*d)^(1/2)
/e))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\left(2\,ex^2+d\right)a}{4\left(e^4x^4+2\,de^3x^2+d^2e^2\right)}-\frac{\left(\left(2\,ex^2+d\right)\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+\left(e^4x^4+2\,de^3x^2+d^2e^2\right)\int\frac{}{c^4e^4x^8-c^2d^2e^2x^2}\right.}{4\left(e^4x^4+2\,de\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+b*arcsin(c*x))/(e*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] -1/4*(2*e*x^2 + d)*a/(e^4*x^4 + 2*d*e^3*x^2 + d^2*e^2) - 1/4*((2*e*x^2 + d)
*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + 4*(e^4*x^4 + 2*d*e^3*x^2 + d^
2*e^2)*integrate(1/4*(2*c*e*x^2 + c*d)*e^(1/2*log(c*x + 1) + 1/2*log(-c*x +
 1))/(c^4*e^4*x^8 - c^2*d^2*e^2*x^2 + (2*c^4*d*e^3 - c^2*e^4)*x^6 + (c^4*d^
2*e^2 - 2*c^2*d*e^3)*x^4 + (c^2*e^4*x^6 + (2*c^2*d*e^3 - e^4)*x^4 - d^2*e^2
 + (c^2*d^2*e^2 - 2*d*e^3)*x^2)*e^(log(c*x + 1) + log(-c*x + 1))), x))*b/(e
^4*x^4 + 2*d*e^3*x^2 + d^2*e^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^3\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(e\,x^2+d\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(a + b*asin(c*x)))/(d + e*x^2)^3,x)
```

```
[Out] int((x^3*(a + b*asin(c*x)))/(d + e*x^2)^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+b*asin(c*x))/(e*x**2+d)**3,x)
```

```
[Out] Timed out
```

3.643 $\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^3}\,dx$

Optimal. Leaf size=133

$$-\frac{a+b\sin^{-1}(cx)}{4e\left(d+ex^2\right)^2}+\frac{bc\left(2c^2d+e\right)\tan^{-1}\left(\frac{x\sqrt{c^2d+e}}{\sqrt{d}\sqrt{1-c^2x^2}}\right)}{8d^{3/2}e\left(c^2d+e\right)^{3/2}}+\frac{bcx\sqrt{1-c^2x^2}}{8d\left(c^2d+e\right)\left(d+ex^2\right)}$$

```
[Out] 1/4*(-a-b*arcsin(c*x))/e/(e*x^2+d)^2+1/8*b*c*(2*c^2*d+e)*arctan(x*(c^2*d+e)
^(1/2)/d^(1/2)/(-c^2*x^2+1)^(1/2))/d^(3/2)/e/(c^2*d+e)^(3/2)+1/8*b*c*x*(-c^
2*x^2+1)^(1/2)/d/(c^2*d+e)/(e*x^2+d)
```

Rubi [A] time = 0.10, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {4729, 382, 377, 205}

$$-\frac{a+b\sin^{-1}(cx)}{4e\left(d+ex^2\right)^2}+\frac{bc\left(2c^2d+e\right)\tan^{-1}\left(\frac{x\sqrt{c^2d+e}}{\sqrt{d}\sqrt{1-c^2x^2}}\right)}{8d^{3/2}e\left(c^2d+e\right)^{3/2}}+\frac{bcx\sqrt{1-c^2x^2}}{8d\left(c^2d+e\right)\left(d+ex^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*ArcSin[c*x]))/(d + e*x^2)^3,x]
```

```
[Out] (b*c*x*Sqrt[1 - c^2*x^2])/(8*d*(c^2*d + e)*(d + e*x^2)) - (a + b*ArcSin[c*x
])/(4*e*(d + e*x^2)^2) + (b*c*(2*c^2*d + e)*ArcTan[(Sqrt[c^2*d + e]*x)/(Sqr
t[d]*Sqrt[1 - c^2*x^2])])/(8*d^(3/2)*e*(c^2*d + e)^(3/2))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 377

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)/((c_) + (d_.)*(x_)^(n_)), x_Symbol] :> Su
bst[Int[1/(c - (b*c - a*d)*x^n), x], x, x/(a + b*x^n)^(1/n)] /; FreeQ[{a, b
, c, d}, x] && NeQ[b*c - a*d, 0] && EqQ[n*p + 1, 0] && IntegerQ[n]
```

Rule 382

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> -Simp[(b*x*(a + b*x^n)^(p + 1)*(c + d*x^n)^(q + 1))/(a*n*(p + 1)*(b*c -
a*d)), x] + Dist[(b*c + n*(p + 1)*(b*c - a*d))/(a*n*(p + 1)*(b*c - a*d)), I
nt[(a + b*x^n)^(p + 1)*(c + d*x^n)^q, x], x] /; FreeQ[{a, b, c, d, n, q}, x
] && NeQ[b*c - a*d, 0] && EqQ[n*(p + q + 2) + 1, 0] && (LtQ[p, -1] ||  !LtQ
[q, -1]) && NeQ[p, -1]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x]))/(2*e*(p + 1)), x]
 - Dist[(b*c)/(2*e*(p + 1)), Int[(d + e*x^2)^(p + 1)/Sqrt[1 - c^2*x^2], x],
 x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[c^2*d + e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^3}\,dx = -\frac{a+b\sin^{-1}(cx)}{4e\left(d+ex^2\right)^2} + \frac{(bc)\int \frac{1}{\sqrt{1-c^2x^2}\left(d+ex^2\right)^2}\,dx}{4e}$$

$$= \frac{bcx\sqrt{1-c^2x^2}}{8d\left(c^2d+e\right)\left(d+ex^2\right)} - \frac{a+b\sin^{-1}(cx)}{4e\left(d+ex^2\right)^2} + \frac{\left(bc\left(2c^2d+e\right)\right)\int \frac{1}{\sqrt{1-c^2x^2}\left(d+ex^2\right)}\,dx}{8de\left(c^2d+e\right)}$$

$$= \frac{bcx\sqrt{1-c^2x^2}}{8d\left(c^2d+e\right)\left(d+ex^2\right)} - \frac{a+b\sin^{-1}(cx)}{4e\left(d+ex^2\right)^2} + \frac{\left(bc\left(2c^2d+e\right)\right)\text{Subst}\left(\int \frac{1}{d-\left(-c^2d-e\right)x^2}\,dx, x,\right.}{8de\left(c^2d+e\right)}$$

$$= \frac{bcx\sqrt{1-c^2x^2}}{8d\left(c^2d+e\right)\left(d+ex^2\right)} - \frac{a+b\sin^{-1}(cx)}{4e\left(d+ex^2\right)^2} + \frac{bc\left(2c^2d+e\right)\tan^{-1}\left(\frac{\sqrt{c^2d+e}\,x}{\sqrt{d}\,\sqrt{1-c^2x^2}}\right)}{8d^{3/2}e\left(c^2d+e\right)^{3/2}}$$

Mathematica [A] time = 0.59, size = 141, normalized size = 1.06

$$\frac{1}{8}\left(\frac{\frac{bcx\sqrt{1-c^2x^2}\left(d+ex^2\right)}{d\left(c^2d+e\right)}-\frac{2a}{e}}{\left(d+ex^2\right)^2}+\frac{bc\left(2c^2d+e\right)\tan^{-1}\left(\frac{x\sqrt{c^2d+e}}{\sqrt{d}\,\sqrt{1-c^2x^2}}\right)}{d^{3/2}e\left(c^2d+e\right)^{3/2}}-\frac{2b\sin^{-1}(cx)}{e\left(d+ex^2\right)^2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*ArcSin[c*x]))/(d + e*x^2)^3,x]
```

```
[Out] (((-2*a)/e + (b*c*x*Sqrt[1 - c^2*x^2]*(d + e*x^2))/(d*(c^2*d + e)))/(d + e*
x^2)^2 - (2*b*ArcSin[c*x])/(e*(d + e*x^2)^2) + (b*c*(2*c^2*d + e)*ArcTan[(S
qrt[c^2*d + e]*x)/(Sqrt[d]*Sqrt[1 - c^2*x^2])])/(d^(3/2)*e*(c^2*d + e)^(3/2
)))/8
```

fricas [B] time = 0.72, size = 783, normalized size = 5.89

$$\left[-\frac{8\,ac^4d^4+16\,ac^2d^3e+8\,ad^2e^2+\left(2\,bc^3d^3+bcd^2e+\left(2\,bc^3de^2+bce^3\right)x^4+2\left(2\,bc^3d^2e+bcde^2\right)x^2\right)\sqrt{-c^2d^2-de}\,1}{32\left(c^4d^6e+2\,c\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(e*x^2+d)^3,x, algorithm="fricas")
```

```
[Out] [-1/32*(8*a*c^4*d^4 + 16*a*c^2*d^3*e + 8*a*d^2*e^2 + (2*b*c^3*d^3 + b*c*d^2
*e + (2*b*c^3*d*e^2 + b*c*e^3)*x^4 + 2*(2*b*c^3*d^2*e + b*c*d*e^2)*x^2)*sqr
t(-c^2*d^2 - d*e)*log(((8*c^4*d^2 + 8*c^2*d*e + e^2)*x^4 - 2*(4*c^2*d^2 + 3
*d*e)*x^2 - 4*sqrt(-c^2*d^2 - d*e)*sqrt(-c^2*x^2 + 1)*((2*c^2*d + e)*x^3 -
d*x) + d^2)/(e^2*x^4 + 2*d*e*x^2 + d^2)) + 8*(b*c^4*d^4 + 2*b*c^2*d^3*e + b
*d^2*e^2)*arcsin(c*x) - 4*sqrt(-c^2*x^2 + 1)*((b*c^3*d^2*e^2 + b*c*d*e^3)*x
^3 + (b*c^3*d^3*e + b*c*d^2*e^2)*x))/(c^4*d^6*e + 2*c^2*d^5*e^2 + d^4*e^3 +
 (c^4*d^4*e^3 + 2*c^2*d^3*e^4 + d^2*e^5)*x^4 + 2*(c^4*d^5*e^2 + 2*c^2*d^4*e
^3 + d^3*e^4)*x^2), -1/16*(4*a*c^4*d^4 + 8*a*c^2*d^3*e + 4*a*d^2*e^2 + (2*b
*c^3*d^3 + b*c*d^2*e + (2*b*c^3*d*e^2 + b*c*e^3)*x^4 + 2*(2*b*c^3*d^2*e + b
*c*d*e^2)*x^2)*sqrt(c^2*d^2 + d*e)*arctan(1/2*sqrt(c^2*d^2 + d*e)*sqrt(-c^2
*x^2 + 1)*((2*c^2*d + e)*x^2 - d)/((c^4*d^2 + c^2*d*e)*x^3 - (c^2*d^2 + d*e
)*x)) + 4*(b*c^4*d^4 + 2*b*c^2*d^3*e + b*d^2*e^2)*arcsin(c*x) - 2*sqrt(-c^2
*x^2 + 1)*((b*c^3*d^2*e^2 + b*c*d*e^3)*x^3 + (b*c^3*d^3*e + b*c*d^2*e^2)*x)
```

```
)/(c^4*d^6*e + 2*c^2*d^5*e^2 + d^4*e^3 + (c^4*d^4*e^3 + 2*c^2*d^3*e^4 + d^2
*e^5)*x^4 + 2*(c^4*d^5*e^2 + 2*c^2*d^4*e^3 + d^3*e^4)*x^2)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b \arcsin (cx) + a)x}{(ex^2 + d)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(e*x^2+d)^3,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)*x/(e*x^2 + d)^3, x)
```

maple [B] time = 0.01, size = 1017, normalized size = 7.65

$$-\frac{c^4 a}{4e\left(c^2 e x^2 + c^2 d\right)^2} - \frac{c^4 b \arcsin (cx)}{4e\left(c^2 e x^2 + c^2 d\right)^2} + \frac{c^2 b \ln\left(\frac{\frac{2c^2 d+2e}{e} + \frac{2\sqrt{-c^2 ed}\left(cx + \frac{\sqrt{-c^2 ed}}{e}\right)}{e} + 2\sqrt{\frac{c^2 d+e}{e}}\sqrt{-\left(cx + \frac{\sqrt{-c^2 ed}}{e}\right)^2 + \frac{2\sqrt{-c^2 ed}\left(cx + \frac{\sqrt{-c^2 ed}}{e}\right)}{e}}}{cx + \frac{\sqrt{-c^2 ed}}{e}}\right)}{16 ed\sqrt{-c^2 ed}\sqrt{\frac{c^2 d+e}{e}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+b*arcsin(c*x))/(e*x^2+d)^3,x)
```

```
[Out] -1/4*c^4*a/e/(c^2*e*x^2+c^2*d)^2-1/4*c^4*b/e/(c^2*e*x^2+c^2*d)^2*arcsin(c*x
)+1/16*c^2*b/e/d/(-c^2*e*d)^(1/2)/((c^2*d+e)/e)^(1/2)*ln((2*(c^2*d+e)/e+2*(
-c^2*e*d)^(1/2)/e*(c*x+(-c^2*e*d)^(1/2)/e)+2*((c^2*d+e)/e)^(1/2)*(-(c*x+(-c
^2*e*d)^(1/2)/e)^2+2*(-c^2*e*d)^(1/2)/e*(c*x+(-c^2*e*d)^(1/2)/e)+(c^2*d+e)/
e)^(1/2))/(c*x+(-c^2*e*d)^(1/2)/e))-1/16*c^2*b/e/d/(-c^2*e*d)^(1/2)/((c^2*d
+e)/e)^(1/2)*ln((2*(c^2*d+e)/e-2*(-c^2*e*d)^(1/2)/e*(c*x-(-c^2*e*d)^(1/2)/e
)+2*((c^2*d+e)/e)^(1/2)*(-(c*x-(-c^2*e*d)^(1/2)/e)^2-2*(-c^2*e*d)^(1/2)/e*(
c*x-(-c^2*e*d)^(1/2)/e)+(c^2*d+e)/e)^(1/2))/(c*x-(-c^2*e*d)^(1/2)/e))+1/16*
c^2*b/e/d/(c^2*d+e)/(c*x-(-c^2*e*d)^(1/2)/e)*(-(c*x-(-c^2*e*d)^(1/2)/e)^2-2
*(-c^2*e*d)^(1/2)/e*(c*x-(-c^2*e*d)^(1/2)/e)+(c^2*d+e)/e)^(1/2)+1/16*c^2*b/
e^2/d*(-c^2*e*d)^(1/2)/(c^2*d+e)/((c^2*d+e)/e)^(1/2)*ln((2*(c^2*d+e)/e-2*(-
c^2*e*d)^(1/2)/e*(c*x-(-c^2*e*d)^(1/2)/e)+2*((c^2*d+e)/e)^(1/2)*(-(c*x-(-c^
2*e*d)^(1/2)/e)^2-2*(-c^2*e*d)^(1/2)/e*(c*x-(-c^2*e*d)^(1/2)/e)+(c^2*d+e)/e
)^(1/2))/(c*x-(-c^2*e*d)^(1/2)/e))+1/16*c^2*b/e/d/(c^2*d+e)/(c*x+(-c^2*e*d)
^(1/2)/e)*(-(c*x+(-c^2*e*d)^(1/2)/e)^2+2*(-c^2*e*d)^(1/2)/e*(c*x+(-c^2*e*d)
^(1/2)/e)+(c^2*d+e)/e)^(1/2)-1/16*c^2*b/e^2/d*(-c^2*e*d)^(1/2)/(c^2*d+e)/((
c^2*d+e)/e)^(1/2)*ln((2*(c^2*d+e)/e+2*(-c^2*e*d)^(1/2)/e*(c*x+(-c^2*e*d)^(1
/2)/e)+2*((c^2*d+e)/e)^(1/2)*(-(c*x+(-c^2*e*d)^(1/2)/e)^2+2*(-c^2*e*d)^(1/2
)/e*(c*x+(-c^2*e*d)^(1/2)/e)+(c^2*d+e)/e)^(1/2))/(c*x+(-c^2*e*d)^(1/2)/e))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\left(\left(ce^3x^4 + 2\,cde^2x^2 + cd^2e\right)\int \frac{e^{\left(\frac{1}{2}\,\log(cx+1)+\frac{1}{2}\,\log(-cx+1)\right)}}{c^4e^3x^8 - c^2d^2ex^2 + \left(2\,c^4de^2 - c^2e^3\right)x^6 + \left(c^4d^2e - 2\,c^2de^2\right)x^4 - \left(c^2e^3x^6 + \left(2\,c^2de^2 - e^3\right)x^4 - d^2e + \left(c^2d^2e - 2\,de^2\right)x^2\right)(cx}$$

$$\cdots\ \Big/\ 4\left(e^3x^4 + 2\,de^2x^2 + d^2e\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*arcsin(c*x))/(e*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] -1/4*(4*(c*e^3*x^4 + 2*c*d*e^2*x^2 + c*d^2*e)*integrate(1/4*e^(1/2*log(c*x
+ 1) + 1/2*log(-c*x + 1))/(c^4*e^3*x^8 - c^2*d^2*e*x^2 + (2*c^4*d*e^2 - c^2
```

```
*e^3)*x^6 + (c^4*d^2*e - 2*c^2*d*e^2)*x^4 + (c^2*e^3*x^6 + (2*c^2*d*e^2 - e
^3)*x^4 - d^2*e + (c^2*d^2*e - 2*d*e^2)*x^2)*e^(log(c*x + 1) + log(-c*x + 1
))), x) + arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))*b/(e^3*x^4 + 2*d*e^2*
x^2 + d^2*e) - 1/4*a/(e^3*x^4 + 2*d*e^2*x^2 + d^2*e)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(e\,x^2+d\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*asin(c*x)))/(d + e*x^2)^3,x)
```

```
[Out] int((x*(a + b*asin(c*x)))/(d + e*x^2)^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+b*asin(c*x))/(e*x**2+d)**3,x)
```

```
[Out] Timed out
```

3.644 $\int \frac{a+b\sin^{-1}(cx)}{x(d+ex^2)^3}\,dx$

Optimal. Leaf size=727

$$-\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2d^3}-\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(1+\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2d^3}-\frac{\left(a+b\sin^{-1}(cx)\right)\log\left(\right.}{2d^3}$$

```
[Out] 1/4*(a+b*arcsin(c*x))/d/(e*x^2+d)^2+1/2*(a+b*arcsin(c*x))/d^2/(e*x^2+d)-1/8
*b*c*(2*c^2*d+e)*arctan(x*(c^2*d+e)^(1/2)/d^(1/2)/(-c^2*x^2+1)^(1/2))/d^(5/
2)/(c^2*d+e)^(3/2)+(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^3
-1/2*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1
/2)-(c^2*d+e)^(1/2)))/d^3-1/2*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1
/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/d^3-1/2*(a+b*arcsin(c*x))*ln
(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/d^3
-1/2*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1
/2)+(c^2*d+e)^(1/2)))/d^3-1/2*I*b*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d
^3+1/2*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c
^2*d+e)^(1/2)))/d^3+1/2*I*b*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I
*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/d^3+1/2*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^
(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/d^3+1/2*I*b*polylog(2,(I*c
*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/d^3-1/2*b*
c*arctan(x*(c^2*d+e)^(1/2)/d^(1/2)/(-c^2*x^2+1)^(1/2))/d^(5/2)/(c^2*d+e)^(1
/2)-1/8*b*c*e*x*(-c^2*x^2+1)^(1/2)/d^2/(c^2*d+e)/(e*x^2+d)
```

Rubi [A] time = 1.13, antiderivative size = 727, normalized size of antiderivative = 1.00, number of steps used = 32, number of rules used = 12, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.571, Rules used = {4733, 4625, 3717, 2190, 2279, 2391, 4729, 382, 377, 205, 4741, 4521}

$$\frac{ib\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2d^3}+\frac{ib\text{PolyLog}\left(2,\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2d^3}+\frac{ib\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2d^3}+\frac{ib\text{PolyLog}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x*(d + e*x^2)^3),x]
```

```
[Out] -(b*c*e*x*Sqrt[1 - c^2*x^2])/(8*d^2*(c^2*d + e)*(d + e*x^2)) + (a + b*ArcSi
n[c*x])/(4*d*(d + e*x^2)^2) + (a + b*ArcSin[c*x])/(2*d^2*(d + e*x^2)) - (b*
c*ArcTan[(Sqrt[c^2*d + e]*x)/(Sqrt[d]*Sqrt[1 - c^2*x^2])])/(2*d^(5/2)*Sqrt[
c^2*d + e]) - (b*c*(2*c^2*d + e)*ArcTan[(Sqrt[c^2*d + e]*x)/(Sqrt[d]*Sqrt[1
 - c^2*x^2])])/(8*d^(5/2)*(c^2*d + e)^(3/2)) - ((a + b*ArcSin[c*x])*Log[1 -
 (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(2*d^3) - (
(a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqr
t[c^2*d + e])])/(2*d^3) - ((a + b*ArcSin[c*x])*Log[1 - (Sqrt[e]*E^(I*ArcSin
[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(2*d^3) - ((a + b*ArcSin[c*x])*L
og[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(2*d^
3) + ((a + b*ArcSin[c*x])*Log[1 - E^((2*I)*ArcSin[c*x])])/d^3 + ((I/2)*b*Po
lyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e]))])/
d^3 + ((I/2)*b*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[
c^2*d + e])])/d^3 + ((I/2)*b*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*
Sqrt[-d] + Sqrt[c^2*d + e]))])/d^3 + ((I/2)*b*PolyLog[2, (Sqrt[e]*E^(I*ArcS
in[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/d^3 - ((I/2)*b*PolyLog[2, E^((
2*I)*ArcSin[c*x])])/d^3
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 377

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)/((c_) + (d_.)*(x_)^(n_)), x_Symbol] :> Su
bst[Int[1/(c - (b*c - a*d)*x^n), x], x, x/(a + b*x^n)^(1/n)] /; FreeQ[{a, b
, c, d}, x] && NeQ[b*c - a*d, 0] && EqQ[n*p + 1, 0] && IntegerQ[n]
```

Rule 382

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> -Simp[(b*x*(a + b*x^n)^(p + 1)*(c + d*x^n)^(q + 1))/(a*n*(p + 1)*(b*c -
a*d)), x] + Dist[(b*c + n*(p + 1)*(b*c - a*d))/(a*n*(p + 1)*(b*c - a*d)), I
nt[(a + b*x^n)^(p + 1)*(c + d*x^n)^q, x], x] /; FreeQ[{a, b, c, d, n, q}, x
] && NeQ[b*c - a*d, 0] && EqQ[n*(p + q + 2) + 1, 0] && (LtQ[p, -1] ||  !LtQ
[q, -1]) && NeQ[p, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x]))/(2*e*(p + 1)), x]
 - Dist[(b*c)/(2*e*(p + 1)), Int[(d + e*x^2)^(p + 1)/Sqrt[1 - c^2*x^2], x],
 x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[c^2*d + e, 0] && NeQ[p, -1]
```

Rule 4733

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (
f*x)^m*(d + e*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[c^2*d +
 e, 0] && IGtQ[n, 0] && IntegerQ[p] && IntegerQ[m]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x\left(d+ex^2\right)^3}\,dx = \int \left(\frac{a+b\sin^{-1}(cx)}{d^3x} - \frac{ex\left(a+b\sin^{-1}(cx)\right)}{d\left(d+ex^2\right)^3} - \frac{ex\left(a+b\sin^{-1}(cx)\right)}{d^2\left(d+ex^2\right)^2} - \frac{ex\left(a+b\sin^{-1}(cx)\right)}{d^3\left(d+ex^2\right)}\right.$$

$$= \frac{\int \frac{a+b\sin^{-1}(cx)}{x}\,dx}{d^3} - \frac{e\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{d+ex^2}\,dx}{d^3} - \frac{e\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^2}\,dx}{d^2} - \frac{e\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^3}\,dx}{d}$$

$$= \frac{a+b\sin^{-1}(cx)}{4d\left(d+ex^2\right)^2} + \frac{a+b\sin^{-1}(cx)}{2d^2\left(d+ex^2\right)} + \frac{\operatorname{Subst}\left(\int (a+bx)\cot(x)\,dx, x, \sin^{-1}(cx)\right)}{d^3} - \frac{(bc)\int}{}$$

$$= -\frac{bcex\sqrt{1-c^2x^2}}{8d^2\left(c^2d+e\right)\left(d+ex^2\right)} + \frac{a+b\sin^{-1}(cx)}{4d\left(d+ex^2\right)^2} + \frac{a+b\sin^{-1}(cx)}{2d^2\left(d+ex^2\right)} - \frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2bd^3} -$$

$$= -\frac{bcex\sqrt{1-c^2x^2}}{8d^2\left(c^2d+e\right)\left(d+ex^2\right)} + \frac{a+b\sin^{-1}(cx)}{4d\left(d+ex^2\right)^2} + \frac{a+b\sin^{-1}(cx)}{2d^2\left(d+ex^2\right)} - \frac{i\left(a+b\sin^{-1}(cx)\right)^2}{2bd^3} -$$

$$= -\frac{bcex\sqrt{1-c^2x^2}}{8d^2\left(c^2d+e\right)\left(d+ex^2\right)} + \frac{a+b\sin^{-1}(cx)}{4d\left(d+ex^2\right)^2} + \frac{a+b\sin^{-1}(cx)}{2d^2\left(d+ex^2\right)} - \frac{bc\tan^{-1}\left(\frac{\sqrt{c^2d+e}\,x}{\sqrt{d}\sqrt{1-c^2x^2}}\right)}{2d^{5/2}\sqrt{c^2d+e}}$$

$$= -\frac{bcex\sqrt{1-c^2x^2}}{8d^2\left(c^2d+e\right)\left(d+ex^2\right)} + \frac{a+b\sin^{-1}(cx)}{4d\left(d+ex^2\right)^2} + \frac{a+b\sin^{-1}(cx)}{2d^2\left(d+ex^2\right)} - \frac{bc\tan^{-1}\left(\frac{\sqrt{c^2d+e}\,x}{\sqrt{d}\sqrt{1-c^2x^2}}\right)}{2d^{5/2}\sqrt{c^2d+e}}$$

$$= -\frac{bcex\sqrt{1-c^2x^2}}{8d^2\left(c^2d+e\right)\left(d+ex^2\right)} + \frac{a+b\sin^{-1}(cx)}{4d\left(d+ex^2\right)^2} + \frac{a+b\sin^{-1}(cx)}{2d^2\left(d+ex^2\right)} - \frac{bc\tan^{-1}\left(\frac{\sqrt{c^2d+e}\,x}{\sqrt{d}\sqrt{1-c^2x^2}}\right)}{2d^{5/2}\sqrt{c^2d+e}}$$

$$= -\frac{bcex\sqrt{1-c^2x^2}}{8d^2\left(c^2d+e\right)\left(d+ex^2\right)} + \frac{a+b\sin^{-1}(cx)}{4d\left(d+ex^2\right)^2} + \frac{a+b\sin^{-1}(cx)}{2d^2\left(d+ex^2\right)} - \frac{bc\tan^{-1}\left(\frac{\sqrt{c^2d+e}\,x}{\sqrt{d}\sqrt{1-c^2x^2}}\right)}{2d^{5/2}\sqrt{c^2d+e}}$$

Mathematica [F] time = 7.46, size = 0, normalized size = 0.00

$$\int \frac{a+b\sin^{-1}(cx)}{x\left(d+ex^2\right)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x*(d + e*x^2)^3),x]
```

```
[Out] Integrate[(a + b*ArcSin[c*x])/(x*(d + e*x^2)^3), x]
```

fricas [F] time = 0.76, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\arcsin(cx)+a}{e^3x^7+3\,de^2x^5+3\,d^2ex^3+d^3x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x/(e*x^2+d)^3,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(c*x) + a)/(e^3*x^7 + 3*d*e^2*x^5 + 3*d^2*e*x^3 + d^3*x),
 x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x/(e*x^2+d)^3,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [C] time = 0.72, size = 1379, normalized size = 1.90

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/x/(e*x^2+d)^3,x)
```

```
[Out] -1/2*a/d^3*ln(c^2*e*x^2+c^2*d)+5/8*I*b*(c^2*d*(c^2*d+e))^(1/2)/d^3/(c^2*d+e
)^2*arctanh(1/4*(2*(I*c*x+(-c^2*x^2+1)^(1/2))^2*e-4*c^2*d-2*e)/(c^4*d^2+c^2
*d*e)^(1/2))*e+3/4*I*b*c^2*(c^2*d*(c^2*d+e))^(1/2)/d^2/(c^2*d+e)^2*arctanh(
1/4*(2*(I*c*x+(-c^2*x^2+1)^(1/2))^2*e-4*c^2*d-2*e)/(c^4*d^2+c^2*d*e)^(1/2))
+1/4*I*b*c^2/d^2/(c^2*d+e)*sum((_R1^2-1)/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)
*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2)
)/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))*e+3/4*b*c^4/d/(c^2*e*x^2+
c^2*d)^2/(c^2*d+e)*arcsin(c*x)*e+I*b/d^3/(c^2*d+e)*e*dilog(I*c*x+(-c^2*x^2+
1)^(1/2))+b*c^2/d^2/(c^2*d+e)*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))+I*
b*c^2/d^2/(c^2*d+e)*dilog(I*c*x+(-c^2*x^2+1)^(1/2))+1/4*I*b/d^3/(c^2*d+e)*e
*sum((_R1^2*e-4*c^2*d-e)/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(
-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=Root
Of(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))-I*b/d^3/(c^2*d+e)*e*dilog(1+I*c*x+(-c^2*x
^2+1)^(1/2))+1/4*I*b/d^3/(c^2*d+e)*e^2*sum((_R1^2-1)/(_R1^2*e-2*c^2*d-e)*(I
*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*
x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))+1/4*I*b*c^2/d
^2/(c^2*d+e)*sum((_R1^2*e-4*c^2*d-e)/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln(
(_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R
1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))-I*b*c^2/d^2/(c^2*d+e)*dilog(1
+I*c*x+(-c^2*x^2+1)^(1/2))+b/d^3/(c^2*d+e)*e*arcsin(c*x)*ln(1+I*c*x+(-c^2*x
^2+1)^(1/2))+1/4*a*c^4/d/(c^2*e*x^2+c^2*d)^2+1/2*a*c^2/d^2/(c^2*e*x^2+c^2*d
```

```
)+3/4*b*c^6/(c^2*e*x^2+c^2*d)^2/(c^2*d+e)*arcsin(c*x)+1/8*I*b*c^6/(c^2*e*x^
2+c^2*d)^2/(c^2*d+e)+1/8*I*b*c^6/d^2/(c^2*e*x^2+c^2*d)^2/(c^2*d+e)*x^4*e^2+
1/4*I*b*c^6/d/(c^2*e*x^2+c^2*d)^2/(c^2*d+e)*x^2*e+1/2*b*c^6/d/(c^2*e*x^2+c^
2*d)^2/(c^2*d+e)*arcsin(c*x)*x^2*e-1/8*b*c^5/d^2/(c^2*e*x^2+c^2*d)^2/(c^2*d
+e)*(-c^2*x^2+1)^(1/2)*x^3*e^2-1/8*b*c^5/d/(c^2*e*x^2+c^2*d)^2/(c^2*d+e)*(-
c^2*x^2+1)^(1/2)*x*e+1/2*b*c^4/d^2/(c^2*e*x^2+c^2*d)^2/(c^2*d+e)*arcsin(c*x
)*x^2*e^2+a/d^3*ln(c*x)
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{4}a\left(\frac{2ex^2+3d}{d^2e^2x^4+2d^3ex^2+d^4}-\frac{2\log\left(ex^2+d\right)}{d^3}+\frac{4\log(x)}{d^3}\right)+b\int\frac{\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)}{e^3x^7+3de^2x^5+3d^2ex^3+d^3x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x/(e*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] 1/4*a*((2*e*x^2 + 3*d)/(d^2*e^2*x^4 + 2*d^3*e*x^2 + d^4) - 2*log(e*x^2 + d)
/d^3 + 4*log(x)/d^3) + b*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1
))/(e^3*x^7 + 3*d*e^2*x^5 + 3*d^2*e*x^3 + d^3*x), x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{a+b\,\mathrm{asin}\left(c\,x\right)}{x\,{\left(e\,x^2+d\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x*(d + e*x^2)^3),x)
```

```
[Out] int((a + b*asin(c*x))/(x*(d + e*x^2)^3), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x/(e*x**2+d)**3,x)
```

```
[Out] Timed out
```

3.645 $\int \frac{a+b\sin^{-1}(cx)}{x^3\left(d+ex^2\right)^3}\,dx$

Optimal. Leaf size=783

$$\frac{3e\left(a+b\sin^{-1}(cx)\right)\log\left(1-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2d^4}+\frac{3e\left(a+b\sin^{-1}(cx)\right)\log\left(1+\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2d^4}+\frac{3e\left(a+b\sin^{-1}(cx)\right)1}{2}$$

```
[Out] 1/2*(-a-b*arcsin(c*x))/d^3/x^2-1/4*e*(a+b*arcsin(c*x))/d^2/(e*x^2+d)^2-e*(a
+b*arcsin(c*x))/d^3/(e*x^2+d)+1/8*b*c*e*(2*c^2*d+e)*arctan(x*(c^2*d+e)^(1/2
)/d^(1/2)/(-c^2*x^2+1)^(1/2))/d^(7/2)/(c^2*d+e)^(3/2)-3*e*(a+b*arcsin(c*x))
*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))^2)/d^4+3/2*e*(a+b*arcsin(c*x))*ln(1-(I*c*x
+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/d^4+3/2*e*(a
+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^
2*d+e)^(1/2)))/d^4+3/2*e*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*
e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/d^4+3/2*e*(a+b*arcsin(c*x))*ln(1+
(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/d^4-3/
2*I*b*e*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d
+e)^(1/2)))/d^4-3/2*I*b*e*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c
*(-d)^(1/2)-(c^2*d+e)^(1/2)))/d^4+3/2*I*b*e*polylog(2,(I*c*x+(-c^2*x^2+1)^(
1/2))^2)/d^4-3/2*I*b*e*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(
-d)^(1/2)-(c^2*d+e)^(1/2)))/d^4-3/2*I*b*e*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1
/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/d^4+b*c*e*arctan(x*(c^2*d+e)
^(1/2)/d^(1/2)/(-c^2*x^2+1)^(1/2))/d^(7/2)/(c^2*d+e)^(1/2)-1/2*b*c*(-c^2*x^
2+1)^(1/2)/d^3/x+1/8*b*c*e^2*x*(-c^2*x^2+1)^(1/2)/d^3/(c^2*d+e)/(e*x^2+d)
```

Rubi **[A]** time = 1.17, antiderivative size = 783, normalized size of antiderivative = 1.00, number of steps used = 34, number of rules used = 14, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667, Rules used = {4733, 4627, 264, 4625, 3717, 2190, 2279, 2391, 4729, 382, 377, 205, 4741, 4521}

$$-\frac{3ibe\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2d^4}-\frac{3ibe\text{PolyLog}\left(2,\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{-\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2d^4}-\frac{3ibe\text{PolyLog}\left(2,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{\sqrt{c^2d+e}+ic\sqrt{-d}}\right)}{2d^4}-3ibe\text{Po}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(x^3*(d + e*x^2)^3),x]
```

```
[Out] -(b*c*Sqrt[1 - c^2*x^2])/(2*d^3*x) + (b*c*e^2*x*Sqrt[1 - c^2*x^2])/(8*d^3*(
c^2*d + e)*(d + e*x^2)) - (a + b*ArcSin[c*x])/(2*d^3*x^2) - (e*(a + b*ArcSi
n[c*x]))/(4*d^2*(d + e*x^2)^2) - (e*(a + b*ArcSin[c*x]))/(d^3*(d + e*x^2))
+ (b*c*e*ArcTan[(Sqrt[c^2*d + e]*x)/(Sqrt[d]*Sqrt[1 - c^2*x^2])])/(d^(7/2)*
Sqrt[c^2*d + e]) + (b*c*e*(2*c^2*d + e)*ArcTan[(Sqrt[c^2*d + e]*x)/(Sqrt[d]
*Sqrt[1 - c^2*x^2])])/(8*d^(7/2)*(c^2*d + e)^(3/2)) + (3*e*(a + b*ArcSin[c*
x])*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/
(2*d^4) + (3*e*(a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c
*Sqrt[-d] - Sqrt[c^2*d + e])])/(2*d^4) + (3*e*(a + b*ArcSin[c*x])*Log[1 - (
Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(2*d^4) + (3*
e*(a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + S
qrt[c^2*d + e])])/(2*d^4) - (3*e*(a + b*ArcSin[c*x])*Log[1 - E^((2*I)*ArcSi
n[c*x])])/d^4 - (((3*I)/2)*b*e*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*
c*Sqrt[-d] - Sqrt[c^2*d + e]))])/d^4 - (((3*I)/2)*b*e*PolyLog[2, (Sqrt[e]*E
^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/d^4 - (((3*I)/2)*b*e*P
olyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e]))])
/d^4 - (((3*I)/2)*b*e*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d]
```

```
+ Sqrt[c^2*d + e])])/d^4 + (((3*I)/2)*b*e*PolyLog[2, E^((2*I)*ArcSin[c*x])]
)/d^4
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 264

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[((c
*x)^(m + 1)*(a + b*x^n)^(p + 1))/(a*c*(m + 1)), x] /; FreeQ[{a, b, c, m, n,
 p}, x] && EqQ[(m + 1)/n + p + 1, 0] && NeQ[m, -1]
```

Rule 377

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)/((c_) + (d_.)*(x_)^(n_)), x_Symbol] :> Su
bst[Int[1/(c - (b*c - a*d)*x^n), x], x, x/(a + b*x^n)^(1/n)] /; FreeQ[{a, b
, c, d}, x] && NeQ[b*c - a*d, 0] && EqQ[n*p + 1, 0] && IntegerQ[n]
```

Rule 382

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_)*((c_) + (d_.)*(x_)^(n_))^(q_), x_Symbol]
:> -Simp[(b*x*(a + b*x^n)^(p + 1)*(c + d*x^n)^(q + 1))/(a*n*(p + 1)*(b*c -
a*d)), x] + Dist[(b*c + n*(p + 1)*(b*c - a*d))/(a*n*(p + 1)*(b*c - a*d)), I
nt[(a + b*x^n)^(p + 1)*(c + d*x^n)^q, x], x] /; FreeQ[{a, b, c, d, n, q}, x
] && NeQ[b*c - a*d, 0] && EqQ[n*(p + q + 2) + 1, 0] && (LtQ[p, -1] ||  !LtQ
[q, -1]) && NeQ[p, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
```

```
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4625

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/(x_), x_Symbol] :> Subst[Int[(
a + b*x)^n/Tan[x], x], x, ArcSin[c*x]] /; FreeQ[{a, b, c}, x] && IGtQ[n, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4729

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*(x_)*((d_) + (e_.)*(x_)^2)^(p_.), x_
Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x]))/(2*e*(p + 1)), x]
 - Dist[(b*c)/(2*e*(p + 1)), Int[(d + e*x^2)^(p + 1)/Sqrt[1 - c^2*x^2], x],
 x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[c^2*d + e, 0] && NeQ[p, -1]
```

Rule 4733

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (
f*x)^m*(d + e*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[c^2*d +
 e, 0] && IGtQ[n, 0] && IntegerQ[p] && IntegerQ[m]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{x^3(d+ex^2)^3}\,dx = \int \left(\frac{a+b\sin^{-1}(cx)}{d^3x^3} - \frac{3e\left(a+b\sin^{-1}(cx)\right)}{d^4x} + \frac{e^2x\left(a+b\sin^{-1}(cx)\right)}{d^2(d+ex^2)^3} + \frac{2e^2x\left(a+b\sin^{-1}\right.}{d^3(d+ex^2)^2}\right.$$

$$= \frac{\int \frac{a+b\sin^{-1}(cx)}{x^3}dx}{d^3} - \frac{(3e)\int \frac{a+b\sin^{-1}(cx)}{x}dx}{d^4} + \frac{(3e^2)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{d+ex^2}dx}{d^4} + \frac{(2e^2)\int \frac{x\left(a+b\sin^{-}\right.}{(d+ex^2}}{d^3}$$

$$= -\frac{a+b\sin^{-1}(cx)}{2d^3x^2} - \frac{e\left(a+b\sin^{-1}(cx)\right)}{4d^2(d+ex^2)^2} - \frac{e\left(a+b\sin^{-1}(cx)\right)}{d^3(d+ex^2)} + \frac{(bc)\int \frac{1}{x^2\sqrt{1-c^2x^2}}dx}{2d^3} - \frac{(3}{}$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{2d^3x} + \frac{bce^2x\sqrt{1-c^2x^2}}{8d^3(c^2d+e)(d+ex^2)} - \frac{a+b\sin^{-1}(cx)}{2d^3x^2} - \frac{e\left(a+b\sin^{-1}(cx)\right)}{4d^2(d+ex^2)^2} - \frac{e(a}{}$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{2d^3x} + \frac{bce^2x\sqrt{1-c^2x^2}}{8d^3(c^2d+e)(d+ex^2)} - \frac{a+b\sin^{-1}(cx)}{2d^3x^2} - \frac{e\left(a+b\sin^{-1}(cx)\right)}{4d^2(d+ex^2)^2} - \frac{e(a}{}$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{2d^3x} + \frac{bce^2x\sqrt{1-c^2x^2}}{8d^3(c^2d+e)(d+ex^2)} - \frac{a+b\sin^{-1}(cx)}{2d^3x^2} - \frac{e\left(a+b\sin^{-1}(cx)\right)}{4d^2(d+ex^2)^2} - \frac{e(a}{}$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{2d^3x} + \frac{bce^2x\sqrt{1-c^2x^2}}{8d^3(c^2d+e)(d+ex^2)} - \frac{a+b\sin^{-1}(cx)}{2d^3x^2} - \frac{e\left(a+b\sin^{-1}(cx)\right)}{4d^2(d+ex^2)^2} - \frac{e(a}{}$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{2d^3x} + \frac{bce^2x\sqrt{1-c^2x^2}}{8d^3(c^2d+e)(d+ex^2)} - \frac{a+b\sin^{-1}(cx)}{2d^3x^2} - \frac{e\left(a+b\sin^{-1}(cx)\right)}{4d^2(d+ex^2)^2} - \frac{e(a}{}$$

$$= -\frac{bc\sqrt{1-c^2x^2}}{2d^3x} + \frac{bce^2x\sqrt{1-c^2x^2}}{8d^3(c^2d+e)(d+ex^2)} - \frac{a+b\sin^{-1}(cx)}{2d^3x^2} - \frac{e\left(a+b\sin^{-1}(cx)\right)}{4d^2(d+ex^2)^2} - \frac{e(a}{}$$

Mathematica [F] time = 10.03, size = 0, normalized size = 0.00

$$\int \frac{a+b\sin^{-1}(cx)}{x^3(d+ex^2)^3}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c*x])/(x^3*(d + e*x^2)^3),x]
[Out] Integrate[(a + b*ArcSin[c*x])/(x^3*(d + e*x^2)^3), x]
```

fricas [F] time = 0.84, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{b\arcsin(cx)+a}{e^3x^9+3\,de^2x^7+3\,d^2ex^5+d^3x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(e*x^2+d)^3,x, algorithm="fricas")
```

[Out] integral((b*arcsin(c*x) + a)/(e^3*x^9 + 3*d*e^2*x^7 + 3*d^2*e*x^5 + d^3*x^3
), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*arcsin(c*x))/x^3/(e*x^2+d)^3,x, algorithm="giac")

[Out] Timed out

maple [C] time = 0.96, size = 1816, normalized size = 2.32

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a+b*arcsin(c*x))/x^3/(e*x^2+d)^3,x)

[Out] -3/4*I*c^2*b/d^3*e/(c^2*d+e)*sum((_R1^2*e-4*c^2*d-e)/(_R1^2*e-2*c^2*d-e)*(I
*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*
x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))-c^2*a*e/d^3/(
c^2*e*x^2+c^2*d)+1/2*I*c^8*b/(c^2*e*x^2+c^2*d)^2/(c^2*d+e)-1/4*c^4*a*e/d^2/
(c^2*e*x^2+c^2*d)^2-3*c^2*b/d^3/(c^2*d+e)*e*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^
2+1)^(1/2))+3/2*a*e/d^4*ln(c^2*e*x^2+c^2*d)-3*a/d^4*e*ln(c*x)-3*b/d^4*e^2/(
c^2*d+e)*arcsin(c*x)*ln(1+I*c*x+(-c^2*x^2+1)^(1/2))-1/2*c^7*b/x/(c^2*e*x^2+
c^2*d)^2/(c^2*d+e)*(-c^2*x^2+1)^(1/2)-1/2*c^6*b/x^2/(c^2*e*x^2+c^2*d)^2/(c^
2*d+e)*arcsin(c*x)-3/4*I*b/d^4*e^2/(c^2*d+e)*sum((_R1^2*e-4*c^2*d-e)/(_R1^2
*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((
_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e
))+3*I*b/d^4*e^2/(c^2*d+e)*dilog(1+I*c*x+(-c^2*x^2+1)^(1/2))-3*I*b/d^4*e^2/
(c^2*d+e)*dilog(I*c*x+(-c^2*x^2+1)^(1/2))-3/4*I*b/d^4*e^3/(c^2*d+e)*sum((_R
1^2-1)/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))
/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*
d-2*e)*_Z^2+e))-9/4*c^4*b/d^2/(c^2*e*x^2+c^2*d)^2/(c^2*d+e)*arcsin(c*x)*e^2
-3/4*I*c^2*b/d^3*e^2/(c^2*d+e)*sum((_R1^2-1)/(_R1^2*e-2*c^2*d-e)*(I*arcsin(
c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(
1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))-9/4*c^6*b/d/(c^2*e*x^
2+c^2*d)^2/(c^2*d+e)*arcsin(c*x)*e-1/2*a/d^3/x^2+3*I*c^2*b/d^3*e/(c^2*d+e)*
dilog(1+I*c*x+(-c^2*x^2+1)^(1/2))-3*I*c^2*b/d^3/(c^2*d+e)*e*dilog(I*c*x+(-c
^2*x^2+1)^(1/2))-9/8*I*b*(c^2*d*(c^2*d+e))^(1/2)/d^4/(c^2*d+e)^2*arctanh(1/
4*(2*(I*c*x+(-c^2*x^2+1)^(1/2))^2*e-4*c^2*d-2*e)/(c^4*d^2+c^2*d*e)^(1/2))*e
^2+3/8*I*c^6*b/d/(c^2*e*x^2+c^2*d)^2/(c^2*d+e)*e-7/8*c^5*b*x/d^2/(c^2*e*x^2
+c^2*d)^2/(c^2*d+e)*(-c^2*x^2+1)^(1/2)*e^2-5/4*I*c^2*b*(c^2*d*(c^2*d+e))^(1
/2)/d^3/(c^2*d+e)^2*arctanh(1/4*(2*(I*c*x+(-c^2*x^2+1)^(1/2))^2*e-4*c^2*d-2
*e)/(c^4*d^2+c^2*d*e)^(1/2))*e+3/4*I*c^6*b*x^2/d^2/(c^2*e*x^2+c^2*d)^2/(c^2
*d+e)*e^2+1/2*I*c^8*b*x^4/d^2/(c^2*e*x^2+c^2*d)^2/(c^2*d+e)*e^2+3/8*I*c^6*b
*x^4/d^3/(c^2*e*x^2+c^2*d)^2/(c^2*d+e)*e^3-1/2*c^5*b/x/d/(c^2*e*x^2+c^2*d)^
2/(c^2*d+e)*(-c^2*x^2+1)^(1/2)*e-3/8*c^5*b*x^3/d^3/(c^2*e*x^2+c^2*d)^2/(c^2
d+e)(-c^2*x^2+1)^(1/2)*e^3-3/2*c^4*b*x^2/d^3/(c^2*e*x^2+c^2*d)^2/(c^2*d+e
)*arcsin(c*x)*e^3-1/2*c^7*b/d^2/(c^2*e*x^2+c^2*d)^2/(c^2*d+e)*(-c^2*x^2+1)^
(1/2)*x^3*e^2-c^7*b/d/(c^2*e*x^2+c^2*d)^2/(c^2*d+e)*(-c^2*x^2+1)^(1/2)*x*e-
3/2*c^6*b/d^2/(c^2*e*x^2+c^2*d)^2/(c^2*d+e)*arcsin(c*x)*x^2*e^2-1/2*c^4*b/x
^2/d/(c^2*e*x^2+c^2*d)^2/(c^2*d+e)*arcsin(c*x)*e+I*c^8*b*x^2/d/(c^2*e*x^2+c
^2*d)^2/(c^2*d+e)*e

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{4}a\left(\frac{6e^2x^4+9dex^2+2d^2}{d^3e^2x^6+2d^4ex^4+d^5x^2}-\frac{6e\log\left(ex^2+d\right)}{d^4}+\frac{12e\log(x)}{d^4}\right)+b\int\frac{\arctan\left(cx,\sqrt{cx+1}\sqrt{-cx+1}\right)}{e^3x^9+3de^2x^7+3d^2ex^5+d^3x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/x^3/(e*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] -1/4*a*((6*e^2*x^4 + 9*d*e*x^2 + 2*d^2)/(d^3*e^2*x^6 + 2*d^4*e*x^4 + d^5*x^
2) - 6*e*log(e*x^2 + d)/d^4 + 12*e*log(x)/d^4) + b*integrate(arctan2(c*x, s
qrt(c*x + 1)*sqrt(-c*x + 1))/(e^3*x^9 + 3*d*e^2*x^7 + 3*d^2*e*x^5 + d^3*x^3
), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,\mathrm{asin}\left(c\,x\right)}{x^3\,{\left(e\,x^2+d\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(x^3*(d + e*x^2)^3),x)
```

```
[Out] int((a + b*asin(c*x))/(x^3*(d + e*x^2)^3), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/x**3/(e*x**2+d)**3,x)
```

```
[Out] Timed out
```

3.646 $\int \frac{x^4\left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^3}\,dx$

Optimal. Leaf size=1082

$$\frac{bd\tanh^{-1}\left(\frac{\sqrt{e}-c^2\sqrt{-d}\,x}{\sqrt{dc^2+e}\,\sqrt{1-c^2x^2}}\right)c^3}{16e^{5/2}\left(dc^2+e\right)^{3/2}}+\frac{bd\tanh^{-1}\left(\frac{\sqrt{-d}\,xc^2+\sqrt{e}}{\sqrt{dc^2+e}\,\sqrt{1-c^2x^2}}\right)c^3}{16e^{5/2}\left(dc^2+e\right)^{3/2}}-\frac{5b\tanh^{-1}\left(\frac{\sqrt{e}-c^2\sqrt{-d}\,x}{\sqrt{dc^2+e}\,\sqrt{1-c^2x^2}}\right)c}{16e^{5/2}\sqrt{dc^2+e}}-\frac{5b\tanh^{-1}\left(\frac{\sqrt{-d}\,xc^2+\cdots}{\sqrt{dc^2+e}\,\sqrt{1-\cdots}}\right)}{16e^{5/2}\sqrt{dc^2+e}}$$

```
[Out] 1/16*b*c^3*d*arctanh((-c^2*x*(-d)^(1/2)+e^(1/2))/(c^2*d+e)^(1/2)/(-c^2*x^2+
1)^(1/2))/e^(5/2)/(c^2*d+e)^(3/2)+1/16*b*c^3*d*arctanh((c^2*x*(-d)^(1/2)+e^
(1/2))/(c^2*d+e)^(1/2)/(-c^2*x^2+1)^(1/2))/e^(5/2)/(c^2*d+e)^(3/2)+3/16*(a+
b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2
*d+e)^(1/2)))/e^(5/2)/(-d)^(1/2)-3/16*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x
^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/e^(5/2)/(-d)^(1/2)+3
/16*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/
2)+(c^2*d+e)^(1/2)))/e^(5/2)/(-d)^(1/2)-3/16*(a+b*arcsin(c*x))*ln(1+(I*c*x+
(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/e^(5/2)/(-d)^
(1/2)-3/16*I*b*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)
+(c^2*d+e)^(1/2)))/e^(5/2)/(-d)^(1/2)+3/16*I*b*polylog(2,-(I*c*x+(-c^2*x^2+
1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/e^(5/2)/(-d)^(1/2)-3/16
*I*b*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)
^(1/2)))/e^(5/2)/(-d)^(1/2)+3/16*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*
e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/e^(5/2)/(-d)^(1/2)-1/16*(a+b*arcs
in(c*x))*(-d)^(1/2)/e^(5/2)/((-d)^(1/2)-x*e^(1/2))^2+5/16*(a+b*arcsin(c*x))
/e^(5/2)/((-d)^(1/2)-x*e^(1/2))+1/16*(a+b*arcsin(c*x))*(-d)^(1/2)/e^(5/2)/(
(-d)^(1/2)+x*e^(1/2))^2-5/16*(a+b*arcsin(c*x))/e^(5/2)/((-d)^(1/2)+x*e^(1/2
))-5/16*b*c*arctanh((-c^2*x*(-d)^(1/2)+e^(1/2))/(c^2*d+e)^(1/2)/(-c^2*x^2+1
)^(1/2))/e^(5/2)/(c^2*d+e)^(1/2)-5/16*b*c*arctanh((c^2*x*(-d)^(1/2)+e^(1/2)
)/(c^2*d+e)^(1/2)/(-c^2*x^2+1)^(1/2))/e^(5/2)/(c^2*d+e)^(1/2)+1/16*b*c*(-d)
^(1/2)*(-c^2*x^2+1)^(1/2)/e^2/(c^2*d+e)/((-d)^(1/2)-x*e^(1/2))+1/16*b*c*(-d
)^(1/2)*(-c^2*x^2+1)^(1/2)/e^2/(c^2*d+e)/((-d)^(1/2)+x*e^(1/2))
```

Rubi [A] time = 3.38, antiderivative size = 1082, normalized size of antiderivative = 1.00, number of steps used = 80, number of rules used = 11, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.524, Rules used = {4733, 4667, 4743, 731, 725, 206, 4741, 4521, 2190, 2279, 2391}

$$\frac{bd\tanh^{-1}\left(\frac{\sqrt{e}-c^2\sqrt{-d}\,x}{\sqrt{dc^2+e}\,\sqrt{1-c^2x^2}}\right)c^3}{16e^{5/2}\left(dc^2+e\right)^{3/2}}+\frac{bd\tanh^{-1}\left(\frac{\sqrt{-d}\,xc^2+\sqrt{e}}{\sqrt{dc^2+e}\,\sqrt{1-c^2x^2}}\right)c^3}{16e^{5/2}\left(dc^2+e\right)^{3/2}}-\frac{5b\tanh^{-1}\left(\frac{\sqrt{e}-c^2\sqrt{-d}\,x}{\sqrt{dc^2+e}\,\sqrt{1-c^2x^2}}\right)c}{16e^{5/2}\sqrt{dc^2+e}}-\frac{5b\tanh^{-1}\left(\frac{\sqrt{-d}\,xc^2+\cdots}{\sqrt{dc^2+e}\,\sqrt{1-\cdots}}\right)}{16e^{5/2}\sqrt{dc^2+e}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(a + b*ArcSin[c*x]))/(d + e*x^2)^3,x]
```

```
[Out] (b*c*Sqrt[-d]*Sqrt[1 - c^2*x^2])/(16*e^2*(c^2*d + e)*(Sqrt[-d] - Sqrt[e]*x)
) + (b*c*Sqrt[-d]*Sqrt[1 - c^2*x^2])/(16*e^2*(c^2*d + e)*(Sqrt[-d] + Sqrt[e
]*x)) - (Sqrt[-d]*(a + b*ArcSin[c*x]))/(16*e^(5/2)*(Sqrt[-d] - Sqrt[e]*x)^2
) + (5*(a + b*ArcSin[c*x]))/(16*e^(5/2)*(Sqrt[-d] - Sqrt[e]*x)) + (Sqrt[-d]
*(a + b*ArcSin[c*x]))/(16*e^(5/2)*(Sqrt[-d] + Sqrt[e]*x)^2) - (5*(a + b*Arc
Sin[c*x]))/(16*e^(5/2)*(Sqrt[-d] + Sqrt[e]*x)) + (b*c^3*d*ArcTanh[(Sqrt[e]
- c^2*Sqrt[-d]*x)/(Sqrt[c^2*d + e]*Sqrt[1 - c^2*x^2])])/(16*e^(5/2)*(c^2*d
+ e)^(3/2)) - (5*b*c*ArcTanh[(Sqrt[e] - c^2*Sqrt[-d]*x)/(Sqrt[c^2*d + e]*Sq
rt[1 - c^2*x^2])])/(16*e^(5/2)*Sqrt[c^2*d + e]) + (b*c^3*d*ArcTanh[(Sqrt[e]
 + c^2*Sqrt[-d]*x)/(Sqrt[c^2*d + e]*Sqrt[1 - c^2*x^2])])/(16*e^(5/2)*(c^2*d
 + e)^(3/2)) - (5*b*c*ArcTanh[(Sqrt[e] + c^2*Sqrt[-d]*x)/(Sqrt[c^2*d + e]*S
qrt[1 - c^2*x^2])])/(16*e^(5/2)*Sqrt[c^2*d + e]) + (3*(a + b*ArcSin[c*x])*L
```

```
og[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(16*S
qrt[-d]*e^(5/2)) - (3*(a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]
))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(16*Sqrt[-d]*e^(5/2)) + (3*(a + b*Arc
Sin[c*x])*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d +
e])])/(16*Sqrt[-d]*e^(5/2)) - (3*(a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*
ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(16*Sqrt[-d]*e^(5/2)) + ((
(3*I)/16)*b*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c
^2*d + e]))])/(Sqrt[-d]*e^(5/2)) - (((3*I)/16)*b*PolyLog[2, (Sqrt[e]*E^(I*A
rcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(Sqrt[-d]*e^(5/2)) + (((3*I
)/16)*b*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d
 + e]))])/(Sqrt[-d]*e^(5/2)) - (((3*I)/16)*b*PolyLog[2, (Sqrt[e]*E^(I*ArcSi
n[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(Sqrt[-d]*e^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 731

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*d^2 + a*e^2)), x] + D
ist[(c*d)/(c*d^2 + a*e^2), Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, d, e, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[m + 2*p + 3, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rule 4733

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (
f*x)^m*(d + e*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[c^2*d +
 e, 0] && IGtQ[n, 0] && IntegerQ[p] && IntegerQ[m]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rubi steps

$$\int \frac{x^4 \left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^3}\,dx = \int \left(\frac{d^2\left(a+b\sin^{-1}(cx)\right)}{e^2\left(d+ex^2\right)^3} - \frac{2d\left(a+b\sin^{-1}(cx)\right)}{e^2\left(d+ex^2\right)^2} + \frac{a+b\sin^{-1}(cx)}{e^2\left(d+ex^2\right)}\right)dx$$

$$= \frac{\int \frac{a+b\sin^{-1}(cx)}{d+ex^2}\,dx}{e^2} - \frac{(2d)\int \frac{a+b\sin^{-1}(cx)}{\left(d+ex^2\right)^2}\,dx}{e^2} + \frac{d^2\int \frac{a+b\sin^{-1}(cx)}{\left(d+ex^2\right)^3}\,dx}{e^2}$$

$$= \frac{\int \left(\frac{\sqrt{-d}\left(a+b\sin^{-1}(cx)\right)}{2d\left(\sqrt{-d}-\sqrt{e}\,x\right)} + \frac{\sqrt{-d}\left(a+b\sin^{-1}(cx)\right)}{2d\left(\sqrt{-d}+\sqrt{e}\,x\right)}\right)dx}{e^2} - \frac{(2d)\int \left(-\frac{e\left(a+b\sin^{-1}(cx)\right)}{4d\left(\sqrt{-d}\sqrt{e}-ex\right)^2} - \frac{e\left(a+b\sin^{-1}\right.}{4d\left(\sqrt{-d}\sqrt{e}\right.}\right.}{e^2}$$

$$= -\frac{\int \frac{a+b\sin^{-1}(cx)}{\sqrt{-d}-\sqrt{e}\,x}\,dx}{2\sqrt{-d}\,e^2} - \frac{\int \frac{a+b\sin^{-1}(cx)}{\sqrt{-d}+\sqrt{e}\,x}\,dx}{2\sqrt{-d}\,e^2} - \frac{3\int \frac{a+b\sin^{-1}(cx)}{\left(\sqrt{-d}\sqrt{e}-ex\right)^2}\,dx}{16e} - \frac{3\int \frac{a+b\sin^{-1}(cx)}{\left(\sqrt{-d}\sqrt{e}+ex\right)^2}\,dx}{16e}$$

$$= -\frac{\sqrt{-d}\left(a+b\sin^{-1}(cx)\right)}{16e^{5/2}\left(\sqrt{-d}-\sqrt{e}\,x\right)^2} + \frac{5\left(a+b\sin^{-1}(cx)\right)}{16e^{5/2}\left(\sqrt{-d}-\sqrt{e}\,x\right)} + \frac{\sqrt{-d}\left(a+b\sin^{-1}(cx)\right)}{16e^{5/2}\left(\sqrt{-d}+\sqrt{e}\,x\right)^2} - \frac{5\left(a\right.}{16e^{5/}}$$

$$= \frac{bc\sqrt{-d}\sqrt{1-c^2x^2}}{16e^2\left(c^2d+e\right)\left(\sqrt{-d}-\sqrt{e}\,x\right)} + \frac{bc\sqrt{-d}\sqrt{1-c^2x^2}}{16e^2\left(c^2d+e\right)\left(\sqrt{-d}+\sqrt{e}\,x\right)} - \frac{\sqrt{-d}\left(a+b\sin^{-1}\right.}{16e^{5/2}\left(\sqrt{-d}-\sqrt{\right.}}$$

$$= \frac{bc\sqrt{-d}\sqrt{1-c^2x^2}}{16e^2\left(c^2d+e\right)\left(\sqrt{-d}-\sqrt{e}\,x\right)} + \frac{bc\sqrt{-d}\sqrt{1-c^2x^2}}{16e^2\left(c^2d+e\right)\left(\sqrt{-d}+\sqrt{e}\,x\right)} - \frac{\sqrt{-d}\left(a+b\sin^{-1}\right.}{16e^{5/2}\left(\sqrt{-d}-\sqrt{\right.}}$$

$$= \frac{bc\sqrt{-d}\sqrt{1-c^2x^2}}{16e^2\left(c^2d+e\right)\left(\sqrt{-d}-\sqrt{e}\,x\right)} + \frac{bc\sqrt{-d}\sqrt{1-c^2x^2}}{16e^2\left(c^2d+e\right)\left(\sqrt{-d}+\sqrt{e}\,x\right)} - \frac{\sqrt{-d}\left(a+b\sin^{-1}\right.}{16e^{5/2}\left(\sqrt{-d}-\sqrt{\right.}}$$

$$= \frac{bc\sqrt{-d}\sqrt{1-c^2x^2}}{16e^2\left(c^2d+e\right)\left(\sqrt{-d}-\sqrt{e}\,x\right)} + \frac{bc\sqrt{-d}\sqrt{1-c^2x^2}}{16e^2\left(c^2d+e\right)\left(\sqrt{-d}+\sqrt{e}\,x\right)} - \frac{\sqrt{-d}\left(a+b\sin^{-1}\right.}{16e^{5/2}\left(\sqrt{-d}-\sqrt{\right.}}$$

$$= \frac{bc\sqrt{-d}\sqrt{1-c^2x^2}}{16e^2\left(c^2d+e\right)\left(\sqrt{-d}-\sqrt{e}\,x\right)} + \frac{bc\sqrt{-d}\sqrt{1-c^2x^2}}{16e^2\left(c^2d+e\right)\left(\sqrt{-d}+\sqrt{e}\,x\right)} - \frac{\sqrt{-d}\left(a+b\sin^{-1}\right.}{16e^{5/2}\left(\sqrt{-d}-\sqrt{\right.}}$$

$$= \frac{bc\sqrt{-d}\sqrt{1-c^2x^2}}{16e^2\left(c^2d+e\right)\left(\sqrt{-d}-\sqrt{e}\,x\right)} + \frac{bc\sqrt{-d}\sqrt{1-c^2x^2}}{16e^2\left(c^2d+e\right)\left(\sqrt{-d}+\sqrt{e}\,x\right)} - \frac{\sqrt{-d}\left(a+b\sin^{-1}\right.}{16e^{5/2}\left(\sqrt{-d}-\sqrt{\right.}}$$

Mathematica [A] time = 6.07, size = 1014, normalized size = 0.94

$$\frac{bd\left(\log\left(\frac{e\sqrt{dc^2+e}\left(-i\sqrt{d}\,xc^2+\sqrt{e}+\sqrt{dc^2+e}\sqrt{1-c^2x^2}\right)}{c^3\left(d+i\sqrt{e}\,x\sqrt{d}\right)}\right)+\log(4)\right)c^3}{\left(dc^2+e\right)^{3/2}} + \frac{bd\left(\log\left(\frac{e\sqrt{dc^2+e}\left(i\sqrt{d}\,xc^2+\sqrt{e}+\sqrt{dc^2+e}\sqrt{1-c^2x^2}\right)}{c^3\left(d-i\sqrt{d}\sqrt{e}\,x\right)}\right)+\log(4)\right)c^3}{\left(dc^2+e\right)^{3/2}} - \frac{5b\tanh^{-1}\left(\frac{i\sqrt{d}\,xc^2\ldots}{\sqrt{dc^2+e}\sqrt{1\ldots}}\right.}{\sqrt{dc^2+e}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^4*(a + b*ArcSin[c*x]))/(d + e*x^2)^3,x]
```

```
[Out] (((-I)*b*c*Sqrt[d]*Sqrt[e]*Sqrt[1 - c^2*x^2])/((c^2*d + e)*((-I)*Sqrt[d] +
Sqrt[e]*x)) + (I*b*c*Sqrt[d]*Sqrt[e]*Sqrt[1 - c^2*x^2])/((c^2*d + e)*(I*Sqr
t[d] + Sqrt[e]*x)) + (4*a*d*Sqrt[e]*x)/(d + e*x^2)^2 - (10*a*Sqrt[e]*x)/(d
+ e*x^2) + (I*b*Sqrt[d]*ArcSin[c*x])/(Sqrt[d] + I*Sqrt[e]*x)^2 + (I*b*Sqrt[
d]*ArcSin[c*x])/(I*Sqrt[d] + Sqrt[e]*x)^2 - (5*b*ArcSin[c*x])/(I*Sqrt[d] +
Sqrt[e]*x) + (6*a*ArcTan[(Sqrt[e]*x)/Sqrt[d]])/Sqrt[d] - (5*I)*b*(ArcSin[c*
x]/(Sqrt[d] + I*Sqrt[e]*x) - (c*ArcTan[(I*Sqrt[e] + c^2*Sqrt[d]*x)/(Sqrt[c^
2*d + e]*Sqrt[1 - c^2*x^2])]])/Sqrt[c^2*d + e]) - (5*b*c*ArcTanh[(Sqrt[e] +
I*c^2*Sqrt[d]*x)/(Sqrt[c^2*d + e]*Sqrt[1 - c^2*x^2])]])/Sqrt[c^2*d + e] + ((
3*I)*b*ArcSin[c*x]*(Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(-(c*Sqrt[d]) + Sqr
t[c^2*d + e])] + Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*
d + e])]))/Sqrt[d] - ((3*I)*b*ArcSin[c*x]*(Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x
]))/(c*Sqrt[d] - Sqrt[c^2*d + e])] + Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(c
*Sqrt[d] + Sqrt[c^2*d + e])]))/Sqrt[d] + (b*c^3*d*(Log[4] + Log[(e*Sqrt[c^2
*d + e]*(Sqrt[e] - I*c^2*Sqrt[d]*x + Sqrt[c^2*d + e]*Sqrt[1 - c^2*x^2]))/(c
^3*(d + I*Sqrt[d]*Sqrt[e]*x))]]))/(c^2*d + e)^(3/2) + (b*c^3*d*(Log[4] + Log
[(e*Sqrt[c^2*d + e]*(Sqrt[e] + I*c^2*Sqrt[d]*x + Sqrt[c^2*d + e]*Sqrt[1 - c
^2*x^2]))/(c^3*(d - I*Sqrt[d]*Sqrt[e]*x))]]))/(c^2*d + e)^(3/2) + (3*b*PolyL
og[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] - Sqrt[c^2*d + e])])/Sqrt[d] -
 (3*b*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(-(c*Sqrt[d]) + Sqrt[c^2*d + e
])])/Sqrt[d] - (3*b*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + S
qrt[c^2*d + e]))])/Sqrt[d] + (3*b*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(c
*Sqrt[d] + Sqrt[c^2*d + e])])/Sqrt[d])/(16*e^(5/2))
```

fricas [F] time = 0.52, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bx^4 \arcsin\left(cx\right) + ax^4}{e^3x^6 + 3\,de^2x^4 + 3\,d^2ex^2 + d^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))/(e*x^2+d)^3,x, algorithm="fricas")
```

```
[Out] integral((b*x^4*arcsin(c*x) + a*x^4)/(e^3*x^6 + 3*d*e^2*x^4 + 3*d^2*e*x^2 +
 d^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b\arcsin\left(cx\right) + a)x^4}{\left(ex^2 + d\right)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))/(e*x^2+d)^3,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)*x^4/(e*x^2 + d)^3, x)
```

maple [C] time = 2.02, size = 3107, normalized size = 2.87

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a+b*arcsin(c*x))/(e*x^2+d)^3,x)
```

```
[Out] -c^5*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*d^2*arctanh(e*(I*c*x
+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/e^5/(
c^2*d+e)^2*(c^2*d*(c^2*d+e))^(1/2)-3/8*c^4*b/e/(c^2*d+e)/(c^2*e*x^2+c^2*d)^
2*arcsin(c*x)*x*d-5/8*c^6*b/e/(c^2*d+e)/(c^2*e*x^2+c^2*d)^2*arcsin(c*x)*x^3
*d-3/8*c^6*b/e^2/(c^2*d+e)/(c^2*e*x^2+c^2*d)^2*arcsin(c*x)*x*d^2+1/8*c^5*b/
e/(c^2*d+e)/(c^2*e*x^2+c^2*d)^2*(-c^2*x^2+1)^(1/2)*x^2*d+c^3*b*((2*c^2*d+2*
```

(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((
2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))*d/e^5/(c^2*d+e)*(c^2*d*(c^2*
d+e))^(1/2)+c^5*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*d^2*arct
an(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^
(1/2))/e^5/(c^2*d+e)^2*(c^2*d*(c^2*d+e))^(1/2)-c^3*b*(-(2*c^2*d-2*(c^2*d*(c
^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2
*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))*d/e^5/(c^2*d+e)*(c^2*d*(c^2*d+e))^(1/
2)-7/4*c^3*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c
*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/e^4
/(c^2*d+e)^2*(c^2*d*(c^2*d+e))^(1/2)*d+7/4*c^3*b*(-(2*c^2*d-2*(c^2*d*(c^2*d
+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^
2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/e^4/(c^2*d+e)^2*(c^2*d*(c^2*d+e))^(1/2)*d
+3/8*a/e^2/(d*e)^(1/2)*arctan(e*x/(d*e)^(1/2))+9/4*c^5*b*((2*c^2*d+2*(c^2*d
*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*
d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/e^4/(c^2*d+e)^2*d^2+5/4*c^3*b*((2*
c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(
1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/e^3/(c^2*d+e)^2*d-5/
4*c*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^
2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/(c^2*d+e)
/e^4*(c^2*d*(c^2*d+e))^(1/2)-5/8*c*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)
*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e)
)^(1/2)+e)*e)^(1/2))/e^3/(c^2*d+e)^2*(c^2*d*(c^2*d+e))^(1/2)+5/4*c*b*((2*c^
2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/
2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/(c^2*d+e)/e^4*(c^2*d*(
c^2*d+e))^(1/2)+5/8*c*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*ar
ctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e
)^(1/2))/e^3/(c^2*d+e)^2*(c^2*d*(c^2*d+e))^(1/2)-7/4*c^3*b*((2*c^2*d+2*(c^2
d(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^
2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/(c^2*d+e)/e^4*d+9/4*c^5*b*(-(2*c
^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/
2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/e^4/(c^2*d+e)^2*d^2+5
/4*c^3*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(
-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/e^3/(c
^2*d+e)^2*d-7/4*c^3*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arct
an(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^
(1/2))/(c^2*d+e)/e^4*d+c^7*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2
)*d^3*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1
/2)+e)*e)^(1/2))/e^5/(c^2*d+e)^2-c^5*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+
e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+
e))^(1/2)+e)*e)^(1/2))*d^2/e^5/(c^2*d+e)+c^7*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e
))^(1/2)+e)*e)^(1/2)*d^3*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(
c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/e^5/(c^2*d+e)^2-c^5*b*(-(2*c^2*d-2*(c^2
d(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^
2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))*d^2/e^5/(c^2*d+e)+1/8*c^5*b/e^2/
(c^2*d+e)/(c^2*e*x^2+c^2*d)^2*d^2*(-c^2*x^2+1)^(1/2)-3/8*c^4*a/(c^2*e*x^2+c
^2*d)^2/e^2*d*x-5/8*c*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*ar
ctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e
)^(1/2))/(c^2*d+e)/e^3+3/16*c^3*b/e^2/(c^2*d+e)*d*sum(1/_R1/(_R1^2*e-2*c^2*
d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x
-(-c^2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))+3/16*c
^3*b/e^2/(c^2*d+e)*d*sum(_R1/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c
*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=
RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))-5/8*c*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))
^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*
(c^2*d+e))^(1/2)+e)*e)^(1/2))/(c^2*d+e)/e^3-5/8*c^4*b/(c^2*d+e)/(c^2*e*x^2+
c^2*d)^2*arcsin(c*x)*x^3-5/8*c^4*a/(c^2*e*x^2+c^2*d)^2/e*x^3+3/16*c*b/e/(c^
2*d+e)*sum(1/_R1/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2
+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^
4+(-4*c^2*d-2*e)*_Z^2+e))+3/16*c*b/e/(c^2*d+e)*sum(_R1/(_R1^2*e-2*c^2*d-e)*

```
(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^
2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{1}{8}\,a\left(\frac{5\,ex^3+3\,dx}{e^4x^4+2\,de^3x^2+d^2e^2}-\frac{3\,\arctan\left(\frac{ex}{\sqrt{de}}\right)}{\sqrt{de}\,e^2}\right)+b\int\frac{x^4\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{e^3x^6+3\,de^2x^4+3\,d^2ex^2+d^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(a+b*arcsin(c*x))/(e*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] -1/8*a*((5*e*x^3 + 3*d*x)/(e^4*x^4 + 2*d*e^3*x^2 + d^2*e^2) - 3*arctan(e*x/
sqrt(d*e))/(sqrt(d*e)*e^2)) + b*integrate(x^4*arctan2(c*x, sqrt(c*x + 1)*sq
rt(-c*x + 1))/(e^3*x^6 + 3*d*e^2*x^4 + 3*d^2*e*x^2 + d^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{x^4\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(e\,x^2+d\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(a + b*asin(c*x)))/(d + e*x^2)^3,x)
```

```
[Out] int((x^4*(a + b*asin(c*x)))/(d + e*x^2)^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(a+b*asin(c*x))/(e*x**2+d)**3,x)
```

```
[Out] Timed out
```

3.647 $\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^3}\,dx$

Optimal. Leaf size=1092

$$-\frac{b\tanh^{-1}\left(\frac{\sqrt{e}-c^2\sqrt{-d}\,x}{\sqrt{dc^2+e}\,\sqrt{1-c^2x^2}}\right)c^3}{16e^{3/2}\left(dc^2+e\right)^{3/2}}-\frac{b\tanh^{-1}\left(\frac{\sqrt{-d}\,xc^2+\sqrt{e}}{\sqrt{dc^2+e}\,\sqrt{1-c^2x^2}}\right)c^3}{16e^{3/2}\left(dc^2+e\right)^{3/2}}+\frac{b\tanh^{-1}\left(\frac{\sqrt{e}-c^2\sqrt{-d}\,x}{\sqrt{dc^2+e}\,\sqrt{1-c^2x^2}}\right)c}{16de^{3/2}\sqrt{dc^2+e}}+\frac{b\tanh^{-1}\left(\frac{\sqrt{-d}\,xc^2+\sqrt{}}{\sqrt{dc^2+e}\,\sqrt{1-}}\right.}{16de^{3/2}\sqrt{dc^2+}}$$

```
[Out] -1/16*b*c^3*arctanh((-c^2*x*(-d)^(1/2)+e^(1/2))/(c^2*d+e)^(1/2)/(-c^2*x^2+1
)^(1/2))/e^(3/2)/(c^2*d+e)^(3/2)-1/16*b*c^3*arctanh((c^2*x*(-d)^(1/2)+e^(1/
2))/(c^2*d+e)^(1/2)/(-c^2*x^2+1)^(1/2))/e^(3/2)/(c^2*d+e)^(3/2)-1/16*(a+b*a
rcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+
e)^(1/2)))/(-d)^(3/2)/e^(3/2)+1/16*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x^2+
1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/(-d)^(3/2)/e^(3/2)-1/16
*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+
(c^2*d+e)^(1/2)))/(-d)^(3/2)/e^(3/2)+1/16*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c
^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/(-d)^(3/2)/e^(3/
2)+1/16*I*b*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c
^2*d+e)^(1/2)))/(-d)^(3/2)/e^(3/2)-1/16*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^
(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/(-d)^(3/2)/e^(3/2)+1/16*I*
b*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1
/2)))/(-d)^(3/2)/e^(3/2)-1/16*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(
1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/(-d)^(3/2)/e^(3/2)+1/16*(-a-b*arcsin
(c*x))/e^(3/2)/(-d)^(1/2)/((-d)^(1/2)-x*e^(1/2))^2+1/16*(-a-b*arcsin(c*x))/
d/e^(3/2)/((-d)^(1/2)-x*e^(1/2))+1/16*(a+b*arcsin(c*x))/e^(3/2)/(-d)^(1/2)/
((-d)^(1/2)+x*e^(1/2))^2+1/16*(a+b*arcsin(c*x))/d/e^(3/2)/((-d)^(1/2)+x*e^(
1/2))+1/16*b*c*arctanh((-c^2*x*(-d)^(1/2)+e^(1/2))/(c^2*d+e)^(1/2)/(-c^2*x^
2+1)^(1/2))/d/e^(3/2)/(c^2*d+e)^(1/2)+1/16*b*c*arctanh((c^2*x*(-d)^(1/2)+e^
(1/2))/(c^2*d+e)^(1/2)/(-c^2*x^2+1)^(1/2))/d/e^(3/2)/(c^2*d+e)^(1/2)+1/16*b
*c*(-c^2*x^2+1)^(1/2)/e/(c^2*d+e)/(-d)^(1/2)/((-d)^(1/2)-x*e^(1/2))+1/16*b*
c*(-c^2*x^2+1)^(1/2)/e/(c^2*d+e)/(-d)^(1/2)/((-d)^(1/2)+x*e^(1/2))
```

Rubi [A] time = 2.61, antiderivative size = 1092, normalized size of antiderivative = 1.00, number of steps used = 62, number of rules used = 11, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.524, Rules used = {4733, 4667, 4743, 731, 725, 206, 4741, 4521, 2190, 2279, 2391}

$$-\frac{b\tanh^{-1}\left(\frac{\sqrt{e}-c^2\sqrt{-d}\,x}{\sqrt{dc^2+e}\,\sqrt{1-c^2x^2}}\right)c^3}{16e^{3/2}\left(dc^2+e\right)^{3/2}}-\frac{b\tanh^{-1}\left(\frac{\sqrt{-d}\,xc^2+\sqrt{e}}{\sqrt{dc^2+e}\,\sqrt{1-c^2x^2}}\right)c^3}{16e^{3/2}\left(dc^2+e\right)^{3/2}}+\frac{b\tanh^{-1}\left(\frac{\sqrt{e}-c^2\sqrt{-d}\,x}{\sqrt{dc^2+e}\,\sqrt{1-c^2x^2}}\right)c}{16de^{3/2}\sqrt{dc^2+e}}+\frac{b\tanh^{-1}\left(\frac{\sqrt{-d}\,xc^2+\sqrt{}}{\sqrt{dc^2+e}\,\sqrt{1-}}\right.}{16de^{3/2}\sqrt{dc^2+}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*ArcSin[c*x]))/(d + e*x^2)^3,x]
```

```
[Out] (b*c*Sqrt[1 - c^2*x^2])/(16*Sqrt[-d]*e*(c^2*d + e)*(Sqrt[-d] - Sqrt[e]*x))
+ (b*c*Sqrt[1 - c^2*x^2])/(16*Sqrt[-d]*e*(c^2*d + e)*(Sqrt[-d] + Sqrt[e]*x)
) - (a + b*ArcSin[c*x])/(16*Sqrt[-d]*e^(3/2)*(Sqrt[-d] - Sqrt[e]*x)^2) - (a
 + b*ArcSin[c*x])/(16*d*e^(3/2)*(Sqrt[-d] - Sqrt[e]*x)) + (a + b*ArcSin[c*x
])/(16*Sqrt[-d]*e^(3/2)*(Sqrt[-d] + Sqrt[e]*x)^2) + (a + b*ArcSin[c*x])/(16
*d*e^(3/2)*(Sqrt[-d] + Sqrt[e]*x)) - (b*c^3*ArcTanh[(Sqrt[e] - c^2*Sqrt[-d]
*x)/(Sqrt[c^2*d + e]*Sqrt[1 - c^2*x^2])])/(16*e^(3/2)*(c^2*d + e)^(3/2)) +
(b*c*ArcTanh[(Sqrt[e] - c^2*Sqrt[-d]*x)/(Sqrt[c^2*d + e]*Sqrt[1 - c^2*x^2])
])/(16*d*e^(3/2)*Sqrt[c^2*d + e]) - (b*c^3*ArcTanh[(Sqrt[e] + c^2*Sqrt[-d]*
x)/(Sqrt[c^2*d + e]*Sqrt[1 - c^2*x^2])])/(16*e^(3/2)*(c^2*d + e)^(3/2)) + (
b*c*ArcTanh[(Sqrt[e] + c^2*Sqrt[-d]*x)/(Sqrt[c^2*d + e]*Sqrt[1 - c^2*x^2])]
)/(16*d*e^(3/2)*Sqrt[c^2*d + e]) - ((a + b*ArcSin[c*x])*Log[1 - (Sqrt[e]*E^
```

```
(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(16*(-d)^(3/2)*e^(3/2))
 + ((a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] -
 Sqrt[c^2*d + e])])/(16*(-d)^(3/2)*e^(3/2)) - ((a + b*ArcSin[c*x])*Log[1 -
(Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(16*(-d)^(3/
2)*e^(3/2)) + ((a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c
*Sqrt[-d] + Sqrt[c^2*d + e])])/(16*(-d)^(3/2)*e^(3/2)) - ((I/16)*b*PolyLog[
2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e]))])/((-d)^
(3/2)*e^(3/2)) + ((I/16)*b*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt
[-d] - Sqrt[c^2*d + e])])/((-d)^(3/2)*e^(3/2)) - ((I/16)*b*PolyLog[2, -((Sq
rt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e]))])/((-d)^(3/2)*e^
(3/2)) + ((I/16)*b*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + S
qrt[c^2*d + e])])/((-d)^(3/2)*e^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 731

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*d^2 + a*e^2)), x] + D
ist[(c*d)/(c*d^2 + a*e^2), Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, d, e, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[m + 2*p + 3, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rule 4733

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (
f*x)^m*(d + e*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[c^2*d +
 e, 0] && IGtQ[n, 0] && IntegerQ[p] && IntegerQ[m]
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rubi steps

$$\int \frac{x^2\left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^3}\,dx = \int \left(-\frac{d\left(a+b\sin^{-1}(cx)\right)}{e\left(d+ex^2\right)^3}+\frac{a+b\sin^{-1}(cx)}{e\left(d+ex^2\right)^2}\right)dx$$

$$= \frac{\int \frac{a+b\sin^{-1}(cx)}{\left(d+ex^2\right)^2}\,dx}{e} - \frac{d\int \frac{a+b\sin^{-1}(cx)}{\left(d+ex^2\right)^3}\,dx}{e}$$

$$= \frac{\int \left(-\frac{e\left(a+b\sin^{-1}(cx)\right)}{4d\left(\sqrt{-d}\,\sqrt{e}-ex\right)^2}-\frac{e\left(a+b\sin^{-1}(cx)\right)}{4d\left(\sqrt{-d}\,\sqrt{e}+ex\right)^2}-\frac{e\left(a+b\sin^{-1}(cx)\right)}{2d\left(-de-e^2x^2\right)}\right)dx}{e} - \frac{d\int \left(-\frac{e^{3/2}\left(a+b\sin^{-1}(cx)\right)}{8(-d)^{3/2}\left(\sqrt{-d}\,\sqrt{e}-ex\right)^3} -\right.}{}$$

$$= \frac{3\int \frac{a+b\sin^{-1}(cx)}{\left(\sqrt{-d}\,\sqrt{e}-ex\right)^2}\,dx}{16d} + \frac{3\int \frac{a+b\sin^{-1}(cx)}{\left(\sqrt{-d}\,\sqrt{e}+ex\right)^2}\,dx}{16d} - \frac{\int \frac{a+b\sin^{-1}(cx)}{\left(\sqrt{-d}\,\sqrt{e}-ex\right)^2}\,dx}{4d} - \frac{\int \frac{a+b\sin^{-1}(cx)}{\left(\sqrt{-d}\,\sqrt{e}+ex\right)^2}\,dx}{4d} +$$

$$= -\frac{a+b\sin^{-1}(cx)}{16\sqrt{-d}\,e^{3/2}\left(\sqrt{-d}-\sqrt{e}\,x\right)^2} - \frac{a+b\sin^{-1}(cx)}{16de^{3/2}\left(\sqrt{-d}-\sqrt{e}\,x\right)} + \frac{a+b\sin^{-1}(cx)}{16\sqrt{-d}\,e^{3/2}\left(\sqrt{-d}+\sqrt{e}\,x\right)^2}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{16\sqrt{-d}\,e\left(c^2d+e\right)\left(\sqrt{-d}-\sqrt{e}\,x\right)} + \frac{bc\sqrt{1-c^2x^2}}{16\sqrt{-d}\,e\left(c^2d+e\right)\left(\sqrt{-d}+\sqrt{e}\,x\right)} - \frac{a+b\,\mathrm{s}}{16\sqrt{-d}\,e^{3/2}\left(\right.}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{16\sqrt{-d}\,e\left(c^2d+e\right)\left(\sqrt{-d}-\sqrt{e}\,x\right)} + \frac{bc\sqrt{1-c^2x^2}}{16\sqrt{-d}\,e\left(c^2d+e\right)\left(\sqrt{-d}+\sqrt{e}\,x\right)} - \frac{a+b\,\mathrm{s}}{16\sqrt{-d}\,e^{3/2}\left(\right.}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{16\sqrt{-d}\,e\left(c^2d+e\right)\left(\sqrt{-d}-\sqrt{e}\,x\right)} + \frac{bc\sqrt{1-c^2x^2}}{16\sqrt{-d}\,e\left(c^2d+e\right)\left(\sqrt{-d}+\sqrt{e}\,x\right)} - \frac{a+b\,\mathrm{s}}{16\sqrt{-d}\,e^{3/2}\left(\right.}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{16\sqrt{-d}\,e\left(c^2d+e\right)\left(\sqrt{-d}-\sqrt{e}\,x\right)} + \frac{bc\sqrt{1-c^2x^2}}{16\sqrt{-d}\,e\left(c^2d+e\right)\left(\sqrt{-d}+\sqrt{e}\,x\right)} - \frac{a+b\,\mathrm{s}}{16\sqrt{-d}\,e^{3/2}\left(\right.}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{16\sqrt{-d}\,e\left(c^2d+e\right)\left(\sqrt{-d}-\sqrt{e}\,x\right)} + \frac{bc\sqrt{1-c^2x^2}}{16\sqrt{-d}\,e\left(c^2d+e\right)\left(\sqrt{-d}+\sqrt{e}\,x\right)} - \frac{a+b\,\mathrm{s}}{16\sqrt{-d}\,e^{3/2}\left(\right.}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{16\sqrt{-d}\,e\left(c^2d+e\right)\left(\sqrt{-d}-\sqrt{e}\,x\right)} + \frac{bc\sqrt{1-c^2x^2}}{16\sqrt{-d}\,e\left(c^2d+e\right)\left(\sqrt{-d}+\sqrt{e}\,x\right)} - \frac{a+b\,\mathrm{s}}{16\sqrt{-d}\,e^{3/2}\left(\right.}$$

Mathematica [A] time = 6.08, size = 1064, normalized size = 0.97

$$\frac{ax}{8de\left(ex^2+d\right)} - \frac{ax}{4e\left(ex^2+d\right)^2} + \frac{a\tan^{-1}\left(\frac{\sqrt{e}\,x}{\sqrt{d}}\right)}{8d^{3/2}e^{3/2}} + b\left(\frac{i\left(\frac{\sin^{-1}(cx)}{i\sqrt{e}\,x+\sqrt{d}} - \frac{c\tan^{-1}\left(\frac{\sqrt{d}\,xc^2+i\sqrt{e}}{\sqrt{dc^2+e}\,\sqrt{1-c^2x^2}}\right)}{\sqrt{dc^2+e}}\right)}{16de^{3/2}} - \frac{-\frac{\sin^{-1}(cx)}{\sqrt{e}\,x+i\sqrt{d}} - \frac{c\tanh^{-1}\left(\frac{i\sqrt{d}\,xc^2\ldots}{\sqrt{dc^2+e}\,\sqrt{\ldots}}\right)}{\sqrt{dc^2+e}}}{16de^{3/2}}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^2*(a + b*ArcSin[c*x]))/(d + e*x^2)^3,x]
```

```
[Out] -1/4*(a*x)/(e*(d + e*x^2)^2) + (a*x)/(8*d*e*(d + e*x^2)) + (a*ArcTan[(Sqrt[
e]*x)/Sqrt[d]])/(8*d^(3/2)*e^(3/2)) + b*(((I/16)*(ArcSin[c*x]/(Sqrt[d] + I*
Sqrt[e]*x) - (c*ArcTan[(I*Sqrt[e] + c^2*Sqrt[d]*x)/(Sqrt[c^2*d + e]*Sqrt[1
- c^2*x^2])])/Sqrt[c^2*d + e]))/(d*e^(3/2)) - (-(ArcSin[c*x]/(I*Sqrt[d] + S
qrt[e]*x)) - (c*ArcTanh[(Sqrt[e] + I*c^2*Sqrt[d]*x)/(Sqrt[c^2*d + e]*Sqrt[1
 - c^2*x^2])])/Sqrt[c^2*d + e])/(16*d*e^(3/2)) - ((I/16)*(-((c*Sqrt[1 - c^2
*x^2])/((c^2*d + e)*((-I)*Sqrt[d] + Sqrt[e]*x))) - ArcSin[c*x]/(Sqrt[e]*((-
I)*Sqrt[d] + Sqrt[e]*x)^2) - (I*c^3*Sqrt[d]*(Log[4] + Log[(e*Sqrt[c^2*d + e
]*(Sqrt[e] - I*c^2*Sqrt[d]*x + Sqrt[c^2*d + e]*Sqrt[1 - c^2*x^2]))/(c^3*(d
+ I*Sqrt[d]*Sqrt[e]*x))]))/(Sqrt[e]*(c^2*d + e)^(3/2))))/(Sqrt[d]*e) + ((I/
16)*(-((c*Sqrt[1 - c^2*x^2])/((c^2*d + e)*(I*Sqrt[d] + Sqrt[e]*x))) - ArcSi
n[c*x]/(Sqrt[e]*(I*Sqrt[d] + Sqrt[e]*x)^2) + (I*c^3*Sqrt[d]*(Log[4] + Log[(
e*Sqrt[c^2*d + e]*(Sqrt[e] + I*c^2*Sqrt[d]*x + Sqrt[c^2*d + e]*Sqrt[1 - c^2
*x^2]))/(c^3*(d - I*Sqrt[d]*Sqrt[e]*x))]))/(Sqrt[e]*(c^2*d + e)^(3/2))))/(S
qrt[d]*e) - (ArcSin[c*x]*(ArcSin[c*x] + (2*I)*(Log[1 + (Sqrt[e]*E^(I*ArcSin
[c*x]))/(c*Sqrt[d] - Sqrt[c^2*d + e])] + Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x])
)/(c*Sqrt[d] + Sqrt[c^2*d + e])])) + 2*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]
))/(-(c*Sqrt[d]) + Sqrt[c^2*d + e])] + 2*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[
c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e]))])/(32*d^(3/2)*e^(3/2)) + (ArcSin[c*x]
*(ArcSin[c*x] + (2*I)*(Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(-(c*Sqrt[d]) +
Sqrt[c^2*d + e])] + Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c
^2*d + e])])) + 2*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] - Sqrt[
c^2*d + e])] + 2*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c
^2*d + e])])/(32*d^(3/2)*e^(3/2)))
```

fricas [F] time = 0.63, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{bx^2 \arcsin(cx) + ax^2}{e^3x^6 + 3\,de^2x^4 + 3\,d^2ex^2 + d^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))/(e*x^2+d)^3,x, algorithm="fricas")
```

```
[Out] integral((b*x^2*arcsin(c*x) + a*x^2)/(e^3*x^6 + 3*d*e^2*x^4 + 3*d^2*e*x^2 +
 d^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b \arcsin(cx) + a)x^2}{\left(ex^2 + d\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))/(e*x^2+d)^3,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)*x^2/(e*x^2 + d)^3, x)
```

maple [C] time = 2.18, size = 2259, normalized size = 2.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+b*arcsin(c*x))/(e*x^2+d)^3,x)
```

```
[Out] 1/8*c^4*b*e/d/(c^2*d+e)/(c^2*e*x^2+c^2*d)^2*arcsin(c*x)*x^3-1/8*c^6*b/e/(c^
2*d+e)/(c^2*e*x^2+c^2*d)^2*arcsin(c*x)*x*d-1/4*c*b*((2*c^2*d+2*(c^2*d*(c^2*
d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c
^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/e^3/d/(c^2*d+e)*(c^2*d*(c^2*d+e))^(1/2)-
```

```
1/8*c*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-
c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/(c^2*d+
e)^2/d/e^2*(c^2*d*(c^2*d+e))^(1/2)+1/4*c*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(
1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c
^2*d+e))^(1/2)-e)*e)^(1/2))/e^3/d/(c^2*d+e)*(c^2*d*(c^2*d+e))^(1/2)+1/8*c*b
*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2
+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/(c^2*d+e)^2/d/e
^2*(c^2*d*(c^2*d+e))^(1/2)-1/4*c^3*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e
)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e
))^(1/2)-e)*e)^(1/2))/(c^2*d+e)^2/e^2+1/4*c^3*b*((2*c^2*d+2*(c^2*d*(c^2*d+e
))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*
d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/(c^2*d+e)/e^3-1/8*c^5*b/(c^2*d+e)/(c^2*e*x^
2+c^2*d)^2*(-c^2*x^2+1)^(1/2)*x^2-1/8*c^4*b/(c^2*d+e)/(c^2*e*x^2+c^2*d)^2*a
rcsin(c*x)*x+1/8*c^6*b/(c^2*d+e)/(c^2*e*x^2+c^2*d)^2*arcsin(c*x)*x^3+1/4*c^
3*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*
x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/(c^2*d+e)/e
^3-1/4*c^3*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c
*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/(c^
2*d+e)^2/e^2+1/16*c^3*b/e/(c^2*d+e)*sum(1/_R1/(_R1^2*e-2*c^2*d-e)*(I*arcsin
(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^
(1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))+1/16*c^3*b/e/(c^2*d+
e)*sum(_R1/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1
/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*
c^2*d-2*e)*_Z^2+e))+1/16*c*b/d/(c^2*d+e)*sum(1/_R1/(_R1^2*e-2*c^2*d-e)*(I*a
rcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^
2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))+1/16*c*b/d/(c^2
*d+e)*sum(_R1/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)
^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4+(
-4*c^2*d-2*e)*_Z^2+e))+1/8*c*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1
/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2
)+e)*e)^(1/2))/e^2/d/(c^2*d+e)+1/8*c*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)
+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d
+e))^(1/2)-e)*e)^(1/2))/e^2/d/(c^2*d+e)-1/4*c^5*b*((2*c^2*d+2*(c^2*d*(c^2*d
+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^
2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/e^3/(c^2*d+e)^2*d+1/4*c^3*b*((2*c^2*d+2*(
c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2
*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/e^3/(c^2*d+e)^2*(c^2*d*(c^2*d
+e))^(1/2)-1/4*c^3*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arcta
n(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(
1/2))/e^3/(c^2*d+e)^2*(c^2*d*(c^2*d+e))^(1/2)-1/4*c^5*b*(-(2*c^2*d-2*(c^2*d
*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*
d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/e^3/(c^2*d+e)^2*d-1/8*c^5*b/e*d/(c
^2*d+e)/(c^2*e*x^2+c^2*d)^2*(-c^2*x^2+1)^(1/2)-1/8*c^4*a/(c^2*e*x^2+c^2*d)^
2/e*x+1/8*c^4*a/(c^2*e*x^2+c^2*d)^2/d*x^3+1/8*a/d/e/(d*e)^(1/2)*arctan(e*x/
(d*e)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{8}a\left(\frac{ex^3-dx}{de^3x^4+2\,d^2e^2x^2+d^3e}+\frac{\arctan\left(\frac{ex}{\sqrt{de}}\right)}{\sqrt{de}\,de}\right)+b\int\frac{x^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{e^3x^6+3\,de^2x^4+3\,d^2ex^2+d^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+b*arcsin(c*x))/(e*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] 1/8*a*((e*x^3 - d*x)/(d*e^3*x^4 + 2*d^2*e^2*x^2 + d^3*e) + arctan(e*x/sqrt(
d*e))/(sqrt(d*e)*d*e)) + b*integrate(x^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c
*x + 1))/(e^3*x^6 + 3*d*e^2*x^4 + 3*d^2*e*x^2 + d^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2\,\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}{{\left(e\,x^2+d\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(a + b*asin(c*x)))/(d + e*x^2)^3,x)
```

```
[Out] int((x^2*(a + b*asin(c*x)))/(d + e*x^2)^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+b*asin(c*x))/(e*x**2+d)**3,x)
```

```
[Out] Timed out
```

3.648 $\int \frac{a+b\sin^{-1}(cx)}{\left(d+ex^2\right)^3}\,dx$

Optimal. Leaf size=1092

$$\frac{b\tanh^{-1}\left(\frac{\sqrt{e}-c^2\sqrt{-d}\,x}{\sqrt{dc^2+e}\,\sqrt{1-c^2x^2}}\right)c^3}{16d\sqrt{e}\left(dc^2+e\right)^{3/2}}+\frac{b\tanh^{-1}\left(\frac{\sqrt{-d}\,xc^2+\sqrt{e}}{\sqrt{dc^2+e}\,\sqrt{1-c^2x^2}}\right)c^3}{16d\sqrt{e}\left(dc^2+e\right)^{3/2}}+\frac{3b\tanh^{-1}\left(\frac{\sqrt{e}-c^2\sqrt{-d}\,x}{\sqrt{dc^2+e}\,\sqrt{1-c^2x^2}}\right)c}{16d^2\sqrt{e}\sqrt{dc^2+e}}+\frac{3b\tanh^{-1}\left(\frac{\sqrt{-d}\,xc^2+\sqrt{e}}{\sqrt{dc^2+e}\,\sqrt{1-c^2x^2}}\right)}{16d^2\sqrt{e}\sqrt{dc^2+e}}$$

```
[Out] 1/16*b*c^3*arctanh((-c^2*x*(-d)^(1/2)+e^(1/2))/(c^2*d+e)^(1/2)/(-c^2*x^2+1)
^(1/2))/d/(c^2*d+e)^(3/2)/e^(1/2)+1/16*b*c^3*arctanh((c^2*x*(-d)^(1/2)+e^(1
/2))/(c^2*d+e)^(1/2)/(-c^2*x^2+1)^(1/2))/d/(c^2*d+e)^(3/2)/e^(1/2)+3/16*(a+
b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2
*d+e)^(1/2)))/(-d)^(5/2)/e^(1/2)-3/16*(a+b*arcsin(c*x))*ln(1+(I*c*x+(-c^2*x
^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/(-d)^(5/2)/e^(1/2)+3
/16*(a+b*arcsin(c*x))*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/
2)+(c^2*d+e)^(1/2)))/(-d)^(5/2)/e^(1/2)-3/16*(a+b*arcsin(c*x))*ln(1+(I*c*x+
(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/(-d)^(5/2)/e^
(1/2)+3/16*I*b*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2
)+(c^2*d+e)^(1/2)))/(-d)^(5/2)/e^(1/2)+3/16*I*b*polylog(2,-(I*c*x+(-c^2*x^2
+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/(-d)^(5/2)/e^(1/2)-3/1
6*I*b*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e
)^(1/2)))/(-d)^(5/2)/e^(1/2)-3/16*I*b*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*
e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/(-d)^(5/2)/e^(1/2)+1/16*(-a-b*arc
sin(c*x))/(-d)^(3/2)/e^(1/2)/((-d)^(1/2)-x*e^(1/2))^2-3/16*(a+b*arcsin(c*x)
)/d^2/e^(1/2)/((-d)^(1/2)-x*e^(1/2))+1/16*(a+b*arcsin(c*x))/(-d)^(3/2)/e^(1
/2)/((-d)^(1/2)+x*e^(1/2))^2+3/16*(a+b*arcsin(c*x))/d^2/e^(1/2)/((-d)^(1/2)
+x*e^(1/2))+3/16*b*c*arctanh((-c^2*x*(-d)^(1/2)+e^(1/2))/(c^2*d+e)^(1/2)/(-
c^2*x^2+1)^(1/2))/d^2/e^(1/2)/(c^2*d+e)^(1/2)+3/16*b*c*arctanh((c^2*x*(-d)^
(1/2)+e^(1/2))/(c^2*d+e)^(1/2)/(-c^2*x^2+1)^(1/2))/d^2/e^(1/2)/(c^2*d+e)^(1
/2)+1/16*b*c*(-c^2*x^2+1)^(1/2)/(-d)^(3/2)/(c^2*d+e)/((-d)^(1/2)-x*e^(1/2))
+1/16*b*c*(-c^2*x^2+1)^(1/2)/(-d)^(3/2)/(c^2*d+e)/((-d)^(1/2)+x*e^(1/2))
```

Rubi [A] time = 1.25, antiderivative size = 1092, normalized size of antiderivative = 1.00, number of steps used = 34, number of rules used = 10, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.556, Rules used = {4667, 4743, 731, 725, 206, 4741, 4521, 2190, 2279, 2391}

$$\frac{b\tanh^{-1}\left(\frac{\sqrt{e}-c^2\sqrt{-d}\,x}{\sqrt{dc^2+e}\,\sqrt{1-c^2x^2}}\right)c^3}{16d\sqrt{e}\left(dc^2+e\right)^{3/2}}+\frac{b\tanh^{-1}\left(\frac{\sqrt{-d}\,xc^2+\sqrt{e}}{\sqrt{dc^2+e}\,\sqrt{1-c^2x^2}}\right)c^3}{16d\sqrt{e}\left(dc^2+e\right)^{3/2}}+\frac{3b\tanh^{-1}\left(\frac{\sqrt{e}-c^2\sqrt{-d}\,x}{\sqrt{dc^2+e}\,\sqrt{1-c^2x^2}}\right)c}{16d^2\sqrt{e}\sqrt{dc^2+e}}+\frac{3b\tanh^{-1}\left(\frac{\sqrt{-d}\,xc^2+\sqrt{e}}{\sqrt{dc^2+e}\,\sqrt{1-c^2x^2}}\right)}{16d^2\sqrt{e}\sqrt{dc^2+e}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(d + e*x^2)^3,x]
```

```
[Out] (b*c*Sqrt[1 - c^2*x^2])/(16*(-d)^(3/2)*(c^2*d + e)*(Sqrt[-d] - Sqrt[e]*x))
+ (b*c*Sqrt[1 - c^2*x^2])/(16*(-d)^(3/2)*(c^2*d + e)*(Sqrt[-d] + Sqrt[e]*x)
) - (a + b*ArcSin[c*x])/(16*(-d)^(3/2)*Sqrt[e]*(Sqrt[-d] - Sqrt[e]*x)^2) -
(3*(a + b*ArcSin[c*x]))/(16*d^2*Sqrt[e]*(Sqrt[-d] - Sqrt[e]*x)) + (a + b*Ar
cSin[c*x])/(16*(-d)^(3/2)*Sqrt[e]*(Sqrt[-d] + Sqrt[e]*x)^2) + (3*(a + b*Arc
Sin[c*x]))/(16*d^2*Sqrt[e]*(Sqrt[-d] + Sqrt[e]*x)) + (b*c^3*ArcTanh[(Sqrt[e
] - c^2*Sqrt[-d]*x)/(Sqrt[c^2*d + e]*Sqrt[1 - c^2*x^2])])/(16*d*Sqrt[e]*(c^
2*d + e)^(3/2)) + (3*b*c*ArcTanh[(Sqrt[e] - c^2*Sqrt[-d]*x)/(Sqrt[c^2*d + e
]*Sqrt[1 - c^2*x^2])])/(16*d^2*Sqrt[e]*Sqrt[c^2*d + e]) + (b*c^3*ArcTanh[(S
qrt[e] + c^2*Sqrt[-d]*x)/(Sqrt[c^2*d + e]*Sqrt[1 - c^2*x^2])])/(16*d*Sqrt[e
]*(c^2*d + e)^(3/2)) + (3*b*c*ArcTanh[(Sqrt[e] + c^2*Sqrt[-d]*x)/(Sqrt[c^2*
d + e]*Sqrt[1 - c^2*x^2])])/(16*d^2*Sqrt[e]*Sqrt[c^2*d + e]) + (3*(a + b*Ar
```

```
cSin[c*x])*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d +
 e])])/(16*(-d)^(5/2)*Sqrt[e]) - (3*(a + b*ArcSin[c*x])*Log[1 + (Sqrt[e]*E^
(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(16*(-d)^(5/2)*Sqrt[e])
 + (3*(a + b*ArcSin[c*x])*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d]
 + Sqrt[c^2*d + e])])/(16*(-d)^(5/2)*Sqrt[e]) - (3*(a + b*ArcSin[c*x])*Log[
1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(16*(-d)
^(5/2)*Sqrt[e]) + (((3*I)/16)*b*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I
*c*Sqrt[-d] - Sqrt[c^2*d + e]))])/((-d)^(5/2)*Sqrt[e]) - (((3*I)/16)*b*Poly
Log[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/((-d)
^(5/2)*Sqrt[e]) + (((3*I)/16)*b*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I
*c*Sqrt[-d] + Sqrt[c^2*d + e]))])/((-d)^(5/2)*Sqrt[e]) - (((3*I)/16)*b*Poly
Log[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/((-d)
^(5/2)*Sqrt[e])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 731

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
(e*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/((m + 1)*(c*d^2 + a*e^2)), x] + D
ist[(c*d)/(c*d^2 + a*e^2), Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, d, e, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[m + 2*p + 3, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
```

```
e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 4743

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_))^(m_.), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(e*(m + 1)), x] -
Dist[(b*c*n)/(e*(m + 1)), Int[((d + e*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1
))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e, m}, x] && IGtQ[n, 0]
&& NeQ[m, -1]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{\left(d+ex^2\right)^3}\,dx = \int \left(-\frac{e^{3/2}\left(a+b\sin^{-1}(cx)\right)}{8(-d)^{3/2}\left(\sqrt{-d}\sqrt{e}-ex\right)^3} - \frac{3e\left(a+b\sin^{-1}(cx)\right)}{16d^2\left(\sqrt{-d}\sqrt{e}-ex\right)^2} - \frac{e^{3/2}\left(a+b\sin^{-1}(cx)\right)}{8(-d)^{3/2}\left(\sqrt{-d}\sqrt{e}+ex\right)^3} - \right.$$

$$= -\frac{(3e)\int \frac{a+b\sin^{-1}(cx)}{\left(\sqrt{-d}\sqrt{e}-ex\right)^2}\,dx}{16d^2} - \frac{(3e)\int \frac{a+b\sin^{-1}(cx)}{\left(\sqrt{-d}\sqrt{e}+ex\right)^2}\,dx}{16d^2} - \frac{(3e)\int \frac{a+b\sin^{-1}(cx)}{-de-e^2x^2}\,dx}{8d^2} - \frac{e^{3/2}\int \frac{a+b\sin}{\left(\sqrt{-d}\right.}}{8(-d)}$$

$$= -\frac{a+b\sin^{-1}(cx)}{16(-d)^{3/2}\sqrt{e}\left(\sqrt{-d}-\sqrt{e}x\right)^2} - \frac{3\left(a+b\sin^{-1}(cx)\right)}{16d^2\sqrt{e}\left(\sqrt{-d}-\sqrt{e}x\right)} + \frac{a+b\sin^{-1}(cx)}{16(-d)^{3/2}\sqrt{e}\left(\sqrt{-d}+\sqrt{e}x\right.}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{16(-d)^{3/2}\left(c^2d+e\right)\left(\sqrt{-d}-\sqrt{e}x\right)} + \frac{bc\sqrt{1-c^2x^2}}{16(-d)^{3/2}\left(c^2d+e\right)\left(\sqrt{-d}+\sqrt{e}x\right)} - \frac{a+b}{16(-d)^{3/2}\sqrt{e}}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{16(-d)^{3/2}\left(c^2d+e\right)\left(\sqrt{-d}-\sqrt{e}x\right)} + \frac{bc\sqrt{1-c^2x^2}}{16(-d)^{3/2}\left(c^2d+e\right)\left(\sqrt{-d}+\sqrt{e}x\right)} - \frac{a+b}{16(-d)^{3/2}\sqrt{e}}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{16(-d)^{3/2}\left(c^2d+e\right)\left(\sqrt{-d}-\sqrt{e}x\right)} + \frac{bc\sqrt{1-c^2x^2}}{16(-d)^{3/2}\left(c^2d+e\right)\left(\sqrt{-d}+\sqrt{e}x\right)} - \frac{a+b}{16(-d)^{3/2}\sqrt{e}}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{16(-d)^{3/2}\left(c^2d+e\right)\left(\sqrt{-d}-\sqrt{e}x\right)} + \frac{bc\sqrt{1-c^2x^2}}{16(-d)^{3/2}\left(c^2d+e\right)\left(\sqrt{-d}+\sqrt{e}x\right)} - \frac{a+b}{16(-d)^{3/2}\sqrt{e}}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{16(-d)^{3/2}\left(c^2d+e\right)\left(\sqrt{-d}-\sqrt{e}x\right)} + \frac{bc\sqrt{1-c^2x^2}}{16(-d)^{3/2}\left(c^2d+e\right)\left(\sqrt{-d}+\sqrt{e}x\right)} - \frac{a+b}{16(-d)^{3/2}\sqrt{e}}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{16(-d)^{3/2}\left(c^2d+e\right)\left(\sqrt{-d}-\sqrt{e}x\right)} + \frac{bc\sqrt{1-c^2x^2}}{16(-d)^{3/2}\left(c^2d+e\right)\left(\sqrt{-d}+\sqrt{e}x\right)} - \frac{a+b}{16(-d)^{3/2}\sqrt{e}}$$

Mathematica [A] time = 6.10, size = 1055, normalized size = 0.97

$$\frac{3ax}{8d^2\left(ex^2+d\right)} + \frac{ax}{4d\left(ex^2+d\right)^2} + \frac{3a\tan^{-1}\left(\frac{\sqrt{e}x}{\sqrt{d}}\right)}{8d^{5/2}\sqrt{e}} + b\left(\frac{3i\left(\frac{\sin^{-1}(cx)}{i\sqrt{e}x+\sqrt{d}} - \frac{c\tan^{-1}\left(\frac{\sqrt{d}xc^2+i\sqrt{e}}{\sqrt{dc^2+e}\sqrt{1-c^2x^2}}\right)}{\sqrt{dc^2+e}}\right)}{16d^2\sqrt{e}} - \frac{3\left(-\frac{\sin^{-1}(cx)}{\sqrt{e}x+i\sqrt{d}} - \frac{c\tanh^{-}}{}\right.}{16d^2\sqrt{}}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(d + e*x^2)^3,x]
```

```
[Out] (a*x)/(4*d*(d + e*x^2)^2) + (3*a*x)/(8*d^2*(d + e*x^2)) + (3*a*ArcTan[(Sqrt
[e]*x)/Sqrt[d]])/(8*d^(5/2)*Sqrt[e]) + b*((((3*I)/16)*(ArcSin[c*x]/(Sqrt[d]
 + I*Sqrt[e]*x) - (c*ArcTan[(I*Sqrt[e] + c^2*Sqrt[d]*x)/(Sqrt[c^2*d + e]*Sq
rt[1 - c^2*x^2])])/Sqrt[c^2*d + e]))/(d^2*Sqrt[e]) - (3*(-(ArcSin[c*x]/(I*S
```

```
qrt[d] + Sqrt[e]*x)) - (c*ArcTanh[(Sqrt[e] + I*c^2*Sqrt[d]*x)/(Sqrt[c^2*d +
 e]*Sqrt[1 - c^2*x^2])])/Sqrt[c^2*d + e]))/(16*d^2*Sqrt[e]) + ((I/16)*(-((c
*Sqrt[1 - c^2*x^2])/((c^2*d + e)*((-I)*Sqrt[d] + Sqrt[e]*x))) - ArcSin[c*x]
/(Sqrt[e]*((-I)*Sqrt[d] + Sqrt[e]*x)^2) - (I*c^3*Sqrt[d]*(Log[4] + Log[(e*S
qrt[c^2*d + e]*(Sqrt[e] - I*c^2*Sqrt[d]*x + Sqrt[c^2*d + e]*Sqrt[1 - c^2*x^
2]))/(c^3*(d + I*Sqrt[d]*Sqrt[e]*x))]))/(Sqrt[e]*(c^2*d + e)^(3/2))))/d^(3/
2) - ((I/16)*(-((c*Sqrt[1 - c^2*x^2])/((c^2*d + e)*(I*Sqrt[d] + Sqrt[e]*x))
) - ArcSin[c*x]/(Sqrt[e]*(I*Sqrt[d] + Sqrt[e]*x)^2) + (I*c^3*Sqrt[d]*(Log[4
] + Log[(e*Sqrt[c^2*d + e]*(Sqrt[e] + I*c^2*Sqrt[d]*x + Sqrt[c^2*d + e]*Sqr
t[1 - c^2*x^2]))/(c^3*(d - I*Sqrt[d]*Sqrt[e]*x))]))/(Sqrt[e]*(c^2*d + e)^(3
/2))))/d^(3/2) - (3*(ArcSin[c*x]*(ArcSin[c*x] + (2*I)*(Log[1 + (Sqrt[e]*E^(
I*ArcSin[c*x]))/(c*Sqrt[d] - Sqrt[c^2*d + e])] + Log[1 + (Sqrt[e]*E^(I*ArcS
in[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e])])) + 2*PolyLog[2, (Sqrt[e]*E^(I*Arc
Sin[c*x]))/(-(c*Sqrt[d]) + Sqrt[c^2*d + e])] + 2*PolyLog[2, -((Sqrt[e]*E^(I
*ArcSin[c*x]))/(c*Sqrt[d] + Sqrt[c^2*d + e]))]))/(32*d^(5/2)*Sqrt[e]) + (3*
(ArcSin[c*x]*(ArcSin[c*x] + (2*I)*(Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(-(c
*Sqrt[d]) + Sqrt[c^2*d + e])] + Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt
[d] + Sqrt[c^2*d + e])])) + 2*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqr
t[d] - Sqrt[c^2*d + e])] + 2*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(c*Sqrt
[d] + Sqrt[c^2*d + e])]))/(32*d^(5/2)*Sqrt[e]))
```

fricas [F] time = 0.84, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\arcsin(cx)+a}{e^3x^6+3\,de^2x^4+3\,d^2ex^2+d^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(e*x^2+d)^3,x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(c*x) + a)/(e^3*x^6 + 3*d*e^2*x^4 + 3*d^2*e*x^2 + d^3), x
)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{b\arcsin(cx)+a}{\left(ex^2+d\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(e*x^2+d)^3,x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/(e*x^2 + d)^3, x)
```

maple [C] time = 1.12, size = 3110, normalized size = 2.85

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(e*x^2+d)^3,x)
```

```
[Out] -c^7*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c
^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/e^3/(c^2*
d+e)^2*d+c^5*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I
*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/e
^3/(c^2*d+e)^2*(c^2*d*(c^2*d+e))^(1/2)-c^5*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))
^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*
(c^2*d+e))^(1/2)-e)*e)^(1/2))/e^3/(c^2*d+e)^2*(c^2*d*(c^2*d+e))^(1/2)+3/8*c
*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x
^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/e/d^2/(c^2*d+
```

```
e)-c^7*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(
-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/e^3/(c
^2*d+e)^2*d+5/4*c^3*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arcta
nh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(
1/2))/e^2/d/(c^2*d+e)+5/4*c^3*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^
(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1
/2)-e)*e)^(1/2))/e^2/d/(c^2*d+e)-3/4*c^3*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(
1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c
^2*d+e))^(1/2)-e)*e)^(1/2))/d/(c^2*d+e)^2/e+3/8*c*b*(-(2*c^2*d-2*(c^2*d*(c^
2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*
(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/e/d^2/(c^2*d+e)-3/4*c^3*b*((2*c^2*d+2*
(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((
2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/d/(c^2*d+e)^2/e+1/4*c^4*a*x/
d/(c^2*e*x^2+c^2*d)^2+3/16*c^3*b/d/(c^2*d+e)*sum(1/_R1/(_R1^2*e-2*c^2*d-e)*
(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^
2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))+3/16*c^3*b/
d/(c^2*d+e)*sum(_R1/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*
x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*
_Z^4+(-4*c^2*d-2*e)*_Z^2+e))+1/8*c^5*b/(c^2*d+e)/(c^2*e*x^2+c^2*d)^2*(-c^2*
x^2+1)^(1/2)+3/8*c^2*a/d^2*x/(c^2*e*x^2+c^2*d)+3/8*a/d^2/(d*e)^(1/2)*arctan
(e*x/(d*e)^(1/2))+3/16*c*b/d^2/(c^2*d+e)*e*sum(1/_R1/(_R1^2*e-2*c^2*d-e)*(I
*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*
x^2+1)^(1/2))/_R1)),_R1=RootOf(e*_Z^4+(-4*c^2*d-2*e)*_Z^2+e))+3/16*c*b/d^2/
(c^2*d+e)*e*sum(_R1/(_R1^2*e-2*c^2*d-e)*(I*arcsin(c*x)*ln((_R1-I*c*x-(-c^2*
x^2+1)^(1/2))/_R1)+dilog((_R1-I*c*x-(-c^2*x^2+1)^(1/2))/_R1)),_R1=RootOf(e*
_Z^4+(-4*c^2*d-2*e)*_Z^2+e))-7/4*c^5*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+
e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+
e))^(1/2)+e)*e)^(1/2))/(c^2*d+e)^2/e^2-7/4*c^5*b*(-(2*c^2*d-2*(c^2*d*(c^2*d
+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^
2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/(c^2*d+e)^2/e^2+c^5*b*((2*c^2*d+2*(c^2*d*
(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d
+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/(c^2*d+e)/e^3+c^5*b*(-(2*c^2*d-2*(c
^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*
c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/(c^2*d+e)/e^3+5/8*c^6*b/(c^2*d
+e)/(c^2*e*x^2+c^2*d)^2*arcsin(c*x)*x+3/8*c*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))
^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*
(c^2*d+e))^(1/2)+e)*e)^(1/2))/d^2/(c^2*d+e)^2/e*(c^2*d*(c^2*d+e))^(1/2)-3/4
*c*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2
*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/e^2/d^2/(c^
2*d+e)*(c^2*d*(c^2*d+e))^(1/2)-5/4*c^3*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/
2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2
*d+e))^(1/2)-e)*e)^(1/2))/(c^2*d+e)^2/d/e^2*(c^2*d*(c^2*d+e))^(1/2)+c^3*b*(
-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1
)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/e^3/d/(c^2*d+e)*
(c^2*d*(c^2*d+e))^(1/2)-3/8*c*b*(-(2*c^2*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^
(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1
/2)-e)*e)^(1/2))/d^2/(c^2*d+e)^2/e*(c^2*d*(c^2*d+e))^(1/2)+3/4*c*b*(-(2*c^2
*d-2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctan(e*(I*c*x+(-c^2*x^2+1)^(1/2)
)/((-2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)-e)*e)^(1/2))/e^2/d^2/(c^2*d+e)*(c^2*
d*(c^2*d+e))^(1/2)+1/8*c^5*b/d/(c^2*d+e)/(c^2*e*x^2+c^2*d)^2*(-c^2*x^2+1)^(
1/2)*x^2*e+3/8*c^4*b/d^2/(c^2*d+e)/(c^2*e*x^2+c^2*d)^2*arcsin(c*x)*x^3*e^2+
5/8*c^4*b/d/(c^2*d+e)/(c^2*e*x^2+c^2*d)^2*arcsin(c*x)*x*e+3/8*c^6*b*e/d/(c^
2*d+e)/(c^2*e*x^2+c^2*d)^2*arcsin(c*x)*x^3+5/4*c^3*b*((2*c^2*d+2*(c^2*d*(c^
2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*
(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/(c^2*d+e)^2/d/e^2*(c^2*d*(c^2*d+e))^(1
/2)-c^3*b*((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2)*arctanh(e*(I*c*x+
(-c^2*x^2+1)^(1/2))/((2*c^2*d+2*(c^2*d*(c^2*d+e))^(1/2)+e)*e)^(1/2))/e^3/d/
(c^2*d+e)*(c^2*d*(c^2*d+e))^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{8}\,a\left(\frac{3\,ex^3+5\,dx}{d^2e^2x^4+2\,d^3ex^2+d^4}+\frac{3\,\arctan\left(\frac{ex}{\sqrt{de}}\right)}{\sqrt{de}\,d^2}\right)+b\int\frac{\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)}{e^3x^6+3\,de^2x^4+3\,d^2ex^2+d^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(e*x^2+d)^3,x, algorithm="maxima")
```

```
[Out] 1/8*a*((3*e*x^3 + 5*d*x)/(d^2*e^2*x^4 + 2*d^3*e*x^2 + d^4) + 3*arctan(e*x/s
qrt(d*e))/(sqrt(d*e)*d^2)) + b*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c
*x + 1))/(e^3*x^6 + 3*d*e^2*x^4 + 3*d^2*e*x^2 + d^3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{a+b\,\mathrm{asin}\left(c\,x\right)}{{\left(e\,x^2+d\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(d + e*x^2)^3,x)
```

```
[Out] int((a + b*asin(c*x))/(d + e*x^2)^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(e*x**2+d)**3,x)
```

```
[Out] Timed out
```

3.649 $\int \sqrt{d+ex^2}\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=23

$$\text{Int}\left(\sqrt{d+ex^2}\left(a+b\sin^{-1}(cx)\right),x\right)$$

```
[Out] Unintegrable((e*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \sqrt{d+ex^2}\left(a+b\sin^{-1}(cx)\right)\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[d + e*x^2]*(a + b*ArcSin[c*x]),x]
[Out] Defer[Int][Sqrt[d + e*x^2]*(a + b*ArcSin[c*x]), x]
```

Rubi steps

$$\int \sqrt{d+ex^2}\left(a+b\sin^{-1}(cx)\right)\,dx=\int \sqrt{d+ex^2}\left(a+b\sin^{-1}(cx)\right)\,dx$$

Mathematica [A] time = 6.35, size = 0, normalized size = 0.00

$$\int \sqrt{d+ex^2}\left(a+b\sin^{-1}(cx)\right)\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[d + e*x^2]*(a + b*ArcSin[c*x]),x]
[Out] Integrate[Sqrt[d + e*x^2]*(a + b*ArcSin[c*x]), x]
```

fricas [A] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{ex^2+d}\,(b\arcsin(cx)+a),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral(sqrt(e*x^2 + d)*(b*arcsin(c*x) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{ex^2+d}\,(b\arcsin(cx)+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x, algorithm="giac")
[Out] integrate(sqrt(e*x^2 + d)*(b*arcsin(c*x) + a), x)
```

maple [A] time = 0.88, size = 0, normalized size = 0.00

$$\int \sqrt{e\,x^2+d}\,\left(a+b\arcsin(cx)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x)
```

```
[Out] int((e*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\left(\sqrt{ex^2+d}\,x+\frac{d\,\operatorname{arsinh}\left(\frac{ex}{\sqrt{de}}\right)}{\sqrt{e}}\right)a+b\int\sqrt{ex^2+d}\,\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^(1/2)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] 1/2*(sqrt(e*x^2 + d)*x + d*arcsinh(e*x/sqrt(d*e))/sqrt(e))*a + b*integrate(
sqrt(e*x^2 + d)*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int(a+b\operatorname{asin}(c\,x))\,\sqrt{e\,x^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(d + e*x^2)^(1/2),x)
```

```
[Out] int((a + b*asin(c*x))*(d + e*x^2)^(1/2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int(a+b\operatorname{asin}(cx))\sqrt{d+ex^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)**(1/2)*(a+b*asin(c*x)),x)
```

```
[Out] Integral((a + b*asin(c*x))*sqrt(d + e*x**2), x)
```

3.650 $\int \frac{a+b\sin^{-1}(cx)}{\sqrt{d+ex^2}}\,dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{a+b\sin^{-1}(cx)}{\sqrt{d+ex^2}},x\right)$$

```
[Out] Unintegrable((a+b*arcsin(c*x))/(e*x^2+d)^(1/2),x)
```

Rubi [A] time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{a+b\sin^{-1}(cx)}{\sqrt{d+ex^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*ArcSin[c*x])/Sqrt[d + e*x^2],x]
[Out] Defer[Int][(a + b*ArcSin[c*x])/Sqrt[d + e*x^2], x]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{\sqrt{d+ex^2}}\,dx=\int \frac{a+b\sin^{-1}(cx)}{\sqrt{d+ex^2}}\,dx$$

Mathematica [A] time = 4.46, size = 0, normalized size = 0.00

$$\int \frac{a+b\sin^{-1}(cx)}{\sqrt{d+ex^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c*x])/Sqrt[d + e*x^2],x]
[Out] Integrate[(a + b*ArcSin[c*x])/Sqrt[d + e*x^2], x]
```

fricas [A] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\arcsin(cx)+a}{\sqrt{ex^2+d}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(e*x^2+d)^(1/2),x, algorithm="fricas")
[Out] integral((b*arcsin(c*x) + a)/sqrt(e*x^2 + d), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b\arcsin(cx)+a}{\sqrt{ex^2+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(e*x^2+d)^(1/2),x, algorithm="giac")
[Out] integrate((b*arcsin(c*x) + a)/sqrt(e*x^2 + d), x)
```

maple [A] time = 0.80, size = 0, normalized size = 0.00

$$\int \frac{a + b \arcsin(cx)}{\sqrt{e\,x^2 + d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(e*x^2+d)^(1/2),x)
```

```
[Out] int((a+b*arcsin(c*x))/(e*x^2+d)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$b\int \frac{\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)}{\sqrt{ex^2+d}}\,dx + \frac{a\,\mathrm{arsinh}\left(\frac{ex}{\sqrt{de}}\right)}{\sqrt{e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(e*x^2+d)^(1/2),x, algorithm="maxima")
```

```
[Out] b*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/sqrt(e*x^2 + d), x)
+ a*arcsinh(e*x/sqrt(d*e))/sqrt(e)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{a + b\,\mathrm{asin}(c\,x)}{\sqrt{e\,x^2 + d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(d + e*x^2)^(1/2),x)
```

```
[Out] int((a + b*asin(c*x))/(d + e*x^2)^(1/2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b\,\mathrm{asin}(cx)}{\sqrt{d + ex^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(e*x**2+d)**(1/2),x)
```

```
[Out] Integral((a + b*asin(c*x))/sqrt(d + e*x**2), x)
```

3.651 $\int \frac{a+b\sin^{-1}(cx)}{\left(d+ex^2\right)^{3/2}}\,dx$

Optimal. Leaf size=70

$$\frac{x\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d+ex^2}}+\frac{b\tan^{-1}\left(\frac{\sqrt{e}\sqrt{1-c^2x^2}}{c\sqrt{d+ex^2}}\right)}{d\sqrt{e}}$$

```
[Out] b*arctan(e^(1/2)*(-c^2*x^2+1)^(1/2)/c/(e*x^2+d)^(1/2))/d/e^(1/2)+x*(a+b*arc
sin(c*x))/d/(e*x^2+d)^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {191, 4665, 12, 444, 63, 217, 203}

$$\frac{x\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d+ex^2}}+\frac{b\tan^{-1}\left(\frac{\sqrt{e}\sqrt{1-c^2x^2}}{c\sqrt{d+ex^2}}\right)}{d\sqrt{e}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(d + e*x^2)^(3/2),x]
```

```
[Out] (x*(a + b*ArcSin[c*x]))/(d*Sqrt[d + e*x^2]) + (b*ArcTan[(Sqrt[e]*Sqrt[1 - c
^2*x^2])/(c*Sqrt[d + e*x^2])])/(d*Sqrt[e])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 444

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
```

```
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 4665

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && NeQ[c^2*d + e, 0] && (IGtQ[p, 0] || ILtQ[p + 1/2, 0]
)
```

Rubi steps

$$
\begin{aligned}
\int \frac{a+b\sin^{-1}(cx)}{\left(d+ex^2\right)^{3/2}}\,dx &= \frac{x\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d+ex^2}}-(bc)\int \frac{x}{d\sqrt{1-c^2x^2}\sqrt{d+ex^2}}\,dx\\
&= \frac{x\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d+ex^2}}-\frac{(bc)\int \frac{x}{\sqrt{1-c^2x^2}\sqrt{d+ex^2}}\,dx}{d}\\
&= \frac{x\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d+ex^2}}-\frac{(bc)\,\text{Subst}\left(\int \frac{1}{\sqrt{1-c^2x}\sqrt{d+ex}}\,dx,x,x^2\right)}{2d}\\
&= \frac{x\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d+ex^2}}+\frac{b\,\text{Subst}\left(\int \frac{1}{\sqrt{d+\frac{e}{c^2}-\frac{ex^2}{c^2}}}\,dx,x,\sqrt{1-c^2x^2}\right)}{cd}\\
&= \frac{x\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d+ex^2}}+\frac{b\,\text{Subst}\left(\int \frac{1}{1+\frac{ex^2}{c^2}}\,dx,x,\frac{\sqrt{1-c^2x^2}}{\sqrt{d+ex^2}}\right)}{cd}\\
&= \frac{x\left(a+b\sin^{-1}(cx)\right)}{d\sqrt{d+ex^2}}+\frac{b\tan^{-1}\left(\frac{\sqrt{e}\sqrt{1-c^2x^2}}{c\sqrt{d+ex^2}}\right)}{d\sqrt{e}}
\end{aligned}
$$

Mathematica [C] time = 0.17, size = 74, normalized size = 1.06

$$\frac{x\left(2\left(a+b\sin^{-1}(cx)\right)-bcx\sqrt{\frac{ex^2}{d}+1}\,F_1\left(1;\frac{1}{2},\frac{1}{2};2;c^2x^2,-\frac{ex^2}{d}\right)\right)}{2d\sqrt{d+ex^2}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(d + e*x^2)^(3/2),x]
```

```
[Out] (x*(-(b*c*x*Sqrt[1 + (e*x^2)/d]*AppellF1[1, 1/2, 1/2, 2, c^2*x^2, -((e*x^2)
/d)]) + 2*(a + b*ArcSin[c*x])))/(2*d*Sqrt[d + e*x^2])
```

fricas [B] time = 1.06, size = 294, normalized size = 4.20

$$\left[-\frac{\left(bex^2+bd\right)\sqrt{-e}\,\log\left(8c^4e^2x^4+c^4d^2-6c^2de+8\left(c^4de-c^2e^2\right)x^2+4\left(2c^3ex^2+c^3d-ce\right)\sqrt{-c^2x^2+1}\sqrt{ex^2+d}\right.}{4\left(de^2x^2+d^2e\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(e*x^2+d)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/4*((b*e*x^2 + b*d)*sqrt(-e)*log(8*c^4*e^2*x^4 + c^4*d^2 - 6*c^2*d*e + 8
*(c^4*d*e - c^2*e^2)*x^2 + 4*(2*c^3*e*x^2 + c^3*d - c*e)*sqrt(-c^2*x^2 + 1)
*sqrt(e*x^2 + d)*sqrt(-e) + e^2) - 4*(b*e*x*arcsin(c*x) + a*e*x)*sqrt(e*x^2
 + d))/(d*e^2*x^2 + d^2*e), 1/2*((b*e*x^2 + b*d)*sqrt(e)*arctan(1/2*(2*c^2*
e*x^2 + c^2*d - e)*sqrt(-c^2*x^2 + 1)*sqrt(e*x^2 + d)*sqrt(e)/(c^3*e^2*x^4
- c*d*e + (c^3*d*e - c*e^2)*x^2)) + 2*(b*e*x*arcsin(c*x) + a*e*x)*sqrt(e*x^
2 + d))/(d*e^2*x^2 + d^2*e)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b \arcsin(cx) + a}{\left(ex^2 + d\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(e*x^2+d)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/(e*x^2 + d)^(3/2), x)
```

maple [F] time = 0.69, size = 0, normalized size = 0.00

$$\int \frac{a + b \arcsin(cx)}{\left(e\,x^2 + d\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(e*x^2+d)^(3/2),x)
```

```
[Out] int((a+b*arcsin(c*x))/(e*x^2+d)^(3/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(e*x^2+d)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(e-c^2*d>0)', see `assume?` for more
 details)Is e-c^2*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a + b\,\mathrm{asin}\left(c\,x\right)}{{\left(e\,x^2 + d\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(d + e*x^2)^(3/2),x)
```

```
[Out] int((a + b*asin(c*x))/(d + e*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b \operatorname{asin}(cx)}{\left(d + ex^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(e*x**2+d)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c*x))/(d + e*x**2)**(3/2), x)
```

3.652 $\int \frac{a+b\sin^{-1}(cx)}{\left(d+ex^2\right)^{5/2}}\,dx$

Optimal. Leaf size=146

$$\frac{2x\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{d+ex^2}}+\frac{x\left(a+b\sin^{-1}(cx)\right)}{3d\left(d+ex^2\right)^{3/2}}+\frac{2b\tan^{-1}\left(\frac{\sqrt{e}\sqrt{1-c^2x^2}}{c\sqrt{d+ex^2}}\right)}{3d^2\sqrt{e}}+\frac{bc\sqrt{1-c^2x^2}}{3d\left(c^2d+e\right)\sqrt{d+ex^2}}$$

```
[Out] 1/3*x*(a+b*arcsin(c*x))/d/(e*x^2+d)^(3/2)+2/3*b*arctan(e^(1/2)*(-c^2*x^2+1)
^(1/2)/c/(e*x^2+d)^(1/2))/d^2/e^(1/2)+2/3*x*(a+b*arcsin(c*x))/d^2/(e*x^2+d)
^(1/2)+1/3*b*c*(-c^2*x^2+1)^(1/2)/d/(c^2*d+e)/(e*x^2+d)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 9, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.450, Rules used = {192, 191, 4665, 12, 571, 78, 63, 217, 203}

$$\frac{2x\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{d+ex^2}}+\frac{x\left(a+b\sin^{-1}(cx)\right)}{3d\left(d+ex^2\right)^{3/2}}+\frac{2b\tan^{-1}\left(\frac{\sqrt{e}\sqrt{1-c^2x^2}}{c\sqrt{d+ex^2}}\right)}{3d^2\sqrt{e}}+\frac{bc\sqrt{1-c^2x^2}}{3d\left(c^2d+e\right)\sqrt{d+ex^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(d + e*x^2)^(5/2),x]
```

```
[Out] (b*c*Sqrt[1 - c^2*x^2])/(3*d*(c^2*d + e)*Sqrt[d + e*x^2]) + (x*(a + b*ArcSi
n[c*x]))/(3*d*(d + e*x^2)^(3/2)) + (2*x*(a + b*ArcSin[c*x]))/(3*d^2*Sqrt[d
+ e*x^2]) + (2*b*ArcTan[(Sqrt[e]*Sqrt[1 - c^2*x^2])/(c*Sqrt[d + e*x^2])])/(
3*d^2*Sqrt[e])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 192

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b, n, p}, x] && ILtQ[Simplify[1/n + p + 1], 0]
 && NeQ[p, -1]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 571

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
)*((e_) + (f_.)*(x_)^(n_))^(r_.), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x
)^p*(c + d*x)^q*(e + f*x)^r, x], x, x^n], x] /; FreeQ[{a, b, c, d, e, f, m,
 n, p, q, r}, x] && EqQ[m - n + 1, 0]
```

Rule 4665

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && NeQ[c^2*d + e, 0] && (IGtQ[p, 0] || ILtQ[p + 1/2, 0]
)
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{\left(d+ex^2\right)^{5/2}}\,dx = \frac{x\left(a+b\sin^{-1}(cx)\right)}{3d\left(d+ex^2\right)^{3/2}} + \frac{2x\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{d+ex^2}} - (bc)\int \frac{x\left(3d+2ex^2\right)}{3d^2\sqrt{1-c^2x^2}\left(d+ex^2\right)^{3/2}}\,dx$$

$$= \frac{x\left(a+b\sin^{-1}(cx)\right)}{3d\left(d+ex^2\right)^{3/2}} + \frac{2x\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{d+ex^2}} - \frac{(bc)\int \frac{x\left(3d+2ex^2\right)}{\sqrt{1-c^2x^2}\left(d+ex^2\right)^{3/2}}\,dx}{3d^2}$$

$$= \frac{x\left(a+b\sin^{-1}(cx)\right)}{3d\left(d+ex^2\right)^{3/2}} + \frac{2x\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{d+ex^2}} - \frac{(bc)\,\text{Subst}\left(\int \frac{3d+2ex}{\sqrt{1-c^2x}\,(d+ex)^{3/2}}\,dx, x, x^2\right)}{6d^2}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{3d\left(c^2d+e\right)\sqrt{d+ex^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)}{3d\left(d+ex^2\right)^{3/2}} + \frac{2x\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{d+ex^2}} - \frac{(bc)\,\text{Subst}\left(\int \ldots\right.}{\ldots}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{3d\left(c^2d+e\right)\sqrt{d+ex^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)}{3d\left(d+ex^2\right)^{3/2}} + \frac{2x\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{d+ex^2}} + \frac{(2b)\,\text{Subst}\left(\int \ldots\right.}{\ldots}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{3d\left(c^2d+e\right)\sqrt{d+ex^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)}{3d\left(d+ex^2\right)^{3/2}} + \frac{2x\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{d+ex^2}} + \frac{(2b)\,\text{Subst}\left(\int \ldots\right.}{\ldots}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{3d\left(c^2d+e\right)\sqrt{d+ex^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)}{3d\left(d+ex^2\right)^{3/2}} + \frac{2x\left(a+b\sin^{-1}(cx)\right)}{3d^2\sqrt{d+ex^2}} + \frac{2b\tan^{-1}\left(\frac{\sqrt{e}\sqrt{1\ldots}}{c\sqrt{d+\ldots}}\right.}{3d^2\sqrt{e}}$$

Mathematica [C] time = 0.29, size = 190, normalized size = 1.30

$$\sqrt{d+ex^2}\left(\frac{2ax}{3d^2\left(d+ex^2\right)} + \frac{ax}{3d\left(d+ex^2\right)^2}\right) - \frac{bcx^2\sqrt{\frac{d+ex^2}{d}}\,F_1\left(1;\frac{1}{2},\frac{1}{2};2;c^2x^2,-\frac{ex^2}{d}\right)}{3d^2\sqrt{d+ex^2}} + \frac{bc\sqrt{1-c^2x^2}}{3d\left(c^2d+e\right)\sqrt{d+ex^2}} + \frac{bx\,\ldots}{\ldots}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(d + e*x^2)^(5/2),x]
```

```
[Out] (b*c*Sqrt[1 - c^2*x^2])/(3*d*(c^2*d + e)*Sqrt[d + e*x^2]) + Sqrt[d + e*x^2]
*((a*x)/(3*d*(d + e*x^2)^2) + (2*a*x)/(3*d^2*(d + e*x^2))) - (b*c*x^2*Sqrt[
(d + e*x^2)/d]*AppellF1[1, 1/2, 1/2, 2, c^2*x^2, -((e*x^2)/d)])/(3*d^2*Sqrt
[d + e*x^2]) + (b*x*(3*d + 2*e*x^2)*ArcSin[c*x])/(3*d^2*(d + e*x^2)^(3/2))
```

fricas [B] time = 0.74, size = 683, normalized size = 4.68

$$\left[-\frac{\left(bc^2d^3 + \left(bc^2de^2 + be^3\right)x^4 + bd^2e + 2\left(bc^2d^2e + bde^2\right)x^2\right)\sqrt{-e}\,\log\left(8\,c^4e^2x^4 + c^4d^2 - 6\,c^2de + 8\left(c^4de - c^2e^2\right)\ldots\right.}{\ldots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(e*x^2+d)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/6*((b*c^2*d^3 + (b*c^2*d*e^2 + b*e^3)*x^4 + b*d^2*e + 2*(b*c^2*d^2*e +
b*d*e^2)*x^2)*sqrt(-e)*log(8*c^4*e^2*x^4 + c^4*d^2 - 6*c^2*d*e + 8*(c^4*d*e
```

```
 - c^2*e^2)*x^2 + 4*(2*c^3*e*x^2 + c^3*d - c*e)*sqrt(-c^2*x^2 + 1)*sqrt(e*x
^2 + d)*sqrt(-e) + e^2) - 2*(2*(a*c^2*d*e^2 + a*e^3)*x^3 + 3*(a*c^2*d^2*e +
 a*d*e^2)*x + (2*(b*c^2*d*e^2 + b*e^3)*x^3 + 3*(b*c^2*d^2*e + b*d*e^2)*x)*a
rcsin(c*x) + (b*c*d*e^2*x^2 + b*c*d^2*e)*sqrt(-c^2*x^2 + 1))*sqrt(e*x^2 + d
))/(c^2*d^5*e + d^4*e^2 + (c^2*d^3*e^3 + d^2*e^4)*x^4 + 2*(c^2*d^4*e^2 + d^
3*e^3)*x^2), 1/3*((b*c^2*d^3 + (b*c^2*d*e^2 + b*e^3)*x^4 + b*d^2*e + 2*(b*c
^2*d^2*e + b*d*e^2)*x^2)*sqrt(e)*arctan(1/2*(2*c^2*e*x^2 + c^2*d - e)*sqrt(
-c^2*x^2 + 1)*sqrt(e*x^2 + d)*sqrt(e)/(c^3*e^2*x^4 - c*d*e + (c^3*d*e - c*e
^2)*x^2)) + (2*(a*c^2*d*e^2 + a*e^3)*x^3 + 3*(a*c^2*d^2*e + a*d*e^2)*x + (2
*(b*c^2*d*e^2 + b*e^3)*x^3 + 3*(b*c^2*d^2*e + b*d*e^2)*x)*arcsin(c*x) + (b*
c*d*e^2*x^2 + b*c*d^2*e)*sqrt(-c^2*x^2 + 1))*sqrt(e*x^2 + d))/(c^2*d^5*e +
d^4*e^2 + (c^2*d^3*e^3 + d^2*e^4)*x^4 + 2*(c^2*d^4*e^2 + d^3*e^3)*x^2)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b \arcsin(cx) + a}{(ex^2 + d)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(e*x^2+d)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)/(e*x^2 + d)^(5/2), x)
```

maple [F] time = 0.72, size = 0, normalized size = 0.00

$$\int \frac{a + b \arcsin(cx)}{(e\,x^2 + d)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(e*x^2+d)^(5/2),x)
```

```
[Out] int((a+b*arcsin(c*x))/(e*x^2+d)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{3}\,a\left(\frac{2\,x}{\sqrt{ex^2+d}\,d^2} + \frac{x}{(ex^2+d)^{\frac{3}{2}}d}\right) + b\int \frac{\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)}{\left(e^2x^4 + 2\,dex^2 + d^2\right)\sqrt{ex^2+d}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(e*x^2+d)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/3*a*(2*x/(sqrt(e*x^2 + d)*d^2) + x/((e*x^2 + d)^(3/2)*d)) + b*integrate(a
rctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/((e^2*x^4 + 2*d*e*x^2 + d^2)*sqrt
(e*x^2 + d)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a + b\,\mathrm{asin}(c\,x)}{(e\,x^2 + d)^{5/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(d + e*x^2)^(5/2),x)
```

```
[Out] int((a + b*asin(c*x))/(d + e*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b \operatorname{asin}(cx)}{(d + ex^2)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(e*x**2+d)**(5/2),x)
```

```
[Out] Integral((a + b*asin(c*x))/(d + e*x**2)**(5/2), x)
```

3.653 $\int \frac{a+b\sin^{-1}(cx)}{\left(d+ex^2\right)^{7/2}}\,dx$

Optimal. Leaf size=226

$$\frac{8x\left(a+b\sin^{-1}(cx)\right)}{15d^3\sqrt{d+ex^2}}+\frac{4x\left(a+b\sin^{-1}(cx)\right)}{15d^2\left(d+ex^2\right)^{3/2}}+\frac{x\left(a+b\sin^{-1}(cx)\right)}{5d\left(d+ex^2\right)^{5/2}}+\frac{8b\tan^{-1}\left(\frac{\sqrt{e}\sqrt{1-c^2x^2}}{c\sqrt{d+ex^2}}\right)}{15d^3\sqrt{e}}+\frac{2bc\sqrt{1-c^2x^2}\left(3c^2d+2e\right.}{15d^2\left(c^2d+e\right)^2\sqrt{d+ex^2}}$$

```
[Out] 1/5*x*(a+b*arcsin(c*x))/d/(e*x^2+d)^(5/2)+4/15*x*(a+b*arcsin(c*x))/d^2/(e*x
^2+d)^(3/2)+8/15*b*arctan(e^(1/2)*(-c^2*x^2+1)^(1/2)/c/(e*x^2+d)^(1/2))/d^3
/e^(1/2)+1/15*b*c*(-c^2*x^2+1)^(1/2)/d/(c^2*d+e)/(e*x^2+d)^(3/2)+8/15*x*(a+
b*arcsin(c*x))/d^3/(e*x^2+d)^(1/2)+2/15*b*c*(3*c^2*d+2*e)*(-c^2*x^2+1)^(1/2
)/d^2/(c^2*d+e)^2/(e*x^2+d)^(1/2)
```

Rubi [A] time = 0.82, antiderivative size = 226, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 10, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {192, 191, 4665, 12, 6715, 949, 78, 63, 217, 203}

$$\frac{8x\left(a+b\sin^{-1}(cx)\right)}{15d^3\sqrt{d+ex^2}}+\frac{4x\left(a+b\sin^{-1}(cx)\right)}{15d^2\left(d+ex^2\right)^{3/2}}+\frac{x\left(a+b\sin^{-1}(cx)\right)}{5d\left(d+ex^2\right)^{5/2}}+\frac{2bc\sqrt{1-c^2x^2}\left(3c^2d+2e\right)}{15d^2\left(c^2d+e\right)^2\sqrt{d+ex^2}}+\frac{8b\tan^{-1}\left(\frac{\sqrt{e}\sqrt{1-c^2x^2}}{c\sqrt{d+ex^2}}\right.}{15d^3\sqrt{e}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])/(d + e*x^2)^(7/2),x]
```

```
[Out] (b*c*Sqrt[1 - c^2*x^2])/(15*d*(c^2*d + e)*(d + e*x^2)^(3/2)) + (2*b*c*(3*c^
2*d + 2*e)*Sqrt[1 - c^2*x^2])/(15*d^2*(c^2*d + e)^2*Sqrt[d + e*x^2]) + (x*(
a + b*ArcSin[c*x]))/(5*d*(d + e*x^2)^(5/2)) + (4*x*(a + b*ArcSin[c*x]))/(15
*d^2*(d + e*x^2)^(3/2)) + (8*x*(a + b*ArcSin[c*x]))/(15*d^3*Sqrt[d + e*x^2]
) + (8*b*ArcTan[(Sqrt[e]*Sqrt[1 - c^2*x^2])/(c*Sqrt[d + e*x^2])])/(15*d^3*S
qrt[e])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 192

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b, n, p}, x] && ILtQ[Simplify[1/n + p + 1], 0]
 && NeQ[p, -1]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 949

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_.) + (b_.)*(x_)
 + (c_.)*(x_)^2)^(p_.), x_Symbol] :> With[{Qx = PolynomialQuotient[(a + b*x
 + c*x^2)^p, d + e*x, x], R = PolynomialRemainder[(a + b*x + c*x^2)^p, d +
e*x, x]}, Simp[(R*(d + e*x)^(m + 1)*(f + g*x)^(n + 1))/((m + 1)*(e*f - d*g)
), x] + Dist[1/((m + 1)*(e*f - d*g)), Int[(d + e*x)^(m + 1)*(f + g*x)^n*Exp
andToSum[(m + 1)*(e*f - d*g)*Qx - g*R*(m + n + 2), x], x], x]] /; FreeQ[{a,
 b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ[b^2 - 4*a*c, 0] && NeQ[c
*d^2 - b*d*e + a*e^2, 0] && IGtQ[p, 0] && LtQ[m, -1]
```

Rule 4665

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(p_.), x_Symbo
l] :> With[{u = IntHide[(d + e*x^2)^p, x]}, Dist[a + b*ArcSin[c*x], u, x] -
 Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*x^2], x], x], x]] /; FreeQ[
{a, b, c, d, e}, x] && NeQ[c^2*d + e, 0] && (IGtQ[p, 0] || ILtQ[p + 1/2, 0]
)
```

Rule 6715

```
Int[(u_)*(x_)^(m_.), x_Symbol] :> Dist[1/(m + 1), Subst[Int[SubstFor[x^(m +
 1), u, x], x], x, x^(m + 1)], x] /; FreeQ[m, x] && NeQ[m, -1] && FunctionO
fQ[x^(m + 1), u, x]
```

Rubi steps

$$\int \frac{a+b\sin^{-1}(cx)}{\left(d+ex^2\right)^{7/2}}\,dx = \frac{x\left(a+b\sin^{-1}(cx)\right)}{5d\left(d+ex^2\right)^{5/2}} + \frac{4x\left(a+b\sin^{-1}(cx)\right)}{15d^2\left(d+ex^2\right)^{3/2}} + \frac{8x\left(a+b\sin^{-1}(cx)\right)}{15d^3\sqrt{d+ex^2}} - (bc)\int \frac{x\left(15d^2+20d\right.}{15d^3\sqrt{1-c^2x^2}}$$

$$= \frac{x\left(a+b\sin^{-1}(cx)\right)}{5d\left(d+ex^2\right)^{5/2}} + \frac{4x\left(a+b\sin^{-1}(cx)\right)}{15d^2\left(d+ex^2\right)^{3/2}} + \frac{8x\left(a+b\sin^{-1}(cx)\right)}{15d^3\sqrt{d+ex^2}} - \frac{(bc)\int \frac{x\left(15d^2+20dex^2+8e\right.}{\sqrt{1-c^2x^2}\left(d+ex^2\right)}}{15d^3}$$

$$= \frac{x\left(a+b\sin^{-1}(cx)\right)}{5d\left(d+ex^2\right)^{5/2}} + \frac{4x\left(a+b\sin^{-1}(cx)\right)}{15d^2\left(d+ex^2\right)^{3/2}} + \frac{8x\left(a+b\sin^{-1}(cx)\right)}{15d^3\sqrt{d+ex^2}} - \frac{(bc)\,\mathrm{Subst}\left(\int \frac{15d^2+20}{\sqrt{1-c^2x}}\right.}{30d}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{15d\left(c^2d+e\right)\left(d+ex^2\right)^{3/2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)}{5d\left(d+ex^2\right)^{5/2}} + \frac{4x\left(a+b\sin^{-1}(cx)\right)}{15d^2\left(d+ex^2\right)^{3/2}} + \frac{8x\left(a+b\sin^{-1}\right.}{15d^3\sqrt{d+ex}}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{15d\left(c^2d+e\right)\left(d+ex^2\right)^{3/2}} + \frac{2bc\left(3c^2d+2e\right)\sqrt{1-c^2x^2}}{15d^2\left(c^2d+e\right)^2\sqrt{d+ex^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)}{5d\left(d+ex^2\right)^{5/2}} + \frac{4x\left(a+b\right.}{15d^2\left(d\right.}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{15d\left(c^2d+e\right)\left(d+ex^2\right)^{3/2}} + \frac{2bc\left(3c^2d+2e\right)\sqrt{1-c^2x^2}}{15d^2\left(c^2d+e\right)^2\sqrt{d+ex^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)}{5d\left(d+ex^2\right)^{5/2}} + \frac{4x\left(a+b\right.}{15d^2\left(d\right.}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{15d\left(c^2d+e\right)\left(d+ex^2\right)^{3/2}} + \frac{2bc\left(3c^2d+2e\right)\sqrt{1-c^2x^2}}{15d^2\left(c^2d+e\right)^2\sqrt{d+ex^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)}{5d\left(d+ex^2\right)^{5/2}} + \frac{4x\left(a+b\right.}{15d^2\left(d\right.}$$

$$= \frac{bc\sqrt{1-c^2x^2}}{15d\left(c^2d+e\right)\left(d+ex^2\right)^{3/2}} + \frac{2bc\left(3c^2d+2e\right)\sqrt{1-c^2x^2}}{15d^2\left(c^2d+e\right)^2\sqrt{d+ex^2}} + \frac{x\left(a+b\sin^{-1}(cx)\right)}{5d\left(d+ex^2\right)^{5/2}} + \frac{4x\left(a+b\right.}{15d^2\left(d\right.}$$

Mathematica [C] time = 0.47, size = 188, normalized size = 0.83

$$\frac{ax\left(15d^2+20dex^2+8e^2x^4\right)-4bcx^2\sqrt{\frac{ex^2}{d}+1}\left(d+ex^2\right)^2F_1\left(1;\frac{1}{2},\frac{1}{2};2;c^2x^2,-\frac{ex^2}{d}\right)+\frac{bcd\sqrt{1-c^2x^2}\left(d+ex^2\right)\left(c^2d\left(7d+6ex^2\right)+e\left(\right.\right.}{\left(c^2d+e\right)^2}}{15d^3\left(d+ex^2\right)^{5/2}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])/(d + e*x^2)^(7/2),x]
```

```
[Out] (a*x*(15*d^2 + 20*d*e*x^2 + 8*e^2*x^4) + (b*c*d*Sqrt[1 - c^2*x^2]*(d + e*x^
2)*(e*(5*d + 4*e*x^2) + c^2*d*(7*d + 6*e*x^2)))/(c^2*d + e)^2 - 4*b*c*x^2*(
d + e*x^2)^2*Sqrt[1 + (e*x^2)/d]*AppellF1[1, 1/2, 1/2, 2, c^2*x^2, -((e*x^2
)/d)] + b*x*(15*d^2 + 20*d*e*x^2 + 8*e^2*x^4)*ArcSin[c*x])/(15*d^3*(d + e*x
^2)^(5/2))
```

fricas [B] time = 0.76, size = 1321, normalized size = 5.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(e*x^2+d)^(7/2),x, algorithm="fricas")
```

```
[Out] [-1/15*(2*(b*c^4*d^5 + 2*b*c^2*d^4*e + (b*c^4*d^2*e^3 + 2*b*c^2*d*e^4 + b*e
^5)*x^6 + b*d^3*e^2 + 3*(b*c^4*d^3*e^2 + 2*b*c^2*d^2*e^3 + b*d*e^4)*x^4 + 3
*(b*c^4*d^4*e + 2*b*c^2*d^3*e^2 + b*d^2*e^3)*x^2)*sqrt(-e)*log(8*c^4*e^2*x^
4 + c^4*d^2 - 6*c^2*d*e + 8*(c^4*d*e - c^2*e^2)*x^2 + 4*(2*c^3*e*x^2 + c^3*
d - c*e)*sqrt(-c^2*x^2 + 1)*sqrt(e*x^2 + d)*sqrt(-e) + e^2) - (8*(a*c^4*d^2
*e^3 + 2*a*c^2*d*e^4 + a*e^5)*x^5 + 20*(a*c^4*d^3*e^2 + 2*a*c^2*d^2*e^3 + a
*d*e^4)*x^3 + 15*(a*c^4*d^4*e + 2*a*c^2*d^3*e^2 + a*d^2*e^3)*x + (8*(b*c^4*
d^2*e^3 + 2*b*c^2*d*e^4 + b*e^5)*x^5 + 20*(b*c^4*d^3*e^2 + 2*b*c^2*d^2*e^3
+ b*d*e^4)*x^3 + 15*(b*c^4*d^4*e + 2*b*c^2*d^3*e^2 + b*d^2*e^3)*x)*arcsin(c
*x) + (7*b*c^3*d^4*e + 5*b*c*d^3*e^2 + 2*(3*b*c^3*d^2*e^3 + 2*b*c*d*e^4)*x^
4 + (13*b*c^3*d^3*e^2 + 9*b*c*d^2*e^3)*x^2)*sqrt(-c^2*x^2 + 1))*sqrt(e*x^2
+ d))/(c^4*d^8*e + 2*c^2*d^7*e^2 + d^6*e^3 + (c^4*d^5*e^4 + 2*c^2*d^4*e^5 +
 d^3*e^6)*x^6 + 3*(c^4*d^6*e^3 + 2*c^2*d^5*e^4 + d^4*e^5)*x^4 + 3*(c^4*d^7*
e^2 + 2*c^2*d^6*e^3 + d^5*e^4)*x^2), 1/15*(4*(b*c^4*d^5 + 2*b*c^2*d^4*e + (
b*c^4*d^2*e^3 + 2*b*c^2*d*e^4 + b*e^5)*x^6 + b*d^3*e^2 + 3*(b*c^4*d^3*e^2 +
 2*b*c^2*d^2*e^3 + b*d*e^4)*x^4 + 3*(b*c^4*d^4*e + 2*b*c^2*d^3*e^2 + b*d^2*
e^3)*x^2)*sqrt(e)*arctan(1/2*(2*c^2*e*x^2 + c^2*d - e)*sqrt(-c^2*x^2 + 1)*s
qrt(e*x^2 + d)*sqrt(e)/(c^3*e^2*x^4 - c*d*e + (c^3*d*e - c*e^2)*x^2)) + (8*
(a*c^4*d^2*e^3 + 2*a*c^2*d*e^4 + a*e^5)*x^5 + 20*(a*c^4*d^3*e^2 + 2*a*c^2*d
^2*e^3 + a*d*e^4)*x^3 + 15*(a*c^4*d^4*e + 2*a*c^2*d^3*e^2 + a*d^2*e^3)*x +
(8*(b*c^4*d^2*e^3 + 2*b*c^2*d*e^4 + b*e^5)*x^5 + 20*(b*c^4*d^3*e^2 + 2*b*c^
2*d^2*e^3 + b*d*e^4)*x^3 + 15*(b*c^4*d^4*e + 2*b*c^2*d^3*e^2 + b*d^2*e^3)*x
)*arcsin(c*x) + (7*b*c^3*d^4*e + 5*b*c*d^3*e^2 + 2*(3*b*c^3*d^2*e^3 + 2*b*c
*d*e^4)*x^4 + (13*b*c^3*d^3*e^2 + 9*b*c*d^2*e^3)*x^2)*sqrt(-c^2*x^2 + 1))*s
qrt(e*x^2 + d))/(c^4*d^8*e + 2*c^2*d^7*e^2 + d^6*e^3 + (c^4*d^5*e^4 + 2*c^2
*d^4*e^5 + d^3*e^6)*x^6 + 3*(c^4*d^6*e^3 + 2*c^2*d^5*e^4 + d^4*e^5)*x^4 + 3
*(c^4*d^7*e^2 + 2*c^2*d^6*e^3 + d^5*e^4)*x^2)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b \arcsin(cx) + a}{(ex^2 + d)^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(e*x^2+d)^(7/2),x, algorithm="giac")
[Out] integrate((b*arcsin(c*x) + a)/(e*x^2 + d)^(7/2), x)
```

maple [F] time = 0.75, size = 0, normalized size = 0.00

$$\int \frac{a + b \arcsin(cx)}{(e\,x^2 + d)^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))/(e*x^2+d)^(7/2),x)
[Out] int((a+b*arcsin(c*x))/(e*x^2+d)^(7/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{15}a\left(\frac{8x}{\sqrt{ex^2+d}\,d^3} + \frac{4x}{(ex^2+d)^{\frac{3}{2}}d^2} + \frac{3x}{(ex^2+d)^{\frac{5}{2}}d}\right) + b\int \frac{\arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)}{\left(e^3x^6 + 3\,de^2x^4 + 3\,d^2ex^2 + d^3\right)\sqrt{ex^2+d}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))/(e*x^2+d)^(7/2),x, algorithm="maxima")
```

```
[Out] 1/15*a*(8*x/(sqrt(e*x^2 + d)*d^3) + 4*x/((e*x^2 + d)^(3/2)*d^2) + 3*x/((e*x
^2 + d)^(5/2)*d)) + b*integrate(arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))/
((e^3*x^6 + 3*d*e^2*x^4 + 3*d^2*e*x^2 + d^3)*sqrt(e*x^2 + d)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a + b \operatorname{asin}(c x)}{\left(e x^2 + d\right)^{7/2}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))/(d + e*x^2)^(7/2),x)
[Out] int((a + b*asin(c*x))/(d + e*x^2)^(7/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))/(e*x**2+d)**(7/2),x)
[Out] Timed out
```

3.654 $\int (fx)^m \left(d+ex^2\right)^3 \left(a+b\sin^{-1}(cx)\right) dx$

Optimal. Leaf size=484

$$\frac{d^3(fx)^{m+1}\left(a+b\sin^{-1}(cx)\right)}{f(m+1)}+\frac{3d^2e(fx)^{m+3}\left(a+b\sin^{-1}(cx)\right)}{f^3(m+3)}+\frac{3de^2(fx)^{m+5}\left(a+b\sin^{-1}(cx)\right)}{f^5(m+5)}+\frac{e^3(fx)^{m+7}\left(a+b\right.}{f^7(m+}$$

```
[Out] d^3*(f*x)^(1+m)*(a+b*arcsin(c*x))/f/(1+m)+3*d^2*e*(f*x)^(3+m)*(a+b*arcsin(c
*x))/f^3/(3+m)+3*d*e^2*(f*x)^(5+m)*(a+b*arcsin(c*x))/f^5/(5+m)+e^3*(f*x)^(7
+m)*(a+b*arcsin(c*x))/f^7/(7+m)-b*(c^6*d^3*(3+m)*(5+m)*(7+m)/(1+m)+e*(2+m)*
(3*c^2*d*e*(7+m)^2*(m^2+7*m+12)+3*c^4*d^2*(m^2+12*m+35)^2+e^2*(m^4+18*m^3+1
19*m^2+342*m+360))/(m^3+15*m^2+71*m+105))*(f*x)^(2+m)*hypergeom([1/2, 1+1/2
*m],[2+1/2*m],c^2*x^2)/c^5/f^2/(2+m)/(3+m)/(5+m)/(7+m)+b*e*(3*c^2*d*e*(7+m)
^2*(m^2+7*m+12)+3*c^4*d^2*(m^2+12*m+35)^2+e^2*(m^4+18*m^3+119*m^2+342*m+360
))*(f*x)^(2+m)*(-c^2*x^2+1)^(1/2)/c^5/f^2/(3+m)^2/(5+m)^2/(7+m)^2+b*e^2*(3*
c^2*d*(7+m)^2+e*(m^2+11*m+30))*(f*x)^(4+m)*(-c^2*x^2+1)^(1/2)/c^3/f^4/(5+m)
^2/(7+m)^2+b*e^3*(f*x)^(6+m)*(-c^2*x^2+1)^(1/2)/c/f^6/(7+m)^2
```

Rubi [A] time = 2.38, antiderivative size = 455, normalized size of antiderivative = 0.94, number of steps used = 6, number of rules used = 7, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.304$, Rules used = {270, 4731, 12, 1809, 1267, 459, 364}

$$\frac{3d^2e(fx)^{m+3}\left(a+b\sin^{-1}(cx)\right)}{f^3(m+3)}+\frac{d^3(fx)^{m+1}\left(a+b\sin^{-1}(cx)\right)}{f(m+1)}+\frac{3de^2(fx)^{m+5}\left(a+b\sin^{-1}(cx)\right)}{f^5(m+5)}+\frac{e^3(fx)^{m+7}\left(a+b\right.}{f^7(m+}$$

Antiderivative was successfully verified.

```
[In] Int[(f*x)^m*(d + e*x^2)^3*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*e*(3*c^2*d*e*(7 + m)^2*(12 + 7*m + m^2) + 3*c^4*d^2*(35 + 12*m + m^2)^2
+ e^2*(360 + 342*m + 119*m^2 + 18*m^3 + m^4))*(f*x)^(2 + m)*Sqrt[1 - c^2*x^
2])/(c^5*f^2*(3 + m)^2*(5 + m)^2*(7 + m)^2) + (b*e^2*(3*c^2*d*(7 + m)^2 + e
*(30 + 11*m + m^2))*(f*x)^(4 + m)*Sqrt[1 - c^2*x^2])/(c^3*f^4*(5 + m)^2*(7
+ m)^2) + (b*e^3*(f*x)^(6 + m)*Sqrt[1 - c^2*x^2])/(c*f^6*(7 + m)^2) + (d^3*
(f*x)^(1 + m)*(a + b*ArcSin[c*x]))/(f*(1 + m)) + (3*d^2*e*(f*x)^(3 + m)*(a
+ b*ArcSin[c*x]))/(f^3*(3 + m)) + (3*d*e^2*(f*x)^(5 + m)*(a + b*ArcSin[c*x]
))/(f^5*(5 + m)) + (e^3*(f*x)^(7 + m)*(a + b*ArcSin[c*x]))/(f^7*(7 + m)) -
(b*c*(d^3/(2 + 3*m + m^2) + (e*(3*c^2*d*e*(7 + m)^2*(12 + 7*m + m^2) + 3*c^
4*d^2*(35 + 12*m + m^2)^2 + e^2*(360 + 342*m + 119*m^2 + 18*m^3 + m^4)))/(c
^6*(3 + m)^2*(5 + m)^2*(7 + m)^2))*(f*x)^(2 + m)*Hypergeometric2F1[1/2, (2
+ m)/2, (4 + m)/2, c^2*x^2])/f^2
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
```

```
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] && !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 459

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_)), x_Symbol] :> Simp[(d*(e*x)^(m + 1)*(a + b*x^n)^(p + 1))/(b*e*(m + n*(p
 + 1) + 1)), x] - Dist[(a*d*(m + 1) - b*c*(m + n*(p + 1) + 1))/(b*(m + n*(p
 + 1) + 1)), Int[(e*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, d, e, m,
n, p}, x] && NeQ[b*c - a*d, 0] && NeQ[m + n*(p + 1) + 1, 0]
```

Rule 1267

```
Int[((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (
c_.)*(x_)^4)^(p_.), x_Symbol] :> Simp[(c^p*(f*x)^(m + 4*p - 1)*(d + e*x^2)^
(q + 1))/(e*f^(4*p - 1)*(m + 4*p + 2*q + 1)), x] + Dist[1/(e*(m + 4*p + 2*q
 + 1)), Int[(f*x)^m*(d + e*x^2)^q*ExpandToSum[e*(m + 4*p + 2*q + 1)*((a + b
*x^2 + c*x^4)^p - c^p*x^(4*p)) - d*c^p*(m + 4*p - 1)*x^(4*p - 2), x], x], x
] /; FreeQ[{a, b, c, d, e, f, m, q}, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[p, 0
] && !IntegerQ[q] && NeQ[m + 4*p + 2*q + 1, 0]
```

Rule 1809

```
Int[(Pq_)*((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^2)^(p_), x_Symbol] :> With[
{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, Simp[(f*(c*x)^(m + q -
1)*(a + b*x^2)^(p + 1))/(b*c^(q - 1)*(m + q + 2*p + 1)), x] + Dist[1/(b*(m
+ q + 2*p + 1)), Int[(c*x)^m*(a + b*x^2)^p*ExpandToSum[b*(m + q + 2*p + 1)*
Pq - b*f*(m + q + 2*p + 1)*x^q - a*f*(m + q - 1)*x^(q - 2), x], x], x] /; G
tQ[q, 1] && NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, m, p}, x] && PolyQ[
Pq, x] && ( !IGtQ[m, 0] || IGtQ[p + 1/2, -1])
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_
)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist
[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*
x^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[c^2*d + e, 0] &
& IntegerQ[p] && (GtQ[p, 0] || (IGtQ[(m - 1)/2, 0] && LeQ[m + p, 0]))
```

Rubi steps

$$\int (fx)^m \left(d+ex^2\right)^3 \left(a+b\sin^{-1}(cx)\right) dx = \frac{d^3(fx)^{1+m}\left(a+b\sin^{-1}(cx)\right)}{f(1+m)} + \frac{3d^2e(fx)^{3+m}\left(a+b\sin^{-1}(cx)\right)}{f^3(3+m)} + \frac{3de}{\ }$$

$$= \frac{d^3(fx)^{1+m}\left(a+b\sin^{-1}(cx)\right)}{f(1+m)} + \frac{3d^2e(fx)^{3+m}\left(a+b\sin^{-1}(cx)\right)}{f^3(3+m)} + \frac{3de}{\ }$$

$$= \frac{be^3(fx)^{6+m}\sqrt{1-c^2x^2}}{cf^6(7+m)^2} + \frac{d^3(fx)^{1+m}\left(a+b\sin^{-1}(cx)\right)}{f(1+m)} + \frac{3d^2e(fx)^{3+r}}{f^{}}$$

$$= \frac{be^2\left(3c^2d(7+m)^2+e\left(30+11m+m^2\right)\right)(fx)^{4+m}\sqrt{1-c^2x^2}}{c^3f^4(5+m)^2(7+m)^2} + \frac{be^3(f}{}$$

$$= \frac{be\left(3c^2de(7+m)^2\left(12+7m+m^2\right)+3c^4d^2\left(35+12m+m^2\right)^2+e^2\left(\right.\right.}{c^5f^2(3+m)^2(5+m)}$$

$$= \frac{be\left(3c^2de(7+m)^2\left(12+7m+m^2\right)+3c^4d^2\left(35+12m+m^2\right)^2+e^2\left(\right.\right.}{c^5f^2(3+m)^2(5+m)}$$

Mathematica [F] time = 5.39, size = 0, normalized size = 0.00

$$\int (fx)^m \left(d+ex^2\right)^3 \left(a+b\sin^{-1}(cx)\right) dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(f*x)^m*(d + e*x^2)^3*(a + b*ArcSin[c*x]),x]
[Out] Integrate[(f*x)^m*(d + e*x^2)^3*(a + b*ArcSin[c*x]), x]
```

fricas [F] time = 0.72, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(ae^3x^6+3\,ade^2x^4+3\,ad^2ex^2+ad^3+\left(be^3x^6+3\,bde^2x^4+3\,bd^2ex^2+bd^3\right)\arcsin\left(cx\right)\right)\left(fx\right)^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)^m*(e*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral((a*e^3*x^6 + 3*a*d*e^2*x^4 + 3*a*d^2*e*x^2 + a*d^3 + (b*e^3*x^6 +
3*b*d*e^2*x^4 + 3*b*d^2*e*x^2 + b*d^3)*arcsin(c*x))*(f*x)^m, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(ex^2+d\right)^3 (b\arcsin\left(cx\right)+a)\left(fx\right)^m\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)^m*(e*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="giac")
[Out] integrate((e*x^2 + d)^3*(b*arcsin(c*x) + a)*(f*x)^m, x)
```

maple [F] time = 44.16, size = 0, normalized size = 0.00

$$\int \left(fx\right)^{m} \left(e\,x^{2}+d\right)^{3} \left(a+b\arcsin \left(cx\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x)^m*(e*x^2+d)^3*(a+b*arcsin(c*x)),x)
[Out] int((f*x)^m*(e*x^2+d)^3*(a+b*arcsin(c*x)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{ae^{3}f^{m}x^{7}x^{m}}{m+7}+\frac{3\,ade^{2}f^{m}x^{5}x^{m}}{m+5}+\frac{3\,ad^{2}ef^{m}x^{3}x^{m}}{m+3}+\frac{\left(fx\right)^{m+1}ad^{3}}{f(m+1)}+\frac{\left(\left(be^{3}f^{m}m^{3}+9\,be^{3}f^{m}m^{2}+23\,be^{3}f^{m}m+15\,be^{3}f^{m}\right)x^{7}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)^m*(e*x^2+d)^3*(a+b*arcsin(c*x)),x, algorithm="maxima")
[Out] a*e^3*f^m*x^7*x^m/(m + 7) + 3*a*d*e^2*f^m*x^5*x^m/(m + 5) + 3*a*d^2*e*f^m*x
^3*x^m/(m + 3) + (f*x)^(m + 1)*a*d^3/(f*(m + 1)) + (((b*e^3*f^m*m^3 + 9*b*e
^3*f^m*m^2 + 23*b*e^3*f^m*m + 15*b*e^3*f^m)*x^7 + 3*(b*d*e^2*f^m*m^3 + 11*b
*d*e^2*f^m*m^2 + 31*b*d*e^2*f^m*m + 21*b*d*e^2*f^m)*x^5 + 3*(b*d^2*e*f^m*m^
3 + 13*b*d^2*e*f^m*m^2 + 47*b*d^2*e*f^m*m + 35*b*d^2*e*f^m)*x^3 + (b*d^3*f^
m*m^3 + 15*b*d^3*f^m*m^2 + 71*b*d^3*f^m*m + 105*b*d^3*f^m)*x)*x^m*arctan2(c
*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + (m^4 + 16*m^3 + 86*m^2 + 176*m + 105)*i
ntegrate(-((b*c*e^3*f^m*m^3 + 9*b*c*e^3*f^m*m^2 + 23*b*c*e^3*f^m*m + 15*b*c
*e^3*f^m)*x^7 + 3*(b*c*d*e^2*f^m*m^3 + 11*b*c*d*e^2*f^m*m^2 + 31*b*c*d*e^2*
f^m*m + 21*b*c*d*e^2*f^m)*x^5 + 3*(b*c*d^2*e*f^m*m^3 + 13*b*c*d^2*e*f^m*m^2
 + 47*b*c*d^2*e*f^m*m + 35*b*c*d^2*e*f^m)*x^3 + (b*c*d^3*f^m*m^3 + 15*b*c*d
^3*f^m*m^2 + 71*b*c*d^3*f^m*m + 105*b*c*d^3*f^m)*x)*sqrt(c*x + 1)*sqrt(-c*x
 + 1)*x^m/(m^4 + 16*m^3 - (c^2*m^4 + 16*c^2*m^3 + 86*c^2*m^2 + 176*c^2*m +
105*c^2)*x^2 + 86*m^2 + 176*m + 105), x))/(m^4 + 16*m^3 + 86*m^2 + 176*m +
105)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(f\,x\right)}^m\,{\left(e\,x^2+d\right)}^3 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(f*x)^m*(d + e*x^2)^3,x)
[Out] int((a + b*asin(c*x))*(f*x)^m*(d + e*x^2)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(fx\right)^{m} \left(a+b\,\mathrm{asin}\left(cx\right)\right) \left(d+ex^{2}\right)^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)**m*(e*x**2+d)**3*(a+b*asin(c*x)),x)
[Out] Integral((f*x)**m*(a + b*asin(c*x))*(d + e*x**2)**3, x)
```

3.655 $\int (fx)^m (d+ex^2)^2 (a+b\sin^{-1}(cx))\,dx$

Optimal. Leaf size=293

$$\frac{d^2(fx)^{m+1}\left(a+b\sin^{-1}(cx)\right)}{f(m+1)}+\frac{2de(fx)^{m+3}\left(a+b\sin^{-1}(cx)\right)}{f^3(m+3)}+\frac{e^2(fx)^{m+5}\left(a+b\sin^{-1}(cx)\right)}{f^5(m+5)}+\frac{be^2\sqrt{1-c^2x^2}\,(fx)^{m-}}{cf^4(m+5)^2}$$

```
[Out] d^2*(f*x)^(1+m)*(a+b*arcsin(c*x))/f/(1+m)+2*d*e*(f*x)^(3+m)*(a+b*arcsin(c*x
))/f^3/(3+m)+e^2*(f*x)^(5+m)*(a+b*arcsin(c*x))/f^5/(5+m)-b*(c^4*d^2*(3+m)*(
5+m)/(1+m)+e*(2+m)*(2*c^2*d*(5+m)^2+e*(m^2+7*m+12))/(3+m)/(5+m))*(f*x)^(2+m
)*hypergeom([1/2, 1+1/2*m],[2+1/2*m],c^2*x^2)/c^3/f^2/(2+m)/(3+m)/(5+m)+b*e
*(2*c^2*d*(5+m)^2+e*(m^2+7*m+12))*(f*x)^(2+m)*(-c^2*x^2+1)^(1/2)/c^3/f^2/(3
+m)^2/(5+m)^2+b*e^2*(f*x)^(4+m)*(-c^2*x^2+1)^(1/2)/c/f^4/(5+m)^2
```

Rubi [A] time = 0.42, antiderivative size = 272, normalized size of antiderivative = 0.93, number of steps used = 5, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.261$, Rules used = {270, 4731, 12, 1267, 459, 364}

$$\frac{d^2(fx)^{m+1}\left(a+b\sin^{-1}(cx)\right)}{f(m+1)}+\frac{2de(fx)^{m+3}\left(a+b\sin^{-1}(cx)\right)}{f^3(m+3)}+\frac{e^2(fx)^{m+5}\left(a+b\sin^{-1}(cx)\right)}{f^5(m+5)}-\frac{bc(fx)^{m+2}\left(\frac{e\left(2c^2d(m+\right.}{c^4(}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(f*x)^m*(d + e*x^2)^2*(a + b*ArcSin[c*x]),x]
```

```
[Out] (b*e*(2*c^2*d*(5 + m)^2 + e*(12 + 7*m + m^2))*(f*x)^(2 + m)*Sqrt[1 - c^2*x^
2])/(c^3*f^2*(3 + m)^2*(5 + m)^2) + (b*e^2*(f*x)^(4 + m)*Sqrt[1 - c^2*x^2])
/(c*f^4*(5 + m)^2) + (d^2*(f*x)^(1 + m)*(a + b*ArcSin[c*x]))/(f*(1 + m)) +
(2*d*e*(f*x)^(3 + m)*(a + b*ArcSin[c*x]))/(f^3*(3 + m)) + (e^2*(f*x)^(5 + m
)*(a + b*ArcSin[c*x]))/(f^5*(5 + m)) - (b*c*(d^2/(2 + 3*m + m^2) + (e*(2*c^
2*d*(5 + m)^2 + e*(12 + 7*m + m^2)))/(c^4*(3 + m)^2*(5 + m)^2))*(f*x)^(2 +
m)*Hypergeometric2F1[1/2, (2 + m)/2, (4 + m)/2, c^2*x^2])/f^2
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 270

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.), x_Symbol] :> Int[Exp
andIntegrand[(c*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, m, n}, x] &&
IGtQ[p, 0]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 459

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_)), x_Symbol] :> Simp[(d*(e*x)^(m + 1)*(a + b*x^n)^(p + 1))/(b*e*(m + n*(p
 + 1) + 1)), x] - Dist[(a*d*(m + 1) - b*c*(m + n*(p + 1) + 1))/(b*(m + n*(p
 + 1) + 1)), Int[(e*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, d, e, m,
```

```
n, p}, x] && NeQ[b*c - a*d, 0] && NeQ[m + n*(p + 1) + 1, 0]
```

Rule 1267

```
Int[((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (
c_.)*(x_)^4)^(p_.), x_Symbol] :> Simp[(c^p*(f*x)^(m + 4*p - 1)*(d + e*x^2)^
(q + 1))/(e*f^(4*p - 1)*(m + 4*p + 2*q + 1)), x] + Dist[1/(e*(m + 4*p + 2*q
 + 1)), Int[(f*x)^m*(d + e*x^2)^q*ExpandToSum[e*(m + 4*p + 2*q + 1)*((a + b
*x^2 + c*x^4)^p - c^p*x^(4*p)) - d*c^p*(m + 4*p - 1)*x^(4*p - 2), x], x], x
] /; FreeQ[{a, b, c, d, e, f, m, q}, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[p, 0
] &&  !IntegerQ[q] && NeQ[m + 4*p + 2*q + 1, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_
)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist
[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*
x^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[c^2*d + e, 0] &
& IntegerQ[p] && (GtQ[p, 0] || (IGtQ[(m - 1)/2, 0] && LeQ[m + p, 0]))
```

Rubi steps

$$\int (fx)^m \left(d+ex^2\right)^2 \left(a+b\sin^{-1}(cx)\right) dx = \frac{d^2(fx)^{1+m}\left(a+b\sin^{-1}(cx)\right)}{f(1+m)} + \frac{2de(fx)^{3+m}\left(a+b\sin^{-1}(cx)\right)}{f^3(3+m)} + \frac{e^2(fx)^5}{}$$

$$= \frac{d^2(fx)^{1+m}\left(a+b\sin^{-1}(cx)\right)}{f(1+m)} + \frac{2de(fx)^{3+m}\left(a+b\sin^{-1}(cx)\right)}{f^3(3+m)} + \frac{e^2(fx)^5}{}$$

$$= \frac{be^2(fx)^{4+m}\sqrt{1-c^2x^2}}{cf^4(5+m)^2} + \frac{d^2(fx)^{1+m}\left(a+b\sin^{-1}(cx)\right)}{f(1+m)} + \frac{2de(fx)^{3+m}\left(a\right.}{f^3(3}$$

$$= \frac{be\left(2c^2d(5+m)^2+e\left(12+7m+m^2\right)\right)(fx)^{2+m}\sqrt{1-c^2x^2}}{c^3f^2(3+m)^2(5+m)^2} + \frac{be^2(fx)^{4+}}{cf^4(5}$$

$$= \frac{be\left(2c^2d(5+m)^2+e\left(12+7m+m^2\right)\right)(fx)^{2+m}\sqrt{1-c^2x^2}}{c^3f^2(3+m)^2(5+m)^2} + \frac{be^2(fx)^{4+}}{cf^4(5}$$

Mathematica [C] time = 7.05, size = 2792, normalized size = 9.53

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[(f*x)^m*(d + e*x^2)^2*(a + b*ArcSin[c*x]),x]
```

```
[Out] (x*(f*x)^m*(-2*(d + e*x^2)^2*(-((2 + m)*(a + b*ArcSin[c*x])) + b*c*x*Hyperg
eometric2F1[1/2, 1 + m/2, 2 + m/2, c^2*x^2]) + 8*e*x^2*(d + e*x^2)*(-a - b*
ArcSin[c*x] + (b*c*x*Hypergeometric2F1[1/2, (3 + m)/2, (5 + m)/2, c^2*x^2])
/(3 + m) + b*c*x*Gamma[2 + m/2]*HypergeometricPFQRegularized[{1/2, 1 + m/2}
, {2 + m/2}, c^2*x^2] - (b*c*x*Gamma[2 + m/2]*Gamma[(3 + m)/2]*Hypergeometr
icPFQRegularized[{1/2, (3 + m)/2}, {(5 + m)/2}, c^2*x^2])/Gamma[1 + m/2]) -
 (4*e*x^2*(d + 3*e*x^2)*((-2*Gamma[1 + m/2]*((4 + m)*(a + b*ArcSin[c*x]) -
b*c*x*Hypergeometric2F1[1/2, 2 + m/2, 3 + m/2, c^2*x^2]))/(4 + m) + b*c*(3
```

+ m)*x*Gamma[1 + m/2]*Gamma[2 + m/2]*HypergeometricPFQRegularized[{1/2, 1 + m/2}, {3 + m/2}, c^2*x^2] + (2*b*c*x*Gamma[2 + m/2]*((3 + m)*Gamma[2 + m/2]*Gamma[(3 + m)/2] - Gamma[1 + m/2]*Gamma[(5 + m)/2])*HypergeometricPFQRegularized[{1/2, 2 + m/2}, {3 + m/2}, c^2*x^2])/Gamma[(3 + m)/2] - 2*b*c*x*((3 + m)*Gamma[2 + m/2]*Gamma[(3 + m)/2] - Gamma[1 + m/2]*Gamma[(5 + m)/2])*HypergeometricPFQRegularized[{1/2, (3 + m)/2}, {(5 + m)/2}, c^2*x^2]))/((3 + m)*Gamma[1 + m/2]) - (8*e^2*x^4*(30*a*Gamma[1 + m/2]*Gamma[2 + m/2]*Gamma[(3 + m)/2] + 6*a*m*Gamma[1 + m/2]*Gamma[2 + m/2]*Gamma[(3 + m)/2] + 30*b*ArcSin[c*x]*Gamma[1 + m/2]*Gamma[2 + m/2]*Gamma[(3 + m)/2] + 6*b*m*ArcSin[c*x]*Gamma[1 + m/2]*Gamma[2 + m/2]*Gamma[(3 + m)/2] - 6*b*c*x*Gamma[1 + m/2]*Gamma[2 + m/2]*Gamma[(3 + m)/2]*Hypergeometric2F1[1/2, (5 + m)/2, (7 + m)/2, c^2*x^2] - b*c*(60 + 47*m + 12*m^2 + m^3)*x*Gamma[1 + m/2]*Gamma[2 + m/2]^2*Gamma[(3 + m)/2]*HypergeometricPFQRegularized[{1/2, 1 + m/2}, {3 + m/2}, c^2*x^2] + b*c*(5 + m)*x*Gamma[2 + m/2]*(-6*(12 + 7*m + m^2)*Gamma[2 + m/2]^2*Gamma[(3 + m)/2] + Gamma[1 + m/2]*(-6*Gamma[3 + m/2]*Gamma[(3 + m)/2] + (4 + m)*Gamma[2 + m/2]*((6 + 5*m + m^2)*Gamma[(3 + m)/2] + 6*Gamma[(5 + m)/2])))*HypergeometricPFQRegularized[{1/2, 2 + m/2}, {3 + m/2}, c^2*x^2] + 180*b*c*x*Gamma[2 + m/2]^2*Gamma[(3 + m)/2]^2*HypergeometricPFQRegularized[{1/2, (3 + m)/2}, {(7 + m)/2}, c^2*x^2] + 141*b*c*m*x*Gamma[2 + m/2]^2*Gamma[(3 + m)/2]^2*HypergeometricPFQRegularized[{1/2, (3 + m)/2}, {(7 + m)/2}, c^2*x^2] + 36*b*c*m^2*x*Gamma[2 + m/2]^2*Gamma[(3 + m)/2]^2*HypergeometricPFQRegularized[{1/2, (3 + m)/2}, {(7 + m)/2}, c^2*x^2] + 3*b*c*m^3*x*Gamma[2 + m/2]^2*Gamma[(3 + m)/2]^2*HypergeometricPFQRegularized[{1/2, (3 + m)/2}, {(7 + m)/2}, c^2*x^2] - 60*b*c*x*Gamma[1 + m/2]*Gamma[2 + m/2]*Gamma[(3 + m)/2]*Gamma[(5 + m)/2]*HypergeometricPFQRegularized[{1/2, (3 + m)/2}, {(7 + m)/2}, c^2*x^2] - 27*b*c*m*x*Gamma[1 + m/2]*Gamma[2 + m/2]*Gamma[(3 + m)/2]*Gamma[(5 + m)/2]*HypergeometricPFQRegularized[{1/2, (3 + m)/2}, {(7 + m)/2}, c^2*x^2] - 3*b*c*m^2*x*Gamma[1 + m/2]*Gamma[2 + m/2]*Gamma[(3 + m)/2]*Gamma[(5 + m)/2]*HypergeometricPFQRegularized[{1/2, (3 + m)/2}, {(7 + m)/2}, c^2*x^2] + 240*b*c*x*Gamma[2 + m/2]^2*Gamma[(3 + m)/2]*Gamma[(5 + m)/2]*HypergeometricPFQRegularized[{1/2, (5 + m)/2}, {(7 + m)/2}, c^2*x^2] + 188*b*c*m*x*Gamma[2 + m/2]^2*Gamma[(3 + m)/2]*Gamma[(5 + m)/2]*HypergeometricPFQRegularized[{1/2, (5 + m)/2}, {(7 + m)/2}, c^2*x^2] + 48*b*c*m^2*x*Gamma[2 + m/2]^2*Gamma[(3 + m)/2]*Gamma[(5 + m)/2]*HypergeometricPFQRegularized[{1/2, (5 + m)/2}, {(7 + m)/2}, c^2*x^2] + 4*b*c*m^3*x*Gamma[2 + m/2]^2*Gamma[(3 + m)/2]*Gamma[(5 + m)/2]*HypergeometricPFQRegularized[{1/2, (5 + m)/2}, {(7 + m)/2}, c^2*x^2] + 30*b*c*x*Gamma[1 + m/2]*Gamma[3 + m/2]*Gamma[(3 + m)/2]*Gamma[(5 + m)/2]*HypergeometricPFQRegularized[{1/2, (5 + m)/2}, {(7 + m)/2}, c^2*x^2] + 6*b*c*m*x*Gamma[1 + m/2]*Gamma[3 + m/2]*Gamma[(3 + m)/2]*Gamma[(5 + m)/2]*HypergeometricPFQRegularized[{1/2, (5 + m)/2}, {(7 + m)/2}, c^2*x^2] - 120*b*c*x*Gamma[1 + m/2]*Gamma[2 + m/2]*Gamma[(5 + m)/2]^2*HypergeometricPFQRegularized[{1/2, (5 + m)/2}, {(7 + m)/2}, c^2*x^2] - 54*b*c*m*x*Gamma[1 + m/2]*Gamma[2 + m/2]*Gamma[(5 + m)/2]^2*HypergeometricPFQRegularized[{1/2, (5 + m)/2}, {(7 + m)/2}, c^2*x^2] - 6*b*c*m^2*x*Gamma[1 + m/2]*Gamma[2 + m/2]*Gamma[(5 + m)/2]^2*HypergeometricPFQRegularized[{1/2, (5 + m)/2}, {(7 + m)/2}, c^2*x^2]))/((3 + m)*(4 + m)*(5 + m)*Gamma[1 + m/2]*Gamma[2 + m/2]*Gamma[(3 + m)/2]) + (4*e^2*x^4*(-(b*c*(360 + 342*m + 119*m^2 + 18*m^3 + m^4)*x*Gamma[1 + m/2]*Gamma[2 + m/2]^2*Gamma[(3 + m)/2]*Gamma[(5 + m)/2]*HypergeometricPFQRegularized[{1/2, 1 + m/2}, {4 + m/2}, c^2*x^2]) + b*c*(30 + 11*m + m^2)*x*Gamma[2 + m/2]*Gamma[(5 + m)/2]*(-6*(12 + 7*m + m^2)*Gamma[2 + m/2]^2*Gamma[(3 + m)/2] + Gamma[1 + m/2]*(-6*Gamma[3 + m/2]*Gamma[(3 + m)/2] + (4 + m)*Gamma[2 + m/2]*((6 + 5*m + m^2)*Gamma[(3 + m)/2] + 6*Gamma[(5 + m)/2])))*HypergeometricPFQRegularized[{1/2, 2 + m/2}, {4 + m/2}, c^2*x^2] - 4*b*c*(6 + m)*x*Gamma[3 + m/2]*((60 + 47*m + 12*m^2 + m^3)*Gamma[2 + m/2]^2*Gamma[(3 + m)/2]*Gamma[(5 + m)/2] + 3*(5 + m)*Gamma[1 + m/2]*Gamma[3 + m/2]*Gamma[(3 + m)/2]*Gamma[(5 + m)/2] - Gamma[1 + m/2]*Gamma[2 + m/2]*(2*(20 + 9*m + m^2)*Gamma[(5 + m)/2]^2 + 3*Gamma[(3 + m)/2]*Gamma[(7 + m)/2]))*HypergeometricPFQRegularized[{1/2, 3 + m/2}, {4 + m/2}, c^2*x^2] + 2*Gamma[(5 + m)/2]*(6*Gamma[1 + m/2]*Gamma[2 + m/2]*Gamma[(3 + m)/2]*((6 + m)*

```
(a + b*ArcSin[c*x]) - b*c*x*Hypergeometric2F1[1/2, 3 + m/2, 4 + m/2, c^2*x^
2]) + b*c*(120 + 74*m + 15*m^2 + m^3)*x*Gamma[2 + m/2]*Gamma[(3 + m)/2]*((3
 + m)*Gamma[2 + m/2]*Gamma[(3 + m)/2] - Gamma[1 + m/2]*Gamma[(5 + m)/2])*Hy
pergeometricPFQRegularized[{1/2, (3 + m)/2}, {(7 + m)/2}, c^2*x^2] - b*c*(6
 + m)*x*((60 + 47*m + 12*m^2 + m^3)*Gamma[2 + m/2]^2*Gamma[(3 + m)/2]*((3 +
 m)*Gamma[(3 + m)/2] - 4*Gamma[(5 + m)/2]) - 6*(5 + m)*Gamma[1 + m/2]*Gamma
[3 + m/2]*Gamma[(3 + m)/2]*Gamma[(5 + m)/2] + Gamma[1 + m/2]*Gamma[2 + m/2]
*(6*(20 + 9*m + m^2)*Gamma[(5 + m)/2]^2 - Gamma[(3 + m)/2]*((60 + 47*m + 12
*m^2 + m^3)*Gamma[(5 + m)/2] - 6*Gamma[(7 + m)/2])))*HypergeometricPFQRegul
arized[{1/2, (5 + m)/2}, {(7 + m)/2}, c^2*x^2])))/((3 + m)*(4 + m)*(5 + m)*
(6 + m)*Gamma[1 + m/2]*Gamma[2 + m/2]*Gamma[(3 + m)/2]*Gamma[(5 + m)/2])))/
(2*(1 + m)*(2 + m))
```

fricas [F] time = 0.83, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(ae^2x^4 + 2\,adex^2 + ad^2 + \left(be^2x^4 + 2\,bdex^2 + bd^2\right)\arcsin\left(cx\right)\right)\left(fx\right)^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)^m*(e*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral((a*e^2*x^4 + 2*a*d*e*x^2 + a*d^2 + (b*e^2*x^4 + 2*b*d*e*x^2 + b*d^
2)*arcsin(c*x))*(f*x)^m, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(ex^2 + d\right)^2 (b\arcsin\left(cx\right) + a)\left(fx\right)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)^m*(e*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] integrate((e*x^2 + d)^2*(b*arcsin(c*x) + a)*(f*x)^m, x)
```

maple [F] time = 15.85, size = 0, normalized size = 0.00

$$\int \left(fx\right)^m \left(e\,x^2 + d\right)^2 (a + b\arcsin\left(cx\right))\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x)^m*(e*x^2+d)^2*(a+b*arcsin(c*x)),x)
```

```
[Out] int((f*x)^m*(e*x^2+d)^2*(a+b*arcsin(c*x)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{ae^2f^mx^5x^m}{m+5} + \frac{2\,adef^mx^3x^m}{m+3} + \frac{\left(fx\right)^{m+1}ad^2}{f(m+1)} + \frac{\left(\left(be^2f^mm^2 + 4\,be^2f^mm + 3\,be^2f^m\right)x^5 + 2\left(bdef^mm^2 + 6\,bdef^mm + 5\,b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)^m*(e*x^2+d)^2*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] a*e^2*f^m*x^5*x^m/(m + 5) + 2*a*d*e*f^m*x^3*x^m/(m + 3) + (f*x)^(m + 1)*a*d
^2/(f*(m + 1)) + (((b*e^2*f^m*m^2 + 4*b*e^2*f^m*m + 3*b*e^2*f^m)*x^5 + 2*(b
*d*e*f^m*m^2 + 6*b*d*e*f^m*m + 5*b*d*e*f^m)*x^3 + (b*d^2*f^m*m^2 + 8*b*d^2*
f^m*m + 15*b*d^2*f^m)*x)*x^m*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + (
m^3 + 9*m^2 + 23*m + 15)*integrate(-((b*c*e^2*f^m*m^2 + 4*b*c*e^2*f^m*m + 3
*b*c*e^2*f^m)*x^5 + 2*(b*c*d*e*f^m*m^2 + 6*b*c*d*e*f^m*m + 5*b*c*d*e*f^m)*x
^3 + (b*c*d^2*f^m*m^2 + 8*b*c*d^2*f^m*m + 15*b*c*d^2*f^m)*x)*sqrt(c*x + 1)*
```

```
sqrt(-c*x + 1)*x^m/(m^3 - (c^2*m^3 + 9*c^2*m^2 + 23*c^2*m + 15*c^2)*x^2 + 9
*m^2 + 23*m + 15), x))/(m^3 + 9*m^2 + 23*m + 15)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a + b\,\mathrm{asin}\,(c\,x))\,\left(f\,x\right)^m\,\left(e\,x^2 + d\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(f*x)^m*(d + e*x^2)^2,x)
```

```
[Out] int((a + b*asin(c*x))*(f*x)^m*(d + e*x^2)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(fx\right)^m (a + b\,\mathrm{asin}\,(cx))\left(d + ex^2\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)**m*(e*x**2+d)**2*(a+b*asin(c*x)),x)
```

```
[Out] Integral((f*x)**m*(a + b*asin(c*x))*(d + e*x**2)**2, x)
```

3.656 $\int (fx)^m \left(d+ex^2\right)\left(a+b\sin^{-1}(cx)\right)\,dx$

Optimal. Leaf size=161

$$\frac{d(fx)^{m+1}\left(a+b\sin^{-1}(cx)\right)}{f(m+1)}+\frac{e(fx)^{m+3}\left(a+b\sin^{-1}(cx)\right)}{f^3(m+3)}-\frac{b(fx)^{m+2}\left(c^2d(m+3)^2+e(m+1)(m+2)\right)\,{}_2F_1\left(\frac{1}{2},\frac{m+2}{2};\right.}{cf^2(m+1)(m+2)(m+3)^2}$$

[Out] d*(f*x)^(1+m)*(a+b*arcsin(c*x))/f/(1+m)+e*(f*x)^(3+m)*(a+b*arcsin(c*x))/f^3/(3+m)-b*(e*(1+m)*(2+m)+c^2*d*(3+m)^2)*(f*x)^(2+m)*hypergeom([1/2, 1+1/2*m],[2+1/2*m],c^2*x^2)/c/f^2/(1+m)/(2+m)/(3+m)^2+b*e*(f*x)^(2+m)*(-c^2*x^2+1)^(1/2)/c/f^2/(3+m)^2

Rubi [A] time = 0.17, antiderivative size = 148, normalized size of antiderivative = 0.92, number of steps used = 4, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {14, 4731, 12, 459, 364}

$$\frac{d(fx)^{m+1}\left(a+b\sin^{-1}(cx)\right)}{f(m+1)}+\frac{e(fx)^{m+3}\left(a+b\sin^{-1}(cx)\right)}{f^3(m+3)}-\frac{bc(fx)^{m+2}\left(\frac{e}{c^2(m+3)^2}+\frac{d}{m^2+3m+2}\right)\,{}_2F_1\left(\frac{1}{2},\frac{m+2}{2};\frac{m+4}{2};c^2x^2\right)}{f^2}$$

Antiderivative was successfully verified.

[In] Int[(f*x)^m*(d + e*x^2)*(a + b*ArcSin[c*x]),x]

[Out] (b*e*(f*x)^(2 + m)*Sqrt[1 - c^2*x^2])/(c*f^2*(3 + m)^2) + (d*(f*x)^(1 + m)*(a + b*ArcSin[c*x]))/(f*(1 + m)) + (e*(f*x)^(3 + m)*(a + b*ArcSin[c*x]))/(f^3*(3 + m)) - (b*c*(e/(c^2*(3 + m)^2) + d/(2 + 3*m + m^2))*(f*x)^(2 + m)*Hypergeometric2F1[1/2, (2 + m)/2, (4 + m)/2, c^2*x^2])/f^2

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 459

```
Int[((e_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n
_)), x_Symbol] :> Simp[(d*(e*x)^(m + 1)*(a + b*x^n)^(p + 1))/(b*e*(m + n*(p
 + 1) + 1)), x] - Dist[(a*d*(m + 1) - b*c*(m + n*(p + 1) + 1))/(b*(m + n*(p
 + 1) + 1)), Int[(e*x)^m*(a + b*x^n)^p, x], x] /; FreeQ[{a, b, c, d, e, m,
n, p}, x] && NeQ[b*c - a*d, 0] && NeQ[m + n*(p + 1) + 1, 0]
```

Rule 4731

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))*((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_
)^2)^(p_.), x_Symbol] :> With[{u = IntHide[(f*x)^m*(d + e*x^2)^p, x]}, Dist
[a + b*ArcSin[c*x], u, x] - Dist[b*c, Int[SimplifyIntegrand[u/Sqrt[1 - c^2*
```

```
x^2], x], x], x]] /; FreeQ[{a, b, c, d, e, f, m}, x] && NeQ[c^2*d + e, 0] &
& IntegerQ[p] && (GtQ[p, 0] || (IGtQ[(m - 1)/2, 0] && LeQ[m + p, 0]))
```

Rubi steps

$$\int (fx)^m \left(d+ex^2\right)\left(a+b\sin^{-1}(cx)\right)dx = \frac{d(fx)^{1+m}\left(a+b\sin^{-1}(cx)\right)}{f(1+m)}+\frac{e(fx)^{3+m}\left(a+b\sin^{-1}(cx)\right)}{f^3(3+m)}-(bc)\int \frac{(f$$

$$=\frac{d(fx)^{1+m}\left(a+b\sin^{-1}(cx)\right)}{f(1+m)}+\frac{e(fx)^{3+m}\left(a+b\sin^{-1}(cx)\right)}{f^3(3+m)}-\frac{(bc)\int \frac{(fx}{}}{f}$$

$$=\frac{be(fx)^{2+m}\sqrt{1-c^2x^2}}{cf^2(3+m)^2}+\frac{d(fx)^{1+m}\left(a+b\sin^{-1}(cx)\right)}{f(1+m)}+\frac{e(fx)^{3+m}\left(a+\right.}{f^3(3+}$$

$$=\frac{be(fx)^{2+m}\sqrt{1-c^2x^2}}{cf^2(3+m)^2}+\frac{d(fx)^{1+m}\left(a+b\sin^{-1}(cx)\right)}{f(1+m)}+\frac{e(fx)^{3+m}\left(a+\right.}{f^3(3+}$$

Mathematica [C] time = 2.22, size = 508, normalized size = 3.16

$$x(fx)^m\left(2ex^2\left(bcx\Gamma\left(\frac{m}{2}+2\right){}_2\tilde{F}_1\left(\frac{1}{2},\frac{m}{2}+1;\frac{m}{2}+2;c^2x^2\right)-\frac{bcx\Gamma\left(\frac{m}{2}+2\right)\Gamma\left(\frac{m+3}{2}\right){}_2\tilde{F}_1\left(\frac{1}{2},\frac{m+3}{2};\frac{m+5}{2};c^2x^2\right)}{\Gamma\left(\frac{m}{2}+1\right)}-a+\frac{bcx\,{}_2F_1\left(\frac{1}{2},\frac{m+3}{2};\right.}{m+3}\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(f*x)^m*(d + e*x^2)*(a + b*ArcSin[c*x]),x]
```

```
[Out] (x*(f*x)^m*(-((d + e*x^2)*(-((2 + m)*(a + b*ArcSin[c*x])) + b*c*x*Hypergeom
etric2F1[1/2, 1 + m/2, 2 + m/2, c^2*x^2])) + 2*e*x^2*(-a - b*ArcSin[c*x] +
(b*c*x*Hypergeometric2F1[1/2, (3 + m)/2, (5 + m)/2, c^2*x^2])/(3 + m) + b*c
*x*Gamma[2 + m/2]*HypergeometricPFQRegularized[{1/2, 1 + m/2}, {2 + m/2}, c
^2*x^2] - (b*c*x*Gamma[2 + m/2]*Gamma[(3 + m)/2]*HypergeometricPFQRegulariz
ed[{1/2, (3 + m)/2}, {(5 + m)/2}, c^2*x^2])/Gamma[1 + m/2]) - (e*x^2*((-2*G
amma[1 + m/2]*((4 + m)*(a + b*ArcSin[c*x]) - b*c*x*Hypergeometric2F1[1/2, 2
 + m/2, 3 + m/2, c^2*x^2]))/(4 + m) + b*c*(3 + m)*x*Gamma[1 + m/2]*Gamma[2
+ m/2]*HypergeometricPFQRegularized[{1/2, 1 + m/2}, {3 + m/2}, c^2*x^2] + (
2*b*c*x*Gamma[2 + m/2]*((3 + m)*Gamma[2 + m/2]*Gamma[(3 + m)/2] - Gamma[1 +
 m/2]*Gamma[(5 + m)/2])*HypergeometricPFQRegularized[{1/2, 2 + m/2}, {3 + m
/2}, c^2*x^2])/Gamma[(3 + m)/2] - 2*b*c*x*((3 + m)*Gamma[2 + m/2]*Gamma[(3
+ m)/2] - Gamma[1 + m/2]*Gamma[(5 + m)/2])*HypergeometricPFQRegularized[{1/
2, (3 + m)/2}, {(5 + m)/2}, c^2*x^2]))/((3 + m)*Gamma[1 + m/2])))/((1 + m)*
(2 + m))
```

fricas [F] time = 0.84, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(aex^2+ad+\left(bex^2+bd\right)\arcsin\left(cx\right)\right)\left(fx\right)^m,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)^m*(e*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral((a*e*x^2 + a*d + (b*e*x^2 + b*d)*arcsin(c*x))*(f*x)^m, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(ex^2+d\right)(b\arcsin(cx)+a)\left(fx\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)^m*(e*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] integrate((e*x^2 + d)*(b*arcsin(c*x) + a)*(f*x)^m, x)
```

maple [F] time = 4.86, size = 0, normalized size = 0.00

$$\int \left(fx\right)^m\left(e\,x^2+d\right)(a+b\arcsin(cx))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x)^m*(e*x^2+d)*(a+b*arcsin(c*x)),x)
```

```
[Out] int((f*x)^m*(e*x^2+d)*(a+b*arcsin(c*x)),x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)^m*(e*x^2+d)*(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] Timed out
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (a+b\,\mathrm{asin}(c\,x))\left(f\,x\right)^m\left(e\,x^2+d\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))*(f*x)^m*(d + e*x^2),x)
```

```
[Out] int((a + b*asin(c*x))*(f*x)^m*(d + e*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(fx\right)^m(a+b\,\mathrm{asin}(cx))\left(d+ex^2\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)**m*(e*x**2+d)*(a+b*asin(c*x)),x)
```

```
[Out] Integral((f*x)**m*(a + b*asin(c*x))*(d + e*x**2), x)
```

3.657 $\int \frac{(fx)^m\left(a+b\sin^{-1}(cx)\right)}{d+ex^2}\,dx$

Optimal. Leaf size=26

$$\text{Int}\left(\frac{(fx)^m\left(a+b\sin^{-1}(cx)\right)}{d+ex^2},x\right)$$

```
[Out] Unintegrable((f*x)^m*(a+b*arcsin(c*x))/(e*x^2+d),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(fx)^m\left(a+b\sin^{-1}(cx)\right)}{d+ex^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((f*x)^m*(a + b*ArcSin[c*x]))/(d + e*x^2),x]
```

```
[Out] Defer[Int][((f*x)^m*(a + b*ArcSin[c*x]))/(d + e*x^2), x]
```

Rubi steps

$$\int \frac{(fx)^m\left(a+b\sin^{-1}(cx)\right)}{d+ex^2}\,dx=\int \frac{(fx)^m\left(a+b\sin^{-1}(cx)\right)}{d+ex^2}\,dx$$

Mathematica [A] time = 8.92, size = 0, normalized size = 0.00

$$\int \frac{(fx)^m\left(a+b\sin^{-1}(cx)\right)}{d+ex^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((f*x)^m*(a + b*ArcSin[c*x]))/(d + e*x^2),x]
```

```
[Out] Integrate[((f*x)^m*(a + b*ArcSin[c*x]))/(d + e*x^2), x]
```

fricas [A] time = 1.24, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(b\arcsin(cx)+a)\left(fx\right)^m}{ex^2+d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)^m*(a+b*arcsin(c*x))/(e*x^2+d),x, algorithm="fricas")
```

```
[Out] integral((b*arcsin(c*x) + a)*(f*x)^m/(e*x^2 + d), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b\arcsin(cx)+a)\left(fx\right)^m}{ex^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)^m*(a+b*arcsin(c*x))/(e*x^2+d),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)*(f*x)^m/(e*x^2 + d), x)
```

maple [A] time = 1.49, size = 0, normalized size = 0.00

$$\int \frac{(fx)^m (a + b \arcsin(cx))}{e x^2 + d}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x)^m*(a+b*arcsin(c*x))/(e*x^2+d),x)
[Out] int((f*x)^m*(a+b*arcsin(c*x))/(e*x^2+d),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b \arcsin(cx) + a)(fx)^m}{ex^2 + d}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)^m*(a+b*arcsin(c*x))/(e*x^2+d),x, algorithm="maxima")
[Out] integrate((b*arcsin(c*x) + a)*(f*x)^m/(e*x^2 + d), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{(a + b \operatorname{asin}(c x))(f x)^m}{e x^2 + d}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(f*x)^m)/(d + e*x^2),x)
[Out] int(((a + b*asin(c*x))*(f*x)^m)/(d + e*x^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx)^m (a + b \operatorname{asin}(cx))}{d + ex^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)**m*(a+b*asin(c*x))/(e*x**2+d),x)
[Out] Integral((f*x)**m*(a + b*asin(c*x))/(d + e*x**2), x)
```

3.658 $\int \frac{(fx)^m\left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^2}\,dx$

Optimal. Leaf size=26

$$\text{Int}\left(\frac{(fx)^m\left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^2},x\right)$$

```
[Out] Unintegrable((f*x)^m*(a+b*arcsin(c*x))/(e*x^2+d)^2,x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(fx)^m\left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((f*x)^m*(a + b*ArcSin[c*x]))/(d + e*x^2)^2,x]
[Out] Defer[Int][((f*x)^m*(a + b*ArcSin[c*x]))/(d + e*x^2)^2, x]
```

Rubi steps

$$\int \frac{(fx)^m\left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^2}\,dx=\int \frac{(fx)^m\left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^2}\,dx$$

Mathematica [A] time = 11.00, size = 0, normalized size = 0.00

$$\int \frac{(fx)^m\left(a+b\sin^{-1}(cx)\right)}{\left(d+ex^2\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((f*x)^m*(a + b*ArcSin[c*x]))/(d + e*x^2)^2,x]
[Out] Integrate[((f*x)^m*(a + b*ArcSin[c*x]))/(d + e*x^2)^2, x]
```

fricas [A] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b\arcsin(cx)+a\right)\left(fx\right)^m}{e^2x^4+2\,dex^2+d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)^m*(a+b*arcsin(c*x))/(e*x^2+d)^2,x, algorithm="fricas")
[Out] integral((b*arcsin(c*x) + a)*(f*x)^m/(e^2*x^4 + 2*d*e*x^2 + d^2), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\arcsin(cx)+a\right)\left(fx\right)^m}{\left(ex^2+d\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)^m*(a+b*arcsin(c*x))/(e*x^2+d)^2,x, algorithm="giac")
[Out] integrate((b*arcsin(c*x) + a)*(f*x)^m/(e*x^2 + d)^2, x)
```

maple [A] time = 1.04, size = 0, normalized size = 0.00

$$\int \frac{\left(fx\right)^{m} \left(a+b\arcsin \left(cx\right)\right)}{\left(e\,x^{2}+d\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x)^m*(a+b*arcsin(c*x))/(e*x^2+d)^2,x)
[Out] int((f*x)^m*(a+b*arcsin(c*x))/(e*x^2+d)^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\arcsin \left(cx\right)+a\right) \left(fx\right)^{m}}{\left(ex^{2}+d\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)^m*(a+b*arcsin(c*x))/(e*x^2+d)^2,x, algorithm="maxima")
[Out] integrate((b*arcsin(c*x) + a)*(f*x)^m/(e*x^2 + d)^2, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(f\,x\right)}^m}{{\left(e\,x^2+d\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*asin(c*x))*(f*x)^m)/(d + e*x^2)^2,x)
[Out] int(((a + b*asin(c*x))*(f*x)^m)/(d + e*x^2)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x)**m*(a+b*asin(c*x))/(e*x**2+d)**2,x)
[Out] Timed out
```

3.659 $\int \left(d+ex^2\right)^3 \left(a+b\sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=569

$$\frac{2bd^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+\frac{2bd^2ex^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3c}+\frac{6bde^2x^4\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{25c}+$$

```
[Out] -2*b^2*d^3*x-4/3*b^2*d^2*e*x/c^2-16/25*b^2*d*e^2*x/c^4-32/245*b^2*e^3*x/c^6
-2/9*b^2*d^2*e*x^3-8/75*b^2*d*e^2*x^3/c^2-16/735*b^2*e^3*x^3/c^4-6/125*b^2*
d*e^2*x^5-12/1225*b^2*e^3*x^5/c^2-2/343*b^2*e^3*x^7+d^3*x*(a+b*arcsin(c*x))
^2+d^2*e*x^3*(a+b*arcsin(c*x))^2+3/5*d*e^2*x^5*(a+b*arcsin(c*x))^2+1/7*e^3*
x^7*(a+b*arcsin(c*x))^2+2*b*d^3*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c+4/3*
b*d^2*e*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3+16/25*b*d*e^2*(a+b*arcsin(
c*x))*(-c^2*x^2+1)^(1/2)/c^5+32/245*b*e^3*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1
/2)/c^7+2/3*b*d^2*e*x^2*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c+8/25*b*d*e^2
*x^2*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3+16/245*b*e^3*x^2*(a+b*arcsin(
c*x))*(-c^2*x^2+1)^(1/2)/c^5+6/25*b*d*e^2*x^4*(a+b*arcsin(c*x))*(-c^2*x^2+1
)^(1/2)/c+12/245*b*e^3*x^4*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3+2/49*b*
e^3*x^6*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.96, antiderivative size = 569, normalized size of antiderivative = 1.00, number of steps used = 26, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {4667, 4619, 4677, 8, 4627, 4707, 30}

$$\frac{2bd^2ex^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3c}+\frac{4bd^2e\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3c^3}+\frac{2bd^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+\frac{6b}{}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x^2)^3*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -2*b^2*d^3*x - (4*b^2*d^2*e*x)/(3*c^2) - (16*b^2*d*e^2*x)/(25*c^4) - (32*b^
2*e^3*x)/(245*c^6) - (2*b^2*d^2*e*x^3)/9 - (8*b^2*d*e^2*x^3)/(75*c^2) - (16
*b^2*e^3*x^3)/(735*c^4) - (6*b^2*d*e^2*x^5)/125 - (12*b^2*e^3*x^5)/(1225*c^
2) - (2*b^2*e^3*x^7)/343 + (2*b*d^3*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/
c + (4*b*d^2*e*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(3*c^3) + (16*b*d*e^2
*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(25*c^5) + (32*b*e^3*Sqrt[1 - c^2*x
^2]*(a + b*ArcSin[c*x]))/(245*c^7) + (2*b*d^2*e*x^2*Sqrt[1 - c^2*x^2]*(a +
b*ArcSin[c*x]))/(3*c) + (8*b*d*e^2*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]
))/(25*c^3) + (16*b*e^3*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(245*c^5
) + (6*b*d*e^2*x^4*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(25*c) + (12*b*e^
3*x^4*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(245*c^3) + (2*b*e^3*x^6*Sqrt[
1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(49*c) + d^3*x*(a + b*ArcSin[c*x])^2 + d^
2*e*x^3*(a + b*ArcSin[c*x])^2 + (3*d*e^2*x^5*(a + b*ArcSin[c*x])^2)/5 + (e^
3*x^7*(a + b*ArcSin[c*x])^2)/7
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
```

```
c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int \left(d+ex^2\right)^3 \left(a+b\sin^{-1}(cx)\right)^2\,dx = \int \left(d^3\left(a+b\sin^{-1}(cx)\right)^2 + 3d^2ex^2\left(a+b\sin^{-1}(cx)\right)^2 + 3de^2x^4\left(a+b\sin\right.\right.$$
$$= d^3\int \left(a+b\sin^{-1}(cx)\right)^2 dx + \left(3d^2e\right)\int x^2\left(a+b\sin^{-1}(cx)\right)^2 dx + \left(3de^2\right)$$
$$= d^3x\left(a+b\sin^{-1}(cx)\right)^2 + d^2ex^3\left(a+b\sin^{-1}(cx)\right)^2 + \frac{3}{5}de^2x^5\left(a+b\sin^{-1}(c\right.$$
$$= \frac{2bd^3\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c} + \frac{2bd^2ex^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{3c}$$
$$= -2b^2d^3x - \frac{2}{9}b^2d^2ex^3 - \frac{6}{125}b^2de^2x^5 - \frac{2}{343}b^2e^3x^7 + \frac{2bd^3\sqrt{1-c^2x^2}\left(a+b\right.}{c}$$
$$= -2b^2d^3x - \frac{4b^2d^2ex}{3c^2} - \frac{2}{9}b^2d^2ex^3 - \frac{8b^2de^2x^3}{75c^2} - \frac{6}{125}b^2de^2x^5 - \frac{12b^2e^3x^5}{1225c^2} -$$
$$= -2b^2d^3x - \frac{4b^2d^2ex}{3c^2} - \frac{16b^2de^2x}{25c^4} - \frac{2}{9}b^2d^2ex^3 - \frac{8b^2de^2x^3}{75c^2} - \frac{16b^2e^3x^3}{735c^4} - \frac{6}{12}$$
$$= -2b^2d^3x - \frac{4b^2d^2ex}{3c^2} - \frac{16b^2de^2x}{25c^4} - \frac{32b^2e^3x}{245c^6} - \frac{2}{9}b^2d^2ex^3 - \frac{8b^2de^2x^3}{75c^2} - \frac{16}{7}$$

Mathematica [A] time = 0.56, size = 435, normalized size = 0.76

$$-2bd^3\left(bx - \frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}\right) - \frac{2bd^2e\left(-3a\sqrt{1-c^2x^2}\left(c^2x^2+2\right)+bcx\left(c^2x^2+6\right)-3b\sqrt{1-c^2x^2}\left(\right.\right.}{9c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x^2)^3*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] d^3*x*(a + b*ArcSin[c*x])^2 + d^2*e*x^3*(a + b*ArcSin[c*x])^2 + (3*d*e^2*x^
5*(a + b*ArcSin[c*x])^2)/5 + (e^3*x^7*(a + b*ArcSin[c*x])^2)/7 - (2*b*d^2*e
*(-3*a*Sqrt[1 - c^2*x^2]*(2 + c^2*x^2) + b*c*x*(6 + c^2*x^2) - 3*b*Sqrt[1 -
 c^2*x^2]*(2 + c^2*x^2)*ArcSin[c*x]))/(9*c^3) - (2*b*d*e^2*(-15*a*Sqrt[1 -
c^2*x^2]*(8 + 4*c^2*x^2 + 3*c^4*x^4) + b*c*x*(120 + 20*c^2*x^2 + 9*c^4*x^4)
 - 15*b*Sqrt[1 - c^2*x^2]*(8 + 4*c^2*x^2 + 3*c^4*x^4)*ArcSin[c*x]))/(375*c^
5) - (2*b*e^3*(-105*a*Sqrt[1 - c^2*x^2]*(16 + 8*c^2*x^2 + 6*c^4*x^4 + 5*c^6
*x^6) + b*c*x*(1680 + 280*c^2*x^2 + 126*c^4*x^4 + 75*c^6*x^6) - 105*b*Sqrt[
1 - c^2*x^2]*(16 + 8*c^2*x^2 + 6*c^4*x^4 + 5*c^6*x^6)*ArcSin[c*x]))/(25725*
c^7) - 2*b*d^3*(b*x - (Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c)
```

fricas [A] time = 1.28, size = 555, normalized size = 0.98

$$\frac{1125\left(49a^2-2b^2\right)c^7e^3x^7 + 189\left(49\left(25a^2-2b^2\right)c^7de^2 - 20b^2c^5e^3\right)x^5 + 35\left(1225\left(9a^2-2b^2\right)c^7d^2e - 1176b^2c\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^3*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] 1/385875*(1125*(49*a^2 - 2*b^2)*c^7*e^3*x^7 + 189*(49*(25*a^2 - 2*b^2)*c^7*
d*e^2 - 20*b^2*c^5*e^3)*x^5 + 35*(1225*(9*a^2 - 2*b^2)*c^7*d^2*e - 1176*b^2
*c^5*d*e^2 - 240*b^2*c^3*e^3)*x^3 + 11025*(5*b^2*c^7*e^3*x^7 + 21*b^2*c^7*d
*e^2*x^5 + 35*b^2*c^7*d^2*e*x^3 + 35*b^2*c^7*d^3*x)*arcsin(c*x)^2 + 105*(36
75*(a^2 - 2*b^2)*c^7*d^3 - 4900*b^2*c^5*d^2*e - 2352*b^2*c^3*d*e^2 - 480*b^
2*c*e^3)*x + 22050*(5*a*b*c^7*e^3*x^7 + 21*a*b*c^7*d*e^2*x^5 + 35*a*b*c^7*d
```

```
^2*e*x^3 + 35*a*b*c^7*d^3*x)*arcsin(c*x) + 210*(75*a*b*c^6*e^3*x^6 + 3675*a
*b*c^6*d^3 + 2450*a*b*c^4*d^2*e + 1176*a*b*c^2*d*e^2 + 240*a*b*e^3 + 9*(49*
a*b*c^6*d*e^2 + 10*a*b*c^4*e^3)*x^4 + (1225*a*b*c^6*d^2*e + 588*a*b*c^4*d*e
^2 + 120*a*b*c^2*e^3)*x^2 + (75*b^2*c^6*e^3*x^6 + 3675*b^2*c^6*d^3 + 2450*b
^2*c^4*d^2*e + 1176*b^2*c^2*d*e^2 + 240*b^2*e^3 + 9*(49*b^2*c^6*d*e^2 + 10*
b^2*c^4*e^3)*x^4 + (1225*b^2*c^6*d^2*e + 588*b^2*c^4*d*e^2 + 120*b^2*c^2*e^
3)*x^2)*arcsin(c*x))*sqrt(-c^2*x^2 + 1))/c^7
```

giac [B] time = 0.72, size = 1216, normalized size = 2.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^3*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] 1/7*a^2*x^7*e^3 + 3/5*a^2*d*x^5*e^2 + b^2*d^3*x*arcsin(c*x)^2 + a^2*d^2*x^3
*e + 2*a*b*d^3*x*arcsin(c*x) + (c^2*x^2 - 1)*b^2*d^2*x*arcsin(c*x)^2*e/c^2
+ a^2*d^3*x - 2*b^2*d^3*x + 2*(c^2*x^2 - 1)*a*b*d^2*x*arcsin(c*x)*e/c^2 + b
^2*d^2*x*arcsin(c*x)^2*e/c^2 + 2*sqrt(-c^2*x^2 + 1)*b^2*d^3*arcsin(c*x)/c +
 3/5*(c^2*x^2 - 1)^2*b^2*d*x*arcsin(c*x)^2*e^2/c^4 - 2/9*(c^2*x^2 - 1)*b^2*
d^2*x*e/c^2 + 2*a*b*d^2*x*arcsin(c*x)*e/c^2 + 2*sqrt(-c^2*x^2 + 1)*a*b*d^3/
c - 2/3*(-c^2*x^2 + 1)^(3/2)*b^2*d^2*arcsin(c*x)*e/c^3 + 6/5*(c^2*x^2 - 1)^
2*a*b*d*x*arcsin(c*x)*e^2/c^4 + 6/5*(c^2*x^2 - 1)*b^2*d*x*arcsin(c*x)^2*e^2
/c^4 - 14/9*b^2*d^2*x*e/c^2 - 2/3*(-c^2*x^2 + 1)^(3/2)*a*b*d^2*e/c^3 + 2*sq
rt(-c^2*x^2 + 1)*b^2*d^2*arcsin(c*x)*e/c^3 + 1/7*(c^2*x^2 - 1)^3*b^2*x*arcs
in(c*x)^2*e^3/c^6 - 6/125*(c^2*x^2 - 1)^2*b^2*d*x*e^2/c^4 + 12/5*(c^2*x^2 -
 1)*a*b*d*x*arcsin(c*x)*e^2/c^4 + 3/5*b^2*d*x*arcsin(c*x)^2*e^2/c^4 + 6/25*
(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*b^2*d*arcsin(c*x)*e^2/c^5 + 2*sqrt(-c^2*
x^2 + 1)*a*b*d^2*e/c^3 + 2/7*(c^2*x^2 - 1)^3*a*b*x*arcsin(c*x)*e^3/c^6 + 3/
7*(c^2*x^2 - 1)^2*b^2*x*arcsin(c*x)^2*e^3/c^6 - 76/375*(c^2*x^2 - 1)*b^2*d*
x*e^2/c^4 + 6/5*a*b*d*x*arcsin(c*x)*e^2/c^4 + 6/25*(c^2*x^2 - 1)^2*sqrt(-c^
2*x^2 + 1)*a*b*d*e^2/c^5 - 4/5*(-c^2*x^2 + 1)^(3/2)*b^2*d*arcsin(c*x)*e^2/c
^5 - 2/343*(c^2*x^2 - 1)^3*b^2*x*e^3/c^6 + 6/7*(c^2*x^2 - 1)^2*a*b*x*arcsin
(c*x)*e^3/c^6 + 3/7*(c^2*x^2 - 1)*b^2*x*arcsin(c*x)^2*e^3/c^6 - 298/375*b^2
*d*x*e^2/c^4 + 2/49*(c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*b^2*arcsin(c*x)*e^3/
c^7 - 4/5*(-c^2*x^2 + 1)^(3/2)*a*b*d*e^2/c^5 + 6/5*sqrt(-c^2*x^2 + 1)*b^2*d
*arcsin(c*x)*e^2/c^5 - 234/8575*(c^2*x^2 - 1)^2*b^2*x*e^3/c^6 + 6/7*(c^2*x^
2 - 1)*a*b*x*arcsin(c*x)*e^3/c^6 + 1/7*b^2*x*arcsin(c*x)^2*e^3/c^6 + 2/49*(
c^2*x^2 - 1)^3*sqrt(-c^2*x^2 + 1)*a*b*e^3/c^7 + 6/35*(c^2*x^2 - 1)^2*sqrt(-
c^2*x^2 + 1)*b^2*arcsin(c*x)*e^3/c^7 + 6/5*sqrt(-c^2*x^2 + 1)*a*b*d*e^2/c^5
 - 1514/25725*(c^2*x^2 - 1)*b^2*x*e^3/c^6 + 2/7*a*b*x*arcsin(c*x)*e^3/c^6 +
 6/35*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*a*b*e^3/c^7 - 2/7*(-c^2*x^2 + 1)^(
3/2)*b^2*arcsin(c*x)*e^3/c^7 - 4322/25725*b^2*x*e^3/c^6 - 2/7*(-c^2*x^2 + 1
)^(3/2)*a*b*e^3/c^7 + 2/7*sqrt(-c^2*x^2 + 1)*b^2*arcsin(c*x)*e^3/c^7 + 2/7*
sqrt(-c^2*x^2 + 1)*a*b*e^3/c^7
```

maple [B] time = 0.17, size = 1194, normalized size = 2.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)^3*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/c*(a^2/c^6*(1/7*e^3*c^7*x^7+3/5*c^7*d*e^2*x^5+c^7*d^2*e*x^3+d^3*c^7*x)+b^
2/c^6*(1/385875*e^3*(55125*arcsin(c*x)^2*c^7*x^7+15750*arcsin(c*x)*(-c^2*x^
2+1)^(1/2)*c^6*x^6-231525*arcsin(c*x)^2*c^5*x^5-2250*c^7*x^7-73710*arcsin(c
*x)*(-c^2*x^2+1)^(1/2)*c^4*x^4+385875*arcsin(c*x)^2*c^3*x^3+14742*c^5*x^5+1
58970*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x^2-385875*c*x*arcsin(c*x)^2-52990
*c^3*x^3-453810*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+453810*c*x)+1/1125*c^2*d*e^2
```

```
*(675*arcsin(c*x)^2*c^5*x^5+270*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^4*x^4-2250
*arcsin(c*x)^2*c^3*x^3-54*c^5*x^5-1140*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x
^2+3375*c*x*arcsin(c*x)^2+380*c^3*x^3+4470*arcsin(c*x)*(-c^2*x^2+1)^(1/2)-4
470*c*x)+1/1125*e^3*(675*arcsin(c*x)^2*c^5*x^5+270*arcsin(c*x)*(-c^2*x^2+1)
^(1/2)*c^4*x^4-2250*arcsin(c*x)^2*c^3*x^3-54*c^5*x^5-1140*arcsin(c*x)*(-c^2
*x^2+1)^(1/2)*c^2*x^2+3375*c*x*arcsin(c*x)^2+380*c^3*x^3+4470*arcsin(c*x)*(
-c^2*x^2+1)^(1/2)-4470*c*x)+1/9*c^4*d^2*e*(9*arcsin(c*x)^2*c^3*x^3+6*arcsin
(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x^2-27*c*x*arcsin(c*x)^2-2*c^3*x^3-42*arcsin(c
*x)*(-c^2*x^2+1)^(1/2)+42*c*x)+2/9*c^2*d*e^2*(9*arcsin(c*x)^2*c^3*x^3+6*arc
sin(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x^2-27*c*x*arcsin(c*x)^2-2*c^3*x^3-42*arcsi
n(c*x)*(-c^2*x^2+1)^(1/2)+42*c*x)+1/9*e^3*(9*arcsin(c*x)^2*c^3*x^3+6*arcsin
(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x^2-27*c*x*arcsin(c*x)^2-2*c^3*x^3-42*arcsin(c
*x)*(-c^2*x^2+1)^(1/2)+42*c*x)+d^3*c^6*(c*x*arcsin(c*x)^2-2*c*x+2*arcsin(c*
x)*(-c^2*x^2+1)^(1/2))+3*c^4*d^2*e*(c*x*arcsin(c*x)^2-2*c*x+2*arcsin(c*x)*(
-c^2*x^2+1)^(1/2))+3*c^2*d*e^2*(c*x*arcsin(c*x)^2-2*c*x+2*arcsin(c*x)*(-c^2
*x^2+1)^(1/2))+e^3*(c*x*arcsin(c*x)^2-2*c*x+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2
)))+2*a*b/c^6*(1/7*arcsin(c*x)*e^3*c^7*x^7+3/5*arcsin(c*x)*c^7*d*e^2*x^5+ar
csin(c*x)*c^7*d^2*e*x^3+arcsin(c*x)*d^3*c^7*x-1/7*e^3*(-1/7*c^6*x^6*(-c^2*x
^2+1)^(1/2)-6/35*c^4*x^4*(-c^2*x^2+1)^(1/2)-8/35*c^2*x^2*(-c^2*x^2+1)^(1/2)
-16/35*(-c^2*x^2+1)^(1/2))-3/5*c^2*d*e^2*(-1/5*c^4*x^4*(-c^2*x^2+1)^(1/2)-4
/15*c^2*x^2*(-c^2*x^2+1)^(1/2)-8/15*(-c^2*x^2+1)^(1/2))-c^4*d^2*e*(-1/3*c^2
*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-c^2*x^2+1)^(1/2))+d^3*c^6*(-c^2*x^2+1)^(1/2))
)
```

maxima [A] time = 0.47, size = 699, normalized size = 1.23

$$\frac{1}{7}b^2e^3x^7\arcsin(cx)^2+\frac{1}{7}a^2e^3x^7+\frac{3}{5}b^2de^2x^5\arcsin(cx)^2+\frac{3}{5}a^2de^2x^5+b^2d^2ex^3\arcsin(cx)^2+a^2d^2ex^3+b^2d^3x\,\mathrm{arcs}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^3*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] 1/7*b^2*e^3*x^7*arcsin(c*x)^2 + 1/7*a^2*e^3*x^7 + 3/5*b^2*d*e^2*x^5*arcsin(
c*x)^2 + 3/5*a^2*d*e^2*x^5 + b^2*d^2*e*x^3*arcsin(c*x)^2 + a^2*d^2*e*x^3 +
b^2*d^3*x*arcsin(c*x)^2 + 2/3*(3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^
2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*d^2*e + 2/9*(3*c*(sqrt(-c^2*x^2 + 1)
*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4)*arcsin(c*x) - (c^2*x^3 + 6*x)/c^2)*b^2
*d^2*e + 2/25*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(
-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*a*b*d*e^2 + 2/375*(15*
(3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*
x^2 + 1)/c^6)*c*arcsin(c*x) - (9*c^4*x^5 + 20*c^2*x^3 + 120*x)/c^4)*b^2*d*e
^2 + 2/245*(35*x^7*arcsin(c*x) + (5*sqrt(-c^2*x^2 + 1)*x^6/c^2 + 6*sqrt(-c^
2*x^2 + 1)*x^4/c^4 + 8*sqrt(-c^2*x^2 + 1)*x^2/c^6 + 16*sqrt(-c^2*x^2 + 1)/c
^8)*c)*a*b*e^3 + 2/25725*(105*(5*sqrt(-c^2*x^2 + 1)*x^6/c^2 + 6*sqrt(-c^2*x
^2 + 1)*x^4/c^4 + 8*sqrt(-c^2*x^2 + 1)*x^2/c^6 + 16*sqrt(-c^2*x^2 + 1)/c^8)
*c*arcsin(c*x) - (75*c^6*x^7 + 126*c^4*x^5 + 280*c^2*x^3 + 1680*x)/c^6)*b^2
*e^3 - 2*b^2*d^3*(x - sqrt(-c^2*x^2 + 1)*arcsin(c*x)/c) + a^2*d^3*x + 2*(c*
x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*a*b*d^3/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,\mathrm{asin}(c\,x))^2\,\left(e\,x^2+d\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2*(d + e*x^2)^3,x)
```

```
[Out] int((a + b*asin(c*x))^2*(d + e*x^2)^3, x)
```

sympy [A] time = 12.76, size = 989, normalized size = 1.74

$$\begin{cases} a^2d^3x + a^2d^2ex^3 + \frac{3a^2de^2x^5}{5} + \frac{a^2e^3x^7}{7} + 2abd^3x\operatorname{asin}(cx) + 2abd^2ex^3\operatorname{asin}(cx) + \frac{6abde^2x^5\operatorname{asin}(cx)}{5} + \frac{2abe^3x^7\operatorname{asin}(cx)}{7} + 2 \\ a^2\left(d^3x + d^2ex^3 + \frac{3de^2x^5}{5} + \frac{e^3x^7}{7}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)**3*(a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((a**2*d**3*x + a**2*d**2*e*x**3 + 3*a**2*d*e**2*x**5/5 + a**2*e**
3*x**7/7 + 2*a*b*d**3*x*asin(c*x) + 2*a*b*d**2*e*x**3*asin(c*x) + 6*a*b*d*e
**2*x**5*asin(c*x)/5 + 2*a*b*e**3*x**7*asin(c*x)/7 + 2*a*b*d**3*sqrt(-c**2*
x**2 + 1)/c + 2*a*b*d**2*e*x**2*sqrt(-c**2*x**2 + 1)/(3*c) + 6*a*b*d*e**2*x
**4*sqrt(-c**2*x**2 + 1)/(25*c) + 2*a*b*e**3*x**6*sqrt(-c**2*x**2 + 1)/(49*
c) + 4*a*b*d**2*e*sqrt(-c**2*x**2 + 1)/(3*c**3) + 8*a*b*d*e**2*x**2*sqrt(-c
**2*x**2 + 1)/(25*c**3) + 12*a*b*e**3*x**4*sqrt(-c**2*x**2 + 1)/(245*c**3)
+ 16*a*b*d*e**2*sqrt(-c**2*x**2 + 1)/(25*c**5) + 16*a*b*e**3*x**2*sqrt(-c**
2*x**2 + 1)/(245*c**5) + 32*a*b*e**3*sqrt(-c**2*x**2 + 1)/(245*c**7) + b**2
*d**3*x*asin(c*x)**2 - 2*b**2*d**3*x + b**2*d**2*e*x**3*asin(c*x)**2 - 2*b*
*2*d**2*e*x**3/9 + 3*b**2*d*e**2*x**5*asin(c*x)**2/5 - 6*b**2*d*e**2*x**5/1
25 + b**2*e**3*x**7*asin(c*x)**2/7 - 2*b**2*e**3*x**7/343 + 2*b**2*d**3*sqr
t(-c**2*x**2 + 1)*asin(c*x)/c + 2*b**2*d**2*e*x**2*sqrt(-c**2*x**2 + 1)*asi
n(c*x)/(3*c) + 6*b**2*d*e**2*x**4*sqrt(-c**2*x**2 + 1)*asin(c*x)/(25*c) + 2
*b**2*e**3*x**6*sqrt(-c**2*x**2 + 1)*asin(c*x)/(49*c) - 4*b**2*d**2*e*x/(3*
c**2) - 8*b**2*d*e**2*x**3/(75*c**2) - 12*b**2*e**3*x**5/(1225*c**2) + 4*b*
*2*d**2*e*sqrt(-c**2*x**2 + 1)*asin(c*x)/(3*c**3) + 8*b**2*d*e**2*x**2*sqrt
(-c**2*x**2 + 1)*asin(c*x)/(25*c**3) + 12*b**2*e**3*x**4*sqrt(-c**2*x**2 +
1)*asin(c*x)/(245*c**3) - 16*b**2*d*e**2*x/(25*c**4) - 16*b**2*e**3*x**3/(7
35*c**4) + 16*b**2*d*e**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(25*c**5) + 16*b**
2*e**3*x**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(245*c**5) - 32*b**2*e**3*x/(245
*c**6) + 32*b**2*e**3*sqrt(-c**2*x**2 + 1)*asin(c*x)/(245*c**7), Ne(c, 0)),
 (a**2*(d**3*x + d**2*e*x**3 + 3*d*e**2*x**5/5 + e**3*x**7/7), True))
```

3.660 $\int \left(d+ex^2\right)^2 \left(a+b\sin^{-1}(cx)\right)^2 \, dx$

Optimal. Leaf size=335

$$\frac{2bd^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+\frac{4bdex^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{9c}+\frac{2be^2x^4\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{25c}+\frac{16}{}$$

```
[Out] -2*b^2*d^2*x-8/9*b^2*d*e*x/c^2-16/75*b^2*e^2*x/c^4-4/27*b^2*d*e*x^3-8/225*b
^2*e^2*x^3/c^2-2/125*b^2*e^2*x^5+d^2*x*(a+b*arcsin(c*x))^2+2/3*d*e*x^3*(a+b
*arcsin(c*x))^2+1/5*e^2*x^5*(a+b*arcsin(c*x))^2+2*b*d^2*(a+b*arcsin(c*x))*(
-c^2*x^2+1)^(1/2)/c+8/9*b*d*e*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3+16/7
5*b*e^2*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^5+4/9*b*d*e*x^2*(a+b*arcsin(
c*x))*(-c^2*x^2+1)^(1/2)/c+8/75*b*e^2*x^2*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1
/2)/c^3+2/25*b*e^2*x^4*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.56, antiderivative size = 335, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.350$, Rules used = {4667, 4619, 4677, 8, 4627, 4707, 30}

$$\frac{2bd^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+\frac{4bdex^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{9c}+\frac{8bde\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{9c^3}+\frac{2be^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x^2)^2*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -2*b^2*d^2*x - (8*b^2*d*e*x)/(9*c^2) - (16*b^2*e^2*x)/(75*c^4) - (4*b^2*d*e
*x^3)/27 - (8*b^2*e^2*x^3)/(225*c^2) - (2*b^2*e^2*x^5)/125 + (2*b*d^2*Sqrt[
1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c + (8*b*d*e*Sqrt[1 - c^2*x^2]*(a + b*Arc
Sin[c*x]))/(9*c^3) + (16*b*e^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(75*c
^5) + (4*b*d*e*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(9*c) + (8*b*e^2*
x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(75*c^3) + (2*b*e^2*x^4*Sqrt[1 -
 c^2*x^2]*(a + b*ArcSin[c*x]))/(25*c) + d^2*x*(a + b*ArcSin[c*x])^2 + (2*d*
e*x^3*(a + b*ArcSin[c*x])^2)/3 + (e^2*x^5*(a + b*ArcSin[c*x])^2)/5
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int \left(d+ex^2\right)^2 \left(a+b\sin^{-1}(cx)\right)^2\,dx = \int \left(d^2\left(a+b\sin^{-1}(cx)\right)^2+2dex^2\left(a+b\sin^{-1}(cx)\right)^2+e^2x^4\left(a+b\sin^{-1}(cx)\right)\right.$$

$$= d^2\int \left(a+b\sin^{-1}(cx)\right)^2\,dx+(2de)\int x^2\left(a+b\sin^{-1}(cx)\right)^2\,dx+e^2\int x^4\left(a\right.$$

$$= d^2x\left(a+b\sin^{-1}(cx)\right)^2+\frac{2}{3}dex^3\left(a+b\sin^{-1}(cx)\right)^2+\frac{1}{5}e^2x^5\left(a+b\sin^{-1}(cx)\right)$$

$$= \frac{2bd^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+\frac{4bdex^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{9c}+\frac{2b}{}$$

$$= -2b^2d^2x-\frac{4}{27}b^2dex^3-\frac{2}{125}b^2e^2x^5+\frac{2bd^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+\frac{8b}{}$$

$$= -2b^2d^2x-\frac{8b^2dex}{9c^2}-\frac{4}{27}b^2dex^3-\frac{8b^2e^2x^3}{225c^2}-\frac{2}{125}b^2e^2x^5+\frac{2bd^2\sqrt{1-c^2x^2}\left(a\right.}{c}$$

$$= -2b^2d^2x-\frac{8b^2dex}{9c^2}-\frac{16b^2e^2x}{75c^4}-\frac{4}{27}b^2dex^3-\frac{8b^2e^2x^3}{225c^2}-\frac{2}{125}b^2e^2x^5+\frac{2bd^2\sqrt{}}{}$$

Mathematica [A] time = 0.38, size = 291, normalized size = 0.87

$$\frac{225a^2c^5x\left(15d^2+10dex^2+3e^2x^4\right)+30ab\sqrt{1-c^2x^2}\left(c^4\left(225d^2+50dex^2+9e^2x^4\right)+4c^2e\left(25d+3ex^2\right)+24e^2\right)+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x^2)^2*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] (225*a^2*c^5*x*(15*d^2 + 10*d*e*x^2 + 3*e^2*x^4) + 30*a*b*Sqrt[1 - c^2*x^2]
*(24*e^2 + 4*c^2*e*(25*d + 3*e*x^2) + c^4*(225*d^2 + 50*d*e*x^2 + 9*e^2*x^4
)) - 2*b^2*c*x*(360*e^2 + 60*c^2*e*(25*d + e*x^2) + c^4*(3375*d^2 + 250*d*e
```

```
*x^2 + 27*e^2*x^4)) + 30*b*(15*a*c^5*x*(15*d^2 + 10*d*e*x^2 + 3*e^2*x^4) +
b*Sqrt[1 - c^2*x^2]*(24*e^2 + 4*c^2*e*(25*d + 3*e*x^2) + c^4*(225*d^2 + 50*
d*e*x^2 + 9*e^2*x^4)))*ArcSin[c*x] + 225*b^2*c^5*x*(15*d^2 + 10*d*e*x^2 + 3
*e^2*x^4)*ArcSin[c*x]^2)/(3375*c^5)
```

fricas [A] time = 0.99, size = 349, normalized size = 1.04

$$\frac{27\left(25\,a^2-2\,b^2\right)c^5e^2x^5+10\left(25\left(9\,a^2-2\,b^2\right)c^5de-12\,b^2c^3e^2\right)x^3+225\left(3\,b^2c^5e^2x^5+10\,b^2c^5dex^3+15\,b^2c^5d^2x\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] 1/3375*(27*(25*a^2 - 2*b^2)*c^5*e^2*x^5 + 10*(25*(9*a^2 - 2*b^2)*c^5*d*e -
12*b^2*c^3*e^2)*x^3 + 225*(3*b^2*c^5*e^2*x^5 + 10*b^2*c^5*d*e*x^3 + 15*b^2*
c^5*d^2*x)*arcsin(c*x)^2 + 15*(225*(a^2 - 2*b^2)*c^5*d^2 - 200*b^2*c^3*d*e
- 48*b^2*c*e^2)*x + 450*(3*a*b*c^5*e^2*x^5 + 10*a*b*c^5*d*e*x^3 + 15*a*b*c^
5*d^2*x)*arcsin(c*x) + 30*(9*a*b*c^4*e^2*x^4 + 225*a*b*c^4*d^2 + 100*a*b*c^
2*d*e + 24*a*b*e^2 + 2*(25*a*b*c^4*d*e + 6*a*b*c^2*e^2)*x^2 + (9*b^2*c^4*e^
2*x^4 + 225*b^2*c^4*d^2 + 100*b^2*c^2*d*e + 24*b^2*e^2 + 2*(25*b^2*c^4*d*e
+ 6*b^2*c^2*e^2)*x^2)*arcsin(c*x))*sqrt(-c^2*x^2 + 1))/c^5
```

giac [B] time = 0.53, size = 678, normalized size = 2.02

$$\frac{1}{5}\,a^2x^5e^2+b^2d^2x\arcsin\left(cx\right)^2+\frac{2}{3}\,a^2dx^3e+2\,abd^2x\arcsin\left(cx\right)+\frac{2\left(c^2x^2-1\right)b^2dx\arcsin\left(cx\right)^2e}{3\,c^2}+a^2d^2x-2\,b^2d^2x+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] 1/5*a^2*x^5*e^2 + b^2*d^2*x*arcsin(c*x)^2 + 2/3*a^2*d*x^3*e + 2*a*b*d^2*x*a
rcsin(c*x) + 2/3*(c^2*x^2 - 1)*b^2*d*x*arcsin(c*x)^2*e/c^2 + a^2*d^2*x - 2*
b^2*d^2*x + 4/3*(c^2*x^2 - 1)*a*b*d*x*arcsin(c*x)*e/c^2 + 2/3*b^2*d*x*arcsi
n(c*x)^2*e/c^2 + 2*sqrt(-c^2*x^2 + 1)*b^2*d^2*arcsin(c*x)/c + 1/5*(c^2*x^2
- 1)^2*b^2*x*arcsin(c*x)^2*e^2/c^4 - 4/27*(c^2*x^2 - 1)*b^2*d*x*e/c^2 + 4/3
*a*b*d*x*arcsin(c*x)*e/c^2 + 2*sqrt(-c^2*x^2 + 1)*a*b*d^2/c - 4/9*(-c^2*x^2
 + 1)^(3/2)*b^2*d*arcsin(c*x)*e/c^3 + 2/5*(c^2*x^2 - 1)^2*a*b*x*arcsin(c*x)
*e^2/c^4 + 2/5*(c^2*x^2 - 1)*b^2*x*arcsin(c*x)^2*e^2/c^4 - 28/27*b^2*d*x*e/
c^2 - 4/9*(-c^2*x^2 + 1)^(3/2)*a*b*d*e/c^3 + 4/3*sqrt(-c^2*x^2 + 1)*b^2*d*a
rcsin(c*x)*e/c^3 - 2/125*(c^2*x^2 - 1)^2*b^2*x*e^2/c^4 + 4/5*(c^2*x^2 - 1)*
a*b*x*arcsin(c*x)*e^2/c^4 + 1/5*b^2*x*arcsin(c*x)^2*e^2/c^4 + 2/25*(c^2*x^2
 - 1)^2*sqrt(-c^2*x^2 + 1)*b^2*arcsin(c*x)*e^2/c^5 + 4/3*sqrt(-c^2*x^2 + 1)
*a*b*d*e/c^3 - 76/1125*(c^2*x^2 - 1)*b^2*x*e^2/c^4 + 2/5*a*b*x*arcsin(c*x)*
e^2/c^4 + 2/25*(c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)*a*b*e^2/c^5 - 4/15*(-c^2*
x^2 + 1)^(3/2)*b^2*arcsin(c*x)*e^2/c^5 - 298/1125*b^2*x*e^2/c^4 - 4/15*(-c^
2*x^2 + 1)^(3/2)*a*b*e^2/c^5 + 2/5*sqrt(-c^2*x^2 + 1)*b^2*arcsin(c*x)*e^2/c
^5 + 2/5*sqrt(-c^2*x^2 + 1)*a*b*e^2/c^5
```

maple [B] time = 0.13, size = 635, normalized size = 1.90

$$\frac{\frac{a^2\left(\frac{1}{5}e^2c^5x^5+\frac{2}{3}c^5ed\,x^3+d^2c^5x\right)}{c^4}+b^2\left(\frac{e^2\left(675\arcsin(cx)^2c^5x^5+270\arcsin(cx)\sqrt{-c^2x^2+1}\,c^4x^4-2250\arcsin(cx)^2c^3x^3-54c^5x^5-1140\arcsin(cx)\sqrt{-c^2x^2+1}\,c^2x^2+3375cx\right.}{3375}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)^2*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/c*(a^2/c^4*(1/5*e^2*c^5*x^5+2/3*c^5*e*d*x^3+d^2*c^5*x)+b^2/c^4*(1/3375*e^
2*(675*arcsin(c*x)^2*c^5*x^5+270*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^4*x^4-225
0*arcsin(c*x)^2*c^3*x^3-54*c^5*x^5-1140*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^2*
x^2+3375*c*x*arcsin(c*x)^2+380*c^3*x^3+4470*arcsin(c*x)*(-c^2*x^2+1)^(1/2)-
4470*c*x)+2/27*c^2*e*d*(9*arcsin(c*x)^2*c^3*x^3+6*arcsin(c*x)*(-c^2*x^2+1)^
(1/2)*c^2*x^2-27*c*x*arcsin(c*x)^2-2*c^3*x^3-42*arcsin(c*x)*(-c^2*x^2+1)^(1
/2)+42*c*x)+2/27*e^2*(9*arcsin(c*x)^2*c^3*x^3+6*arcsin(c*x)*(-c^2*x^2+1)^(1
/2)*c^2*x^2-27*c*x*arcsin(c*x)^2-2*c^3*x^3-42*arcsin(c*x)*(-c^2*x^2+1)^(1/2
)+42*c*x)+d^2*c^4*(c*x*arcsin(c*x)^2-2*c*x+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)
)+2*c^2*e*d*(c*x*arcsin(c*x)^2-2*c*x+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2))+e^2*
(c*x*arcsin(c*x)^2-2*c*x+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2)))+2*a*b/c^4*(1/5*
arcsin(c*x)*e^2*c^5*x^5+2/3*arcsin(c*x)*c^5*e*d*x^3+arcsin(c*x)*d^2*c^5*x-1
/5*e^2*(-1/5*c^4*x^4*(-c^2*x^2+1)^(1/2)-4/15*c^2*x^2*(-c^2*x^2+1)^(1/2)-8/1
5*(-c^2*x^2+1)^(1/2))-2/3*c^2*e*d*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-c^
2*x^2+1)^(1/2))+d^2*c^4*(-c^2*x^2+1)^(1/2)))
```

maxima [A] time = 0.45, size = 437, normalized size = 1.30

$$\frac{1}{5}b^2e^2x^5\arcsin(cx)^2+\frac{1}{5}a^2e^2x^5+\frac{2}{3}b^2dex^3\arcsin(cx)^2+\frac{2}{3}a^2dex^3+b^2d^2x\arcsin(cx)^2+\frac{4}{9}\left(3x^3\arcsin(cx)+c\left(\frac{\sqrt{-}}{}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] 1/5*b^2*e^2*x^5*arcsin(c*x)^2 + 1/5*a^2*e^2*x^5 + 2/3*b^2*d*e*x^3*arcsin(c*
x)^2 + 2/3*a^2*d*e*x^3 + b^2*d^2*x*arcsin(c*x)^2 + 4/9*(3*x^3*arcsin(c*x) +
 c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4))*a*b*d*e + 4/27*
(3*c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^4)*arcsin(c*x) -
(c^2*x^3 + 6*x)/c^2)*b^2*d*e + 2/75*(15*x^5*arcsin(c*x) + (3*sqrt(-c^2*x^2
+ 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c)*
a*b*e^2 + 2/1125*(15*(3*sqrt(-c^2*x^2 + 1)*x^4/c^2 + 4*sqrt(-c^2*x^2 + 1)*x
^2/c^4 + 8*sqrt(-c^2*x^2 + 1)/c^6)*c*arcsin(c*x) - (9*c^4*x^5 + 20*c^2*x^3
+ 120*x)/c^4)*b^2*e^2 - 2*b^2*d^2*(x - sqrt(-c^2*x^2 + 1)*arcsin(c*x)/c) +
a^2*d^2*x + 2*(c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*a*b*d^2/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,\mathrm{asin}\,(c\,x))^2\,\left(e\,x^2+d\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2*(d + e*x^2)^2,x)
```

```
[Out] int((a + b*asin(c*x))^2*(d + e*x^2)^2, x)
```

sympy [A] time = 4.61, size = 595, normalized size = 1.78

$$\begin{cases} a^2d^2x+\frac{2a^2dex^3}{3}+\frac{a^2e^2x^5}{5}+2abd^2x\,\mathrm{asin}\,(cx)+\frac{4abdex^3\,\mathrm{asin}\,(cx)}{3}+\frac{2abe^2x^5\,\mathrm{asin}\,(cx)}{5}+\frac{2abd^2\sqrt{-c^2x^2+1}}{c}+\frac{4abdex^2\sqrt{-c^2x^2+1}}{9c}+\frac{2}{} \\ a^2\left(d^2x+\frac{2dex^3}{3}+\frac{e^2x^5}{5}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)**2*(a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((a**2*d**2*x + 2*a**2*d*e*x**3/3 + a**2*e**2*x**5/5 + 2*a*b*d**2*
x*asin(c*x) + 4*a*b*d*e*x**3*asin(c*x)/3 + 2*a*b*e**2*x**5*asin(c*x)/5 + 2*
a*b*d**2*sqrt(-c**2*x**2 + 1)/c + 4*a*b*d*e*x**2*sqrt(-c**2*x**2 + 1)/(9*c)
```

```
 + 2*a*b*e**2*x**4*sqrt(-c**2*x**2 + 1)/(25*c) + 8*a*b*d*e*sqrt(-c**2*x**2
+ 1)/(9*c**3) + 8*a*b*e**2*x**2*sqrt(-c**2*x**2 + 1)/(75*c**3) + 16*a*b*e**
2*sqrt(-c**2*x**2 + 1)/(75*c**5) + b**2*d**2*x*asin(c*x)**2 - 2*b**2*d**2*x
 + 2*b**2*d*e*x**3*asin(c*x)**2/3 - 4*b**2*d*e*x**3/27 + b**2*e**2*x**5*asi
n(c*x)**2/5 - 2*b**2*e**2*x**5/125 + 2*b**2*d**2*sqrt(-c**2*x**2 + 1)*asin(
c*x)/c + 4*b**2*d*e*x**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(9*c) + 2*b**2*e**2
*x**4*sqrt(-c**2*x**2 + 1)*asin(c*x)/(25*c) - 8*b**2*d*e*x/(9*c**2) - 8*b**
2*e**2*x**3/(225*c**2) + 8*b**2*d*e*sqrt(-c**2*x**2 + 1)*asin(c*x)/(9*c**3)
 + 8*b**2*e**2*x**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(75*c**3) - 16*b**2*e**2
*x/(75*c**4) + 16*b**2*e**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/(75*c**5), Ne(c,
 0)), (a**2*(d**2*x + 2*d*e*x**3/3 + e**2*x**5/5), True))
```

3.661 $\int \left(d+ex^2\right)\left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=156

$$\frac{2bd\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{c}+\frac{2bex^2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{9c}+\frac{4be\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{9c^3}+dx\left(a+b\,\mathrm{si}\right.$$

```
[Out] -2*b^2*d*x-4/9*b^2*e*x/c^2-2/27*b^2*e*x^3+d*x*(a+b*arcsin(c*x))^2+1/3*e*x^3
*(a+b*arcsin(c*x))^2+2*b*d*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c+4/9*b*e*(
a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c^3+2/9*b*e*x^2*(a+b*arcsin(c*x))*(-c^2
*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.26, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.389, Rules used = {4667, 4619, 4677, 8, 4627, 4707, 30}

$$\frac{2bd\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{c}+\frac{2bex^2\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{9c}+\frac{4be\sqrt{1-c^2x^2}\,\left(a+b\sin^{-1}(cx)\right)}{9c^3}+dx\left(a+b\,\mathrm{si}\right.$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x^2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -2*b^2*d*x - (4*b^2*e*x)/(9*c^2) - (2*b^2*e*x^3)/27 + (2*b*d*Sqrt[1 - c^2*x
^2]*(a + b*ArcSin[c*x]))/c + (4*b*e*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/
(9*c^3) + (2*b*e*x^2*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/(9*c) + d*x*(a
+ b*ArcSin[c*x])^2 + (e*x^3*(a + b*ArcSin[c*x])^2)/3
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4627

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^n)/(d*(m + 1)), x] - Dist[(b*c*n
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2
*x^2], x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && NeQ[m, -1]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \left(d+ex^2\right)\left(a+b\sin^{-1}(cx)\right)^2\,dx &= \int \left(d\left(a+b\sin^{-1}(cx)\right)^2+ex^2\left(a+b\sin^{-1}(cx)\right)^2\right)dx\\ &= d\int \left(a+b\sin^{-1}(cx)\right)^2\,dx+e\int x^2\left(a+b\sin^{-1}(cx)\right)^2\,dx\\ &= dx\left(a+b\sin^{-1}(cx)\right)^2+\frac{1}{3}ex^3\left(a+b\sin^{-1}(cx)\right)^2-(2bcd)\int \frac{x\left(a+b\sin^{-1}\right.}{\sqrt{1-c^2x^2}}\\ &= \frac{2bd\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+\frac{2bex^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{9c}+dx\\ &= -2b^2dx-\frac{2}{27}b^2ex^3+\frac{2bd\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+\frac{4be\sqrt{1-c^2x^2}\left(a\right.}{9c^3}\\ &= -2b^2dx-\frac{4b^2ex}{9c^2}-\frac{2}{27}b^2ex^3+\frac{2bd\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+\frac{4be\sqrt{1-}}{}\end{aligned}$$

Mathematica [A] time = 0.28, size = 148, normalized size = 0.95

$$-2bd\left(bx-\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}\right)-\frac{2}{27}be\left(-\frac{3x^2\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+\frac{6\left(\frac{bx}{c}-\frac{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx\right.}{c^2}\right.}{c}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x^2)*(a + b*ArcSin[c*x])^2,x]
```

```
[Out] d*x*(a + b*ArcSin[c*x])^2 + (e*x^3*(a + b*ArcSin[c*x])^2)/3 - 2*b*d*(b*x -
(Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c) - (2*b*e*(b*x^3 - (3*x^2*Sqrt[1
- c^2*x^2]*(a + b*ArcSin[c*x]))/c + (6*((b*x)/c - (Sqrt[1 - c^2*x^2]*(a + b
*ArcSin[c*x]))/c^2))/c))/27
```

fricas [A] time = 0.88, size = 177, normalized size = 1.13

$$\frac{\left(9a^2-2b^2\right)c^3ex^3+9\left(b^2c^3ex^3+3b^2c^3dx\right)\arcsin(cx)^2+3\left(9\left(a^2-2b^2\right)c^3d-4b^2ce\right)x+18\left(abc^3ex^3+3abc^3\right.}{27c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] 1/27*((9*a^2 - 2*b^2)*c^3*e*x^3 + 9*(b^2*c^3*e*x^3 + 3*b^2*c^3*d*x)*arcsin(
c*x)^2 + 3*(9*(a^2 - 2*b^2)*c^3*d - 4*b^2*c*e)*x + 18*(a*b*c^3*e*x^3 + 3*a*
b*c^3*d*x)*arcsin(c*x) + 6*(a*b*c^2*e*x^2 + 9*a*b*c^2*d + 2*a*b*e + (b^2*c^
2*e*x^2 + 9*b^2*c^2*d + 2*b^2*e)*arcsin(c*x))*sqrt(-c^2*x^2 + 1))/c^3
```

giac [B] time = 0.88, size = 296, normalized size = 1.90

$$b^2dx\arcsin(cx)^2+\frac{1}{3}a^2x^3e+2abdx\arcsin(cx)+\frac{(c^2x^2-1)b^2x\arcsin(cx)^2e}{3c^2}+a^2dx-2b^2dx+\frac{2(c^2x^2-1)abx\,\mathrm{arcsir}}{3c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] b^2*d*x*arcsin(c*x)^2 + 1/3*a^2*x^3*e + 2*a*b*d*x*arcsin(c*x) + 1/3*(c^2*x^
2 - 1)*b^2*x*arcsin(c*x)^2*e/c^2 + a^2*d*x - 2*b^2*d*x + 2/3*(c^2*x^2 - 1)*
a*b*x*arcsin(c*x)*e/c^2 + 1/3*b^2*x*arcsin(c*x)^2*e/c^2 + 2*sqrt(-c^2*x^2 +
 1)*b^2*d*arcsin(c*x)/c - 2/27*(c^2*x^2 - 1)*b^2*x*e/c^2 + 2/3*a*b*x*arcsin
(c*x)*e/c^2 + 2*sqrt(-c^2*x^2 + 1)*a*b*d/c - 2/9*(-c^2*x^2 + 1)^(3/2)*b^2*a
rcsin(c*x)*e/c^3 - 14/27*b^2*x*e/c^2 - 2/9*(-c^2*x^2 + 1)^(3/2)*a*b*e/c^3 +
 2/3*sqrt(-c^2*x^2 + 1)*b^2*arcsin(c*x)*e/c^3 + 2/3*sqrt(-c^2*x^2 + 1)*a*b*
e/c^3
```

maple [A] time = 0.10, size = 276, normalized size = 1.77

$$\frac{\frac{a^2\left(\frac{1}{3}c^3x^3e+c^3dx\right)}{c^2}+\frac{b^2\left(\frac{e\left(9\arcsin(cx)^2c^3x^3+6\arcsin(cx)\sqrt{-c^2x^2+1}\,c^2x^2-27cx\arcsin(cx)^2-2c^3x^3-42\arcsin(cx)\sqrt{-c^2x^2+1}+42cx\right)}{27}+c^2d\left(cx\arcsin(cx)^2-2cx+2\,\mathrm{arcsin}\right.\right.}{c^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/c*(a^2/c^2*(1/3*c^3*x^3*e+c^3*d*x)+b^2/c^2*(1/27*e*(9*arcsin(c*x)^2*c^3*x
^3+6*arcsin(c*x)*(-c^2*x^2+1)^(1/2)*c^2*x^2-27*c*x*arcsin(c*x)^2-2*c^3*x^3-
42*arcsin(c*x)*(-c^2*x^2+1)^(1/2)+42*c*x)+c^2*d*(c*x*arcsin(c*x)^2-2*c*x+2*
arcsin(c*x)*(-c^2*x^2+1)^(1/2))+e*(c*x*arcsin(c*x)^2-2*c*x+2*arcsin(c*x)*(-
c^2*x^2+1)^(1/2)))+2*a*b/c^2*(1/3*arcsin(c*x)*c^3*x^3*e+arcsin(c*x)*c^3*d*x
-1/3*e*(-1/3*c^2*x^2*(-c^2*x^2+1)^(1/2)-2/3*(-c^2*x^2+1)^(1/2))+c^2*d*(-c^2
*x^2+1)^(1/2)))
```

maxima [A] time = 0.44, size = 221, normalized size = 1.42

$$\frac{1}{3}b^2ex^3\arcsin(cx)^2+\frac{1}{3}a^2ex^3+b^2dx\arcsin(cx)^2+\frac{2}{9}\left(3x^3\arcsin(cx)+c\left(\frac{\sqrt{-c^2x^2+1}\,x^2}{c^2}+\frac{2\sqrt{-c^2x^2+1}}{c^4}\right)\right)abe+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] 1/3*b^2*e*x^3*arcsin(c*x)^2 + 1/3*a^2*e*x^3 + b^2*d*x*arcsin(c*x)^2 + 2/9*(
3*x^3*arcsin(c*x) + c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^
4))*a*b*e + 2/27*(3*c*(sqrt(-c^2*x^2 + 1)*x^2/c^2 + 2*sqrt(-c^2*x^2 + 1)/c^
4)*arcsin(c*x) - (c^2*x^3 + 6*x)/c^2)*b^2*e - 2*b^2*d*(x - sqrt(-c^2*x^2 +
1)*arcsin(c*x)/c) + a^2*d*x + 2*(c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*a*b*
d/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (a + b\,\mathrm{asin}\,(c\,x))^2\,\left(e\,x^2 + d\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2*(d + e*x^2),x)
```

```
[Out] int((a + b*asin(c*x))^2*(d + e*x^2), x)
```

sympy [A] time = 1.27, size = 279, normalized size = 1.79

$$\begin{cases} a^2dx + \frac{a^2ex^3}{3} + 2abdx\,\mathrm{asin}\,(cx) + \frac{2abex^3\,\mathrm{asin}\,(cx)}{3} + \frac{2abd\sqrt{-c^2x^2+1}}{c} + \frac{2abex^2\sqrt{-c^2x^2+1}}{9c} + \frac{4abe\sqrt{-c^2x^2+1}}{9c^3} + b^2dx\,\mathrm{asin}^2\,(cx \\ a^2\left(dx + \frac{ex^3}{3}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)*(a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((a**2*d*x + a**2*e*x**3/3 + 2*a*b*d*x*asin(c*x) + 2*a*b*e*x**3*as
in(c*x)/3 + 2*a*b*d*sqrt(-c**2*x**2 + 1)/c + 2*a*b*e*x**2*sqrt(-c**2*x**2 +
 1)/(9*c) + 4*a*b*e*sqrt(-c**2*x**2 + 1)/(9*c**3) + b**2*d*x*asin(c*x)**2 -
 2*b**2*d*x + b**2*e*x**3*asin(c*x)**2/3 - 2*b**2*e*x**3/27 + 2*b**2*d*sqrt
(-c**2*x**2 + 1)*asin(c*x)/c + 2*b**2*e*x**2*sqrt(-c**2*x**2 + 1)*asin(c*x)
/(9*c) - 4*b**2*e*x/(9*c**2) + 4*b**2*e*sqrt(-c**2*x**2 + 1)*asin(c*x)/(9*c
**3), Ne(c, 0)), (a**2*(d*x + e*x**3/3), True))
```

3.662 $\int \left(a+b\sin^{-1}(cx)\right)^2\,dx$

Optimal. Leaf size=47

$$\frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+x\left(a+b\sin^{-1}(cx)\right)^2-2b^2x$$

```
[Out] -2*b^2*x+x*(a+b*arcsin(c*x))^2+2*b*(a+b*arcsin(c*x))*(-c^2*x^2+1)^(1/2)/c
```

Rubi [A] time = 0.06, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {4619, 4677, 8}

$$\frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+x\left(a+b\sin^{-1}(cx)\right)^2-2b^2x$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -2*b^2*x + (2*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c + x*(a + b*ArcSin[
c*x])^2
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int \left(a+b\sin^{-1}(cx)\right)^2\,dx &= x\left(a+b\sin^{-1}(cx)\right)^2-(2bc)\int \frac{x\left(a+b\sin^{-1}(cx)\right)}{\sqrt{1-c^2x^2}}\,dx\\
&= \frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+x\left(a+b\sin^{-1}(cx)\right)^2-\left(2b^2\right)\int 1\,dx\\
&= -2b^2x+\frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+x\left(a+b\sin^{-1}(cx)\right)^2
\end{aligned}$$

Mathematica [A] time = 0.09, size = 47, normalized size = 1.00

$$\frac{2b\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}{c}+x\left(a+b\sin^{-1}(cx)\right)^2-2b^2x$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -2*b^2*x + (2*b*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x]))/c + x*(a + b*ArcSin[
c*x])^2
```

fricas [A] time = 0.62, size = 65, normalized size = 1.38

$$\frac{b^2cx\arcsin(cx)^2 + 2\,abcx\arcsin(cx) + \left(a^2 - 2\,b^2\right)cx + 2\,\sqrt{-c^2x^2+1}\left(b^2\arcsin(cx) + ab\right)}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] (b^2*c*x*arcsin(c*x)^2 + 2*a*b*c*x*arcsin(c*x) + (a^2 - 2*b^2)*c*x + 2*sqrt
(-c^2*x^2 + 1)*(b^2*arcsin(c*x) + a*b))/c
```

giac [A] time = 0.57, size = 75, normalized size = 1.60

$$b^2x\arcsin(cx)^2 + 2\,abx\arcsin(cx) + a^2x - 2\,b^2x + \frac{2\,\sqrt{-c^2x^2+1}\,b^2\arcsin(cx)}{c} + \frac{2\,\sqrt{-c^2x^2+1}\,ab}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] b^2*x*arcsin(c*x)^2 + 2*a*b*x*arcsin(c*x) + a^2*x - 2*b^2*x + 2*sqrt(-c^2*x
^2 + 1)*b^2*arcsin(c*x)/c + 2*sqrt(-c^2*x^2 + 1)*a*b/c
```

maple [A] time = 0.02, size = 72, normalized size = 1.53

$$\frac{cx\,a^2 + b^2\left(cx\arcsin(cx)^2 - 2cx + 2\arcsin(cx)\sqrt{-c^2x^2+1}\right) + 2ab\left(cx\arcsin(cx) + \sqrt{-c^2x^2+1}\right)}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/c*(c*x*a^2+b^2*(c*x*arcsin(c*x)^2-2*c*x+2*arcsin(c*x)*(-c^2*x^2+1)^(1/2))
+2*a*b*(c*x*arcsin(c*x)+(-c^2*x^2+1)^(1/2)))
```

maxima [A] time = 0.42, size = 72, normalized size = 1.53

$$b^2x\arcsin(cx)^2 - 2\,b^2\left(x - \frac{\sqrt{-c^2x^2+1}\,\arcsin(cx)}{c}\right) + a^2x + \frac{2\left(cx\arcsin(cx) + \sqrt{-c^2x^2+1}\right)ab}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] b^2*x*arcsin(c*x)^2 - 2*b^2*(x - sqrt(-c^2*x^2 + 1)*arcsin(c*x)/c) + a^2*x
+ 2*(c*x*arcsin(c*x) + sqrt(-c^2*x^2 + 1))*a*b/c
```

mupad [B] time = 0.53, size = 142, normalized size = 3.02

$$\begin{cases} b^2\,\left(x\,\left(\mathrm{asin}\left(c\,x\right)^2-2\right)+2\,\mathrm{asin}\left(c\,x\right)\,\sqrt{\frac{1}{c^2}-x^2}\right)+a^2\,x+\frac{2\,a\,b\,\left(\sqrt{1-c^2\,x^2}+c\,x\,\mathrm{asin}\left(c\,x\right)\right)}{c} & \text{if } 0<c\\ a^2\,x+b^2\,x\,\left(\mathrm{asin}\left(c\,x\right)^2-2\right)+\frac{2\,b^2\,\mathrm{asin}\left(c\,x\right)\,\sqrt{1-c^2\,x^2}}{c}+\frac{2\,a\,b\,\left(\sqrt{1-c^2\,x^2}+c\,x\,\mathrm{asin}\left(c\,x\right)\right)}{c} & \text{if } \neg 0<c \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2,x)
```

```
[Out] piecewise(0 < c, b^2*(x*(asin(c*x)^2 - 2) + 2*asin(c*x)*(1/c^2 - x^2)^(1/2)
) + a^2*x + (2*a*b*((- c^2*x^2 + 1)^(1/2) + c*x*asin(c*x)))/c, ~0 < c, a^2*
x + b^2*x*(asin(c*x)^2 - 2) + (2*b^2*asin(c*x)*(- c^2*x^2 + 1)^(1/2))/c + (
2*a*b*((- c^2*x^2 + 1)^(1/2) + c*x*asin(c*x)))/c)
```

sympy [A] time = 0.25, size = 82, normalized size = 1.74

$$\begin{cases} a^2x + 2abx\operatorname{asin}(cx) + \frac{2ab\sqrt{-c^2x^2+1}}{c} + b^2x\operatorname{asin}^2(cx) - 2b^2x + \frac{2b^2\sqrt{-c^2x^2+1}\operatorname{asin}(cx)}{c} & \text{for } c \neq 0 \\ a^2x & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2,x)
```

```
[Out] Piecewise((a**2*x + 2*a*b*x*asin(c*x) + 2*a*b*sqrt(-c**2*x**2 + 1)/c + b**2
*x*asin(c*x)**2 - 2*b**2*x + 2*b**2*sqrt(-c**2*x**2 + 1)*asin(c*x)/c, Ne(c,
 0)), (a**2*x, True))
```

3.663 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d+ex^2}\,dx$

Optimal. Leaf size=821

$$-\frac{\text{Li}_3\left(-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{dc^2+e}}\right)b^2}{\sqrt{-d}\sqrt{e}}+\frac{\text{Li}_3\left(\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{dc^2+e}}\right)b^2}{\sqrt{-d}\sqrt{e}}-\frac{\text{Li}_3\left(-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{i\sqrt{-d}c+\sqrt{dc^2+e}}\right)b^2}{\sqrt{-d}\sqrt{e}}+\frac{\text{Li}_3\left(\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{i\sqrt{-d}c+\sqrt{dc^2+e}}\right)b^2}{\sqrt{-d}\sqrt{e}}+\frac{i\left(a+b\sin\right.}{}$$

```
[Out] 1/2*(a+b*arcsin(c*x))^2*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(
1/2)-(c^2*d+e)^(1/2)))/(-d)^(1/2)/e^(1/2)-1/2*(a+b*arcsin(c*x))^2*ln(1+(I*c
*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/(-d)^(1/2)
/e^(1/2)+1/2*(a+b*arcsin(c*x))^2*ln(1-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I
*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/(-d)^(1/2)/e^(1/2)-1/2*(a+b*arcsin(c*x))^2*
ln(1+(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/(
-d)^(1/2)/e^(1/2)+I*b*(a+b*arcsin(c*x))*polylog(2,-(I*c*x+(-c^2*x^2+1)^(1/2
))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/(-d)^(1/2)/e^(1/2)-I*b*(a+b*ar
csin(c*x))*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^
2*d+e)^(1/2)))/(-d)^(1/2)/e^(1/2)+I*b*(a+b*arcsin(c*x))*polylog(2,-(I*c*x+(
-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/(-d)^(1/2)/e^(
1/2)-I*b*(a+b*arcsin(c*x))*polylog(2,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*
c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/(-d)^(1/2)/e^(1/2)-b^2*polylog(3,-(I*c*x+(-c
^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+e)^(1/2)))/(-d)^(1/2)/e^(1/
2)+b^2*polylog(3,(I*c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)-(c^2*d+
e)^(1/2)))/(-d)^(1/2)/e^(1/2)-b^2*polylog(3,-(I*c*x+(-c^2*x^2+1)^(1/2))*e^(
1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/(-d)^(1/2)/e^(1/2)+b^2*polylog(3,(I*
c*x+(-c^2*x^2+1)^(1/2))*e^(1/2)/(I*c*(-d)^(1/2)+(c^2*d+e)^(1/2)))/(-d)^(1/2
)/e^(1/2)
```

Rubi [A] time = 1.34, antiderivative size = 821, normalized size of antiderivative = 1.00, number of steps used = 22, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {4667, 4741, 4521, 2190, 2531, 2282, 6589}

$$-\frac{\text{PolyLog}\left(3,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{dc^2+e}}\right)b^2}{\sqrt{-d}\sqrt{e}}+\frac{\text{PolyLog}\left(3,\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{dc^2+e}}\right)b^2}{\sqrt{-d}\sqrt{e}}-\frac{\text{PolyLog}\left(3,-\frac{\sqrt{e}e^{i\sin^{-1}(cx)}}{i\sqrt{-d}c+\sqrt{dc^2+e}}\right)b^2}{\sqrt{-d}\sqrt{e}}+\frac{\text{PolyLog}\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^2/(d + e*x^2),x]
```

```
[Out] ((a + b*ArcSin[c*x])^2*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] -
Sqrt[c^2*d + e])])/(2*Sqrt[-d]*Sqrt[e]) - ((a + b*ArcSin[c*x])^2*Log[1 + (S
qrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])])/(2*Sqrt[-d]*Sq
rt[e]) + ((a + b*ArcSin[c*x])^2*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sq
rt[-d] + Sqrt[c^2*d + e])])/(2*Sqrt[-d]*Sqrt[e]) - ((a + b*ArcSin[c*x])^2*L
og[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(2*Sq
rt[-d]*Sqrt[e]) + (I*b*(a + b*ArcSin[c*x])*PolyLog[2, -((Sqrt[e]*E^(I*ArcSi
n[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e]))])/(Sqrt[-d]*Sqrt[e]) - (I*b*(a +
 b*ArcSin[c*x])*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt
[c^2*d + e])])/(Sqrt[-d]*Sqrt[e]) + (I*b*(a + b*ArcSin[c*x])*PolyLog[2, -((
Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e]))])/(Sqrt[-d]*Sq
rt[e]) - (I*b*(a + b*ArcSin[c*x])*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I
*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(Sqrt[-d]*Sqrt[e]) - (b^2*PolyLog[3, -((Sq
rt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e]))])/(Sqrt[-d]*Sqrt
[e]) + (b^2*PolyLog[3, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2
*d + e])])/(Sqrt[-d]*Sqrt[e]) - (b^2*PolyLog[3, -((Sqrt[e]*E^(I*ArcSin[c*x]
))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e]))])/(Sqrt[-d]*Sqrt[e]) + (b^2*PolyLog[3,
```

```
(Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])])/(Sqrt[-d]*S
qrt[e])
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4521

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(I*a - Rt[-a^2 + b^2, 2]
 + b*E^(I*(c + d*x))), x], x] + Dist[I, Int[((e + f*x)^m*E^(I*(c + d*x)))/(
I*a + Rt[-a^2 + b^2, 2] + b*E^(I*(c + d*x))), x], x]) /; FreeQ[{a, b, c, d,
 e, f}, x] && IGtQ[m, 0] && NegQ[a^2 - b^2]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rule 4741

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> Subst[Int[((a + b*x)^n*Cos[x])/(c*d + e*Sin[x]), x], x, ArcSin[c*x]] /;
 FreeQ[{a, b, c, d, e}, x] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{d+ex^2}\,dx = \int \left(\frac{\sqrt{-d}\,\left(a+b\sin^{-1}(cx)\right)^2}{2d\left(\sqrt{-d}-\sqrt{e}\,x\right)} + \frac{\sqrt{-d}\,\left(a+b\sin^{-1}(cx)\right)^2}{2d\left(\sqrt{-d}+\sqrt{e}\,x\right)}\right)dx$$

$$= -\frac{\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{-d}-\sqrt{e}\,x}\,dx}{2\sqrt{-d}} - \frac{\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{-d}+\sqrt{e}\,x}\,dx}{2\sqrt{-d}}$$

$$= -\frac{\text{Subst}\left(\int \frac{(a+bx)^2\cos(x)}{c\sqrt{-d}-\sqrt{e}\sin(x)}\,dx, x, \sin^{-1}(cx)\right)}{2\sqrt{-d}} - \frac{\text{Subst}\left(\int \frac{(a+bx)^2\cos(x)}{c\sqrt{-d}+\sqrt{e}\sin(x)}\,dx, x, \sin^{-1}(cx\right.}{2\sqrt{-d}}$$

$$= -\frac{i\,\text{Subst}\left(\int \frac{e^{ix}(a+bx)^2}{ic\sqrt{-d}-\sqrt{c^2d+e}-\sqrt{e}\,e^{ix}}\,dx, x, \sin^{-1}(cx)\right)}{2\sqrt{-d}} - \frac{i\,\text{Subst}\left(\int \frac{e^{ix}(a+bx)^2}{ic\sqrt{-d}+\sqrt{c^2d+e}-\sqrt{e}\,e^{ix}}\,dx\right.}{2\sqrt{-d}}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(1+\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+}\right.}{2\sqrt{-d}\,\sqrt{e}}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(1+\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+}\right.}{2\sqrt{-d}\,\sqrt{e}}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(1+\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+}\right.}{2\sqrt{-d}\,\sqrt{e}}$$

$$= \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(1-\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+e}}\right)}{2\sqrt{-d}\,\sqrt{e}} - \frac{\left(a+b\sin^{-1}(cx)\right)^2\log\left(1+\frac{\sqrt{e}\,e^{i\sin^{-1}(cx)}}{ic\sqrt{-d}-\sqrt{c^2d+}\right.}{2\sqrt{-d}\,\sqrt{e}}$$

Mathematica [A] time = 0.87, size = 1101, normalized size = 1.34

$$2\sqrt{-d}\,\tan^{-1}\left(\frac{\sqrt{e}\,x}{\sqrt{d}}\right)a^2 - 2b\sqrt{d}\,\sin^{-1}(cx)\log\left(\frac{e^{i\sin^{-1}(cx)}\sqrt{e}}{ic\sqrt{-d}-\sqrt{dc^2+e}}+1\right)a + 2b\sqrt{d}\,\sin^{-1}(cx)\log\left(\frac{e^{i\sin^{-1}(cx)}\sqrt{e}}{\sqrt{dc^2+e}-ic\sqrt{-d}}+1\right)a +$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(d + e*x^2),x]
```

```
[Out] (2*a^2*Sqrt[-d]*ArcTan[(Sqrt[e]*x)/Sqrt[d]] - 2*a*b*Sqrt[d]*ArcSin[c*x]*Log
[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])] - b^2*Sq
rt[d]*ArcSin[c*x]^2*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqr
t[c^2*d + e])] + 2*a*b*Sqrt[d]*ArcSin[c*x]*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x
]))/((-I)*c*Sqrt[-d] + Sqrt[c^2*d + e])] + b^2*Sqrt[d]*ArcSin[c*x]^2*Log[1
+ (Sqrt[e]*E^(I*ArcSin[c*x]))/((-I)*c*Sqrt[-d] + Sqrt[c^2*d + e])] + 2*a*b*
Sqrt[d]*ArcSin[c*x]*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqr
t[c^2*d + e])] + b^2*Sqrt[d]*ArcSin[c*x]^2*Log[1 - (Sqrt[e]*E^(I*ArcSin[c*x
]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])] - 2*a*b*Sqrt[d]*ArcSin[c*x]*Log[1 + (
Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])] - b^2*Sqrt[d]*
ArcSin[c*x]^2*Log[1 + (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*
d + e])] - (2*I)*b*Sqrt[d]*(a + b*ArcSin[c*x])*PolyLog[2, (Sqrt[e]*E^(I*Arc
Sin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])] + (2*I)*b*Sqrt[d]*(a + b*ArcSi
n[c*x])*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/((-I)*c*Sqrt[-d] + Sqrt[c^2*
d + e])] + (2*I)*a*b*Sqrt[d]*PolyLog[2, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*
Sqrt[-d] + Sqrt[c^2*d + e]))] + (2*I)*b^2*Sqrt[d]*ArcSin[c*x]*PolyLog[2, -(
```

```
(Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d + e]))] - (2*I)*a*b*
Sqrt[d]*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d +
 e])] - (2*I)*b^2*Sqrt[d]*ArcSin[c*x]*PolyLog[2, (Sqrt[e]*E^(I*ArcSin[c*x])
)/(I*c*Sqrt[-d] + Sqrt[c^2*d + e])] + 2*b^2*Sqrt[d]*PolyLog[3, (Sqrt[e]*E^(
I*ArcSin[c*x]))/(I*c*Sqrt[-d] - Sqrt[c^2*d + e])] - 2*b^2*Sqrt[d]*PolyLog[3
, (Sqrt[e]*E^(I*ArcSin[c*x]))/((-I)*c*Sqrt[-d] + Sqrt[c^2*d + e])] - 2*b^2*
Sqrt[d]*PolyLog[3, -((Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-d] + Sqrt[c^2*d
 + e]))] + 2*b^2*Sqrt[d]*PolyLog[3, (Sqrt[e]*E^(I*ArcSin[c*x]))/(I*c*Sqrt[-
d] + Sqrt[c^2*d + e])])/(2*Sqrt[-d^2]*Sqrt[e])
```

fricas [F] time = 0.69, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2 \arcsin(cx)^2 + 2\,ab \arcsin(cx) + a^2}{ex^2 + d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(e*x^2+d),x, algorithm="fricas")
```

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)/(e*x^2 + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b \arcsin(cx) + a)^2}{ex^2 + d}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(e*x^2+d),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/(e*x^2 + d), x)
```

maple [F] time = 1.39, size = 0, normalized size = 0.00

$$\int \frac{(a + b \arcsin(cx))^2}{e\,x^2 + d}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(e*x^2+d),x)
```

```
[Out] int((a+b*arcsin(c*x))^2/(e*x^2+d),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{a^2 \arctan\left(\frac{ex}{\sqrt{de}}\right)}{\sqrt{de}} + \int \frac{b^2 \arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)^2 + 2\,ab \arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)}{ex^2 + d}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(e*x^2+d),x, algorithm="maxima")
```

```
[Out] a^2*arctan(e*x/sqrt(d*e))/sqrt(d*e) + integrate((b^2*arctan2(c*x, sqrt(c*x
+ 1)*sqrt(-c*x + 1))^2 + 2*a*b*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))/
(e*x^2 + d), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a + b\,\mathrm{asin}(c\,x))^2}{e\,x^2 + d}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(d + e*x^2),x)
```

```
[Out] int((a + b*asin(c*x))^2/(d + e*x^2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\,\mathrm{asin}\,(cx))^2}{d + ex^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(e*x**2+d),x)
```

```
[Out] Integral((a + b*asin(c*x))**2/(d + e*x**2), x)
```

3.664 $\int \sqrt{d+ex^2} \left(a+b\sin^{-1}(cx)\right)^2 dx$

Optimal. Leaf size=25

$$\text{Int}\left(\sqrt{d+ex^2} \left(a+b\sin^{-1}(cx)\right)^2,x\right)$$

```
[Out] Unintegrable((e*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \sqrt{d+ex^2} \left(a+b\sin^{-1}(cx)\right)^2 dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^2,x]
[Out] Defer[Int][Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^2, x]
```

Rubi steps

$$\int \sqrt{d+ex^2} \left(a+b\sin^{-1}(cx)\right)^2 dx = \int \sqrt{d+ex^2} \left(a+b\sin^{-1}(cx)\right)^2 dx$$

Mathematica [A] time = 18.09, size = 0, normalized size = 0.00

$$\int \sqrt{d+ex^2} \left(a+b\sin^{-1}(cx)\right)^2 dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^2,x]
[Out] Integrate[Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^2, x]
```

fricas [A] time = 0.81, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)\sqrt{ex^2+d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x, algorithm="fricas")
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(e*x^2 + d), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{ex^2+d}\,(b\arcsin(cx)+a)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x, algorithm="giac")
[Out] integrate(sqrt(e*x^2 + d)*(b*arcsin(c*x) + a)^2, x)
```

maple [A] time = 0.70, size = 0, normalized size = 0.00

$$\int \sqrt{e\,x^2+d}\;(a+b\arcsin(cx))^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x)
```

```
[Out] int((e*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\left(\sqrt{ex^2+d}\,x+\frac{d\,\mathrm{arsinh}\left(\frac{ex}{\sqrt{de}}\right)}{\sqrt{e}}\right)a^2+\int\left(b^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)^2+2\,ab\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^(1/2)*(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] 1/2*(sqrt(e*x^2 + d)*x + d*arcsinh(e*x/sqrt(d*e))/sqrt(e))*a^2 + integrate(
(b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a*b*arctan2(c*x, sqrt
(c*x + 1)*sqrt(-c*x + 1)))*sqrt(e*x^2 + d), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int (a+b\,\mathrm{asin}\left(c\,x\right))^2\,\sqrt{e\,x^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2*(d + e*x^2)^(1/2),x)
```

```
[Out] int((a + b*asin(c*x))^2*(d + e*x^2)^(1/2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+b\,\mathrm{asin}\,(cx))^2\,\sqrt{d+ex^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)**(1/2)*(a+b*asin(c*x))**2,x)
```

```
[Out] Integral((a + b*asin(c*x))**2*sqrt(d + e*x**2), x)
```

3.665 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+ex^2}}\,dx$

Optimal. Leaf size=25

$$\text{Int}\left(\frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+ex^2}},x\right)$$

```
[Out] Unintegrable((a+b*arcsin(c*x))^2/(e*x^2+d)^(1/2),x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+ex^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*ArcSin[c*x])^2/Sqrt[d + e*x^2],x]
[Out] Defer[Int][(a + b*ArcSin[c*x])^2/Sqrt[d + e*x^2], x]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+ex^2}}\,dx=\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+ex^2}}\,dx$$

Mathematica [A] time = 13.06, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\sqrt{d+ex^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/Sqrt[d + e*x^2],x]
[Out] Integrate[(a + b*ArcSin[c*x])^2/Sqrt[d + e*x^2], x]
```

fricas [A] time = 0.67, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2}{\sqrt{ex^2+d}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(e*x^2+d)^(1/2),x, algorithm="fricas")
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)/sqrt(e*x^2 + d), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b\arcsin(cx)+a)^2}{\sqrt{ex^2+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(e*x^2+d)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/sqrt(e*x^2 + d), x)
```

maple [A] time = 0.72, size = 0, normalized size = 0.00

$$\int \frac{(a + b \arcsin (cx))^2}{\sqrt{e\,x^2 + d}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(e*x^2+d)^(1/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2/(e*x^2+d)^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{a^2 \operatorname{arsinh}\left(\frac{ex}{\sqrt{de}}\right)}{\sqrt{e}} + \int \frac{b^2 \arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)^2 + 2\,ab \arctan\left(cx, \sqrt{cx+1}\,\sqrt{-cx+1}\right)}{\sqrt{ex^2 + d}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(e*x^2+d)^(1/2),x, algorithm="maxima")
```

```
[Out] a^2*arcsinh(e*x/sqrt(d*e))/sqrt(e) + integrate((b^2*arctan2(c*x, sqrt(c*x +
 1)*sqrt(-c*x + 1))^2 + 2*a*b*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)))/s
qrt(e*x^2 + d), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{(a + b \operatorname{asin}(c\,x))^2}{\sqrt{e\,x^2 + d}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(d + e*x^2)^(1/2),x)
```

```
[Out] int((a + b*asin(c*x))^2/(d + e*x^2)^(1/2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(cx))^2}{\sqrt{d + ex^2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(e*x**2+d)**(1/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2/sqrt(d + e*x**2), x)
```

3.666 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d+ex^2\right)^{3/2}}\,dx$

Optimal. Leaf size=25

$$\text{Int}\left(\frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d+ex^2\right)^{3/2}},x\right)$$

[Out] Unintegrable((a+b*arcsin(c*x))^2/(e*x^2+d)^(3/2),x)

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d+ex^2\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

[In] Int[(a + b*ArcSin[c*x])^2/(d + e*x^2)^(3/2),x]

[Out] Defer[Int][(a + b*ArcSin[c*x])^2/(d + e*x^2)^(3/2), x]

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d+ex^2\right)^{3/2}}\,dx = \int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d+ex^2\right)^{3/2}}\,dx$$

Mathematica [A] time = 4.33, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d+ex^2\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

[In] Integrate[(a + b*ArcSin[c*x])^2/(d + e*x^2)^(3/2),x]

[Out] Integrate[(a + b*ArcSin[c*x])^2/(d + e*x^2)^(3/2), x]

fricas [A] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)\sqrt{ex^2+d}}{e^2x^4+2\,dex^2+d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*arcsin(c*x))^2/(e*x^2+d)^(3/2),x, algorithm="fricas")

[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(e*x^2 + d)/(e^2*x^4 + 2*d*e*x^2 + d^2), x)

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\arcsin(cx)+a\right)^2}{\left(ex^2+d\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(e*x^2+d)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/(e*x^2 + d)^(3/2), x)
```

maple [A] time = 0.68, size = 0, normalized size = 0.00

$$\int \frac{(a + b\arcsin (cx))^2}{\left(e\,x^2 + d\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(e*x^2+d)^(3/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2/(e*x^2+d)^(3/2),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(e*x^2+d)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(e-c^2*d>0)', see `assume?` for more
 details)Is e-c^2*d zero or nonzero?
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{(a + b\,\mathrm{asin}\,(c\,x))^2}{\left(e\,x^2 + d\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(d + e*x^2)^(3/2),x)
```

```
[Out] int((a + b*asin(c*x))^2/(d + e*x^2)^(3/2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\,\mathrm{asin}\,(cx))^2}{\left(d + ex^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(e*x**2+d)**(3/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2/(d + e*x**2)**(3/2), x)
```

3.667 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d+ex^2\right)^{5/2}}\,dx$

Optimal. Leaf size=25

$$\text{Int}\left(\frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d+ex^2\right)^{5/2}},x\right)$$

```
[Out] Unintegrable((a+b*arcsin(c*x))^2/(e*x^2+d)^(5/2),x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d+ex^2\right)^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*ArcSin[c*x])^2/(d + e*x^2)^(5/2),x]
```

```
[Out] Defer[Int][(a + b*ArcSin[c*x])^2/(d + e*x^2)^(5/2), x]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d+ex^2\right)^{5/2}}\,dx = \int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d+ex^2\right)^{5/2}}\,dx$$

Mathematica [A] time = 8.76, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^2}{\left(d+ex^2\right)^{5/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c*x])^2/(d + e*x^2)^(5/2),x]
```

```
[Out] Integrate[(a + b*ArcSin[c*x])^2/(d + e*x^2)^(5/2), x]
```

fricas [A] time = 0.58, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2\right)\sqrt{ex^2+d}}{e^3x^6+3\,de^2x^4+3\,d^2ex^2+d^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(e*x^2+d)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2)*sqrt(e*x^2 + d)/(e^3
*x^6 + 3*d*e^2*x^4 + 3*d^2*e*x^2 + d^3), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\arcsin(cx)+a\right)^2}{\left(ex^2+d\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(e*x^2+d)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^2/(e*x^2 + d)^(5/2), x)
```

maple [A] time = 0.56, size = 0, normalized size = 0.00

$$\int \frac{(a + b \arcsin (cx))^2}{\left(e x^2 + d\right)^{\frac{5}{2}}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^2/(e*x^2+d)^(5/2),x)
```

```
[Out] int((a+b*arcsin(c*x))^2/(e*x^2+d)^(5/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{3} a^2 \left(\frac{2x}{\sqrt{ex^2 + d}\, d^2} + \frac{x}{\left(ex^2 + d\right)^{\frac{3}{2}} d} \right) + \int \frac{\left(b^2 \arctan\left(cx, \sqrt{cx+1}\sqrt{-cx+1}\right)^2 + 2\,ab \arctan\left(cx, \sqrt{cx+1}\sqrt{-cx+\right.\right.}{e^3x^6 + 3\,de^2x^4 + 3\,d^2ex^2 + d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^2/(e*x^2+d)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/3*a^2*(2*x/(sqrt(e*x^2 + d)*d^2) + x/((e*x^2 + d)^(3/2)*d)) + integrate((
b^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))^2 + 2*a*b*arctan2(c*x, sqrt(
c*x + 1)*sqrt(-c*x + 1)))*sqrt(e*x^2 + d)/(e^3*x^6 + 3*d*e^2*x^4 + 3*d^2*e*
x^2 + d^3), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{(a + b \operatorname{asin}(c\,x))^2}{\left(e\,x^2 + d\right)^{5/2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^2/(d + e*x^2)^(5/2),x)
```

```
[Out] int((a + b*asin(c*x))^2/(d + e*x^2)^(5/2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b \operatorname{asin}(cx))^2}{\left(d + ex^2\right)^{\frac{5}{2}}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**2/(e*x**2+d)**(5/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**2/(d + e*x**2)**(5/2), x)
```

3.668 $\int \frac{\left(d+ex^2\right)^2}{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=387

$$\frac{e^2\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{8bc^5}-\frac{3e^2\cos\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{16bc^5}+\frac{e^2\cos\left(\frac{5a}{b}\right)\text{Ci}\left(\frac{5\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{16bc^5}+\frac{e^2\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}}{b}\right.}{8bc^5}$$

```
[Out] d^2*Ci((a+b*arcsin(c*x))/b)*cos(a/b)/b/c+1/2*d*e*Ci((a+b*arcsin(c*x))/b)*co
s(a/b)/b/c^3+1/8*e^2*Ci((a+b*arcsin(c*x))/b)*cos(a/b)/b/c^5-1/2*d*e*Ci(3*(a
+b*arcsin(c*x))/b)*cos(3*a/b)/b/c^3-3/16*e^2*Ci(3*(a+b*arcsin(c*x))/b)*cos(
3*a/b)/b/c^5+1/16*e^2*Ci(5*(a+b*arcsin(c*x))/b)*cos(5*a/b)/b/c^5+d^2*Si((a+
b*arcsin(c*x))/b)*sin(a/b)/b/c+1/2*d*e*Si((a+b*arcsin(c*x))/b)*sin(a/b)/b/c
^3+1/8*e^2*Si((a+b*arcsin(c*x))/b)*sin(a/b)/b/c^5-1/2*d*e*Si(3*(a+b*arcsin(
c*x))/b)*sin(3*a/b)/b/c^3-3/16*e^2*Si(3*(a+b*arcsin(c*x))/b)*sin(3*a/b)/b/c
^5+1/16*e^2*Si(5*(a+b*arcsin(c*x))/b)*sin(5*a/b)/b/c^5
```

Rubi [A] time = 0.77, antiderivative size = 379, normalized size of antiderivative = 0.98, number of steps used = 27, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {4667, 4623, 3303, 3299, 3302, 4635, 4406}

$$\frac{de\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{2bc^3}-\frac{de\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)}{2bc^3}+\frac{e^2\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}\right.}{8bc^5}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x^2)^2/(a + b*ArcSin[c*x]),x]
```

```
[Out] (d*e*Cos[a/b]*CosIntegral[a/b + ArcSin[c*x]])/(2*b*c^3) + (e^2*Cos[a/b]*Cos
Integral[a/b + ArcSin[c*x]])/(8*b*c^5) - (d*e*Cos[(3*a)/b]*CosIntegral[(3*a
)/b + 3*ArcSin[c*x]])/(2*b*c^3) - (3*e^2*Cos[(3*a)/b]*CosIntegral[(3*a)/b +
 3*ArcSin[c*x]])/(16*b*c^5) + (e^2*Cos[(5*a)/b]*CosIntegral[(5*a)/b + 5*Arc
Sin[c*x]])/(16*b*c^5) + (d^2*Cos[a/b]*CosIntegral[(a + b*ArcSin[c*x])/b])/(
b*c) + (d*e*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(2*b*c^3) + (e^2*Sin[a
/b]*SinIntegral[a/b + ArcSin[c*x]])/(8*b*c^5) - (d*e*Sin[(3*a)/b]*SinIntegr
al[(3*a)/b + 3*ArcSin[c*x]])/(2*b*c^3) - (3*e^2*Sin[(3*a)/b]*SinIntegral[(3
*a)/b + 3*ArcSin[c*x]])/(16*b*c^5) + (e^2*Sin[(5*a)/b]*SinIntegral[(5*a)/b
+ 5*ArcSin[c*x]])/(16*b*c^5) + (d^2*Sin[a/b]*SinIntegral[(a + b*ArcSin[c*x]
)/b])/(b*c)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rubi steps

$$\int \frac{\left(d+ex^2\right)^2}{a+b\sin^{-1}(cx)}\,dx = \int \left(\frac{d^2}{a+b\sin^{-1}(cx)}+\frac{2dex^2}{a+b\sin^{-1}(cx)}+\frac{e^2x^4}{a+b\sin^{-1}(cx)}\right)dx$$

$$= d^2\int \frac{1}{a+b\sin^{-1}(cx)}\,dx+(2de)\int \frac{x^2}{a+b\sin^{-1}(cx)}\,dx+e^2\int \frac{x^4}{a+b\sin^{-1}(cx)}\,dx$$

$$= \frac{d^2\,\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}-\frac{x}{b}\right)}{x}\,dx,x,a+b\sin^{-1}(cx)\right)}{bc}+\frac{(2de)\,\text{Subst}\left(\int \frac{\cos(x)\sin^2(x)}{a+bx}\,dx,x,\sin^{-1}(c\right.}{c^3}$$

$$= \frac{(2de)\,\text{Subst}\left(\int \left(\frac{\cos(x)}{4(a+bx)}-\frac{\cos(3x)}{4(a+bx)}\right)dx,x,\sin^{-1}(cx)\right)}{c^3}+\frac{e^2\,\text{Subst}\left(\int \left(\frac{\cos(x)}{8(a+bx)}-\frac{3\cos(3x)}{16(a+bx)}+\right.\right.}{c^5}$$

$$= \frac{d^2\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{bc}+\frac{d^2\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{bc}+\frac{(de)\,\text{Subst}\left(\int \frac{\cos(x)}{a+bx}\,dx,x,\text{si}\right.}{2c^3}$$

$$= \frac{d^2\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{bc}+\frac{d^2\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{bc}+\frac{\left(de\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}\right.}{a+b}\right.}{2c^3}$$

$$= \frac{de\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{2bc^3}+\frac{e^2\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{8bc^5}-\frac{de\cos\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3a}{b}+3\right.}{2bc^3}$$

Mathematica [A] time = 0.72, size = 253, normalized size = 0.65

$$\frac{16c^4d^2\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)-e\cos\left(\frac{3a}{b}\right)\left(8c^2d+3e\right)\text{Ci}\left(3\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+8c^2de\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(c\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x^2)^2/(a + b*ArcSin[c*x]),x]
```

```
[Out] (2*(8*c^4*d^2 + 4*c^2*d*e + e^2)*Cos[a/b]*CosIntegral[a/b + ArcSin[c*x]] -
e*(8*c^2*d + 3*e)*Cos[(3*a)/b]*CosIntegral[3*(a/b + ArcSin[c*x])] + e^2*Cos
[(5*a)/b]*CosIntegral[5*(a/b + ArcSin[c*x])] + 16*c^4*d^2*Sin[a/b]*SinInteg
ral[a/b + ArcSin[c*x]] + 8*c^2*d*e*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]]
+ 2*e^2*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]] - 8*c^2*d*e*Sin[(3*a)/b]*Si
nIntegral[3*(a/b + ArcSin[c*x])] - 3*e^2*Sin[(3*a)/b]*SinIntegral[3*(a/b +
ArcSin[c*x])] + e^2*Sin[(5*a)/b]*SinIntegral[5*(a/b + ArcSin[c*x])])/(16*b*
c^5)
```

fricas [F] time = 0.52, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{e^2x^4 + 2\,dex^2 + d^2}{b\arcsin(cx) + a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral((e^2*x^4 + 2*d*e*x^2 + d^2)/(b*arcsin(c*x) + a), x)
```

giac [A] time = 1.52, size = 627, normalized size = 1.62

$$\frac{d^2\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b} + \arcsin(cx)\right)}{bc} - \frac{2\,d\cos\left(\frac{a}{b}\right)^3\text{Ci}\left(\frac{3\,a}{b} + 3\,\arcsin(cx)\right)e}{bc^3} - \frac{2\,d\cos\left(\frac{a}{b}\right)^2 e\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{3\,a}{b} + 3\,\arcsin(cx\right.}{bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] d^2*cos(a/b)*cos_integral(a/b + arcsin(c*x))/(b*c) - 2*d*cos(a/b)^3*cos_int
egral(3*a/b + 3*arcsin(c*x))*e/(b*c^3) - 2*d*cos(a/b)^2*e*sin(a/b)*sin_inte
gral(3*a/b + 3*arcsin(c*x))/(b*c^3) + d^2*sin(a/b)*sin_integral(a/b + arcsi
n(c*x))/(b*c) + cos(a/b)^5*cos_integral(5*a/b + 5*arcsin(c*x))*e^2/(b*c^5)
+ cos(a/b)^4*e^2*sin(a/b)*sin_integral(5*a/b + 5*arcsin(c*x))/(b*c^5) + 3/2
*d*cos(a/b)*cos_integral(3*a/b + 3*arcsin(c*x))*e/(b*c^3) + 1/2*d*cos(a/b)*
cos_integral(a/b + arcsin(c*x))*e/(b*c^3) + 1/2*d*e*sin(a/b)*sin_integral(3
*a/b + 3*arcsin(c*x))/(b*c^3) + 1/2*d*e*sin(a/b)*sin_integral(a/b + arcsin(
c*x))/(b*c^3) - 5/4*cos(a/b)^3*cos_integral(5*a/b + 5*arcsin(c*x))*e^2/(b*c
^5) - 3/4*cos(a/b)^3*cos_integral(3*a/b + 3*arcsin(c*x))*e^2/(b*c^5) - 3/4*
cos(a/b)^2*e^2*sin(a/b)*sin_integral(5*a/b + 5*arcsin(c*x))/(b*c^5) - 3/4*c
os(a/b)^2*e^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(c*x))/(b*c^5) + 5/16*c
os(a/b)*cos_integral(5*a/b + 5*arcsin(c*x))*e^2/(b*c^5) + 9/16*cos(a/b)*cos
_integral(3*a/b + 3*arcsin(c*x))*e^2/(b*c^5) + 1/8*cos(a/b)*cos_integral(a/
b + arcsin(c*x))*e^2/(b*c^5) + 1/16*e^2*sin(a/b)*sin_integral(5*a/b + 5*arc
sin(c*x))/(b*c^5) + 3/16*e^2*sin(a/b)*sin_integral(3*a/b + 3*arcsin(c*x))/(
b*c^5) + 1/8*e^2*sin(a/b)*sin_integral(a/b + arcsin(c*x))/(b*c^5)
```

maple [A] time = 0.08, size = 310, normalized size = 0.80

$$\frac{16\,\text{Si}\left(\arcsin(cx) + \frac{a}{b}\right)\sin\left(\frac{a}{b}\right)c^4d^2 + 16\,\text{Ci}\left(\arcsin(cx) + \frac{a}{b}\right)\cos\left(\frac{a}{b}\right)c^4d^2 - 8\,\text{Si}\left(3\arcsin(cx) + \frac{3a}{b}\right)\sin\left(\frac{3a}{b}\right)c^2de}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)^2/(a+b*arcsin(c*x)),x)
```

```
[Out] 1/16/c^5*(16*Si(arcsin(c*x)+a/b)*sin(a/b)*c^4*d^2+16*Ci(arcsin(c*x)+a/b)*co
s(a/b)*c^4*d^2-8*Si(3*arcsin(c*x)+3*a/b)*sin(3*a/b)*c^2*d*e-8*Ci(3*arcsin(c
*x)+3*a/b)*cos(3*a/b)*c^2*d*e+8*Si(arcsin(c*x)+a/b)*sin(a/b)*c^2*d*e+8*Ci(a
```

```
rcsin(c*x)+a/b)*cos(a/b)*c^2*d*e+sin(5*a/b)*Si(5*arcsin(c*x)+5*a/b)*e^2+cos
(5*a/b)*Ci(5*arcsin(c*x)+5*a/b)*e^2-3*Si(3*arcsin(c*x)+3*a/b)*sin(3*a/b)*e^
2-3*Ci(3*arcsin(c*x)+3*a/b)*cos(3*a/b)*e^2+2*Si(arcsin(c*x)+a/b)*sin(a/b)*e
^2+2*Ci(arcsin(c*x)+a/b)*cos(a/b)*e^2)/b
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(ex^2+d\right)^2}{b\arcsin\left(cx\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate((e*x^2 + d)^2/(b*arcsin(c*x) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(e\,x^2+d\right)^2}{a+b\,\mathrm{asin}\left(c\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x^2)^2/(a + b*asin(c*x)),x)
```

```
[Out] int((d + e*x^2)^2/(a + b*asin(c*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d+ex^2\right)^2}{a+b\,\mathrm{asin}\left(cx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)**2/(a+b*asin(c*x)),x)
```

```
[Out] Integral((d + e*x**2)**2/(a + b*asin(c*x)), x)
```

3.669 $\int \frac{d+ex^2}{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=179

$$\frac{e\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{4bc^3}-\frac{e\cos\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{4bc^3}+\frac{e\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{4bc^3}-\frac{e\sin\left(\frac{3a}{b}\right)\text{Si}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{4bc^3}+$$

```
[Out] d*Ci((a+b*arcsin(c*x))/b)*cos(a/b)/b/c+1/4*e*Ci((a+b*arcsin(c*x))/b)*cos(a/
b)/b/c^3-1/4*e*Ci(3*(a+b*arcsin(c*x))/b)*cos(3*a/b)/b/c^3+d*Si((a+b*arcsin(
c*x))/b)*sin(a/b)/b/c+1/4*e*Si((a+b*arcsin(c*x))/b)*sin(a/b)/b/c^3-1/4*e*Si
(3*(a+b*arcsin(c*x))/b)*sin(3*a/b)/b/c^3
```

Rubi [A] time = 0.34, antiderivative size = 175, normalized size of antiderivative = 0.98, number of steps used = 15, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.389, Rules used = {4667, 4623, 3303, 3299, 3302, 4635, 4406}

$$\frac{e\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{4bc^3}-\frac{e\cos\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)}{4bc^3}+\frac{e\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{4bc^3}-$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x^2)/(a + b*ArcSin[c*x]),x]
```

```
[Out] (e*Cos[a/b]*CosIntegral[a/b + ArcSin[c*x]])/(4*b*c^3) - (e*Cos[(3*a)/b]*Cos
Integral[(3*a)/b + 3*ArcSin[c*x]])/(4*b*c^3) + (d*Cos[a/b]*CosIntegral[(a +
 b*ArcSin[c*x])/b])/(b*c) + (e*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(4*
b*c^3) - (e*Sin[(3*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c*x]])/(4*b*c^3) +
(d*Sin[a/b]*SinIntegral[(a + b*ArcSin[c*x])/b])/(b*c)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
```

```
n}, x]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rubi steps

$$\int \frac{d+ex^2}{a+b\sin^{-1}(cx)}\,dx = \int \left(\frac{d}{a+b\sin^{-1}(cx)}+\frac{ex^2}{a+b\sin^{-1}(cx)}\right)dx$$

$$= d\int \frac{1}{a+b\sin^{-1}(cx)}\,dx + e\int \frac{x^2}{a+b\sin^{-1}(cx)}\,dx$$

$$= \frac{d\,\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}-\frac{x}{b}\right)}{x}\,dx, x, a+b\sin^{-1}(cx)\right)}{bc} + \frac{e\,\text{Subst}\left(\int \frac{\cos(x)\sin^2(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{c^3}$$

$$= \frac{e\,\text{Subst}\left(\int \left(\frac{\cos(x)}{4(a+bx)}-\frac{\cos(3x)}{4(a+bx)}\right)dx, x, \sin^{-1}(cx)\right)}{c^3} + \frac{\left(d\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{x}{b}\right)}{x}\,dx, x, a+\right.}{bc}$$

$$= \frac{d\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{bc} + \frac{d\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{bc} + \frac{e\,\text{Subst}\left(\int \frac{\cos(x)}{a+bx}\,dx, x, \sin^{-1}(c\right.}{4c^3}$$

$$= \frac{d\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{bc} + \frac{d\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{bc} + \frac{\left(e\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}+x\right)}{a+bx}\right.}{4c^3}$$

$$= \frac{e\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{4bc^3} - \frac{e\cos\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)}{4bc^3} + \frac{d\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}}{b}\right.}{bc}$$

Mathematica [A] time = 0.32, size = 125, normalized size = 0.70

$$\frac{\cos\left(\frac{a}{b}\right)\left(4c^2d+e\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)+4c^2d\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)-e\cos\left(\frac{3a}{b}\right)\text{Ci}\left(3\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right)+e\,\text{s}}{4bc^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x^2)/(a + b*ArcSin[c*x]),x]
```

```
[Out] ((4*c^2*d + e)*Cos[a/b]*CosIntegral[a/b + ArcSin[c*x]] - e*Cos[(3*a)/b]*Cos
Integral[3*(a/b + ArcSin[c*x])] + 4*c^2*d*Sin[a/b]*SinIntegral[a/b + ArcSin
[c*x]] + e*Sin[a/b]*SinIntegral[a/b + ArcSin[c*x]] - e*Sin[(3*a)/b]*SinInte
gral[3*(a/b + ArcSin[c*x])])/(4*b*c^3)
```

fricas [F] time = 0.77, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{ex^2+d}{b\arcsin(cx)+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)/(a+b*arcsin(c*x)),x, algorithm="fricas")
```

```
[Out] integral((e*x^2 + d)/(b*arcsin(c*x) + a), x)
```

giac [A] time = 3.98, size = 235, normalized size = 1.31

$$\frac{d\cos\left(\frac{a}{b}\right)\mathrm{Ci}\left(\frac{a}{b}+\arcsin\left(cx\right)\right)}{bc}-\frac{\cos\left(\frac{a}{b}\right)^{3}\mathrm{Ci}\left(\frac{3\,a}{b}+3\,\arcsin\left(cx\right)\right)e}{bc^{3}}-\frac{\cos\left(\frac{a}{b}\right)^{2}e\sin\left(\frac{a}{b}\right)\mathrm{Si}\left(\frac{3\,a}{b}+3\,\arcsin\left(cx\right)\right)}{bc^{3}}+\frac{d\,\mathrm{si}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] d*cos(a/b)*cos_integral(a/b + arcsin(c*x))/(b*c) - cos(a/b)^3*cos_integral(
3*a/b + 3*arcsin(c*x))*e/(b*c^3) - cos(a/b)^2*e*sin(a/b)*sin_integral(3*a/b
 + 3*arcsin(c*x))/(b*c^3) + d*sin(a/b)*sin_integral(a/b + arcsin(c*x))/(b*c
) + 3/4*cos(a/b)*cos_integral(3*a/b + 3*arcsin(c*x))*e/(b*c^3) + 1/4*cos(a/
b)*cos_integral(a/b + arcsin(c*x))*e/(b*c^3) + 1/4*e*sin(a/b)*sin_integral(
3*a/b + 3*arcsin(c*x))/(b*c^3) + 1/4*e*sin(a/b)*sin_integral(a/b + arcsin(c
*x))/(b*c^3)
```

maple [A] time = 0.07, size = 142, normalized size = 0.79

$$-\frac{-4\,\mathrm{Si}\left(\arcsin\left(cx\right)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)c^{2}d-4\,\mathrm{Ci}\left(\arcsin\left(cx\right)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)c^{2}d+\mathrm{Si}\left(3\arcsin\left(cx\right)+\frac{3a}{b}\right)\sin\left(\frac{3a}{b}\right)e+\mathrm{Ci}\left(\right.}{4c^{3}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)/(a+b*arcsin(c*x)),x)
```

```
[Out] -1/4/c^3*(-4*Si(arcsin(c*x)+a/b)*sin(a/b)*c^2*d-4*Ci(arcsin(c*x)+a/b)*cos(a
/b)*c^2*d+Si(3*arcsin(c*x)+3*a/b)*sin(3*a/b)*e+Ci(3*arcsin(c*x)+3*a/b)*cos(
3*a/b)*e-Si(arcsin(c*x)+a/b)*sin(a/b)*e-Ci(arcsin(c*x)+a/b)*cos(a/b)*e)/b
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{ex^2+d}{b\arcsin\left(cx\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate((e*x^2 + d)/(b*arcsin(c*x) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{e\,x^2+d}{a+b\,\mathrm{asin}\left(c\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x^2)/(a + b*asin(c*x)),x)
```

```
[Out] int((d + e*x^2)/(a + b*asin(c*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex^2}{a+b\,\mathrm{asin}\left(cx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)/(a+b*asin(c*x)),x)
```

```
[Out] Integral((d + e*x**2)/(a + b*asin(c*x)), x)
```

3.670 $\int \frac{1}{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=53

$$\frac{\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{bc}+\frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{bc}$$

```
[Out] Ci((a+b*arcsin(c*x))/b)*cos(a/b)/b/c+Si((a+b*arcsin(c*x))/b)*sin(a/b)/b/c
```

Rubi [A] time = 0.06, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {4623, 3303, 3299, 3302}

$$\frac{\cos\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{bc}+\frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{bc}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^(-1),x]
```

```
[Out] (Cos[a/b]*CosIntegral[(a + b*ArcSin[c*x])/b])/(b*c) + (Sin[a/b]*SinIntegral
[(a + b*ArcSin[c*x])/b])/(b*c)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rubi steps

$$\int \frac{1}{a+b\sin^{-1}(cx)}\,dx = \frac{\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}-\frac{x}{b}\right)}{x}\,dx, x, a+b\sin^{-1}(cx)\right)}{bc}$$
$$= \frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\cos\left(\frac{x}{b}\right)}{x}\,dx, x, a+b\sin^{-1}(cx)\right)}{bc} + \frac{\sin\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\sin\left(\frac{x}{b}\right)}{x}\,dx, x, a+b\sin^{-1}(cx)\right)}{bc}$$
$$= \frac{\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{bc} + \frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{bc}$$

Mathematica [A] time = 0.07, size = 44, normalized size = 0.83

$$\frac{\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)+\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{bc}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])^(-1),x]
[Out] (Cos[a/b]*CosIntegral[a/b + ArcSin[c*x]] + Sin[a/b]*SinIntegral[a/b + ArcSi
n[c*x]])/(b*c)
```

fricas [F] time = 0.58, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{b\arcsin(cx)+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral(1/(b*arcsin(c*x) + a), x)
```

giac [A] time = 1.10, size = 49, normalized size = 0.92

$$\frac{\cos\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\arcsin(cx)\right)}{bc} + \frac{\sin\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\arcsin(cx)\right)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x)),x, algorithm="giac")
[Out] cos(a/b)*cos_integral(a/b + arcsin(c*x))/(b*c) + sin(a/b)*sin_integral(a/b
+ arcsin(c*x))/(b*c)
```

maple [A] time = 0.06, size = 48, normalized size = 0.91

$$\frac{\frac{\text{Si}\left(\arcsin(cx)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)}{b}+\frac{\text{Ci}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)}{b}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(c*x)),x)
[Out] 1/c*(Si(arcsin(c*x)+a/b)*sin(a/b)/b+Ci(arcsin(c*x)+a/b)*cos(a/b)/b)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{b\arcsin(cx)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate(1/(b*arcsin(c*x) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{1}{a+b\,\mathrm{asin}\left(c\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(c*x)),x)
```

```
[Out] int(1/(a + b*asin(c*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{a+b\,\mathrm{asin}\left(cx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(c*x)),x)
```

```
[Out] Integral(1/(a + b*asin(c*x)), x)
```

3.671 $\int \frac{1}{(d+ex^2)(a+b\sin^{-1}(cx))}\,dx$

Optimal. Leaf size=23

$$\mathrm{Int}\left(\frac{1}{(d+ex^2)\left(a+b\sin^{-1}(cx)\right)},x\right)$$

```
[Out] Unintegrable(1/(e*x^2+d)/(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(d+ex^2)\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((d + e*x^2)*(a + b*ArcSin[c*x])),x]
[Out] Defer[Int][1/((d + e*x^2)*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{1}{(d+ex^2)\left(a+b\sin^{-1}(cx)\right)}\,dx = \int \frac{1}{(d+ex^2)\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Mathematica [A] time = 0.81, size = 0, normalized size = 0.00

$$\int \frac{1}{(d+ex^2)\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((d + e*x^2)*(a + b*ArcSin[c*x])),x]
[Out] Integrate[1/((d + e*x^2)*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{1}{aex^2+ad+\left(bex^2+bd\right)\arcsin(cx)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral(1/(a*e*x^2 + a*d + (b*e*x^2 + b*d)*arcsin(c*x)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(ex^2+d)(b\arcsin(cx)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)/(a+b*arcsin(c*x)),x, algorithm="giac")
[Out] integrate(1/((e*x^2 + d)*(b*arcsin(c*x) + a)), x)
```

maple [A] time = 0.85, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(e\,x^{2}+d\right)\left(a+b\arcsin\left(c x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x^2+d)/(a+b*arcsin(c*x)),x)
[Out] int(1/(e*x^2+d)/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(ex^{2}+d\right)\left(b\arcsin\left(cx\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)/(a+b*arcsin(c*x)),x, algorithm="maxima")
[Out] integrate(1/((e*x^2 + d)*(b*arcsin(c*x) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\left(e\,x^{2}+d\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*asin(c*x))*(d + e*x^2)),x)
[Out] int(1/((a + b*asin(c*x))*(d + e*x^2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\,\mathrm{asin}\left(cx\right)\right)\left(d+ex^{2}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x**2+d)/(a+b*asin(c*x)),x)
[Out] Integral(1/((a + b*asin(c*x))*(d + e*x**2)), x)
```

3.672 $\int \frac{1}{(d+ex^2)^2 (a+b\sin^{-1}(cx))} dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{1}{\left(d+ex^2\right)^2 \left(a+b\sin^{-1}(cx)\right)},x\right)$$

```
[Out] Unintegrable(1/(e*x^2+d)^2/(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\left(d+ex^2\right)^2 \left(a+b\sin^{-1}(cx)\right)} dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((d + e*x^2)^2*(a + b*ArcSin[c*x])),x]
[Out] Defer[Int][1/((d + e*x^2)^2*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{1}{\left(d+ex^2\right)^2 \left(a+b\sin^{-1}(cx)\right)} dx = \int \frac{1}{\left(d+ex^2\right)^2 \left(a+b\sin^{-1}(cx)\right)} dx$$

Mathematica [A] time = 3.85, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(d+ex^2\right)^2 \left(a+b\sin^{-1}(cx)\right)} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((d + e*x^2)^2*(a + b*ArcSin[c*x])),x]
[Out] Integrate[1/((d + e*x^2)^2*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 0.71, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{ae^2x^4+2\,adex^2+ad^2+\left(be^2x^4+2\,bdex^2+bd^2\right)\arcsin\left(cx\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^2/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral(1/(a*e^2*x^4 + 2*a*d*e*x^2 + a*d^2 + (b*e^2*x^4 + 2*b*d*e*x^2 + b*
d^2)*arcsin(c*x)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^2/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 3.20, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(e\,x^{2}+d\right)^{2} \left(a+b \arcsin \left(c x\right)\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x^2+d)^2/(a+b*arcsin(c*x)),x)
```

```
[Out] int(1/(e*x^2+d)^2/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{{\left(ex^{2}+d\right)}^{2} {\left(b \arcsin \left(cx\right)+a\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^2/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate(1/((e*x^2 + d)^2*(b*arcsin(c*x) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(e\,x^2+d\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*asin(c*x))*(d + e*x^2)^2),x)
```

```
[Out] int(1/((a + b*asin(c*x))*(d + e*x^2)^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x**2+d)**2/(a+b*asin(c*x)),x)
```

```
[Out] Timed out
```

3.673 $\int \frac{\sqrt{d+ex^2}}{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=25

$$\text{Int}\left(\frac{\sqrt{d+ex^2}}{a+b\sin^{-1}(cx)},x\right)$$

```
[Out] Unintegrable((e*x^2+d)^(1/2)/(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{d+ex^2}}{a+b\sin^{-1}(cx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[d + e*x^2]/(a + b*ArcSin[c*x]),x]
[Out] Defer[Int][Sqrt[d + e*x^2]/(a + b*ArcSin[c*x]), x]
```

Rubi steps

$$\int \frac{\sqrt{d+ex^2}}{a+b\sin^{-1}(cx)}\,dx=\int \frac{\sqrt{d+ex^2}}{a+b\sin^{-1}(cx)}\,dx$$

Mathematica [A] time = 1.34, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d+ex^2}}{a+b\sin^{-1}(cx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[d + e*x^2]/(a + b*ArcSin[c*x]),x]
[Out] Integrate[Sqrt[d + e*x^2]/(a + b*ArcSin[c*x]), x]
```

fricas [A] time = 1.03, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{ex^2+d}}{b\arcsin(cx)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral(sqrt(e*x^2 + d)/(b*arcsin(c*x) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{ex^2+d}}{b\arcsin(cx)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
[Out] integrate(sqrt(e*x^2 + d)/(b*arcsin(c*x) + a), x)
```

maple [A] time = 0.43, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{e\,x^{2}+d}}{a+b\arcsin\left(c x\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)^(1/2)/(a+b*arcsin(c*x)),x)
[Out] int((e*x^2+d)^(1/2)/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{ex^{2}+d}}{b\arcsin\left(cx\right)+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
[Out] integrate(sqrt(e*x^2 + d)/(b*arcsin(c*x) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\sqrt{e\,x^2+d}}{a+b\,\mathrm{asin}\left(c\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x^2)^(1/2)/(a + b*asin(c*x)),x)
[Out] int((d + e*x^2)^(1/2)/(a + b*asin(c*x)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d + ex^{2}}}{a + b \operatorname{asin}{\left(cx \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)**(1/2)/(a+b*asin(c*x)),x)
[Out] Integral(sqrt(d + e*x**2)/(a + b*asin(c*x)), x)
```

3.674 $\int \frac{1}{\sqrt{d+ex^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=25

$$\text{Int}\left(\frac{1}{\sqrt{d+ex^2}\left(a+b\sin^{-1}(cx)\right)},x\right)$$

```
[Out] Unintegrable(1/(e*x^2+d)^(1/2)/(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} =$ 0.000, Rules used = {}

$$\int \frac{1}{\sqrt{d+ex^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])),x]
[Out] Defer[Int][1/(Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{1}{\sqrt{d+ex^2}\left(a+b\sin^{-1}(cx)\right)}\,dx = \int \frac{1}{\sqrt{d+ex^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Mathematica [A] time = 1.21, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{d+ex^2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])),x]
[Out] Integrate[1/(Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 0.68, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{ex^2+d}}{aex^2+ad+\left(bex^2+bd\right)\arcsin(cx)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral(sqrt(e*x^2 + d)/(a*e*x^2 + a*d + (b*e*x^2 + b*d)*arcsin(c*x)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{ex^2+d}\,(b\arcsin(cx)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(e*x^2 + d)*(b*arcsin(c*x) + a)), x)
```

maple [A] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{e\,x^2+d}\;\left(a+b\arcsin\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x^2+d)^(1/2)/(a+b*arcsin(c*x)),x)
[Out] int(1/(e*x^2+d)^(1/2)/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{ex^2+d}\,(b\arcsin\left(cx\right)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^(1/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
[Out] integrate(1/(sqrt(e*x^2 + d)*(b*arcsin(c*x) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,\sqrt{e\,x^2+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*asin(c*x))*(d + e*x^2)^(1/2)),x)
[Out] int(1/((a + b*asin(c*x))*(d + e*x^2)^(1/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\,\mathrm{asin}\left(cx\right)\right)\sqrt{d+ex^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x**2+d)**(1/2)/(a+b*asin(c*x)),x)
[Out] Integral(1/((a + b*asin(c*x))*sqrt(d + e*x**2)), x)
```

3.675 $\int \frac{1}{\left(d+ex^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$

Optimal. Leaf size=25

$$\text{Int}\left(\frac{1}{\left(d+ex^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)},x\right)$$

```
[Out] Unintegrable(1/(e*x^2+d)^(3/2)/(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\left(d+ex^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((d + e*x^2)^(3/2)*(a + b*ArcSin[c*x])),x]
[Out] Defer[Int][1/((d + e*x^2)^(3/2)*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{1}{\left(d+ex^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}\,dx=\int \frac{1}{\left(d+ex^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Mathematica [A] time = 1.70, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(d+ex^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((d + e*x^2)^(3/2)*(a + b*ArcSin[c*x])),x]
[Out] Integrate[1/((d + e*x^2)^(3/2)*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 0.56, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{ex^2+d}}{ae^2x^4+2\,adex^2+ad^2+\left(be^2x^4+2\,bdex^2+bd^2\right)\arcsin\left(cx\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral(sqrt(e*x^2 + d)/(a*e^2*x^4 + 2*a*d*e*x^2 + a*d^2 + (b*e^2*x^4 + 2*
b*d*e*x^2 + b*d^2)*arcsin(c*x)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(ex^2+d\right)^{\frac{3}{2}}\left(b\arcsin\left(cx\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
```

```
[Out] integrate(1/((e*x^2 + d)^(3/2)*(b*arcsin(c*x) + a)), x)
```

maple [A] time = 0.41, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(e\,x^{2}+d\right)^{\frac{3}{2}}\left(a+b\arcsin\left(c x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x^2+d)^(3/2)/(a+b*arcsin(c*x)),x)
```

```
[Out] int(1/(e*x^2+d)^(3/2)/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(ex^{2}+d\right)^{\frac{3}{2}}\left(b\arcsin\left(cx\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^(3/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
```

```
[Out] integrate(1/((e*x^2 + d)^(3/2)*(b*arcsin(c*x) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(e\,x^2+d\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*asin(c*x))*(d + e*x^2)^(3/2)),x)
```

```
[Out] int(1/((a + b*asin(c*x))*(d + e*x^2)^(3/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\,\mathrm{asin}\left(cx\right)\right)\left(d+ex^{2}\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x**2+d)**(3/2)/(a+b*asin(c*x)),x)
```

```
[Out] Integral(1/((a + b*asin(c*x))*(d + e*x**2)**(3/2)), x)
```

3.676 $\int \frac{1}{(d+ex^2)^{5/2}(a+b\sin^{-1}(cx))}\,dx$

Optimal. Leaf size=25

$$\text{Int}\left(\frac{1}{(d+ex^2)^{5/2}(a+b\sin^{-1}(cx))},x\right)$$

```
[Out] Unintegrable(1/(e*x^2+d)^(5/2)/(a+b*arcsin(c*x)),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(d+ex^2)^{5/2}(a+b\sin^{-1}(cx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((d + e*x^2)^(5/2)*(a + b*ArcSin[c*x])),x]
[Out] Defer[Int][1/((d + e*x^2)^(5/2)*(a + b*ArcSin[c*x])), x]
```

Rubi steps

$$\int \frac{1}{(d+ex^2)^{5/2}(a+b\sin^{-1}(cx))}\,dx=\int \frac{1}{(d+ex^2)^{5/2}(a+b\sin^{-1}(cx))}\,dx$$

Mathematica [A] time = 4.08, size = 0, normalized size = 0.00

$$\int \frac{1}{(d+ex^2)^{5/2}(a+b\sin^{-1}(cx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((d + e*x^2)^(5/2)*(a + b*ArcSin[c*x])),x]
[Out] Integrate[1/((d + e*x^2)^(5/2)*(a + b*ArcSin[c*x])), x]
```

fricas [A] time = 0.75, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{ex^2+d}}{ae^3x^6+3\,ade^2x^4+3\,ad^2ex^2+ad^3+\left(be^3x^6+3\,bde^2x^4+3\,bd^2ex^2+bd^3\right)\arcsin(cx)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="fricas")
[Out] integral(sqrt(e*x^2 + d)/(a*e^3*x^6 + 3*a*d*e^2*x^4 + 3*a*d^2*e*x^2 + a*d^3
 + (b*e^3*x^6 + 3*b*d*e^2*x^4 + 3*b*d^2*e*x^2 + b*d^3)*arcsin(c*x)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(ex^2+d)^{\frac{5}{2}}(b\arcsin(cx)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="giac")
[Out] integrate(1/((e*x^2 + d)^(5/2)*(b*arcsin(c*x) + a)), x)
```

maple [A] time = 0.43, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(e\,x^{2}+d\right)^{\frac{5}{2}}\left(a+b\arcsin\left(cx\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x^2+d)^(5/2)/(a+b*arcsin(c*x)),x)
[Out] int(1/(e*x^2+d)^(5/2)/(a+b*arcsin(c*x)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(ex^{2}+d\right)^{\frac{5}{2}}\left(b\arcsin\left(cx\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^(5/2)/(a+b*arcsin(c*x)),x, algorithm="maxima")
[Out] integrate(1/((e*x^2 + d)^(5/2)*(b*arcsin(c*x) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)\,{\left(e\,x^2+d\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*asin(c*x))*(d + e*x^2)^(5/2)),x)
[Out] int(1/((a + b*asin(c*x))*(d + e*x^2)^(5/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\,\mathrm{asin}\left(cx\right)\right)\left(d+ex^{2}\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x**2+d)**(5/2)/(a+b*asin(c*x)),x)
[Out] Integral(1/((a + b*asin(c*x))*(d + e*x**2)**(5/2)), x)
```

3.677 $\int \frac{\left(d+ex^2\right)^2}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=498

$$\frac{e^2\sin\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{8b^2c^5}-\frac{9e^2\sin\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{16b^2c^5}+\frac{5e^2\sin\left(\frac{5a}{b}\right)\text{Ci}\left(\frac{5\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{16b^2c^5}-\frac{e^2\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b}{}\right.}{8b^2c^5}$$

```
[Out] -d^2*cos(a/b)*Si((a+b*arcsin(c*x))/b)/b^2/c-1/2*d*e*cos(a/b)*Si((a+b*arcsin
(c*x))/b)/b^2/c^3-1/8*e^2*cos(a/b)*Si((a+b*arcsin(c*x))/b)/b^2/c^5+3/2*d*e*
cos(3*a/b)*Si(3*(a+b*arcsin(c*x))/b)/b^2/c^3+9/16*e^2*cos(3*a/b)*Si(3*(a+b*
arcsin(c*x))/b)/b^2/c^5-5/16*e^2*cos(5*a/b)*Si(5*(a+b*arcsin(c*x))/b)/b^2/c
^5+d^2*Ci((a+b*arcsin(c*x))/b)*sin(a/b)/b^2/c+1/2*d*e*Ci((a+b*arcsin(c*x))/
b)*sin(a/b)/b^2/c^3+1/8*e^2*Ci((a+b*arcsin(c*x))/b)*sin(a/b)/b^2/c^5-3/2*d*
e*Ci(3*(a+b*arcsin(c*x))/b)*sin(3*a/b)/b^2/c^3-9/16*e^2*Ci(3*(a+b*arcsin(c*
x))/b)*sin(3*a/b)/b^2/c^5+5/16*e^2*Ci(5*(a+b*arcsin(c*x))/b)*sin(5*a/b)/b^2
/c^5-d^2*(-c^2*x^2+1)^(1/2)/b/c/(a+b*arcsin(c*x))-2*d*e*x^2*(-c^2*x^2+1)^(1
/2)/b/c/(a+b*arcsin(c*x))-e^2*x^4*(-c^2*x^2+1)^(1/2)/b/c/(a+b*arcsin(c*x))
```

Rubi [A] time = 0.76, antiderivative size = 486, normalized size of antiderivative = 0.98, number of steps used = 26, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {4667, 4621, 4723, 3303, 3299, 3302, 4631}

$$\frac{de\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{2b^2c^3}-\frac{3de\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)}{2b^2c^3}+\frac{e^2\sin\left(\frac{a}{b}\right)\text{CosIntegral}}{8b^2c^5}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x^2)^2/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -((d^2*Sqrt[1 - c^2*x^2])/(b*c*(a + b*ArcSin[c*x]))) - (2*d*e*x^2*Sqrt[1 -
c^2*x^2])/(b*c*(a + b*ArcSin[c*x])) - (e^2*x^4*Sqrt[1 - c^2*x^2])/(b*c*(a +
 b*ArcSin[c*x])) + (d^2*CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b])/(b^2*c) +
(d*e*CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b])/(2*b^2*c^3) + (e^2*CosIntegra
l[a/b + ArcSin[c*x]]*Sin[a/b])/(8*b^2*c^5) - (3*d*e*CosIntegral[(3*a)/b + 3
*ArcSin[c*x]]*Sin[(3*a)/b])/(2*b^2*c^3) - (9*e^2*CosIntegral[(3*a)/b + 3*Ar
cSin[c*x]]*Sin[(3*a)/b])/(16*b^2*c^5) + (5*e^2*CosIntegral[(5*a)/b + 5*ArcS
in[c*x]]*Sin[(5*a)/b])/(16*b^2*c^5) - (d^2*Cos[a/b]*SinIntegral[a/b + ArcSi
n[c*x]])/(b^2*c) - (d*e*Cos[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(2*b^2*c^3
) - (e^2*Cos[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(8*b^2*c^5) + (3*d*e*Cos[
(3*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c*x]])/(2*b^2*c^3) + (9*e^2*Cos[(3*
a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[c*x]])/(16*b^2*c^5) - (5*e^2*Cos[(5*a)
/b]*SinIntegral[(5*a)/b + 5*ArcSin[c*x]])/(16*b^2*c^5)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{(d+ex^2)^2}{(a+b\sin^{-1}(cx))^2}\,dx = \int \left(\frac{d^2}{(a+b\sin^{-1}(cx))^2} + \frac{2dex^2}{(a+b\sin^{-1}(cx))^2} + \frac{e^2x^4}{(a+b\sin^{-1}(cx))^2}\right)dx$$

$$= d^2\int \frac{1}{(a+b\sin^{-1}(cx))^2}\,dx + (2de)\int \frac{x^2}{(a+b\sin^{-1}(cx))^2}\,dx + e^2\int \frac{x^4}{(a+b\sin^{-1}(cx$$

$$= -\frac{d^2\sqrt{1-c^2x^2}}{bc(a+b\sin^{-1}(cx))} - \frac{2dex^2\sqrt{1-c^2x^2}}{bc(a+b\sin^{-1}(cx))} - \frac{e^2x^4\sqrt{1-c^2x^2}}{bc(a+b\sin^{-1}(cx))} - \frac{(cd^2)\int \frac{}{\sqrt{1-c^2}}}{}$$

$$= -\frac{d^2\sqrt{1-c^2x^2}}{bc(a+b\sin^{-1}(cx))} - \frac{2dex^2\sqrt{1-c^2x^2}}{bc(a+b\sin^{-1}(cx))} - \frac{e^2x^4\sqrt{1-c^2x^2}}{bc(a+b\sin^{-1}(cx))} - \frac{d^2\,\mathrm{Subst}\left(\int \right.}{}$$

$$= -\frac{d^2\sqrt{1-c^2x^2}}{bc(a+b\sin^{-1}(cx))} - \frac{2dex^2\sqrt{1-c^2x^2}}{bc(a+b\sin^{-1}(cx))} - \frac{e^2x^4\sqrt{1-c^2x^2}}{bc(a+b\sin^{-1}(cx))} - \frac{\left(d^2\cos\left(\frac{a}{b}\right)\right)\mathrm{S}}{}$$

$$= -\frac{d^2\sqrt{1-c^2x^2}}{bc(a+b\sin^{-1}(cx))} - \frac{2dex^2\sqrt{1-c^2x^2}}{bc(a+b\sin^{-1}(cx))} - \frac{e^2x^4\sqrt{1-c^2x^2}}{bc(a+b\sin^{-1}(cx))} + \frac{d^2\mathrm{Ci}\left(\frac{a}{b}+\sin\right.}{b}$$

Mathematica [A] time = 2.25, size = 359, normalized size = 0.72

$$-\frac{16c^4d^2\cos\left(\frac{a}{b}\right)\mathrm{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right) + 3e\sin\left(\frac{3a}{b}\right)(8c^2d+3e)\,\mathrm{Ci}\left(3\left(\frac{a}{b}+\sin^{-1}(cx)\right)\right) + 8c^2de\cos\left(\frac{a}{b}\right)\mathrm{Si}\left(\frac{a}{b}+\sin\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x^2)^2/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -1/16*((16*b*c^4*d^2*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x]) + (32*b*c^4*d*e
*x^2*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x]) + (16*b*c^4*e^2*x^4*Sqrt[1 - c^
2*x^2])/(a + b*ArcSin[c*x]) - 2*(8*c^4*d^2 + 4*c^2*d*e + e^2)*CosIntegral[a
/b + ArcSin[c*x]]*Sin[a/b] + 3*e*(8*c^2*d + 3*e)*CosIntegral[3*(a/b + ArcSi
n[c*x])]*Sin[(3*a)/b] - 5*e^2*CosIntegral[5*(a/b + ArcSin[c*x])]*Sin[(5*a)/
b] + 16*c^4*d^2*Cos[a/b]*SinIntegral[a/b + ArcSin[c*x]] + 8*c^2*d*e*Cos[a/b
]*SinIntegral[a/b + ArcSin[c*x]] + 2*e^2*Cos[a/b]*SinIntegral[a/b + ArcSin[
c*x]] - 24*c^2*d*e*Cos[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c*x])] - 9*e^2*
Cos[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c*x])] + 5*e^2*Cos[(5*a)/b]*SinInt
egral[5*(a/b + ArcSin[c*x])])/(b^2*c^5)
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{e^2x^4 + 2\,dex^2 + d^2}{b^2\arcsin(cx)^2 + 2\,ab\arcsin(cx) + a^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral((e^2*x^4 + 2*d*e*x^2 + d^2)/(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x)
 + a^2), x)
```

giac [B] time = 1.34, size = 2324, normalized size = 4.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] b*c^4*d^2*arcsin(c*x)*cos_integral(a/b + arcsin(c*x))*sin(a/b)/(b^3*c^5*arc
sin(c*x) + a*b^2*c^5) - 6*b*c^2*d*arcsin(c*x)*cos(a/b)^2*cos_integral(3*a/b
 + 3*arcsin(c*x))*e*sin(a/b)/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) + 6*b*c^2*d*
arcsin(c*x)*cos(a/b)^3*e*sin_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^5*arcsi
n(c*x) + a*b^2*c^5) - b*c^4*d^2*arcsin(c*x)*cos(a/b)*sin_integral(a/b + arc
sin(c*x))/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) + a*c^4*d^2*cos_integral(a/b +
arcsin(c*x))*sin(a/b)/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) + 5*b*arcsin(c*x)*c
os(a/b)^4*cos_integral(5*a/b + 5*arcsin(c*x))*e^2*sin(a/b)/(b^3*c^5*arcsin(
c*x) + a*b^2*c^5) - 6*a*c^2*d*cos(a/b)^2*cos_integral(3*a/b + 3*arcsin(c*x)
)*e*sin(a/b)/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) - 5*b*arcsin(c*x)*cos(a/b)^5
*e^2*sin_integral(5*a/b + 5*arcsin(c*x))/(b^3*c^5*arcsin(c*x) + a*b^2*c^5)
+ 6*a*c^2*d*cos(a/b)^3*e*sin_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^5*arcsi
n(c*x) + a*b^2*c^5) - a*c^4*d^2*cos(a/b)*sin_integral(a/b + arcsin(c*x))/(b
^3*c^5*arcsin(c*x) + a*b^2*c^5) + 5*a*cos(a/b)^4*cos_integral(5*a/b + 5*arc
sin(c*x))*e^2*sin(a/b)/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) + 3/2*b*c^2*d*arcs
in(c*x)*cos_integral(3*a/b + 3*arcsin(c*x))*e*sin(a/b)/(b^3*c^5*arcsin(c*x)
 + a*b^2*c^5) + 1/2*b*c^2*d*arcsin(c*x)*cos_integral(a/b + arcsin(c*x))*e*s
in(a/b)/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) - 5*a*cos(a/b)^5*e^2*sin_integral
(5*a/b + 5*arcsin(c*x))/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) - 9/2*b*c^2*d*arc
sin(c*x)*cos(a/b)*e*sin_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^5*arcsin(c*x
) + a*b^2*c^5) - 1/2*b*c^2*d*arcsin(c*x)*cos(a/b)*e*sin_integral(a/b + arcs
in(c*x))/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) - sqrt(-c^2*x^2 + 1)*b*c^4*d^2/(
b^3*c^5*arcsin(c*x) + a*b^2*c^5) - 15/4*b*arcsin(c*x)*cos(a/b)^2*cos_integr
al(5*a/b + 5*arcsin(c*x))*e^2*sin(a/b)/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) -
9/4*b*arcsin(c*x)*cos(a/b)^2*cos_integral(3*a/b + 3*arcsin(c*x))*e^2*sin(a/
b)/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) + 3/2*a*c^2*d*cos_integral(3*a/b + 3*a
rcsin(c*x))*e*sin(a/b)/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) + 1/2*a*c^2*d*cos_
integral(a/b + arcsin(c*x))*e*sin(a/b)/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) +
25/4*b*arcsin(c*x)*cos(a/b)^3*e^2*sin_integral(5*a/b + 5*arcsin(c*x))/(b^3*
c^5*arcsin(c*x) + a*b^2*c^5) + 9/4*b*arcsin(c*x)*cos(a/b)^3*e^2*sin_integra
l(3*a/b + 3*arcsin(c*x))/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) - 9/2*a*c^2*d*co
s(a/b)*e*sin_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^5*arcsin(c*x) + a*b^2*c
^5) - 1/2*a*c^2*d*cos(a/b)*e*sin_integral(a/b + arcsin(c*x))/(b^3*c^5*arcsi
n(c*x) + a*b^2*c^5) + 2*(-c^2*x^2 + 1)^(3/2)*b*c^2*d*e/(b^3*c^5*arcsin(c*x)
 + a*b^2*c^5) - 15/4*a*cos(a/b)^2*cos_integral(5*a/b + 5*arcsin(c*x))*e^2*s
in(a/b)/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) - 9/4*a*cos(a/b)^2*cos_integral(3
*a/b + 3*arcsin(c*x))*e^2*sin(a/b)/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) + 25/4
*a*cos(a/b)^3*e^2*sin_integral(5*a/b + 5*arcsin(c*x))/(b^3*c^5*arcsin(c*x)
+ a*b^2*c^5) + 9/4*a*cos(a/b)^3*e^2*sin_integral(3*a/b + 3*arcsin(c*x))/(b^
3*c^5*arcsin(c*x) + a*b^2*c^5) - 2*sqrt(-c^2*x^2 + 1)*b*c^2*d*e/(b^3*c^5*ar
csin(c*x) + a*b^2*c^5) + 5/16*b*arcsin(c*x)*cos_integral(5*a/b + 5*arcsin(c
*x))*e^2*sin(a/b)/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) + 9/16*b*arcsin(c*x)*co
s_integral(3*a/b + 3*arcsin(c*x))*e^2*sin(a/b)/(b^3*c^5*arcsin(c*x) + a*b^2
*c^5) + 1/8*b*arcsin(c*x)*cos_integral(a/b + arcsin(c*x))*e^2*sin(a/b)/(b^3
*c^5*arcsin(c*x) + a*b^2*c^5) - 25/16*b*arcsin(c*x)*cos(a/b)*e^2*sin_integr
al(5*a/b + 5*arcsin(c*x))/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) - 27/16*b*arcsi
n(c*x)*cos(a/b)*e^2*sin_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^5*arcsin(c*x
) + a*b^2*c^5) - 1/8*b*arcsin(c*x)*cos(a/b)*e^2*sin_integral(a/b + arcsin(c
*x))/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) - (c^2*x^2 - 1)^2*sqrt(-c^2*x^2 + 1)
*b*e^2/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) + 5/16*a*cos_integral(5*a/b + 5*ar
csin(c*x))*e^2*sin(a/b)/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) + 9/16*a*cos_inte
gral(3*a/b + 3*arcsin(c*x))*e^2*sin(a/b)/(b^3*c^5*arcsin(c*x) + a*b^2*c^5)
+ 1/8*a*cos_integral(a/b + arcsin(c*x))*e^2*sin(a/b)/(b^3*c^5*arcsin(c*x) +
 a*b^2*c^5) - 25/16*a*cos(a/b)*e^2*sin_integral(5*a/b + 5*arcsin(c*x))/(b^3
*c^5*arcsin(c*x) + a*b^2*c^5) - 27/16*a*cos(a/b)*e^2*sin_integral(3*a/b + 3
*arcsin(c*x))/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) - 1/8*a*cos(a/b)*e^2*sin_in
```

```
tegral(a/b + arcsin(c*x))/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) + 2*(-c^2*x^2 +
 1)^(3/2)*b*e^2/(b^3*c^5*arcsin(c*x) + a*b^2*c^5) - sqrt(-c^2*x^2 + 1)*b*e^
2/(b^3*c^5*arcsin(c*x) + a*b^2*c^5)
```

maple [A] time = 0.27, size = 795, normalized size = 1.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)^2/(a+b*arcsin(c*x))^2,x)
```

```
[Out] -1/16/c^5*(2*(-c^2*x^2+1)^(1/2)*b*e^2+cos(5*arcsin(c*x))*b*e^2+24*Ci(3*arcs
in(c*x)+3*a/b)*sin(3*a/b)*a*c^2*d*e+8*Si(arcsin(c*x)+a/b)*cos(a/b)*a*c^2*d*
e-8*Ci(arcsin(c*x)+a/b)*sin(a/b)*a*c^2*d*e+16*arcsin(c*x)*Si(arcsin(c*x)+a/
b)*cos(a/b)*b*c^4*d^2-16*arcsin(c*x)*Ci(arcsin(c*x)+a/b)*sin(a/b)*b*c^4*d^2
-2*arcsin(c*x)*Ci(arcsin(c*x)+a/b)*sin(a/b)*b*e^2-8*cos(3*arcsin(c*x))*b*c^
2*d*e-24*arcsin(c*x)*Si(3*arcsin(c*x)+3*a/b)*cos(3*a/b)*b*c^2*d*e+24*arcsin
(c*x)*Ci(3*arcsin(c*x)+3*a/b)*sin(3*a/b)*b*c^2*d*e+8*arcsin(c*x)*Si(arcsin(
c*x)+a/b)*cos(a/b)*b*c^2*d*e-8*arcsin(c*x)*Ci(arcsin(c*x)+a/b)*sin(a/b)*b*c
^2*d*e+16*Si(arcsin(c*x)+a/b)*cos(a/b)*a*c^4*d^2-16*Ci(arcsin(c*x)+a/b)*sin
(a/b)*a*c^4*d^2+5*arcsin(c*x)*cos(5*a/b)*Si(5*arcsin(c*x)+5*a/b)*b*e^2-5*ar
csin(c*x)*Ci(5*arcsin(c*x)+5*a/b)*sin(5*a/b)*b*e^2+8*(-c^2*x^2+1)^(1/2)*b*c
^2*d*e-9*arcsin(c*x)*Si(3*arcsin(c*x)+3*a/b)*cos(3*a/b)*b*e^2+9*arcsin(c*x)
*Ci(3*arcsin(c*x)+3*a/b)*sin(3*a/b)*b*e^2+2*Si(arcsin(c*x)+a/b)*cos(a/b)*a*
e^2+9*Ci(3*arcsin(c*x)+3*a/b)*sin(3*a/b)*a*e^2-3*cos(3*arcsin(c*x))*b*e^2-2
4*Si(3*arcsin(c*x)+3*a/b)*cos(3*a/b)*a*c^2*d*e+5*cos(5*a/b)*Si(5*arcsin(c*x
)+5*a/b)*a*e^2-5*Ci(5*arcsin(c*x)+5*a/b)*sin(5*a/b)*a*e^2-9*Si(3*arcsin(c*x
)+3*a/b)*cos(3*a/b)*a*e^2+16*(-c^2*x^2+1)^(1/2)*b*c^4*d^2-2*Ci(arcsin(c*x)+
a/b)*sin(a/b)*a*e^2+2*arcsin(c*x)*Si(arcsin(c*x)+a/b)*cos(a/b)*b*e^2)/(a+b*
arcsin(c*x))/b^2
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(e\,x^2+d\right)^2}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x^2)^2/(a + b*asin(c*x))^2,x)
```

```
[Out] int((d + e*x^2)^2/(a + b*asin(c*x))^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d + e x^{2}\right)^{2}}{\left(a + b \operatorname{asin}{\left(c x \right)}\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)**2/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral((d + e*x**2)**2/(a + b*asin(c*x))**2, x)
```

3.678 $\int \frac{d+ex^2}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=249

$$\frac{e\sin\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{4b^2c^3}-\frac{3e\sin\left(\frac{3a}{b}\right)\text{Ci}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{4b^2c^3}-\frac{e\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{4b^2c^3}+\frac{3e\cos\left(\frac{3a}{b}\right)\text{Si}\left(\frac{3\left(a+b\sin^{-1}(cx)\right)}{b}\right)}{4b^2c^3}$$

```
[Out] -d*cos(a/b)*Si((a+b*arcsin(c*x))/b)/b^2/c-1/4*e*cos(a/b)*Si((a+b*arcsin(c*x
))/b)/b^2/c^3+3/4*e*cos(3*a/b)*Si(3*(a+b*arcsin(c*x))/b)/b^2/c^3+d*Ci((a+b*
arcsin(c*x))/b)*sin(a/b)/b^2/c+1/4*e*Ci((a+b*arcsin(c*x))/b)*sin(a/b)/b^2/c
^3-3/4*e*Ci(3*(a+b*arcsin(c*x))/b)*sin(3*a/b)/b^2/c^3-d*(-c^2*x^2+1)^(1/2)/
b/c/(a+b*arcsin(c*x))-e*x^2*(-c^2*x^2+1)^(1/2)/b/c/(a+b*arcsin(c*x))
```

Rubi [A] time = 0.42, antiderivative size = 241, normalized size of antiderivative = 0.97, number of steps used = 15, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.389, Rules used = {4667, 4621, 4723, 3303, 3299, 3302, 4631}

$$\frac{e\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{4b^2c^3}-\frac{3e\sin\left(\frac{3a}{b}\right)\text{CosIntegral}\left(\frac{3a}{b}+3\sin^{-1}(cx)\right)}{4b^2c^3}-\frac{e\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{4b^2c^3}+$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x^2)/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -((d*Sqrt[1 - c^2*x^2])/(b*c*(a + b*ArcSin[c*x]))) - (e*x^2*Sqrt[1 - c^2*x^
2])/(b*c*(a + b*ArcSin[c*x])) + (d*CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b])
/(b^2*c) + (e*CosIntegral[a/b + ArcSin[c*x]]*Sin[a/b])/(4*b^2*c^3) - (3*e*C
osIntegral[(3*a)/b + 3*ArcSin[c*x]]*Sin[(3*a)/b])/(4*b^2*c^3) - (d*Cos[a/b]
*SinIntegral[a/b + ArcSin[c*x]])/(b^2*c) - (e*Cos[a/b]*SinIntegral[a/b + Ar
cSin[c*x]])/(4*b^2*c^3) + (3*e*Cos[(3*a)/b]*SinIntegral[(3*a)/b + 3*ArcSin[
c*x]])/(4*b^2*c^3)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{d+ex^2}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx=\int \left(\frac{d}{\left(a+b\sin^{-1}(cx)\right)^2}+\frac{ex^2}{\left(a+b\sin^{-1}(cx)\right)^2}\right)dx$$

$$=d\int \frac{1}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx+e\int \frac{x^2}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

$$=-\frac{d\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{ex^2\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{(cd)\int \frac{x}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx}{b}+\frac{e\,\mathrm{Su}}{}$$

$$=-\frac{d\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{ex^2\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{d\,\mathrm{Subst}\left(\int \frac{\sin(x)}{a+bx}\,dx,x,\sin^{-1}(cx)\right)}{bc}-$$

$$=-\frac{d\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{ex^2\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{\left(d\cos\left(\frac{a}{b}\right)\right)\mathrm{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{a+bx}\,dx,x,\mathrm{s}\right.}{bc}$$

$$=-\frac{d\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}-\frac{ex^2\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}+\frac{d\mathrm{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)\sin\left(\frac{a}{b}\right)}{b^2c}+\frac{e\mathrm{Ci}\left(\frac{a}{b}\right.}{}$$

Mathematica [A] time = 1.04, size = 191, normalized size = 0.77

$$-\frac{-\sin\left(\frac{a}{b}\right)\left(4c^2d+e\right)\mathrm{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)+4c^2d\cos\left(\frac{a}{b}\right)\mathrm{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)+\frac{4bc^2d\sqrt{1-c^2x^2}}{a+b\sin^{-1}(cx)}+\frac{4bc^2ex^2\sqrt{1-c^2x^2}}{a+b\sin^{-1}(cx)}+3e\,\mathrm{s}}{4b^2c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x^2)/(a + b*ArcSin[c*x])^2,x]
```

```
[Out] -1/4*((4*b*c^2*d*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x]) + (4*b*c^2*e*x^2*Sq
rt[1 - c^2*x^2])/(a + b*ArcSin[c*x]) - (4*c^2*d + e)*CosIntegral[a/b + ArcS
```

```
in[c*x]]*Sin[a/b] + 3*e*CosIntegral[3*(a/b + ArcSin[c*x])]*Sin[(3*a)/b] + 4
*c^2*d*Cos[a/b]*SinIntegral[a/b + ArcSin[c*x]] + e*Cos[a/b]*SinIntegral[a/b
 + ArcSin[c*x]] - 3*e*Cos[(3*a)/b]*SinIntegral[3*(a/b + ArcSin[c*x])])/(b^2
*c^3)
```

fricas [F] time = 0.69, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{ex^2+d}{b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral((e*x^2 + d)/(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2), x)
```

giac [B] time = 0.82, size = 905, normalized size = 3.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] b*c^2*d*arcsin(c*x)*cos_integral(a/b + arcsin(c*x))*sin(a/b)/(b^3*c^3*arcsi
n(c*x) + a*b^2*c^3) - 3*b*arcsin(c*x)*cos(a/b)^2*cos_integral(3*a/b + 3*arc
sin(c*x))*e*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 3*b*arcsin(c*x)*co
s(a/b)^3*e*sin_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2
*c^3) - b*c^2*d*arcsin(c*x)*cos(a/b)*sin_integral(a/b + arcsin(c*x))/(b^3*c
^3*arcsin(c*x) + a*b^2*c^3) + a*c^2*d*cos_integral(a/b + arcsin(c*x))*sin(a
/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 3*a*cos(a/b)^2*cos_integral(3*a/b +
 3*arcsin(c*x))*e*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 3*a*cos(a/b)
^3*e*sin_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3)
- a*c^2*d*cos(a/b)*sin_integral(a/b + arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a
*b^2*c^3) + 3/4*b*arcsin(c*x)*cos_integral(3*a/b + 3*arcsin(c*x))*e*sin(a/b
)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 1/4*b*arcsin(c*x)*cos_integral(a/b +
arcsin(c*x))*e*sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 9/4*b*arcsin(c*
x)*cos(a/b)*e*sin_integral(3*a/b + 3*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*
b^2*c^3) - 1/4*b*arcsin(c*x)*cos(a/b)*e*sin_integral(a/b + arcsin(c*x))/(b^
3*c^3*arcsin(c*x) + a*b^2*c^3) - sqrt(-c^2*x^2 + 1)*b*c^2*d/(b^3*c^3*arcsin
(c*x) + a*b^2*c^3) + 3/4*a*cos_integral(3*a/b + 3*arcsin(c*x))*e*sin(a/b)/(
b^3*c^3*arcsin(c*x) + a*b^2*c^3) + 1/4*a*cos_integral(a/b + arcsin(c*x))*e*
sin(a/b)/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 9/4*a*cos(a/b)*e*sin_integral(
3*a/b + 3*arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - 1/4*a*cos(a/b)*e
*sin_integral(a/b + arcsin(c*x))/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) + (-c^2*
x^2 + 1)^(3/2)*b*e/(b^3*c^3*arcsin(c*x) + a*b^2*c^3) - sqrt(-c^2*x^2 + 1)*b
*e/(b^3*c^3*arcsin(c*x) + a*b^2*c^3)
```

maple [A] time = 0.19, size = 367, normalized size = 1.47

$$\frac{-4\arcsin(cx)\,\mathrm{Si}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right)b\,c^2d+4\arcsin(cx)\,\mathrm{Ci}\left(\arcsin(cx)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)b\,c^2d-4\,\mathrm{Si}\left(\arcsin(cx\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/4/c^3*(-4*arcsin(c*x)*Si(arcsin(c*x)+a/b)*cos(a/b)*b*c^2*d+4*arcsin(c*x)*
Ci(arcsin(c*x)+a/b)*sin(a/b)*b*c^2*d-4*Si(arcsin(c*x)+a/b)*cos(a/b)*a*c^2*d
+4*Ci(arcsin(c*x)+a/b)*sin(a/b)*a*c^2*d+3*arcsin(c*x)*Si(3*arcsin(c*x)+3*a/
b)*cos(3*a/b)*b*e-3*arcsin(c*x)*Ci(3*arcsin(c*x)+3*a/b)*sin(3*a/b)*b*e-arcs
```

```
in(c*x)*Si(arcsin(c*x)+a/b)*cos(a/b)*b*e+arcsin(c*x)*Ci(arcsin(c*x)+a/b)*si
n(a/b)*b*e-4*(-c^2*x^2+1)^(1/2)*b*c^2*d+3*Si(3*arcsin(c*x)+3*a/b)*cos(3*a/b
)*a*e-3*Ci(3*arcsin(c*x)+3*a/b)*sin(3*a/b)*a*e-Si(arcsin(c*x)+a/b)*cos(a/b)
*a*e+Ci(arcsin(c*x)+a/b)*sin(a/b)*a*e+cos(3*arcsin(c*x))*b*e-(-c^2*x^2+1)^(
1/2)*b*e)/(a+b*arcsin(c*x))/b^2
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
[Out] Timed out
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{e\,x^2+d}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x^2)/(a + b*asin(c*x))^2,x)
[Out] int((d + e*x^2)/(a + b*asin(c*x))^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d + ex^{2}}{\left(a + b \operatorname{asin}{\left(cx \right)}\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)/(a+b*asin(c*x))**2,x)
[Out] Integral((d + e*x**2)/(a + b*asin(c*x))**2, x)
```

3.679 $\int \frac{1}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=86

$$\frac{\sin\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{b^2c}-\frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a+b\sin^{-1}(cx)}{b}\right)}{b^2c}-\frac{\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}$$

```
[Out] -cos(a/b)*Si((a+b*arcsin(c*x))/b)/b^2/c+Ci((a+b*arcsin(c*x))/b)*sin(a/b)/b^
2/c-(-c^2*x^2+1)^(1/2)/b/c/(a+b*arcsin(c*x))
```

Rubi [A] time = 0.17, antiderivative size = 82, normalized size of antiderivative = 0.95, number of steps used = 5, number of rules used = 5, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {4621, 4723, 3303, 3299, 3302}

$$\frac{\sin\left(\frac{a}{b}\right)\text{CosIntegral}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{b^2c}-\frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{b^2c}-\frac{\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^(-2),x]
```

```
[Out] -(Sqrt[1 - c^2*x^2]/(b*c*(a + b*ArcSin[c*x]))) + (CosIntegral[a/b + ArcSin[
c*x]]*Sin[a/b])/(b^2*c) - (Cos[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(b^2*c)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx = -\frac{\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)} - \frac{c\int \frac{x}{\sqrt{1-c^2x^2}\left(a+b\sin^{-1}(cx)\right)}\,dx}{b}$$

$$= -\frac{\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)} - \frac{\text{Subst}\left(\int \frac{\sin(x)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{bc}$$

$$= -\frac{\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)} - \frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{a+bx}\,dx, x, \sin^{-1}(cx)\right)}{bc} + \frac{\sin\left(\frac{a}{b}\right)\text{Subst}}{}$$

$$= -\frac{\sqrt{1-c^2x^2}}{bc\left(a+b\sin^{-1}(cx)\right)} + \frac{\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right)\sin\left(\frac{a}{b}\right)}{b^2c} - \frac{\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{b^2c}$$

Mathematica [A] time = 0.22, size = 72, normalized size = 0.84

$$\frac{-\frac{b\sqrt{1-c^2x^2}}{a+b\sin^{-1}(cx)} + \sin\left(\frac{a}{b}\right)\text{Ci}\left(\frac{a}{b}+\sin^{-1}(cx)\right) - \cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\sin^{-1}(cx)\right)}{b^2c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcSin[c*x])^(-2),x]
```

```
[Out] (-((b*Sqrt[1 - c^2*x^2])/(a + b*ArcSin[c*x])) + CosIntegral[a/b + ArcSin[c*
x]]*Sin[a/b] - Cos[a/b]*SinIntegral[a/b + ArcSin[c*x]])/(b^2*c)
```

fricas [F] time = 0.60, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{b^2\arcsin(cx)^2 + 2ab\arcsin(cx) + a^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2), x)
```

giac [B] time = 0.82, size = 192, normalized size = 2.23

$$\frac{b\arcsin(cx)\,\text{Ci}\left(\frac{a}{b}+\arcsin(cx)\right)\sin\left(\frac{a}{b}\right)}{b^3c\arcsin(cx)+ab^2c} - \frac{b\arcsin(cx)\cos\left(\frac{a}{b}\right)\text{Si}\left(\frac{a}{b}+\arcsin(cx)\right)}{b^3c\arcsin(cx)+ab^2c} + \frac{a\,\text{Ci}\left(\frac{a}{b}+\arcsin(cx)\right)\sin}{b^3c\arcsin(cx)+ab^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] b*arcsin(c*x)*cos_integral(a/b + arcsin(c*x))*sin(a/b)/(b^3*c*arcsin(c*x) +
 a*b^2*c) - b*arcsin(c*x)*cos(a/b)*sin_integral(a/b + arcsin(c*x))/(b^3*c*a
rcsin(c*x) + a*b^2*c) + a*cos_integral(a/b + arcsin(c*x))*sin(a/b)/(b^3*c*a
rcsin(c*x) + a*b^2*c) - a*cos(a/b)*sin_integral(a/b + arcsin(c*x))/(b^3*c*a
rcsin(c*x) + a*b^2*c) - sqrt(-c^2*x^2 + 1)*b/(b^3*c*arcsin(c*x) + a*b^2*c)
```

maple [A] time = 0.00, size = 76, normalized size = 0.88

$$\frac{-\frac{\sqrt{-c^2x^2+1}}{(a+b\arcsin(cx))b} - \frac{\text{Si}\left(\arcsin(cx)+\frac{a}{b}\right)\cos\left(\frac{a}{b}\right) - \text{Ci}\left(\arcsin(cx)+\frac{a}{b}\right)\sin\left(\frac{a}{b}\right)}{b^2}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(c*x))^2,x)
```

```
[Out] 1/c*(-(-c^2*x^2+1)^(1/2)/(a+b*arcsin(c*x))/b-(Si(arcsin(c*x)+a/b)*cos(a/b)-
Ci(arcsin(c*x)+a/b)*sin(a/b))/b^2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{-\sqrt{cx+1}\,\sqrt{-cx+1}+\frac{\left(b^2c^2\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abc^2\right)\int\frac{\sqrt{-cx+1}\,x}{\sqrt{cx+1}\,(cx-1)\left(b\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+a\right)}\,dx}{b}}{b^2c\arctan\left(cx,\sqrt{cx+1}\,\sqrt{-cx+1}\right)+abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] ((b^2*c^2*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c^2)*integrate(s
qrt(c*x + 1)*sqrt(-c*x + 1)*x/(a*b*c^2*x^2 - a*b + (b^2*c^2*x^2 - b^2)*arct
an2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1))), x) - sqrt(c*x + 1)*sqrt(-c*x + 1))
/(b^2*c*arctan2(c*x, sqrt(c*x + 1)*sqrt(-c*x + 1)) + a*b*c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{1}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(c*x))^2,x)
```

```
[Out] int(1/(a + b*asin(c*x))^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{1}{\left(a+b\,\mathrm{asin}\,(cx)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral((a + b*asin(c*x))**(-2), x)
```

3.680 $\int \frac{1}{(d+ex^2)(a+b\sin^{-1}(cx))^2}\,dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{1}{\left(d+ex^2\right)\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

[Out] Unintegrable(1/(e*x^2+d)/(a+b*arcsin(c*x))^2,x)

Rubi [A] time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\left(d+ex^2\right)\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

[In] Int[1/((d + e*x^2)*(a + b*ArcSin[c*x])^2),x]

[Out] Defer[Int][1/((d + e*x^2)*(a + b*ArcSin[c*x])^2), x]

Rubi steps

$$\int \frac{1}{\left(d+ex^2\right)\left(a+b\sin^{-1}(cx)\right)^2}\,dx=\int \frac{1}{\left(d+ex^2\right)\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Mathematica [A] time = 22.77, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(d+ex^2\right)\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

[In] Integrate[1/((d + e*x^2)*(a + b*ArcSin[c*x])^2),x]

[Out] Integrate[1/((d + e*x^2)*(a + b*ArcSin[c*x])^2), x]

fricas [A] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{a^2ex^2+a^2d+\left(b^2ex^2+b^2d\right)\arcsin(cx)^2+2\left(abex^2+abd\right)\arcsin(cx)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/(e*x^2+d)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")

[Out] integral(1/(a^2*e*x^2 + a^2*d + (b^2*e*x^2 + b^2*d)*arcsin(c*x)^2 + 2*(a*b*e*x^2 + a*b*d)*arcsin(c*x)), x)

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(ex^2+d\right)(b\arcsin(cx)+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((e*x^2 + d)*(b*arcsin(c*x) + a)^2), x)
```

maple [A] time = 1.07, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(e\,x^{2}+d\right)\left(a+b\arcsin\left(cx\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x^2+d)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] int(1/(e*x^2+d)/(a+b*arcsin(c*x))^2,x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,\left(e\,x^2+d\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*asin(c*x))^2*(d + e*x^2)),x)
```

```
[Out] int(1/((a + b*asin(c*x))^2*(d + e*x^2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b \operatorname{asin}{\left(cx \right)}\right)^{2} \left(d + ex^{2}\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x**2+d)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(1/((a + b*asin(c*x))**2*(d + e*x**2)), x)
```

3.681 $\int \frac{1}{\left(d+ex^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{1}{\left(d+ex^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

```
[Out] Unintegrable(1/(e*x^2+d)^2/(a+b*arcsin(c*x))^2,x)
```

Rubi [A] time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\left(d+ex^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((d + e*x^2)^2*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] Defer[Int][1/((d + e*x^2)^2*(a + b*ArcSin[c*x])^2), x]
```

Rubi steps

$$\int \frac{1}{\left(d+ex^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}\,dx=\int \frac{1}{\left(d+ex^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Mathematica [A] time = 56.36, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(d+ex^2\right)^2\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((d + e*x^2)^2*(a + b*ArcSin[c*x])^2),x]
```

```
[Out] Integrate[1/((d + e*x^2)^2*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.58, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{a^2e^2x^4+2\,a^2dex^2+a^2d^2+\left(b^2e^2x^4+2\,b^2dex^2+b^2d^2\right)\arcsin(cx)^2+2\left(abe^2x^4+2\,abdex^2+abd^2\right)a\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^2/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(a^2*e^2*x^4 + 2*a^2*d*e*x^2 + a^2*d^2 + (b^2*e^2*x^4 + 2*b^2*d*
e*x^2 + b^2*d^2)*arcsin(c*x)^2 + 2*(a*b*e^2*x^4 + 2*a*b*d*e*x^2 + a*b*d^2)*
arcsin(c*x)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^2/(a+b*arcsin(c*x))^2,x, algorithm="giac")
[Out] Timed out
```

maple [A] time = 3.98, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(e\,x^{2}+d\right)^{2} \left(a+b \arcsin \left(c x\right)\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x^2+d)^2/(a+b*arcsin(c*x))^2,x)
[Out] int(1/(e*x^2+d)^2/(a+b*arcsin(c*x))^2,x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^2/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(e\,x^2+d\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*asin(c*x))^2*(d + e*x^2)^2),x)
[Out] int(1/((a + b*asin(c*x))^2*(d + e*x^2)^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x**2+d)**2/(a+b*asin(c*x))**2,x)
[Out] Timed out
```

3.682 $\int \frac{\sqrt{d+ex^2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=25

$$\text{Int}\left(\frac{\sqrt{d+ex^2}}{\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

```
[Out] Unintegrable((e*x^2+d)^(1/2)/(a+b*arcsin(c*x))^2,x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{d+ex^2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[d + e*x^2]/(a + b*ArcSin[c*x])^2,x]
[Out] Defer[Int][Sqrt[d + e*x^2]/(a + b*ArcSin[c*x])^2, x]
```

Rubi steps

$$\int \frac{\sqrt{d+ex^2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx=\int \frac{\sqrt{d+ex^2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Mathematica [A] time = 7.79, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d+ex^2}}{\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[d + e*x^2]/(a + b*ArcSin[c*x])^2,x]
[Out] Integrate[Sqrt[d + e*x^2]/(a + b*ArcSin[c*x])^2, x]
```

fricas [A] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{ex^2+d}}{b^2\arcsin(cx)^2+2\,ab\arcsin(cx)+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^(1/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
[Out] integral(sqrt(e*x^2 + d)/(b^2*arcsin(c*x)^2 + 2*a*b*arcsin(c*x) + a^2), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{ex^2+d}}{\left(b\arcsin(cx)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^(1/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
[Out] integrate(sqrt(e*x^2 + d)/(b*arcsin(c*x) + a)^2, x)
```

maple [A] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{e\,x^{2}+d}}{\left(a+b\arcsin\left(c x\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)^(1/2)/(a+b*arcsin(c*x))^2,x)
[Out] int((e*x^2+d)^(1/2)/(a+b*arcsin(c*x))^2,x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^(1/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\sqrt{e\,x^2+d}}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x^2)^(1/2)/(a + b*asin(c*x))^2,x)
[Out] int((d + e*x^2)^(1/2)/(a + b*asin(c*x))^2, x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d + e x^{2}}}{\left(a + b \operatorname{asin}{\left(c x \right)}\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)**(1/2)/(a+b*asin(c*x))**2,x)
[Out] Integral(sqrt(d + e*x**2)/(a + b*asin(c*x))**2, x)
```

3.683 $\int \frac{1}{\sqrt{d+ex^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=25

$$\mathrm{Int}\left(\frac{1}{\sqrt{d+ex^2}\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

```
[Out] Unintegrable(1/(e*x^2+d)^(1/2)/(a+b*arcsin(c*x))^2,x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\sqrt{d+ex^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^2),x]
[Out] Defer[Int][1/(Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^2), x]
```

Rubi steps

$$\int \frac{1}{\sqrt{d+ex^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx=\int \frac{1}{\sqrt{d+ex^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Mathematica [A] time = 12.40, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{d+ex^2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^2),x]
[Out] Integrate[1/(Sqrt[d + e*x^2]*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.67, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{ex^2+d}}{a^2ex^2+a^2d+\left(b^2ex^2+b^2d\right)\arcsin\left(cx\right)^2+2\left(abex^2+abd\right)\arcsin\left(cx\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^(1/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
[Out] integral(sqrt(e*x^2 + d)/(a^2*e*x^2 + a^2*d + (b^2*e*x^2 + b^2*d)*arcsin(c*
x)^2 + 2*(a*b*e*x^2 + a*b*d)*arcsin(c*x)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{ex^2+d}\left(b\arcsin\left(cx\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^(1/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
[Out] integrate(1/(sqrt(e*x^2 + d)*(b*arcsin(c*x) + a)^2), x)
```

maple [A] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{e\,x^{2}+d}\;\left(a+b \arcsin\left(c x\right)\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x^2+d)^(1/2)/(a+b*arcsin(c*x))^2,x)
[Out] int(1/(e*x^2+d)^(1/2)/(a+b*arcsin(c*x))^2,x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^(1/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,\sqrt{e\,x^2+d}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*asin(c*x))^2*(d + e*x^2)^(1/2)),x)
[Out] int(1/((a + b*asin(c*x))^2*(d + e*x^2)^(1/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b \operatorname{asin}{\left(c x \right)}\right)^{2} \sqrt{d + e x^{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x**2+d)**(1/2)/(a+b*asin(c*x))**2,x)
[Out] Integral(1/((a + b*asin(c*x))**2*sqrt(d + e*x**2)), x)
```

3.684 $\int \frac{1}{\left(d+ex^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=25

$$\text{Int}\left(\frac{1}{\left(d+ex^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

```
[Out] Unintegrable(1/(e*x^2+d)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\left(d+ex^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((d + e*x^2)^(3/2)*(a + b*ArcSin[c*x])^2),x]
[Out] Defer[Int][1/((d + e*x^2)^(3/2)*(a + b*ArcSin[c*x])^2), x]
```

Rubi steps

$$\int \frac{1}{\left(d+ex^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx=\int \frac{1}{\left(d+ex^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Mathematica [A] time = 27.41, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(d+ex^2\right)^{3/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((d + e*x^2)^(3/2)*(a + b*ArcSin[c*x])^2),x]
[Out] Integrate[1/((d + e*x^2)^(3/2)*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{ex^2+d}}{a^2e^2x^4+2\,a^2dex^2+a^2d^2+\left(b^2e^2x^4+2\,b^2dex^2+b^2d^2\right)\arcsin(cx)^2+2\left(abe^2x^4+2\,abdex^2+abd^2\right)a\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
[Out] integral(sqrt(e*x^2 + d)/(a^2*e^2*x^4 + 2*a^2*d*e*x^2 + a^2*d^2 + (b^2*e^2*
x^4 + 2*b^2*d*e*x^2 + b^2*d^2)*arcsin(c*x)^2 + 2*(a*b*e^2*x^4 + 2*a*b*d*e*x
^2 + a*b*d^2)*arcsin(c*x)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(ex^2+d\right)^{\frac{3}{2}}\left(b\arcsin(cx)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((e*x^2 + d)^(3/2)*(b*arcsin(c*x) + a)^2), x)
```

maple [A] time = 0.40, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(e\,x^{2}+d\right)^{\frac{3}{2}} \left(a +b \arcsin \left(c x \right)\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x^2+d)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

```
[Out] int(1/(e*x^2+d)^(3/2)/(a+b*arcsin(c*x))^2,x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^(3/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(e\,x^2+d\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*asin(c*x))^2*(d + e*x^2)^(3/2)),x)
```

```
[Out] int(1/((a + b*asin(c*x))^2*(d + e*x^2)^(3/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b \operatorname{asin}{\left(c x \right)}\right)^{2} \left(d + e x^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x**2+d)**(3/2)/(a+b*asin(c*x))**2,x)
```

```
[Out] Integral(1/((a + b*asin(c*x))**2*(d + e*x**2)**(3/2)), x)
```

3.685 $\int \frac{1}{\left(d+ex^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$

Optimal. Leaf size=25

$$\text{Int}\left(\frac{1}{\left(d+ex^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2},x\right)$$

```
[Out] Unintegrable(1/(e*x^2+d)^(5/2)/(a+b*arcsin(c*x))^2,x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\left(d+ex^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((d + e*x^2)^(5/2)*(a + b*ArcSin[c*x])^2),x]
[Out] Defer[Int][1/((d + e*x^2)^(5/2)*(a + b*ArcSin[c*x])^2), x]
```

Rubi steps

$$\int \frac{1}{\left(d+ex^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx=\int \frac{1}{\left(d+ex^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Mathematica [A] time = 51.99, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(d+ex^2\right)^{5/2}\left(a+b\sin^{-1}(cx)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((d + e*x^2)^(5/2)*(a + b*ArcSin[c*x])^2),x]
[Out] Integrate[1/((d + e*x^2)^(5/2)*(a + b*ArcSin[c*x])^2), x]
```

fricas [A] time = 0.50, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{ex^2+d}}{a^2e^3x^6+3\,a^2de^2x^4+3\,a^2d^2ex^2+a^2d^3+\left(b^2e^3x^6+3\,b^2de^2x^4+3\,b^2d^2ex^2+b^2d^3\right)\arcsin\left(cx\right)^2+2\left(a\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="fricas")
[Out] integral(sqrt(e*x^2 + d)/(a^2*e^3*x^6 + 3*a^2*d*e^2*x^4 + 3*a^2*d^2*e*x^2 +
 a^2*d^3 + (b^2*e^3*x^6 + 3*b^2*d*e^2*x^4 + 3*b^2*d^2*e*x^2 + b^2*d^3)*arcs
in(c*x)^2 + 2*(a*b*e^3*x^6 + 3*a*b*d*e^2*x^4 + 3*a*b*d^2*e*x^2 + a*b*d^3)*a
rcsin(c*x)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(ex^2+d\right)^{\frac{5}{2}}\left(b\arcsin\left(cx\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="giac")
[Out] integrate(1/((e*x^2 + d)^(5/2)*(b*arcsin(c*x) + a)^2), x)
```

maple [A] time = 0.42, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(e\,x^{2}+d\right)^{\frac{5}{2}} \left(a +b \arcsin \left(c x \right)\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x^2+d)^(5/2)/(a+b*arcsin(c*x))^2,x)
[Out] int(1/(e*x^2+d)^(5/2)/(a+b*arcsin(c*x))^2,x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^(5/2)/(a+b*arcsin(c*x))^2,x, algorithm="maxima")
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^2\,{\left(e\,x^2+d\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*asin(c*x))^2*(d + e*x^2)^(5/2)),x)
[Out] int(1/((a + b*asin(c*x))^2*(d + e*x^2)^(5/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b \operatorname{asin}{\left(c x \right)}\right)^{2} \left(d + e x^{2}\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x**2+d)**(5/2)/(a+b*asin(c*x))**2,x)
[Out] Integral(1/((a + b*asin(c*x))**2*(d + e*x**2)**(5/2)), x)
```

3.686 $\int \left(d+ex^2\right)^2 \sqrt{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=754

$$\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,e^2\sin\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{8c^5}-\frac{\sqrt{\frac{\pi}{6}}\sqrt{b}\,e^2\sin\left(\frac{3a}{b}\right)C\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{16c^5}+\frac{\sqrt{\frac{\pi}{10}}\sqrt{b}\,e^2\sin\left(\frac{5a}{b}\right)C\left(\frac{\sqrt{\frac{10}{\pi}}\sqrt{\cdots}}{\cdots}\right)}{80c^5}$$

```
[Out] -1/800*e^2*cos(5*a/b)*FresnelS(10^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^
(1/2))*b^(1/2)*10^(1/2)*Pi^(1/2)/c^5+1/800*e^2*FresnelC(10^(1/2)/Pi^(1/2)*(
a+b*arcsin(c*x))^(1/2)/b^(1/2))*sin(5*a/b)*b^(1/2)*10^(1/2)*Pi^(1/2)/c^5+1/
36*d*e*cos(3*a/b)*FresnelS(6^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2)
)*b^(1/2)*6^(1/2)*Pi^(1/2)/c^3+1/96*e^2*cos(3*a/b)*FresnelS(6^(1/2)/Pi^(1/2
)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*b^(1/2)*6^(1/2)*Pi^(1/2)/c^5-1/36*d*e*Fr
esnelC(6^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*sin(3*a/b)*b^(1/2)
*6^(1/2)*Pi^(1/2)/c^3-1/96*e^2*FresnelC(6^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^
(1/2)/b^(1/2))*sin(3*a/b)*b^(1/2)*6^(1/2)*Pi^(1/2)/c^5-1/2*d^2*cos(a/b)*Fre
snelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*b^(1/2)*2^(1/2)*Pi^
(1/2)/c-1/4*d*e*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/
b^(1/2))*b^(1/2)*2^(1/2)*Pi^(1/2)/c^3-1/16*e^2*cos(a/b)*FresnelS(2^(1/2)/Pi
^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*b^(1/2)*2^(1/2)*Pi^(1/2)/c^5+1/2*d^
2*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*sin(a/b)*b^(1/
2)*2^(1/2)*Pi^(1/2)/c+1/4*d*e*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(
1/2)/b^(1/2))*sin(a/b)*b^(1/2)*2^(1/2)*Pi^(1/2)/c^3+1/16*e^2*FresnelC(2^(1/
2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*sin(a/b)*b^(1/2)*2^(1/2)*Pi^(1
/2)/c^5+d^2*x*(a+b*arcsin(c*x))^(1/2)+2/3*d*e*x^3*(a+b*arcsin(c*x))^(1/2)+1
/5*e^2*x^5*(a+b*arcsin(c*x))^(1/2)
```

Rubi [A] time = 2.26, antiderivative size = 754, normalized size of antiderivative = 1.00, number of steps used = 42, number of rules used = 10, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.454, Rules used = {4667, 4619, 4723, 3306, 3305, 3351, 3304, 3352, 4629, 3312}

$$\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,de\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{2c^3}-\frac{\sqrt{\frac{\pi}{6}}\sqrt{b}\,de\sin\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{6c^3}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,de\,\text{c}\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x^2)^2*Sqrt[a + b*ArcSin[c*x]],x]
```

```
[Out] d^2*x*Sqrt[a + b*ArcSin[c*x]] + (2*d*e*x^3*Sqrt[a + b*ArcSin[c*x]])/3 + (e^
2*x^5*Sqrt[a + b*ArcSin[c*x]])/5 - (Sqrt[b]*d^2*Sqrt[Pi/2]*Cos[a/b]*Fresnel
S[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/c - (Sqrt[b]*d*e*Sqrt[Pi/2
]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/(2*c^3)
- (Sqrt[b]*e^2*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c
*x]])/Sqrt[b]])/(8*c^5) + (Sqrt[b]*d*e*Sqrt[Pi/6]*Cos[(3*a)/b]*FresnelS[(Sq
rt[6/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/(6*c^3) + (Sqrt[b]*e^2*Sqrt[Pi/
6]*Cos[(3*a)/b]*FresnelS[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/(16
*c^5) - (Sqrt[b]*e^2*Sqrt[Pi/10]*Cos[(5*a)/b]*FresnelS[(Sqrt[10/Pi]*Sqrt[a
+ b*ArcSin[c*x]])/Sqrt[b]])/(80*c^5) + (Sqrt[b]*d^2*Sqrt[Pi/2]*FresnelC[(Sq
rt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[a/b])/c + (Sqrt[b]*d*e*Sqrt[
Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[a/b])/(2*c
^3) + (Sqrt[b]*e^2*Sqrt[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])
/Sqrt[b]]*Sin[a/b])/(8*c^5) - (Sqrt[b]*d*e*Sqrt[Pi/6]*FresnelC[(Sqrt[6/Pi]*
Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[(3*a)/b])/(6*c^3) - (Sqrt[b]*e^2*Sqrt
[Pi/6]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[(3*a)/b])
/(16*c^5) + (Sqrt[b]*e^2*Sqrt[Pi/10]*FresnelC[(Sqrt[10/Pi]*Sqrt[a + b*ArcSi
n[c*x]])/Sqrt[b]]*Sin[(5*a)/b])/(80*c^5)
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4629

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^(m + 1)*(a + b*ArcSin[c*x])^n)/(m + 1), x] - Dist[(b*c*n)/(m + 1), Int[(x
^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
```

```
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \left(d+ex^2\right)^2 \sqrt{a+b\sin^{-1}(cx)}\,dx = \int \left(d^2\sqrt{a+b\sin^{-1}(cx)} + 2dex^2\sqrt{a+b\sin^{-1}(cx)} + e^2x^4\sqrt{a+b\sin^{-1}(cx)}\right.$$

$$= d^2\int \sqrt{a+b\sin^{-1}(cx)}\,dx + (2de)\int x^2\sqrt{a+b\sin^{-1}(cx)}\,dx + e^2\int x^4\sqrt{a}$$

$$= d^2x\sqrt{a+b\sin^{-1}(cx)} + \frac{2}{3}dex^3\sqrt{a+b\sin^{-1}(cx)} + \frac{1}{5}e^2x^5\sqrt{a+b\sin^{-1}(cx)}$$

$$= d^2x\sqrt{a+b\sin^{-1}(cx)} + \frac{2}{3}dex^3\sqrt{a+b\sin^{-1}(cx)} + \frac{1}{5}e^2x^5\sqrt{a+b\sin^{-1}(cx)}$$

$$= d^2x\sqrt{a+b\sin^{-1}(cx)} + \frac{2}{3}dex^3\sqrt{a+b\sin^{-1}(cx)} + \frac{1}{5}e^2x^5\sqrt{a+b\sin^{-1}(cx)}$$

$$= d^2x\sqrt{a+b\sin^{-1}(cx)} + \frac{2}{3}dex^3\sqrt{a+b\sin^{-1}(cx)} + \frac{1}{5}e^2x^5\sqrt{a+b\sin^{-1}(cx)}$$

$$= d^2x\sqrt{a+b\sin^{-1}(cx)} + \frac{2}{3}dex^3\sqrt{a+b\sin^{-1}(cx)} + \frac{1}{5}e^2x^5\sqrt{a+b\sin^{-1}(cx)}$$

$$= d^2x\sqrt{a+b\sin^{-1}(cx)} + \frac{2}{3}dex^3\sqrt{a+b\sin^{-1}(cx)} + \frac{1}{5}e^2x^5\sqrt{a+b\sin^{-1}(cx)}$$

$$= d^2x\sqrt{a+b\sin^{-1}(cx)} + \frac{2}{3}dex^3\sqrt{a+b\sin^{-1}(cx)} + \frac{1}{5}e^2x^5\sqrt{a+b\sin^{-1}(cx)}$$

Mathematica [C] time = 1.68, size = 400, normalized size = 0.53

$$be^{-\frac{5ia}{b}}\left(-e\left(25\sqrt{3}e^{\frac{2ia}{b}}\left(8c^2d+3e\right)\sqrt{-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}}\,\Gamma\left(\frac{3}{2},-\frac{3i\left(a+b\sin^{-1}(cx)\right)}{b}\right)+25\sqrt{3}e^{\frac{8ia}{b}}\left(8c^2d+3e\right)\sqrt{\frac{i\left(a+b\sin^{-1}(cx\right.}{b}}\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(d + e*x^2)^2*Sqrt[a + b*ArcSin[c*x]],x]
```

```
[Out] (b*(450*(8*c^4*d^2 + 4*c^2*d*e + e^2)*E^(((4*I)*a)/b)*Sqrt[((-I)*(a + b*Arc
Sin[c*x]))/b]*Gamma[3/2, ((-I)*(a + b*ArcSin[c*x]))/b] + 450*(8*c^4*d^2 + 4
*c^2*d*e + e^2)*E^(((6*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gamma[3/2,
(I*(a + b*ArcSin[c*x]))/b] - e*(25*Sqrt[3]*(8*c^2*d + 3*e)*E^(((2*I)*a)/b)*
Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*Gamma[3/2, ((-3*I)*(a + b*ArcSin[c*x]))/
b] + 25*Sqrt[3]*(8*c^2*d + 3*e)*E^(((8*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c*x])
)/b]*Gamma[3/2, ((3*I)*(a + b*ArcSin[c*x]))/b] - 9*Sqrt[5]*e*(Sqrt[((-I)*(a
 + b*ArcSin[c*x]))/b]*Gamma[3/2, ((-5*I)*(a + b*ArcSin[c*x]))/b] + E^(((10*
I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gamma[3/2, ((5*I)*(a + b*ArcSin[c*
x]))/b]))))/(7200*c^5*E^(((5*I)*a)/b)*Sqrt[a + b*ArcSin[c*x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2*(a+b*arcsin(c*x))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [C] time = 4.59, size = 3371, normalized size = 4.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2*(a+b*arcsin(c*x))^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*sqrt(pi)*a*b^2*d^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/s
qrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b)
/((I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*c) + 1/4*I*sqrt(2)*sqrt(pi)*b^3*d
^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sq
rt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^3/sqrt(abs(b)) + b^2*
sqrt(abs(b)))*c) + 1/2*sqrt(2)*sqrt(pi)*a*b^2*d^2*erf(1/2*I*sqrt(2)*sqrt(b*
arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(ab
s(b))/b)*e^(-I*a/b)/((-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*c) - 1/4*I*sq
rt(2)*sqrt(pi)*b^3*d^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b
)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^
3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*c) - sqrt(pi)*a*b*d^2*erf(-1/2*I*sqrt(2)
*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)
*sqrt(abs(b))/b)*e^(I*a/b)/((I*sqrt(2)*b^2/sqrt(abs(b)) + sqrt(2)*b*sqrt(ab
s(b)))*c) - sqrt(pi)*a*b*d^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt
(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/(
(-I*sqrt(2)*b^2/sqrt(abs(b)) + sqrt(2)*b*sqrt(abs(b)))*c) + 1/4*sqrt(2)*sqr
t(pi)*a*b^2*d*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2
*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b + 1)/((I*b^3/sqrt
(abs(b)) + b^2*sqrt(abs(b)))*c^3) + 1/8*I*sqrt(2)*sqrt(pi)*b^3*d*erf(-1/2*I
*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c
*x) + a)*sqrt(abs(b))/b)*e^(I*a/b + 1)/((I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(
b)))*c^3) + 1/4*sqrt(2)*sqrt(pi)*a*b^2*d*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(c*
x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*
e^(-I*a/b + 1)/((-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*c^3) - 1/8*I*sqrt(
2)*sqrt(pi)*b^3*d*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) -
1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(-I*a/b + 1)/((-I*b^3
/sqrt(abs(b)) + b^2*sqrt(abs(b)))*c^3) - 1/2*I*sqrt(b*arcsin(c*x) + a)*d^2*
e^(I*arcsin(c*x))/c + 1/2*I*sqrt(b*arcsin(c*x) + a)*d^2*e^(-I*arcsin(c*x))/
c - 1/2*sqrt(pi)*a*b^(3/2)*d*erf(-1/2*sqrt(6)*sqrt(b*arcsin(c*x) + a)/sqrt(
b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(c*x) + a)*sqrt(b)/abs(b))*e^(3*I*a/b + 1)/
((sqrt(6)*b^2 + I*sqrt(6)*b^3/abs(b))*c^3) - 1/12*I*sqrt(pi)*b^(5/2)*d*erf(
-1/2*sqrt(6)*sqrt(b*arcsin(c*x) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(
c*x) + a)*sqrt(b)/abs(b))*e^(3*I*a/b + 1)/((sqrt(6)*b^2 + I*sqrt(6)*b^3/abs
(b))*c^3) - 1/2*sqrt(pi)*a*b^(3/2)*d*erf(-1/2*sqrt(6)*sqrt(b*arcsin(c*x) +
a)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b*arcsin(c*x) + a)*sqrt(b)/abs(b))*e^(-3*I*
a/b + 1)/((sqrt(6)*b^2 - I*sqrt(6)*b^3/abs(b))*c^3) + 1/12*I*sqrt(pi)*b^(5/
2)*d*erf(-1/2*sqrt(6)*sqrt(b*arcsin(c*x) + a)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(
b*arcsin(c*x) + a)*sqrt(b)/abs(b))*e^(-3*I*a/b + 1)/((sqrt(6)*b^2 - I*sqrt(
6)*b^3/abs(b))*c^3) + 1/2*sqrt(pi)*a*b*d*erf(-1/2*sqrt(6)*sqrt(b*arcsin(c*x
) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(c*x) + a)*sqrt(b)/abs(b))*e^(3
*I*a/b + 1)/((sqrt(6)*b^(3/2) + I*sqrt(6)*b^(5/2)/abs(b))*c^3) - 1/2*sqrt(p
i)*a*b*d*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt
(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b + 1)/((I*sqrt(2)*b^2/s
qrt(abs(b)) + sqrt(2)*b*sqrt(abs(b)))*c^3) - 1/2*sqrt(pi)*a*b*d*erf(1/2*I*s
qrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x
) + a)*sqrt(abs(b))/b)*e^(-I*a/b + 1)/((-I*sqrt(2)*b^2/sqrt(abs(b)) + sqrt(
```

```
2)*b*sqrt(abs(b)))*c^3) + 1/2*sqrt(pi)*a*b*d*erf(-1/2*sqrt(6)*sqrt(b*arcsin
(c*x) + a)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b*arcsin(c*x) + a)*sqrt(b)/abs(b))*
e^(-3*I*a/b + 1)/((sqrt(6)*b^(3/2) - I*sqrt(6)*b^(5/2)/abs(b))*c^3) + 1/16*
sqrt(2)*sqrt(pi)*a*b^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(
b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b + 2)/((I
*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*c^5) + 1/32*I*sqrt(2)*sqrt(pi)*b^3*er
f(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*
arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b + 2)/((I*b^3/sqrt(abs(b)) + b^2*s
qrt(abs(b)))*c^5) + 1/16*sqrt(2)*sqrt(pi)*a*b^2*erf(1/2*I*sqrt(2)*sqrt(b*ar
csin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(
b))/b)*e^(-I*a/b + 2)/((-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*c^5) - 1/32
*I*sqrt(2)*sqrt(pi)*b^3*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(
b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(-I*a/b + 2)/((
-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*c^5) - 1/32*sqrt(6)*sqrt(pi)*a*b^(3
/2)*erf(-1/2*sqrt(6)*sqrt(b*arcsin(c*x) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b
*arcsin(c*x) + a)*sqrt(b)/abs(b))*e^(3*I*a/b + 2)/((b^2 + I*b^3/abs(b))*c^5
) - 1/32*sqrt(6)*sqrt(pi)*a*b^(3/2)*erf(-1/2*sqrt(6)*sqrt(b*arcsin(c*x) + a
)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b*arcsin(c*x) + a)*sqrt(b)/abs(b))*e^(-3*I*a
/b + 2)/((b^2 - I*b^3/abs(b))*c^5) + 1/12*I*sqrt(b*arcsin(c*x) + a)*d*e^(3*
I*arcsin(c*x) + 1)/c^3 - 1/4*I*sqrt(b*arcsin(c*x) + a)*d*e^(I*arcsin(c*x) +
 1)/c^3 + 1/4*I*sqrt(b*arcsin(c*x) + a)*d*e^(-I*arcsin(c*x) + 1)/c^3 - 1/12
*I*sqrt(b*arcsin(c*x) + a)*d*e^(-3*I*arcsin(c*x) + 1)/c^3 + 1/16*sqrt(pi)*a
*b^(3/2)*erf(-1/2*sqrt(10)*sqrt(b*arcsin(c*x) + a)/sqrt(b) - 1/2*I*sqrt(10)
*sqrt(b*arcsin(c*x) + a)*sqrt(b)/abs(b))*e^(5*I*a/b + 2)/((sqrt(10)*b^2 + I
*sqrt(10)*b^3/abs(b))*c^5) + 1/160*I*sqrt(pi)*b^(5/2)*erf(-1/2*sqrt(10)*sqr
t(b*arcsin(c*x) + a)/sqrt(b) - 1/2*I*sqrt(10)*sqrt(b*arcsin(c*x) + a)*sqrt(
b)/abs(b))*e^(5*I*a/b + 2)/((sqrt(10)*b^2 + I*sqrt(10)*b^3/abs(b))*c^5) - 1
/32*I*sqrt(pi)*b^(5/2)*erf(-1/2*sqrt(6)*sqrt(b*arcsin(c*x) + a)/sqrt(b) - 1
/2*I*sqrt(6)*sqrt(b*arcsin(c*x) + a)*sqrt(b)/abs(b))*e^(3*I*a/b + 2)/((sqrt
(6)*b^2 + I*sqrt(6)*b^3/abs(b))*c^5) + 1/32*I*sqrt(pi)*b^(5/2)*erf(-1/2*sqr
t(6)*sqrt(b*arcsin(c*x) + a)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b*arcsin(c*x) + a
)*sqrt(b)/abs(b))*e^(-3*I*a/b + 2)/((sqrt(6)*b^2 - I*sqrt(6)*b^3/abs(b))*c^
5) + 1/16*sqrt(pi)*a*b^(3/2)*erf(-1/2*sqrt(10)*sqrt(b*arcsin(c*x) + a)/sqrt
(b) + 1/2*I*sqrt(10)*sqrt(b*arcsin(c*x) + a)*sqrt(b)/abs(b))*e^(-5*I*a/b +
2)/((sqrt(10)*b^2 - I*sqrt(10)*b^3/abs(b))*c^5) - 1/160*I*sqrt(pi)*b^(5/2)*
erf(-1/2*sqrt(10)*sqrt(b*arcsin(c*x) + a)/sqrt(b) + 1/2*I*sqrt(10)*sqrt(b*a
rcsin(c*x) + a)*sqrt(b)/abs(b))*e^(-5*I*a/b + 2)/((sqrt(10)*b^2 - I*sqrt(10
)*b^3/abs(b))*c^5) - 1/16*sqrt(pi)*a*b*erf(-1/2*sqrt(10)*sqrt(b*arcsin(c*x)
 + a)/sqrt(b) - 1/2*I*sqrt(10)*sqrt(b*arcsin(c*x) + a)*sqrt(b)/abs(b))*e^(5
*I*a/b + 2)/((sqrt(10)*b^(3/2) + I*sqrt(10)*b^(5/2)/abs(b))*c^5) - 1/8*sqrt
(pi)*a*b*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt
(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b + 2)/((I*sqrt(2)*b^2/s
qrt(abs(b)) + sqrt(2)*b*sqrt(abs(b)))*c^5) - 1/8*sqrt(pi)*a*b*erf(1/2*I*sqr
t(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x)
+ a)*sqrt(abs(b))/b)*e^(-I*a/b + 2)/((-I*sqrt(2)*b^2/sqrt(abs(b)) + sqrt(2)
*b*sqrt(abs(b)))*c^5) - 1/16*sqrt(pi)*a*b*erf(-1/2*sqrt(10)*sqrt(b*arcsin(c
*x) + a)/sqrt(b) + 1/2*I*sqrt(10)*sqrt(b*arcsin(c*x) + a)*sqrt(b)/abs(b))*e
^(-5*I*a/b + 2)/((sqrt(10)*b^(3/2) - I*sqrt(10)*b^(5/2)/abs(b))*c^5) + 3/16
*sqrt(pi)*a*sqrt(b)*erf(-1/2*sqrt(6)*sqrt(b*arcsin(c*x) + a)/sqrt(b) - 1/2*
I*sqrt(6)*sqrt(b*arcsin(c*x) + a)*sqrt(b)/abs(b))*e^(3*I*a/b + 2)/((sqrt(6)
*b + I*sqrt(6)*b^2/abs(b))*c^5) + 3/16*sqrt(pi)*a*sqrt(b)*erf(-1/2*sqrt(6)*
sqrt(b*arcsin(c*x) + a)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b*arcsin(c*x) + a)*sqr
t(b)/abs(b))*e^(-3*I*a/b + 2)/((sqrt(6)*b - I*sqrt(6)*b^2/abs(b))*c^5) - 1/
160*I*sqrt(b*arcsin(c*x) + a)*e^(5*I*arcsin(c*x) + 2)/c^5 + 1/32*I*sqrt(b*a
rcsin(c*x) + a)*e^(3*I*arcsin(c*x) + 2)/c^5 - 1/16*I*sqrt(b*arcsin(c*x) + a
)*e^(I*arcsin(c*x) + 2)/c^5 + 1/16*I*sqrt(b*arcsin(c*x) + a)*e^(-I*arcsin(c
*x) + 2)/c^5 - 1/32*I*sqrt(b*arcsin(c*x) + a)*e^(-3*I*arcsin(c*x) + 2)/c^5
+ 1/160*I*sqrt(b*arcsin(c*x) + a)*e^(-5*I*arcsin(c*x) + 2)/c^5
```

maple [A] time = 0.50, size = 1137, normalized size = 1.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)^2*(a+b*arcsin(c*x))^(1/2),x)
```

```
[Out] -1/7200/c^5*(-200*(a+b*arcsin(c*x))^(1/2)*(1/b)^(1/2)*2^(1/2)*Pi^(1/2)*3^(1
/2)*cos(3*a/b)*FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*
x))^(1/2)/b)*b*c^2*d*e+200*(a+b*arcsin(c*x))^(1/2)*(1/b)^(1/2)*2^(1/2)*Pi^(
1/2)*3^(1/2)*sin(3*a/b)*FresnelC(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*
arcsin(c*x))^(1/2)/b)*b*c^2*d*e-75*(a+b*arcsin(c*x))^(1/2)*(1/b)^(1/2)*2^(1
/2)*Pi^(1/2)*3^(1/2)*cos(3*a/b)*FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/
2)*(a+b*arcsin(c*x))^(1/2)/b)*b*e^2+75*(a+b*arcsin(c*x))^(1/2)*(1/b)^(1/2)*
2^(1/2)*Pi^(1/2)*3^(1/2)*sin(3*a/b)*FresnelC(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)
^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*b*e^2+1200*arcsin(c*x)*sin(3*(a+b*arcsin(
c*x))/b-3*a/b)*b*c^2*d*e+1200*sin(3*(a+b*arcsin(c*x))/b-3*a/b)*a*c^2*d*e+45
0*arcsin(c*x)*sin(3*(a+b*arcsin(c*x))/b-3*a/b)*b*e^2+450*sin(3*(a+b*arcsin(
c*x))/b-3*a/b)*a*e^2+3600*(a+b*arcsin(c*x))^(1/2)*(1/b)^(1/2)*2^(1/2)*Pi^(1
/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/
b)*b*c^4*d^2-3600*(a+b*arcsin(c*x))^(1/2)*(1/b)^(1/2)*2^(1/2)*Pi^(1/2)*sin(
a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*b*c^4
*d^2+1800*(a+b*arcsin(c*x))^(1/2)*(1/b)^(1/2)*2^(1/2)*Pi^(1/2)*cos(a/b)*Fre
snelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*b*c^2*d*e-180
0*(a+b*arcsin(c*x))^(1/2)*(1/b)^(1/2)*2^(1/2)*Pi^(1/2)*sin(a/b)*FresnelC(2^
(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*b*c^2*d*e+450*(a+b*ar
csin(c*x))^(1/2)*(1/b)^(1/2)*2^(1/2)*Pi^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^
(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*b*e^2-450*(a+b*arcsin(c*x))^(1
/2)*(1/b)^(1/2)*2^(1/2)*Pi^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(
1/2)*(a+b*arcsin(c*x))^(1/2)/b)*b*e^2-7200*arcsin(c*x)*sin((a+b*arcsin(c*x)
)/b-a/b)*b*c^4*d^2-7200*sin((a+b*arcsin(c*x))/b-a/b)*a*c^4*d^2-3600*arcsin(
c*x)*sin((a+b*arcsin(c*x))/b-a/b)*b*c^2*d*e-3600*sin((a+b*arcsin(c*x))/b-a/
b)*a*c^2*d*e-900*arcsin(c*x)*sin((a+b*arcsin(c*x))/b-a/b)*b*e^2-900*sin((a+
b*arcsin(c*x))/b-a/b)*a*e^2+9*(a+b*arcsin(c*x))^(1/2)*(1/b)^(1/2)*2^(1/2)*P
i^(1/2)*5^(1/2)*cos(5*a/b)*FresnelS(2^(1/2)/Pi^(1/2)*5^(1/2)/(1/b)^(1/2)*(a
+b*arcsin(c*x))^(1/2)/b)*b*e^2-9*(a+b*arcsin(c*x))^(1/2)*(1/b)^(1/2)*2^(1/2
)*Pi^(1/2)*5^(1/2)*sin(5*a/b)*FresnelC(2^(1/2)/Pi^(1/2)*5^(1/2)/(1/b)^(1/2)
*(a+b*arcsin(c*x))^(1/2)/b)*b*e^2-90*arcsin(c*x)*sin(5*(a+b*arcsin(c*x))/b-
5*a/b)*b*e^2-90*sin(5*(a+b*arcsin(c*x))/b-5*a/b)*a*e^2)/(a+b*arcsin(c*x))^(
1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(ex^2+d\right)^2 \sqrt{b \arcsin\left(cx\right)+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2*(a+b*arcsin(c*x))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((e*x^2 + d)^2*sqrt(b*arcsin(c*x) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \sqrt{a+b\,\mathrm{asin}\left(c\,x\right)}\,\left(e\,x^2+d\right)^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^(1/2)*(d + e*x^2)^2,x)
```

```
[Out] int((a + b*asin(c*x))^(1/2)*(d + e*x^2)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{a + b \operatorname{asin}(cx)} \left(d + ex^2\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)**2*(a+b*asin(c*x))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*asin(c*x))*(d + e*x**2)**2, x)
```

3.687 $\int \left(d+ex^2\right)\sqrt{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=369

$$\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,e\sin\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{4c^3}-\frac{\sqrt{\frac{\pi}{6}}\sqrt{b}\,e\sin\left(\frac{3a}{b}\right)C\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{12c^3}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,e\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(c}}{\sqrt{b}}\right.}{4c^3}$$

```
[Out] 1/72*e*cos(3*a/b)*FresnelS(6^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2)
)*b^(1/2)*6^(1/2)*Pi^(1/2)/c^3-1/72*e*FresnelC(6^(1/2)/Pi^(1/2)*(a+b*arcsin
(c*x))^(1/2)/b^(1/2))*sin(3*a/b)*b^(1/2)*6^(1/2)*Pi^(1/2)/c^3-1/2*d*cos(a/b
)*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*b^(1/2)*2^(1/2
)*Pi^(1/2)/c-1/8*e*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/
2)/b^(1/2))*b^(1/2)*2^(1/2)*Pi^(1/2)/c^3+1/2*d*FresnelC(2^(1/2)/Pi^(1/2)*(a
+b*arcsin(c*x))^(1/2)/b^(1/2))*sin(a/b)*b^(1/2)*2^(1/2)*Pi^(1/2)/c+1/8*e*Fr
esnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*sin(a/b)*b^(1/2)*2
^(1/2)*Pi^(1/2)/c^3+d*x*(a+b*arcsin(c*x))^(1/2)+1/3*e*x^3*(a+b*arcsin(c*x))
^(1/2)
```

Rubi [A] time = 1.03, antiderivative size = 369, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 10, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {4667, 4619, 4723, 3306, 3305, 3351, 3304, 3352, 4629, 3312}

$$\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,e\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{4c^3}-\frac{\sqrt{\frac{\pi}{6}}\sqrt{b}\,e\sin\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{12c^3}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\,e\cos\left(\frac{a}{b}\right)S}{4}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x^2)*Sqrt[a + b*ArcSin[c*x]],x]
```

```
[Out] d*x*Sqrt[a + b*ArcSin[c*x]] + (e*x^3*Sqrt[a + b*ArcSin[c*x]])/3 - (Sqrt[b]*
d*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]
])/c - (Sqrt[b]*e*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSi
n[c*x]])/Sqrt[b]])/(4*c^3) + (Sqrt[b]*e*Sqrt[Pi/6]*Cos[(3*a)/b]*FresnelS[(S
qrt[6/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/(12*c^3) + (Sqrt[b]*d*Sqrt[Pi/
2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[a/b])/c + (Sq
rt[b]*e*Sqrt[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*S
in[a/b])/(4*c^3) - (Sqrt[b]*e*Sqrt[Pi/6]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*Ar
cSin[c*x]])/Sqrt[b]]*Sin[(3*a)/b])/(12*c^3)
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
```

```
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4629

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^(m + 1)*(a + b*ArcSin[c*x])^n)/(m + 1), x] - Dist[(b*c*n)/(m + 1), Int[(x
^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int (d+ex^2)\sqrt{a+b\sin^{-1}(cx)}\,dx = \int \left(d\sqrt{a+b\sin^{-1}(cx)} + ex^2\sqrt{a+b\sin^{-1}(cx)}\right)dx$$
$$= d\int \sqrt{a+b\sin^{-1}(cx)}\,dx + e\int x^2\sqrt{a+b\sin^{-1}(cx)}\,dx$$
$$= dx\sqrt{a+b\sin^{-1}(cx)} + \frac{1}{3}ex^3\sqrt{a+b\sin^{-1}(cx)} - \frac{1}{2}(bcd)\int \frac{x}{\sqrt{1-c^2x^2}\sqrt{a+b\,\mathrm{s}}}$$
$$= dx\sqrt{a+b\sin^{-1}(cx)} + \frac{1}{3}ex^3\sqrt{a+b\sin^{-1}(cx)} - \frac{(bd)\,\mathrm{Subst}\left(\int \frac{\sin(x)}{\sqrt{a+bx}}dx, x, \mathrm{sin}\right.}{2c}$$
$$= dx\sqrt{a+b\sin^{-1}(cx)} + \frac{1}{3}ex^3\sqrt{a+b\sin^{-1}(cx)} - \frac{(be)\,\mathrm{Subst}\left(\int \left(\frac{3\sin(x)}{4\sqrt{a+bx}} - \frac{\sin(3}{4\sqrt{a+}}\right.\right.}{6c^3}$$
$$= dx\sqrt{a+b\sin^{-1}(cx)} + \frac{1}{3}ex^3\sqrt{a+b\sin^{-1}(cx)} + \frac{(be)\,\mathrm{Subst}\left(\int \frac{\sin(3x)}{\sqrt{a+bx}}dx, x, \mathrm{sin}\right.}{24c^3}$$
$$= dx\sqrt{a+b\sin^{-1}(cx)} + \frac{1}{3}ex^3\sqrt{a+b\sin^{-1}(cx)} - \frac{\sqrt{b}\,d\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\,\mathrm{s}}}{\sqrt{b}}\right.}{c}$$
$$= dx\sqrt{a+b\sin^{-1}(cx)} + \frac{1}{3}ex^3\sqrt{a+b\sin^{-1}(cx)} - \frac{\sqrt{b}\,d\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\,\mathrm{s}}}{\sqrt{b}}\right.}{c}$$
$$= dx\sqrt{a+b\sin^{-1}(cx)} + \frac{1}{3}ex^3\sqrt{a+b\sin^{-1}(cx)} - \frac{\sqrt{b}\,d\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\,\mathrm{s}}}{\sqrt{b}}\right.}{c}$$

Mathematica [C] time = 0.67, size = 244, normalized size = 0.66

$$\frac{be^{-\frac{3ia}{b}}\left(9e^{\frac{2ia}{b}}(4c^2d+e)\sqrt{-\frac{i(a+b\sin^{-1}(cx))}{b}}\,\Gamma\left(\frac{3}{2},-\frac{i(a+b\sin^{-1}(cx))}{b}\right)+9e^{\frac{4ia}{b}}(4c^2d+e)\sqrt{\frac{i(a+b\sin^{-1}(cx))}{b}}\,\Gamma\left(\frac{3}{2},\frac{i(a+b\sin^{-1}(cx))}{b}\right.\right.}{72c^3\sqrt{a+b\sin^{-1}(cx)}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(d + e*x^2)*Sqrt[a + b*ArcSin[c*x]],x]
```

```
[Out] (b*(9*(4*c^2*d + e)*E^(((2*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*Gamm
a[3/2, ((-I)*(a + b*ArcSin[c*x]))/b] + 9*(4*c^2*d + e)*E^(((4*I)*a)/b)*Sqrt
[(I*(a + b*ArcSin[c*x]))/b]*Gamma[3/2, (I*(a + b*ArcSin[c*x]))/b] - Sqrt[3]
*e*(Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*Gamma[3/2, ((-3*I)*(a + b*ArcSin[c*x
]))/b] + E^(((6*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gamma[3/2, ((3*I)*
(a + b*ArcSin[c*x]))/b])))/(72*c^3*E^(((3*I)*a)/b)*Sqrt[a + b*ArcSin[c*x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)*(a+b*arcsin(c*x))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [C] time = 3.90, size = 1677, normalized size = 4.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)*(a+b*arcsin(c*x))^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*sqrt(pi)*a*b^2*d*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqr
t(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(
(I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*c) + 1/4*I*sqrt(2)*sqrt(pi)*b^3*d*e
rf(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b
*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^3/sqrt(abs(b)) + b^2*sqrt
(abs(b)))*c) + 1/2*sqrt(2)*sqrt(pi)*a*b^2*d*erf(1/2*I*sqrt(2)*sqrt(b*arcsin
(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/
b)*e^(-I*a/b)/((-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*c) - 1/4*I*sqrt(2)*
sqrt(pi)*b^3*d*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2
*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^3/sqrt(a
bs(b)) + b^2*sqrt(abs(b)))*c) - sqrt(pi)*a*b*d*erf(-1/2*I*sqrt(2)*sqrt(b*ar
csin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(
b))/b)*e^(I*a/b)/((I*sqrt(2)*b^2/sqrt(abs(b)) + sqrt(2)*b*sqrt(abs(b)))*c)
- sqrt(pi)*a*b*d*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1
/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*sqrt(2)*
b^2/sqrt(abs(b)) + sqrt(2)*b*sqrt(abs(b)))*c) + 1/8*sqrt(2)*sqrt(pi)*a*b^2*
erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(
b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b + 1)/((I*b^3/sqrt(abs(b)) + b^2
*sqrt(abs(b)))*c^3) + 1/16*I*sqrt(2)*sqrt(pi)*b^3*erf(-1/2*I*sqrt(2)*sqrt(b
*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(a
bs(b))/b)*e^(I*a/b + 1)/((I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*c^3) + 1/8
*sqrt(2)*sqrt(pi)*a*b^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(
b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(-I*a/b + 1)/((
-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*c^3) - 1/16*I*sqrt(2)*sqrt(pi)*b^3*
erf(1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b
*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(-I*a/b + 1)/((-I*b^3/sqrt(abs(b)) + b^
2*sqrt(abs(b)))*c^3) - 1/2*I*sqrt(b*arcsin(c*x) + a)*d*e^(I*arcsin(c*x))/c
+ 1/2*I*sqrt(b*arcsin(c*x) + a)*d*e^(-I*arcsin(c*x))/c - 1/4*sqrt(pi)*a*b^(
3/2)*erf(-1/2*sqrt(6)*sqrt(b*arcsin(c*x) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(
b*arcsin(c*x) + a)*sqrt(b)/abs(b))*e^(3*I*a/b + 1)/((sqrt(6)*b^2 + I*sqrt(6
)*b^3/abs(b))*c^3) - 1/24*I*sqrt(pi)*b^(5/2)*erf(-1/2*sqrt(6)*sqrt(b*arcsin
(c*x) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(c*x) + a)*sqrt(b)/abs(b))*
e^(3*I*a/b + 1)/((sqrt(6)*b^2 + I*sqrt(6)*b^3/abs(b))*c^3) - 1/4*sqrt(pi)*a
*b^(3/2)*erf(-1/2*sqrt(6)*sqrt(b*arcsin(c*x) + a)/sqrt(b) + 1/2*I*sqrt(6)*s
qrt(b*arcsin(c*x) + a)*sqrt(b)/abs(b))*e^(-3*I*a/b + 1)/((sqrt(6)*b^2 - I*s
qrt(6)*b^3/abs(b))*c^3) + 1/24*I*sqrt(pi)*b^(5/2)*erf(-1/2*sqrt(6)*sqrt(b*a
rcsin(c*x) + a)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b*arcsin(c*x) + a)*sqrt(b)/abs
(b))*e^(-3*I*a/b + 1)/((sqrt(6)*b^2 - I*sqrt(6)*b^3/abs(b))*c^3) + 1/4*sqrt
(pi)*a*b*erf(-1/2*sqrt(6)*sqrt(b*arcsin(c*x) + a)/sqrt(b) - 1/2*I*sqrt(6)*s
qrt(b*arcsin(c*x) + a)*sqrt(b)/abs(b))*e^(3*I*a/b + 1)/((sqrt(6)*b^(3/2) +
I*sqrt(6)*b^(5/2)/abs(b))*c^3) - 1/4*sqrt(pi)*a*b*erf(-1/2*I*sqrt(2)*sqrt(b
*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(a
bs(b))/b)*e^(I*a/b + 1)/((I*sqrt(2)*b^2/sqrt(abs(b)) + sqrt(2)*b*sqrt(abs(b
)))*c^3) - 1/4*sqrt(pi)*a*b*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(
abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(-I*a/b + 1
)/((-I*sqrt(2)*b^2/sqrt(abs(b)) + sqrt(2)*b*sqrt(abs(b)))*c^3) + 1/4*sqrt(p
i)*a*b*erf(-1/2*sqrt(6)*sqrt(b*arcsin(c*x) + a)/sqrt(b) + 1/2*I*sqrt(6)*sqr
t(b*arcsin(c*x) + a)*sqrt(b)/abs(b))*e^(-3*I*a/b + 1)/((sqrt(6)*b^(3/2) - I
*sqrt(6)*b^(5/2)/abs(b))*c^3) + 1/24*I*sqrt(b*arcsin(c*x) + a)*e^(3*I*arcsi
n(c*x) + 1)/c^3 - 1/8*I*sqrt(b*arcsin(c*x) + a)*e^(I*arcsin(c*x) + 1)/c^3 +
 1/8*I*sqrt(b*arcsin(c*x) + a)*e^(-I*arcsin(c*x) + 1)/c^3 - 1/24*I*sqrt(b*a
rcsin(c*x) + a)*e^(-3*I*arcsin(c*x) + 1)/c^3
```

maple [A] time = 0.32, size = 542, normalized size = 1.47

$$-36\cos\left(\frac{a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin(cx)}}{\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,b}\right)\sqrt{\frac{1}{b}}\,\sqrt{a+b\arcsin(cx)}\,\sqrt{\pi}\,\sqrt{2}\,b\,c^2 d+36\sin\left(\frac{a}{b}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin(cx)}}{\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,b}\right)\sqrt{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)*(a+b*arcsin(c*x))^(1/2),x)
```

```
[Out] 1/72/c^3*(-36*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*
x))^(1/2)/b)*(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)*Pi^(1/2)*2^(1/2)*b*c^2*d+3
6*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)
*(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)*Pi^(1/2)*2^(1/2)*b*c^2*d+cos(3*a/b)*Fr
esnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*3^(1
/2)*(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)*Pi^(1/2)*2^(1/2)*b*e-sin(3*a/b)*Fre
snelC(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*3^(1/
2)*(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)*Pi^(1/2)*2^(1/2)*b*e-9*cos(a/b)*Fres
nelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*(1/b)^(1/2)*(a
+b*arcsin(c*x))^(1/2)*Pi^(1/2)*2^(1/2)*b*e+9*sin(a/b)*FresnelC(2^(1/2)/Pi^(
1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*(1/b)^(1/2)*(a+b*arcsin(c*x))^(
1/2)*Pi^(1/2)*2^(1/2)*b*e+72*arcsin(c*x)*sin((a+b*arcsin(c*x))/b-a/b)*b*c^2
*d+72*sin((a+b*arcsin(c*x))/b-a/b)*a*c^2*d+18*arcsin(c*x)*sin((a+b*arcsin(c
*x))/b-a/b)*b*e-6*arcsin(c*x)*sin(3*(a+b*arcsin(c*x))/b-3*a/b)*b*e+18*sin((
a+b*arcsin(c*x))/b-a/b)*a*e-6*sin(3*(a+b*arcsin(c*x))/b-3*a/b)*a*e)/(a+b*ar
csin(c*x))^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (ex^2+d)\sqrt{b\arcsin(cx)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)*(a+b*arcsin(c*x))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((e*x^2 + d)*sqrt(b*arcsin(c*x) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \sqrt{a+b\,\mathrm{asin}(c\,x)}\,\left(e\,x^2+d\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^(1/2)*(d + e*x^2),x)
```

```
[Out] int((a + b*asin(c*x))^(1/2)*(d + e*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{a+b\,\mathrm{asin}(cx)}\,\left(d+ex^2\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)*(a+b*asin(c*x))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*asin(c*x))*(d + e*x**2), x)
```

3.688 $\int \sqrt{a+b\sin^{-1}(cx)}\,dx$

Optimal. Leaf size=120

$$\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\sin\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{c}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{c}+x\sqrt{a+b\sin^{-1}(cx)}$$

```
[Out] -1/2*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*b^
(1/2)*2^(1/2)*Pi^(1/2)/c+1/2*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1
/2)/b^(1/2))*sin(a/b)*b^(1/2)*2^(1/2)*Pi^(1/2)/c+x*(a+b*arcsin(c*x))^(1/2)
```

Rubi [A] time = 0.27, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.583, Rules used = {4619, 4723, 3306, 3305, 3351, 3304, 3352}

$$\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{c}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{b}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{c}+x\sqrt{a+b\sin^{-1}(cx)}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + b*ArcSin[c*x]],x]
```

```
[Out] x*Sqrt[a + b*ArcSin[c*x]] - (Sqrt[b]*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(Sqrt[2/P
i]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/c + (Sqrt[b]*Sqrt[Pi/2]*FresnelC[(Sqr
t[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[a/b])/c
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\begin{aligned}
\int \sqrt{a+b\sin^{-1}(cx)}\,dx &= x\sqrt{a+b\sin^{-1}(cx)}-\frac{1}{2}(bc)\int \frac{x}{\sqrt{1-c^2x^2}\sqrt{a+b\sin^{-1}(cx)}}\,dx\\
&= x\sqrt{a+b\sin^{-1}(cx)}-\frac{b\,\text{Subst}\left(\int \frac{\sin(x)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(cx)\right)}{2c}\\
&= x\sqrt{a+b\sin^{-1}(cx)}-\frac{\left(b\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{\sqrt{a+bx}}\,dx,x,\sin^{-1}(cx)\right)}{2c}+\frac{\left(b\sin\left(\frac{a}{b}\right)\right)\text{Subst}\ldots}{\ldots}\\
&= x\sqrt{a+b\sin^{-1}(cx)}-\frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \sin\left(\frac{x^2}{b}\right)dx,x,\sqrt{a+b\sin^{-1}(cx)}\right)}{c}+\frac{\sin\left(\frac{a}{b}\right)\text{Sub}\ldots}{\ldots}\\
&= x\sqrt{a+b\sin^{-1}(cx)}-\frac{\sqrt{b}\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{c}+\frac{\sqrt{b}\sqrt{\frac{\pi}{2}}C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx}\ldots}{\sqrt{b}}\right)}{c}
\end{aligned}$$

Mathematica [C] time = 0.14, size = 119, normalized size = 0.99

$$\frac{be^{-\frac{ia}{b}}\left(\sqrt{-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}}\,\Gamma\left(\frac{3}{2},-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)+e^{\frac{2ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}}\,\Gamma\left(\frac{3}{2},\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)\right)}{2c\sqrt{a+b\sin^{-1}(cx)}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[a + b*ArcSin[c*x]],x]
```

```
[Out] (b*(Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*Gamma[3/2, ((-I)*(a + b*ArcSin[c*x])
)/b] + E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gamma[3/2, (I*(a + b
*ArcSin[c*x]))/b]))/(2*c*E^((I*a)/b)*Sqrt[a + b*ArcSin[c*x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [C] time = 1.14, size = 531, normalized size = 4.42

$$\frac{\sqrt{2}\,\sqrt{\pi}\,ab\,\mathrm{erf}\left(-\frac{i\sqrt{2}\,\sqrt{b\arcsin(cx)+a}}{2\,\sqrt{|b|}}-\frac{\sqrt{2}\,\sqrt{b\arcsin(cx)+a}\,\sqrt{|b|}}{2\,b}\right)e^{\left(\frac{ia}{b}\right)}}{2\left(\frac{ib^2}{\sqrt{|b|}}+b\sqrt{|b|}\right)c}+\frac{i\sqrt{2}\,\sqrt{\pi}\,b^2\,\mathrm{erf}\left(-\frac{i\sqrt{2}\,\sqrt{b\arcsin(cx)+a}}{2\,\sqrt{|b|}}-\frac{\sqrt{2}\,\sqrt{b\arcsin}}{2}\right.}{4\left(\frac{ib^2}{\sqrt{|b|}}+b\sqrt{|b|}\right)c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*sqrt(pi)*a*b*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(ab
s(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b
^2/sqrt(abs(b)) + b*sqrt(abs(b)))*c) + 1/4*I*sqrt(2)*sqrt(pi)*b^2*erf(-1/2*
I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(
c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*
c) + 1/2*sqrt(2)*sqrt(pi)*a*b*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqr
t(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/
((-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*c) - 1/4*I*sqrt(2)*sqrt(pi)*b^2*erf
(1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*ar
csin(c*x) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^2/sqrt(abs(b)) + b*sqrt(ab
s(b)))*c) - sqrt(pi)*a*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(
b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(c*(I*s
qrt(2)*b/sqrt(abs(b)) + sqrt(2)*sqrt(abs(b)))) - sqrt(pi)*a*erf(1/2*I*sqrt(
2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) +
a)*sqrt(abs(b))/b)*e^(-I*a/b)/(c*(-I*sqrt(2)*b/sqrt(abs(b)) + sqrt(2)*sqrt(
abs(b)))) - 1/2*I*sqrt(b*arcsin(c*x) + a)*e^(I*arcsin(c*x))/c + 1/2*I*sqrt(
b*arcsin(c*x) + a)*e^(-I*arcsin(c*x))/c
```

maple [A] time = 0.01, size = 178, normalized size = 1.48

$$\frac{-\sqrt{2}\,\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,\sqrt{a+b\arcsin(cx)}\,\cos\left(\frac{a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin(cx)}}{\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,b}\right)b+\sqrt{2}\,\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,\sqrt{a+b\arcsin(cx)}\,\sin\left(\frac{a}{b}\right)\mathrm{Fres}}{2c\sqrt{a+b\arcsin(cx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^(1/2),x)
```

```
[Out] 1/2/c/(a+b*arcsin(c*x))^(1/2)*(-2^(1/2)*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcsin(c*
x))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^
(1/2)/b)*b+2^(1/2)*Pi^(1/2)*(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)*sin(a/b)*Fr
esnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*b+2*arcsin(c
*x)*sin((a+b*arcsin(c*x))/b-a/b)*b+2*sin((a+b*arcsin(c*x))/b-a/b)*a)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{b\arcsin(cx)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*arcsin(c*x) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{a+b\,\mathrm{asin}(c\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^(1/2),x)
```

```
[Out] int((a + b*asin(c*x))^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{a + b\,\mathrm{asin}\,(cx)}\; dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*asin(c*x)), x)
```

3.689 $\int \frac{\sqrt{a+b\sin^{-1}(cx)}}{d+ex^2}\,dx$

Optimal. Leaf size=25

$$\text{Int}\left(\frac{\sqrt{a+b\sin^{-1}(cx)}}{d+ex^2},x\right)$$

```
[Out] Unintegrable((a+b*arcsin(c*x))^(1/2)/(e*x^2+d),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{a+b\sin^{-1}(cx)}}{d+ex^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[a + b*ArcSin[c*x]]/(d + e*x^2),x]
[Out] Defer[Int][Sqrt[a + b*ArcSin[c*x]]/(d + e*x^2), x]
```

Rubi steps

$$\int \frac{\sqrt{a+b\sin^{-1}(cx)}}{d+ex^2}\,dx = \int \frac{\sqrt{a+b\sin^{-1}(cx)}}{d+ex^2}\,dx$$

Mathematica [A] time = 10.93, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\sin^{-1}(cx)}}{d+ex^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[a + b*ArcSin[c*x]]/(d + e*x^2),x]
[Out] Integrate[Sqrt[a + b*ArcSin[c*x]]/(d + e*x^2), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^(1/2)/(e*x^2+d),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\arcsin(cx)+a}}{ex^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^(1/2)/(e*x^2+d),x, algorithm="giac")
[Out] integrate(sqrt(b*arcsin(c*x) + a)/(e*x^2 + d), x)
```

maple [A] time = 0.58, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\arcsin\left(cx\right)}}{e\,x^{2}+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^(1/2)/(e*x^2+d),x)
```

```
[Out] int((a+b*arcsin(c*x))^(1/2)/(e*x^2+d),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\arcsin\left(cx\right)+a}}{ex^{2}+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^(1/2)/(e*x^2+d),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*arcsin(c*x) + a)/(e*x^2 + d), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\sqrt{a+b\,\mathrm{asin}\left(c\,x\right)}}{e\,x^{2}+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^(1/2)/(d + e*x^2),x)
```

```
[Out] int((a + b*asin(c*x))^(1/2)/(d + e*x^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\,\mathrm{asin}\left(cx\right)}}{d+ex^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**(1/2)/(e*x**2+d),x)
```

```
[Out] Integral(sqrt(a + b*asin(c*x))/(d + e*x**2), x)
```

3.690 $\int \frac{\sqrt{a+b\sin^{-1}(cx)}}{(d+ex^2)^2} dx$

Optimal. Leaf size=25

$$\text{Int}\left(\frac{\sqrt{a+b\sin^{-1}(cx)}}{(d+ex^2)^2},x\right)$$

```
[Out] Unintegrable((a+b*arcsin(c*x))^(1/2)/(e*x^2+d)^2,x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt{a+b\sin^{-1}(cx)}}{(d+ex^2)^2} dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[a + b*ArcSin[c*x]]/(d + e*x^2)^2,x]
[Out] Defer[Int][Sqrt[a + b*ArcSin[c*x]]/(d + e*x^2)^2, x]
```

Rubi steps

$$\int \frac{\sqrt{a+b\sin^{-1}(cx)}}{(d+ex^2)^2} dx = \int \frac{\sqrt{a+b\sin^{-1}(cx)}}{(d+ex^2)^2} dx$$

Mathematica [A] time = 23.49, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\sin^{-1}(cx)}}{(d+ex^2)^2} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[a + b*ArcSin[c*x]]/(d + e*x^2)^2,x]
[Out] Integrate[Sqrt[a + b*ArcSin[c*x]]/(d + e*x^2)^2, x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^(1/2)/(e*x^2+d)^2,x, algorithm="fricas")
[Out] Exception raised: TypeError >> Error detected within library code: integ
rate: implementation incomplete (constant residues)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^(1/2)/(e*x^2+d)^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Evaluation time: 1.19Unable to divide, perha
ps due to rounding error%%%{68719476736,[0,8,8,24,68,8,36,18]%%%}+%%%{17867
06395136,[0,8,8,24,66,8,38,19]%%%}+%%%{22058952032256,[0,8,8,24,64,8,40,20]
%%%}+%%%{172073569746944,[0,8,8,24,62,8,42,21]%%%}+%%%{951902191747072,[0,8
,8,24,60,8,44,22]%%%}+%%%{3973085266968576,[0,8,8,24,58,8,46,23]%%%}+%%%{12
995402806591488,[0,8,8,24,56,8,48,24]%%%}+%%%{34149731647094784,[0,8,8,24,5
4,8,50,25]%%%}+%%%{73325193505800192,[0,8,8,24,52,8,52,26]%%%}+%%%{13012692
6269382656,[0,8,8,24,50,8,54,27]%%%}+%%%{192297849189302272,[0,8,8,24,48,8,
56,28]%%%}+%%%{237646244204249088,[0,8,8,24,46,8,58,29]%%%}+%%%{24596872259
2792576,[0,8,8,24,44,8,60,30]%%%}+%%%{212963857428119552,[0,8,8,24,42,8,62,
31]%%%}+%%%{153631736092164096,[0,8,8,24,40,8,64,32]%%%}+%%%{91682777082101
760,[0,8,8,24,38,8,66,33]%%%}+%%%{44758438307168256,[0,8,8,24,36,8,68,34]%%
%}+%%%{17580778611277824,[0,8,8,24,34,8,70,35]%%%}+%%%{5421210800226304,[0,
8,8,24,32,8,72,36]%%%}+%%%{1263888616128512,[0,8,8,24,30,8,74,37]%%%}+%%%{2
09456965091328,[0,8,8,24,28,8,76,38]%%%}+%%%{21990232555520,[0,8,8,24,26,8,
78,39]%%%}+%%%{1099511627776,[0,8,8,24,24,8,80,40]%%%}+%%%{-2147483648,[0,6
,10,24,66,8,30,15]%%%}+%%%{62277025792,[0,6,10,24,64,8,32,16]%%%}+%%%{84825
6040960,[0,6,10,24,62,8,34,17]%%%}+%%%{7243462344704,[0,6,10,24,60,8,36,18]
%%%}+%%%{43626130309120,[0,6,10,24,58,8,38,19]%%%}+%%%{197510513557504,[0,6
,10,24,56,8,40,20]%%%}+%%%{699055319547904,[0,6,10,24,54,8,42,21]%%%}+%%%{1
984921283330048,[0,6,10,24,52,8,44,22]%%%}+%%%{4601819086979072,[0,6,10,24,
50,8,46,23]%%%}+%%%{8816010933043200,[0,6,10,24,48,8,48,24]%%%}+%%%{1406587
4012995584,[0,6,10,24,46,8,50,25]%%%}+%%%{18774236206202880,[0,6,10,24,44,8
,52,26]%%%}+%%%{20996619788877824,[0,6,10,24,42,8,54,27]%%%}+%%%{1965282330
6207232,[0,6,10,24,40,8,56,28]%%%}+%%%{15333688229232640,[0,6,10,24,38,8,58
,29]%%%}+%%%{9900653384040448,[0,6,10,24,36,8,60,30]%%%}+%%%{52309308641116
16,[0,6,10,24,34,8,62,31]%%%}+%%%{2223994195410944,[0,6,10,24,32,8,64,32]%%
%}+%%%{742316377636864,[0,6,10,24,30,8,66,33]%%%}+%%%{187303523778560,[0,6,
10,24,28,8,68,34]%%%}+%%%{33586644254720,[0,6,10,24,26,8,70,35]%%%}+%%%{381
3930958848,[0,6,10,24,24,8,72,36]%%%}+%%%{206158430208,[0,6,10,24,22,8,74,3
7]%%%}+%%%{6442450944*i,[0,6,8,24,64,9,32,16]%%%}+%%%{167503724544*i,[0,6,8
,24,62,9,34,17]%%%}+%%%{2061584302080*i,[0,6,8,24,60,9,36,18]%%%}+%%%{15977
278341120*i,[0,6,8,24,58,9,38,19]%%%}+%%%{87488483819520*i,[0,6,8,24,56,9,4
0,20]%%%}+%%%{360004158750720*i,[0,6,8,24,54,9,42,21]%%%}+%%%{1155775699353
600*i,[0,6,8,24,52,9,44,22]%%%}+%%%{2966619810693120*i,[0,6,8,24,50,9,46,23
]%%%}+%%%{6188296254259200*i,[0,6,8,24,48,9,48,24]%%%}+%%%{1060466080088064
0*i,[0,6,8,24,46,9,50,25]%%%}+%%%{15029104180985856*i,[0,6,8,24,44,9,52,26]
%%%}+%%%{17672312954290176*i,[0,6,8,24,42,9,54,27]%%%}+%%%{1724450844180480
0*i,[0,6,8,24,40,9,56,28]%%%}+%%%{13923167282135040*i,[0,6,8,24,38,9,58,29]
%%%}+%%%{9242855520337920*i,[0,6,8,24,36,9,60,30]%%%}+%%%{4992332545916928*
i,[0,6,8,24,34,9,62,31]%%%}+%%%{2159103682019328*i,[0,6,8,24,32,9,64,32]%%%
}+%%%{729865267445760*i,[0,6,8,24,30,9,66,33]%%%}+%%%{185800285224960*i,[0,
6,8,24,28,9,68,34]%%%}+%%%{33500744908800*i,[0,6,8,24,26,9,70,35]%%%}+%%%{3
813930958848*i,[0,6,8,24,24,9,72,36]%%%}+%%%{206158430208*i,[0,6,8,24,22,9,
74,37]%%%}+%%%{-1073741824,[0,6,6,24,64,10,32,16]%%%}+%%%{-30064771072,[0,6
,6,24,62,10,34,17]%%%}+%%%{-392989507584,[0,6,6,24,60,10,36,18]%%%}+%%%{-31
99750635520,[0,6,6,24,58,10,38,19]%%%}+%%%{-18249316040704,[0,6,6,24,56,10,
40,20]%%%}+%%%{-77670188580864,[0,6,6,24,54,10,42,21]%%%}+%%%{-256443907309
568,[0,6,6,24,52,10,44,22]%%%}+%%%{-673760109658112,[0,6,6,24,50,10,46,23]%
%%}+%%%{-1432962151219200,[0,6,6,24,48,10,48,24]%%%}+%%%{-2495470488256512,
[0,6,6,24,46,10,50,25]%%%}+%%%{-3584077194067968,[0,6,6,24,44,10,52,26]%%%}
+%%%{-4260959744950272,[0,6,6,24,42,10,54,27]%%%}+%%%{-4195354119503872,[0,
6,6,24,40,10,56,28]%%%}+%%%{-3412093818634240,[0,6,6,24,38,10,58,29]%%%}+%%
%{-2278359891443712,[0,6,6,24,36,10,60,30]%%%}+%%%{-1236263386480640,[0,6,6
,24,34,10,62,31]%%%}+%%%{-536545568227328,[0,6,6,24,32,10,64,32]%%%}+%%%{-1
81844620345344,[0,6,6,24,30,10,66,33]%%%}+%%%{-46374909378560,[0,6,6,24,28,
10,68,34]%%%}+%%%{-8370891259904,[0,6,6,24,26,10,70,35]%%%}+%%%{-9534827397
12,[0,6,6,24,24,10,72,36]%%%}+%%%{-51539607552,[0,6,6,24,22,10,74,37]%%%}+%
```

%%{16777216,[0,4,12,24,64,8,24,12]%%%}+%%%{637534208,[0,4,12,24,62,8,26,13]
%%%}+%%%{10502537216,[0,4,12,24,60,8,28,14]%%%}+%%%{103750303744,[0,4,12,24
,58,8,30,15]%%%}+%%%{703183454208,[0,4,12,24,56,8,32,16]%%%}+%%%{3517477552
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}+%%%{41710172241920,[0,4,12,24,50,8,38,19]%%%}+%%%{103946613948416,[0,4,12
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}+%%%{356623079964672,[0,4,12,24,34,8,54,27]%%%}+%%%{202452846510080,[0,4,1
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]%%%}+%%%{899036714369024*i,[0,4,10,24,36,9,52,26]%%%}+%%%{645793497219072*
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,10,42,21]%%%}+%%%{-283712159744000,[0,4,8,24,44,10,44,22]%%%}+%%%{-4594773
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```
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07778304,[0,0,16,24,34,8,38,19]%%%}+%%%{24557342720,[0,0,16,24,32,8,40,20]%
%%}+%%%{15720759296,[0,0,16,24,30,8,42,21]%%%}+%%%{7796113408,[0,0,16,24,28
,8,44,22]%%%}+%%%{2887778304,[0,0,16,24,26,8,46,23]%%%}+%%%{751828992,[0,0,
16,24,24,8,48,24]%%%}+%%%{122683392,[0,0,16,24,22,8,50,25]%%%}+%%%{9437184,
[0,0,16,24,20,8,52,26]%%%}+%%%{49152*i,[0,0,14,24,56,9,16,8]%%%}+%%%{128614
4*i,[0,0,14,24,54,9,18,9]%%%}+%%%{15745024*i,[0,0,14,24,52,9,20,10]%%%}+%%%
{120209408*i,[0,0,14,24,50,9,22,11]%%%}+%%%{642752512*i,[0,0,14,24,48,9,24,
12]%%%}+%%%{2559459328*i,[0,0,14,24,46,9,26,13]%%%}+%%%{7872872448*i,[0,0,1
4,24,44,9,28,14]%%%}+%%%{19136970752*i,[0,0,14,24,42,9,30,15]%%%}+%%%{37273
436160*i,[0,0,14,24,40,9,32,16]%%%}+%%%{58609016832*i,[0,0,14,24,38,9,34,17
]%%%}+%%%{74567696384*i,[0,0,14,24,36,9,36,18]%%%}+%%%{76565168128*i,[0,0,1
4,24,34,9,38,19]%%%}+%%%{62956052480*i,[0,0,14,24,32,9,40,20]%%%}+%%%{40877
326336*i,[0,0,14,24,30,9,42,21]%%%}+%%%{20489666560*i,[0,0,14,24,28,9,44,22
]%%%}+%%%{7647264768*i,[0,0,14,24,26,9,46,23]%%%}+%%%{2000420864*i,[0,0,14,
24,24,9,48,24]%%%}+%%%{327155712*i,[0,0,14,24,22,9,50,25]%%%}+%%%{25165824*
i,[0,0,14,24,20,9,52,26]%%%}+%%%{-22528,[0,0,12,24,56,10,16,8]%%%}+%%%{-681
```

984,[0,0,12,24,54,10,18,9]%%%}+%%%{-9402368,[0,0,12,24,52,10,20,10]%%%}+%%%
{-79233024,[0,0,12,24,50,10,22,11]%%%}+%%%{-460300288,[0,0,12,24,48,10,24,1
2]%%%}+%%%{-1966190592,[0,0,12,24,46,10,26,13]%%%}+%%%{-6419050496,[0,0,12,
24,44,10,28,14]%%%}+%%%{-16411369472,[0,0,12,24,42,10,30,15]%%%}+%%%{-33358
960640,[0,0,12,24,40,10,32,16]%%%}+%%%{-54368659456,[0,0,12,24,38,10,34,17]
%%%}+%%%{-71265507328,[0,0,12,24,36,10,36,18]%%%}+%%%{-74983481344,[0,0,12,
24,34,10,38,19]%%%}+%%%{-62876299264,[0,0,12,24,32,10,40,20]%%%}+%%%{-41454
944256,[0,0,12,24,30,10,42,21]%%%}+%%%{-21018492928,[0,0,12,24,28,10,44,22]
%%%}+%%%{-7907835904,[0,0,12,24,26,10,46,23]%%%}+%%%{-2078932992,[0,0,12,24
,24,10,48,24]%%%}+%%%{-340787200,[0,0,12,24,22,10,50,25]%%%}+%%%{-26214400,
[0,0,12,24,20,10,52,26]%%%}+%%%{-4096*i,[0,0,10,24,56,11,16,8]%%%}+%%%{-143
360*i,[0,0,10,24,54,11,18,9]%%%}+%%%{-2271232*i,[0,0,10,24,52,11,20,10]%%%}
+%%%{-21630976*i,[0,0,10,24,50,11,22,11]%%%}+%%%{-139548672*i,[0,0,10,24,48
,11,24,12]%%%}+%%%{-651476992*i,[0,0,10,24,46,11,26,13]%%%}+%%%{-2292477952
*i,[0,0,10,24,44,11,28,14]%%%}+%%%{-6242279424*i,[0,0,10,24,42,11,30,15]%%%
}+%%%{-13374816256*i,[0,0,10,24,40,11,32,16]%%%}+%%%{-22772330496*i,[0,0,10
,24,38,11,34,17]%%%}+%%%{-30940416000*i,[0,0,10,24,36,11,36,18]%%%}+%%%{-33
514082304*i,[0,0,10,24,34,11,38,19]%%%}+%%%{-28757792768*i,[0,0,10,24,32,11
,40,20]%%%}+%%%{-19300278272*i,[0,0,10,24,30,11,42,21]%%%}+%%%{-9915244544*
i,[0,0,10,24,28,11,44,22]%%%}+%%%{-3764649984*i,[0,0,10,24,26,11,46,23]%%%}
+%%%{-995295232*i,[0,0,10,24,24,11,48,24]%%%}+%%%{-163577856*i,[0,0,10,24,2
2,11,50,25]%%%}+%%%{-12582912*i,[0,0,10,24,20,11,52,26]%%%}+%%%{256,[0,0,8,
24,56,12,16,8]%%%}+%%%{5632,[0,0,8,24,54,12,18,9]%%%}+%%%{83968,[0,0,8,24,5
2,12,20,10]%%%}+%%%{971776,[0,0,8,24,50,12,22,11]%%%}+%%%{8010752,[0,0,8,24
,48,12,24,12]%%%}+%%%{46535680,[0,0,8,24,46,12,26,13]%%%}+%%%{195884032,[0,
0,8,24,44,12,28,14]%%%}+%%%{615667712,[0,0,8,24,42,12,30,15]%%%}+%%%{147862
4512,[0,0,8,24,40,12,32,16]%%%}+%%%{2755911168,[0,0,8,24,38,12,34,17]%%%}+%
%%{4021228544,[0,0,8,24,36,12,36,18]%%%}+%%%{4605281280,[0,0,8,24,34,12,38,
19]%%%}+%%%{4124808704,[0,0,8,24,32,12,40,20]%%%}+%%%{2858960896,[0,0,8,24,
30,12,42,21]%%%}+%%%{1503451136,[0,0,8,24,28,12,44,22]%%%}+%%%{579993600,[0
,0,8,24,26,12,46,23]%%%}+%%%{154828800,[0,0,8,24,24,12,48,24]%%%}+%%%{25559
040,[0,0,8,24,22,12,50,25]%%%}+%%%{1966080,[0,0,8,24,20,12,52,26]%%%}+%%%{-
1536*i,[0,0,6,24,54,13,18,9]%%%}+%%%{-45056*i,[0,0,6,24,52,13,20,10]%%%}+%%
%{-578560*i,[0,0,6,24,50,13,22,11]%%%}+%%%{-4428288*i,[0,0,6,24,48,13,24,12
]%%%}+%%%{-22948864*i,[0,0,6,24,46,13,26,13]%%%}+%%%{-86220800*i,[0,0,6,24,
44,13,28,14]%%%}+%%%{-244662272*i,[0,0,6,24,42,13,30,15]%%%}+%%%{-537869312
*i,[0,0,6,24,40,13,32,16]%%%}+%%%{-930248192*i,[0,0,6,24,38,13,34,17]%%%}+%
%%{-1275635712*i,[0,0,6,24,36,13,36,18]%%%}+%%%{-1388960768*i,[0,0,6,24,34,
13,38,19]%%%}+%%%{-1195164160*i,[0,0,6,24,32,13,40,20]%%%}+%%%{-803235840*i
,[0,0,6,24,30,13,42,21]%%%}+%%%{-412923904*i,[0,0,6,24,28,13,44,22]%%%}+%%%
{-156827648*i,[0,0,6,24,26,13,46,23]%%%}+%%%{-41467904*i,[0,0,6,24,24,13,48
,24]%%%}+%%%{-6815744*i,[0,0,6,24,22,13,50,25]%%%}+%%%{-524288*i,[0,0,6,24,
20,13,52,26]%%%}+%%%{128,[0,0,4,24,54,14,18,9]%%%}+%%%{4480,[0,0,4,24,52,14
,20,10]%%%}+%%%{71680,[0,0,4,24,50,14,22,11]%%%}+%%%{671488,[0,0,4,24,48,14
,24,12]%%%}+%%%{4141824,[0,0,4,24,46,14,26,13]%%%}+%%%{18038016,[0,0,4,24,4
4,14,28,14]%%%}+%%%{57974272,[0,0,4,24,42,14,30,15]%%%}+%%%{141480960,[0,0,
4,24,40,14,32,16]%%%}+%%%{266884224,[0,0,4,24,38,14,34,17]%%%}+%%%{39301568
0,[0,0,4,24,36,14,36,18]%%%}+%%%{453285376,[0,0,4,24,34,14,38,19]%%%}+%%%{4
08176896,[0,0,4,24,32,14,40,20]%%%}+%%%{284044288,[0,0,4,24,30,14,42,21]%%%
}+%%%{149799936,[0,0,4,24,28,14,44,22]%%%}+%%%{57901056,[0,0,4,24,26,14,46,
23]%%%}+%%%{15474688,[0,0,4,24,24,14,48,24]%%%}+%%%{2555904,[0,0,4,24,22,14
,50,25]%%%}+%%%{196608,[0,0,4,24,20,14,52,26]%%%}+%%%{-128*i,[0,0,2,24,52,1
5,20,10]%%%}+%%%{-2816*i,[0,0,2,24,50,15,22,11]%%%}+%%%{-26752*i,[0,0,2,24,
48,15,24,12]%%%}+%%%{-148992*i,[0,0,2,24,46,15,26,13]%%%}+%%%{-550656*i,[0,
0,2,24,44,15,28,14]%%%}+%%%{-1440256*i,[0,0,2,24,42,15,30,15]%%%}+%%%{-2764
032*i,[0,0,2,24,40,15,32,16]%%%}+%%%{-3969024*i,[0,0,2,24,38,15,34,17]%%%}+
%%%{-4297344*i,[0,0,2,24,36,15,36,18]%%%}+%%%{-3498752*i,[0,0,2,24,34,15,38
,19]%%%}+%%%{-2112128*i,[0,0,2,24,32,15,40,20]%%%}+%%%{-918016*i,[0,0,2,24,
30,15,42,21]%%%}+%%%{-271872*i,[0,0,2,24,28,15,44,22]%%%}+%%%{-49152*i,[0,0

```
,2,24,26,15,46,23]%%%}+%%%{-4096*i,[0,0,2,24,24,15,48,24]%%%}+%%%{16,[0,0,0
,24,52,16,20,10]%%%}+%%%{480,[0,0,0,24,50,16,22,11]%%%}+%%%{6288,[0,0,0,24,
48,16,24,12]%%%}+%%%{48192,[0,0,0,24,46,16,26,13]%%%}+%%%{244576,[0,0,0,24,
44,16,28,14]%%%}+%%%{879680,[0,0,0,24,42,16,30,15]%%%}+%%%{2336416,[0,0,0,2
4,40,16,32,16]%%%}+%%%{4700416,[0,0,0,24,38,16,34,17]%%%}+%%%{7270224,[0,0,
0,24,36,16,36,18]%%%}+%%%{8703712,[0,0,0,24,34,16,38,19]%%%}+%%%{8060112,[0
,0,0,24,32,16,40,20]%%%}+%%%{5725632,[0,0,0,24,30,16,42,21]%%%}+%%%{3064128
,[0,0,0,24,28,16,44,22]%%%}+%%%{1196032,[0,0,0,24,26,16,46,23]%%%}+%%%{3215
36,[0,0,0,24,24,16,48,24]%%%}+%%%{53248,[0,0,0,24,22,16,50,25]%%%}+%%%{4096
,[0,0,0,24,20,16,52,26]%%%} / %%%{-256,[0,2,2,4,20,2,8,4]%%%}+%%%{-2048,[0,
2,2,4,18,2,10,5]%%%}+%%%{-6656,[0,2,2,4,16,2,12,6]%%%}+%%%{-11264,[0,2,2,4,
14,2,14,7]%%%}+%%%{-10496,[0,2,2,4,12,2,16,8]%%%}+%%%{-5120,[0,2,2,4,10,2,1
8,9]%%%}+%%%{-1024,[0,2,2,4,8,2,20,10]%%%}+%%%{-12,[0,0,4,4,16,2,4,2]%%%}+%
%%{-80,[0,0,4,4,14,2,6,3]%%%}+%%%{-220,[0,0,4,4,12,2,8,4]%%%}+%%%{-312,[0,0
,4,4,10,2,10,5]%%%}+%%%{-224,[0,0,4,4,8,2,12,6]%%%}+%%%{-64,[0,0,4,4,6,2,14
,7]%%%}+%%%{-8*i,[0,0,2,4,16,3,4,2]%%%}+%%%{-64*i,[0,0,2,4,14,3,6,3]%%%}+%%
%{-200*i,[0,0,2,4,12,3,8,4]%%%}+%%%{-304*i,[0,0,2,4,10,3,10,5]%%%}+%%%{-224
*i,[0,0,2,4,8,3,12,6]%%%}+%%%{-64*i,[0,0,2,4,6,3,14,7]%%%}+%%%{1,[0,0,0,4,1
6,4,4,2]%%%}+%%%{12,[0,0,0,4,14,4,6,3]%%%}+%%%{45,[0,0,0,4,12,4,8,4]%%%}+%%
%{74,[0,0,0,4,10,4,10,5]%%%}+%%%{56,[0,0,0,4,8,4,12,6]%%%}+%%%{16,[0,0,0,4,
6,4,14,7]%%%} Error: Bad Argument Value
```

maple [A] time = 1.26, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\arcsin\left(cx\right)}}{\left(e\,x^{2}+d\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^(1/2)/(e*x^2+d)^2,x)
```

```
[Out] int((a+b*arcsin(c*x))^(1/2)/(e*x^2+d)^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{b\arcsin\left(cx\right)+a}}{\left(ex^{2}+d\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^(1/2)/(e*x^2+d)^2,x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*arcsin(c*x) + a)/(e*x^2 + d)^2, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\sqrt{a+b\,\mathrm{asin}\left(c\,x\right)}}{\left(e\,x^{2}+d\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^(1/2)/(d + e*x^2)^2,x)
```

```
[Out] int((a + b*asin(c*x))^(1/2)/(d + e*x^2)^2, x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a+b\,\mathrm{asin}\left(cx\right)}}{\left(d+ex^{2}\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**(1/2)/(e*x**2+d)**2,x)
```

```
[Out] Integral(sqrt(a + b*asin(c*x))/(d + e*x**2)**2, x)
```

3.691 $\int \left(d+ex^2\right)\left(a+b\sin^{-1}(cx)\right)^{3/2}\,dx$

Optimal. Leaf size=482

$$-\frac{3\sqrt{\frac{\pi}{2}}\,b^{3/2}e\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{8c^3}+\frac{\sqrt{\frac{\pi}{6}}\,b^{3/2}e\cos\left(\frac{3a}{b}\right)C\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{24c^3}-\frac{3\sqrt{\frac{\pi}{2}}\,b^{3/2}e\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a\ldots}}{\ldots}\right)}{8c^3}$$

```
[Out] d*x*(a+b*arcsin(c*x))^(3/2)+1/3*e*x^3*(a+b*arcsin(c*x))^(3/2)+1/144*b^(3/2)
*e*cos(3*a/b)*FresnelC(6^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*6^
(1/2)*Pi^(1/2)/c^3+1/144*b^(3/2)*e*FresnelS(6^(1/2)/Pi^(1/2)*(a+b*arcsin(c*
x))^(1/2)/b^(1/2))*sin(3*a/b)*6^(1/2)*Pi^(1/2)/c^3-3/4*b^(3/2)*d*cos(a/b)*F
resnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/
c-3/16*b^(3/2)*e*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)
/b^(1/2))*2^(1/2)*Pi^(1/2)/c^3-3/4*b^(3/2)*d*FresnelS(2^(1/2)/Pi^(1/2)*(a+b
*arcsin(c*x))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/c-3/16*b^(3/2)*e*Fre
snelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi
^(1/2)/c^3+3/2*b*d*(-c^2*x^2+1)^(1/2)*(a+b*arcsin(c*x))^(1/2)/c+1/3*b*e*(-c
^2*x^2+1)^(1/2)*(a+b*arcsin(c*x))^(1/2)/c^3+1/6*b*e*x^2*(-c^2*x^2+1)^(1/2)*
(a+b*arcsin(c*x))^(1/2)/c
```

Rubi [A] time = 1.42, antiderivative size = 482, normalized size of antiderivative = 1.00, number of steps used = 32, number of rules used = 13, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.650, Rules used = {4667, 4619, 4677, 4623, 3306, 3305, 3351, 3304, 3352, 4629, 4707, 4635, 4406}

$$-\frac{3\sqrt{\frac{\pi}{2}}\,b^{3/2}e\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{8c^3}+\frac{\sqrt{\frac{\pi}{6}}\,b^{3/2}e\cos\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{24c^3}-\frac{3\sqrt{\frac{\pi}{2}}\,b^{3/2}e\ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x^2)*(a + b*ArcSin[c*x])^(3/2),x]
```

```
[Out] (3*b*d*Sqrt[1 - c^2*x^2]*Sqrt[a + b*ArcSin[c*x]])/(2*c) + (b*e*Sqrt[1 - c^2
*x^2]*Sqrt[a + b*ArcSin[c*x]])/(3*c^3) + (b*e*x^2*Sqrt[1 - c^2*x^2]*Sqrt[a
+ b*ArcSin[c*x]])/(6*c) + d*x*(a + b*ArcSin[c*x])^(3/2) + (e*x^3*(a + b*Arc
Sin[c*x])^(3/2))/3 - (3*b^(3/2)*d*Sqrt[Pi/2]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*
Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/(2*c) - (3*b^(3/2)*e*Sqrt[Pi/2]*Cos[a/b]
*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/(8*c^3) + (b^(3/2)
*e*Sqrt[Pi/6]*Cos[(3*a)/b]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sq
rt[b]])/(24*c^3) - (3*b^(3/2)*d*Sqrt[Pi/2]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*
ArcSin[c*x]])/Sqrt[b]]*Sin[a/b])/(2*c) - (3*b^(3/2)*e*Sqrt[Pi/2]*FresnelS[(
Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[a/b])/(8*c^3) + (b^(3/2)*e
*Sqrt[Pi/6]*FresnelS[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[(3*a
)/b])/(24*c^3)
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 4629

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^(m + 1)*(a + b*ArcSin[c*x])^n)/(m + 1), x] - Dist[(b*c*n)/(m + 1), Int[(x
^(m + 1)*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GtQ[n, 0]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
```

```
1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rule 4707

```
Int[(((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcSin[c*x])^n)/(e*m), x] + (Dist[(f^2*(m - 1))/(c^2*m), Int[((f*x)^(m - 2)
*(a + b*ArcSin[c*x])^n)/Sqrt[d + e*x^2], x], x] + Dist[(b*f*n*Sqrt[1 - c^2*
x^2])/(c*m*Sqrt[d + e*x^2]), Int[(f*x)^(m - 1)*(a + b*ArcSin[c*x])^(n - 1),
 x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && EqQ[c^2*d + e, 0] && GtQ[n, 0]
&& GtQ[m, 1] && IntegerQ[m]
```

Rubi steps

$$\int \left(d+ex^2\right)\left(a+b\sin^{-1}(cx)\right)^{3/2}\,dx = \int \left(d\left(a+b\sin^{-1}(cx)\right)^{3/2}+ex^2\left(a+b\sin^{-1}(cx)\right)^{3/2}\right)dx$$

$$= d\int \left(a+b\sin^{-1}(cx)\right)^{3/2}\,dx + e\int x^2\left(a+b\sin^{-1}(cx)\right)^{3/2}\,dx$$

$$= dx\left(a+b\sin^{-1}(cx)\right)^{3/2}+\frac{1}{3}ex^3\left(a+b\sin^{-1}(cx)\right)^{3/2}-\frac{1}{2}(3bcd)\int \frac{x\sqrt{a+b}}{\sqrt{1}}$$

$$= \frac{3bd\sqrt{1-c^2x^2}\,\sqrt{a+b\sin^{-1}(cx)}}{2c}+\frac{bex^2\sqrt{1-c^2x^2}\,\sqrt{a+b\sin^{-1}(cx)}}{6c}+dx$$

$$= \frac{3bd\sqrt{1-c^2x^2}\,\sqrt{a+b\sin^{-1}(cx)}}{2c}+\frac{be\sqrt{1-c^2x^2}\,\sqrt{a+b\sin^{-1}(cx)}}{3c^3}+bex^2$$

$$= \frac{3bd\sqrt{1-c^2x^2}\,\sqrt{a+b\sin^{-1}(cx)}}{2c}+\frac{be\sqrt{1-c^2x^2}\,\sqrt{a+b\sin^{-1}(cx)}}{3c^3}+bex^2$$

$$= \frac{3bd\sqrt{1-c^2x^2}\,\sqrt{a+b\sin^{-1}(cx)}}{2c}+\frac{be\sqrt{1-c^2x^2}\,\sqrt{a+b\sin^{-1}(cx)}}{3c^3}+bex^2$$

$$= \frac{3bd\sqrt{1-c^2x^2}\,\sqrt{a+b\sin^{-1}(cx)}}{2c}+\frac{be\sqrt{1-c^2x^2}\,\sqrt{a+b\sin^{-1}(cx)}}{3c^3}+bex^2$$

$$= \frac{3bd\sqrt{1-c^2x^2}\,\sqrt{a+b\sin^{-1}(cx)}}{2c}+\frac{be\sqrt{1-c^2x^2}\,\sqrt{a+b\sin^{-1}(cx)}}{3c^3}+bex^2$$

$$= \frac{3bd\sqrt{1-c^2x^2}\,\sqrt{a+b\sin^{-1}(cx)}}{2c}+\frac{be\sqrt{1-c^2x^2}\,\sqrt{a+b\sin^{-1}(cx)}}{3c^3}+bex^2$$

Mathematica [C] time = 10.28, size = 873, normalized size = 1.81

$$\frac{abde^{-\frac{ia}{b}}\left(\sqrt{-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}}\,\Gamma\left(\frac{3}{2},-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)+e^{\frac{2ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}}\,\Gamma\left(\frac{3}{2},\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)\right)}{2c\sqrt{a+b\sin^{-1}(cx)}}+\frac{abee^{-\frac{3ia}{b}}\left(9e^{\frac{2ia}{b}}\sqrt{-\frac{i}{}}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(d + e*x^2)*(a + b*ArcSin[c*x])^(3/2),x]
```

```
[Out] (a*b*d*(Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*Gamma[3/2, ((-I)*(a + b*ArcSin[c
*x]))/b] + E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gamma[3/2, (I*(a
 + b*ArcSin[c*x]))/b]))/(2*c*E^((I*a)/b)*Sqrt[a + b*ArcSin[c*x]]) + (a*b*e*
(9*E^(((2*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*Gamma[3/2, ((-I)*(a +
 b*ArcSin[c*x]))/b] + 9*E^(((4*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gam
ma[3/2, (I*(a + b*ArcSin[c*x]))/b] - Sqrt[3]*(Sqrt[((-I)*(a + b*ArcSin[c*x]
))/b]*Gamma[3/2, ((-3*I)*(a + b*ArcSin[c*x]))/b] + E^(((6*I)*a)/b)*Sqrt[(I*
(a + b*ArcSin[c*x]))/b]*Gamma[3/2, ((3*I)*(a + b*ArcSin[c*x]))/b])))/(72*c^
3*E^(((3*I)*a)/b)*Sqrt[a + b*ArcSin[c*x]]) + (b*d*(2*Sqrt[a + b*ArcSin[c*x]
]*(3*Sqrt[1 - c^2*x^2] + 2*c*x*ArcSin[c*x]) - Sqrt[b^(-1)]*Sqrt[2*Pi]*Fresn
elC[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]]]*(3*b*Cos[a/b] + 2*a*Si
n[a/b]) + Sqrt[b^(-1)]*Sqrt[2*Pi]*FresnelS[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a +
 b*ArcSin[c*x]]]*(2*a*Cos[a/b] - 3*b*Sin[a/b])))/(4*c) + (b*e*(18*Sqrt[a +
b*ArcSin[c*x]]*(3*Sqrt[1 - c^2*x^2] + 2*c*x*ArcSin[c*x]) - 9*Sqrt[b^(-1)]*S
qrt[2*Pi]*FresnelC[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]]]*(3*b*Co
s[a/b] + 2*a*Sin[a/b]) + 9*Sqrt[b^(-1)]*Sqrt[2*Pi]*FresnelS[Sqrt[b^(-1)]*Sq
rt[2/Pi]*Sqrt[a + b*ArcSin[c*x]]]*(2*a*Cos[a/b] - 3*b*Sin[a/b]) + Sqrt[b^(-
1)]*Sqrt[6*Pi]*FresnelC[Sqrt[b^(-1)]*Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c*x]]]*(b
*Cos[(3*a)/b] + 2*a*Sin[(3*a)/b]) + Sqrt[b^(-1)]*Sqrt[6*Pi]*FresnelS[Sqrt[b
^(-1)]*Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c*x]]]*(-2*a*Cos[(3*a)/b] + b*Sin[(3*a)
/b]) - 6*Sqrt[a + b*ArcSin[c*x]]*(Cos[3*ArcSin[c*x]] + 2*ArcSin[c*x]*Sin[3*
ArcSin[c*x]])))/(144*c^3)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)*(a+b*arcsin(c*x))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >> Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [C] time = 5.68, size = 3039, normalized size = 6.30

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)*(a+b*arcsin(c*x))^(3/2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*sqrt(pi)*a^2*b^2*d*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/s
qrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b)
/((I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*c) + 1/2*I*sqrt(2)*sqrt(pi)*a*b^3
*d*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sq
rt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^3/sqrt(abs(b)) + b^2*
sqrt(abs(b)))*c) + 1/2*sqrt(2)*sqrt(pi)*a^2*b^2*d*erf(1/2*I*sqrt(2)*sqrt(b*
arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(ab
s(b))/b)*e^(-I*a/b)/((-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*c) - 1/2*I*sq
rt(2)*sqrt(pi)*a*b^3*d*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b
)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^
3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*c) - 1/2*I*sqrt(2)*sqrt(pi)*a*b^2*d*erf(
-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*ar
csin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^2/sqrt(abs(b)) + b*sqrt(abs(
b)))*c) + 3/8*sqrt(2)*sqrt(pi)*b^3*d*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x)
+ a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(
I*a/b)/((I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*c) + 1/2*I*sqrt(2)*sqrt(pi)*a
*b^2*d*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)
*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^2/sqrt(abs(b)) +
```

```
 b*sqrt(abs(b)))*c) + 3/8*sqrt(2)*sqrt(pi)*b^3*d*erf(1/2*I*sqrt(2)*sqrt(b*a
rcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs
(b))/b)*e^(-I*a/b)/((-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*c) - sqrt(pi)*a^
2*b*d*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)
*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*sqrt(2)*b^2/sqrt(abs
(b)) + sqrt(2)*b*sqrt(abs(b)))*c) - sqrt(pi)*a^2*b*d*erf(1/2*I*sqrt(2)*sqrt
(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt
(abs(b))/b)*e^(-I*a/b)/((-I*sqrt(2)*b^2/sqrt(abs(b)) + sqrt(2)*b*sqrt(abs(b
)))*c) - 1/2*I*sqrt(b*arcsin(c*x) + a)*b*d*arcsin(c*x)*e^(I*arcsin(c*x))/c
+ 1/2*I*sqrt(b*arcsin(c*x) + a)*b*d*arcsin(c*x)*e^(-I*arcsin(c*x))/c + 1/8*
sqrt(2)*sqrt(pi)*a^2*b^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(ab
s(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b + 1)/(
(I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*c^3) + 1/8*I*sqrt(2)*sqrt(pi)*a*b^3
*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt
(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b + 1)/((I*b^3/sqrt(abs(b)) + b^
2*sqrt(abs(b)))*c^3) + 1/8*sqrt(2)*sqrt(pi)*a^2*b^2*erf(1/2*I*sqrt(2)*sqrt(
b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(
abs(b))/b)*e^(-I*a/b + 1)/((-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*c^3) -
1/8*I*sqrt(2)*sqrt(pi)*a*b^3*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt
(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(-I*a/b +
1)/((-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*c^3) - 1/2*I*sqrt(b*arcsin(c*x
) + a)*a*d*e^(I*arcsin(c*x))/c + 3/4*sqrt(b*arcsin(c*x) + a)*b*d*e^(I*arcsi
n(c*x))/c + 1/2*I*sqrt(b*arcsin(c*x) + a)*a*d*e^(-I*arcsin(c*x))/c + 3/4*sq
rt(b*arcsin(c*x) + a)*b*d*e^(-I*arcsin(c*x))/c - 1/4*sqrt(pi)*a^2*b^(3/2)*e
rf(-1/2*sqrt(6)*sqrt(b*arcsin(c*x) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcs
in(c*x) + a)*sqrt(b)/abs(b))*e^(3*I*a/b + 1)/((sqrt(6)*b^2 + I*sqrt(6)*b^3/
abs(b))*c^3) - 1/12*I*sqrt(pi)*a*b^(5/2)*erf(-1/2*sqrt(6)*sqrt(b*arcsin(c*x
) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(c*x) + a)*sqrt(b)/abs(b))*e^(3
*I*a/b + 1)/((sqrt(6)*b^2 + I*sqrt(6)*b^3/abs(b))*c^3) - 1/8*I*sqrt(2)*sqrt
(pi)*a*b^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sq
rt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b + 1)/((I*b^2/sqrt(ab
s(b)) + b*sqrt(abs(b)))*c^3) + 3/32*sqrt(2)*sqrt(pi)*b^3*erf(-1/2*I*sqrt(2)
*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)
*sqrt(abs(b))/b)*e^(I*a/b + 1)/((I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*c^3)
+ 1/8*I*sqrt(2)*sqrt(pi)*a*b^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sq
rt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(-I*a/b
+ 1)/((-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*c^3) + 3/32*sqrt(2)*sqrt(pi)*b
^3*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqr
t(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(-I*a/b + 1)/((-I*b^2/sqrt(abs(b)) +
 b*sqrt(abs(b)))*c^3) - 1/4*sqrt(pi)*a^2*b^(3/2)*erf(-1/2*sqrt(6)*sqrt(b*ar
csin(c*x) + a)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b*arcsin(c*x) + a)*sqrt(b)/abs(
b))*e^(-3*I*a/b + 1)/((sqrt(6)*b^2 - I*sqrt(6)*b^3/abs(b))*c^3) + 1/12*I*sq
rt(pi)*a*b^(5/2)*erf(-1/2*sqrt(6)*sqrt(b*arcsin(c*x) + a)/sqrt(b) + 1/2*I*s
qrt(6)*sqrt(b*arcsin(c*x) + a)*sqrt(b)/abs(b))*e^(-3*I*a/b + 1)/((sqrt(6)*b
^2 - I*sqrt(6)*b^3/abs(b))*c^3) + 1/4*sqrt(pi)*a^2*b*erf(-1/2*sqrt(6)*sqrt(
b*arcsin(c*x) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(c*x) + a)*sqrt(b)/
abs(b))*e^(3*I*a/b + 1)/((sqrt(6)*b^(3/2) + I*sqrt(6)*b^(5/2)/abs(b))*c^3)
+ 1/12*I*sqrt(pi)*a*b^2*erf(-1/2*sqrt(6)*sqrt(b*arcsin(c*x) + a)/sqrt(b) -
1/2*I*sqrt(6)*sqrt(b*arcsin(c*x) + a)*sqrt(b)/abs(b))*e^(3*I*a/b + 1)/((sqr
t(6)*b^(3/2) + I*sqrt(6)*b^(5/2)/abs(b))*c^3) - 1/4*sqrt(pi)*a^2*b*erf(-1/2
*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin
(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b + 1)/((I*sqrt(2)*b^2/sqrt(abs(b)) + sqr
t(2)*b*sqrt(abs(b)))*c^3) - 1/4*sqrt(pi)*a^2*b*erf(1/2*I*sqrt(2)*sqrt(b*arc
sin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b
))/b)*e^(-I*a/b + 1)/((-I*sqrt(2)*b^2/sqrt(abs(b)) + sqrt(2)*b*sqrt(abs(b))
)*c^3) + 1/4*sqrt(pi)*a^2*b*erf(-1/2*sqrt(6)*sqrt(b*arcsin(c*x) + a)/sqrt(b
) + 1/2*I*sqrt(6)*sqrt(b*arcsin(c*x) + a)*sqrt(b)/abs(b))*e^(-3*I*a/b + 1)/
((sqrt(6)*b^(3/2) - I*sqrt(6)*b^(5/2)/abs(b))*c^3) - 1/12*I*sqrt(pi)*a*b^2*
erf(-1/2*sqrt(6)*sqrt(b*arcsin(c*x) + a)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b*arc
```

```
sin(c*x) + a)*sqrt(b)/abs(b))*e^(-3*I*a/b + 1)/((sqrt(6)*b^(3/2) - I*sqrt(6
)*b^(5/2)/abs(b))*c^3) - 1/48*sqrt(pi)*b^(5/2)*erf(-1/2*sqrt(6)*sqrt(b*arcs
in(c*x) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(c*x) + a)*sqrt(b)/abs(b)
)*e^(3*I*a/b + 1)/((sqrt(6)*b + I*sqrt(6)*b^2/abs(b))*c^3) - 1/48*sqrt(pi)*
b^(5/2)*erf(-1/2*sqrt(6)*sqrt(b*arcsin(c*x) + a)/sqrt(b) + 1/2*I*sqrt(6)*sq
rt(b*arcsin(c*x) + a)*sqrt(b)/abs(b))*e^(-3*I*a/b + 1)/((sqrt(6)*b - I*sqrt
(6)*b^2/abs(b))*c^3) + 1/24*I*sqrt(b*arcsin(c*x) + a)*b*arcsin(c*x)*e^(3*I*
arcsin(c*x) + 1)/c^3 - 1/8*I*sqrt(b*arcsin(c*x) + a)*b*arcsin(c*x)*e^(I*arc
sin(c*x) + 1)/c^3 + 1/8*I*sqrt(b*arcsin(c*x) + a)*b*arcsin(c*x)*e^(-I*arcsi
n(c*x) + 1)/c^3 - 1/24*I*sqrt(b*arcsin(c*x) + a)*b*arcsin(c*x)*e^(-3*I*arcs
in(c*x) + 1)/c^3 + 1/24*I*sqrt(b*arcsin(c*x) + a)*a*e^(3*I*arcsin(c*x) + 1)
/c^3 - 1/48*sqrt(b*arcsin(c*x) + a)*b*e^(3*I*arcsin(c*x) + 1)/c^3 - 1/8*I*s
qrt(b*arcsin(c*x) + a)*a*e^(I*arcsin(c*x) + 1)/c^3 + 3/16*sqrt(b*arcsin(c*x
) + a)*b*e^(I*arcsin(c*x) + 1)/c^3 + 1/8*I*sqrt(b*arcsin(c*x) + a)*a*e^(-I*
arcsin(c*x) + 1)/c^3 + 3/16*sqrt(b*arcsin(c*x) + a)*b*e^(-I*arcsin(c*x) + 1
)/c^3 - 1/24*I*sqrt(b*arcsin(c*x) + a)*a*e^(-3*I*arcsin(c*x) + 1)/c^3 - 1/4
8*sqrt(b*arcsin(c*x) + a)*b*e^(-3*I*arcsin(c*x) + 1)/c^3
```

maple [B] time = 0.44, size = 835, normalized size = 1.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)*(a+b*arcsin(c*x))^(3/2),x)
```

```
[Out] 1/144/c^3*(-108*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(
1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*(a+b*arcsin(c*x))^(1/2)*b^2*c^2
*d-108*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b
)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*(a+b*arcsin(c*x))^(1/2)*b^2*c^2*d+3^(1/2
)*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*cos(3*a/b)*FresnelC(2^(1/2)/Pi^(1/2)*3^(1/2)
/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*(a+b*arcsin(c*x))^(1/2)*b^2*e+3^(1/
2)*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*sin(3*a/b)*FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2
)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*(a+b*arcsin(c*x))^(1/2)*b^2*e-27*(
1/b)^(1/2)*Pi^(1/2)*2^(1/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*
(a+b*arcsin(c*x))^(1/2)/b)*(a+b*arcsin(c*x))^(1/2)*b^2*e-27*(1/b)^(1/2)*Pi^
(1/2)*2^(1/2)*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*
x))^(1/2)/b)*(a+b*arcsin(c*x))^(1/2)*b^2*e+144*arcsin(c*x)^2*sin((a+b*arcsi
n(c*x))/b-a/b)*b^2*c^2*d+288*arcsin(c*x)*sin((a+b*arcsin(c*x))/b-a/b)*a*b*c
^2*d+216*arcsin(c*x)*cos((a+b*arcsin(c*x))/b-a/b)*b^2*c^2*d+36*arcsin(c*x)^
2*sin((a+b*arcsin(c*x))/b-a/b)*b^2*e-12*arcsin(c*x)^2*sin(3*(a+b*arcsin(c*x
))/b-3*a/b)*b^2*e+144*sin((a+b*arcsin(c*x))/b-a/b)*a^2*c^2*d+216*cos((a+b*a
rcsin(c*x))/b-a/b)*a*b*c^2*d+72*arcsin(c*x)*sin((a+b*arcsin(c*x))/b-a/b)*a*
b*e+54*arcsin(c*x)*cos((a+b*arcsin(c*x))/b-a/b)*b^2*e-24*arcsin(c*x)*sin(3*
(a+b*arcsin(c*x))/b-3*a/b)*a*b*e-6*arcsin(c*x)*cos(3*(a+b*arcsin(c*x))/b-3*
a/b)*b^2*e+36*sin((a+b*arcsin(c*x))/b-a/b)*a^2*e+54*cos((a+b*arcsin(c*x))/b
-a/b)*a*b*e-12*sin(3*(a+b*arcsin(c*x))/b-3*a/b)*a^2*e-6*cos(3*(a+b*arcsin(c
*x))/b-3*a/b)*a*b*e)/(a+b*arcsin(c*x))^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(ex^2 + d\right)(b \arcsin(cx) + a)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)*(a+b*arcsin(c*x))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((e*x^2 + d)*(b*arcsin(c*x) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a + b\,\mathrm{asin}(c\,x))^{3/2}\,\left(e\,x^2 + d\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^(3/2)*(d + e*x^2),x)
```

```
[Out] int((a + b*asin(c*x))^(3/2)*(d + e*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a + b \operatorname{asin}(cx))^{\frac{3}{2}} \left(d + ex^2\right) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)*(a+b*asin(c*x))**(3/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**(3/2)*(d + e*x**2), x)
```

3.692 $\int \left(a+b\sin^{-1}(cx)\right)^{3/2} dx$

Optimal. Leaf size=159

$$-\frac{3\sqrt{\frac{\pi}{2}}\, b^{3/2}\cos\left(\frac{a}{b}\right) C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{2c}-\frac{3\sqrt{\frac{\pi}{2}}\, b^{3/2}\sin\left(\frac{a}{b}\right) S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{2c}+\frac{3b\sqrt{1-c^2x^2}\,\sqrt{a+b\sin^{-1}(cx)}}{2c}+$$

```
[Out] x*(a+b*arcsin(c*x))^(3/2)-3/4*b^(3/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)*(a
+b*arcsin(c*x))^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/c-3/4*b^(3/2)*FresnelS(2^(1
/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/c+3
/2*b*(-c^2*x^2+1)^(1/2)*(a+b*arcsin(c*x))^(1/2)/c
```

Rubi [A] time = 0.23, antiderivative size = 159, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667, Rules used = {4619, 4677, 4623, 3306, 3305, 3351, 3304, 3352}

$$-\frac{3\sqrt{\frac{\pi}{2}}\, b^{3/2}\cos\left(\frac{a}{b}\right) \text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{2c}-\frac{3\sqrt{\frac{\pi}{2}}\, b^{3/2}\sin\left(\frac{a}{b}\right) S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{2c}+\frac{3b\sqrt{1-c^2x^2}\,\sqrt{a+b\sin^{-1}}}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^(3/2),x]
```

```
[Out] (3*b*Sqrt[1 - c^2*x^2]*Sqrt[a + b*ArcSin[c*x]])/(2*c) + x*(a + b*ArcSin[c*x
])^(3/2) - (3*b^(3/2)*Sqrt[Pi/2]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*A
rcSin[c*x]])/Sqrt[b]])/(2*c) - (3*b^(3/2)*Sqrt[Pi/2]*FresnelS[(Sqrt[2/Pi]*S
qrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[a/b])/(2*c)
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4619

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a + b*Ar
cSin[c*x])^n, x] - Dist[b*c*n, Int[(x*(a + b*ArcSin[c*x])^(n - 1))/Sqrt[1 -
 c^2*x^2], x], x] /; FreeQ[{a, b, c}, x] && GtQ[n, 0]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 4677

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)*((d_) + (e_.)*(x_)^2)^(p_
.), x_Symbol] :> Simp[((d + e*x^2)^(p + 1)*(a + b*ArcSin[c*x])^n)/(2*e*(p +
 1)), x] + Dist[(b*n*d^IntPart[p]*(d + e*x^2)^FracPart[p])/(2*c*(p + 1)*(1
- c^2*x^2)^FracPart[p]), Int[(1 - c^2*x^2)^(p + 1/2)*(a + b*ArcSin[c*x])^(n
 - 1), x], x] /; FreeQ[{a, b, c, d, e, p}, x] && EqQ[c^2*d + e, 0] && GtQ[n
, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \left(a+b\sin^{-1}(cx)\right)^{3/2}\,dx = x\left(a+b\sin^{-1}(cx)\right)^{3/2}-\frac{1}{2}(3bc)\int \frac{x\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{1-c^2x^2}}\,dx$$
$$=\frac{3b\sqrt{1-c^2x^2}\sqrt{a+b\sin^{-1}(cx)}}{2c}+x\left(a+b\sin^{-1}(cx)\right)^{3/2}-\frac{1}{4}\left(3b^2\right)\int \frac{1}{\sqrt{a+b\sin^{-1}(}}$$
$$=\frac{3b\sqrt{1-c^2x^2}\sqrt{a+b\sin^{-1}(cx)}}{2c}+x\left(a+b\sin^{-1}(cx)\right)^{3/2}-\frac{(3b)\,\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}-\frac{x}{b}\right)}{\sqrt{x}}\,d\right.}{4c}$$
$$=\frac{3b\sqrt{1-c^2x^2}\sqrt{a+b\sin^{-1}(cx)}}{2c}+x\left(a+b\sin^{-1}(cx)\right)^{3/2}-\frac{\left(3b\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\text{co}}{}\right.}{4}$$
$$=\frac{3b\sqrt{1-c^2x^2}\sqrt{a+b\sin^{-1}(cx)}}{2c}+x\left(a+b\sin^{-1}(cx)\right)^{3/2}-\frac{\left(3b\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \text{co}\right.}{}$$
$$=\frac{3b\sqrt{1-c^2x^2}\sqrt{a+b\sin^{-1}(cx)}}{2c}+x\left(a+b\sin^{-1}(cx)\right)^{3/2}-\frac{3b^{3/2}\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}}{}\right.}{2c}$$

Mathematica [C] time = 2.92, size = 291, normalized size = 1.83

$$b\left(2\left(3\sqrt{1-c^2x^2}+2cx\sin^{-1}(cx)\right)\sqrt{a+b\sin^{-1}(cx)}-\sqrt{2\pi}\sqrt{\frac{1}{b}}\left(2a\sin\left(\frac{a}{b}\right)+3b\cos\left(\frac{a}{b}\right)\right)C\left(\sqrt{\frac{1}{b}}\sqrt{\frac{2}{\pi}}\sqrt{a+b\,\text{si}}\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^(3/2),x]
```

```
[Out] (b*(2*Sqrt[a + b*ArcSin[c*x]]*(3*Sqrt[1 - c^2*x^2] + 2*c*x*ArcSin[c*x]) + (
2*a*(Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*Gamma[3/2, ((-I)*(a + b*ArcSin[c*x]
```

```
))/b] + E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gamma[3/2, (I*(a +
b*ArcSin[c*x]))/b]))/(E^((I*a)/b)*Sqrt[a + b*ArcSin[c*x]]) - Sqrt[b^(-1)]*S
qrt[2*Pi]*FresnelC[Sqrt[b^(-1)]*Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]]]*(3*b*Co
s[a/b] + 2*a*Sin[a/b]) + Sqrt[b^(-1)]*Sqrt[2*Pi]*FresnelS[Sqrt[b^(-1)]*Sqrt
[2/Pi]*Sqrt[a + b*ArcSin[c*x]]]*(2*a*Cos[a/b] - 3*b*Sin[a/b])))/(4*c)
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [C] time = 3.40, size = 993, normalized size = 6.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^(3/2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*sqrt(pi)*a^2*b^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqr
t(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(
(I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*c) + 1/2*I*sqrt(2)*sqrt(pi)*a*b^3*e
rf(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b
*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^3/sqrt(abs(b)) + b^2*sqrt
(abs(b)))*c) + 1/2*sqrt(2)*sqrt(pi)*a^2*b^2*erf(1/2*I*sqrt(2)*sqrt(b*arcsin
(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/
b)*e^(-I*a/b)/((-I*b^3/sqrt(abs(b)) + b^2*sqrt(abs(b)))*c) - 1/2*I*sqrt(2)*
sqrt(pi)*a*b^3*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2
*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^3/sqrt(a
bs(b)) + b^2*sqrt(abs(b)))*c) - 1/2*I*sqrt(2)*sqrt(pi)*a*b^2*erf(-1/2*I*sqr
t(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x)
+ a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*c) +
3/8*sqrt(2)*sqrt(pi)*b^3*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(ab
s(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*b
^2/sqrt(abs(b)) + b*sqrt(abs(b)))*c) + 1/2*I*sqrt(2)*sqrt(pi)*a*b^2*erf(1/2
*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin
(c*x) + a)*sqrt(abs(b))/b)*e^(-I*a/b)/((-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)
))*c) + 3/8*sqrt(2)*sqrt(pi)*b^3*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/
sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(-I*a/
b)/((-I*b^2/sqrt(abs(b)) + b*sqrt(abs(b)))*c) - sqrt(pi)*a^2*b*erf(-1/2*I*s
qrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x
) + a)*sqrt(abs(b))/b)*e^(I*a/b)/((I*sqrt(2)*b^2/sqrt(abs(b)) + sqrt(2)*b*s
qrt(abs(b)))*c) - sqrt(pi)*a^2*b*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/
sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(-I*a/
b)/((-I*sqrt(2)*b^2/sqrt(abs(b)) + sqrt(2)*b*sqrt(abs(b)))*c) - 1/2*I*sqrt(
b*arcsin(c*x) + a)*b*arcsin(c*x)*e^(I*arcsin(c*x))/c + 1/2*I*sqrt(b*arcsin(
c*x) + a)*b*arcsin(c*x)*e^(-I*arcsin(c*x))/c - 1/2*I*sqrt(b*arcsin(c*x) + a
)*a*e^(I*arcsin(c*x))/c + 3/4*sqrt(b*arcsin(c*x) + a)*b*e^(I*arcsin(c*x))/c
 + 1/2*I*sqrt(b*arcsin(c*x) + a)*a*e^(-I*arcsin(c*x))/c + 3/4*sqrt(b*arcsin
(c*x) + a)*b*e^(-I*arcsin(c*x))/c
```

maple [B] time = 0.00, size = 270, normalized size = 1.70

$$-3\sqrt{\pi}\,\sqrt{2}\,\sqrt{a+b\arcsin(cx)}\;\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin(cx)}}{\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,b}\right)\cos\left(\frac{a}{b}\right)\sqrt{\frac{1}{b}}\,b^2-3\sqrt{\pi}\,\sqrt{2}\,\sqrt{a+b\arcsin(cx)}\;\sin\left(\frac{a}{b}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^(3/2),x)
```

```
[Out] 1/4/c/(a+b*arcsin(c*x))^(1/2)*(-3*Pi^(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*
FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*cos(a/b)*(
1/b)^(1/2)*b^2-3*Pi^(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*sin(a/b)*FresnelS
(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*(1/b)^(1/2)*b^2+4*
arcsin(c*x)^2*sin((a+b*arcsin(c*x))/b-a/b)*b^2+8*arcsin(c*x)*sin((a+b*arcsi
n(c*x))/b-a/b)*a*b+6*arcsin(c*x)*cos((a+b*arcsin(c*x))/b-a/b)*b^2+4*sin((a+
b*arcsin(c*x))/b-a/b)*a^2+6*cos((a+b*arcsin(c*x))/b-a/b)*a*b)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b \arcsin(cx) + a)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(c*x) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (a + b\,\mathrm{asin}(c\,x))^{3/2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^(3/2),x)
```

```
[Out] int((a + b*asin(c*x))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a + b\,\mathrm{asin}(cx))^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**(3/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**(3/2), x)
```

3.693 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^{3/2}}{d+ex^2}\,dx$

Optimal. Leaf size=25

$$\operatorname{Int}\left(\frac{\left(a+b\sin^{-1}(cx)\right)^{3/2}}{d+ex^2},x\right)$$

```
[Out] Unintegrable((a+b*arcsin(c*x))^(3/2)/(e*x^2+d),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^{3/2}}{d+ex^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*ArcSin[c*x])^(3/2)/(d + e*x^2),x]
[Out] Defer[Int][(a + b*ArcSin[c*x])^(3/2)/(d + e*x^2), x]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^{3/2}}{d+ex^2}\,dx=\int \frac{\left(a+b\sin^{-1}(cx)\right)^{3/2}}{d+ex^2}\,dx$$

Mathematica [A] time = 3.87, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^{3/2}}{d+ex^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c*x])^(3/2)/(d + e*x^2),x]
[Out] Integrate[(a + b*ArcSin[c*x])^(3/2)/(d + e*x^2), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^(3/2)/(e*x^2+d),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\arcsin\left(cx\right)+a\right)^{\frac{3}{2}}}{ex^2+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^(3/2)/(e*x^2+d),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^(3/2)/(e*x^2 + d), x)
```

maple [A] time = 0.56, size = 0, normalized size = 0.00

$$\int \frac{(a + b \arcsin(cx))^{\frac{3}{2}}}{e\,x^2 + d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arcsin(c*x))^(3/2)/(e*x^2+d),x)
```

```
[Out] int((a+b*arcsin(c*x))^(3/2)/(e*x^2+d),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b \arcsin(cx) + a)^{\frac{3}{2}}}{ex^2 + d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^(3/2)/(e*x^2+d),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(c*x) + a)^(3/2)/(e*x^2 + d), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{(a + b\,\mathrm{asin}(c\,x))^{3/2}}{e\,x^2 + d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^(3/2)/(d + e*x^2),x)
```

```
[Out] int((a + b*asin(c*x))^(3/2)/(d + e*x^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + b\,\mathrm{asin}(cx))^{\frac{3}{2}}}{d + ex^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**(3/2)/(e*x**2+d),x)
```

```
[Out] Integral((a + b*asin(c*x))**(3/2)/(d + e*x**2), x)
```

3.694 $\int \frac{\left(a+b\sin^{-1}(cx)\right)^{3/2}}{\left(d+ex^2\right)^2}\,dx$

Optimal. Leaf size=25

$$\text{Int}\left(\frac{\left(a+b\sin^{-1}(cx)\right)^{3/2}}{\left(d+ex^2\right)^2},x\right)$$

```
[Out] Unintegrable((a+b*arcsin(c*x))^(3/2)/(e*x^2+d)^2,x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^{3/2}}{\left(d+ex^2\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*ArcSin[c*x])^(3/2)/(d + e*x^2)^2,x]
[Out] Defer[Int][(a + b*ArcSin[c*x])^(3/2)/(d + e*x^2)^2, x]
```

Rubi steps

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^{3/2}}{\left(d+ex^2\right)^2}\,dx=\int \frac{\left(a+b\sin^{-1}(cx)\right)^{3/2}}{\left(d+ex^2\right)^2}\,dx$$

Mathematica [A] time = 12.77, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\sin^{-1}(cx)\right)^{3/2}}{\left(d+ex^2\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcSin[c*x])^(3/2)/(d + e*x^2)^2,x]
[Out] Integrate[(a + b*ArcSin[c*x])^(3/2)/(d + e*x^2)^2, x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^(3/2)/(e*x^2+d)^2,x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arcsin(c*x))^(3/2)/(e*x^2+d)^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Evaluation time: 1.35Unable to divide, perha
ps due to rounding error%%%{1099511627776,[0,8,8,48,24,24,8,40]%%%}+%%%{219
90232555520,[0,8,8,46,24,26,8,39]%%%}+%%%{209456965091328,[0,8,8,44,24,28,8
,38]%%%}+%%%{1263888616128512,[0,8,8,42,24,30,8,37]%%%}+%%%{542121080022630
4,[0,8,8,40,24,32,8,36]%%%}+%%%{17580778611277824,[0,8,8,38,24,34,8,35]%%%}
+%%%{44758438307168256,[0,8,8,36,24,36,8,34]%%%}+%%%{91682777082101760,[0,8
,8,34,24,38,8,33]%%%}+%%%{153631736092164096,[0,8,8,32,24,40,8,32]%%%}+%%%{
212963857428119552,[0,8,8,30,24,42,8,31]%%%}+%%%{245968722592792576,[0,8,8,
28,24,44,8,30]%%%}+%%%{237646244204249088,[0,8,8,26,24,46,8,29]%%%}+%%%{192
297849189302272,[0,8,8,24,24,48,8,28]%%%}+%%%{130126926269382656,[0,8,8,22,
24,50,8,27]%%%}+%%%{73325193505800192,[0,8,8,20,24,52,8,26]%%%}+%%%{3414973
1647094784,[0,8,8,18,24,54,8,25]%%%}+%%%{12995402806591488,[0,8,8,16,24,56,
8,24]%%%}+%%%{3973085266968576,[0,8,8,14,24,58,8,23]%%%}+%%%{95190219174707
2,[0,8,8,12,24,60,8,22]%%%}+%%%{172073569746944,[0,8,8,10,24,62,8,21]%%%}+%
%%{22058952032256,[0,8,8,8,24,64,8,20]%%%}+%%%{1786706395136,[0,8,8,6,24,66
,8,19]%%%}+%%%{68719476736,[0,8,8,4,24,68,8,18]%%%}+%%%{206158430208,[0,6,1
4,48,24,22,8,37]%%%}+%%%{3813930958848,[0,6,14,46,24,24,8,36]%%%}+%%%{33586
644254720,[0,6,14,44,24,26,8,35]%%%}+%%%{187303523778560,[0,6,14,42,24,28,8
,34]%%%}+%%%{742316377636864,[0,6,14,40,24,30,8,33]%%%}+%%%{222399419541094
4,[0,6,14,38,24,32,8,32]%%%}+%%%{5230930864111616,[0,6,14,36,24,34,8,31]%%%
}+%%%{9900653384040448,[0,6,14,34,24,36,8,30]%%%}+%%%{15333688229232640,[0,
6,14,32,24,38,8,29]%%%}+%%%{19652823306207232,[0,6,14,30,24,40,8,28]%%%}+%%
%{20996619788877824,[0,6,14,28,24,42,8,27]%%%}+%%%{18774236206202880,[0,6,1
4,26,24,44,8,26]%%%}+%%%{14065874012995584,[0,6,14,24,24,46,8,25]%%%}+%%%{8
816010933043200,[0,6,14,22,24,48,8,24]%%%}+%%%{4601819086979072,[0,6,14,20,
24,50,8,23]%%%}+%%%{1984921283330048,[0,6,14,18,24,52,8,22]%%%}+%%%{6990553
19547904,[0,6,14,16,24,54,8,21]%%%}+%%%{197510513557504,[0,6,14,14,24,56,8,
20]%%%}+%%%{43626130309120,[0,6,14,12,24,58,8,19]%%%}+%%%{7243462344704,[0,
6,14,10,24,60,8,18]%%%}+%%%{848256040960,[0,6,14,8,24,62,8,17]%%%}+%%%{6227
7025792,[0,6,14,6,24,64,8,16]%%%}+%%%{-2147483648,[0,6,14,4,24,66,8,15]%%%}
+%%%{618475290624*i,[0,6,12,48,24,22,9,37]%%%}+%%%{11441792876544*i,[0,6,12
,46,24,24,9,36]%%%}+%%%{100502234726400*i,[0,6,12,44,24,26,9,35]%%%}+%%%{55
7400855674880*i,[0,6,12,42,24,28,9,34]%%%}+%%%{2189595802337280*i,[0,6,12,4
0,24,30,9,33]%%%}+%%%{6477311046057984*i,[0,6,12,38,24,32,9,32]%%%}+%%%{149
76997637750784*i,[0,6,12,36,24,34,9,31]%%%}+%%%{27728566561013760*i,[0,6,12
,34,24,36,9,30]%%%}+%%%{41769501846405120*i,[0,6,12,32,24,38,9,29]%%%}+%%%{
51733525325414400*i,[0,6,12,30,24,40,9,28]%%%}+%%%{53016938862870528*i,[0,6
,12,28,24,42,9,27]%%%}+%%%{45087312542957568*i,[0,6,12,26,24,44,9,26]%%%}+%
%%{31813982402641920*i,[0,6,12,24,24,46,9,25]%%%}+%%%{18564888762777600*i,[
0,6,12,22,24,48,9,24]%%%}+%%%{8899859432079360*i,[0,6,12,20,24,50,9,23]%%%}
+%%%{3467327098060800*i,[0,6,12,18,24,52,9,22]%%%}+%%%{1080012476252160*i,[
0,6,12,16,24,54,9,21]%%%}+%%%{262465451458560*i,[0,6,12,14,24,56,9,20]%%%}+
%%%{47931835023360*i,[0,6,12,12,24,58,9,19]%%%}+%%%{6184752906240*i,[0,6,12
,10,24,60,9,18]%%%}+%%%{502511173632*i,[0,6,12,8,24,62,9,17]%%%}+%%%{193273
52832*i,[0,6,12,6,24,64,9,16]%%%}+%%%{-463856467968,[0,6,10,48,24,22,10,37]
%%%}+%%%{-8581344657408,[0,6,10,46,24,24,10,36]%%%}+%%%{-75338021339136,[0,
6,10,44,24,26,10,35]%%%}+%%%{-417374184407040,[0,6,10,42,24,28,10,34]%%%}+%
%%{-1636601583108096,[0,6,10,40,24,30,10,33]%%%}+%%%{-4828910114045952,[0,6
,10,38,24,32,10,32]%%%}+%%%{-11126370478325760,[0,6,10,36,24,34,10,31]%%%}+
%%%{-20505239022993408,[0,6,10,34,24,36,10,30]%%%}+%%%{-30708844367708160,[
0,6,10,32,24,38,10,29]%%%}+%%%{-37758187075534848,[0,6,10,30,24,40,10,28]%%
%}+%%%{-38348637704552448,[0,6,10,28,24,42,10,27]%%%}+%%%{-322566947466117l
2,[0,6,10,26,24,44,10,26]%%%}+%%%{-22459234394308608,[0,6,10,24,24,46,10,25
]%%%}+%%%{-12896659360972800,[0,6,10,22,24,48,10,24]%%%}+%%%{-6063840986923
008,[0,6,10,20,24,50,10,23]%%%}+%%%{-2307995165786112,[0,6,10,18,24,52,10,2
2]%%%}+%%%{-699031697227776,[0,6,10,16,24,54,10,21]%%%}+%%%{-16424384436633
6,[0,6,10,14,24,56,10,20]%%%}+%%%{-28797755719680,[0,6,10,12,24,58,10,19]%%
```

%}+%%%{-3536905568256,[0,6,10,10,24,60,10,18]%%%}+%%%{-270582939648,[0,6,10,8,24,62,10,17]%%%}+%%%{-9663676416,[0,6,10,6,24,64,10,16]%%%}+%%%{12884901888,[0,4,20,48,24,20,8,34]%%%}+%%%{219043332096,[0,4,20,46,24,22,8,33]%%%}+%%%{1775163670528,[0,4,20,44,24,24,8,32]%%%}+%%%{9126805504000,[0,4,20,42,24,26,8,31]%%%}+%%%{33417999679488,[0,4,20,40,24,28,8,30]%%%}+%%%{92717673611264,[0,4,20,38,24,30,8,29]%%%}+%%%{202452846510080,[0,4,20,36,24,32,8,28]%%%}+%%%{356623079964672,[0,4,20,34,24,34,8,27]%%%}+%%%{515251925680128,[0,4,20,32,24,36,8,26]%%%}+%%%{617336285429760,[0,4,20,30,24,38,8,25]%%%}+%%%{617529978388480,[0,4,20,28,24,40,8,24]%%%}+%%%{517463699619840,[0,4,20,26,24,42,8,23]%%%}+%%%{363340241043456,[0,4,20,24,24,44,8,22]%%%}+%%%{213205632679936,[0,4,20,22,24,46,8,21]%%%}+%%%{103946613948416,[0,4,20,20,24,48,8,20]%%%}+%%%{41710172241920,[0,4,20,18,24,50,8,19]%%%}+%%%{13582901182464,[0,4,20,16,24,52,8,18]%%%}+%%%{3517477552128,[0,4,20,14,24,54,8,17]%%%}+%%%{703183454208,[0,4,20,12,24,56,8,16]%%%}+%%%{103750303744,[0,4,20,10,24,58,8,15]%%%}+%%%{10502537216,[0,4,20,8,24,60,8,14]%%%}+%%%{637534208,[0,4,20,6,24,62,8,13]%%%}+%%%{16777216,[0,4,20,4,24,64,8,12]%%%}+%%%{77309411328*i,[0,4,18,48,24,20,9,34]%%%}+%%%{1314259992576*i,[0,4,18,46,24,22,9,33]%%%}+%%%{10609106092032*i,[0,4,18,44,24,24,9,32]%%%}+%%%{54090818125824*i,[0,4,18,42,24,26,9,31]%%%}+%%%{195440607756288*i,[0,4,18,40,24,28,9,30]%%%}+%%%{532221341466624*i,[0,4,18,38,24,30,9,29]%%%}+%%%{1134048835534848*i,[0,4,18,36,24,32,9,28]%%%}+%%%{1937380491657216*i,[0,4,18,34,24,34,9,27]%%%}+%%%{2697110143107072*i,[0,4,18,32,24,36,9,26]%%%}+%%%{3092580698947584*i,[0,4,18,30,24,38,9,25]%%%}+%%%{2939655032930304*i,[0,4,18,28,24,40,9,24]%%%}+%%%{2323428459675648*i,[0,4,18,26,24,42,9,23]%%%}+%%%{1526681290407936*i,[0,4,18,24,24,44,9,22]%%%}+%%%{831187606044672*i,[0,4,18,22,24,46,9,21]%%%}+%%%{372388663394304*i,[0,4,18,20,24,48,9,20]%%%}+%%%{135768412520448*i,[0,4,18,18,24,50,9,19]%%%}+%%%{39609597689856*i,[0,4,18,16,24,52,9,18]%%%}+%%%{9018122698752*i,[0,4,18,14,24,54,9,17]%%%}+%%%{1542061031424*i,[0,4,18,12,24,56,9,16]%%%}+%%%{186025771008*i,[0,4,18,10,24,58,9,15]%%%}+%%%{14092861440*i,[0,4,18,8,24,60,9,14]%%%}+%%%{503316480*i,[0,4,18,6,24,62,9,13]%%%}+%%%{-173946175488,[0,4,16,48,24,20,10,34]%%%}+%%%{-2957084983296,[0,4,16,46,24,22,10,33]%%%}+%%%{-23805258891264,[0,4,16,44,24,24,10,32]%%%}+%%%{-120660663730176,[0,4,16,42,24,26,10,31]%%%}+%%%{-431863961223168,[0,4,16,40,24,28,10,30]%%%}+%%%{-1160221896474624,[0,4,16,38,24,30,10,29]%%%}+%%%{-2427647032295424,[0,4,16,36,24,32,10,28]%%%}+%%%{-4051333866848256,[0,4,16,34,24,34,10,27]%%%}+%%%{-5476973392429056,[0,4,16,32,24,36,10,26]%%%}+%%%{-6057839919366144,[0,4,16,30,24,38,10,25]%%%}+%%%{-5512622166245376,[0,4,16,28,24,40,10,24]%%%}+%%%{-4135295964413952,[0,4,16,26,24,42,10,23]%%%}+%%%{-2553409437696000,[0,4,16,24,24,44,10,22]%%%}+%%%{-1291226242351104,[0,4,16,22,24,46,10,21]%%%}+%%%{-529845939339264,[0,4,16,20,24,48,10,20]%%%}+%%%{-173879435722752,[0,4,16,18,24,50,10,19]%%%}+%%%{-44641126711296,[0,4,16,16,24,52,10,18]%%%}+%%%{-8670054187008,[0,4,16,14,24,54,10,17]%%%}+%%%{-1207355572224,[0,4,16,12,24,56,10,16]%%%}+%%%{-109773324288,[0,4,16,10,24,58,10,15]%%%}+%%%{-5360320512,[0,4,16,8,24,60,10,14]%%%}+%%%{-75497472,[0,4,16,6,24,62,10,13]%%%}+%%%{-173946175488*i,[0,4,14,48,24,20,11,34]%%%}+%%%{-2957084983296*i,[0,4,14,46,24,22,11,33]%%%}+%%%{-23769020104704*i,[0,4,14,44,24,24,11,32]%%%}+%%%{-120080843145216*i,[0,4,14,42,24,26,11,31]%%%}+%%%{-427496281473024*i,[0,4,14,40,24,28,11,30]%%%}+%%%{-1139642795556864*i,[0,4,14,38,24,30,11,29]%%%}+%%%{-2359691984240640*i,[0,4,14,36,24,32,11,28]%%%}+%%%{-3884347199324160*i,[0,4,14,34,24,34,11,27]%%%}+%%%{-5160549293752320*i,[0,4,14,32,24,36,11,26]%%%}+%%%{-5585117254778880*i,[0,4,14,30,24,38,11,25]%%%}+%%%{-4948204953010176*i,[0,4,14,28,24,40,11,24]%%%}+%%%{-3592682043604992*i,[0,4,14,26,24,42,11,23]%%%}+%%%{-2132338444075008*i,[0,4,14,24,24,44,11,22]%%%}+%%%{-1028029144891392*i,[0,4,14,22,24,46,11,21]%%%}+%%%{-398240029605888*i,[0,4,14,20,24,48,11,20]%%%}+%%%{-121894141427712*i,[0,4,14,18,24,50,11,19]%%%}+%%%{-28742567067648*i,[0,4,14,16,24,52,11,18]%%%}+%%%{-5021789847552*i,[0,4,14,14,24,54,11,17]%%%}+%%%{-609944076288*i,[0,4,14,12,24,56,11,16]%%%}+%%%{-45751468032*i,[0,4,14,10,24,58,11,15]%%%}+%%%{-1585446912*i,[0,4,14,8,24,60,11,14]%%%}+%%%{65229815808,[0,4,12,48,24,20,12,34]%%%}+%%%{1108906868736,[0,4,12,46,24

,22,12,33]%%%}+%%%{8910664630272,[0,4,12,44,24,24,12,32]%%%}+%%%{4498682963
5584,[0,4,12,42,24,26,12,31]%%%}+%%%{159983937257472,[0,4,12,40,24,28,12,30
]%%%}+%%%{425828731060224,[0,4,12,38,24,30,12,29]%%%}+%%%{879830797123584,[
0,4,12,36,24,32,12,28]%%%}+%%%{1444293440962560,[0,4,12,34,24,34,12,27]%%%}
+%%%{1912042011230208,[0,4,12,32,24,36,12,26]%%%}+%%%{2060234470195200,[0,4
,12,30,24,38,12,25]%%%}+%%%{1815411173621760,[0,4,12,28,24,40,12,24]%%%}+%%
%{1309434194165760,[0,4,12,26,24,42,12,23]%%%}+%%%{771048188411904,[0,4,12,
24,24,44,12,22]%%%}+%%%{368246431678464,[0,4,12,22,24,46,12,21]%%%}+%%%{141
077652701184,[0,4,12,20,24,48,12,20]%%%}+%%%{42627005153280,[0,4,12,18,24,5
0,12,19]%%%}+%%%{9903550758912,[0,4,12,16,24,52,12,18]%%%}+%%%{170175076761
6,[0,4,12,14,24,54,12,17]%%%}+%%%{202993827840,[0,4,12,12,24,56,12,16]%%%}+
%%%{14948499456,[0,4,12,10,24,58,12,15]%%%}+%%%{509607936,[0,4,12,8,24,60,1
2,14]%%%}+%%%{268435456,[0,2,26,48,24,18,8,31]%%%}+%%%{4160749568,[0,2,26,4
6,24,20,8,30]%%%}+%%%{31037849600,[0,2,26,44,24,22,8,29]%%%}+%%%{1483944755
20,[0,2,26,42,24,24,8,28]%%%}+%%%{510438408192,[0,2,26,40,24,26,8,27]%%%}+%
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,30,8,25]%%%}+%%%{4744596684800,[0,2,26,34,24,32,8,24]%%%}+%%%{661102736179
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%%{7373563887616,[0,2,26,28,24,38,8,21]%%%}+%%%{5936130293760,[0,2,26,26,24
,40,8,20]%%%}+%%%{3983139143680,[0,2,26,24,24,42,8,19]%%%}+%%%{221769262694
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%%{379297202176,[0,2,26,18,24,48,8,16]%%%}+%%%{113185390592,[0,2,26,16,24,5
0,8,15]%%%}+%%%{26337607680,[0,2,26,14,24,52,8,14]%%%}+%%%{4597481472,[0,2,
26,12,24,54,8,13]%%%}+%%%{565182464,[0,2,26,10,24,56,8,12]%%%}+%%%{43515904
,[0,2,26,8,24,58,8,11]%%%}+%%%{1572864,[0,2,26,6,24,60,8,10]%%%}+%%%{241591
9104*i,[0,2,24,48,24,18,9,31]%%%}+%%%{37446746112*i,[0,2,24,46,24,20,9,30]%
%%}+%%%{277126053888*i,[0,2,24,44,24,22,9,29]%%%}+%%%{1303438688256*i,[0,2,
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138727149568*i,[0,2,24,38,24,28,9,26]%%%}+%%%{22345436626944*i,[0,2,24,36,2
4,30,9,25]%%%}+%%%{36163768811520*i,[0,2,24,34,24,32,9,24]%%%}+%%%{47946575
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,22]%%%}+%%%{47916383207424*i,[0,2,24,28,24,38,9,21]%%%}+%%%{36353755054080
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%}+%%%{11942350553088*i,[0,2,24,22,24,44,9,18]%%%}+%%%{5099599429632*i,[0,2
,24,20,24,46,9,17]%%%}+%%%{1760876298240*i,[0,2,24,18,24,48,9,16]%%%}+%%%{4
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2,9,14]%%%}+%%%{15860760576*i,[0,2,24,12,24,54,9,13]%%%}+%%%{1700265984*i,[
0,2,24,10,24,56,9,12]%%%}+%%%{110100480*i,[0,2,24,8,24,58,9,11]%%%}+%%%{314
5728*i,[0,2,24,6,24,60,9,10]%%%}+%%%{-9059696640,[0,2,22,48,24,18,10,31]%%%
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,23]%%%}+%%%{-152637525983232,[0,2,22,30,24,36,10,22]%%%}+%%%{-130460565897
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,2,22,22,24,44,10,18]%%%}+%%%{-9996879790080,[0,2,22,20,24,46,10,17]%%%}+%%
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4,50,10,15]%%%}+%%%{-138099032064,[0,2,22,14,24,52,10,14]%%%}+%%%{-18109956
096,[0,2,22,12,24,54,10,13]%%%}+%%%{-1553596416,[0,2,22,10,24,56,10,12]%%%}
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0,2,20,46,24,20,11,30]%%%}+%%%{-2056098152448*i,[0,2,20,44,24,22,11,29]%%%}
+%%%{-9451755012096*i,[0,2,20,42,24,24,11,28]%%%}+%%%{-30592047513600*i,[0,
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%}+%%%{-245523816382464*i,[0,2,20,30,24,36,11,22]%%%}+%%%{-196736967770112*

i,[0,2,20,28,24,38,11,21]%%%}+%%%{-128927438733312*i,[0,2,20,26,24,40,11,20
]%%%}+%%%{-68849851170816*i,[0,2,20,24,24,42,11,19]%%%}+%%%{-29720320671744
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]%%%}+%%%{-2749766565888*i,[0,2,20,18,24,48,11,16]%%%}+%%%{-558671855616*i,
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4,56,11,12]%%%}+%%%{-7077888*i,[0,2,20,8,24,58,11,11]%%%}+%%%{20384317440,[
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,24,12,28]%%%}+%%%{33779744243712,[0,2,18,40,24,26,12,27]%%%}+%%%{806567309
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028105613312,[0,2,18,22,24,44,12,18]%%%}+%%%{6797421379584,[0,2,18,20,24,46
,12,17]%%%}+%%%{1590895116288,[0,2,18,18,24,48,12,16]%%%}+%%%{269189775360,
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24,18,13,31]%%%}+%%%{189574152192*i,[0,2,16,46,24,20,13,30]%%%}+%%%{1382566
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3,28]%%%}+%%%{20127666143232*i,[0,2,16,40,24,26,13,27]%%%}+%%%{478050783068
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2]%%%}+%%%{101502355046400*i,[0,2,16,28,24,38,13,21]%%%}+%%%{61467468005376
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24,52,13,14]%%%}+%%%{1162543104*i,[0,2,16,12,24,54,13,13]%%%}+%%%{39813120*
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,22,14,29]%%%}+%%%{-1579466096640,[0,2,14,42,24,24,14,28]%%%}+%%%{-50569669
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44,14,18]%%%}+%%%{-995335962624,[0,2,14,20,24,46,14,17]%%%}+%%%{-2353313710
08,[0,2,14,18,24,48,14,16]%%%}+%%%{-40896036864,[0,2,14,16,24,50,14,15]%%%}
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4,14,13]%%%}+%%%{-11943936,[0,2,14,10,24,56,14,12]%%%}+%%%{9437184,[0,0,32,
44,24,20,8,26]%%%}+%%%{122683392,[0,0,32,42,24,22,8,25]%%%}+%%%{751828992,[
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,34,8,19]%%%}+%%%{30278578176,[0,0,32,28,24,36,8,18]%%%}+%%%{24444837888,[0
,0,32,26,24,38,8,17]%%%}+%%%{16050204672,[0,0,32,24,24,40,8,16]%%%}+%%%{855
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6,8,8]%%%}+%%%{75497472*i,[0,0,30,44,24,20,9,26]%%%}+%%%{981467136*i,[0,0,3
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,12]%%%}+%%%{360628224*i,[0,0,30,14,24,50,9,11]%%%}+%%%{47235072*i,[0,0,30,
12,24,52,9,10]%%%}+%%%{3858432*i,[0,0,30,10,24,54,9,9]%%%}+%%%{147456*i,[0,
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19]%%%}+%%%{-641389565952,[0,0,28,28,24,36,10,18]%%%}+%%%{-489317935104,[0,
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,10,14]%%%}+%%%{-17695715328,[0,0,28,18,24,46,10,13]%%%}+%%%{-4142702592,[0
,0,28,16,24,48,10,12]%%%}+%%%{-713097216,[0,0,28,14,24,50,10,11]%%%}+%%%{-8
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,26]%%%}+%%%{-4416602112*i,[0,0,26,42,24,22,11,25]%%%}+%%%{-26872971264*i,[
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,34,24,30,11,21]%%%}+%%%{-776460404736*i,[0,0,26,32,24,32,11,20]%%%}+%%%{-9
04880222208*i,[0,0,26,30,24,34,11,19]%%%}+%%%{-835391232000*i,[0,0,26,28,24
,36,11,18]%%%}+%%%{-614852923392*i,[0,0,26,26,24,38,11,17]%%%}+%%%{-3611200
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,15]%%%}+%%%{-61896904704*i,[0,0,26,20,24,44,11,14]%%%}+%%%{-17589878784*i,
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6,8,24,56,11,8]%%%}+%%%{159252480,[0,0,24,44,24,20,12,26]%%%}+%%%{207028224
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8,12,17]%%%}+%%%{119768585472,[0,0,24,24,24,40,12,16]%%%}+%%%{49869084672,[
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]%%%}+%%%{78713856,[0,0,24,14,24,50,12,11]%%%}+%%%{6801408,[0,0,24,12,24,52
,12,10]%%%}+%%%{456192,[0,0,24,10,24,54,12,9]%%%}+%%%{20736,[0,0,24,8,24,56
,12,8]%%%}+%%%{-127401984*i,[0,0,22,44,24,20,13,26]%%%}+%%%{-1656225792*i,[
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4,13,19]%%%}+%%%{-309979478016*i,[0,0,22,28,24,36,13,18]%%%}+%%%{-226050310
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0,13,11]%%%}+%%%{-10948608*i,[0,0,22,12,24,52,13,10]%%%}+%%%{-373248*i,[0,0
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}+%%%{42209869824,[0,0,20,38,24,26,14,23]%%%}+%%%{109204153344,[0,0,20,36,2
4,28,14,22]%%%}+%%%{207068285952,[0,0,20,34,24,30,14,21]%%%}+%%%{2975609571
84,[0,0,20,32,24,32,14,20]%%%}+%%%{330445039104,[0,0,20,30,24,34,14,19]%%%}
+%%%{286508430720,[0,0,20,28,24,36,14,18]%%%}+%%%{194558599296,[0,0,20,26,2
4,38,14,17]%%%}+%%%{103139619840,[0,0,20,24,24,40,14,16]%%%}+%%%{4226324428

```
8,[0,0,20,22,24,42,14,15]%%%}+%%%{13149713664,[0,0,20,20,24,44,14,14]%%%}+%
%%{3019389696,[0,0,20,18,24,46,14,13]%%%}+%%%{489514752,[0,0,20,16,24,48,14
,12]%%%}+%%%{52254720,[0,0,20,14,24,50,14,11]%%%}+%%%{3265920,[0,0,20,12,24
,52,14,10]%%%}+%%%{93312,[0,0,20,10,24,54,14,9]%%%}+%%%{-8957952*i,[0,0,18,
40,24,24,15,24]%%%}+%%%{-107495424*i,[0,0,18,38,24,26,15,23]%%%}+%%%{-59458
4064*i,[0,0,18,36,24,28,15,22]%%%}+%%%{-2007700992*i,[0,0,18,34,24,30,15,21
]%%%}+%%%{-4619223936*i,[0,0,18,32,24,32,15,20]%%%}+%%%{-7651770624*i,[0,0,
18,30,24,34,15,19]%%%}+%%%{-9398291328*i,[0,0,18,28,24,36,15,18]%%%}+%%%{-8
680255488*i,[0,0,18,26,24,38,15,17]%%%}+%%%{-6044937984*i,[0,0,18,24,24,40,
15,16]%%%}+%%%{-3149839872*i,[0,0,18,22,24,42,15,15]%%%}+%%%{-1204284672*i,
[0,0,18,20,24,44,15,14]%%%}+%%%{-325845504*i,[0,0,18,18,24,46,15,13]%%%}+%%
%{-58506624*i,[0,0,18,16,24,48,15,12]%%%}+%%%{-6158592*i,[0,0,18,14,24,50,1
5,11]%%%}+%%%{-279936*i,[0,0,18,12,24,52,15,10]%%%}+%%%{26873856,[0,0,16,44
,24,20,16,26]%%%}+%%%{349360128,[0,0,16,42,24,22,16,25]%%%}+%%%{2109597696,
[0,0,16,40,24,24,16,24]%%%}+%%%{7847165952,[0,0,16,38,24,26,16,23]%%%}+%%%{
20103743808,[0,0,16,36,24,28,16,22]%%%}+%%%{37565871552,[0,0,16,34,24,30,16
,21]%%%}+%%%{52882394832,[0,0,16,32,24,32,16,20]%%%}+%%%{57105054432,[0,0,1
6,30,24,34,16,19]%%%}+%%%{47699939664,[0,0,16,28,24,36,16,18]%%%}+%%%{30839
429376,[0,0,16,26,24,38,16,17]%%%}+%%%{15329225376,[0,0,16,24,24,40,16,16]%
%%}+%%%{5771580480,[0,0,16,22,24,42,16,15]%%%}+%%%{1604663136,[0,0,16,20,24
,44,16,14]%%%}+%%%{316187712,[0,0,16,18,24,46,16,13]%%%}+%%%{41255568,[0,0,
16,16,24,48,16,12]%%%}+%%%{3149280,[0,0,16,14,24,50,16,11]%%%}+%%%{104976,[
0,0,16,12,24,52,16,10]%%%} / %%%{-1024,[0,2,2,12,4,8,2,10]%%%}+%%%{-5120,[0
,2,2,10,4,10,2,9]%%%}+%%%{-10496,[0,2,2,8,4,12,2,8]%%%}+%%%{-11264,[0,2,2,6
,4,14,2,7]%%%}+%%%{-6656,[0,2,2,4,4,16,2,6]%%%}+%%%{-2048,[0,2,2,2,4,18,2,5
]%%%}+%%%{-256,[0,2,2,0,4,20,2,4]%%%}+%%%{-64,[0,0,8,12,4,6,2,7]%%%}+%%%{-2
24,[0,0,8,10,4,8,2,6]%%%}+%%%{-312,[0,0,8,8,4,10,2,5]%%%}+%%%{-220,[0,0,8,6
,4,12,2,4]%%%}+%%%{-80,[0,0,8,4,4,14,2,3]%%%}+%%%{-12,[0,0,8,2,4,16,2,2]%%%
}+%%%{-192*i,[0,0,6,12,4,6,3,7]%%%}+%%%{-672*i,[0,0,6,10,4,8,3,6]%%%}+%%%{-
912*i,[0,0,6,8,4,10,3,5]%%%}+%%%{-600*i,[0,0,6,6,4,12,3,4]%%%}+%%%{-192*i,[
0,0,6,4,4,14,3,3]%%%}+%%%{-24*i,[0,0,6,2,4,16,3,2]%%%}+%%%{144,[0,0,4,12,4,
6,4,7]%%%}+%%%{504,[0,0,4,10,4,8,4,6]%%%}+%%%{666,[0,0,4,8,4,10,4,5]%%%}+%%
%{405,[0,0,4,6,4,12,4,4]%%%}+%%%{108,[0,0,4,4,4,14,4,3]%%%}+%%%{9,[0,0,4,2,
4,16,4,2]%%%} Error: Bad Argument Value
```

maple [A] time = 1.32, size = 0, normalized size = 0.00

$$\int \frac{(a+b\arcsin(cx))^{\frac{3}{2}}}{\left(e\,x^{2}+d\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((a+b*arcsin(c*x))^(3/2)/(e*x^2+d)^2,x)

[Out] int((a+b*arcsin(c*x))^(3/2)/(e*x^2+d)^2,x)

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b\arcsin(cx)+a)^{\frac{3}{2}}}{\left(ex^{2}+d\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((a+b*arcsin(c*x))^(3/2)/(e*x^2+d)^2,x, algorithm="maxima")

[Out] integrate((b*arcsin(c*x) + a)^(3/2)/(e*x^2 + d)^2, x)

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{(a+b\,\mathrm{asin}(c\,x))^{3/2}}{\left(e\,x^{2}+d\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*asin(c*x))^(3/2)/(d + e*x^2)^2,x)
[Out] int((a + b*asin(c*x))^(3/2)/(d + e*x^2)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*asin(c*x))**(3/2)/(e*x**2+d)**2,x)
[Out] Timed out
```

3.695 $\int \frac{(d+ex^2)^2}{\sqrt{a+b\sin^{-1}(cx)}}\,dx$

Optimal. Leaf size=679

$$\frac{\sqrt{\frac{\pi}{2}}e^2\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{4\sqrt{b}c^5}-\frac{\sqrt{\frac{3\pi}{2}}e^2\cos\left(\frac{3a}{b}\right)C\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{8\sqrt{b}c^5}+\frac{\sqrt{\frac{\pi}{10}}e^2\cos\left(\frac{5a}{b}\right)C\left(\frac{\sqrt{\frac{10}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{8\sqrt{b}c^5}$$

```
[Out] 1/80*e^2*cos(5*a/b)*FresnelC(10^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1
/2))*10^(1/2)*Pi^(1/2)/c^5/b^(1/2)+1/80*e^2*FresnelS(10^(1/2)/Pi^(1/2)*(a+b
*arcsin(c*x))^(1/2)/b^(1/2))*sin(5*a/b)*10^(1/2)*Pi^(1/2)/c^5/b^(1/2)-1/6*d
*e*cos(3*a/b)*FresnelC(6^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*6^
(1/2)*Pi^(1/2)/c^3/b^(1/2)-1/6*d*e*FresnelS(6^(1/2)/Pi^(1/2)*(a+b*arcsin(c*
x))^(1/2)/b^(1/2))*sin(3*a/b)*6^(1/2)*Pi^(1/2)/c^3/b^(1/2)+1/2*d*e*cos(a/b)
*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2
)/c^3/b^(1/2)+1/8*e^2*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^
(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/c^5/b^(1/2)+1/2*d*e*FresnelS(2^(1/2)/Pi^(1/
2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/c^3/b^(1/2)+1
/8*e^2*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*sin(a/b)*
2^(1/2)*Pi^(1/2)/c^5/b^(1/2)-1/16*e^2*cos(3*a/b)*FresnelC(6^(1/2)/Pi^(1/2)*
(a+b*arcsin(c*x))^(1/2)/b^(1/2))*6^(1/2)*Pi^(1/2)/c^5/b^(1/2)-1/16*e^2*Fres
nelS(6^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*sin(3*a/b)*6^(1/2)*P
i^(1/2)/c^5/b^(1/2)+d^2*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x)
)^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/c/b^(1/2)+d^2*FresnelS(2^(1/2)/Pi^(1/2)*(
a+b*arcsin(c*x))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/c/b^(1/2)
```

Rubi [A] time = 1.50, antiderivative size = 679, normalized size of antiderivative = 1.00, number of steps used = 39, number of rules used = 9, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.409$, Rules used = {4667, 4623, 3306, 3305, 3351, 3304, 3352, 4635, 4406}

$$\frac{\sqrt{\frac{\pi}{2}}de\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{\sqrt{b}c^3}-\frac{\sqrt{\frac{\pi}{6}}de\cos\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{\sqrt{b}c^3}+\frac{\sqrt{\frac{\pi}{2}}de\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}}{}\right)}{\sqrt{b}c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x^2)^2/Sqrt[a + b*ArcSin[c*x]],x]
```

```
[Out] (d*e*Sqrt[Pi/2]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt
[b]])/(Sqrt[b]*c^3) + (e^2*Sqrt[Pi/2]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a
+ b*ArcSin[c*x]])/Sqrt[b]])/(4*Sqrt[b]*c^5) + (d^2*Sqrt[2*Pi]*Cos[a/b]*Fres
nelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/(Sqrt[b]*c) - (d*e*Sqrt
[Pi/6]*Cos[(3*a)/b]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])
/(Sqrt[b]*c^3) - (e^2*Sqrt[(3*Pi)/2]*Cos[(3*a)/b]*FresnelC[(Sqrt[6/Pi]*Sqrt
[a + b*ArcSin[c*x]])/Sqrt[b]])/(8*Sqrt[b]*c^5) + (e^2*Sqrt[Pi/10]*Cos[(5*a)
/b]*FresnelC[(Sqrt[10/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/(8*Sqrt[b]*c^5
) + (d*e*Sqrt[Pi/2]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*
Sin[a/b])/(Sqrt[b]*c^3) + (e^2*Sqrt[Pi/2]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*A
rcSin[c*x]])/Sqrt[b]]*Sin[a/b])/(4*Sqrt[b]*c^5) + (d^2*Sqrt[2*Pi]*FresnelS[
(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[a/b])/(Sqrt[b]*c) - (d*e*
Sqrt[Pi/6]*FresnelS[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[(3*a)
/b])/(Sqrt[b]*c^3) - (e^2*Sqrt[(3*Pi)/2]*FresnelS[(Sqrt[6/Pi]*Sqrt[a + b*Ar
cSin[c*x]])/Sqrt[b]]*Sin[(3*a)/b])/(8*Sqrt[b]*c^5) + (e^2*Sqrt[Pi/10]*Fresn
elS[(Sqrt[10/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[(5*a)/b])/(8*Sqrt[b]
*c^5)
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rubi steps

$$\int \frac{\left(d+ex^2\right)^2}{\sqrt{a+b\sin^{-1}(cx)}}\,dx = \int \left(\frac{d^2}{\sqrt{a+b\sin^{-1}(cx)}} + \frac{2dex^2}{\sqrt{a+b\sin^{-1}(cx)}} + \frac{e^2x^4}{\sqrt{a+b\sin^{-1}(cx)}}\right) dx$$

$$= d^2 \int \frac{1}{\sqrt{a+b\sin^{-1}(cx)}}\,dx + (2de)\int \frac{x^2}{\sqrt{a+b\sin^{-1}(cx)}}\,dx + e^2 \int \frac{x^4}{\sqrt{a+b\sin^{-1}(cx)}}\,dx$$

$$= \frac{d^2\,\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}-\frac{x}{b}\right)}{\sqrt{x}}\,dx, x, a+b\sin^{-1}(cx)\right)}{bc} + \frac{(2de)\,\text{Subst}\left(\int \frac{\cos(x)\sin^2(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(c\right.}{c^3}$$

$$= \frac{(2de)\,\text{Subst}\left(\int \left(\frac{\cos(x)}{4\sqrt{a+bx}} - \frac{\cos(3x)}{4\sqrt{a+bx}}\right) dx, x, \sin^{-1}(cx)\right)}{c^3} + \frac{e^2\,\text{Subst}\left(\int \left(\frac{\cos(x)}{8\sqrt{a+bx}} - \frac{3\cos(3x)}{16\sqrt{a+bx}}\right.\right.}{c^5}$$

$$= \frac{(de)\,\text{Subst}\left(\int \frac{\cos(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{2c^3} - \frac{(de)\,\text{Subst}\left(\int \frac{\cos(3x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{2c^3} + \frac{e^2\,\text{Sub}}{}$$

$$= \frac{d^2\sqrt{2\pi}\,\cos\left(\frac{a}{b}\right) C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{\sqrt{b}\,c} + \frac{d^2\sqrt{2\pi}\,S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)\sin\left(\frac{a}{b}\right)}{\sqrt{b}\,c} + \frac{\left(de\cos\left(\right.\right.}{}$$

$$= \frac{d^2\sqrt{2\pi}\,\cos\left(\frac{a}{b}\right) C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{\sqrt{b}\,c} + \frac{d^2\sqrt{2\pi}\,S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)\sin\left(\frac{a}{b}\right)}{\sqrt{b}\,c} + \frac{\left(de\cos\left(\right.\right.}{}$$

$$= \frac{de\sqrt{\frac{\pi}{2}}\,\cos\left(\frac{a}{b}\right) C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{\sqrt{b}\,c^3} + \frac{e^2\sqrt{\frac{\pi}{2}}\,\cos\left(\frac{a}{b}\right) C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{4\sqrt{b}\,c^5} + \frac{d^2\sqrt{2\pi}\,\text{co}}{}$$

Mathematica [C] time = 1.75, size = 401, normalized size = 0.59

$$\frac{ie^{-\frac{5ia}{b}}\left(e\left(5\sqrt{3}\,e^{\frac{2ia}{b}}\left(8c^2d+3e\right)\sqrt{-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}}\,\Gamma\left(\frac{1}{2}, -\frac{3i\left(a+b\sin^{-1}(cx)\right)}{b}\right) - 5\sqrt{3}\,e^{\frac{8ia}{b}}\left(8c^2d+3e\right)\sqrt{\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}}\,\Gamma\left(\frac{1}{2},\right.\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(d + e*x^2)^2/Sqrt[a + b*ArcSin[c*x]],x]
```

```
[Out] ((I/480)*(-30*(8*c^4*d^2 + 4*c^2*d*e + e^2)*E^(((4*I)*a)/b)*Sqrt[((-I)*(a +
 b*ArcSin[c*x]))/b]*Gamma[1/2, ((-I)*(a + b*ArcSin[c*x]))/b] + 30*(8*c^4*d^
2 + 4*c^2*d*e + e^2)*E^(((6*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gamma[
1/2, (I*(a + b*ArcSin[c*x]))/b] + e*(5*Sqrt[3]*(8*c^2*d + 3*e)*E^(((2*I)*a)
/b)*Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((-3*I)*(a + b*ArcSin[c*x
]))/b] - 5*Sqrt[3]*(8*c^2*d + 3*e)*E^(((8*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c*
x]))/b]*Gamma[1/2, ((3*I)*(a + b*ArcSin[c*x]))/b] - 3*Sqrt[5]*e*(Sqrt[((-I)
*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((-5*I)*(a + b*ArcSin[c*x]))/b] - E^(((
10*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((5*I)*(a + b*ArcSin
[c*x]))/b]))))/(c^5*E^(((5*I)*a)/b)*Sqrt[a + b*ArcSin[c*x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2/(a+b*arcsin(c*x))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >> Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [C] time = 2.52, size = 973, normalized size = 1.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2/(a+b*arcsin(c*x))^(1/2),x, algorithm="giac")
```

```
[Out] -sqrt(pi)*d^2*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2
*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(c*(I*sqrt(2)*b/
sqrt(abs(b)) + sqrt(2)*sqrt(abs(b)))) - sqrt(pi)*d^2*erf(1/2*I*sqrt(2)*sqrt
(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt
(abs(b))/b)*e^(-I*a/b)/(c*(-I*sqrt(2)*b/sqrt(abs(b)) + sqrt(2)*sqrt(abs(b))
)) + 1/2*sqrt(pi)*d*erf(-1/2*sqrt(6)*sqrt(b*arcsin(c*x) + a)/sqrt(b) - 1/2*
I*sqrt(6)*sqrt(b*arcsin(c*x) + a)*sqrt(b)/abs(b))*e^(3*I*a/b + 1)/((sqrt(6)
*sqrt(b) + I*sqrt(6)*b^(3/2)/abs(b))*c^3) - 1/2*sqrt(pi)*d*erf(-1/2*I*sqrt(
2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) +
a)*sqrt(abs(b))/b)*e^(I*a/b + 1)/(c^3*(I*sqrt(2)*b/sqrt(abs(b)) + sqrt(2)*s
qrt(abs(b)))) - 1/2*sqrt(pi)*d*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sq
rt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(-I*a/b
+ 1)/(c^3*(-I*sqrt(2)*b/sqrt(abs(b)) + sqrt(2)*sqrt(abs(b)))) + 1/2*sqrt(pi
)*d*erf(-1/2*sqrt(6)*sqrt(b*arcsin(c*x) + a)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b
*arcsin(c*x) + a)*sqrt(b)/abs(b))*e^(-3*I*a/b + 1)/((sqrt(6)*sqrt(b) - I*sq
rt(6)*b^(3/2)/abs(b))*c^3) - 1/16*sqrt(pi)*erf(-1/2*sqrt(10)*sqrt(b*arcsin(
c*x) + a)/sqrt(b) - 1/2*I*sqrt(10)*sqrt(b*arcsin(c*x) + a)*sqrt(b)/abs(b))*
e^(5*I*a/b + 2)/((sqrt(10)*sqrt(b) + I*sqrt(10)*b^(3/2)/abs(b))*c^5) - 1/8*
sqrt(pi)*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt
(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b + 2)/(c^5*(I*sqrt(2)*b
/sqrt(abs(b)) + sqrt(2)*sqrt(abs(b)))) - 1/8*sqrt(pi)*erf(1/2*I*sqrt(2)*sqr
t(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqr
t(abs(b))/b)*e^(-I*a/b + 2)/(c^5*(-I*sqrt(2)*b/sqrt(abs(b)) + sqrt(2)*sqrt(
abs(b)))) - 1/16*sqrt(pi)*erf(-1/2*sqrt(10)*sqrt(b*arcsin(c*x) + a)/sqrt(b)
 + 1/2*I*sqrt(10)*sqrt(b*arcsin(c*x) + a)*sqrt(b)/abs(b))*e^(-5*I*a/b + 2)/
((sqrt(10)*sqrt(b) - I*sqrt(10)*b^(3/2)/abs(b))*c^5) + 3/16*sqrt(pi)*erf(-1
/2*sqrt(6)*sqrt(b*arcsin(c*x) + a)/sqrt(b) - 1/2*I*sqrt(6)*sqrt(b*arcsin(c*
x) + a)*sqrt(b)/abs(b))*e^(3*I*a/b + 2)/(sqrt(b)*c^5*(sqrt(6) + I*sqrt(6)*b
/abs(b))) + 3/16*sqrt(pi)*erf(-1/2*sqrt(6)*sqrt(b*arcsin(c*x) + a)/sqrt(b)
+ 1/2*I*sqrt(6)*sqrt(b*arcsin(c*x) + a)*sqrt(b)/abs(b))*e^(-3*I*a/b + 2)/(s
qrt(b)*c^5*(sqrt(6) - I*sqrt(6)*b/abs(b)))
```

maple [A] time = 0.42, size = 545, normalized size = 0.80

$$-\frac{\sqrt{\frac{1}{b}}\,\sqrt{\pi}\,\sqrt{2}\,\sqrt{5}\,\left(-48\sqrt{5}\,\cos\left(\frac{a}{b}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin(cx)}}{\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,b}\right)c^4d^2-48\sqrt{5}\,\sin\left(\frac{a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin(cx)}}{\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,b}\right)c^4d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)^2/(a+b*arcsin(c*x))^(1/2),x)
```

```
[Out] -1/240/c^5*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*5^(1/2)*(-48*5^(1/2)*cos(a/b)*Fresn
elC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*c^4*d^2-48*5^(1
/2)*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/
b)*c^4*d^2+8*5^(1/2)*3^(1/2)*cos(3*a/b)*FresnelC(2^(1/2)/Pi^(1/2)*3^(1/2)/(
1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*c^2*d*e+8*5^(1/2)*3^(1/2)*sin(3*a/b)*
FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*c^
2*d*e-24*5^(1/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin
(c*x))^(1/2)/b)*c^2*d*e-24*5^(1/2)*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)
```

```
^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*c^2*d*e+3*5^(1/2)*3^(1/2)*cos(3*a/b)*Fres
nelC(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*e^2+3*
5^(1/2)*3^(1/2)*sin(3*a/b)*FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a
+b*arcsin(c*x))^(1/2)/b)*e^2-6*5^(1/2)*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(
1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*e^2-6*5^(1/2)*sin(a/b)*FresnelS(2^(1/
2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*e^2-3*cos(5*a/b)*Fresnel
C(2^(1/2)/Pi^(1/2)*5^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*e^2-3*sin
(5*a/b)*FresnelS(2^(1/2)/Pi^(1/2)*5^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/
2)/b)*e^2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(ex^2+d\right)^2}{\sqrt{b \arcsin(cx)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)^2/(a+b*arcsin(c*x))^(1/2),x, algorithm="maxima")
[Out] integrate((e*x^2 + d)^2/sqrt(b*arcsin(c*x) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(e\,x^2+d\right)^2}{\sqrt{a+b\,\mathrm{asin}\left(c\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x^2)^2/(a + b*asin(c*x))^(1/2),x)
[Out] int((d + e*x^2)^2/(a + b*asin(c*x))^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d+ex^2\right)^2}{\sqrt{a+b\,\mathrm{asin}\left(cx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)**2/(a+b*asin(c*x))**(1/2),x)
[Out] Integral((d + e*x**2)**2/sqrt(a + b*asin(c*x)), x)
```

3.696 $\int \frac{d+ex^2}{\sqrt{a+b\sin^{-1}(cx)}}\,dx$

Optimal. Leaf size=329

$$\frac{\sqrt{\frac{\pi}{2}}\,e\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{2\sqrt{b}\,c^3}-\frac{\sqrt{\frac{\pi}{6}}\,e\cos\left(\frac{3a}{b}\right)C\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{2\sqrt{b}\,c^3}+\frac{\sqrt{\frac{\pi}{2}}\,e\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{2\sqrt{b}\,c^3}-$$

```
[Out] -1/12*e*cos(3*a/b)*FresnelC(6^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2
))*6^(1/2)*Pi^(1/2)/c^3/b^(1/2)-1/12*e*FresnelS(6^(1/2)/Pi^(1/2)*(a+b*arcsi
n(c*x))^(1/2)/b^(1/2))*sin(3*a/b)*6^(1/2)*Pi^(1/2)/c^3/b^(1/2)+1/4*e*cos(a/
b)*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*2^(1/2)*Pi^(1
/2)/c^3/b^(1/2)+1/4*e*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(
1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/c^3/b^(1/2)+d*cos(a/b)*FresnelC(2^(1/2)/Pi^
(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/c/b^(1/2)+d*Fresnel
S(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/
2)/c/b^(1/2)
```

Rubi [A] time = 0.64, antiderivative size = 329, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 9, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.450, Rules used = {4667, 4623, 3306, 3305, 3351, 3304, 3352, 4635, 4406}

$$\frac{\sqrt{\frac{\pi}{2}}\,e\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{2\sqrt{b}\,c^3}-\frac{\sqrt{\frac{\pi}{6}}\,e\cos\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{2\sqrt{b}\,c^3}+\frac{\sqrt{\frac{\pi}{2}}\,e\sin\left(\frac{a}{b}\right)S\left(\sqrt{\frac{2}{\pi}}\right.}{2\sqrt{b}\,c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x^2)/Sqrt[a + b*ArcSin[c*x]],x]
```

```
[Out] (e*Sqrt[Pi/2]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b
]])/(2*Sqrt[b]*c^3) + (d*Sqrt[2*Pi]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a +
b*ArcSin[c*x]])/Sqrt[b]])/(Sqrt[b]*c) - (e*Sqrt[Pi/6]*Cos[(3*a)/b]*FresnelC
[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/(2*Sqrt[b]*c^3) + (e*Sqrt[P
i/2]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[a/b])/(2*Sq
rt[b]*c^3) + (d*Sqrt[2*Pi]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sq
rt[b]]*Sin[a/b])/(Sqrt[b]*c) - (e*Sqrt[Pi/6]*FresnelS[(Sqrt[6/Pi]*Sqrt[a +
b*ArcSin[c*x]])/Sqrt[b]]*Sin[(3*a)/b])/(2*Sqrt[b]*c^3)
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rule 4635

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Dist[1
/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*Cos[x], x], x, ArcSin[c*x]], x]
/; FreeQ[{a, b, c, n}, x] && IGtQ[m, 0]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rubi steps

$$\int \frac{d+ex^2}{\sqrt{a+b\sin^{-1}(cx)}}\,dx = \int \left(\frac{d}{\sqrt{a+b\sin^{-1}(cx)}} + \frac{ex^2}{\sqrt{a+b\sin^{-1}(cx)}}\right)dx$$
$$= d\int \frac{1}{\sqrt{a+b\sin^{-1}(cx)}}\,dx + e\int \frac{x^2}{\sqrt{a+b\sin^{-1}(cx)}}\,dx$$
$$= \frac{d\,\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}-\frac{x}{b}\right)}{\sqrt{x}}\,dx, x, a+b\sin^{-1}(cx)\right)}{bc} + \frac{e\,\text{Subst}\left(\int \frac{\cos(x)\sin^2(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{c^3}$$
$$= \frac{e\,\text{Subst}\left(\int \left(\frac{\cos(x)}{4\sqrt{a+bx}} - \frac{\cos(3x)}{4\sqrt{a+bx}}\right)dx, x, \sin^{-1}(cx)\right)}{c^3} + \frac{\left(d\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\cos\left(\frac{x}{b}\right)}{\sqrt{x}}\,dx, x,\right.}{bc}$$
$$= \frac{e\,\text{Subst}\left(\int \frac{\cos(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{4c^3} - \frac{e\,\text{Subst}\left(\int \frac{\cos(3x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{4c^3} + \frac{\left(2d\cos\left(\right.\right.}{}$$
$$= \frac{d\sqrt{2\pi}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{\sqrt{b}\,c} + \frac{d\sqrt{2\pi}\,S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)\sin\left(\frac{a}{b}\right)}{\sqrt{b}\,c} + \frac{\left(e\cos\left(\right.\right.}{}$$
$$= \frac{d\sqrt{2\pi}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{\sqrt{b}\,c} + \frac{d\sqrt{2\pi}\,S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)\sin\left(\frac{a}{b}\right)}{\sqrt{b}\,c} + \frac{\left(e\cos\left(\right.\right.}{}$$
$$= \frac{e\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{2\sqrt{b}\,c^3} + \frac{d\sqrt{2\pi}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{\sqrt{b}\,c} - \frac{e\sqrt{\frac{\pi}{6}}\,\text{co}}{}$$

Mathematica [C] time = 0.68, size = 246, normalized size = 0.75

$$-\frac{ie^{-\frac{3ia}{b}}\left(3e^{\frac{2ia}{b}}\left(4c^2d+e\right)\sqrt{-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}}\,\Gamma\left(\frac{1}{2},-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right) - 3e^{\frac{4ia}{b}}\left(4c^2d+e\right)\sqrt{\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}}\,\Gamma\left(\frac{1}{2},\frac{i\left(a+b\sin^{-1}\right.}{b}\right.\right.}{24c^3\sqrt{a+b\sin^{-1}}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(d + e*x^2)/Sqrt[a + b*ArcSin[c*x]],x]
```

```
[Out] ((-1/24*I)*(3*(4*c^2*d + e)*E^(((2*I)*a)/b)*Sqrt[((-I)*(a + b*ArcSin[c*x]))
/b]*Gamma[1/2, ((-I)*(a + b*ArcSin[c*x]))/b] - 3*(4*c^2*d + e)*E^(((4*I)*a)
/b)*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, (I*(a + b*ArcSin[c*x]))/b] -
 Sqrt[3]*e*(Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((-3*I)*(a + b*Ar
cSin[c*x]))/b] - E^(((6*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gamma[1/2,
 ((3*I)*(a + b*ArcSin[c*x]))/b])))/(c^3*E^(((3*I)*a)/b)*Sqrt[a + b*ArcSin[c
*x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)/(a+b*arcsin(c*x))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >> Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [C] time = 2.07, size = 485, normalized size = 1.47

$$-\frac{\sqrt{\pi}\,d\,\mathrm{erf}\left(-\frac{i\sqrt{2}\sqrt{b\arcsin(cx)+a}}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin(cx)+a}\sqrt{|b|}}{2b}\right)e^{\left(\frac{ia}{b}\right)}}{c\left(\frac{i\sqrt{2}b}{\sqrt{|b|}}+\sqrt{2}\sqrt{|b|}\right)}-\frac{\sqrt{\pi}\,d\,\mathrm{erf}\left(\frac{i\sqrt{2}\sqrt{b\arcsin(cx)+a}}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin(cx)+a}\sqrt{|b|}}{2b}\right)e^{\left(-\right.}}{c\left(-\frac{i\sqrt{2}b}{\sqrt{|b|}}+\sqrt{2}\sqrt{|b|}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)/(a+b*arcsin(c*x))^(1/2),x, algorithm="giac")
```

```
[Out] -sqrt(pi)*d*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*s
qrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(c*(I*sqrt(2)*b/sq
rt(abs(b)) + sqrt(2)*sqrt(abs(b)))) - sqrt(pi)*d*erf(1/2*I*sqrt(2)*sqrt(b*a
rcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs
(b))/b)*e^(-I*a/b)/(c*(-I*sqrt(2)*b/sqrt(abs(b)) + sqrt(2)*sqrt(abs(b)))) +
 1/4*sqrt(pi)*erf(-1/2*sqrt(6)*sqrt(b*arcsin(c*x) + a)/sqrt(b) - 1/2*I*sqrt
(6)*sqrt(b*arcsin(c*x) + a)*sqrt(b)/abs(b))*e^(3*I*a/b + 1)/((sqrt(6)*sqrt(
b) + I*sqrt(6)*b^(3/2)/abs(b))*c^3) - 1/4*sqrt(pi)*erf(-1/2*I*sqrt(2)*sqrt(
b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(
abs(b))/b)*e^(I*a/b + 1)/(c^3*(I*sqrt(2)*b/sqrt(abs(b)) + sqrt(2)*sqrt(abs(
b)))) - 1/4*sqrt(pi)*erf(1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b))
 - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(-I*a/b + 1)/(c^3*
(-I*sqrt(2)*b/sqrt(abs(b)) + sqrt(2)*sqrt(abs(b)))) + 1/4*sqrt(pi)*erf(-1/2
*sqrt(6)*sqrt(b*arcsin(c*x) + a)/sqrt(b) + 1/2*I*sqrt(6)*sqrt(b*arcsin(c*x)
 + a)*sqrt(b)/abs(b))*e^(-3*I*a/b + 1)/((sqrt(6)*sqrt(b) - I*sqrt(6)*b^(3/2
)/abs(b))*c^3)
```

maple [A] time = 0.25, size = 248, normalized size = 0.75

$$\frac{\sqrt{2}\,\sqrt{\frac{1}{b}}\,\sqrt{\pi}\,\left(12\cos\left(\frac{a}{b}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin(cx)}}{\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,b}\right)c^2d+12\sin\left(\frac{a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin(cx)}}{\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,b}\right)c^2d-\cos\left(\frac{3a}{b}\right)\mathrm{Fresnel}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)/(a+b*arcsin(c*x))^(1/2),x)
```

```
[Out] 1/12/c^3*2^(1/2)*(1/b)^(1/2)*Pi^(1/2)*(12*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2
)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*c^2*d+12*sin(a/b)*FresnelS(2^(1/2)
/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*c^2*d-cos(3*a/b)*FresnelC(
2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*3^(1/2)*e-s
in(3*a/b)*FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(
1/2)/b)*3^(1/2)*e+3*cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arc
sin(c*x))^(1/2)/b)*e+3*sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*
arcsin(c*x))^(1/2)/b)*e)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{ex^2+d}{\sqrt{b\arcsin(cx)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)/(a+b*arcsin(c*x))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((e*x^2 + d)/sqrt(b*arcsin(c*x) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{e\,x^2+d}{\sqrt{a+b\,\mathrm{asin}\left(c\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x^2)/(a + b*asin(c*x))^(1/2),x)
```

```
[Out] int((d + e*x^2)/(a + b*asin(c*x))^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d + ex^2}{\sqrt{a + b \operatorname{asin}(cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)/(a+b*asin(c*x))**(1/2),x)
```

```
[Out] Integral((d + e*x**2)/sqrt(a + b*asin(c*x)), x)
```

3.697 $\int \frac{1}{\sqrt{a+b\sin^{-1}(cx)}}\,dx$

Optimal. Leaf size=101

$$\frac{\sqrt{2\pi}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{\sqrt{b}\,c}+\frac{\sqrt{2\pi}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{\sqrt{b}\,c}$$

```
[Out] cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*2^(1/2)
*Pi^(1/2)/c/b^(1/2)+FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/
2))*sin(a/b)*2^(1/2)*Pi^(1/2)/c/b^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {4623, 3306, 3305, 3351, 3304, 3352}

$$\frac{\sqrt{2\pi}\cos\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{\sqrt{b}\,c}+\frac{\sqrt{2\pi}\sin\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{\sqrt{b}\,c}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[a + b*ArcSin[c*x]],x]
```

```
[Out] (Sqrt[2*Pi]*Cos[a/b]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]
)/(Sqrt[b]*c) + (Sqrt[2*Pi]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/S
qrt[b]]*Sin[a/b])/(Sqrt[b]*c)
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4623

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[1/(b*c), Sub
st[Int[x^n*Cos[a/b - x/b], x], x, a + b*ArcSin[c*x]], x] /; FreeQ[{a, b, c,
 n}, x]
```

Rubi steps

$$\int \frac{1}{\sqrt{a+b\sin^{-1}(cx)}}\,dx = \frac{\text{Subst}\left(\int \frac{\cos\left(\frac{a}{b}-\frac{x}{b}\right)}{\sqrt{x}}\,dx, x, a+b\sin^{-1}(cx)\right)}{bc}$$
$$= \frac{\cos\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\cos\left(\frac{x}{b}\right)}{\sqrt{x}}\,dx, x, a+b\sin^{-1}(cx)\right)}{bc} + \frac{\sin\left(\frac{a}{b}\right)\text{Subst}\left(\int \frac{\sin\left(\frac{x}{b}\right)}{\sqrt{x}}\,dx, x, a+b\right.}{bc}$$
$$= \frac{\left(2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \cos\left(\frac{x^2}{b}\right)\,dx, x, \sqrt{a+b\sin^{-1}(cx)}\right)}{bc} + \frac{\left(2\sin\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \sin\left(\right.\right.}{}$$
$$= \frac{\sqrt{2\pi}\cos\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{\sqrt{b}\,c} + \frac{\sqrt{2\pi}\,S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)\sin\left(\frac{a}{b}\right)}{\sqrt{b}\,c}$$

Mathematica [C] time = 0.15, size = 121, normalized size = 1.20

$$\frac{ie^{-\frac{ia}{b}}\left(e^{\frac{2ia}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}}\,\Gamma\left(\frac{1}{2},\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)-\sqrt{-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}}\,\Gamma\left(\frac{1}{2},-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)\right)}{2c\sqrt{a+b\sin^{-1}(cx)}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[1/Sqrt[a + b*ArcSin[c*x]],x]
```

```
[Out] ((I/2)*(-(Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((-I)*(a + b*ArcSin
[c*x]))/b]) + E^(((2*I)*a)/b)*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, (I
*(a + b*ArcSin[c*x]))/b]))/(c*E^((I*a)/b)*Sqrt[a + b*ArcSin[c*x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [C] time = 1.98, size = 159, normalized size = 1.57

$$-\frac{\sqrt{\pi}\,\text{erf}\left(-\frac{i\sqrt{2}\sqrt{b\arcsin(cx)+a}}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin(cx)+a}\sqrt{|b|}}{2b}\right)e^{\left(\frac{ia}{b}\right)}}{c\left(\frac{i\sqrt{2}b}{\sqrt{|b|}}+\sqrt{2}\sqrt{|b|}\right)}-\frac{\sqrt{\pi}\,\text{erf}\left(\frac{i\sqrt{2}\sqrt{b\arcsin(cx)+a}}{2\sqrt{|b|}}-\frac{\sqrt{2}\sqrt{b\arcsin(cx)+a}\sqrt{|b|}}{2b}\right)e^{\left(\right.}}{c\left(-\frac{i\sqrt{2}b}{\sqrt{|b|}}+\sqrt{2}\sqrt{|b|}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x))^(1/2),x, algorithm="giac")
```

```
[Out] -sqrt(pi)*erf(-1/2*I*sqrt(2)*sqrt(b*arcsin(c*x) + a)/sqrt(abs(b)) - 1/2*sqr
t(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))/b)*e^(I*a/b)/(c*(I*sqrt(2)*b/sqrt
(abs(b)) + sqrt(2)*sqrt(abs(b)))) - sqrt(pi)*erf(1/2*I*sqrt(2)*sqrt(b*arcsi
n(c*x) + a)/sqrt(abs(b)) - 1/2*sqrt(2)*sqrt(b*arcsin(c*x) + a)*sqrt(abs(b))
/b)*e^(-I*a/b)/(c*(-I*sqrt(2)*b/sqrt(abs(b)) + sqrt(2)*sqrt(abs(b))))
```

maple [A] time = 0.00, size = 83, normalized size = 0.82

$$\frac{\sqrt{2}\,\sqrt{\pi}\,\sqrt{\frac{1}{b}}\left(\cos\left(\frac{a}{b}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin(cx)}}{\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,b}\right)+\sin\left(\frac{a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin(cx)}}{\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,b}\right)\right)}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(c*x))^(1/2),x)
```

```
[Out] 2^(1/2)*Pi^(1/2)*(1/b)^(1/2)*(cos(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2
)*(a+b*arcsin(c*x))^(1/2)/b)+sin(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)
*(a+b*arcsin(c*x))^(1/2)/b))/c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{b\arcsin(cx)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/sqrt(b*arcsin(c*x) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{\sqrt{a+b\,\mathrm{asin}(c\,x)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(c*x))^(1/2),x)
```

```
[Out] int(1/(a + b*asin(c*x))^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a+b\,\mathrm{asin}(cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(c*x))**(1/2),x)
```

```
[Out] Integral(1/sqrt(a + b*asin(c*x)), x)
```

3.698 $\int \frac{1}{(d+ex^2)\sqrt{a+b\sin^{-1}(cx)}}\,dx$

Optimal. Leaf size=25

$$\text{Int}\left(\frac{1}{\left(d+ex^2\right)\sqrt{a+b\sin^{-1}(cx)}},x\right)$$

```
[Out] Unintegrable(1/(e*x^2+d)/(a+b*arcsin(c*x))^(1/2),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\left(d+ex^2\right)\sqrt{a+b\sin^{-1}(cx)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((d + e*x^2)*Sqrt[a + b*ArcSin[c*x]]),x]
[Out] Defer[Int][1/((d + e*x^2)*Sqrt[a + b*ArcSin[c*x]]), x]
```

Rubi steps

$$\int \frac{1}{\left(d+ex^2\right)\sqrt{a+b\sin^{-1}(cx)}}\,dx=\int \frac{1}{\left(d+ex^2\right)\sqrt{a+b\sin^{-1}(cx)}}\,dx$$

Mathematica [A] time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(d+ex^2\right)\sqrt{a+b\sin^{-1}(cx)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((d + e*x^2)*Sqrt[a + b*ArcSin[c*x]]),x]
[Out] Integrate[1/((d + e*x^2)*Sqrt[a + b*ArcSin[c*x]]), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)/(a+b*arcsin(c*x))^(1/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >> Error detected within library code: integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(ex^2+d\right)\sqrt{b\arcsin\left(cx\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)/(a+b*arcsin(c*x))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/((e*x^2 + d)*sqrt(b*arcsin(c*x) + a)), x)
```

maple [A] time = 0.56, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(e\,x^{2}+d\right)\sqrt{a+b\arcsin\left(cx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x^2+d)/(a+b*arcsin(c*x))^(1/2),x)
```

```
[Out] int(1/(e*x^2+d)/(a+b*arcsin(c*x))^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(ex^{2}+d\right)\sqrt{b\arcsin\left(cx\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)/(a+b*arcsin(c*x))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/((e*x^2 + d)*sqrt(b*arcsin(c*x) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\sqrt{a+b\,\mathrm{asin}\left(c\,x\right)}\,\left(e\,x^{2}+d\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*asin(c*x))^(1/2)*(d + e*x^2)),x)
```

```
[Out] int(1/((a + b*asin(c*x))^(1/2)*(d + e*x^2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a+b\,\mathrm{asin}\left(cx\right)}\,\left(d+ex^{2}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x**2+d)/(a+b*asin(c*x))**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a + b*asin(c*x))*(d + e*x**2)), x)
```

3.699 $\int \frac{1}{\left(d+ex^2\right)^2 \sqrt{a+b\sin^{-1}(cx)}} \, dx$

Optimal. Leaf size=25

$$\text{Int}\left(\frac{1}{\left(d+ex^2\right)^2 \sqrt{a+b\sin^{-1}(cx)}},x\right)$$

```
[Out] Unintegrable(1/(e*x^2+d)^2/(a+b*arcsin(c*x))^(1/2),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\left(d+ex^2\right)^2 \sqrt{a+b\sin^{-1}(cx)}} \, dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((d + e*x^2)^2*Sqrt[a + b*ArcSin[c*x]]),x]
[Out] Defer[Int][1/((d + e*x^2)^2*Sqrt[a + b*ArcSin[c*x]]), x]
```

Rubi steps

$$\int \frac{1}{\left(d+ex^2\right)^2 \sqrt{a+b\sin^{-1}(cx)}} \, dx = \int \frac{1}{\left(d+ex^2\right)^2 \sqrt{a+b\sin^{-1}(cx)}} \, dx$$

Mathematica [A] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(d+ex^2\right)^2 \sqrt{a+b\sin^{-1}(cx)}} \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((d + e*x^2)^2*Sqrt[a + b*ArcSin[c*x]]),x]
[Out] Integrate[1/((d + e*x^2)^2*Sqrt[a + b*ArcSin[c*x]]), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^2/(a+b*arcsin(c*x))^(1/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >> Error detected within library code: integ
rate: implementation incomplete (constant residues)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^2/(a+b*arcsin(c*x))^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Evaluation time: 1.4Unable to divide, perhap
s due to rounding error%%%{68719476736,[0,8,40,24,52,8,36,18]%%%}+%%%{68719
4767360,[0,8,40,24,50,8,38,19]%%%}+%%%{2817498546176,[0,8,40,24,48,8,40,20]
%%%}+%%%{6047313952768,[0,8,40,24,46,8,42,21]%%%}+%%%{7146825580544,[0,8,40
,24,44,8,44,22]%%%}+%%%{4398046511104,[0,8,40,24,42,8,46,23]%%%}+%%%{109951
1627776,[0,8,40,24,40,8,48,24]%%%}+%%%{-2147483648,[0,6,38,24,50,8,30,15]%%
%}+%%%{27917287424,[0,6,38,24,48,8,32,16]%%%}+%%%{135291469824,[0,6,38,24,4
6,8,34,17]%%%}+%%%{324270030848,[0,6,38,24,44,8,36,18]%%%}+%%%{412316860416
,[0,6,38,24,42,8,38,19]%%%}+%%%{266287972352,[0,6,38,24,40,8,40,20]%%%}+%%%
{68719476736,[0,6,38,24,38,8,42,21]%%%}+%%%{-4294967296*i,[0,6,36,24,48,9,3
2,16]%%%}+%%%{-34359738368*i,[0,6,36,24,46,9,34,17]%%%}+%%%{-107374182400*i
,[0,6,36,24,44,9,36,18]%%%}+%%%{-163208757248*i,[0,6,36,24,42,9,38,19]%%%}+
%%%{-120259084288*i,[0,6,36,24,40,9,40,20]%%%}+%%%{-34359738368*i,[0,6,36,2
4,38,9,42,21]%%%}+%%%{-1073741824,[0,6,34,24,48,10,32,16]%%%}+%%%{-10200547
328,[0,6,34,24,46,10,34,17]%%%}+%%%{-37044092928,[0,6,34,24,44,10,36,18]%%%
}+%%%{-64424509440,[0,6,34,24,42,10,38,19]%%%}+%%%{-53687091200,[0,6,34,24,
40,10,40,20]%%%}+%%%{-17179869184,[0,6,34,24,38,10,42,21]%%%}+%%%{16777216,
[0,4,36,24,48,8,24,12]%%%}+%%%{369098752,[0,4,36,24,46,8,26,13]%%%}+%%%{231
5255808,[0,4,36,24,44,8,28,14]%%%}+%%%{6408896512,[0,4,36,24,42,8,30,15]%%%
}+%%%{8875147264,[0,4,36,24,40,8,32,16]%%%}+%%%{6039797760,[0,4,36,24,38,8,
34,17]%%%}+%%%{1610612736,[0,4,36,24,36,8,36,18]%%%}+%%%{-134217728*i,[0,4,
34,24,46,9,26,13]%%%}+%%%{-1275068416*i,[0,4,34,24,44,9,28,14]%%%}+%%%{-442
9185024*i,[0,4,34,24,42,9,30,15]%%%}+%%%{-7180648448*i,[0,4,34,24,40,9,32,1
6]%%%}+%%%{-5502926848*i,[0,4,34,24,38,9,34,17]%%%}+%%%{-1610612736*i,[0,4,
34,24,36,9,36,18]%%%}+%%%{-8388608,[0,4,32,24,46,10,26,13]%%%}+%%%{-2348810
24,[0,4,32,24,44,10,28,14]%%%}+%%%{-1258291200,[0,4,32,24,42,10,30,15]%%%}+
%%%{-2642411520,[0,4,32,24,40,10,32,16]%%%}+%%%{-2415919104,[0,4,32,24,38,1
0,34,17]%%%}+%%%{-805306368,[0,4,32,24,36,10,36,18]%%%}+%%%{50331648*i,[0,4
,30,24,44,11,28,14]%%%}+%%%{369098752*i,[0,4,30,24,42,11,30,15]%%%}+%%%{956
301312*i,[0,4,30,24,40,11,32,16]%%%}+%%%{1040187392*i,[0,4,30,24,38,11,34,1
7]%%%}+%%%{402653184*i,[0,4,30,24,36,11,36,18]%%%}+%%%{6291456,[0,4,28,24,4
4,12,28,14]%%%}+%%%{56623104,[0,4,28,24,42,12,30,15]%%%}+%%%{177209344,[0,4
,28,24,40,12,32,16]%%%}+%%%{226492416,[0,4,28,24,38,12,34,17]%%%}+%%%{10066
3296,[0,4,28,24,36,12,36,18]%%%}+%%%{1572864,[0,2,34,24,44,8,20,10]%%%}+%%%
{16252928,[0,2,34,24,42,8,22,11]%%%}+%%%{55050240,[0,2,34,24,40,8,24,12]%%%
}+%%%{84410368,[0,2,34,24,38,8,26,13]%%%}+%%%{60817408,[0,2,34,24,36,8,28,1
4]%%%}+%%%{16777216,[0,2,34,24,34,8,30,15]%%%}+%%%{-1048576*i,[0,2,32,24,44
,9,20,10]%%%}+%%%{-14680064*i,[0,2,32,24,42,9,22,11]%%%}+%%%{-59768832*i,[0
,2,32,24,40,9,24,12]%%%}+%%%{-104857600*i,[0,2,32,24,38,9,26,13]%%%}+%%%{-8
3886080*i,[0,2,32,24,36,9,28,14]%%%}+%%%{-25165824*i,[0,2,32,24,34,9,30,15]
%%%}+%%%{-131072,[0,2,30,24,44,10,20,10]%%%}+%%%{-3407872,[0,2,30,24,42,10,
22,11]%%%}+%%%{-19398656,[0,2,30,24,40,10,24,12]%%%}+%%%{-41811968,[0,2,30,
24,38,10,26,13]%%%}+%%%{-38273024,[0,2,30,24,36,10,28,14]%%%}+%%%{-12582912
,[0,2,30,24,34,10,30,15]%%%}+%%%{2097152*i,[0,2,28,24,40,11,24,12]%%%}+%%%{
8388608*i,[0,2,28,24,38,11,26,13]%%%}+%%%{10485760*i,[0,2,28,24,36,11,28,14
]%%%}+%%%{4194304*i,[0,2,28,24,34,11,30,15]%%%}+%%%{-32768,[0,2,26,24,42,12
,22,11]%%%}+%%%{557056,[0,2,26,24,40,12,24,12]%%%}+%%%{3637248,[0,2,26,24,3
8,12,26,13]%%%}+%%%{6160384,[0,2,26,24,36,12,28,14]%%%}+%%%{3145728,[0,2,26
,24,34,12,30,15]%%%}+%%%{-196608*i,[0,2,24,24,40,13,24,12]%%%}+%%%{-1310720
*i,[0,2,24,24,38,13,26,13]%%%}+%%%{-2621440*i,[0,2,24,24,36,13,28,14]%%%}+%
%%{-1572864*i,[0,2,24,24,34,13,30,15]%%%}+%%%{-16384,[0,2,22,24,40,14,24,12
]%%%}+%%%{-139264,[0,2,22,24,38,14,26,13]%%%}+%%%{-360448,[0,2,22,24,36,14,
28,14]%%%}+%%%{-262144,[0,2,22,24,34,14,30,15]%%%}+%%%{36864,[0,0,32,24,40,
8,16,8]%%%}+%%%{172032,[0,0,32,24,38,8,18,9]%%%}+%%%{299008,[0,0,32,24,36,8
,20,10]%%%}+%%%{229376,[0,0,32,24,34,8,22,11]%%%}+%%%{65536,[0,0,32,24,32,8
,24,12]%%%}+%%%{-49152*i,[0,0,30,24,40,9,16,8]%%%}+%%%{-262144*i,[0,0,30,24
,38,9,18,9]%%%}+%%%{-507904*i,[0,0,30,24,36,9,20,10]%%%}+%%%{-425984*i,[0,0
,30,24,34,9,22,11]%%%}+%%%{-131072*i,[0,0,30,24,32,9,24,12]%%%}+%%%{-22528,
```

```
[0,0,28,24,40,10,16,8]%%%}+%%%{-124928,[0,0,28,24,38,10,18,9]%%%}+%%%{-2498
56,[0,0,28,24,36,10,20,10]%%%}+%%%{-212992,[0,0,28,24,34,10,22,11]%%%}+%%%{
-65536,[0,0,28,24,32,10,24,12]%%%}+%%%{4096*i,[0,0,26,24,40,11,16,8]%%%}+%%
%{8192*i,[0,0,26,24,38,11,18,9]%%%}+%%%{-20480*i,[0,0,26,24,36,11,20,10]%%%
}+%%%{-57344*i,[0,0,26,24,34,11,22,11]%%%}+%%%{-32768*i,[0,0,26,24,32,11,24
,12]%%%}+%%%{256,[0,0,24,24,40,12,16,8]%%%}+%%%{-8704,[0,0,24,24,38,12,18,9
]%%%}+%%%{-49664,[0,0,24,24,36,12,20,10]%%%}+%%%{-81920,[0,0,24,24,34,12,22
,11]%%%}+%%%{-40960,[0,0,24,24,32,12,24,12]%%%}+%%%{2048*i,[0,0,22,24,38,13
,18,9]%%%}+%%%{11264*i,[0,0,22,24,36,13,20,10]%%%}+%%%{18432*i,[0,0,22,24,3
4,13,22,11]%%%}+%%%{8192*i,[0,0,22,24,32,13,24,12]%%%}+%%%{128,[0,0,20,24,3
8,14,18,9]%%%}+%%%{-256,[0,0,20,24,36,14,20,10]%%%}+%%%{-3072,[0,0,20,24,34
,14,22,11]%%%}+%%%{-4096,[0,0,20,24,32,14,24,12]%%%}+%%%{256*i,[0,0,18,24,3
6,15,20,10]%%%}+%%%{1536*i,[0,0,18,24,34,15,22,11]%%%}+%%%{2048*i,[0,0,18,2
4,32,15,24,12]%%%}+%%%{16,[0,0,16,24,36,16,20,10]%%%}+%%%{128,[0,0,16,24,34
,16,22,11]%%%}+%%%{256,[0,0,16,24,32,16,24,12]%%%} / %%%{-256,[0,2,10,4,16,
2,8,4]%%%}+%%%{-1024,[0,2,10,4,14,2,10,5]%%%}+%%%{-1024,[0,2,10,4,12,2,12,6
]%%%}+%%%{-12,[0,0,8,4,12,2,4,2]%%%}+%%%{-16,[0,0,8,4,10,2,6,3]%%%}+%%%{8*i
,[0,0,6,4,12,3,4,2]%%%}+%%%{16*i,[0,0,6,4,10,3,6,3]%%%}+%%%{1,[0,0,4,4,12,4
,4,2]%%%}+%%%{4,[0,0,4,4,10,4,6,3]%%%} Error: Bad Argument Value
```

maple [A] time = 1.23, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(e\,x^{2}+d\right)^{2} \sqrt{a+b \arcsin\left(c x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x^2+d)^2/(a+b*arcsin(c*x))^(1/2),x)
[Out] int(1/(e*x^2+d)^2/(a+b*arcsin(c*x))^(1/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{{\left(e x^{2} + d\right)}^{2} \sqrt{b \arcsin\left(c x\right) + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^2/(a+b*arcsin(c*x))^(1/2),x, algorithm="maxima")
[Out] integrate(1/((e*x^2 + d)^2*sqrt(b*arcsin(c*x) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\sqrt{a+b\,\mathrm{asin}\left(c\,x\right)}\,{\left(e\,x^2+d\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*asin(c*x))^(1/2)*(d + e*x^2)^2),x)
[Out] int(1/((a + b*asin(c*x))^(1/2)*(d + e*x^2)^2), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\sqrt{a + b \operatorname{asin}{\left(c x \right)}} \left(d + e x^{2}\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x**2+d)**2/(a+b*asin(c*x))**(1/2),x)
[Out] Integral(1/(sqrt(a + b*asin(c*x))*(d + e*x**2)**2), x)
```

3.700 $\int \frac{d+ex^2}{\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx$

Optimal. Leaf size=394

$$\frac{\sqrt{\frac{\pi}{2}}e\sin\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c^3}-\frac{\sqrt{\frac{3\pi}{2}}e\sin\left(\frac{3a}{b}\right)C\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c^3}-\frac{\sqrt{\frac{\pi}{2}}e\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c^3}+\ldots$$

```
[Out] -1/2*e*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*
2^(1/2)*Pi^(1/2)/b^(3/2)/c^3+1/2*e*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*
x))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/b^(3/2)/c^3+1/2*e*cos(3*a/b)*F
resnelS(6^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*6^(1/2)*Pi^(1/2)/
b^(3/2)/c^3-1/2*e*FresnelC(6^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2)
)*sin(3*a/b)*6^(1/2)*Pi^(1/2)/b^(3/2)/c^3-2*d*cos(a/b)*FresnelS(2^(1/2)/Pi^
(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*2^(1/2)*Pi^(1/2)/b^(3/2)/c+2*d*Fresn
elC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*sin(a/b)*2^(1/2)*Pi^(
1/2)/b^(3/2)/c-2*d*(-c^2*x^2+1)^(1/2)/b/c/(a+b*arcsin(c*x))^(1/2)-2*e*x^2*(
-c^2*x^2+1)^(1/2)/b/c/(a+b*arcsin(c*x))^(1/2)
```

Rubi [A] time = 0.80, antiderivative size = 394, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 9, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.450, Rules used = {4667, 4621, 4723, 3306, 3305, 3351, 3304, 3352, 4631}

$$\frac{\sqrt{\frac{\pi}{2}}e\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c^3}-\frac{\sqrt{\frac{3\pi}{2}}e\sin\left(\frac{3a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c^3}-\frac{\sqrt{\frac{\pi}{2}}e\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+\ldots}}{\ldots}\right)}{b^{3/2}c^3}\ldots$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x^2)/(a + b*ArcSin[c*x])^(3/2),x]
```

```
[Out] (-2*d*Sqrt[1 - c^2*x^2])/(b*c*Sqrt[a + b*ArcSin[c*x]]) - (2*e*x^2*Sqrt[1 -
c^2*x^2])/(b*c*Sqrt[a + b*ArcSin[c*x]]) - (e*Sqrt[Pi/2]*Cos[a/b]*FresnelS[(
Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/(b^(3/2)*c^3) - (2*d*Sqrt[2*P
i]*Cos[a/b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/(b^(3/2
)*c) + (e*Sqrt[(3*Pi)/2]*Cos[(3*a)/b]*FresnelS[(Sqrt[6/Pi]*Sqrt[a + b*ArcSi
n[c*x]])/Sqrt[b]])/(b^(3/2)*c^3) + (e*Sqrt[Pi/2]*FresnelC[(Sqrt[2/Pi]*Sqrt[
a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[a/b])/(b^(3/2)*c^3) + (2*d*Sqrt[2*Pi]*Fres
nelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[a/b])/(b^(3/2)*c) -
(e*Sqrt[(3*Pi)/2]*FresnelC[(Sqrt[6/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Si
n[(3*a)/b])/(b^(3/2)*c^3)
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
```

```
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4631

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_)*(x_)^(m_.), x_Symbol] :> Simp[(
x^m*Sqrt[1 - c^2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] - Dist
[1/(b*c^(m + 1)*(n + 1)), Subst[Int[ExpandTrigReduce[(a + b*x)^(n + 1), Sin
[x]^(m - 1)*(m - (m + 1)*Sin[x]^2), x], x], x, ArcSin[c*x]], x] /; FreeQ[{a
, b, c}, x] && IGtQ[m, 0] && GeQ[n, -2] && LtQ[n, -1]
```

Rule 4667

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*((d_) + (e_.)*(x_)^2)^(p_.), x
_Symbol] :> Int[ExpandIntegrand[(a + b*ArcSin[c*x])^n, (d + e*x^2)^p, x], x
] /; FreeQ[{a, b, c, d, e, n}, x] && NeQ[c^2*d + e, 0] && IntegerQ[p] && (G
tQ[p, 0] || IGtQ[n, 0])
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{d+ex^2}{\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx = \int \left(\frac{d}{\left(a+b\sin^{-1}(cx)\right)^{3/2}} + \frac{ex^2}{\left(a+b\sin^{-1}(cx)\right)^{3/2}}\right) dx$$

$$= d\int \frac{1}{\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx + e\int \frac{x^2}{\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx$$

$$= -\frac{2d\sqrt{1-c^2x^2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{2ex^2\sqrt{1-c^2x^2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{(2cd)\int \frac{x}{\sqrt{1-c^2x^2}\sqrt{a+b\sin^{-1}(cx)}}\,dx}{b} + \frac{(2e)}{}$$

$$= -\frac{2d\sqrt{1-c^2x^2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{2ex^2\sqrt{1-c^2x^2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{(2d)\,\text{Subst}\left(\int \frac{\sin(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{bc}$$

$$= -\frac{2d\sqrt{1-c^2x^2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{2ex^2\sqrt{1-c^2x^2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{\left(2d\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{\sqrt{a+bx}}\,dx, x, \text{si}\right.}{bc}$$

$$= -\frac{2d\sqrt{1-c^2x^2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{2ex^2\sqrt{1-c^2x^2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{\left(4d\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \sin\left(\frac{x^2}{b}\right)dx, x,\right.}{b^2c}$$

$$= -\frac{2d\sqrt{1-c^2x^2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{2ex^2\sqrt{1-c^2x^2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{e\sqrt{\frac{\pi}{2}}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c^3} - \frac{2}{}$$

Mathematica [C] time = 1.32, size = 417, normalized size = 1.06

$$\frac{e^{-\frac{3i\left(a+b\sin^{-1}(cx)\right)}{b}}\left(\left(4c^2d+e\right)e^{\frac{2ia}{b}+3i\sin^{-1}(cx)}\sqrt{-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}}\,\Gamma\left(\frac{1}{2},-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)+\left(4c^2d+e\right)e^{\frac{4ia}{b}+3i\sin^{-1}(cx)}\sqrt{\frac{i\left(a+b\sin\right.}{b}}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(d + e*x^2)/(a + b*ArcSin[c*x])^(3/2),x]
```

```
[Out] (e*E^(((3*I)*a)/b) - 4*c^2*d*E^(((3*I)*a)/b + (2*I)*ArcSin[c*x]) - e*E^(((3
*I)*a)/b + (2*I)*ArcSin[c*x]) - 4*c^2*d*E^(((3*I)*a)/b + (4*I)*ArcSin[c*x])
 - e*E^(((3*I)*a)/b + (4*I)*ArcSin[c*x]) + e*E^(((3*I)*(a + 2*b*ArcSin[c*x]
))/b) + (4*c^2*d + e)*E^(((2*I)*a)/b + (3*I)*ArcSin[c*x])*Sqrt[((-I)*(a + b
*ArcSin[c*x]))/b]*Gamma[1/2, ((-I)*(a + b*ArcSin[c*x]))/b] + (4*c^2*d + e)*
E^(((4*I)*a)/b + (3*I)*ArcSin[c*x])*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gamma[1
/2, (I*(a + b*ArcSin[c*x]))/b] - Sqrt[3]*e*E^((3*I)*ArcSin[c*x])*Sqrt[((-I)
*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((-3*I)*(a + b*ArcSin[c*x]))/b] - Sqrt[
3]*e*E^((3*I)*((2*a)/b + ArcSin[c*x]))*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gamm
a[1/2, ((3*I)*(a + b*ArcSin[c*x]))/b])/(4*b*c^3*E^(((3*I)*(a + b*ArcSin[c*x
]))/b)*Sqrt[a + b*ArcSin[c*x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)/(a+b*arcsin(c*x))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{ex^2+d}{(b\arcsin(cx)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)/(a+b*arcsin(c*x))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((e*x^2 + d)/(b*arcsin(c*x) + a)^(3/2), x)
```

maple [A] time = 0.35, size = 446, normalized size = 1.13

$$\frac{-4\sqrt{\frac{1}{b}}\,\sqrt{\pi}\,\sqrt{2}\,\sqrt{a+b\arcsin(cx)}\,\cos\left(\frac{a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin(cx)}}{\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,b}\right)c^2d+4\sqrt{\frac{1}{b}}\,\sqrt{\pi}\,\sqrt{2}\,\sqrt{a+b\arcsin(cx)}\,\sin\left(\frac{a}{b}\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x^2+d)/(a+b*arcsin(c*x))^(3/2),x)
```

```
[Out] 1/2/c^3/b*(-4*(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*cos(a/b)
*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*c^2*d+4*(
1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*sin(a/b)*FresnelC(2^(1/
2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*c^2*d+(1/b)^(1/2)*3^(1/2
)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*cos(3*a/b)*FresnelS(2^(1/2)/Pi^(
1/2)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*e-(1/b)^(1/2)*3^(1/2)*P
i^(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*sin(3*a/b)*FresnelC(2^(1/2)/Pi^(1/2
)*3^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)*e-(1/b)^(1/2)*Pi^(1/2)*2^(
1/2)*(a+b*arcsin(c*x))^(1/2)*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)
*(a+b*arcsin(c*x))^(1/2)/b)*e+(1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(c*x)
)^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1
/2)/b)*e-4*cos((a+b*arcsin(c*x))/b-a/b)*c^2*d+cos(3*(a+b*arcsin(c*x))/b-3*a
/b)*e-cos((a+b*arcsin(c*x))/b-a/b)*e)/(a+b*arcsin(c*x))^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{ex^2+d}{(b\arcsin(cx)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x^2+d)/(a+b*arcsin(c*x))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((e*x^2 + d)/(b*arcsin(c*x) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{e\,x^2+d}{(a+b\,\mathrm{asin}(c\,x))^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x^2)/(a + b*asin(c*x))^(3/2),x)
```

```
[Out] int((d + e*x^2)/(a + b*asin(c*x))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex^2}{(a+b\,\mathrm{asin}(cx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x**2+d)/(a+b*asin(c*x))**(3/2),x)
```

```
[Out] Integral((d + e*x**2)/(a + b*asin(c*x))**(3/2), x)
```

3.701 $\int \frac{1}{\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx$

Optimal. Leaf size=137

$$\frac{2\sqrt{2\pi}\,\sin\left(\frac{a}{b}\right)C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c}-\frac{2\sqrt{2\pi}\,\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c}-\frac{2\sqrt{1-c^2x^2}}{bc\sqrt{a+b\sin^{-1}(cx)}}$$

```
[Out] -2*cos(a/b)*FresnelS(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/b^(1/2))*2^(1
/2)*Pi^(1/2)/b^(3/2)/c+2*FresnelC(2^(1/2)/Pi^(1/2)*(a+b*arcsin(c*x))^(1/2)/
b^(1/2))*sin(a/b)*2^(1/2)*Pi^(1/2)/b^(3/2)/c-2*(-c^2*x^2+1)^(1/2)/b/c/(a+b*
arcsin(c*x))^(1/2)
```

Rubi [A] time = 0.27, antiderivative size = 137, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.583, Rules used = {4621, 4723, 3306, 3305, 3351, 3304, 3352}

$$\frac{2\sqrt{2\pi}\,\sin\left(\frac{a}{b}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c}-\frac{2\sqrt{2\pi}\,\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c}-\frac{2\sqrt{1-c^2x^2}}{bc\sqrt{a+b\sin^{-1}(cx)}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcSin[c*x])^(-3/2),x]
```

```
[Out] (-2*Sqrt[1 - c^2*x^2])/(b*c*Sqrt[a + b*ArcSin[c*x]]) - (2*Sqrt[2*Pi]*Cos[a/
b]*FresnelS[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]])/(b^(3/2)*c) + (2
*Sqrt[2*Pi]*FresnelC[(Sqrt[2/Pi]*Sqrt[a + b*ArcSin[c*x]])/Sqrt[b]]*Sin[a/b]
)/(b^(3/2)*c)
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 4621

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Simp[(Sqrt[1 - c^
2*x^2]*(a + b*ArcSin[c*x])^(n + 1))/(b*c*(n + 1)), x] + Dist[c/(b*(n + 1)),
 Int[(x*(a + b*ArcSin[c*x])^(n + 1))/Sqrt[1 - c^2*x^2], x], x] /; FreeQ[{a,
 b, c}, x] && LtQ[n, -1]
```

Rule 4723

```
Int[((a_.) + ArcSin[(c_.)*(x_)]*(b_.))^(n_.)*(x_)^(m_.)*((d_) + (e_.)*(x_)^
2)^(p_.), x_Symbol] :> Dist[d^p/c^(m + 1), Subst[Int[(a + b*x)^n*Sin[x]^m*C
os[x]^(2*p + 1), x], x, ArcSin[c*x]], x] /; FreeQ[{a, b, c, d, e, n}, x] &&
 EqQ[c^2*d + e, 0] && IntegerQ[2*p] && GtQ[p, -1] && IGtQ[m, 0] && (Integer
Q[p] || GtQ[d, 0])
```

Rubi steps

$$\int \frac{1}{\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx = -\frac{2\sqrt{1-c^2x^2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{(2c)\int \frac{x}{\sqrt{1-c^2x^2}\sqrt{a+b\sin^{-1}(cx)}}\,dx}{b}$$

$$= -\frac{2\sqrt{1-c^2x^2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{2\,\text{Subst}\left(\int \frac{\sin(x)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{bc}$$

$$= -\frac{2\sqrt{1-c^2x^2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{\left(2\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \frac{\sin\left(\frac{a}{b}+x\right)}{\sqrt{a+bx}}\,dx, x, \sin^{-1}(cx)\right)}{bc} + \frac{\left(2\sin\left(\frac{a}{b}\right)\right) \cdots}{\cdots}$$

$$= -\frac{2\sqrt{1-c^2x^2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{\left(4\cos\left(\frac{a}{b}\right)\right)\text{Subst}\left(\int \sin\left(\frac{x^2}{b}\right)dx, x, \sqrt{a+b\sin^{-1}(cx)}\right)}{b^2c} + \frac{(4 \cdots}{\cdots}$$

$$= -\frac{2\sqrt{1-c^2x^2}}{bc\sqrt{a+b\sin^{-1}(cx)}} - \frac{2\sqrt{2\pi}\cos\left(\frac{a}{b}\right)S\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1}(cx)}}{\sqrt{b}}\right)}{b^{3/2}c} + \frac{2\sqrt{2\pi}\,C\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{a+b\sin^{-1} \cdots}}{\sqrt{b}}\right)}{b^{3/2}c}$$

Mathematica [C] time = 0.37, size = 167, normalized size = 1.22

$$\frac{e^{-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}}\left(e^{i\sin^{-1}(cx)}\sqrt{-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}}\,\Gamma\left(\frac{1}{2},-\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}\right)+e^{\frac{ia}{b}}\left(e^{\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}}\sqrt{\frac{i\left(a+b\sin^{-1}(cx)\right)}{b}}\,\Gamma\left(\frac{1}{2},\frac{i\left(a+b\sin^{-1}(cx)\right)}{b} \cdots\right.\right.}{bc\sqrt{a+b\sin^{-1}(cx)}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcSin[c*x])^(-3/2),x]
```

```
[Out] (E^(I*ArcSin[c*x])*Sqrt[((-I)*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, ((-I)*(a +
 b*ArcSin[c*x]))/b] + E^((I*a)/b)*(-1 - E^((2*I)*ArcSin[c*x]) + E^((I*(a +
b*ArcSin[c*x]))/b)*Sqrt[(I*(a + b*ArcSin[c*x]))/b]*Gamma[1/2, (I*(a + b*Arc
Sin[c*x]))/b]))/(b*c*E^((I*(a + b*ArcSin[c*x]))/b)*Sqrt[a + b*ArcSin[c*x]])
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(b\arcsin(cx)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x))^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*arcsin(c*x) + a)^(-3/2), x)
```

maple [A] time = 0.00, size = 149, normalized size = 1.09

$$-\frac{2\left(\sqrt{\frac{1}{b}}\,\sqrt{\pi}\,\sqrt{2}\,\sqrt{a+b\arcsin(cx)}\,\cos\left(\frac{a}{b}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{a+b\arcsin(cx)}}{\sqrt{\pi}\,\sqrt{\frac{1}{b}}\,b}\right)-\sqrt{\frac{1}{b}}\,\sqrt{\pi}\,\sqrt{2}\,\sqrt{a+b\arcsin(cx)}\,\sin\left(\frac{a}{b}\right)\mathrm{Fre}}{cb\sqrt{a+b\arcsin(cx)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*arcsin(c*x))^(3/2),x)
```

```
[Out] -2/c/b*((1/b)^(1/2)*Pi^(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*cos(a/b)*Fresn
elS(2^(1/2)/Pi^(1/2)/(1/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)-(1/b)^(1/2)*Pi^
(1/2)*2^(1/2)*(a+b*arcsin(c*x))^(1/2)*sin(a/b)*FresnelC(2^(1/2)/Pi^(1/2)/(1
/b)^(1/2)*(a+b*arcsin(c*x))^(1/2)/b)+cos((a+b*arcsin(c*x))/b-a/b))/(a+b*arc
sin(c*x))^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(b\arcsin(cx)+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*arcsin(c*x))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*arcsin(c*x) + a)^(-3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{1}{(a+b\,\mathrm{asin}(c\,x))^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a + b*asin(c*x))^(3/2),x)
```

```
[Out] int(1/(a + b*asin(c*x))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(a+b\,\mathrm{asin}(cx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*asin(c*x))**(3/2),x)
```

```
[Out] Integral((a + b*asin(c*x))**(-3/2), x)
```

3.702 $\int \frac{1}{(d+ex^2)\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx$

Optimal. Leaf size=25

$$\text{Int}\left(\frac{1}{\left(d+ex^2\right)\left(a+b\sin^{-1}(cx)\right)^{3/2}},x\right)$$

```
[Out] Unintegrable(1/(e*x^2+d)/(a+b*arcsin(c*x))^(3/2),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\left(d+ex^2\right)\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((d + e*x^2)*(a + b*ArcSin[c*x])^(3/2)),x]
```

```
[Out] Defer[Int][1/((d + e*x^2)*(a + b*ArcSin[c*x])^(3/2)), x]
```

Rubi steps

$$\int \frac{1}{\left(d+ex^2\right)\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx=\int \frac{1}{\left(d+ex^2\right)\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx$$

Mathematica [A] time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(d+ex^2\right)\left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((d + e*x^2)*(a + b*ArcSin[c*x])^(3/2)),x]
```

```
[Out] Integrate[1/((d + e*x^2)*(a + b*ArcSin[c*x])^(3/2)), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)/(a+b*arcsin(c*x))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(ex^2+d\right)\left(b\arcsin(cx)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)/(a+b*arcsin(c*x))^(3/2),x, algorithm="giac")
[Out] integrate(1/((e*x^2 + d)*(b*arcsin(c*x) + a)^(3/2)), x)
```

maple [A] time = 0.55, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(e\,x^{2}+d\right)\left(a+b\arcsin\left(cx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x^2+d)/(a+b*arcsin(c*x))^(3/2),x)
[Out] int(1/(e*x^2+d)/(a+b*arcsin(c*x))^(3/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(ex^{2}+d\right)\left(b\arcsin\left(cx\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)/(a+b*arcsin(c*x))^(3/2),x, algorithm="maxima")
[Out] integrate(1/((e*x^2 + d)*(b*arcsin(c*x) + a)^(3/2)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)}^{3/2}\,\left(e\,x^2+d\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*asin(c*x))^(3/2)*(d + e*x^2)),x)
[Out] int(1/((a + b*asin(c*x))^(3/2)*(d + e*x^2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a+b\,\mathrm{asin}\left(cx\right)\right)^{\frac{3}{2}}\left(d+ex^{2}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x**2+d)/(a+b*asin(c*x))**(3/2),x)
[Out] Integral(1/((a + b*asin(c*x))**(3/2)*(d + e*x**2)), x)
```

3.703 $\int \frac{1}{(d+ex^2)^2 \left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx$

Optimal. Leaf size=25

$$\text{Int}\left(\frac{1}{\left(d+ex^2\right)^2 \left(a+b\sin^{-1}(cx)\right)^{3/2}},x\right)$$

```
[Out] Unintegrable(1/(e*x^2+d)^2/(a+b*arcsin(c*x))^(3/2),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{\left(d+ex^2\right)^2 \left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((d + e*x^2)^2*(a + b*ArcSin[c*x])^(3/2)),x]
```

```
[Out] Defer[Int][1/((d + e*x^2)^2*(a + b*ArcSin[c*x])^(3/2)), x]
```

Rubi steps

$$\int \frac{1}{\left(d+ex^2\right)^2 \left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx = \int \frac{1}{\left(d+ex^2\right)^2 \left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx$$

Mathematica [A] time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(d+ex^2\right)^2 \left(a+b\sin^{-1}(cx)\right)^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((d + e*x^2)^2*(a + b*ArcSin[c*x])^(3/2)),x]
```

```
[Out] Integrate[1/((d + e*x^2)^2*(a + b*ArcSin[c*x])^(3/2)), x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^2/(a+b*arcsin(c*x))^(3/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (constant residues)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^2/(a+b*arcsin(c*x))^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Evaluation time: 1.48Unable to divide, perha
ps due to rounding error%%%{68719476736,[0,8,72,24,52,8,36,18]%%%}+%%%{6871
94767360,[0,8,72,24,50,8,38,19]%%%}+%%%{2817498546176,[0,8,72,24,48,8,40,20
]%%%}+%%%{6047313952768,[0,8,72,24,46,8,42,21]%%%}+%%%{7146825580544,[0,8,7
2,24,44,8,44,22]%%%}+%%%{4398046511104,[0,8,72,24,42,8,46,23]%%%}+%%%{10995
11627776,[0,8,72,24,40,8,48,24]%%%}+%%%{-2147483648,[0,6,66,24,50,8,30,15]%
%%}+%%%{27917287424,[0,6,66,24,48,8,32,16]%%%}+%%%{135291469824,[0,6,66,24,
46,8,34,17]%%%}+%%%{324270030848,[0,6,66,24,44,8,36,18]%%%}+%%%{41231686041
6,[0,6,66,24,42,8,38,19]%%%}+%%%{266287972352,[0,6,66,24,40,8,40,20]%%%}+%%
%{68719476736,[0,6,66,24,38,8,42,21]%%%}+%%%{-12884901888*i,[0,6,64,24,48,9
,32,16]%%%}+%%%{-103079215104*i,[0,6,64,24,46,9,34,17]%%%}+%%%{-32212254720
0*i,[0,6,64,24,44,9,36,18]%%%}+%%%{-489626271744*i,[0,6,64,24,42,9,38,19]%%
%}+%%%{-360777252864*i,[0,6,64,24,40,9,40,20]%%%}+%%%{-103079215104*i,[0,6,
64,24,38,9,42,21]%%%}+%%%{-9663676416,[0,6,62,24,48,10,32,16]%%%}+%%%{-9180
4925952,[0,6,62,24,46,10,34,17]%%%}+%%%{-333396836352,[0,6,62,24,44,10,36,1
8]%%%}+%%%{-579820584960,[0,6,62,24,42,10,38,19]%%%}+%%%{-483183820800,[0,6
,62,24,40,10,40,20]%%%}+%%%{-154618822656,[0,6,62,24,38,10,42,21]%%%}+%%%{1
6777216,[0,4,60,24,48,8,24,12]%%%}+%%%{369098752,[0,4,60,24,46,8,26,13]%%%}
+%%%{2315255808,[0,4,60,24,44,8,28,14]%%%}+%%%{6408896512,[0,4,60,24,42,8,3
0,15]%%%}+%%%{8875147264,[0,4,60,24,40,8,32,16]%%%}+%%%{6039797760,[0,4,60,
24,38,8,34,17]%%%}+%%%{1610612736,[0,4,60,24,36,8,36,18]%%%}+%%%{-402653184
*i,[0,4,58,24,46,9,26,13]%%%}+%%%{-3825205248*i,[0,4,58,24,44,9,28,14]%%%}+
%%%{-13287555072*i,[0,4,58,24,42,9,30,15]%%%}+%%%{-21541945344*i,[0,4,58,24
,40,9,32,16]%%%}+%%%{-16508780544*i,[0,4,58,24,38,9,34,17]%%%}+%%%{-4831838
208*i,[0,4,58,24,36,9,36,18]%%%}+%%%{-75497472,[0,4,56,24,46,10,26,13]%%%}+
%%%{-2113929216,[0,4,56,24,44,10,28,14]%%%}+%%%{-11324620800,[0,4,56,24,42,
10,30,15]%%%}+%%%{-23781703680,[0,4,56,24,40,10,32,16]%%%}+%%%{-21743271936
,[0,4,56,24,38,10,34,17]%%%}+%%%{-7247757312,[0,4,56,24,36,10,36,18]%%%}+%%
%{1358954496*i,[0,4,54,24,44,11,28,14]%%%}+%%%{9965666304*i,[0,4,54,24,42,1
1,30,15]%%%}+%%%{25820135424*i,[0,4,54,24,40,11,32,16]%%%}+%%%{28085059584*
i,[0,4,54,24,38,11,34,17]%%%}+%%%{10871635968*i,[0,4,54,24,36,11,36,18]%%%}
+%%%{509607936,[0,4,52,24,44,12,28,14]%%%}+%%%{4586471424,[0,4,52,24,42,12,
30,15]%%%}+%%%{14353956864,[0,4,52,24,40,12,32,16]%%%}+%%%{18345885696,[0,4
,52,24,38,12,34,17]%%%}+%%%{8153726976,[0,4,52,24,36,12,36,18]%%%}+%%%{1572
864,[0,2,54,24,44,8,20,10]%%%}+%%%{16252928,[0,2,54,24,42,8,22,11]%%%}+%%%{
55050240,[0,2,54,24,40,8,24,12]%%%}+%%%{84410368,[0,2,54,24,38,8,26,13]%%%}
+%%%{60817408,[0,2,54,24,36,8,28,14]%%%}+%%%{16777216,[0,2,54,24,34,8,30,15
]%%%}+%%%{-3145728*i,[0,2,52,24,44,9,20,10]%%%}+%%%{-44040192*i,[0,2,52,24,
42,9,22,11]%%%}+%%%{-179306496*i,[0,2,52,24,40,9,24,12]%%%}+%%%{-314572800*
i,[0,2,52,24,38,9,26,13]%%%}+%%%{-251658240*i,[0,2,52,24,36,9,28,14]%%%}+%%
%{-75497472*i,[0,2,52,24,34,9,30,15]%%%}+%%%{-1179648,[0,2,50,24,44,10,20,1
0]%%%}+%%%{-30670848,[0,2,50,24,42,10,22,11]%%%}+%%%{-174587904,[0,2,50,24,
40,10,24,12]%%%}+%%%{-376307712,[0,2,50,24,38,10,26,13]%%%}+%%%{-344457216,
[0,2,50,24,36,10,28,14]%%%}+%%%{-113246208,[0,2,50,24,34,10,30,15]%%%}+%%%{
56623104*i,[0,2,48,24,40,11,24,12]%%%}+%%%{226492416*i,[0,2,48,24,38,11,26,
13]%%%}+%%%{283115520*i,[0,2,48,24,36,11,28,14]%%%}+%%%{113246208*i,[0,2,48
,24,34,11,30,15]%%%}+%%%{-2654208,[0,2,46,24,42,12,22,11]%%%}+%%%{45121536,
[0,2,46,24,40,12,24,12]%%%}+%%%{294617088,[0,2,46,24,38,12,26,13]%%%}+%%%{4
98991104,[0,2,46,24,36,12,28,14]%%%}+%%%{254803968,[0,2,46,24,34,12,30,15]%
%%}+%%%{-47775744*i,[0,2,44,24,40,13,24,12]%%%}+%%%{-318504960*i,[0,2,44,24
,38,13,26,13]%%%}+%%%{-637009920*i,[0,2,44,24,36,13,28,14]%%%}+%%%{-3822059
52*i,[0,2,44,24,34,13,30,15]%%%}+%%%{-11943936,[0,2,42,24,40,14,24,12]%%%}+
%%%{-101523456,[0,2,42,24,38,14,26,13]%%%}+%%%{-262766592,[0,2,42,24,36,14,
28,14]%%%}+%%%{-191102976,[0,2,42,24,34,14,30,15]%%%}+%%%{36864,[0,0,48,24,
40,8,16,8]%%%}+%%%{172032,[0,0,48,24,38,8,18,9]%%%}+%%%{299008,[0,0,48,24,3
6,8,20,10]%%%}+%%%{229376,[0,0,48,24,34,8,22,11]%%%}+%%%{65536,[0,0,48,24,3
2,8,24,12]%%%}+%%%{-147456*i,[0,0,46,24,40,9,16,8]%%%}+%%%{-786432*i,[0,0,4
6,24,38,9,18,9]%%%}+%%%{-1523712*i,[0,0,46,24,36,9,20,10]%%%}+%%%{-1277952*
```

```
i,[0,0,46,24,34,9,22,11]%%%}+%%%{-393216*i,[0,0,46,24,32,9,24,12]%%%}+%%%{-
202752,[0,0,44,24,40,10,16,8]%%%}+%%%{-1124352,[0,0,44,24,38,10,18,9]%%%}+%
%%{-2248704,[0,0,44,24,36,10,20,10]%%%}+%%%{-1916928,[0,0,44,24,34,10,22,11
]%%%}+%%%{-589824,[0,0,44,24,32,10,24,12]%%%}+%%%{110592*i,[0,0,42,24,40,11
,16,8]%%%}+%%%{221184*i,[0,0,42,24,38,11,18,9]%%%}+%%%{-552960*i,[0,0,42,24
,36,11,20,10]%%%}+%%%{-1548288*i,[0,0,42,24,34,11,22,11]%%%}+%%%{-884736*i,
[0,0,42,24,32,11,24,12]%%%}+%%%{20736,[0,0,40,24,40,12,16,8]%%%}+%%%{-70502
4,[0,0,40,24,38,12,18,9]%%%}+%%%{-4022784,[0,0,40,24,36,12,20,10]%%%}+%%%{-
6635520,[0,0,40,24,34,12,22,11]%%%}+%%%{-3317760,[0,0,40,24,32,12,24,12]%%%
}+%%%{497664*i,[0,0,38,24,38,13,18,9]%%%}+%%%{2737152*i,[0,0,38,24,36,13,20
,10]%%%}+%%%{4478976*i,[0,0,38,24,34,13,22,11]%%%}+%%%{1990656*i,[0,0,38,24
,32,13,24,12]%%%}+%%%{93312,[0,0,36,24,38,14,18,9]%%%}+%%%{-186624,[0,0,36,
24,36,14,20,10]%%%}+%%%{-2239488,[0,0,36,24,34,14,22,11]%%%}+%%%{-2985984,[
0,0,36,24,32,14,24,12]%%%}+%%%{559872*i,[0,0,34,24,36,15,20,10]%%%}+%%%{335
9232*i,[0,0,34,24,34,15,22,11]%%%}+%%%{4478976*i,[0,0,34,24,32,15,24,12]%%%
}+%%%{104976,[0,0,32,24,36,16,20,10]%%%}+%%%{839808,[0,0,32,24,34,16,22,11]
%%%}+%%%{1679616,[0,0,32,24,32,16,24,12]%%%} / %%%{-256,[0,2,18,4,16,2,8,4]
%%%}+%%%{-1024,[0,2,18,4,14,2,10,5]%%%}+%%%{-1024,[0,2,18,4,12,2,12,6]%%%}+
%%%{-12,[0,0,12,4,12,2,4,2]%%%}+%%%{-16,[0,0,12,4,10,2,6,3]%%%}+%%%{24*i,[0
,0,10,4,12,3,4,2]%%%}+%%%{48*i,[0,0,10,4,10,3,6,3]%%%}+%%%{9,[0,0,8,4,12,4,
4,2]%%%}+%%%{36,[0,0,8,4,10,4,6,3]%%%} Error: Bad Argument Value
```

maple [A] time = 1.24, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(e\,x^{2}+d\right)^{2}\left(a+b\arcsin\left(cx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(e*x^2+d)^2/(a+b*arcsin(c*x))^(3/2),x)
[Out] int(1/(e*x^2+d)^2/(a+b*arcsin(c*x))^(3/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(ex^{2}+d\right)^{2}\left(b\arcsin\left(cx\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x^2+d)^2/(a+b*arcsin(c*x))^(3/2),x, algorithm="maxima")
[Out] integrate(1/((e*x^2 + d)^2*(b*arcsin(c*x) + a)^(3/2)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(a+b\,\mathrm{asin}\left(c\,x\right)\right)^{3/2}\,\left(e\,x^2+d\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*asin(c*x))^(3/2)*(d + e*x^2)^2),x)
[Out] int(1/((a + b*asin(c*x))^(3/2)*(d + e*x^2)^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(e*x**2+d)**2/(a+b*asin(c*x))**(3/2),x)
[Out] Timed out
```

Chapter 4

Listing of Grading functions

The following are the current version of the grading functions used for grading the quality of the antiderivative with reference to the optimal antiderivative included in the test suite.

There is a version for Maple and for Mathematica/Rubi. There is a version for grading Sympy and version for use with Sagemath.

The following are links to the current source code.

The following are the listings of source code of the grading functions.

4.0.1 Mathematica and Rubi grading function

```
(* Original version thanks to Albert Rich emailed on 03/21/2017 *)
(* ::Package:: *)

(* ::Subsection:: *)
(*GradeAntiderivative[result,optimal]*)


(* ::Text:: *)
(*If result and optimal are mathematical expressions, *)
(*         GradeAntiderivative[result,optimal] returns*)
(*  "F" if the result fails to integrate an expression that*)
(*      is integrable*)
(*  "C" if result involves higher level functions than necessary*)
(*  "B" if result is more than twice the size of the optimal*)
(*      antiderivative*)
(*  "A" if result can be considered optimal*)


GradeAntiderivative[result_,optimal_] :=
  If[ExpnType[result]<=ExpnType[optimal],
    If[FreeQ[result,Complex] || Not[FreeQ[optimal,Complex]],
      If[LeafCount[result]<=2*LeafCount[optimal],
        "A",
      "B"],
    "C"],
  If[FreeQ[result,Integrate] && FreeQ[result,Int],
    "C",
  "F"]]


(* ::Text:: *)
(*The following summarizes the type number assigned an *)
(*expression based on the functions it involves*)
(*1 = rational function*)
(*2 = algebraic function*)
```

```
(*3 = elementary function*)
(*4 = special function*)
(*5 = hyperpergeometric function*)
(*6 = appell function*)
(*7 = rootsum function*)
(*8 = integrate function*)
(*9 = unknown function*)


ExpnType[expn_] :=
  If[AtomQ[expn],
    1,
  If[ListQ[expn],
    Max[Map[ExpnType,expn]],
  If[Head[expn]===Power,
    If[IntegerQ[expn[[2]]],
      ExpnType[expn[[1]]],
    If[Head[expn[[2]]]===Rational,
      If[IntegerQ[expn[[1]]] || Head[expn[[1]]]===Rational,
        1,
      Max[ExpnType[expn[[1]]],2]],
    Max[ExpnType[expn[[1]]],ExpnType[expn[[2]]],3]]],
  If[Head[expn]===Plus || Head[expn]===Times,
    Max[ExpnType[First[expn]],ExpnType[Rest[expn]]],
  If[ElementaryFunctionQ[Head[expn]],
    Max[3,ExpnType[expn[[1]]]],
  If[SpecialFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],4]],
  If[HypergeometricFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],5]],
  If[AppellFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],6]],
  If[Head[expn]===RootSum,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],7]],
  If[Head[expn]===Integrate || Head[expn]===Int,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],8]],
  9]]]]]]]]]]


ElementaryFunctionQ[func_] :=
  MemberQ[{
        Exp,Log,
        Sin,Cos,Tan,Cot,Sec,Csc,
        ArcSin,ArcCos,ArcTan,ArcCot,ArcSec,ArcCsc,
        Sinh,Cosh,Tanh,Coth,Sech,Csch,
        ArcSinh,ArcCosh,ArcTanh,ArcCoth,ArcSech,ArcCsch
},func]


SpecialFunctionQ[func_] :=
  MemberQ[{
        Erf, Erfc, Erfi,
        FresnelS, FresnelC,
        ExpIntegralE, ExpIntegralEi, LogIntegral,
        SinIntegral, CosIntegral, SinhIntegral, CoshIntegral,
        Gamma, LogGamma, PolyGamma,
        Zeta, PolyLog, ProductLog,
        EllipticF, EllipticE, EllipticPi
},func]


HypergeometricFunctionQ[func_] :=
  MemberQ[{Hypergeometric1F1,Hypergeometric2F1,HypergeometricPFQ},func]
```

```
AppellFunctionQ[func_] :=
  MemberQ[{AppellF1},func]
```

4.0.2 Maple grading function

```
# File: GradeAntiderivative.mpl
# Original version thanks to Albert Rich emailed on 03/21/2017

#Nasser 03/22/2017  Use Maple leaf count instead since buildin
#Nasser 03/23/2017  missing 'ln' for ElementaryFunctionQ added
#Nasser 03/24/2017  corrected the check for complex result
#Nasser 10/27/2017  check for leafsize and do not call ExpnType()
#                   if leaf size is "too large". Set at 500,000
#Nasser 12/22/2019  Added debug flag, added 'dilog' to special functions
#                   see problem 156, file Apostol_Problems

GradeAntiderivative := proc(result,optimal)
local leaf_count_result, leaf_count_optimal,ExpnType_result,ExpnType_optimal,
   debug:=false;

      leaf_count_result:=leafcount(result);
      #do NOT call ExpnType() if leaf size is too large. Recursion problem
      if leaf_count_result > 500000 then
          return "B";
      fi;

      leaf_count_optimal:=leafcount(optimal);

      ExpnType_result:=ExpnType(result);
      ExpnType_optimal:=ExpnType(optimal);

      if debug then
         print("ExpnType_result",ExpnType_result," ExpnType_optimal=",
   ExpnType_optimal);
      fi;

# If result and optimal are mathematical expressions,
#  GradeAntiderivative[result,optimal] returns
#   "F" if the result fails to integrate an expression that
#       is integrable
#   "C" if result involves higher level functions than necessary
#   "B" if result is more than twice the size of the optimal
#       antiderivative
#   "A" if result can be considered optimal

  #This check below actually is not needed, since I only
  #call this grading only for passed integrals. i.e. I check
  #for "F" before calling this. But no harm of keeping it here.
  #just in case.


  if not type(result,freeof('int')) then
     return "F";
  end if;


  if ExpnType_result<=ExpnType_optimal then
      if debug then
          print("ExpnType_result<=ExpnType_optimal");
      fi;
```

```
      if is_contains_complex(result) then
         if is_contains_complex(optimal) then
            if debug then
               print("both result and optimal complex");
            fi;
            #both result and optimal complex
            if leaf_count_result<=2*leaf_count_optimal then
               return "A";
            else
               return "B";
            end if
         else #result contains complex but optimal is not
            if debug then
               print("result contains complex but optimal is not");
            fi;
            return "C";
         end if
      else # result do not contain complex
           # this assumes optimal do not as well
           if debug then
               print("result do not contain complex, this assumes optimal do
   not as well");
           fi;
           if leaf_count_result<=2*leaf_count_optimal then
              if debug then
                 print("leaf_count_result<=2*leaf_count_optimal");
              fi;
              return "A";
           else
              if debug then
                 print("leaf_count_result>2*leaf_count_optimal");
              fi;
              return "B";
           end if
      end if
  else #ExpnType(result) > ExpnType(optimal)
      if debug then
         print("ExpnType(result) > ExpnType(optimal)");
      fi;
      return "C";
  end if

end proc:

#
# is_contains_complex(result)
# takes expressions and returns true if it contains "I" else false
#
#Nasser 032417
is_contains_complex:= proc(expression)
  return (has(expression,I));
end proc:

# The following summarizes the type number assigned an expression
# based on the functions it involves
# 1 = rational function
# 2 = algebraic function
# 3 = elementary function
# 4 = special function
# 5 = hyperpergeometric function
# 6 = appell function
# 7 = rootsum function
# 8 = integrate function
```

```
# 9 = unknown function

ExpnType := proc(expn)
  if type(expn,'atomic') then
    1
  elif type(expn,'list') then
    apply(max,map(ExpnType,expn))
  elif type(expn,'sqrt') then
    if type(op(1,expn),'rational') then
       1
    else
       max(2,ExpnType(op(1,expn)))
    end if
  elif type(expn,'`^`') then
    if type(op(2,expn),'integer') then
      ExpnType(op(1,expn))
    elif type(op(2,expn),'rational') then
      if type(op(1,expn),'rational') then
         1
      else
         max(2,ExpnType(op(1,expn)))
      end if
    else
         max(3,ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    end if
  elif type(expn,'`+`') or type(expn,'`*`') then
    max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
  elif ElementaryFunctionQ(op(0,expn)) then
    max(3,ExpnType(op(1,expn)))
  elif SpecialFunctionQ(op(0,expn)) then
    max(4,apply(max,map(ExpnType,[op(expn)])))
  elif HypergeometricFunctionQ(op(0,expn)) then
    max(5,apply(max,map(ExpnType,[op(expn)])))
  elif AppellFunctionQ(op(0,expn)) then
    max(6,apply(max,map(ExpnType,[op(expn)])))
  elif op(0,expn)='int' then
    max(8,apply(max,map(ExpnType,[op(expn)]))) else
  9
  end if
end proc:


ElementaryFunctionQ := proc(func)
  member(func,[
        exp,log,ln,
        sin,cos,tan,cot,sec,csc,
        arcsin,arccos,arctan,arccot,arcsec,arccsc,
        sinh,cosh,tanh,coth,sech,csch,
        arcsinh,arccosh,arctanh,arccoth,arcsech,arccsch])
end proc:

SpecialFunctionQ := proc(func)
  member(func,[
        erf,erfc,erfi,
        FresnelS,FresnelC,
        Ei,Ei,Li,Si,Ci,Shi,Chi,
        GAMMA,lnGAMMA,Psi,Zeta,polylog,dilog,LambertW,
        EllipticF,EllipticE,EllipticPi])
end proc:

HypergeometricFunctionQ := proc(func)
  member(func,[Hypergeometric1F1,hypergeom,HypergeometricPFQ])
end proc:
```

```
AppellFunctionQ := proc(func)
  member(func,[AppellF1])
end proc:

# u is a sum or product.  rest(u) returns all but the
# first term or factor of u.
rest := proc(u) local v;
  if nops(u)=2 then
     op(2,u)
  else
     apply(op(0,u),op(2..nops(u),u))
  end if
end proc:

#leafcount(u) returns the number of nodes in u.
#Nasser 3/23/17  Replaced by build-in leafCount from package in Maple
leafcount := proc(u)
   MmaTranslator[Mma][LeafCount](u);
end proc:
```

4.0.3 Sympy grading function

```
#Dec 24, 2019. Nasser M. Abbasi:
#              Port of original Maple grading function by
#              Albert Rich to use with Sympy/Python
#Dec 27, 2019  Nasser. Added `RootSum`. See problem 177, Timofeev file
#              added 'exp_polar'
from sympy import *

def leaf_count(expr):
    #sympy do not have leaf count function. This is approximation
    return round(1.7*count_ops(expr))

def is_sqrt(expr):
    if isinstance(expr,Pow):
        if expr.args[1] == Rational(1,2):
            return True
        else:
            return False
    else:
        return False

def is_elementary_function(func):
    return func in [exp,log,ln,sin,cos,tan,cot,sec,csc,
            asin,acos,atan,acot,asec,acsc,sinh,cosh,tanh,coth,sech,csch,
            asinh,acosh,atanh,acoth,asech,acsch
        ]

def is_special_function(func):
    return func in [ erf,erfc,erfi,
             fresnels,fresnelc,Ei,Ei,Li,Si,Ci,Shi,Chi,
             gamma,loggamma,digamma,zeta,polylog,LambertW,
             elliptic_f,elliptic_e,elliptic_pi,exp_polar
         ]

def is_hypergeometric_function(func):
    return func in [hyper]

def is_appell_function(func):
    return func in [appellf1]
```

```
def is_atom(expn):
    try:
        if expn.isAtom or isinstance(expn,int) or isinstance(expn,float):
           return True
        else:
           return False

    except AttributeError as error:
        return False

def expnType(expn):
    debug=False
    if debug:
        print("expn=",expn,"type(expn)=",type(expn))

    if is_atom(expn):
      return 1
    elif isinstance(expn,list):
        return max(map(expnType, expn))   #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
            return 1
        else:
            return max(2,expnType(expn.args[0]))  #max(2,ExpnType(op(1,expn)))
    elif isinstance(expn,Pow):   #type(expn,'`^`')
        if isinstance(expn.args[1],Integer):  #type(op(2,expn),'integer')
            return expnType(expn.args[0])   #ExpnType(op(1,expn))
        elif isinstance(expn.args[1],Rational):  #type(op(2,expn),'rational')
            if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
                return 1
            else:
                return max(2,expnType(expn.args[0]))  #max(2,ExpnType(op(1,expn
   )))
        else:
            return max(3,expnType(expn.args[0]),expnType(expn.args[1])) #max(3,
   ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    elif isinstance(expn,Add) or isinstance(expn,Mul): #type(expn,'`+`') or
   type(expn,'`*`')
        m1 = expnType(expn.args[0])
        m2 = expnType(list(expn.args[1:]))
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.func):  #ElementaryFunctionQ(op(0,expn))
        return max(3,expnType(expn.args[0]))  #max(3,ExpnType(op(1,expn)))
    elif is_special_function(expn.func): #SpecialFunctionQ(op(0,expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(4,m1)   #max(4,apply(max,map(ExpnType,[op(expn)])))
    elif is_hypergeometric_function(expn.func): #HypergeometricFunctionQ(op(0,
   expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(5,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif is_appell_function(expn.func):
        m1 = max(map(expnType, list(expn.args)))
        return max(6,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif isinstance(expn,RootSum):
        m1 = max(map(expnType, list(expn.args))) #Apply[Max,Append[Map[ExpnType
   ,Apply[List,expn]],7]],
        return max(7,m1)
    elif str(expn).find("Integral") != -1:
        m1 = max(map(expnType, list(expn.args)))
        return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9
```

```
#main function
def grade_antiderivative(result,optimal):

    leaf_count_result  = leaf_count(result)
    leaf_count_optimal = leaf_count(optimal)

    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if str(result).find("Integral") != -1:
        return "F"

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex
                if leaf_count_result <= 2*leaf_count_optimal:
                    return "A"
                else:
                    return "B"
            else: #result contains complex but optimal is not
                return "C"
        else: # result do not contain complex, this assumes optimal do not as
   well
            if leaf_count_result <= 2*leaf_count_optimal:
                return "A"
            else:
                return "B"
    else:
        return "C"
```

4.0.4 SageMath grading function

```
#Dec 24, 2019. Nasser: Ported original Maple grading function by
#               Albert Rich to use with Sagemath. This is used to
#               grade Fricas, Giac and Maxima results.
#Dec 24, 2019. Nasser: Added 'exp_integral_e' and 'sng', 'sin_integral'
#               'arctan2','floor','abs','log_integral'

from sage.all import *
from sage.symbolic.operators import add_vararg, mul_vararg

debug=False;

def tree_size(expr):
    r"""
    Return the tree size of this expression.
    """
    if expr not in SR:
        # deal with lists, tuples, vectors
        return 1 + sum(tree_size(a) for a in expr)
    expr = SR(expr)
    x, aa = expr.operator(), expr.operands()
    if x is None:
        return 1
    else:
        return 1 + sum(tree_size(a) for a in aa)

def is_sqrt(expr):
    if expr.operator() == operator.pow:   #isinstance(expr,Pow):
        if expr.operands()[1]==1/2: #expr.args[1] == Rational(1,2):
            if debug: print ("expr is sqrt")
            return True
```

```
        else:
            return False
    else:
        return False

def is_elementary_function(func):
    debug=False
    m = func.name() in ['exp','log','ln',
            'sin','cos','tan','cot','sec','csc',
            'arcsin','arccos','arctan','arccot','arcsec','arccsc',
            'sinh','cosh','tanh','coth','sech','csch',
            'arcsinh','arccosh','arctanh','arccoth','arcsech','arccsch','sgn',
        'arctan2','floor','abs'
        ]
    if debug:
        if m:
            print ("func ", func , " is elementary_function")
        else:
            print ("func ", func , " is NOT elementary_function")


    return m

def is_special_function(func):
    debug=False
    if debug: print ("type(func)=", type(func))

    m= func.name() in ['erf','erfc','erfi','fresnel_sin','fresnel_cos','Ei',
           'Ei','Li','Si','sin_integral','Ci','cos_integral','Shi','
    sinh_integral'
           'Chi','cosh_integral','gamma','log_gamma','psi,zeta',
           'polylog','lambert_w','elliptic_f','elliptic_e',
           'elliptic_pi','exp_integral_e','log_integral']

    if debug:
        print ("m=",m)
        if m:
            print ("func ", func ," is special_function")
        else:
            print ("func ", func ," is NOT special_function")


    return m


def is_hypergeometric_function(func):
    return func.name() in ['hypergeometric','hypergeometric_M','
    hypergeometric_U']

def is_appell_function(func):
    return func.name() in ['hypergeometric']   #[appellf1] can't find this in
    sagemath

def is_atom(expn):

    debug=False
    if debug: print ("Enter is_atom")


    #thanks to answer at https://ask.sagemath.org/question/49179/what-is-
    sagemath-equivalent-to-atomic-type-in-maple/
    try:
        if expn.parent() is SR:
```

```
            return expn.operator() is None
        if expn.parent() in (ZZ, QQ, AA, QQbar):
            return expn in expn.parent() # Should always return True
        if hasattr(expn.parent(),"base_ring") and hasattr(expn.parent(),"gens")
    :
            return expn in expn.parent().base_ring() or expn in expn.parent().
    gens()
        return False

    except AttributeError as error:
        return False


def expnType(expn):

    if debug:
        print (">>>>>Enter expnType, expn=", expn)
        print (">>>>>is_atom(expn)=", is_atom(expn))

    if is_atom(expn):
        return 1
    elif type(expn)==list:   #isinstance(expn,list):
        return max(map(expnType, expn))   #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if  type(expn.operands()[0])==Rational: #type(isinstance(expn.args[0],
    Rational):
            return 1
        else:
            return max(2,expnType(expn.operands()[0]))  #max(2,expnType(expn.
    args[0]))
    elif expn.operator() == operator.pow:   #isinstance(expn,Pow)
        if type(expn.operands()[1])==Integer:  #isinstance(expn.args[1],Integer
    )
            return expnType(expn.operands()[0])   #expnType(expn.args[0])
        elif type(expn.operands()[1])==Rational:  #isinstance(expn.args[1],
    Rational)
            if type(expn.operands()[0])==Rational: #isinstance(expn.args[0],
    Rational)
                return 1
            else:
                return max(2,expnType(expn.operands()[0]))  #max(2,expnType(
    expn.args[0]))
        else:
            return max(3,expnType(expn.operands()[0]),expnType(expn.operands()
    [1])) #max(3,expnType(expn.operands()[0]),expnType(expn.operands()[1]))
    elif expn.operator() == add_vararg or expn.operator() == mul_vararg: #
    isinstance(expn,Add) or isinstance(expn,Mul)
        m1 = expnType(expn.operands()[0]) #expnType(expn.args[0])
        m2 = expnType(expn.operands()[1:]) #expnType(list(expn.args[1:]))
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.operator()):  #is_elementary_function(expn
    .func)
        return max(3,expnType(expn.operands()[0]))
    elif is_special_function(expn.operator()): #is_special_function(expn.func)
        m1 = max(map(expnType, expn.operands()))      #max(map(expnType, list(
    expn.args)))
        return max(4,m1)   #max(4,m1)
    elif is_hypergeometric_function(expn.operator()): #
    is_hypergeometric_function(expn.func)
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
        return max(5,m1)   #max(5,m1)
    elif is_appell_function(expn.operator()):
```

```
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
        return max(6,m1)   #max(6,m1)
    elif str(expn).find("Integral") != -1: #this will never happen, since it
                #is checked before calling the grading function that is passed.
                #but kept it here.
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
        return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9

#main function
def grade_antiderivative(result,optimal):

    if debug: print ("Enter grade_antiderivative for sagemath")

    leaf_count_result  = tree_size(result) #leaf_count(result)
    leaf_count_optimal = tree_size(optimal) #leaf_count(optimal)

    if debug: print ("leaf_count_result=", leaf_count_result, "
    leaf_count_optimal=",leaf_count_optimal)


    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if debug: print ("expnType_result=", expnType_result, "expnType_optimal=",
    expnType_optimal)

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex
                if leaf_count_result <= 2*leaf_count_optimal:
                    return "A"
                else:
                    return "B"
            else: #result contains complex but optimal is not
                return "C"
        else: # result do not contain complex, this assumes optimal do not as
    well
            if leaf_count_result <= 2*leaf_count_optimal:
                return "A"
            else:
                return "B"
    else:
        return "C"
```