Rubi 4.16.1.4 Integration Test Results

on the problems in the test-suite directory "5 Inverse trig functions"

Test results for the 227 problems in "5.1.2 (d x)^m (a+b arcsin(c x))^n.m"

Test results for the 703 problems in "5.1.4 (f x)^m (d+e x^2)^p (a+b arcsin(c x))^n.m"

Test results for the 474 problems in "5.1.5 Inverse sine functions.m"

Problem 470: Unable to integrate problem.

$$\int \frac{x}{\text{ArcSin}[\text{Sin}[x]]}\,dx$$

Optimal (type 3, 27 leaves, ? steps):

$$\text{ArcSin}[\text{Sin}[x]] + \text{Log}[\text{ArcSin}[\text{Sin}[x]]]\left(-\text{ArcSin}[\text{Sin}[x]] + x\sqrt{\text{Cos}[x]^2}\,\text{Sec}[x]\right)$$

Result (type 8, 9 leaves, 0 steps):

$$\text{CannotIntegrate}\left[\frac{x}{\text{ArcSin}[\text{Sin}[x]]}, x\right]$$

Problem 474: Unable to integrate problem.

$$\int \frac{\sqrt{1-x^2} + x\,\text{ArcSin}[x]}{\text{ArcSin}[x] - x^2\,\text{ArcSin}[x]}\,dx$$

Optimal (type 3, 16 leaves, ? steps):

$$-\frac{1}{2}\text{Log}\left[1-x^2\right] + \text{Log}[\text{ArcSin}[x]]$$

Result (type 8, 32 leaves, 1 step):

$$\text{Unintegrable}\left[\frac{\sqrt{1-x^2}+x\,\text{ArcSin}[x]}{\left(1-x^2\right)\text{ArcSin}[x]},\,x\right]$$

Test results for the 227 problems in "5.2.2 (d x)^m (a+b arccos(c x))^n.m"

Test results for the 33 problems in "5.2.4 (f x)^m (d+e x^2)^p (a+b arccos(c x))^n.m"

Test results for the 118 problems in "5.2.5 Inverse cosine functions.m"

Test results for the 166 problems in "5.3.2 (d x)^m (a+b arctan(c x^n))^p.m"

Test results for the 31 problems in "5.3.3 (d+e x)^m (a+b arctan(c x^n))^p.m"

Test results for the 1301 problems in "5.3.4 u (a+b arctan(c x))^p.m"

Problem 1137: Result valid but suboptimal antiderivative.

$$\int x^3\left(d+e\,x^2\right)^3\left(a+b\,\text{ArcTan}[c\,x]\right)\,dx$$

Optimal (type 3, 240 leaves, ? steps):

$$\frac{b\left(10c^6d^3-20c^4d^2e+15c^2de^2-4e^3\right)x}{40c^9}-\frac{b\left(10c^6d^3-20c^4d^2e+15c^2de^2-4e^3\right)x^3}{120c^7}-\frac{be\left(20c^4d^2-15c^2de+4e^2\right)x^5}{200c^5}-$$
$$\frac{b\left(15c^2d-4e\right)e^2x^7}{280c^3}-\frac{be^3x^9}{90c}+\frac{b\left(c^2d-e\right)^4\left(c^2d+4e\right)\text{ArcTan}[c\,x]}{40c^{10}e^2}-\frac{d\left(d+e\,x^2\right)^4\left(a+b\,\text{ArcTan}[c\,x]\right)}{8e^2}+\frac{\left(d+e\,x^2\right)^5\left(a+b\,\text{ArcTan}[c\,x]\right)}{10e^2}$$

Result (type 3, 285 leaves, 8 steps):

$$\frac{b\left(325c^8d^4+1815c^6d^3e-4977c^4d^2e^2+4305c^2de^3-1260e^4\right)x}{12\,600c^9e}+\frac{b\left(5c^6d^3+750c^4d^2e-1071c^2de^2+420e^3\right)x\left(d+e\,x^2\right)}{12\,600c^7e}-$$
$$\frac{b\left(25c^4d^2-135c^2de+84e^2\right)x\left(d+e\,x^2\right)^2}{4200c^5e}-\frac{b\left(23c^2d-36e\right)x\left(d+e\,x^2\right)^3}{2520c^3e}-\frac{bx\left(d+e\,x^2\right)^4}{90ce}+$$
$$\frac{b\left(c^2d-e\right)^4\left(c^2d+4e\right)\text{ArcTan}[c\,x]}{40c^{10}e^2}-\frac{d\left(d+e\,x^2\right)^4\left(a+b\,\text{ArcTan}[c\,x]\right)}{8e^2}+\frac{\left(d+e\,x^2\right)^5\left(a+b\,\text{ArcTan}[c\,x]\right)}{10e^2}$$

Test results for the 70 problems in "5.3.5 u (a+b arctan(c+d x))^p.m"

Test results for the 385 problems in "5.3.6 Exponentials of inverse tangent.m"

Test results for the 153 problems in "5.3.7 Inverse tangent functions.m"

Test results for the 234 problems in "5.4.1 Inverse cotangent functions.m"

Test results for the 12 problems in "5.4.2 Exponentials of inverse cotangent.m"

Test results for the 174 problems in "5.5.1 u (a+b arcsec(c x))^n.m"

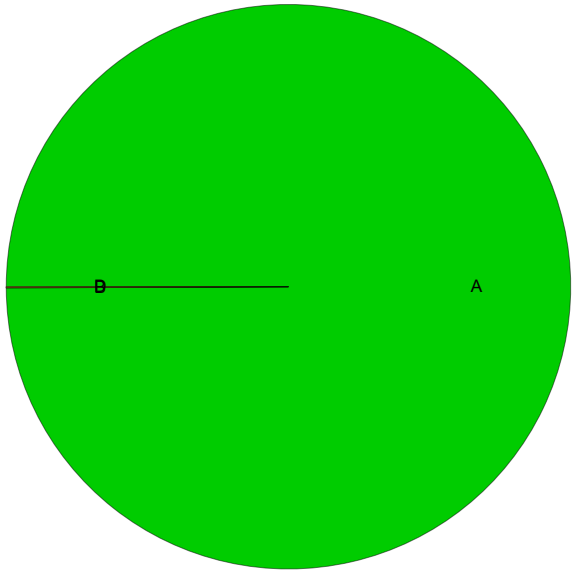
Test results for the 50 problems in "5.5.2 Inverse secant functions.m"

Test results for the 178 problems in "5.6.1 u (a+b arccsc(c x))^n.m"

Test results for the 49 problems in "5.6.2 Inverse cosecant functions.m"

Summary of Integration Test Results

4585 integration problems



A - 4582 optimal antiderivatives

B - 1 valid but suboptimal antiderivatives

C - 0 unnecessarily complex antiderivatives

D - 2 unable to integrate problems

E - 0 integration timeouts

F - 0 invalid antiderivatives