AXIOM Computer Algebra System
Version: Axiom (July 2010)
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→ f:=tan(x)

$$\tan{(x)}$$

(1)

→ dfdx:=differentiate(f,x)

$$\tan{(x)}^2 + 1$$

(2)

→ P:=integrate(f*sqrt(1+dfdx^2),x)

$$\frac{-\log\left(2\cos{(x)}^4\sqrt{\frac{\cos{(x)}^4+1}{\cos(x)^4}} + 2\cos{(x)}^4 + 1\right) + 2\sqrt{\frac{\cos{(x)}^4+1}{\cos(x)^4}}}{4}$$

(3)

→ F2:=differentiate(P,x)

$$\frac{\left(\cos{(x)}^4+1\right)\sin{(x)}}{\cos(x)^5\sqrt{\frac{\cos{(x)}^4+1}{\cos(x)^4}}}$$

(4)

→ simplify(F2)

$$\frac{\left(\cos{(x)}^4+1\right)\sin{(x)}}{\cos(x)^5\sqrt{\frac{\cos{(x)}^4+1}{\cos(x)^4}}}$$

(5)

→ F3:=tan(x)*sqrt(1+sec(x)^4)

$$\tan{(x)}\sqrt{\sec{(x)}^4+1}$$

(6)

→ simplify(F3-F2)

$$0$$

(7)

→ function(P,F,x)

$$F$$

(8)

→ A1:=F(2*%pi/5.0)-F(%pi/7.0)

    Compiling function F with type Float -> Float

4.7897705198439850971 $\qquad$ (9)

<div align="center">Type: Float</div>

$\rightarrow$ `digits(64)`

20 $\qquad$ (10)

<div align="center">Type: PositiveInteger</div>

$\rightarrow$ `A2:=F(2*%pi/5.0)-F(%pi/7.0)`

4.78977051984398509707404634823727906831181396843643543137424253 $\qquad$ (11)

<div align="center">Type: Float</div>

Find an antiderivative

$\rightarrow$ `)clear all`
$\rightarrow$ `integrate(log(x)^2,x)`

$$x \log{(x)}^2 - 2x \log{(x)} + 2x \qquad (1)$$

<div align="center">Type: Union(Expression Integer,...)</div>

Work an arc length problem

$\rightarrow$ `)clear all`
$\rightarrow$ `f:=y^3/21+7/(4*y)`

$$\frac{4y^4 + 147}{84y} \qquad (1)$$

<div align="center">Type: Fraction Polynomial Integer</div>

$\rightarrow$ `dfdy:=differentiate(f,y)`

$$\frac{4y^4 - 49}{28y^2} \qquad (2)$$

<div align="center">Type: Fraction Polynomial Integer</div>

$\rightarrow$ `A:=integrate(sqrt(dfdy^2+1),y)`

$$\frac{4y^4 - 147}{84y} \qquad (3)$$

<div align="center">Type: Union(Expression Integer,...)</div>

$\rightarrow$ `function(A,L,y)`

$$L \qquad (4)$$

<div align="center">Type: Symbol</div>

$\rightarrow$ `L(5)-L(3)`

Compiling function L with type PositiveInteger -> Fraction Integer

$$\frac{49}{10} \qquad (5)$$

<div align="center">Type: Fraction Integer</div>

$\rightarrow$