Integrals

SUMS

June 1, 2018

Level 1

Integral

$$\int \frac{1}{x(\ln(x))^2} \, dx = \frac{1}{\ln(x)}$$

Integral

$$\int 2018^x = \frac{2018^x}{\ln(2018)}$$

Integral

$$\int \frac{1}{x^2} \cos(\frac{1}{x})\, dx = -\sin\frac{1}{x}$$

Integral

$$\int x \sin(2x)\, dx = 1/4(-2x\cos(2x) + \sin(2x))$$

Integral

$$\int e^{e^x} e^x = e^{e^x}$$

Integral

$$\int \frac{e^x}{e^x + 1}\, dx = \ln(e^x + 1)$$

Integral

$$\int \frac{x^2}{1+x^6} \, dx = \frac{\tan^{-1}(x^3)}{3}$$

Integral

$$\int \frac{1}{x^2 + 9} = \frac{1}{3} \tan^{-1}(\frac{x}{3})$$

Integral

$$\int e^{\sin^2(x)} \sin(2x)\, dx$$

$$= \quad e^{\sin^2(x)}$$

Integral

$$\int x^2 e^x \, dx = e^x(2 - 2x + x^2)$$

Integral

$$\int \sin(x)\cos(\cos(x))\,dx = -\sin(\cos(x))$$

Integral

$$\int \frac{x}{x^2 + 9} = \frac{1}{2} \ln(x^2 + 9)$$

Integral

$$\int \frac{1}{x^2\sqrt{4x^2-1}}\, dx = \frac{\sqrt{4x^2-1}}{x}$$

Integral

$$\int \sin^{-1}(x)\, dx = x \sin^{-1}(x) + \sqrt{1 - x^2}$$

Integral

$$\int \sin^3(x)\, dx = -\cos(x) + \frac{\cos^3(x)}{3}$$

Integral

$$\int \ln(x^2 + 6x + 5)\, dx = x\ln(x^2 + 6x + 5) - 2x + \ln(x+1) + \ln(x+5)$$

Integral

$$\int \frac{7 - \ln(x)}{x(3 + \ln(x))} \, dx = 10 \ln(\ln(x) + 3) - \ln(x)$$

Integral

$$\int \frac{3}{\sqrt{4 - 9x^2}}\, dx = \sin^{-1}\left(\frac{3x}{2}\right)$$

Integral

$$\int \frac{x}{1+x^4}\,dx = \frac{\tan^{-1}(x^2)}{2}$$

Integral

$$\int \frac{x}{x-1} = \ln(1-x) + x$$

Integral

$$\int x \ln(x)\, dx = \frac{1}{4}x^2(-1 + 2\ln(x))$$

Integral

$$\int e^{(x+e^x)}\,dx = e^{e^x}$$

Integral

$$\int \frac{x}{(x+5)^2} = \frac{5}{5+x} + \ln(5+x)$$

Integral

$$\int \frac{1}{\sqrt{x^2 + 25}} = \ln(x + \sqrt{x^2 + 25})$$

Integral

$$\int 4x \ln x = 2x^2 \ln(x) - x^2$$

Integral

$$\int \cos^3(x) \sin(x) dx = -\frac{\cos^4(x)}{4}$$

Integral

$$\int \sin(x)\cos(x)\cot(x)\tan(x)\,dx = \frac{\sin^2(x)}{2}$$

Integral

$$\int \frac{x+1}{x^2+2x+3}dx = \frac{1}{2}\ln(x^2+2x+3)$$

Level 2

Integral

$$\int (\sin(x) + \cos(x))^2 \, dx = x - \frac{1}{2} \cos(2x)$$

Integral

$$\int \frac{\ln(x)}{x} \, dx = \frac{\ln^2(x)}{2}$$

Integral

$$\int \frac{1}{x(x-1)^2} = \frac{1}{1-x} - \ln(x-1) + \ln(x)$$

Integral

$$\int \frac{1 + e^x}{1 - e^x} \, dx = x - 2\ln(e^x - 1)$$

Integral

$$\int \sqrt{1-x^2}\,dx = \frac{1}{2}\sin^{-1}(x) + \frac{1}{4}\sin\left(2\sin^{-1}x\right)$$

Integral

$$\int \frac{e^x}{1 + e^{2x}}\, dx = \tan^{-1}(e^x)$$

Integral

$$\int \frac{7x + 5}{x^2 + x - 2}\, dx = 3\ln(x + 2) + 4\ln(x - 1)$$

Integral

$$\int \frac{1}{\sqrt{e^{2x} - 1}} \, dx = \tan^{-1}(\sqrt{e^{2x} - 1})$$

Integral

$$\int (\tan(x) + \cot(x))^2 \, dx = \tan(x) - \cot(x)$$

Integral

$$\int \frac{1}{(e^x + e^{-x})}\, dx = \tan^{-1}(e^x)$$

Integral

$$\int \frac{x^3 - 4x^2 + 2x - 3}{x + 2} = (1/3)x^3 - 3x^2 + 14x - 31\ln(x + 2)$$

Integral

$$\int e^x \cos(x)\, dx = \frac{1}{2} e^x (\cos(x) + \sin(x))$$

Integral

$$\int \frac{x}{x^2 - 2x + 16}\, dx = \frac{1}{\sqrt{15}} \tan^{-1}(\frac{1}{\sqrt{15}(x-1)})$$

Integral

$$\int \frac{1}{(x+1)\sqrt{x}}\, dx = 2\tan^{-1}(\sqrt{x})$$

Integral

$$\int \frac{\sec^3(x) + e^{\sin(x)}}{\sec(x)} \, dx = \sec(x)(-e^{\sin(x)}\sin(\frac{x}{2}) + \sin(x) + e^{\sin(x)}\cos^2(\frac{x}{2}))$$

Integral

$$\int \sin(4x)\cos(3x)\,dx = \frac{-7\cos(x) - \cos(7x)}{14}$$

Integral

$$\int x^2 \ln(x)\,dx$$

$=$

$$1/9x^3(-1 + 3\ln(x))$$

Level 3

Integral

$$\int x^3 e^{-x}\, dx = (x^3 + 3x^2 + 6x + 6)e^{-x}$$

Integral

$$\int \sin^2(2x) + \sec(2x)\,dx = \ln(\tan(2x) + \sec(2x)) - \cos(x)\sin(x) + x$$

Integral

$$\int \frac{1}{x^2\sqrt{4x^2-1}}\,dx = \frac{\sqrt{4x^2-1}}{x}$$

Integral

$$\int \frac{1}{\cos^4(x)}\,dx = \frac{1}{3}\left(\sqrt{\sec^2(x)-1}\right)^3 + \sqrt{\sec^2(x)-1}$$

Integral

$$\int \frac{1+x^2}{1-x^2} = \ln \frac{x+1}{x-1}$$

Integral

$$\int \tanh(x) = \ln(\cosh(x))$$

Integral

$$\int \frac{1}{1 + \sin(x) + \cos(x)}\, dx = \ln(\tan(\frac{x}{2}) + 1)$$

Integral

$$\int \ln(x^2 - 1)\, dx = \ln(x + 1) - \ln(x - 1) - 2x + x \ln(x^2 - 1)$$

Integral

$$\int \frac{3}{2} \sin(2x) \left(\sin(x) + \cos(x) \right) \, dx = \sin^3(x) - \cos^3(x)$$

Level 4

Integral

$$\int 4\cos(x)\cos(2x)\sin(3x)\,dx = -\frac{16}{3}\cos^6(x) + 6\cos^4(x) - 2\cos^2(x)$$

Integral

$$\int \frac{2\tan^{-1}(e^x)}{e^{2x}}\,dx = \tan^{-1}(e^{-x}) + e^{-x} + e^{-2x}\tan^{-1}(e^x)$$

Integral

$$\int_{-1729}^{1729} \sin^5(x^3) + \sin^3(x^5) + x = 0$$

Integral

$$\int \frac{1 - \sqrt{x}}{1 + \sqrt{x}} \, dx = 4\sqrt{x} - x - 4\ln(1 + \sqrt{x})$$

Integral

$$\int \frac{2x-3}{x^3+x}\, dx = 2\tan^{-1}(x) - 3\ln(x) - \frac{3}{2}\ln\left(x^2+1\right)$$

Integral

$$\int \frac{\sin^3(x)}{\cos(x) - \cos^3(x)} \, dx = -\ln(\cos(x))$$

Integral

$$\int \frac{x^2}{x^2+1}\, dx = x + \tan^{-1}(x)$$

Level 5

Integral

$$\int \frac{xe^x}{(e^x+1)^2}\,dx = \frac{xe^x}{e^x+1} - \ln(e^x+1)$$

Integral

$$\int \frac{e^x x \ln(x) - xe^x}{x \ln^2(x)} = \frac{e^x}{\ln(x)}$$

Integral

$$\int \frac{xe^x}{(e^x + 1)^2}\, dx = \frac{xe^x}{e^x + 1} - \ln(e^x + 1)$$

Integral

$$\int \frac{1}{\sin(x) + \cos(x)}\, dx = \frac{\sqrt{2}}{2}\left(\ln(u+1) - \ln(u-1)\right), u = \frac{\sqrt{2}}{2}\left(\tan(x/2)\right.$$

Integral

$$\int \sinh(x)\sin(x) = \frac{1}{2}(\cosh(x)\sin(x) - \sinh(x)\cos(x))$$

Integral

$$\int \sqrt{\frac{1+x}{1-x}}\, dx = x\sqrt{\frac{x+1}{1-x}} - \sqrt{\frac{x+1}{1-x}} - \sin^{-1}(-x)$$

$$\int \frac{2\sin^2(x)}{\cos^3(x)} = \tan(x)\sec(x) - \ln\left(\tan(x) + \sec(x)\right)$$

Integral

$$\int \frac{1+\sin(x)}{1+\cos(x)}\,dx = -\ln(\cos(x)+1) - \cot(x) + \csc(x)$$

Integral

$$\int \frac{1 - \sin(x)}{1 + \cos(x)} \, dx = \tan(\frac{x}{2}) + \ln(\cos(x) + 1)$$