

Integrals of Standard Functions Guide

Exponential

$$\int e^x \, dx = e^x + C$$

$$\int \frac{1}{x} \, dx = \ln(|x|) + C$$

$$\int a^x \, dx = \frac{a^x}{\ln(a)} + C$$

$$\int \ln(x) \, dx = x \ln(x) - x + C$$

$$\int \log_a(x) \, dx = \frac{x}{\ln(a)} (\ln(x) - 1) + C$$

Trigonometric

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

$$\int \cos(x) \, dx = \sin(x) + C$$

$$\int \tan(x) \, dx = -\ln(|\cos(x)|) + C$$

$$\int \cot(x) \, dx = \ln(|\sin(x)|) + C$$

$$\int \sec^2(x) \, dx = \tan(x) + C$$

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

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

Hyperbolic

$$\int \sinh(x) \, dx = \cosh(x) + C$$

$$\int \cosh(x) \, dx = \sinh(x) + C$$

$$\int \tanh(x) \, dx = \ln(\cosh(x)) + C$$

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

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