

Short Table of Elementary Integrals

$$\int x^n dx = \frac{x^{n+1}}{n+1} + C \quad (n \neq -1)$$

$$\int k dx = kx + C$$

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

$$\int e^{ax} dx = \frac{1}{a} e^{ax} + C$$

$$\int a^x dx = \frac{1}{\ln a} a^x + C$$

$$\int \ln x dx = x \ln x - x + C$$

$$\int \frac{1}{a^2 + x^2} dx = \frac{1}{a} \arctan \frac{x}{a} + C \quad \int \frac{1}{\sqrt{a^2 - x^2}} dx = \arcsin \frac{x}{a} + C$$

$$\int \cos ax dx = \frac{1}{a} \sin ax + C \quad \int \sec(ax) dx = \frac{1}{a} \ln|\sec(ax) + \tan(ax)| + C$$

$$\int \sin ax dx = -\frac{1}{a} \cos ax + C \quad \int \csc(ax) dx = \frac{-1}{a} \ln|\csc(ax) + \cot(ax)| + C$$

$$\int \tan ax dx = -\frac{1}{a} \ln|\cos ax| + C \quad \int \cot(ax) dx = \frac{1}{a} \ln|\sin(ax)| + C$$

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