

Rules of Integration

$$\int 1 \, dx = x + C$$

$$\int a \, dx = ax + C$$

$$\int x^n \, dx = \frac{x^{n+1}}{n+1} + C; n \neq -1$$

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

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

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

$$\int \csc^2 x \, dx = -\cot x + C$$

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

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

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

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

$$\int a^x \, dx = \frac{a^x}{\ln a} + C; a > 0, a \neq 1$$

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

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

$$\int \frac{1}{|x|\sqrt{x^2-1}} \, dx = \sec^{-1} x + C$$

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

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

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

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

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

Basic Integration Formulas And The Substitution Rule

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