

**Integration Formulas**

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

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

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$$\int e^x dx = e^x$$

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

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$$\int \sin x dx = -\cos x$$

$$\int \cos x dx = \sin x$$

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$$\int \sec^2 x dx = \tan x$$

$$\int \csc^2 x dx = -\cot x$$

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$$\int \sec x \tan x dx = \sec x$$

$$\int \csc x \cot x dx = -\csc x$$

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$$\int \sec x dx = \ln|\sec x + \tan x|$$

$$\int \csc x dx = \ln|\csc x - \cot x|$$

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$$\int \tan x dx = \ln|\sec x|$$

$$\int \cot x dx = \ln|\sin x|$$

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$$\int \sinh x dx = \cosh x$$

$$\int \cosh x dx = \sinh x$$

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

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

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$$\int \frac{dx}{x^2 - a^2} = \frac{1}{2a} \ln\left|\frac{x-a}{x+a}\right|$$

$$\int \frac{dx}{\sqrt{x^2 \pm a^2}} = \ln\left|x + \sqrt{x^2 \pm a^2}\right|$$

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Constants of integration have been omitted.