

Integration Formulas

- 1 $\int \sin(ax + b) dx = -\frac{1}{a} \cos(ax + b) + C$
- 2 $\int \cos(ax + b) dx = \frac{1}{a} \sin(ax + b) + C$
- 3 $\int \tan(ax + b) dx = -\frac{1}{a} \ln |\cos(ax + b)| + C = \frac{1}{a} \ln |\sec(ax + b)| + C$
- 4 $\int \cot(ax + b) dx = \frac{1}{a} \ln |\sin(ax + b)| + C$
- 5 $\int \operatorname{cosec} x dx = \ln |\operatorname{cosec} x - \cot x| + C = \ln \left| \tan \frac{x}{2} \right| + C$
- 6 $\int \sec x dx = \ln |\sec x + \tan x| + C = \ln \left| \tan \left(\frac{\pi}{4} + \frac{x}{2} \right) \right| + C$
- 7 $\int e^{ax+b} dx = \frac{1}{a} \times e^{ax+b} + C$
- 8 $\int a^{bx+c} dx = \frac{1}{b \ln a} \times a^{bx+c} + C$
- 9 $\int \sqrt{x^2 + a^2} dx = \frac{x}{2} \sqrt{x^2 + a^2} + \frac{a^2}{2} \sinh^{-1} \left(\frac{x}{a} \right)$
- 10 $\int \sqrt{x^2 - a^2} dx = \frac{x}{2} \sqrt{x^2 - a^2} - \frac{a^2}{2} \cosh^{-1} \left(\frac{x}{a} \right)$
- 11 $\int \sqrt{a^2 - x^2} dx = \frac{x}{2} \sqrt{a^2 - x^2} + \frac{a^2}{2} \sin^{-1} \left(\frac{x}{a} \right)$
- 12 $\int \frac{1}{\sqrt{x^2 + a^2}} dx = \sinh^{-1} \left(\frac{x}{a} \right) + C = \ln \left(\frac{x + \sqrt{x^2 + a^2}}{a} \right) + C$
- 13 $\int \frac{1}{\sqrt{x^2 - a^2}} dx = \cosh^{-1} \left(\frac{x}{a} \right) + C = \ln \left(\frac{x + \sqrt{x^2 - a^2}}{a} \right) + C$
- 14 $\int \frac{1}{x^2 + a^2} dx = \frac{1}{a} \tan^{-1} \left(\frac{x}{a} \right) + C$
- 15 $\int \frac{1}{\sqrt{a^2 - x^2}} dx = \sin^{-1} \left(\frac{x}{a} \right) + C$
- 16 $\int \frac{1}{a^2 - x^2} dx = \frac{1}{2a} \ln \left| \frac{a+x}{a-x} \right| + C$
- 17 $\int \frac{1}{x^2 - a^2} dx = \frac{1}{2a} \ln \left| \frac{x-a}{x+a} \right| + C$