

Integration Formulas

1. $\int a \, dx = ax + C$
2. $\int x^n \, dx = \frac{x^{n+1}}{n+1} + C, \quad n \neq -1$
3. $\int \frac{1}{x} \, dx = \ln|x| + C$
4. $\int e^x \, dx = e^x + C$
5. $\int a^x \, dx = \frac{a^x}{\ln a} + C$
6. $\int \ln x \, dx = x \ln x - x + C$
7. $\int \sin x \, dx = -\cos x + C$
8. $\int \cos x \, dx = \sin x + C$
9. $\int \tan x \, dx = \ln|\sec x| + C$ or $-\ln|\cos x| + C$
10. $\int \cot x \, dx = \ln|\sin x| + C$
11. $\int \sec x \, dx = \ln|\sec x + \tan x| + C$
12. $\int \csc x \, dx = -\ln|\csc x + \cot x| + C$
13. $\int \sec^2 x \, dx = \tan x + C$
14. $\int \sec x \tan x \, dx = \sec x + C$
15. $\int \csc^2 x \, dx = -\cot x + C$
16. $\int \csc x \cot x \, dx = -\csc x + C$
17. $\int \tan^2 x \, dx = \tan x - x + C$
18. $\int \frac{dx}{a^2 + x^2} = \frac{1}{a} \operatorname{Arc} \tan\left(\frac{x}{a}\right) + C$
19. $\int \frac{dx}{\sqrt{a^2 - x^2}} = \operatorname{Arc} \sin\left(\frac{x}{a}\right) + C$
20. $\int \frac{dx}{x\sqrt{x^2 - a^2}} = \frac{1}{a} \operatorname{Arc} \sec \frac{|x|}{a} + C = \frac{1}{a} \operatorname{Arc} \cos \left| \frac{a}{x} \right| + C$