Common Integration Formulas

1. $\displaystyle\int f'(g(x))g'(x)\,dx = f(g(x)) + C$

2. $\displaystyle\int u\,dv = uv - \int v\,du$

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

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

5. $\displaystyle\int e^x\,dx = e^x + C$

6. $\displaystyle\int a^x\,dx = \frac{a^x}{\ln a} + C$

7. $\displaystyle\int \ln x\,dx = x\ln x - x + C$

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

9. $\displaystyle\int \cos x\,dx = \sin x + C$

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

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

12. $\displaystyle\int \sec x\tan x\,dx = \sec x + C$

13. $\displaystyle\int \csc x\cot x\,dx = -\csc x + C$

14. $\displaystyle\int \tan x\,dx = \ln|\sec x| + C$

15. $\displaystyle\int \cot x\,dx = \ln|\sin x| + C$

16. $\displaystyle\int \sec x\,dx = \ln|\sec x + \tan x| + C$

17. $\displaystyle\int \csc x\,dx = -\ln|\csc x + \cot x| + C = \ln|\csc x - \cot x| + C$

18. $\displaystyle\int \sec^3 x\,dx = \frac{1}{2}\left(\sec x\tan x + \ln|\sec x + \tan x|\right) + C$

19. $\displaystyle\int \csc^3 x\,dx = -\frac{1}{2}\left(\csc x\cot x + \ln|\csc x + \cot x|\right) + C$

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

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

22. $\displaystyle\int \frac{dx}{x\sqrt{x^2 - a^2}} = \frac{1}{a}\sec^{-1}\left(\frac{x}{a}\right) + C$