



Rules for Integration

1. $\int u^n du = \frac{u^{n+1}}{n+1} + C, n \neq -1$
2. $\int \frac{1}{u} du = \ln|u| + C$
3. $\int e^u du = e^u + C$
4. $\int a^u du = \frac{a^u}{\ln a} + C$
5. $\int \cos u du = \sin u + C$
6. $\int \sin u du = -\cos u + C$
7. $\int \sec^2 u du = \tan u + C$
8. $\int \csc^2 u du = -\cot u + C$
9. $\int \tan u du = \ln|\sec u| + C$
10. $\int \cot u du = \ln|\sin u| + C$
11. $\int \sec u du = \ln|\sec u + \tan u| + C$
12. $\int \csc u du = \ln|\csc u - \cot u| + C$
13. $\int \sec u \tan u du = \sec u + C$
14. $\int \csc u \cot u du = -\csc u + C$
15. $\int \frac{du}{u^2 + a^2} = \frac{1}{a} \tan^{-1} \frac{u}{a} + C$
16. $\int \frac{du}{\sqrt{a^2 - u^2}} = \sin^{-1} \frac{u}{a} + C$
17. $\int u dv = uv - \int v du$ (Integration by parts)

PRACTICE:

1. $\int u^n du =$ _____

2. $\int \frac{1}{u} du =$ _____

3. $\int e^u du =$ _____

4. $\int a^u du =$ _____

5. $\int \cos u du =$ _____

6. $\int \sin u du =$ _____

7. $\int \sec^2 u du =$ _____

8. $\int \csc^2 u du =$ _____

9. $\int \tan u du =$ _____

10. $\int \cot u du =$ _____

11. $\int \sec u du =$ _____

12. $\int \csc u du =$ _____

13. $\int \sec u \tan u du =$ _____

14. $\int \csc u \cot u du =$ _____

15. $\int \frac{du}{u^2 + a^2} =$ _____

16. $\int \frac{du}{\sqrt{a^2 - u^2}} =$ _____

17. $\int u dv =$ _____