

Basic Integration Formulas

$$1. \int dx = x + C$$

$$2. \int k dx = kx + C$$

$$3. \int x^n dx = \frac{x^{n+1}}{n+1} + C \quad (n \neq -1)$$

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

$$5. \int \sin x dx = -\cos x + C$$

$$6. \int \cos x dx = \sin x + C$$

$$7. \int \sec^2 x dx = \tan x + C$$

$$8. \int \csc^2 x dx = -\cot x + C$$

$$9. \int \sec x \tan x dx = \sec x + C$$

$$10. \int \csc x \cot x dx = -\csc x + C$$

$$11. \int e^x dx = e^x + C$$

$$12. \int a^x dx = \frac{a^x}{\ln a} + C \quad (a > 0, a \neq 1)$$

$$13. \int \frac{dx}{\sqrt{a^2 - x^2}} = \arcsin \left(\frac{x}{a} \right) + C$$

$$14. \int \frac{dx}{a^2 + x^2} = \frac{1}{a} \arctan \left(\frac{x}{a} \right) + C$$

$$15. \int \tan x dx = -\ln |\cos x| + C = \ln |\sec x| + C$$

$$16. \int \cot x dx = \ln |\sin x| + C = -\ln |\csc x| + C$$