

Basic Integration Formulas

$$\textcircled{1} \int k dx = kx + C$$

$$\textcircled{2} \int x^n dx = \frac{x^{n+1}}{n+1} + C, n \neq -1$$

$$\textcircled{3} \int \frac{dx}{x} = \ln |x| + C$$

$$\textcircled{4} \int e^x dx = e^x + C$$

$$\textcircled{5} \int a^x dx = \frac{a^x}{\ln a} + C$$

$$\textcircled{6} \int \sin x dx = -\cos x + C$$

$$\textcircled{7} \int \cos x dx = \sin x + C$$

$$\textcircled{8} \int \sec^2 x dx = \tan x + C$$

$$\textcircled{9} \int \csc^2 x dx = -\cot x + C$$

$$\textcircled{10} \int \sec x \tan x dx = \sec x + C$$

$$\textcircled{11} \int \csc x \cot x dx = -\csc x + C$$

$$\textcircled{12} \int \tan x dx = \ln |\sec x| + C$$

$$(13) \int \cot x dx = \ln |\sin x| + C.$$

$$(14) \int \sec x dx = \ln |\sec x + \tan x| + C.$$

$$(15) \int \csc x dx = -\ln |\csc x + \cot x| + C.$$

$$(16) \int \sinh x = \cosh x + C.$$

$$(17) \int \cosh x = \sinh x + C.$$

$$(18) \int \operatorname{sech}^2 x = \tanh x + C.$$

$$(19) \int \operatorname{csch}^2 x dx = -\coth x + C.$$

$$(20) \int \operatorname{sech} x \tanh x dx = -\operatorname{sech} x + C.$$

$$(21) \int \operatorname{csch} x \coth x dx = -\operatorname{csch} x + C.$$

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

$$(23) \int \frac{dx}{a^2 + x^2} = \frac{1}{a} \tan^{-1}\left(\frac{x}{a}\right) + C.$$

$$(24) \int \frac{dx}{x\sqrt{x^2 - a^2}} = \frac{1}{a} \sec^{-1}\left|\frac{x}{a}\right| + C.$$