Table of Basic Integrals

(1) $$\int x^n\,dx = \frac{1}{n+1}x^{n+1},\ \ n \neq -1$$

(2) $$\int \frac{1}{x}\,dx = \ln|x|$$

(3) $$\int u\ dv = uv - \int v du$$

(4) $$\int e^x\,dx = e^x$$

(5) $$\int a^x\,dx = \frac{1}{\ln a}a^x$$

(6) $$\int \ln x\,dx = x\ln x - x$$

(7) $$\int \sin x\,dx = -\cos x$$

(8) $$\int \cos x\,dx = \sin x$$

(9) $$\int \tan x\,dx = \ln|\sec x|$$

(10) $$\int \sec x\,dx = \ln|\sec x + \tan x|$$

(11) $$\int \sec^2 x\,dx = \tan x$$

(12) $$\int \sec x\tan x\,dx = \sec x$$

(13) $$\int \frac{a}{a^2+x^2}\,dx = \tan^{-1}\frac{x}{a}$$

(14) $$\int \frac{a}{a^2-x^2}\,dx = \frac{1}{2}\ln\left|\frac{x+a}{x-a}\right|$$

(15) $$\int \frac{1}{\sqrt{a^2-x^2}}\,dx = \sin^{-1}\frac{x}{a}$$

(16) $$\int \frac{a}{x\sqrt{x^2-a^2}}\,dx = \sec^{-1}\frac{x}{a}$$

(17) $$\int \frac{1}{\sqrt{x^2-a^2}}\,dx = \cosh^{-1}\frac{x}{a} = \ln(x+\sqrt{x^2-a^2})$$

(18) $$\int \frac{1}{\sqrt{x^2+a^2}}\,dx = \sinh^{-1}\frac{x}{a} = \ln(x+\sqrt{x^2+a^2})$$