

Table of Basic Integrals¹

- (1) $\int x^n dx = \frac{1}{n+1}x^{n+1}, n \neq -1$ (11) $\int \sec^2 x dx = \tan x$
- (2) $\int \frac{1}{x} dx = \ln x$ (12) $\int \sec x \tan x dx = \sec x$
- (3) $\int u dv = uv - \int vdu$ (13) $\int \frac{a}{a^2 + x^2} dx = \tan^{-1} \frac{x}{a}$
- (4) $\int e^x dx = e^x$ (14) $\int \frac{a}{a^2 - x^2} dx = \frac{1}{2} \ln \left| \frac{x+a}{x-a} \right|$
- (5) $\int a^x dx = \frac{1}{\ln a} a^x$ (15) $\int \frac{1}{\sqrt{a^2 - x^2}} dx = \sin^{-1} \frac{x}{a}$
- (6) $\int \ln x dx = x \ln x - x$ (16) $\int \frac{a}{x\sqrt{x^2 - a^2}} dx = \sec^{-1} \frac{x}{a}$
- (7) $\int \sin x dx = -\cos x$ (17) $\int \frac{1}{\sqrt{x^2 - a^2}} dx = \cosh^{-1} \frac{x}{a}$
 $= \ln(x + \sqrt{x^2 - a^2})$
- (8) $\int \cos x dx = \sin x$ (18) $\int \frac{1}{\sqrt{x^2 + a^2}} dx = \sinh^{-1} \frac{x}{a}$
 $= \ln(x + \sqrt{x^2 + a^2})$
- (9) $\int \tan x dx = \ln |\sec x|$
- (10) $\int \sec x dx = \ln |\sec x + \tan x|$

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