Table of Integrals

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0.1 Standard integrals

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

(2) $$\int u \, dv = uv - \int v du + C$$

(3) $$\int e^x \, dx = e^x + C$$

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

(5) $$\int \ln x \, dx = x \ln x - x + C$$

0.2 Trig integrals

(6) $$\int \sin x \, dx = -\cos x + C$$

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

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

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

(10) $$\int \sec^2 x \, dx = \tan x + C$$

(11) $$\int \sec x \tan x \, dx = \sec x + C$$

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

0.3 Logarithmic integrals

(13) $$\int \frac{1}{x} \, dx = \ln |x| + C$$

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

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

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

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

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