

Combined Function Rules

Integration by Parts

$$\int uv' = uv - \int vdu$$

Common Integrals

Trig Functions

$$\int \sin x \, dx = -\cos x + c$$

$$\int \cos x \, dx = \sin x + c$$

$$\int \tan x \, dx = \ln |\sec x| + c$$

$$\int \csc x \, dx = \ln |\csc x - \cot x| + c$$

$$\int \sec x \, dx = \ln |\sec x + \tan x| + c$$

$$\int \cot x \, dx = \ln |\sin x| + c$$

$$\int \csc^2 x \, dx = -\cot x + c$$

$$\int \sec^2 x \, dx = \tan x + c$$

Inverse trig functions

$$\int \frac{du}{\sqrt{a^2 - u^2}} = \sin^{-1} \frac{u}{a} + c$$

$$\int \frac{du}{u\sqrt{u^2 - a^2}} = \frac{1}{a} \sec^{-1} \frac{|u|}{a} + c$$

$$\int \frac{du}{a^2 + u^2} = \frac{1}{a} \tan^{-1} \frac{u}{a} + c$$

Exponential & Logarithmic Functions

$$\int e^x \, dx = e^x + c$$

$$\int a^x \, dx = \frac{a^x}{\ln a} + c$$

$$\int \frac{1}{x} \, dx = \ln |x| + c$$

$$\int \frac{1}{ax + b} \, dx = \frac{1}{a} \ln |ax + b| + c$$

$$\int \ln x \, dx = x \ln x - x + c$$