

Trigonometry Formula Sheet

1. Trigonometric Identities

$$\sin(x \pm y) = \sin x \cos y \pm \cos x \sin y$$

$$\cos(x \pm y) = \cos x \cos y \mp \sin x \sin y$$

$$\sin 2x = 2 \sin x \cos x$$

$$\cos 2x = 2 \cos^2 x - 1 = 1 - 2 \sin^2 x$$

$$1 + \tan^2 \theta = \sec^2 \theta; \quad 1 + \cot^2 \theta = \csc^2 \theta$$

2. Differentiation Rules

$$(\sec x)' = \sec x \tan x; \quad (\tan x)' = \sec^2 x$$

$$(\csc x)' = -\csc x \cot x; \quad (\cot x)' = -\csc^2 x$$

$$(\arcsin x)' = \frac{1}{\sqrt{1-x^2}}; \quad (\arctan x)' = \frac{1}{1+x^2}$$

3. Table of Integrals

$$\int \tan x \, dx = \ln |\sec x| + C; \quad \int \cot x \, dx = \ln |\sin x| + C$$

$$\int \sec x \, dx = \ln |\sec x + \tan x| + C; \quad \int \csc x \, dx = \ln |\csc x - \cot x| + C$$

$$\int \frac{1}{\sqrt{a^2 - x^2}} \, dx = \arcsin \frac{x}{a} + C; \quad \int \frac{1}{a^2 + x^2} \, dx = \frac{1}{a} \arctan \frac{x}{a} + C$$