Trigonometric Identities

$$\sin^2\theta + \cos^2\theta = 1$$

$$\sec^2\theta - \tan^2\theta = 1$$

$$\operatorname{cosec}^2\theta - \cot^2\theta = 1$$

$$\sin(A+B) = \sin A\cos B + \cos A\sin B$$

$$\cos(A+B) = \cos A\cos B - \sin A\sin B$$

$$\tan(A+B) = \frac{\tan A + \tan B}{1 - \tan A\tan B}$$

$$\cot(A+B) = \frac{\cot A\cdot\cot B - 1}{\cot A + \cot B}$$

Derivatives

$$\frac{d}{d\theta}\sin\theta = \cos\theta$$

$$\frac{d}{d\theta}\cos\theta = -\sin\theta$$

$$\frac{d}{d\theta}\tan\theta = \sec^2\theta$$

$$\frac{d}{d\theta}\cot\theta = -\csc^2\theta$$

$$\frac{d}{d\theta}(\sec\theta) = \sec\theta\cdot\tan\theta$$

$$\frac{d}{d\theta}\csc\theta = -\csc\theta\cdot\cot\theta$$

$$\sin 2A = 2\sin A\cdot\cos A$$

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

$$\sin 3A = 3\sin A - 4\sin^3 A$$

$$\cos 3A = 4\cos^3 A - 3\cos A$$

Integrals

$$\int \sin\theta\, d\theta = -\cos\theta + C$$

$$\int \cos\theta\, d\theta = \sin\theta + C$$

$$\int \tan\theta\, d\theta = \ln|\sec\theta| + C$$

$$\int \cot\theta\, d\theta = -\ln|\csc\theta| + C$$

$$\int \sec\theta\, d\theta = \ln|\sec\theta + \tan\theta| + C$$

$$\int \csc\theta\, d\theta = \ln|\csc\theta - \cot\theta| + C$$