

## Pythagorean Identities

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

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

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

## Reciprocal Identities

$$\sin\theta = 1 / \operatorname{cosec}\theta$$

$$\cos\theta = 1 / \sec\theta$$

$$\tan\theta = 1 / \cot\theta$$

$$\operatorname{cosec}\theta = 1 / \sin\theta$$

$$\sec\theta = 1 / \cos\theta$$

$$\cot\theta = 1 / \tan\theta$$

## Quotient Identities

$$\tan\theta = \sin\theta / \cos\theta$$

$$\cot\theta = \cos\theta / \sin\theta$$

## Co-function Identities

$$\sin(90^\circ - \theta) = \cos\theta$$

$$\cos(90^\circ - \theta) = \sin\theta$$

$$\tan(90^\circ - \theta) = \cot\theta$$

$$\cot(90^\circ - \theta) = \tan\theta$$

$$\sec(90^\circ - \theta) = \operatorname{cosec}\theta$$

$$\operatorname{cosec}(90^\circ - \theta) = \sec\theta$$

## Even and Odd Identities

$$\sin(-\theta) = -\sin\theta$$

$$\cos(-\theta) = \cos\theta$$

$$\tan(-\theta) = -\tan\theta$$

$$\operatorname{cosec}(-\theta) = -\operatorname{cosec}\theta$$

$$\sec(-\theta) = \sec\theta$$

$$\cot(-\theta) = -\cot\theta$$

## Double Angle Identities

$$\sin 2\theta = 2\sin\theta\cos\theta$$

$$\cos 2\theta = \cos^2\theta - \sin^2\theta$$

$$\cos 2\theta = 2\cos^2\theta - 1$$

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

$$\tan 2\theta = \frac{2\tan\theta}{1 - \tan^2\theta}$$

## Half Angle Identities

$$\sin^2(\theta/2) = (1 - \cos\theta) / 2$$

$$\cos^2(\theta/2) = (1 + \cos\theta) / 2$$

$$\tan(\theta/2) = \sin\theta / (1 + \cos\theta)$$

$$\tan(\theta/2) = (1 - \cos\theta) / \sin\theta$$

## Sum and Difference Identities

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

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

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

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

$$\tan(A + B) = (\tan A + \tan B) / (1 - \tan A \tan B)$$

$$\tan(A - B) = (\tan A - \tan B) / (1 + \tan A \tan B)$$