

MIND MAP

If ABC is a right triangle right angled at B and $\angle BAC = \theta$ less than 90° then base = AB perpendicular = BC and hypotenuse = AC .

$$\sin \theta = \frac{\text{Perpendicular}}{\text{Hypotenuse}}$$

$$\cos \theta = \frac{\text{Base}}{\text{Hypotenuse}}$$

$$\tan \theta = \frac{\text{Perpendicular}}{\text{Base}}$$

$$\text{cosec } \theta = \frac{\text{Hypotenuse}}{\text{Perpendicular}}$$

$$\sec \theta = \frac{\text{Hypotenuse}}{\text{Base}}$$

Trigonometric identities are:

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

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

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

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

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

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

$$3. \quad \text{cosec}^2 \theta - \cot^2 \theta = 1$$

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

For acute angle θ

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

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

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

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

Reciprocal relations

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

$$\cot \theta = \frac{1}{\tan \theta} = \frac{\cos \theta}{\sin \theta}$$

$$\text{cosec } \theta = \frac{1}{\sin \theta}$$

$$\sec \theta = \frac{1}{\cos \theta}$$

The values of $\sin \theta$ and $\cos \theta$ never exceed 1. But the values of $\sec \theta$ and $\text{cosec } \theta$ are always greater than or equal to 1.