

Class 11 Math New Book 2025

(Unit 10: Trigonometric Identities)

Basic Formulas For Trigonometry

$$1: \sin \theta = \frac{\text{prep}}{\text{base}}$$

$$3: \cos \theta = \frac{\text{base}}{\text{hyp}}$$

$$5: \tan \theta = \frac{\text{prep}}{\text{base}}$$

$$7: \sin \theta = \frac{1}{\csc \theta}$$

$$9: \tan \theta = \frac{1}{\cot \theta}$$

$$11: \tan \theta = \frac{\sin \theta}{\cos \theta}$$

$$2: \csc \theta = \frac{\text{base}}{\text{prep}}$$

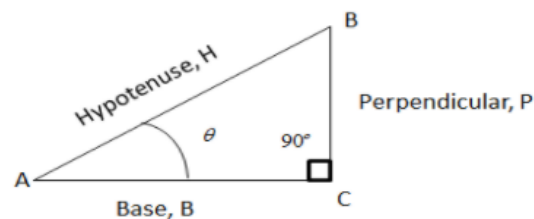
$$4: \sec \theta = \frac{\text{hyp}}{\text{base}}$$

$$6: \cot \theta = \frac{\text{base}}{\text{prep}}$$

$$8: \cos \theta = \frac{1}{\sec \theta}$$

$$10: \cot \theta = \frac{1}{\tan \theta}$$

$$12: \cot \theta = \frac{\cos \theta}{\sin \theta}$$



Trigonometric Identities

$$13: \sin^2 \theta + \cos^2 \theta = 1$$

$$14: 1 + \tan^2 \theta = \sec^2 \theta$$

$$15: 1 + \cot^2 \theta = \csc^2 \theta$$

We can further change these formulas according to our requirement

Exercise 10.1

$$16: \alpha + \beta + \gamma = 180^\circ$$

Universal law to find the unknown angle for any triangle, It will be used in **Question 6**.

Exercise 10.2

$$17: \sin(\alpha + \beta) = \sin \alpha \cos \beta + \cos \alpha \sin \beta$$

$$18: \sin(\alpha - \beta) = \sin \alpha \cos \beta - \cos \alpha \sin \beta$$

$$19: \cos(\alpha + \beta) = \cos \alpha \cos \beta - \sin \alpha \sin \beta$$

$$20: \cos(\alpha - \beta) = \cos \alpha \cos \beta + \sin \alpha \sin \beta$$

$$21: \tan(\alpha + \beta) = \frac{\tan \alpha + \tan \beta}{1 - \tan \alpha \tan \beta}$$

$$22: \tan(\alpha - \beta) = \frac{\tan \alpha - \tan \beta}{1 + \tan \alpha \tan \beta}$$

Exercise 10.3

Double Angle Identities

$$23: \sin 2\alpha = 2 \sin \alpha \cos \alpha$$

$$24: \cos 2\alpha = \cos^2 \alpha - \sin^2 \alpha$$

$$\rightarrow \cos 2\alpha = 1 - 2\sin^2 \alpha$$

$$\rightarrow \cos 2\alpha = 2\cos^2 \alpha - 1$$

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