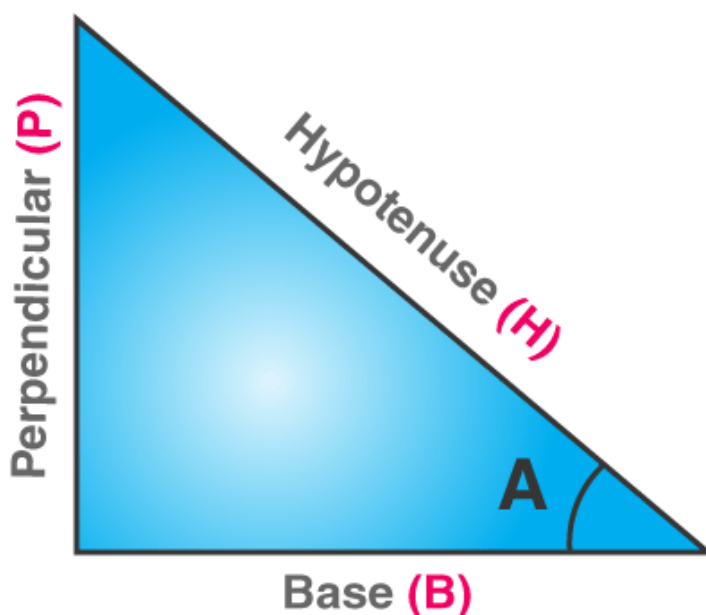


Trigonometry Formulas For Class 10

Basic Trigonometric formulas

TRIGONOMETRY FORMULAS



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S.no	Trigonometric ratios	Mathematical value
1	$\sin A$	Perpendicular/Hypotenuse
2	$\cos A$	Base/Hypotenuse

3	$\tan A$	Perpendicular/Base
4	$\cot A$	Base/Perpendicular
5	$\operatorname{cosec} A$	Hypotenuse/Perpendicular
6	$\sec A$	Hypotenuse/Base

Reciprocal Relation Between Trigonometric Ratios

S.no	Trigonometric ratios	Relation
1	$\tan A$	$\sin A / \cos A$
2	$\cot A$	$\cos A / \sin A$
3	$\operatorname{cosec} A$	$1 / \sin A$
4	$\sec A$	$1 / \cos A$

Trigonometric Sign Functions

- $\sin (-\theta) = -\sin \theta$
- $\cos (-\theta) = \cos \theta$
- $\tan (-\theta) = -\tan \theta$
- $\operatorname{cosec} (-\theta) = -\operatorname{cosec} \theta$
- $\sec (-\theta) = \sec \theta$
- $\cot (-\theta) = -\cot \theta$

Trigonometric Identities

1. $\sin^2 A + \cos^2 A = 1$
2. $\tan^2 A + 1 = \sec^2 A$
3. $\cot^2 A + 1 = \operatorname{cosec}^2 A$

Periodic Identities

- $\sin(2n\pi + \theta) = \sin \theta$
- $\cos(2n\pi + \theta) = \cos \theta$
- $\tan(2n\pi + \theta) = \tan \theta$
- $\cot(2n\pi + \theta) = \cot \theta$
- $\sec(2n\pi + \theta) = \sec \theta$
- $\operatorname{cosec}(2n\pi + \theta) = \operatorname{cosec} \theta$

Complementary Ratios

Quadrant I

- $\sin(\pi/2 - \theta) = \cos \theta$
- $\cos(\pi/2 - \theta) = \sin \theta$
- $\tan(\pi/2 - \theta) = \cot \theta$
- $\cot(\pi/2 - \theta) = \tan \theta$
- $\sec(\pi/2 - \theta) = \operatorname{cosec} \theta$
- $\operatorname{cosec}(\pi/2 - \theta) = \sec \theta$

Quadrant II

- $\sin(\pi - \theta) = \sin \theta$
- $\cos(\pi - \theta) = -\cos \theta$
- $\tan(\pi - \theta) = -\tan \theta$
- $\cot(\pi - \theta) = -\cot \theta$
- $\sec(\pi - \theta) = -\sec \theta$
- $\operatorname{cosec}(\pi - \theta) = \operatorname{cosec} \theta$

Quadrant III

- $\sin(\pi + \theta) = -\sin \theta$
- $\cos(\pi + \theta) = -\cos \theta$
- $\tan(\pi + \theta) = \tan \theta$
- $\cot(\pi + \theta) = \cot \theta$
- $\sec(\pi + \theta) = -\sec \theta$
- $\operatorname{cosec}(\pi + \theta) = -\operatorname{cosec} \theta$

Quadrant IV

- $\sin(2\pi - \theta) = -\sin \theta$
- $\cos(2\pi - \theta) = \cos \theta$

- $\tan(2\pi - \theta) = -\tan \theta$
- $\cot(2\pi - \theta) = -\cot \theta$
- $\sec(2\pi - \theta) = \sec \theta$
- $\operatorname{cosec}(2\pi - \theta) = -\operatorname{cosec} \theta$

Sum and Difference of Two Angles

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

Double Angle Formulas

- $\sin 2A = 2 \sin A \cos A = \frac{2 \tan A}{(1 + \tan^2 A)}$
- $\cos 2A = \cos^2 A - \sin^2 A = 1 - 2 \sin^2 A = 2 \cos^2 A - 1 = \frac{(1 - \tan^2 A)}{(1 + \tan^2 A)}$
- $\tan 2A = \frac{(2 \tan A)}{(1 - \tan^2 A)}$

Triple Angle Formulas

- $\sin 3A = 3 \sin A - 4 \sin^3 A$
- $\cos 3A = 4 \cos^3 A - 3 \cos A$
- $\tan 3A = \frac{[3 \tan A - \tan^3 A]}{[1 - 3 \tan^2 A]}$