



# SSC CHSL 2022-23



**MATHS**

# TRIGONOMETRY

## DAY-1

**REVISION CLASS**

TRIGONOMETRY के प्रश्न सेकेण्डों में SOLVE करें!

**BY SUNIL MAHENDRAS**

(((•))) **LIVE** | 08:15 PM





# UPCOMING ONLINE BATCHES

## January 2023

18 JAN 2023

07:30 PM to 09:30 PM

**BANK ONLINE LIVE CLASS**

01:00 PM to 03:00 PM

**SSC ONLINE LIVE CLASS**

**BILINGUAL**

25 JAN 2023

03:00 PM to 05:00 PM

**BANK ONLINE LIVE CLASS**

07:30 PM to 09:30 PM

**SSC ONLINE LIVE CLASS**

**BILINGUAL**

18 JAN 2023

04:00 PM to 06:00 PM

**BANK ONLINE LIVE CLASS**

**BENGALI**



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## Trigonometry

## त्रिकोणमिति



## Definition (परिभाषा)-

The type of mathematics that deals with the relationship between the sides and angles of triangles

त्रिकोणमिति (गणित की एक शाखा जिसमें त्रिकोण की भुजाओं और कोणों के बीच संबंध की व्याख्या की जाती है)

## Trigonometry Meaning

ट्रिगोनोमेट्री/Trigonometry यह शब्द Tri + Gon + Metron इन तीन ग्रीक शब्दों से मिलकर बना है। जिसमें 'Tri' का अर्थ 'तीन', 'Gon' का अर्थ 'भुजा' और 'Metron' का अर्थ 'माप' यह होता है। अर्थात् Trigonometry का अर्थ 'त्रिभुज की तीनों भुजाओं की माप' यह होता है।



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- ⇒ • **Trigonometry Table**
- ⇒ • **Trigonometry Formulas**
- ⇒ • **Trigonometric functions**



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

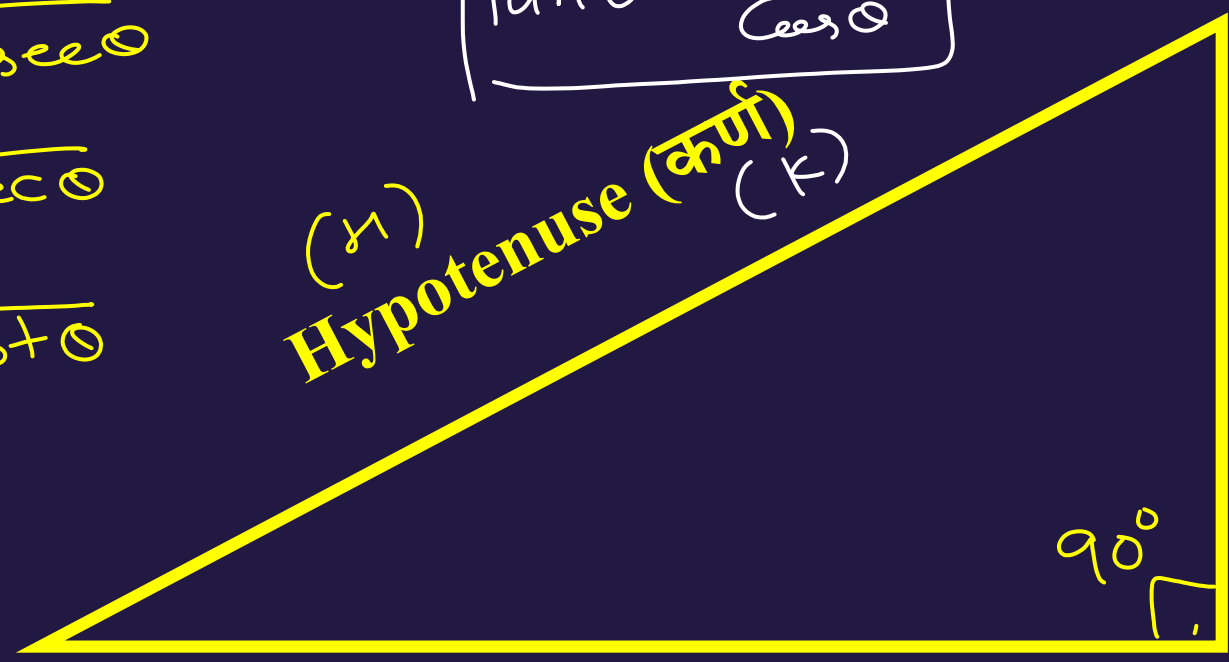
$$\cos \theta = \frac{1}{\operatorname{sec} \theta}$$

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

S.C.T  
P.B.P.  
—————  
H.H.B

S.C.T  
L.A.L  
—————  
K.K.A

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



Perpendicular (लंब)  
(P)  
(L)

Base (आधार)  
(B) (A)



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$$\sin \theta = \frac{P}{H} = \frac{L}{K}$$

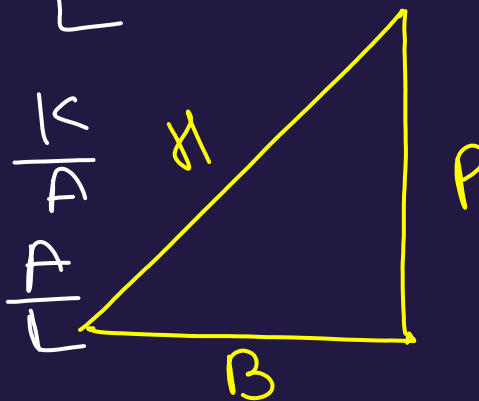
$$\cos \theta = \frac{B}{H} = \frac{A}{K}$$

$$\tan \theta = \frac{P}{B} = \frac{L}{A}$$

$$\operatorname{cosec} \theta = \frac{H}{L} = \frac{K}{L}$$

$$\sec \theta = \frac{H}{B} = \frac{K}{B}$$

$$\cot \theta = \frac{B}{P} = \frac{A}{L}$$



$$\frac{SCT}{PBP} \\ \frac{HKB}{HKB}$$



$$\frac{SCT}{LAL} \\ \frac{KKA}{KKA}$$



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$$\frac{0}{1} = 0$$

$$\frac{1}{0} = \infty$$

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

$$\begin{aligned} \sin 0 &= 0 & \sin 90 &= 1 \\ \cos 0 &= 1 & \cos 90 &= 0 \\ \tan 0 &= 0 & \tan 90 &= \infty \end{aligned}$$

$$\begin{aligned} \sin 30 &= \frac{1}{2} & \sin 60 &= \frac{\sqrt{3}}{2} \\ \cos 30 &= \frac{\sqrt{3}}{2} & \cos 60 &= \frac{1}{2} \\ \tan 30 &= \frac{1}{\sqrt{3}} & \tan 60 &= \sqrt{3} \end{aligned}$$

$$\begin{aligned} \operatorname{cosec} 0 &= \infty & \operatorname{cosec} 90 &= 1 \\ \sec 0 &= 1 & \sec 90 &= \infty \\ \cot 0 &= \infty & \cot 90 &= 0 \end{aligned}$$

$$\begin{aligned} \sin 45 &= \frac{1}{\sqrt{2}} \\ \cos 45 &= \frac{1}{\sqrt{2}} \\ \tan 45 &= 1 \end{aligned}$$

$$\begin{aligned} \sin \theta &= \frac{1}{\operatorname{cosec} \theta} \\ \cos \theta &= \frac{1}{\sec \theta} \\ \tan \theta &= \frac{1}{\cot \theta} \end{aligned}$$





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$$\operatorname{Cosec} 45 = \sqrt{2}$$

$$\operatorname{Sec} 45 = \sqrt{2}$$

$$\operatorname{Cot} 45 = 1$$

$$\operatorname{Cosec} 30 = 2$$

$$\operatorname{Sec} 30 = \frac{2}{\sqrt{3}}$$

$$\operatorname{Cot} 30 = \sqrt{3}$$

$$\operatorname{Cosec} 60 = \frac{2}{\sqrt{3}}$$

$$\operatorname{Sec} 60 = 2$$

$$\operatorname{Cot} 60 = \frac{1}{\sqrt{3}}$$



## Trigonometry Table

$\sin \theta$	0	$1/2$	$1/\sqrt{2}$	$\sqrt{3}/2$	1
$\cos \theta$	1	$\sqrt{3}/2$	$1/\sqrt{2}$	$1/2$	0
$\tan \theta$	0	$1/\sqrt{3}$	1	$\sqrt{3}$	$\infty$
$\cot \theta$	$\infty$	$\sqrt{3}$	1	$1/\sqrt{3}$	0
$\sec \theta$	1	$2/\sqrt{3}$	$\sqrt{2}$	2	$\infty$
$\operatorname{cosec} \theta$	$\infty$	2	$\sqrt{2}$	$2/\sqrt{3}$	1



## Basic Trigonometric Formulas (मूल त्रिकोणमितीय सूत्र)

$$\begin{aligned}\sin^2 \theta + \cos^2 \theta &= 1 \Rightarrow \sin^2 \theta = 1 - \cos^2 \theta \\ 1 + \tan^2 \theta &= \sec^2 \theta \Rightarrow \sec^2 \theta - \tan^2 \theta = 1 \\ 1 + \cot^2 \theta &= \operatorname{cosec}^2 \theta \Rightarrow \operatorname{cosec}^2 \theta - \cot^2 \theta = 1\end{aligned}$$

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

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

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

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

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

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

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

$$\begin{aligned}\cos 2\theta &= \cos^2 \theta - \sin^2 \theta \\ &= 1 - 2 \sin^2 \theta \\ &= 2 \cos^2 \theta - 1\end{aligned}$$



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Rule – 1 :  $90^\circ$  or  $270^\circ$  — Change

$\sin \theta \rightleftharpoons \cos \theta$

$\tan \theta \rightleftharpoons \cot \theta$

$\sec \theta \rightleftharpoons \csc \theta$

Rule – 2 :  $180^\circ$  or  $360^\circ$   $\Rightarrow$  No Change

$\sin \theta \Rightarrow \sin \theta$

$\cos \theta \Rightarrow \cos \theta$

$\tan \theta \Rightarrow \tan \theta$

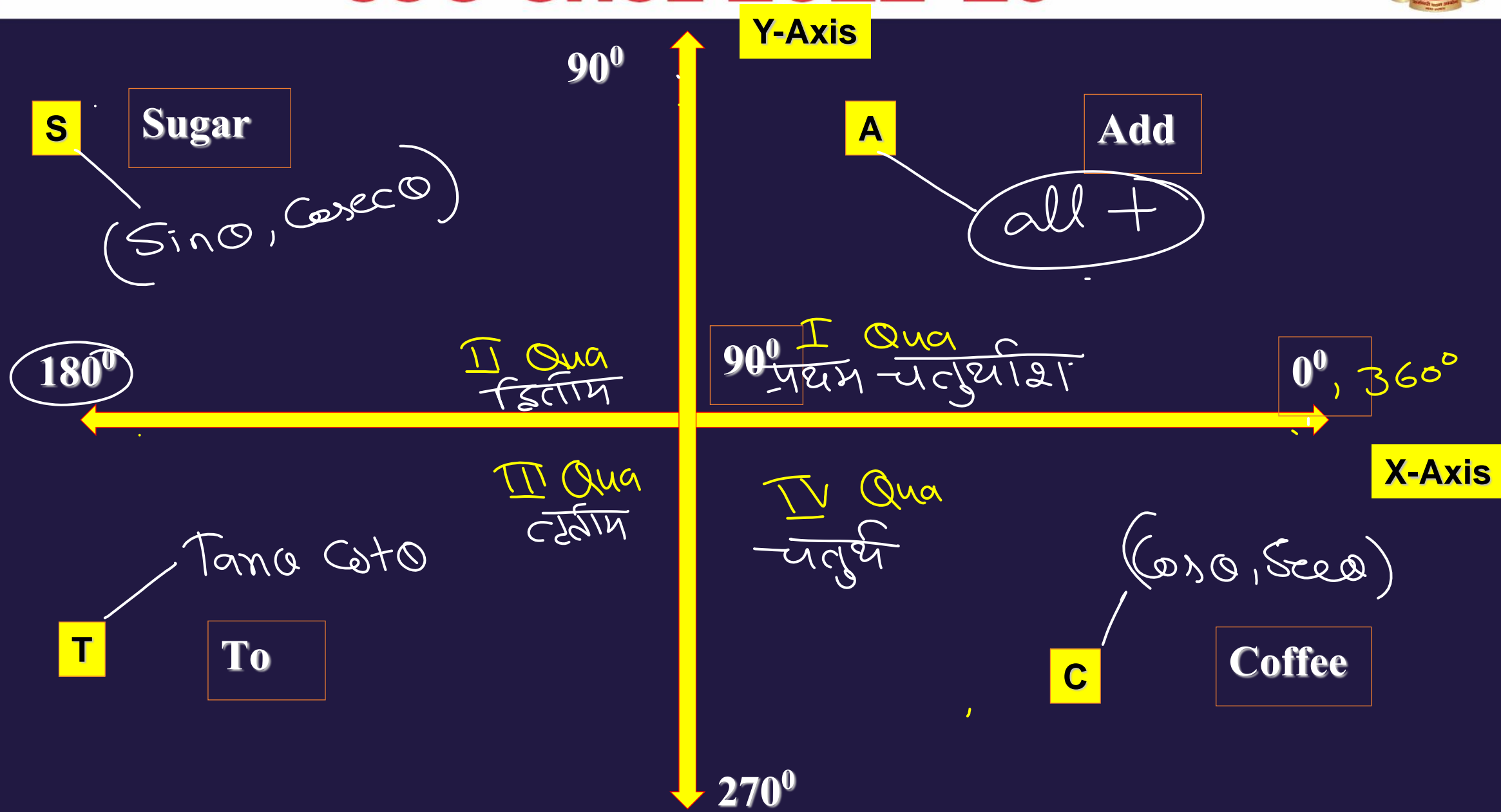
$\cot \theta \Rightarrow \cot \theta$

$\sec \theta \Rightarrow \sec \theta$

$\csc \theta \Rightarrow \csc \theta$



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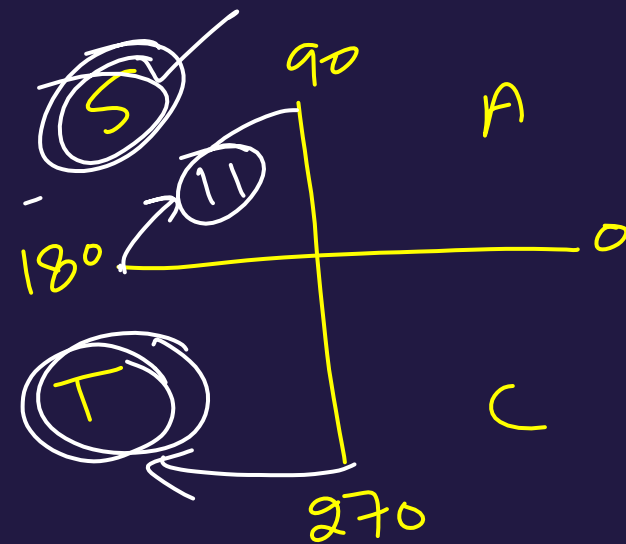
$$\tan(90 + \theta) = -\cot \theta$$

$$\cos(180 - \theta) = -\cos \theta$$

$$\tan(180 + \theta) = +\tan \theta$$

$$\sec(270 - \theta) = -\sec \theta$$

$$\csc(90 + \theta) = +\sec \theta$$







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If  $0^\circ < A < 90^\circ$  and  $\cos A = \frac{4}{5}$  then find the value of  $\cot A + \operatorname{cosec} A = ?$

यदि  $0^\circ < A < 90^\circ$  तथा  $\cos A = \frac{4}{5}$  तो  $\cot A + \operatorname{cosec} A =$  का मान ज्ञात कीजिए।

- (a) 9
- (b) 3
- (c) 5
- (d)  $1/3$

3



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Thanks For  
**WATCHING**

