SSC CHSL 2022-23

MATHS

TRIGONOMETRY

DAY-1

REVISION CLASS

TRIGONOMETRY के प्रश्न सेकेण्डों में SOLVE करें!

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LIVE | 08:15 PM

UPCOMING ONLINE BATCHES

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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। जिसमे 'Tri' का अर्थ 'तीन', 'Gon' का अर्थ 'भुजा' और 'Metron' का अर्थ 'माप' यह होता है। अर्थात Trigonometry का अर्थ 'त्रिभुज की तीनों भुजाओं की माप' यह होता है।

- Trigonometry Table
- Trigonometry Formulas
- Trigonometric functions

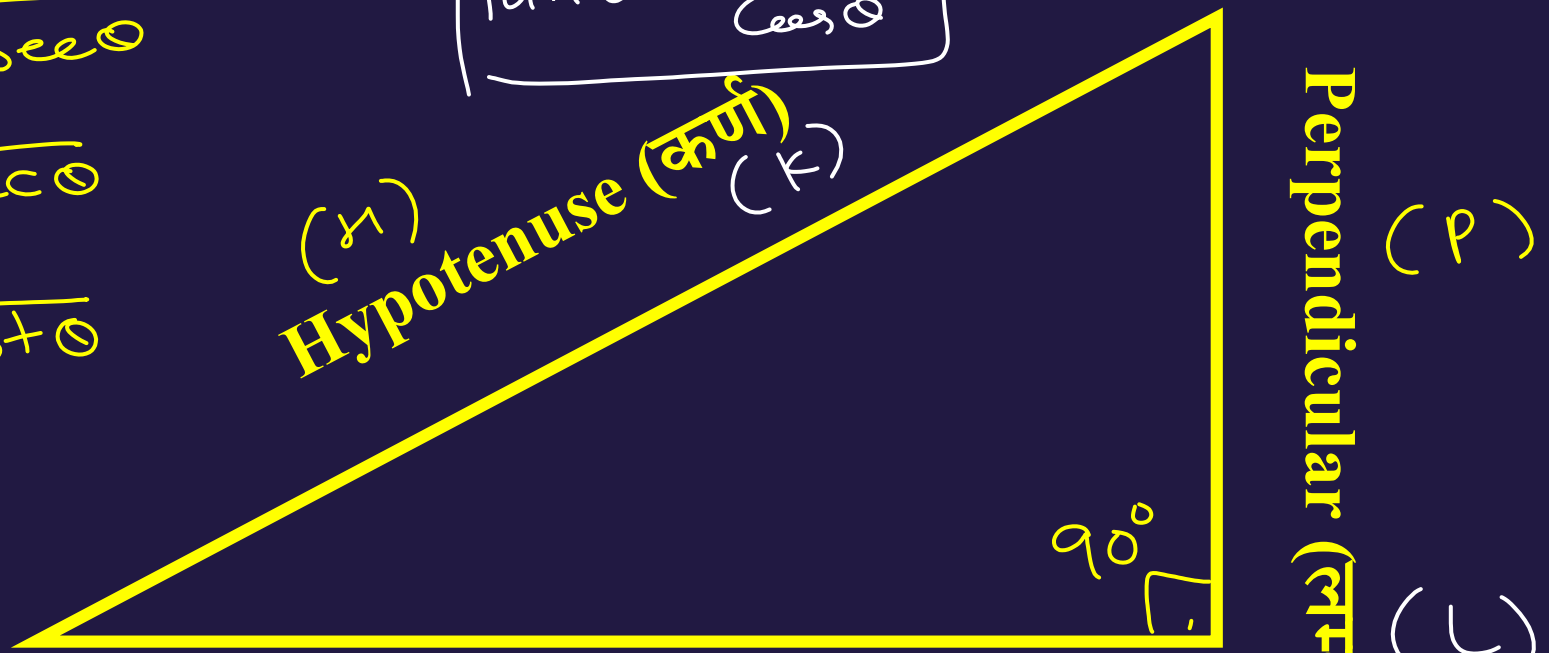
$\sin\theta = \frac{1}{\text{Cosec}\,\theta}$

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

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

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

S.C.T
P B P.
H H B



S.C.T
LAL
KKA

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

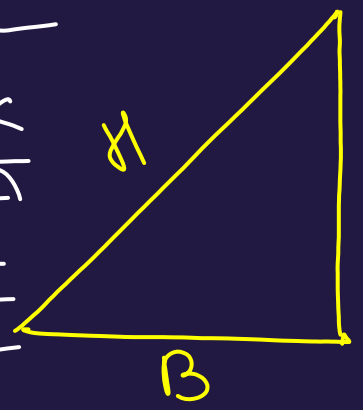
$$\cos\theta = \frac{B}{H} = \frac{A}{K}$$

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

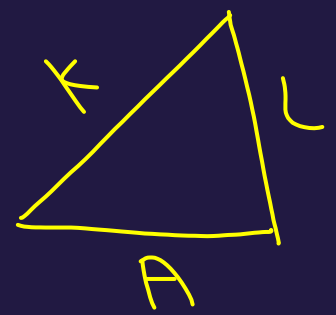
$$\operatorname{cosec}\theta = \frac{H}{L} = \frac{K}{L}$$

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

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



S C T
P B P
H H B



S C T
L A L
K K A

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

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

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

$\sin 0 = 0$, $\sin 90 = 1$

$\cos 0 = 1$, $\cos 90 = 0$

$\tan 0 = 0$, $\tan 90 = \infty$

$\sin 30 = \frac{1}{2}$, $\sin 60 = \frac{\sqrt{3}}{2}$

$\cos 30 = \frac{\sqrt{3}}{2}$, $\cos 60 = \frac{1}{2}$

$\tan 30 = \frac{1}{\sqrt{3}}$, $\tan 60 = \sqrt{3}$

$\text{Cosec}\, 0 = \infty$, $\text{Cosec}\, 90 = 1$

$\sec 0 = 1$, $\sec 90 = \infty$

$\cot 0 = \infty$, $\cot 90 = 0$

$\sin 45 = \frac{1}{\sqrt{2}}$

$\cos 45 = \frac{1}{\sqrt{2}}$

$\tan 45 = 1$

$\sin\theta = \frac{1}{\text{Cosec}\,\theta}$

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

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

$\text{Cosec}\,45 = \sqrt{2}$

$\text{Sec}\,45 = \sqrt{2}$

$\text{Cot}\,45 = 1$

$\text{Cosec}\,30 = 2$

$\text{Sec}\,30 = \frac{2}{\sqrt{3}}$

$\text{Cot}\,30 = \sqrt{3}$

$\text{Cosec}\,60 = \frac{2}{\sqrt{3}}$

$\text{Sec}\,60 = 2$

$\text{Cot}\,60 = \frac{1}{\sqrt{3}}$

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	$\sqrt{3}$	∞
$\cot\theta$	∞	$\sqrt{3}$	1	$1/\sqrt{3}$	0
$\sec\theta$	1	$2/\sqrt{3}$	$\sqrt{2}$	2	∞
$\operatorname{cosec}\theta$	∞	2	$\sqrt{2}$	$2/\sqrt{3}$	1

Basic Trigonometric Formulas (मूल त्रिकोणमितीय सूत्र)

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

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

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

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

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

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

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

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

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

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

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

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Rule – 1 : **90^0 *or* 270^0** — Change

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

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

$\operatorname{cosec}\theta \rightleftharpoons \sec\theta$

Rule – 2 : 180^0 ***or*** 360^0 $\Rightarrow$ No Change

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

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

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

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

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

$\operatorname{cosec}\theta \Rightarrow \operatorname{cosec}\theta$

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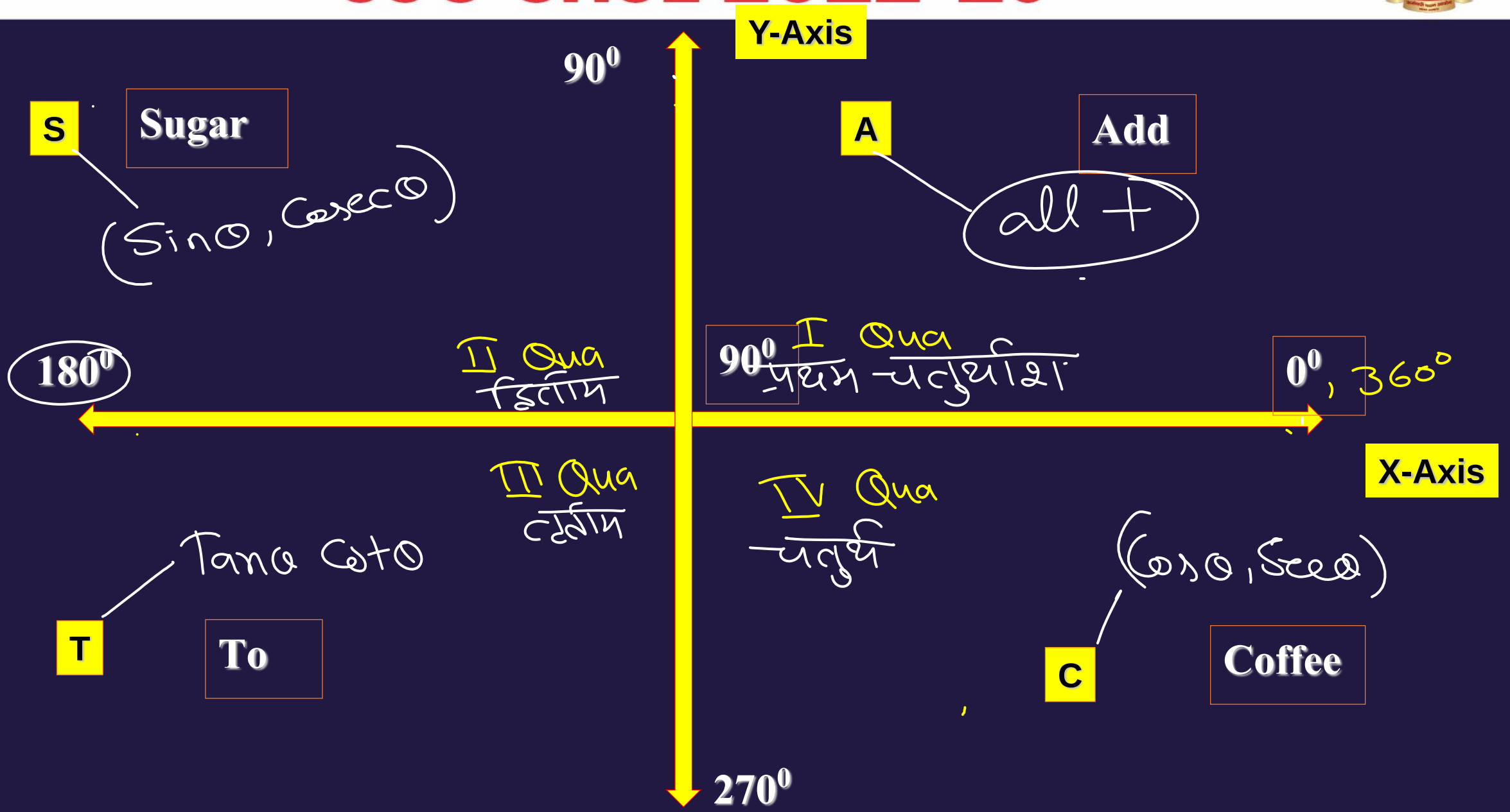


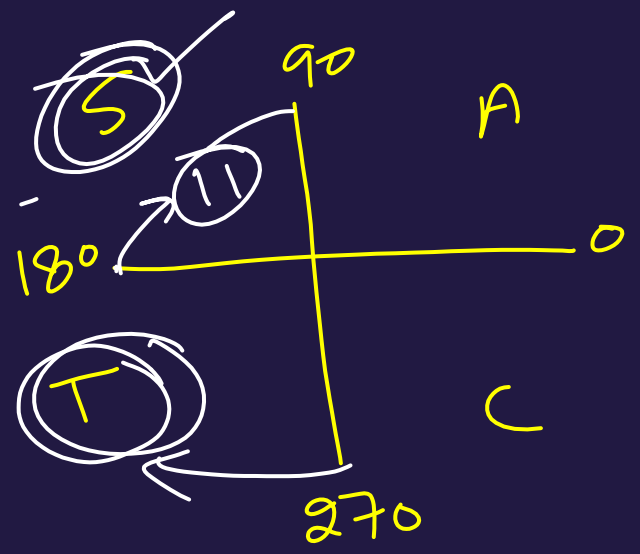
$\tan(90+\theta) = -\cot\theta$

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

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

$\sec(270-\theta) = -\operatorname{cosec}\theta$

$\operatorname{cosec}(90+\theta) = +\sec\theta$



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

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

(a) 9

(b) 3

(c) 5

(d) 1/3

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Thanks For WATCHING