



DSSSB TGT

PART (A+B)



MATHS

TRIGNOMETRIC RATIO & IDENTITIES

Part -2



17/05/2024 04:00PM



$$\left. \begin{array}{l} \sin^2 \theta + \cos^2 \theta = 1 \\ \sec^2 \theta - \tan^2 \theta = 1 \\ \underline{\csc^2 \theta - \cot^2 \theta = 1} \end{array} \right\} \begin{array}{l} \Rightarrow \sec^2 \theta = 1 + \tan^2 \theta \\ \Rightarrow \csc^2 \theta = 1 + \cot^2 \theta \end{array}$$

$$\frac{\sin^2 \theta}{\sin^2 \theta} + \frac{\cos^2 \theta}{\sin^2 \theta} = \frac{1}{\sin^2 \theta}$$
$$1 + \cot^2 \theta = \csc^2 \theta$$

$$a^2 - b^2 = (a+b)(a-b)$$



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

$$\left(\frac{\sec \theta + \tan \theta}{x} \right) (\sec \theta - \tan \theta) = 1$$

यदि $\sec \theta + \tan \theta = x$

तो

$$\sec \theta - \tan \theta = \frac{1}{x}$$

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

यदि $\operatorname{cosec} \theta + \cot \theta = x$

तो

$$\operatorname{cosec} \theta - \cot \theta = \frac{1}{x}$$

○ दो कोणों के योग एवं अन्तर से सम्बन्धित कुछ महत्त्वपूर्ण सर्वसमिकाएँ

○ **Some Important Identities Related to Sum and Difference**

of Two Angles

$$\sin 15^\circ \Rightarrow \sin(45^\circ - 30^\circ) = \sin 45^\circ \cos 30^\circ - \cos 45^\circ \sin 30^\circ$$
$$= \frac{1}{\sqrt{2}} \cdot \frac{\sqrt{3}}{2} - \frac{1}{\sqrt{2}} \cdot \frac{1}{2} \Rightarrow \frac{\sqrt{3}-1}{2\sqrt{2}}$$

$$= \frac{\sqrt{3}-1}{2\sqrt{2}}$$

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

□ $\sin (A - B) = \sin A \underline{\cos B} - \cos A \sin B$

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

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

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

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

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

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

$$\square \sin (A + B) \sin (A - B) = \sin^2 A - \sin^2 B = \cos^2 B - \cos^2 A$$

$$\square \cos (A + B) \cos (A - B) = \cos^2 A - \sin^2 B = \cos^2 B - \sin^2 A$$

[] ()

	0	30	45	60	90
Sin	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
Cos	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
Tan	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	∞
Cot	∞	$\sqrt{3}$	1	$\frac{1}{\sqrt{3}}$	0
Sec	1	$\frac{2}{\sqrt{3}}$	$\sqrt{2}$	2	∞
Cosec	∞	2	$\sqrt{2}$	$\frac{2}{\sqrt{3}}$	1

Function	Domain	Range
$\sin\theta$	$\theta \in \mathbb{R}$	$[-1, 1]$
$\cos\theta$	$\theta \in \mathbb{R}$	$[-1, 1]$
$\tan\theta$	$\theta \in (\mathbb{R} - [(2n+1) \times 90^\circ])$	$\mathbb{R}(-\infty, \infty)$
$\cot\theta$	$\theta \in \mathbb{R} - [n\pi] \quad \lambda = 180$	$\mathbb{R}(-\infty, \infty)$
$\sec\theta$	$\theta \in \mathbb{R} - [(2n+1) \times 90^\circ]$	$\mathbb{R} - (-1, 1)$
$\csc\theta$	$\theta \in \mathbb{R} - [n\pi]$	$\mathbb{R} - (-1, 1)$

विषय

$(-\infty, \infty)$

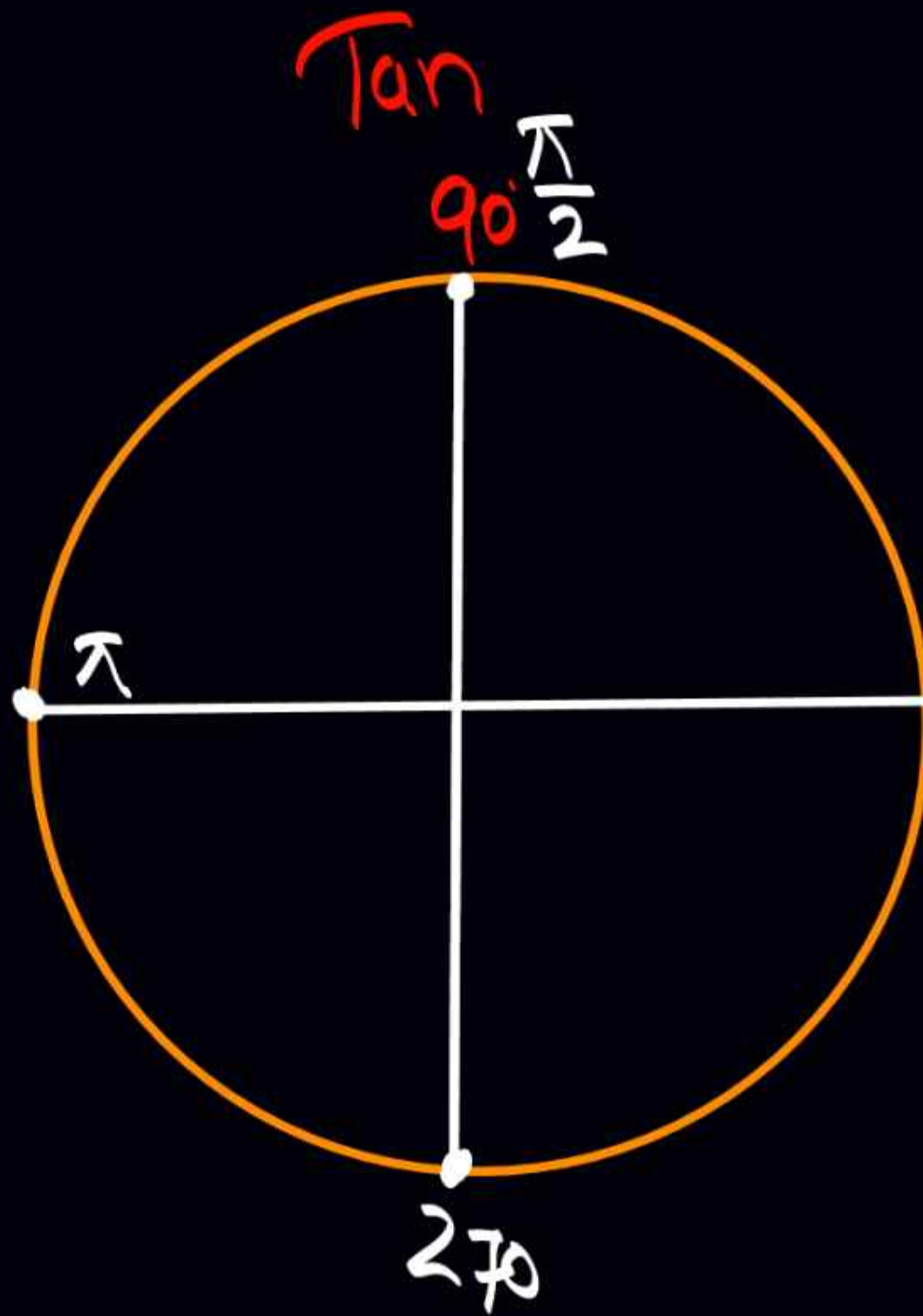
$(-1, 1)$

$$\tan(180+0) \Rightarrow \tan 0$$

$$\Rightarrow 1$$

$$\tan(180-0) \Rightarrow \tan 0$$

$$1$$



$$\tan 90 = \infty$$

$$\sin(90+\theta) \Rightarrow \cos\theta$$

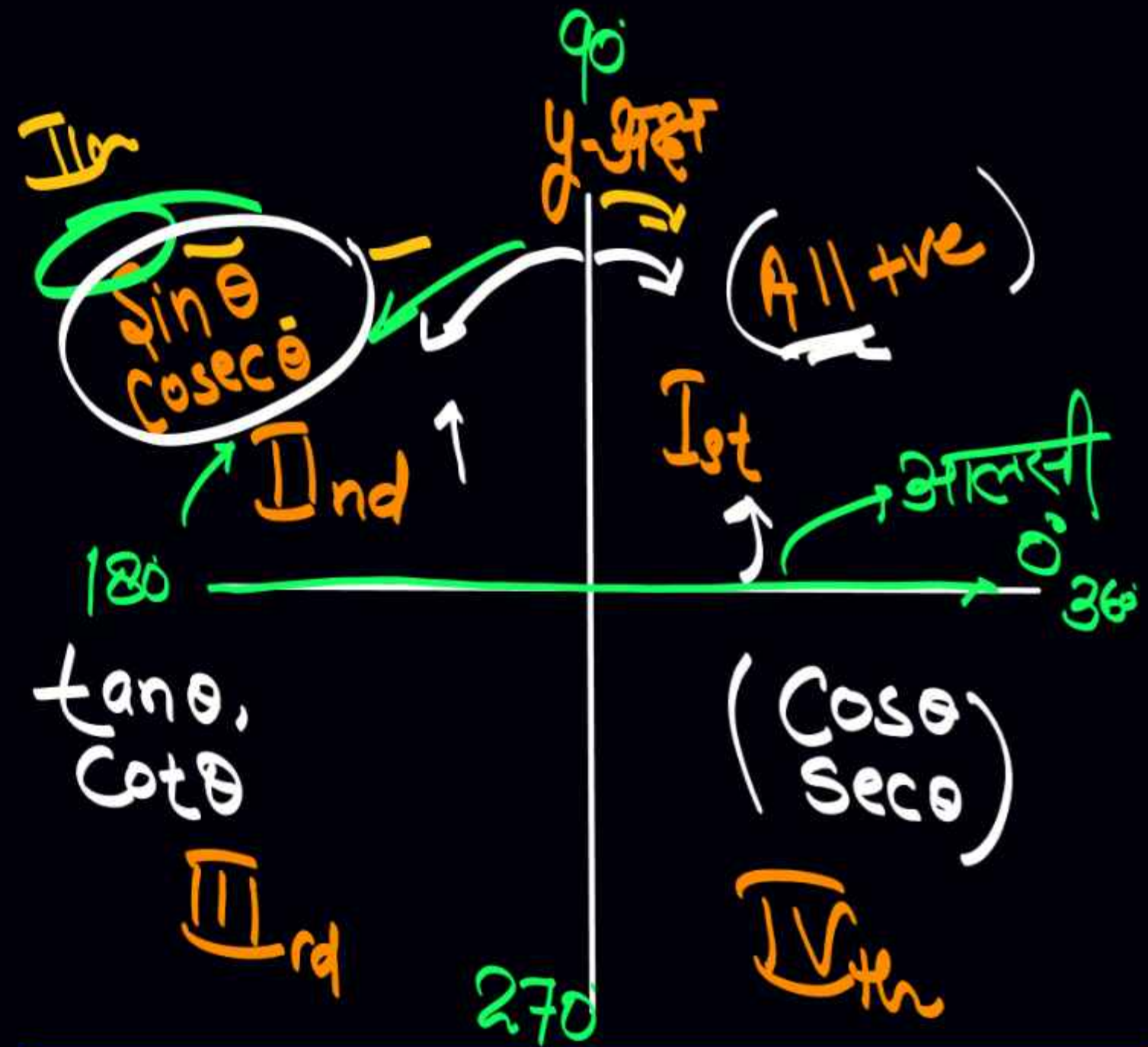
$$\sin(90-\theta) \Rightarrow \cos\theta$$

$$\cos(90+\theta) \Rightarrow -\sin\theta$$

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

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

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



Add Sugar To Coffee

$$\cos(90^\circ + \theta) = -\sin \theta$$

$$\cos 240^\circ \rightarrow \cos(270^\circ - 30^\circ) = -\sin 30^\circ = -\frac{1}{2}$$

$$\begin{aligned}\cos(90^\circ + \underline{150^\circ}) &= -\sin 150^\circ \Rightarrow -\sin(180^\circ - 30^\circ) \\ &= -\sin(90^\circ + 60^\circ) \Rightarrow -\sin 30^\circ \\ &= -\cos 60^\circ = -\frac{1}{2}\end{aligned}$$

Ratio हमेशा $(90 \pm \theta)$ व $(270 \pm \theta)$ पर Change होते हैं।

$$\sin \rightleftharpoons \cos$$

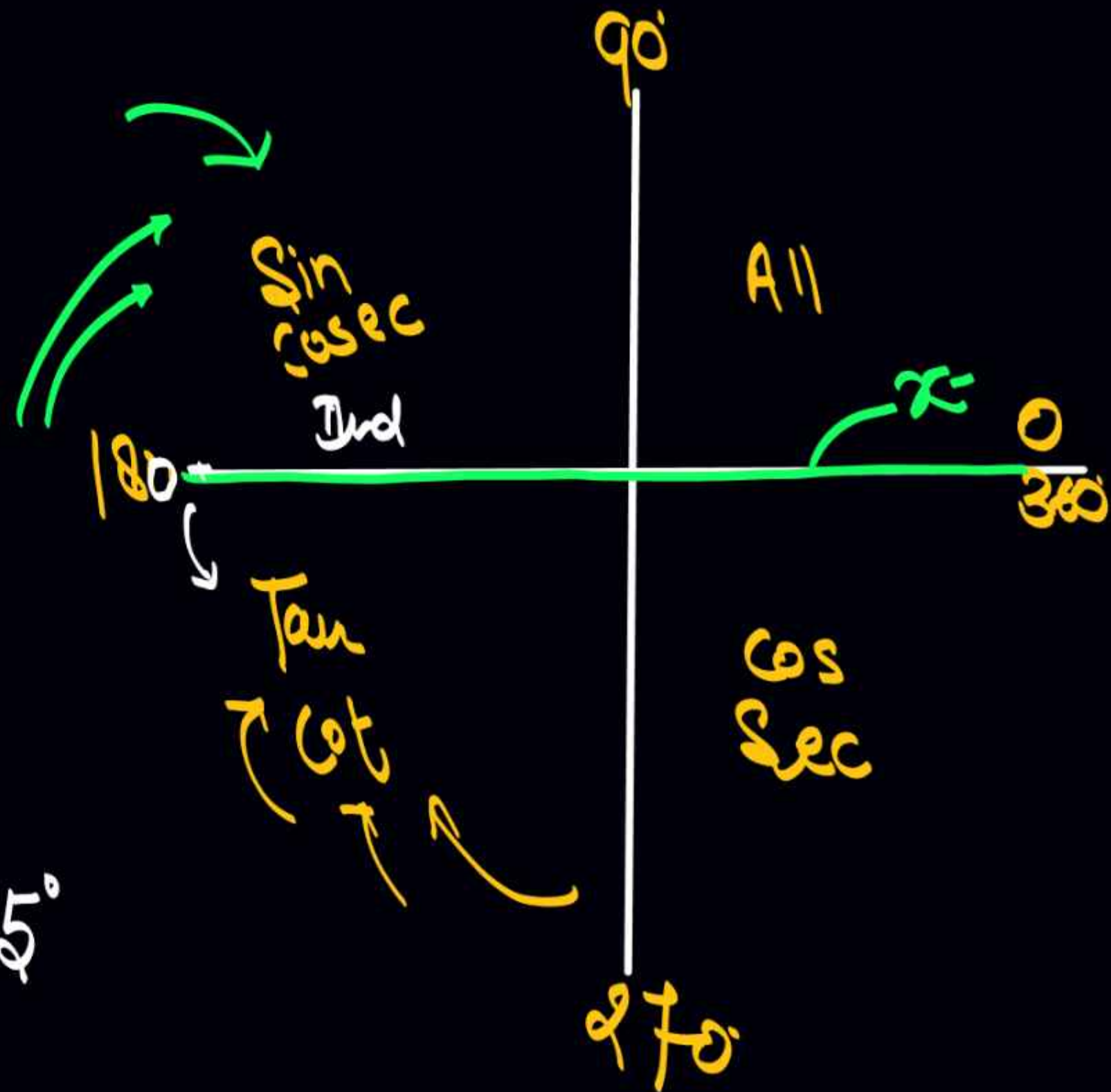
$$\tan \rightleftharpoons \cot$$

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

$$\begin{aligned}\sin(180+\theta) &\Rightarrow -\sin\theta \\ \sin(180-\theta) &= \sin\theta \\ \tan(180+\theta) &= \tan\theta \\ \tan(180-\theta) &= -\tan\theta\end{aligned}$$

$$\tan 225^\circ = ?$$

$$\begin{aligned}\tan(180+45) &\Rightarrow \tan 45^\circ \\ \tan(270-45) &\Rightarrow 1 \\ &\Rightarrow +\cot 45^\circ\end{aligned}$$



$$\cos 120^\circ \Rightarrow \cos(90+30) = -\sin 30^\circ \Rightarrow -\frac{1}{2}$$

$$\cos(180-60) = -\cos 60^\circ \Rightarrow -\frac{1}{2}$$

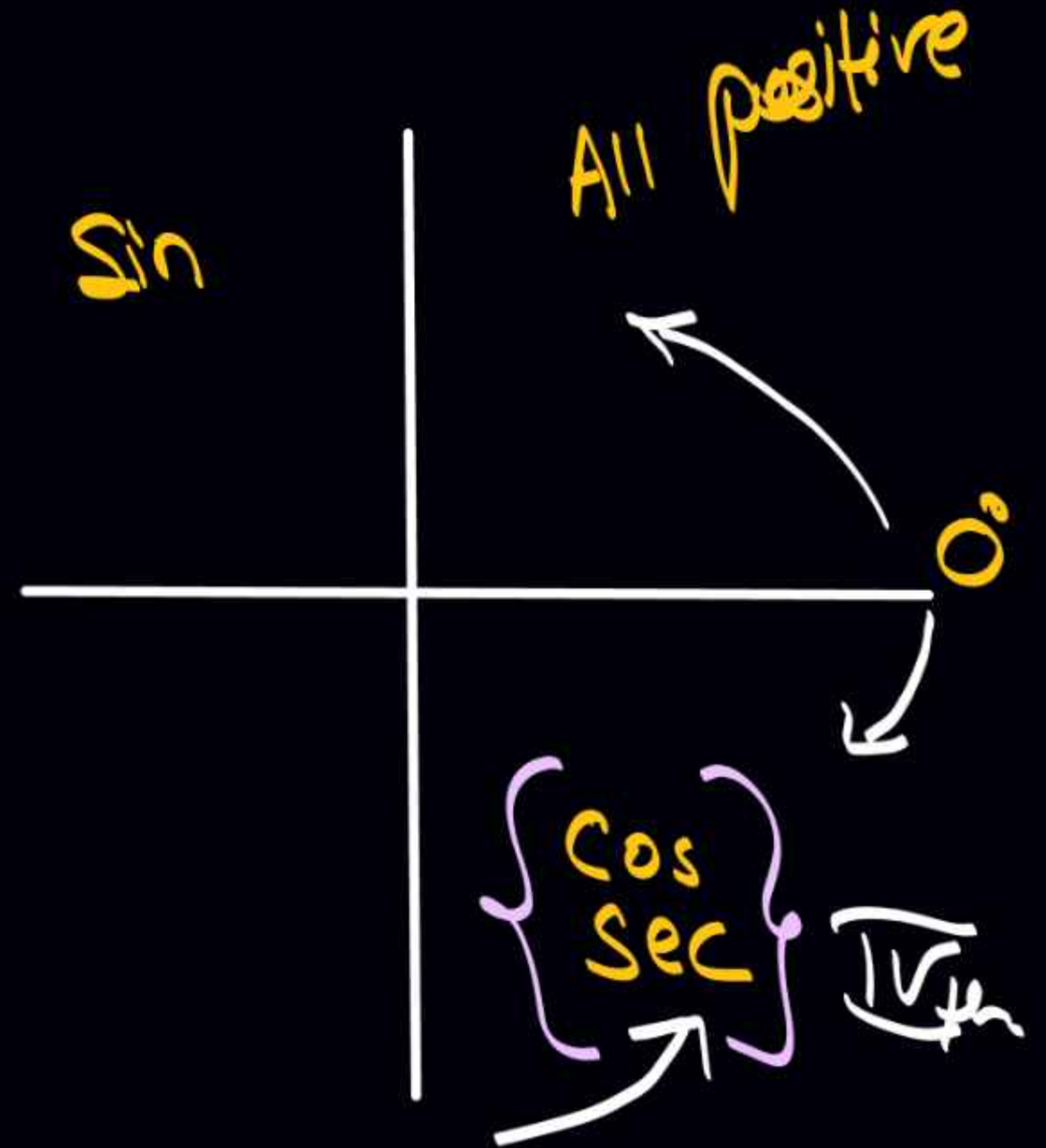
$$\tan 300^\circ = ?$$

$$\tan(270+30) = -\cot 30^\circ \Rightarrow -\sqrt{3}$$

$$\tan(360-60) = -\tan 60^\circ = -\sqrt{3}$$

$$\begin{aligned} \sin(-\theta) &= \sin(0^\circ - \theta) = -\sin\theta \\ \cos(-\theta) &= \cos\theta \quad \checkmark \\ \tan(-\theta) &= -\tan\theta \\ \cot(-\theta) &= -\cot\theta \\ \sec(-\theta) &= \sec\theta \quad \checkmark \\ \operatorname{cosec}(-\theta) &= -\operatorname{cosec}\theta \end{aligned}$$

$\left. \begin{aligned} \tan(-156^\circ) \\ = -\tan 156^\circ \end{aligned} \right\}$



विभिन्न कोणों के त्रिकोणमितीय अनुपात

Trigonometric Ratios of Different Angles

θ	$\sin \theta$	$\cos \theta$	$\tan \theta$	$\cot \theta$	$\sec \theta$	$\operatorname{cosec} \theta$
$-\theta$	$-\sin \theta$	$\cos \theta$	$-\tan \theta$	$-\cot \theta$	$\sec \theta$	$-\operatorname{cosec} \theta$
$90^\circ \pm \theta$	$\cos \theta$	$\mp \sin \theta$	$\mp \cot \theta$	$\mp \tan \theta$	$\mp \operatorname{cosec} \theta$	$\sec \theta$
$180^\circ \pm \theta$	$\mp \sin \theta$	$-\cos \theta$	$\pm \tan \theta$	$\pm \cot \theta$	$-\sec \theta$	$\mp \operatorname{cosec} \theta$
$360^\circ \pm \theta$	$\pm \sin \theta$	$\cos \theta$	$\pm \tan \theta$	$\pm \cot \theta$	$\sec \theta$	$\pm \operatorname{cosec} \theta$

उदा

$$\sin A = \cos B$$

यदि

$$A + B = 90^\circ$$

$$(i) \sin 18^\circ = \cos 72^\circ = \frac{\sqrt{5}-1}{4}$$

$$(ii) \sin 15^\circ = \cos 75^\circ = \frac{\sqrt{3}-1}{2\sqrt{2}}$$

$$(iii) \cos 18^\circ = \sin 72^\circ = \frac{\sqrt{10+2\sqrt{5}}}{4}$$

$$(iv) \cos 15^\circ = \sin 75^\circ = \frac{\sqrt{3}+1}{2\sqrt{2}}$$

1. Find the value of $\frac{\sin 10^\circ}{\cos 80^\circ}$.

$\frac{\sin 10^\circ}{\cos 80^\circ}$ का मान ज्ञात कीजिए।

(a) 1

(b) 0

(c) 2

(d) 3

$$\frac{\sin 10^\circ}{\cos 80^\circ} = \frac{\sin(90^\circ - 80^\circ)}{\cos 80^\circ}$$
$$\Rightarrow \frac{\cos 80^\circ}{\cos 80^\circ}$$

2. The value of $\sin 1875^\circ$ will be

$\sin 1875^\circ$ का मान होगा

$1800 + 75$

$\sin(360 \times 5 + 75)$

$\sin 75$

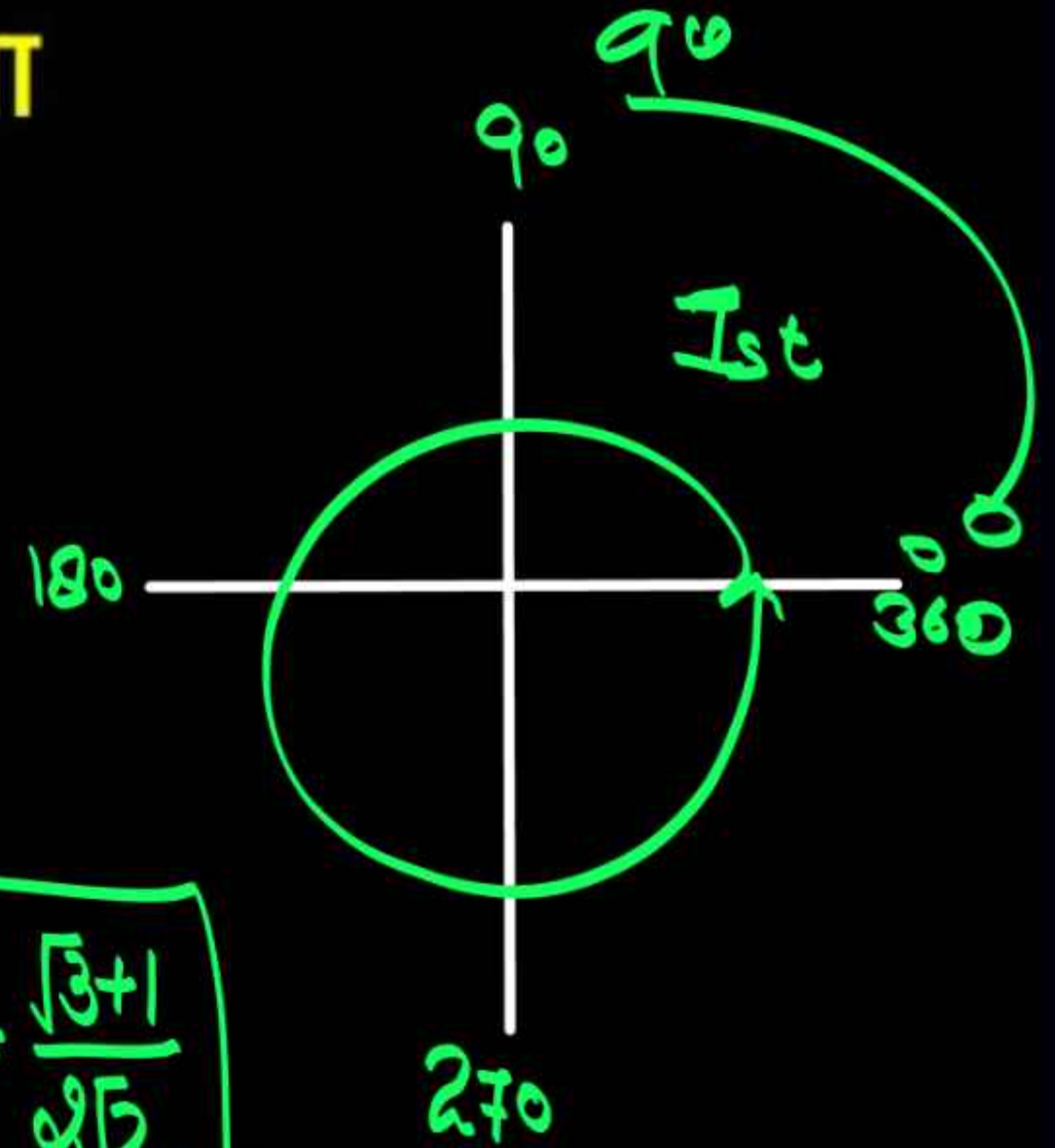
(a) $\frac{\sqrt{3}+1}{2\sqrt{2}}$

(b) $\frac{\sqrt{3}-1}{2\sqrt{2}}$

(c) $\frac{2\sqrt{2}}{\sqrt{3}-1}$

(d) $\frac{2\sqrt{2}}{\sqrt{3}+1}$

$\cos 15 = \sin 75 = \frac{\sqrt{3}+1}{2\sqrt{2}}$



3. The value of $\tan(-1560^\circ)$ will be-

$\tan(-1560^\circ)$ का मान होगा-

1440

$\tan(-1560)$

(a) 3

(b) $\sqrt{3}$

(c) 2

(d) $\sqrt{2}$

$$= \tan 1560$$

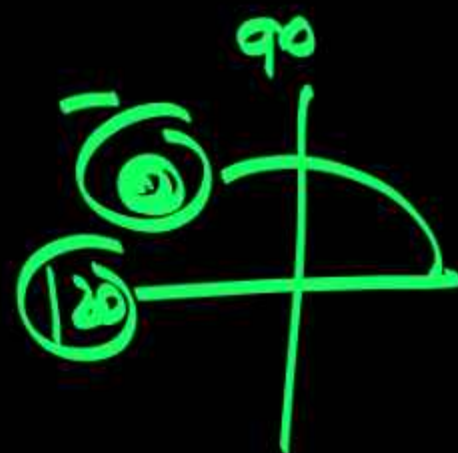
$$= \tan(360 \times 4 + 120)$$

$$= \tan 120$$

$$= \tan(90 + 30)$$

$$= -(\cot 30)$$

$$+ \cot 30 \Rightarrow \sqrt{3}$$



$$\begin{array}{r} 2160 \\ - 1950 \\ \hline 210 \end{array}$$

$$\sin(360 \times 6 - 210)$$

$$= \sin 210$$

$$= \sin(180 + 30)$$

$$= -\sin 30$$

$$\uparrow \sin 30 = \frac{1}{2}$$

$$\sin 1950^\circ$$

$$\sin(1800 + 150)$$

$$\sin(360 \times 5 + 150)$$

$$\sin 150$$

$$\sin(90 + 60)$$

$$\Rightarrow \cos 60 = \frac{1}{2}$$

Angles

known

33°
 45°
 51°
 90°

$$\tan 3660 = ?$$

$$\tan(3600 + 60)$$

$$\tan(\underline{360 \times 10} + 60)$$

$$\tan 60$$

$$\tan 3700$$

$$\Rightarrow \tan(3600 + 100)$$

$$\tan(360 \times 10 + 100)$$

$$\tan 100$$

$$\tan(90 + 10)$$

$$= \cot 10$$

$$\sqrt{3}, 0$$

4. The value of $\frac{\cos(-225^\circ) \sin 135^\circ \cot 120^\circ}{\tan 315^\circ \sec 750^\circ}$ is

$\frac{\cos(-225^\circ) \sin 135^\circ \cot 120^\circ}{\tan 315^\circ \sec 750^\circ}$ का मान है

(a) $\frac{1}{4}$

(b) $-\frac{1}{4}$

(c) $\frac{1}{4\sqrt{3}}$

(d) इनमें से कोई नहीं

5. The value of $\cos 225^\circ - \sin 210^\circ$ is

$\cos 225^\circ - \sin 210^\circ$ का मान है

(a) $\frac{1-\sqrt{2}}{2}$

(b) $\frac{(\sqrt{3}+2)}{4}$

(c) $\frac{\sqrt{3}-2}{2}$

(d) $\frac{\sqrt{3}-2}{4}$

$$\begin{aligned} & \cos(180+45) - \sin(180+30) \\ &= -\cos 45 - (-\sin 30) \end{aligned}$$

$$= -\frac{1}{\sqrt{2}} + \frac{1}{2}$$

$$= \frac{1}{2} - \frac{1 \times \sqrt{2}}{\sqrt{2} \times \sqrt{2}} \Rightarrow$$

$$\frac{1-\sqrt{2}}{2}$$

6. $\cos 75^\circ + \sin 75^\circ$ is equal to

$\cos 75^\circ + \sin 75^\circ$ बराबर है

(a) $\frac{1}{2}$

(b) $\frac{\sqrt{3}}{2}$

(c) $\frac{\sqrt{6}}{2}$

(d) 1

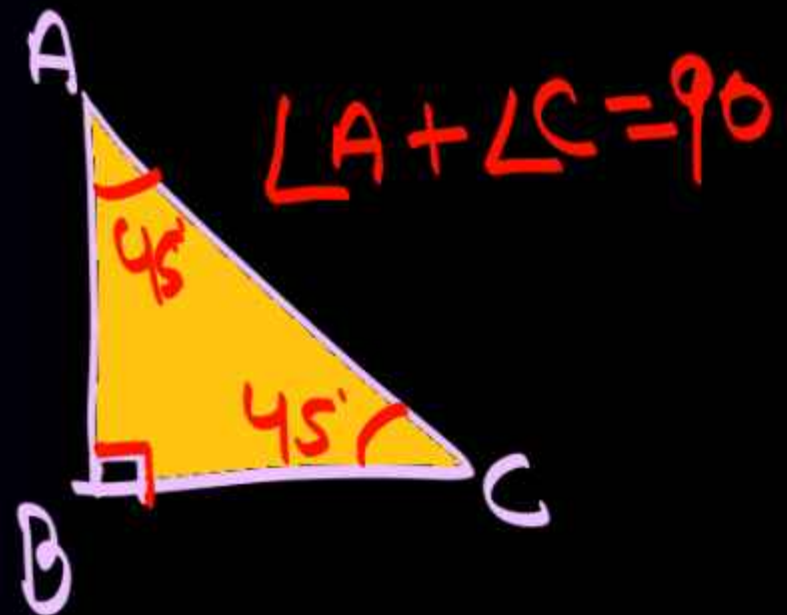
$\cos 75^\circ + \sin 75^\circ$
 $\sin 15^\circ + \cos 15^\circ$

$\frac{\sqrt{3}-1}{2\sqrt{2}} + \frac{\sqrt{3}+1}{2\sqrt{2}}$

$\frac{\sqrt{3} \times \sqrt{2}}{\sqrt{2} \times \sqrt{2}}$

$\frac{\sqrt{3}-1 + \sqrt{3}+1}{2\sqrt{2}} = \frac{2\sqrt{3}}{2\sqrt{2}}$

$\Rightarrow \frac{\sqrt{6}}{2}$



7. In right angle $\triangle ABC$, $\angle B$ is at right angle. If $\sin (A - C) = 0$, then the value of $2A + C$ is

समकोण $\triangle ABC$ में $\angle B$ समकोण है। यदि $\sin (A - C) = 0$, तो $2A + C$ का मान है

(a) 90°

(b) 135°

(c) 145°

(d) 180°

$$\angle C = \angle A = 45^\circ$$

$$2 \times 45 + 45$$

$$135^\circ$$

$$\sin(A - C) = \sin 0$$

$$A - C = 0$$

$$A = C$$

- $\sin C + \sin D = 2 \sin \frac{C+D}{2} \cos \frac{C-D}{2}$

- $\sin C - \sin D = 2 \cos \frac{C+D}{2} \sin \frac{C-D}{2}$

- $\cos C + \cos D = 2 \cos \frac{C+D}{2} \cos \frac{C-D}{2}$

- $\cos C - \cos D = 2 \sin \frac{C+D}{2} \sin \frac{D-C}{2}$

- **$2 \sin A \cos B = \sin (A + B) + \sin (A - B)$**
- **$2 \cos A \sin B = \sin (A + B) - \sin (A - B)$**
- **$2 \cos A \cos B = \cos (A + B) + \cos (A - B)$**
- **$2 \sin A \sin B = \cos (A - B) - \cos (A + B)$**

$$\bullet \sin 2A = 2 \sin A \cos A = \frac{2 \tan A}{1 + \tan^2 A}$$

$$\bullet \cos 2A = \cos^2 A - \sin^2 A = 1 - 2\sin^2 A$$

$$\bullet = 2\cos^2 A - 1 = \frac{1 - \tan^2 A}{1 + \tan^2 A}$$

$$\bullet \tan 2A = \frac{2 \tan A}{1 - \tan^2 A}, \cot 2A = \frac{\cot^2 A - 1}{2 \cot A}$$

8. If $\triangle ABC$ is right angled at C, then the value of $\cos (A + B)$ is.

यदि $\triangle ABC$, C पर समकोण है, तो ~~$\cos (A + B)$~~

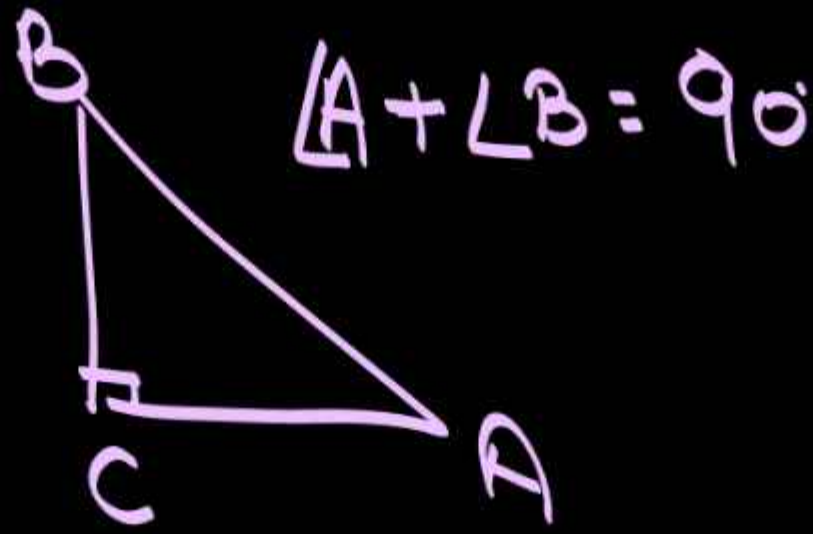
$\cos (A + B)$ का मान = ?

(a) 0

(b) 1

(c) $\frac{1}{2}$

(d) $\frac{\sqrt{3}}{2}$



$C = 90$
 $A + B = 90$

$\cos (A + B)$
 $\cos 90$
0

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

$$x + y = 90 \checkmark$$

$$x - y = 40 \checkmark$$

$$x = \frac{90+40}{2} = 65$$

$$y = \frac{90-40}{2} = 25$$

9. If $\sec \theta + \tan \theta = x$, then $\sec \theta =$

यदि $\sec \theta + \tan \theta = x$, तो $\sec \theta =$

(a) $\frac{x^2+1}{x}$

(b) $\frac{x^2+1}{2x}$

(c) $\frac{x^2-1}{2x}$

(d) $\frac{x^2-1}{x}$

यदि $\sec \theta + \tan \theta = x$

तो $\sec \theta - \tan \theta = \frac{1}{x}$

$$\sec \theta = \frac{x + \frac{1}{x}}{2} = \frac{x^2+1}{2x}$$

$$\tan \theta = \frac{x^2-1}{2x}$$

10. If $\sec \theta + \tan \theta = x$, then $\tan \theta =$

यदि $\sec \theta + \tan \theta = x$, तो $\tan \theta =$

(a) $\frac{x^2+1}{x}$

(b) $\frac{x^2-1}{x}$

(c) $\frac{x^2+1}{2x}$

(d) $\frac{x^2-1}{2x}$

$$\frac{x^2-1}{2x} = \tan \theta$$

$$\frac{(x+1)(x-1)}{2x}$$

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

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

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

$$\sec^4 A - \sec^2 A$$

$$\sec^2 A (\sec^2 A - 1)$$

$$(1 + \tan^2 A) \tan^2 A$$

$$\tan^2 A + \tan^4 A$$

11. $\sec^4 A - \sec^2 A$ is equal to.

$\sec^4 A - \sec^2 A$ बराबर है.

(a) $\tan^2 A - \tan^4 A$

(b) $\tan^4 A - \tan^2 A$

(c) $\tan^4 A + \tan^2 A$

(d) $\tan^2 A + \tan^4 A$

$$a^2 - b^2 = (a+b)(a-b)$$

$$(\cos^2 A)^2 - (\sin^2 A)^2$$

$$(\cos^2 A + \sin^2 A)(\cos^2 A - \sin^2 A)$$

$$1 \times (\cos^2 A - (1 - \cos^2 A))$$

$$= \cos^2 A - 1 + \cos^2 A$$

$$= 2\cos^2 A - 1$$

12. $\cos^4 A - \sin^4 A$ is equal to.

$\cos^4 A - \sin^4 A$ के बराबर है।

(a) $2\cos^2 A + 1$

(b) $2\cos^2 A - 1$

(c) $2\sin^2 A - 1$

(d) $2\sin^2 A + 1$

$$1 - 2\sin^2 A$$

13. The value of $(1 + \cot\theta - \operatorname{cosec}\theta)(1 + \tan\theta + \sec\theta)$ is.

$(1 + \cot\theta - \operatorname{cosec}\theta)$ ~~का मान~~ $(1 + \tan\theta + \sec\theta)$ का मान = ?

(a) 1

(b) 2

(c) 4

(d) 0

14. $(\operatorname{cosec} \theta - \sin \theta)(\sec \theta - \cos \theta)(\tan \theta + \cot \theta)$ is equal.
 $(\operatorname{cosec} \theta - \sin \theta)(\sec \theta - \cos \theta)(\tan \theta + \cot \theta)$ बराबर है

(a) 0

(b) 1

(c) -1

(d) none of these

15. If A and B are acute angles such that $\sin (A - B) = 0$ and $2\cos (A + B) - 1 = 0$, then $A =$

यदि A और B न्यून कोण हैं जैसे कि $\sin(A - B) = 0$ और $2\cos(A + B) - 1 = 0$, तो $A =$

(a) 60°

(b) 30°

(c) 45°

(d) 15°

16. If $\sin \theta - \cos \theta = 0$, then the value of $\sin^4 \theta + \cos^4 \theta$ is

यदि $\sin \theta - \cos \theta = 0$, तो $\sin^4 \theta + \cos^4 \theta$ का मान है

- (a) 1
- (b) $\frac{3}{4}$
- (c) $\frac{1}{2}$
- (d) $\frac{1}{4}$

$$\cos 8\theta = \cos(90 - \theta)$$

$$8\theta = 90 - \theta$$

$$9\theta = 90$$

∞

17. If $\cos 8\theta = \overset{\cos(90-\theta)}{\sin \theta}$ and $\underline{9\theta < 90^\circ}$, then the value of $\tan 6\theta$ is

$$9\theta < 90$$

यदि $\cos 8\theta = \sin \theta$ तथा $9\theta < 90^\circ$, तो $\tan 6\theta$ का मान है

(a) $1/\sqrt{3}$

(b) $\sqrt{3}$

(c) 1

(d) 0

$$\sin A = \cos B$$

$$A + B = 90$$

18. यदि $\cos(\alpha + \beta) = 0$, तो $\sin(\alpha - \beta)$ को कम किया जा सकता है

If $\cos(\alpha + \beta) = 0$, then $\sin(\alpha - \beta)$ can be reduced to

(a) $\cos \beta$

(b) $\cos 2\beta$

(c) $\sin \alpha$

(d) $\sin 2\alpha$

19. यदि $1 + \sin^2 \alpha = 3 \sin \alpha \cos \alpha$, तो $\cot \alpha$ के मान हैं

If $1 + \sin^2 \alpha = 3 \sin \alpha \cos \alpha$, then the values of $\cot \alpha$ are

(a) $-1, 1$

(b) $0, 1$

(c) $1, 2$

(d) $-1, -1$

20. $\frac{\cot \theta}{\cot \theta - \cot 3\theta} + \frac{\tan \theta}{\tan \theta - \tan 3\theta}$ के बराबर है

$\frac{\cot \theta}{\cot \theta - \cot 3\theta} + \frac{\tan \theta}{\tan \theta - \tan 3\theta}$ is equal to

(a) 0

(b) 1

(c) -1

(d) 2

21. $2(\sin^6 \theta + \cos^6 \theta) - 3(\sin^4 \theta + \cos^4 \theta)$ बराबर है

$2(\sin^6 \theta + \cos^6 \theta) - 3(\sin^4 \theta + \cos^4 \theta)$ is equal to

(a) 0

(b) 1

(c) -1

(d) none of these

22. अगर $a \cos \theta + b \sin \theta = 4$ तथा $a \sin \theta - b \cos \theta = 3$, फिर $a^2 + b^2 =$

If $a \cos \theta + b \sin \theta = 4$ and $a \sin \theta - b \cos \theta = 3$, then $a^2 + b^2 =$

(a) 7

(b) 12

(c) 25

(d) none of these

23. यदि $a \cot \theta + b \operatorname{cosec} \theta = p$ तथा $b \cot \theta + a \operatorname{cosec} \theta = q$, तो $p^2 - q^2 =$

If $a \cot \theta + b \operatorname{cosec} \theta = p$ and $b \cot \theta + a \operatorname{cosec} \theta = q$, then $p^2 - q^2 =$

(a) $a^2 - b^2$

(b) $b^2 - a^2$

(c) $a^2 + b^2$

(d) $b - a$

24. यदि θ एक न्यून कोण है जैसे कि $\cos \theta = \frac{3}{5}$, तो $\frac{\sin \theta \tan \theta - 1}{2 \tan^2 \theta} =$

If θ is an acute angle such that $\cos \theta = \frac{3}{5}$, then $\frac{\sin \theta \tan \theta - 1}{2 \tan^2 \theta} =$

(a) $\frac{16}{625}$

(b) $\frac{1}{36}$

(c) $\frac{3}{160}$

(d) $\frac{160}{3}$

25. यदि $\tan \theta = \frac{a}{b}$, तो $\frac{a \sin \theta + b \cos \theta}{a \sin \theta - b \cos \theta}$ बराबर है

If $\tan \theta = \frac{a}{b}$, then $\frac{a \sin \theta + b \cos \theta}{a \sin \theta - b \cos \theta}$ is equal

to

(a) $\frac{a^2 + b^2}{a^2 - b^2}$

(b) $\frac{a^2 - b^2}{a^2 + b^2}$

(c) $\frac{a+b}{a-b}$

(d) $\frac{a-b}{a+b}$

26. यदि $5 \tan \theta - 4 = 0$, तो $\frac{5 \sin \theta - 4 \cos \theta}{5 \sin \theta + 4 \cos \theta}$ का मान है

If $5 \tan \theta - 4 = 0$, then the value of $\frac{5 \sin \theta - 4 \cos \theta}{5 \sin \theta + 4 \cos \theta}$ is

- (a) $\frac{5}{3}$
- (b) $\frac{5}{6}$
- (c) **0**
- (d) $\frac{1}{6}$

27. यदि $16 \cot x = 12$, तो $\frac{\sin x - \cos x}{\sin x + \cos x}$ बराबर है

If $16 \cot x = 12$, then $\frac{\sin x - \cos x}{\sin x + \cos x}$ equals

- (a) $\frac{1}{7}$
- (b) $\frac{3}{7}$
- (c) $\frac{2}{7}$
- (d) 0

28. यदि $8\tan x = 15$, तो $\sin x - \cos x$ बराबर है

If $8\tan x = 15$, then $\sin x - \cos x$ is equal to

- (a) $\frac{8}{17}$
- (b) $\frac{17}{7}$
- (c) $\frac{1}{17}$
- (d) $\frac{7}{17}$

29. यदि $\tan \theta = \frac{1}{\sqrt{7}}$, तो $\frac{\operatorname{cosec}^2 \theta - \sec^2 \theta}{\operatorname{cosec}^2 \theta + \sec^2 \theta} =$

If $\tan \theta = \frac{1}{\sqrt{7}}$, then $\frac{\operatorname{cosec}^2 \theta - \sec^2 \theta}{\operatorname{cosec}^2 \theta + \sec^2 \theta} =$

(a) $\frac{5}{7}$

(b) $\frac{3}{7}$

(c) $\frac{1}{12}$

(d) $\frac{3}{4}$

30. यदि $\tan \theta = \frac{3}{4}$, तो $\cos^2 \theta - \sin^2 \theta =$

If $\tan \theta = \frac{3}{4}$, then $\cos^2 \theta - \sin^2 \theta =$

(a) $\frac{7}{25}$

(b) 1

(c) $\frac{-7}{25}$

(d) $\frac{4}{25}$

31. यदि θ एक न्यून कोण है जैसे कि $[\tan]$
 $\tan^2 \theta = \frac{8}{7}$, तो $\frac{(1+\sin \theta)(1-\sin \theta)}{(1+\cos \theta)(1-\cos \theta)}$ का मान है

If θ is an acute angle such that

$\tan^2 \theta = \frac{8}{7}$, then the value of

$\frac{(1+\sin \theta)(1-\sin \theta)}{(1+\cos \theta)(1-\cos \theta)}$ is

- (a)** $\frac{7}{8}$
- (b)** $\frac{8}{7}$
- (c)** $\frac{7}{4}$
- (d)** $\frac{64}{49}$

32. यदि $3\cos \theta = 5\sin \theta$, तो $\frac{5\sin \theta - 2\sec^3 \theta + 2\cos \theta}{5\sin \theta + 2\sec^3 \theta - 2\cos \theta}$ का मान है

If $3\cos \theta = 5\sin \theta$, then the value of $\frac{5\sin \theta - 2\sec^3 \theta + 2\cos \theta}{5\sin \theta + 2\sec^3 \theta - 2\cos \theta}$ is

(a) $\frac{271}{979}$

(b) $\frac{316}{2937}$

(c) $\frac{542}{2937}$

(d) none of these

33. यदि $\tan^2 45^\circ - \cos^2 30^\circ =$
 $x \sin 45^\circ \cos 45^\circ$ तो $x =$

If $\tan^2 45^\circ - \cos^2 30^\circ =$
 $x \sin 45^\circ \cos 45^\circ$, then $x =$

(a) 2

(b) -2

(c) $-\frac{1}{2}$

(d) $\frac{1}{2}$

34. $\cos^2 17^\circ - \sin^2 73^\circ$ का मान है

The value of $\cos^2 17^\circ - \sin^2 73^\circ$ is

(a) 1

(b) $\frac{1}{3}$

(c) 0

(d) -1

35. $\frac{\cos^3 20^\circ - \cos^3 70^\circ}{\sin^3 70^\circ - \sin^3 20^\circ}$ का मान है

The value of $\frac{\cos^3 20^\circ - \cos^3 70^\circ}{\sin^3 70^\circ - \sin^3 20^\circ}$ is

(a) $\frac{1}{2}$

(b) $\frac{1}{\sqrt{2}}$

(c) 1

(d) 2