

Foundation Batch



MATHS

Trigonometry

Part -3

LIVE 29-10-2024 07:00PM

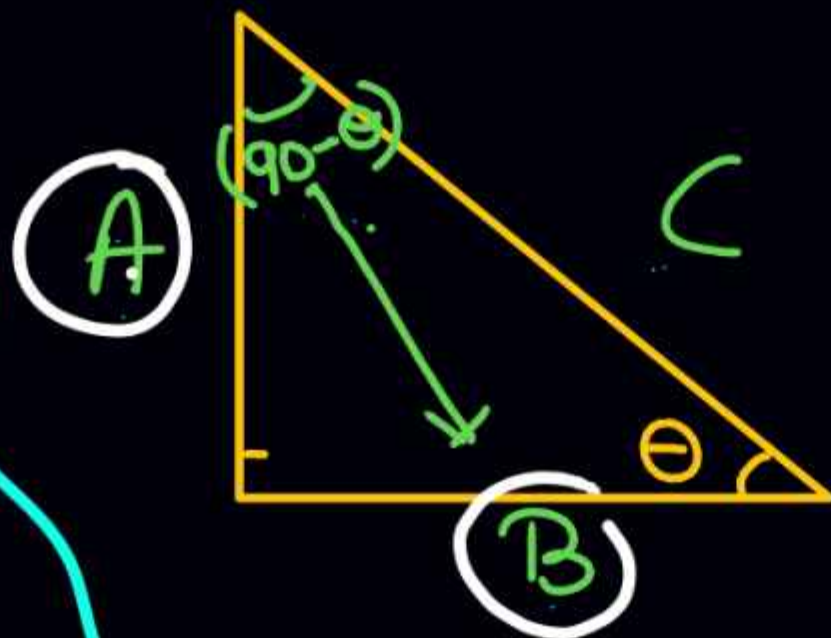


Definition of Trigonometric Ratio

$$\sec \theta = \frac{C}{B}$$

$$\operatorname{cosec}(90-\theta) = \frac{C}{B}$$

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



$$\sin \theta = \frac{A}{C}$$

$$\cos(90-\theta) = \frac{A}{C}$$

$$\boxed{\cos(90-\theta) = \sin \theta}$$

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

$$\cot(90-\theta) = \frac{A}{B}$$

$$\boxed{\cot(90-\theta) = \tan \theta}$$

$\swarrow$ $\sin, \csc$ $\oplus$	$\nearrow$ A $\text{All } \oplus$
$\downarrow$ $\tan, \cot$ $\oplus$	$\searrow$ $\cos, \sec$ $\oplus$

$$= + \cot \theta$$

$$= + \tan \theta$$

$$= + \operatorname{cosec} \theta$$

$$= + \sec \theta$$

180°
(90° x 2)

270° (90° x 3)

$$\left\{ \begin{array}{l} \sin(90 + \theta) = \cos \theta \\ \cos(90 + \theta) = -\sin \theta \\ \tan(90 + \theta) = -\cot \theta \end{array} \right.$$

$$\underline{(90R \pm \theta)}$$

$$0^\circ < \theta < 90^\circ$$

↳ $R \rightarrow$ odd Number ✓
विषम संख्या

Trigonometric Ratio



CHANGES

$$\sin(270^\circ - \theta) = -\cos \theta$$

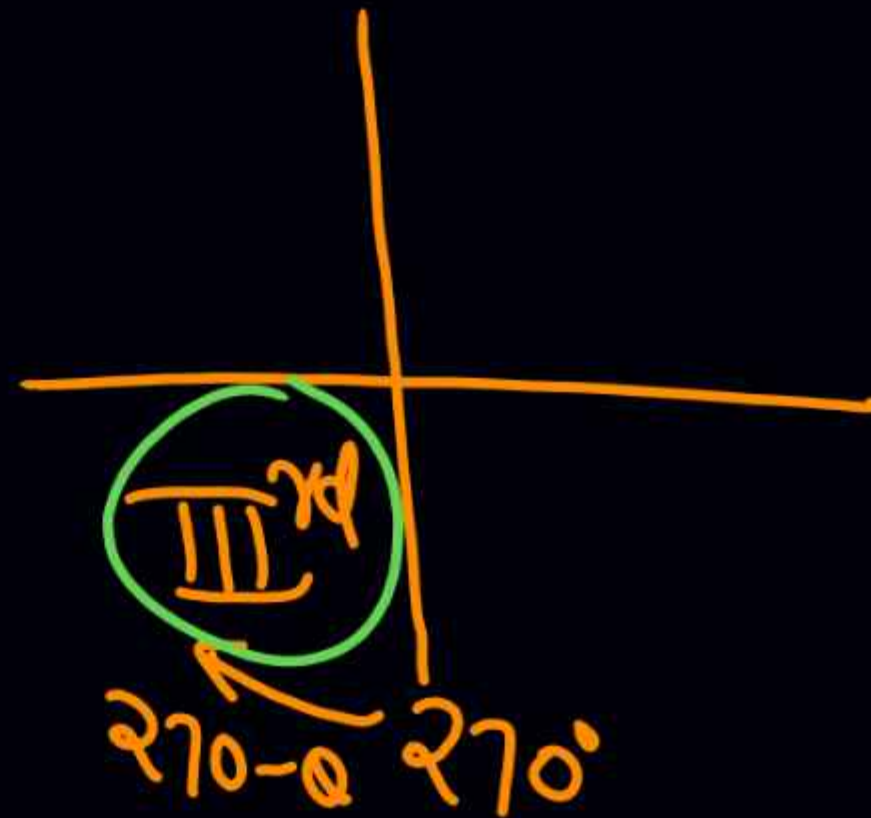
$$\cos(270^\circ - \theta) = -\sin \theta$$

$$\tan(270^\circ - \theta) = +\cot \theta$$

$$\cot(270^\circ - \theta) = +\tan \theta$$

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

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



$$\sin(270^\circ + \theta) = -\cos \theta$$

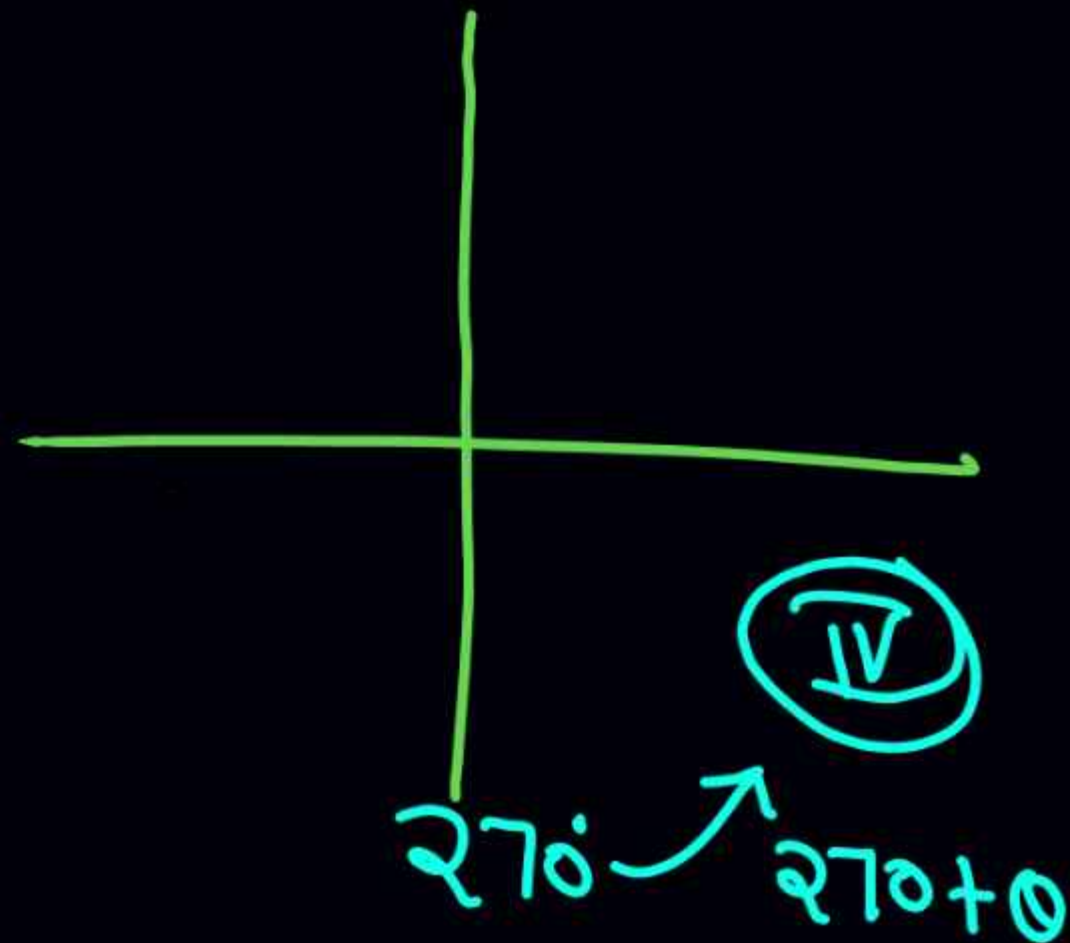
$$\cos(270^\circ + \theta) = +\sin \theta$$

$$\tan(270^\circ + \theta) = -\cot \theta$$

$$\cot(270^\circ + \theta) = -\tan \theta$$

$$\sec(270^\circ + \theta) = +\operatorname{cosec} \theta$$

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



angle $\rightarrow (90R \pm \theta)$

$$0 < \theta < 90$$

$\hookrightarrow R \rightarrow$ even Number
सम संख्या

Trigonometric Ratio



Change नहीं होंगे।

$$\underline{\sin(180-\theta)} = +\sin\theta$$

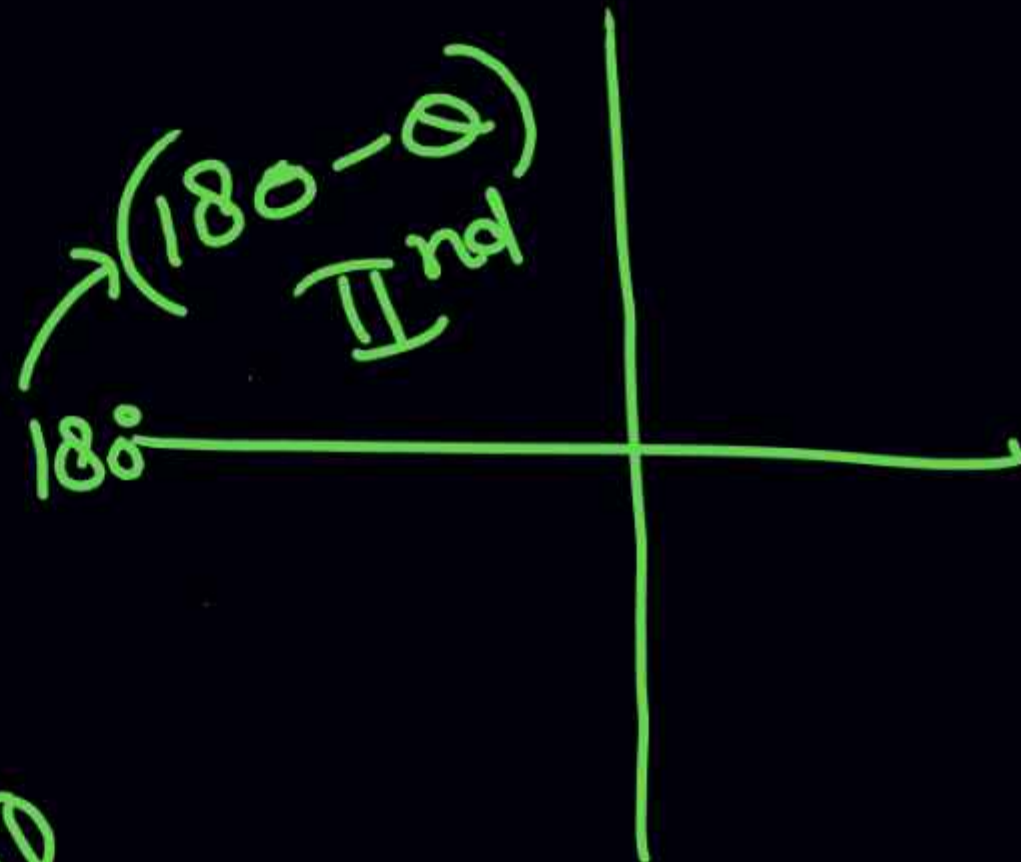
$$\cos(180-\theta) = -\cos\theta$$

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

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

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

$$\underline{\operatorname{cosec}(180-\theta)} = +\operatorname{cosec}\theta$$



$$\sin(180+\theta) = -\sin\theta$$

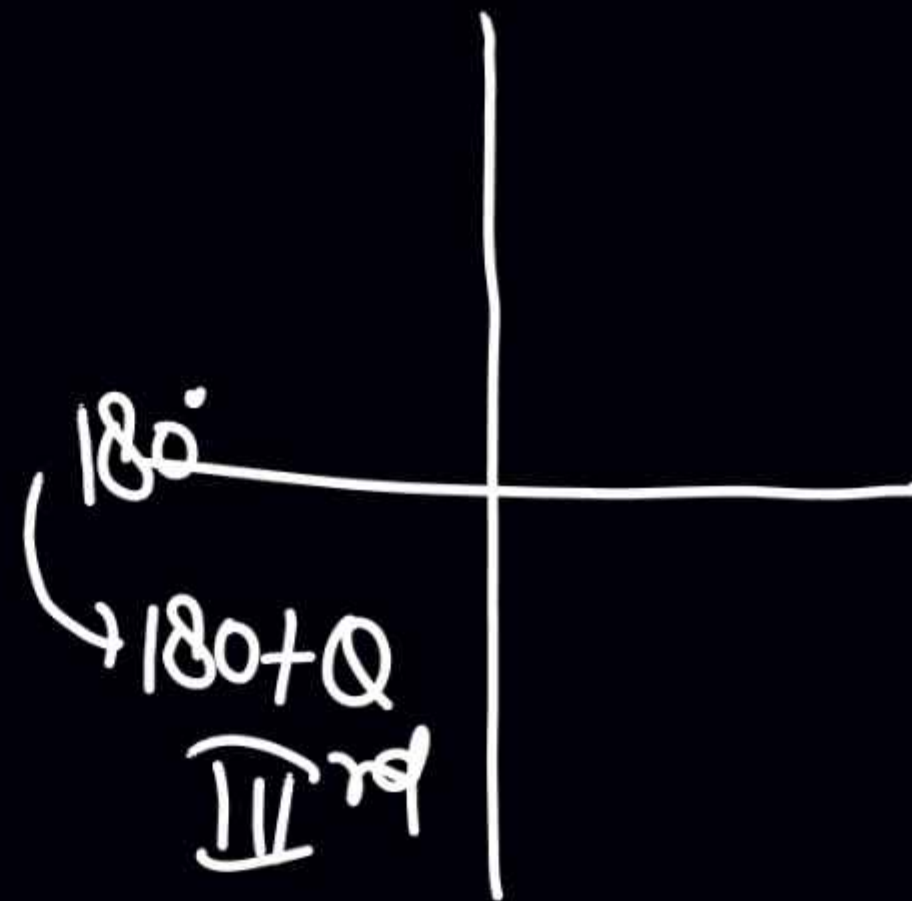
$$\cos(180+\theta) = -\cos\theta$$

$$\tan(\underline{180+\theta}) = +\tan\theta$$

$$\cot(\underline{180+\theta}) = +\cot\theta$$

$$\sec(180+\theta) = -\sec\theta$$

$$\operatorname{cosec}(180+\theta) = -\operatorname{cosec}\theta$$



$$\sin(360^\circ + \theta) = + \sin \theta$$

$$\cos(360^\circ + \theta) = + \cos \theta$$

$$\tan(360^\circ + \theta) = + \tan \theta$$

$$\cot(360^\circ + \theta) = + \cot \theta$$

$$\sec(360^\circ + \theta) = + \sec \theta$$

$$\operatorname{cosec}(360^\circ + \theta) = + \operatorname{cosec} \theta$$



$$\sin(360^\circ - \theta) = -\sin \theta$$

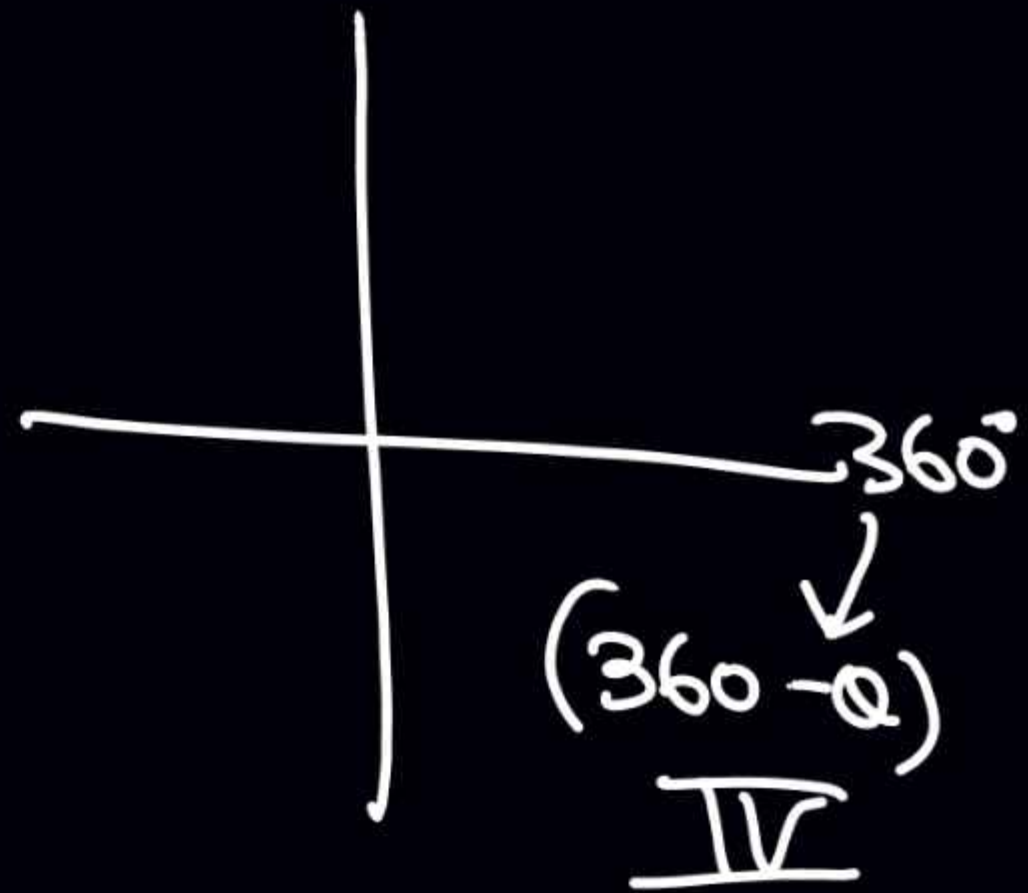
$$\cos(\underline{360^\circ - \theta}) = +\cos \theta$$

$$\tan(360^\circ - \theta) = -\tan \theta$$

$$\cot(360^\circ - \theta) = -\cot \theta$$

$$\sec(\underline{360^\circ - \theta}) = +\sec \theta$$

$$\csc(360^\circ - \theta) = -\csc \theta$$



$$\sin(-\theta) = \sin(0-\theta)$$

$$\sin(-\theta) = -\sin\theta$$

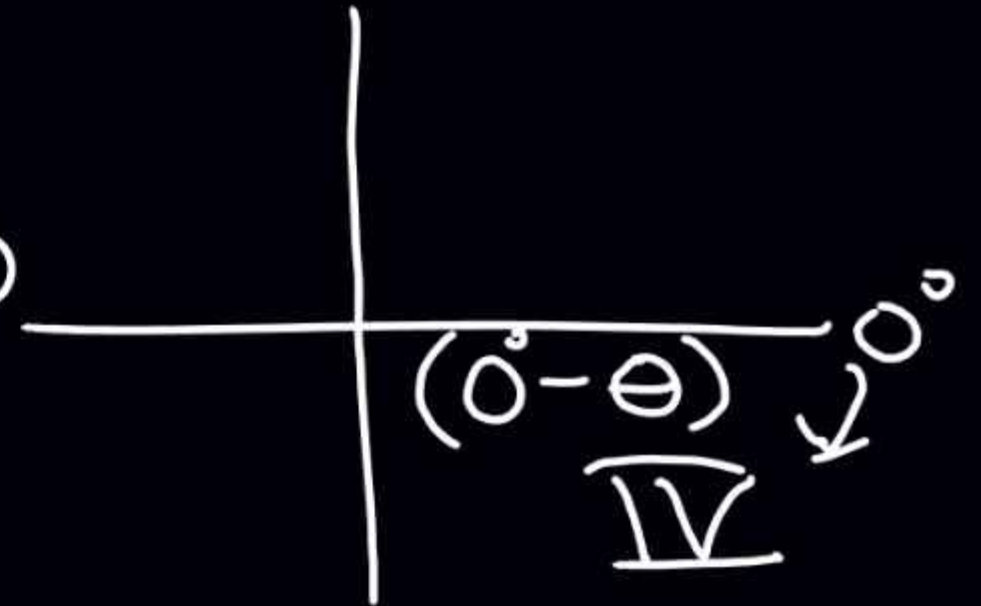
$$\cos(-\theta) = \cos(0-\theta) = +\cos\theta$$

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

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

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

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



$$\underline{\underline{\cos(120^\circ)}}$$

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

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





$$\sin(150^\circ)$$

$$\sin(90+60)$$

$$= +\cos 60^\circ$$

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

$$\sin(180-30)$$

$$= +\sin 30^\circ$$

$$= \left(+\frac{1}{2}\right)$$

Q

$$\underline{\cos(225^\circ)}$$



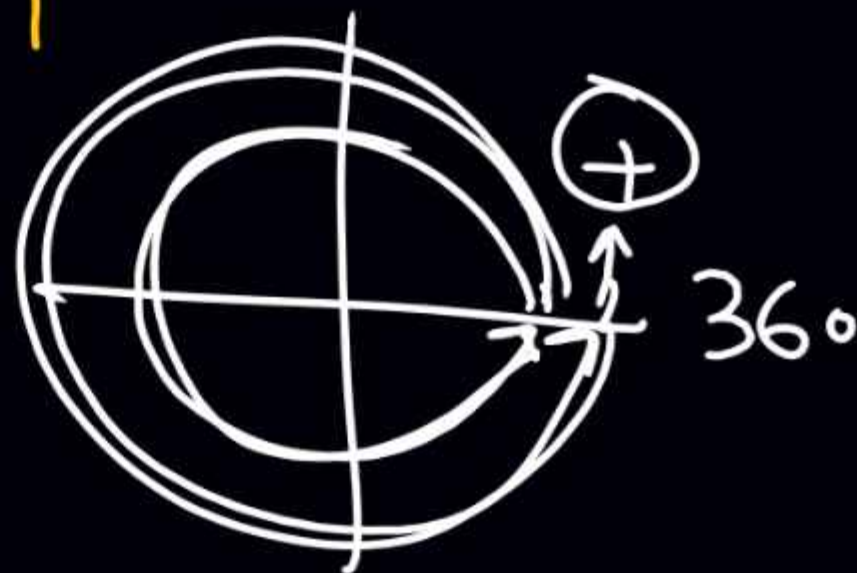
$$\cos(180^\circ + 45^\circ)$$

$$= -\cos 45^\circ$$

$$= \left(-\frac{1}{\sqrt{2}} \right)$$



$$\begin{aligned}
 \underline{\underline{Q}} \quad \tan(405^\circ) &= \tan(360 + 45^\circ) \\
 &= +\tan 45^\circ \\
 &= +1
 \end{aligned}$$



$$\begin{aligned}
 \underline{\underline{Q}} \quad \sin(750^\circ) &= \sin(360 \times 2 + 30^\circ) \\
 &\quad + \sin 30^\circ = \left(\frac{1}{2}\right)
 \end{aligned}$$



1. Find the value of $\cos 120^\circ$.

$\cos 120^\circ$ का सटीक मान ज्ञात कीजिए।

(a) 0.4

(b) 1

(c) 0.5

(d) -0.5

$$\cos (90 + 30^\circ)$$

$$= -\sin 30^\circ$$

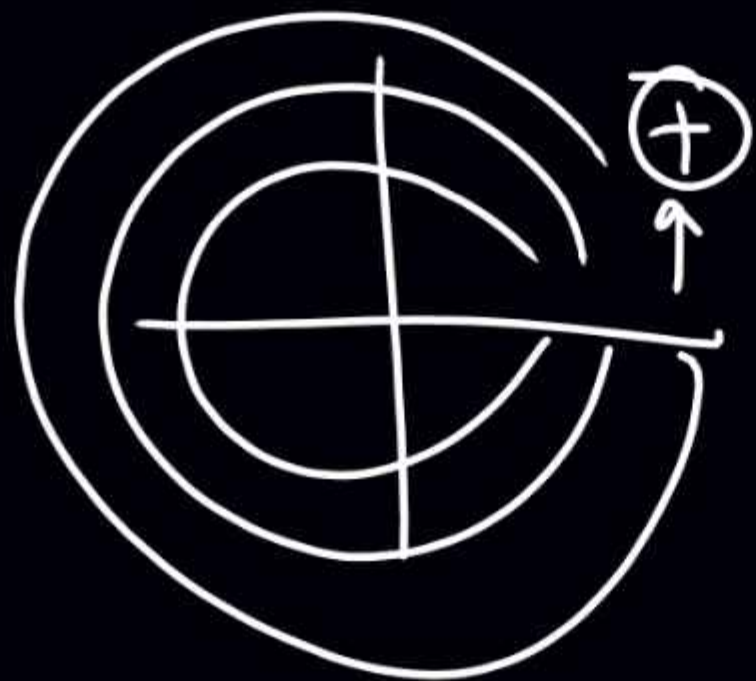
$$= -\frac{1}{2}$$

(SSC-CGL Pre. 18/07/2023)

$$\sin(1125^\circ)$$

$$\sin(360 \times 3 + 45^\circ)$$

$$+ \sin 45^\circ = \frac{1}{\sqrt{2}}$$



$$\sin(-1125^\circ)$$

$$\sin(-\theta) = -\sin\theta$$

$$-\sin(1125^\circ)$$

$$\downarrow$$
$$\left(-\frac{1}{\sqrt{2}}\right)$$



2. Find the value of $\cos 225^\circ$

$\cos 225^\circ$ का मान ज्ञात कीजिए।

(a) -0.7071

~~(b) -0.866~~

~~(c) 0.7071~~

~~(d) 0.866~~



$$\cos(180 + 45^\circ)$$

$$-\cos 45^\circ = -\frac{1}{\sqrt{2}} =$$

$$-\frac{1}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = -\frac{\sqrt{2}}{2} = \frac{-1.414}{2} = -0.7071$$



4. What will be the value of $\sin(-405^\circ)$

$\sin(-405^\circ)$ का मान क्या होगा?

(a) $-\frac{1}{2}$ — $\sin(405^\circ)$

(b) $-\frac{1}{\sqrt{2}}$ — $\left[\sin(360+45^\circ)\right]$

(c) $\frac{1}{3}$ — $\left[+\sin 45^\circ\right]$

(d) $-\frac{1}{\sqrt{3}}$

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

(SSC-CGL Pre. 20/07/2023)



5. Find the value of $\operatorname{cosec}(-1410^\circ)$

$\operatorname{cosec}(-1410^\circ)$ का मान ज्ञात कीजिए -

(a) 3 — $\operatorname{Cosec}(1410)$

(b) 4

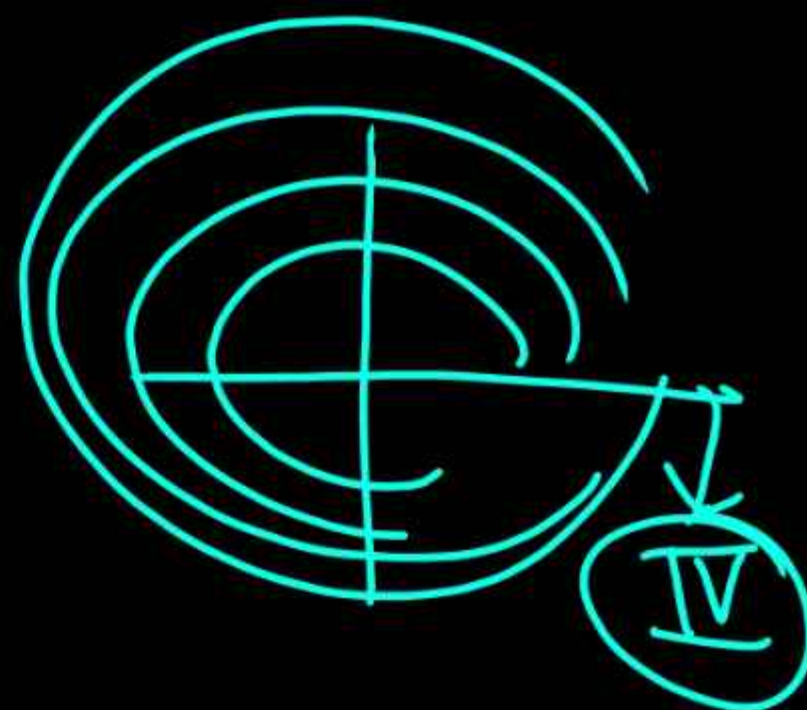
(c) 7

(d) 2

— $\left[\operatorname{cosec}(1440 - 30^\circ) \right]$

— $\left[\operatorname{cosec}(360 \times 4 - 30^\circ) \right]$

— $\left[-\operatorname{cosec} 30^\circ \right]$
 $+ \operatorname{cosec} 30^\circ = 2$





Foundation Batch

MATHS



Q. No.

6. $\cos 570^\circ \sin 510^\circ + \sin(-330^\circ)(\cos 390^\circ) = ?$

(a) 2

(b) 0

(c) -1

(d) 1