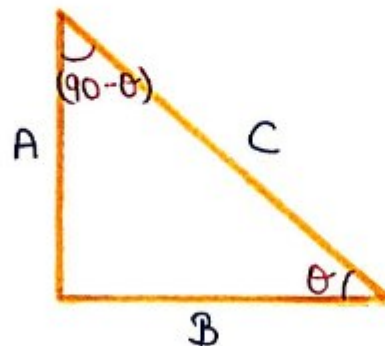


TRIGONOMETRY

CONVERSION OF TRIGONOMETRIC RATIO



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

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

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

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

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

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

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

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

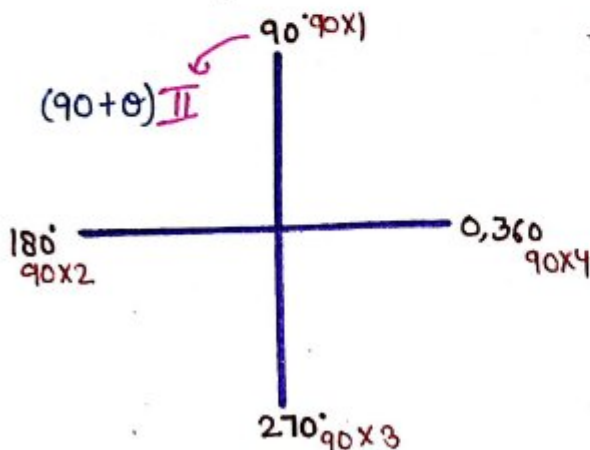
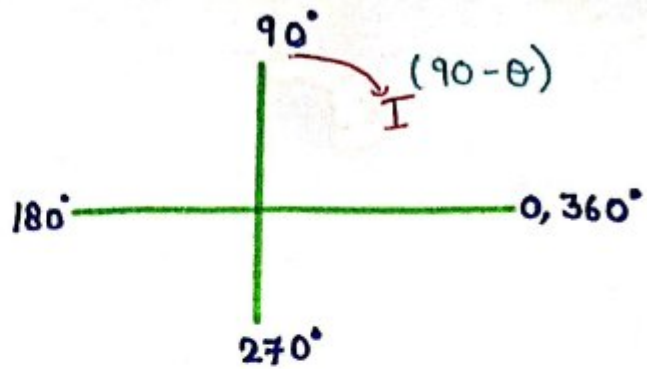
$$\boxed{\operatorname{cosec} (90 - \theta) = \sec \theta}$$

Trick

S sin, cosec (+)	A All (+)
T tan, cot (+)	C cos, sec (+)

ROJGAR WITH ANKIT

$$\begin{aligned}\sin(90-\theta) &= +\cos\theta \\ \cos(90-\theta) &= +\sin\theta \\ \tan(90-\theta) &= +\cot\theta \\ \cot(90-\theta) &= +\tan\theta \\ \sec(90-\theta) &= +\operatorname{cosec}\theta \\ \operatorname{cosec}(90-\theta) &= +\sec\theta\end{aligned}$$



$$\begin{aligned}\sin(90+\theta) &= +\cos\theta \\ \cos(90+\theta) &= -\sin\theta \\ \tan(90+\theta) &= -\cot\theta \\ \cot(90+\theta) &= -\tan\theta \\ \sec(90+\theta) &= -\operatorname{cosec}\theta \\ \operatorname{cosec}(90+\theta) &= +\sec\theta\end{aligned}$$

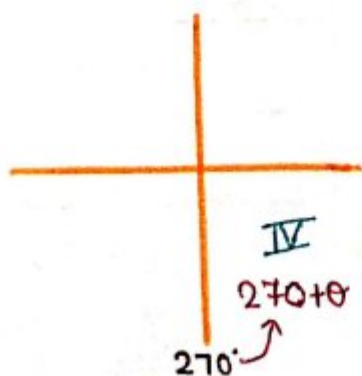
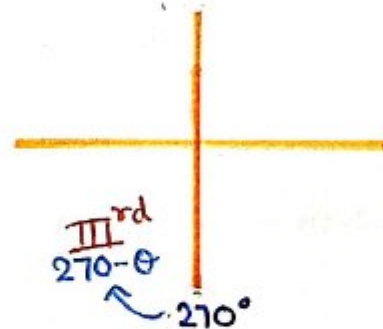
$(90R \pm \theta)$

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

$R \rightarrow$ odd Number
विषम संख्या

Trigonometric Ratio
↓
CHANGES

$$\begin{aligned}\sin(270-\theta) &= -\cos\theta \\ \cos(270-\theta) &= -\sin\theta \\ \tan(270-\theta) &= +\cot\theta \\ \cot(270-\theta) &= +\tan\theta \\ \sec(270-\theta) &= -\operatorname{cosec}\theta \\ \operatorname{cosec}(270-\theta) &= -\sec\theta\end{aligned}$$



$$\begin{aligned}\sin(270+\theta) &= -\cos\theta \\ \cos(270+\theta) &= +\sin\theta \\ \tan(270+\theta) &= -\cot\theta \\ \cot(270+\theta) &= +\tan\theta \\ \sec(270+\theta) &= +\operatorname{cosec}\theta \\ \operatorname{cosec}(270+\theta) &= -\sec\theta\end{aligned}$$

$$\text{angle} = (90R \pm \theta)$$

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

$R \rightarrow$ even Number
सम संख्या

Trigonometric Ratio
↓
CHANGE नहीं होंगे

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

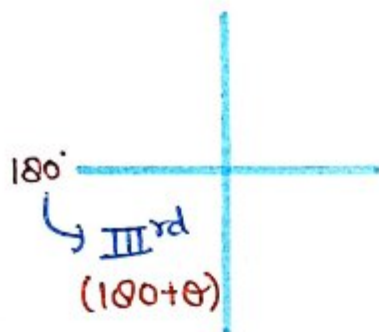
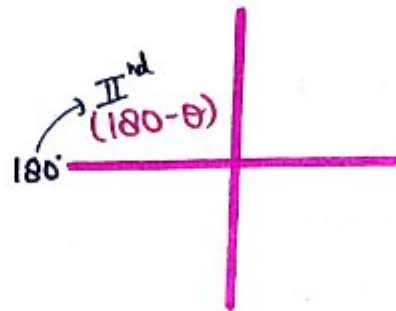
$$\cos(180^\circ - \theta) = - \cos \theta$$

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

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

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

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



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

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

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

$$\cot(180^\circ + \theta) = + \cot \theta$$

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

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

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

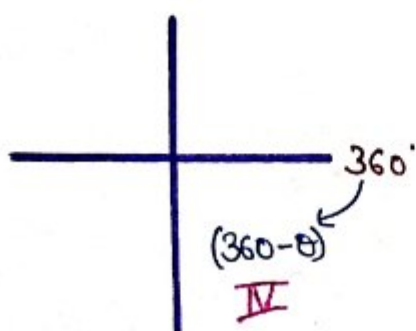
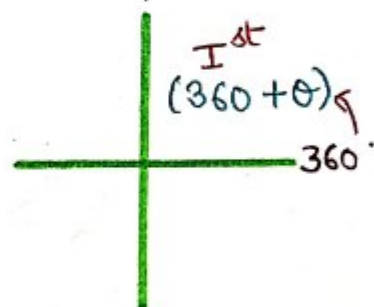
$$\cos(360^\circ + \theta) = + \cos \theta$$

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

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

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

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



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

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

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

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

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

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

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

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

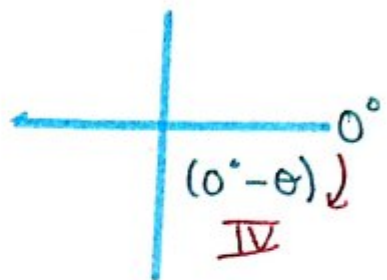
$$\cos(-\theta) = \cos(0^\circ - \theta) = +\cos \theta$$

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

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

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

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



Q) $\cos(120^\circ)$

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

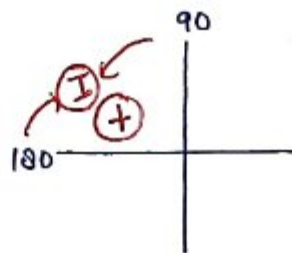
$$\cos(90 + \theta) = -\sin \theta$$



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

$$\begin{aligned} \sin(90 + 60) \\ = +\cos 60^\circ \\ = +\frac{1}{2} \end{aligned}$$

$$\begin{aligned} \sin(180 - 30) \\ = +\sin 30^\circ \\ = +\frac{1}{2} \end{aligned}$$

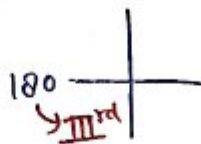


Q) $\cos(225^\circ)$

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

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

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



Q) $\tan(405^\circ)$

$$\tan(360 + 45^\circ)$$

$$= +\tan 45^\circ$$

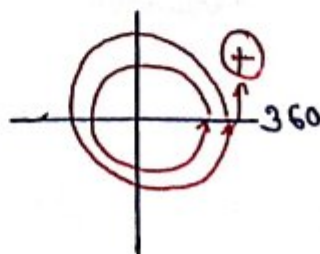
$$= +1$$

Q) $\sin(750^\circ)$

$$\sin(360 \times 2 + 30^\circ)$$

$$+ \sin 30^\circ$$

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



Q) Find the value of $\cos 120^\circ$.

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

$$\begin{aligned} & \cos(90+30^\circ) \\ & -\sin 30^\circ \\ & = -\frac{1}{2} = -0.5 \end{aligned}$$

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

$$\begin{aligned} & \sin(360 \times 3 + 45^\circ) \\ & + \sin 45^\circ \\ & = \frac{1}{\sqrt{2}} \end{aligned}$$



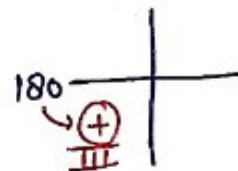
Q) $\sin(-1125^\circ)$

$$\begin{aligned} & \sin(-\theta) = -\sin \theta \\ & -\sin(1125^\circ) \\ & -\frac{1}{\sqrt{2}} \end{aligned}$$

Q) Find the value of $\cos 225^\circ$

$\cos 225^\circ$ का मान ज्ञात कीजिए।

$$\begin{aligned} & \cos(180+45^\circ) \\ & -\cos 45^\circ \\ & = -\frac{1}{\sqrt{2}} = -\frac{1}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = -\frac{\sqrt{2}}{2} = -\frac{1.414}{2} \\ & = -0.7071 \end{aligned}$$



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

$\sin(-405^\circ)$ का मान क्या होगा।

$$\begin{aligned} & -\sin(405^\circ) \\ & -[\sin(360+45^\circ)] \\ & -[+\sin 45^\circ] \\ & -\frac{1}{\sqrt{2}} \end{aligned}$$

Q) Find the value of $\operatorname{cosec}(-1410^\circ)$
 $\operatorname{cosec}(-1410^\circ)$ का मान ज्ञात कीजिए-

$$- \operatorname{cosec}(1410)$$

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

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

$$- [-\operatorname{cosec} 30^\circ]$$

$$+ \operatorname{cosec} 30^\circ = 2$$

