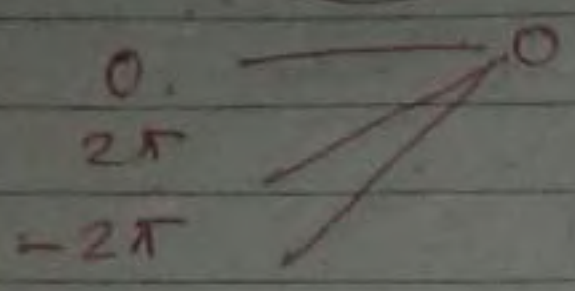


$$\Rightarrow y = \sin x$$



Principal Value

$$\swarrow \sin^{-1} \quad \text{Domain } [-1, 1] \quad \rightarrow \quad \text{Range } \left[-\frac{\pi}{2}, \frac{\pi}{2}\right] \quad \swarrow$$

$$\cos^{-1} \quad [-1, 1] \quad \rightarrow \quad [0, \pi]$$

$$\operatorname{cosec}^{-1} \quad \mathbb{R} - (-1, 1) \quad \rightarrow \quad \left[-\frac{\pi}{2}, \frac{\pi}{2}\right] - \{0\}$$

$$\sec^{-1} \quad \mathbb{R} - (-1, 1) \quad \rightarrow \quad [0, \pi] - \left\{\frac{\pi}{2}\right\}$$

$$\tan^{-1} \quad \mathbb{R} \quad \rightarrow \quad \left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$$

$$\cot^{-1} \quad \mathbb{R} \quad \rightarrow \quad (0, \pi)$$

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

$$\begin{aligned} \cos(\pi - \theta) &= -\cos\theta \\ \sec(\pi - \theta) &= -\sec\theta \end{aligned}$$

$30^\circ \times \frac{\pi}{180}$
 $\frac{\pi}{6}$

① $\sin^{-1}\left(\frac{-1}{2}\right) = y$

~~$\frac{\pi}{3}$~~

$\Rightarrow \frac{-1}{2} = \sin y$

$\Rightarrow -\left(\frac{1}{2}\right) = \sin y$

$\Rightarrow -\left(\sin \frac{\pi}{6}\right) = \sin y$

$\Rightarrow \sin\left(-\frac{\pi}{6}\right) = \sin y$

$\Rightarrow y = -\frac{\pi}{6}$

② $\cos^{-1}\left(\frac{\sqrt{3}}{2}\right) = y$

$\frac{\sqrt{3}}{2} = \cos y$

$\cos \frac{\pi}{6} = \cos y$

$y = \frac{\pi}{6}$

5. $\cos^{-1}\left(-\frac{1}{2}\right) = y$

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

$\rightarrow \left\{ \begin{array}{l} \cos \pi = \cos y \\ -\frac{1}{2} \end{array} \right\}$

$\cos\left(\pi - \frac{\pi}{3}\right) = \cos y \rightarrow \left(\frac{1}{2}\right)$

$\cos\left(\frac{3\pi - \pi}{3}\right) = \cos y \rightarrow \left(\frac{1}{2}\right)$

$\cos \frac{2\pi}{3} = \cos y \rightarrow \left(\frac{1}{2}\right)$

$y = \frac{2\pi}{3}$

$\sin x = \frac{1}{\cos x}$

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

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

cos
sin