

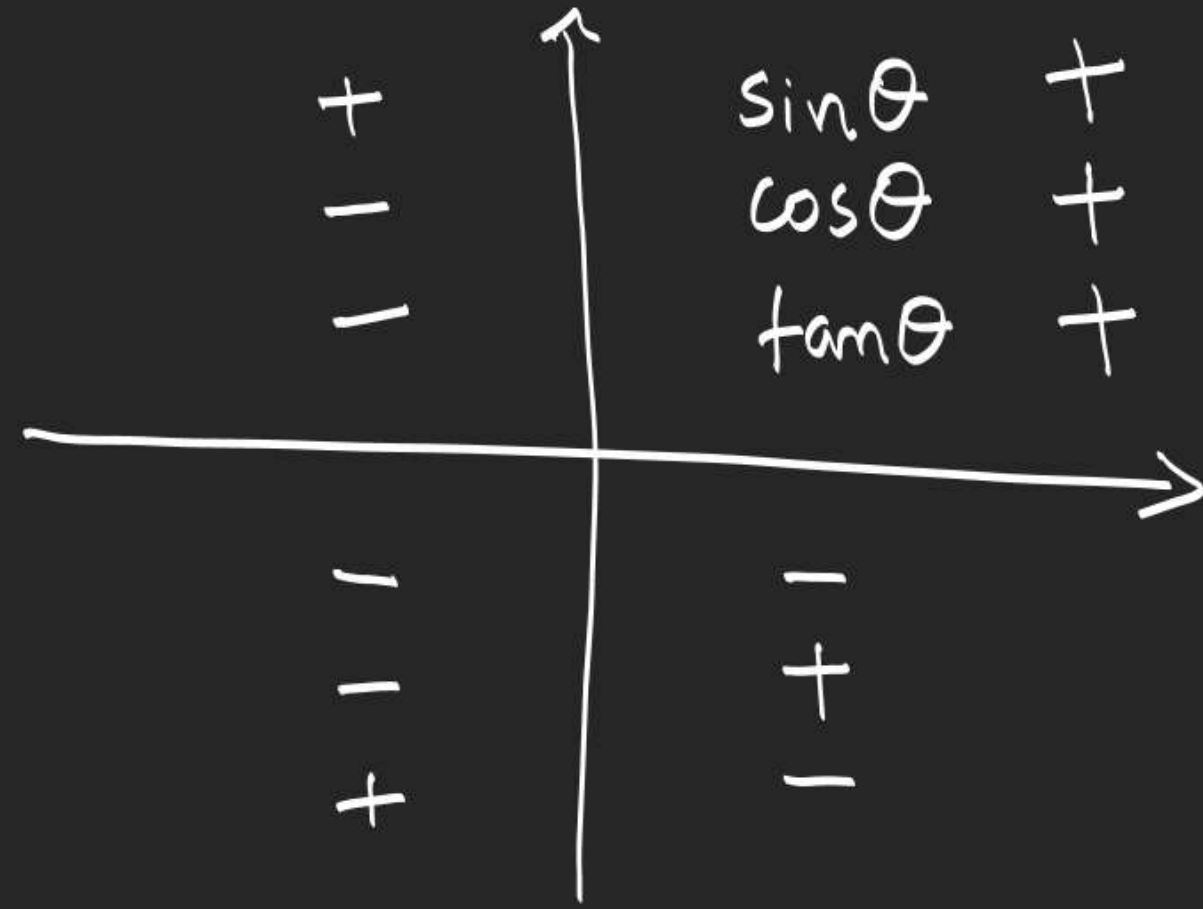
$$\sin \theta = \frac{y}{r}$$

$$\cos \theta = \frac{x}{r}$$

$$\sin(\pi + \theta) = \frac{-y}{r} = -\sin \theta$$

$$\cos(\pi + \theta) = \frac{-x}{r} = -\cos \theta$$

$$\tan(\pi + \theta) = \frac{\sin(\pi + \theta)}{\cos(\pi + \theta)} = \tan \theta$$



$$\sin\left(\begin{matrix} \pi \\ 2 \\ 3\pi \\ 4\pi \end{matrix} \pm \theta\right) = \pm \cos \theta$$

$$\cos\left(\begin{matrix} \pi \\ 2 \\ 3\pi \\ 4\pi \end{matrix} \pm \theta\right) = \pm \sin \theta$$

$$\tan\left(\begin{matrix} \pi \\ 2 \\ 3\pi \\ 4\pi \end{matrix} \pm \theta\right) = \pm \cot \theta$$

$$\sin\left(\begin{matrix} \pi \pm \theta \\ 2\pi \pm \theta \end{matrix}\right) = \pm \sin \theta$$

$$\cos\left(\begin{matrix} \pi \pm \theta \\ 2\pi \pm \theta \end{matrix}\right) = \pm \cos \theta$$

$$\tan\left(\begin{matrix} \pi \pm \theta \\ 2\pi \pm \theta \end{matrix}\right) = \pm \tan \theta$$

$$\cos(2\pi - \theta) = \cos \theta$$

$$\sec\left(\frac{3\pi}{2} + \theta\right) = \sec \theta$$

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

$$\tan\left(\frac{3\pi}{2} - \theta\right) = \cot \theta$$

$$\sin(0) = 0$$

$$\sin\left(\frac{\pi}{6}\right) = \frac{1}{2}$$

$$\sin\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}$$

$$\sin\left(\frac{\pi}{4}\right) = \frac{1}{\sqrt{2}}$$

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

$$\cos 0 = 1$$

$$\cos\frac{\pi}{6} = \frac{\sqrt{3}}{2}$$

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

$$\cos\left(\frac{\pi}{4}\right) = \frac{1}{\sqrt{2}}$$

$$\cos\left(\frac{\pi}{2}\right) = 0$$

$$\tan 0 = 0$$

$$\tan\frac{\pi}{6} = \frac{1}{\sqrt{3}}$$

$$\tan\frac{\pi}{3} = \sqrt{3}$$

$$\tan\left(\frac{\pi}{4}\right) = 1$$

$$\tan\left(\frac{\pi}{2}\right) = \text{not defined}$$

$$2\pi - \theta \quad (-\infty, -1] \cup [1, \infty)$$

$$\cos(2\pi - \theta) = \cos(-\theta) = \cos \theta$$

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

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

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

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

$$\cos 330^\circ = \cos(\boxed{360^\circ} - 30^\circ) = \cos 30^\circ = \frac{\sqrt{3}}{2}$$

$$\cot \frac{3\pi}{4} = \cot\left(\pi - \frac{\pi}{4}\right) = -\cot \frac{\pi}{4} = -1$$

$$\begin{aligned}
 & \cos \frac{\pi}{3} + \cos \frac{2\pi}{3} + \cos \frac{3\pi}{3} + \cos \frac{4\pi}{3} + \cos \frac{5\pi}{3} + \cos \frac{6\pi}{3} \\
 &= \frac{1}{2} + \left(-\frac{1}{2}\right) + (-1) + \left(-\frac{1}{2}\right) + \left(\frac{1}{2}\right) + (1) \\
 &= 0
 \end{aligned}$$

Sum $\sum_{r=1}^4 r = 1+2+3+4 = 10$

Product $\prod_{r=1}^4 r = 1 \times 2 \times 3 \times 4 = 24$

$$\sum_{r=1}^4 \cos \frac{r\pi}{4} = 0$$

$$= \cos \frac{\pi}{4} \cos \frac{2\pi}{4} \cos \frac{3\pi}{4} \cos \frac{4\pi}{4}$$

\swarrow
 $= 0$

$$\underline{1.} \quad I) \quad A = \sin \theta + \sin\left(\frac{\pi}{2} + \theta\right) = \sin \theta + \cos \theta$$

$$B = \cos \theta + \cos\left(\frac{\pi}{2} + \theta\right) = \cos \theta - \sin \theta$$

$$\text{find } A^2 + B^2 = 2(\sin^2 \theta + \cos^2 \theta) = 2.$$

$$\underline{2.} \quad \sec \frac{2\pi}{3} = \sec\left(\pi - \frac{\pi}{3}\right) = -\sec \frac{\pi}{3} = -2.$$

$$\underline{3.} \quad \tan \frac{11\pi}{6} = \tan\left(2\pi - \frac{\pi}{6}\right) = -\tan \frac{\pi}{6} = -\frac{1}{\sqrt{3}}.$$

Express in terms of trigonometric ratio of angle between 0 to 45° .

$$(i) \quad \operatorname{cosec}(1438^\circ) = \operatorname{cosec}(1438^\circ - 1440^\circ) \\ = -\operatorname{cosec} 2^\circ \quad 2n\pi + \theta = \theta$$

$$(ii) \quad \cot(-963^\circ)$$

$$\cot(-963^\circ + 1080^\circ) \\ = \cot(117^\circ) = \cot(90^\circ + 27^\circ) = \boxed{-\tan 27^\circ}$$



$$\Sigma x - 6 \quad (16 \text{ to } 22)$$

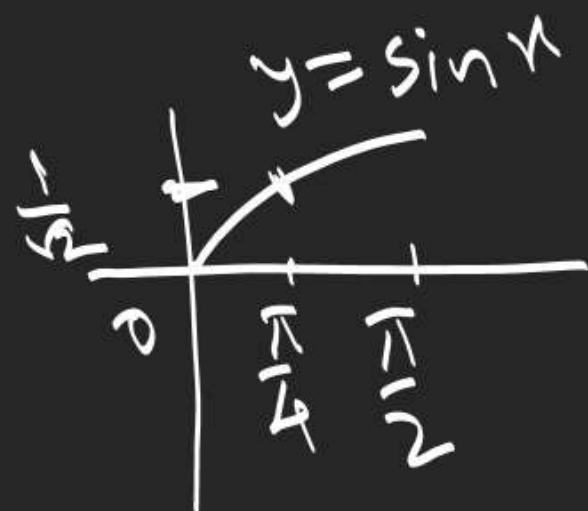
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$$\Sigma x - 7$$

$$\Sigma x - 10 \rightarrow 4 \text{ to } 27$$

$$\sin \theta < \cos \theta \Rightarrow \theta \in (0, \frac{\pi}{4})$$

$$\sin \frac{\pi}{4} = \cos \frac{\pi}{4}$$



$$\theta \in (0, \frac{\pi}{2})$$

$$\sin \theta > \cos \theta, \quad \theta = ?$$

$$\Rightarrow \tan \theta > 1$$

$$\Rightarrow \theta \in (\frac{\pi}{4}, \frac{\pi}{2})$$

