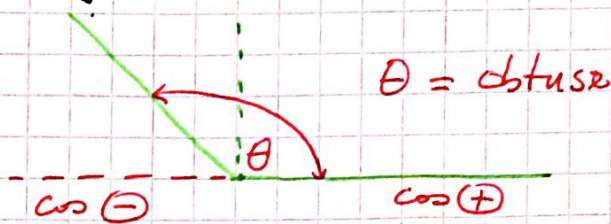


① an obtuse angle: bigger than 90° and smaller than 180° !!!



$$i) \sin \theta = k \Rightarrow \sin^2 \theta = k^2$$

$$\text{We know, } \cos^2 \theta + \sin^2 \theta = 1$$

$$\Rightarrow \cos^2 \theta + k^2 = 1 \quad \left| \begin{array}{l} -k^2 \\ \sqrt{\quad} \end{array} \right.$$

$$\cos^2 \theta = 1 - k^2$$

$$\cos \theta = \sqrt{1 - k^2}$$

and because the $\cos \theta$ lies on the negative side of the unit circle ($\cos \ominus$),

$$\cos \theta = -\sqrt{1 - k^2}$$

$$ii) \tan \theta = \frac{\sin \theta}{\cos \theta} = \frac{k}{-\sqrt{1 - k^2}}$$

$$iii) \begin{aligned} \sin(\theta + \pi) &= \sin \theta \cos \pi + \cos \theta \sin \pi \\ &= \sin \theta \cdot (-1) + \cos \theta \cdot 0 \\ &= -\sin \theta + 0 \end{aligned}$$

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