

Find the trigonometric angle for the following:

↪ y-coord

a)  $\sin \theta = 1$

$$\sin^{-1}(1) = \theta$$

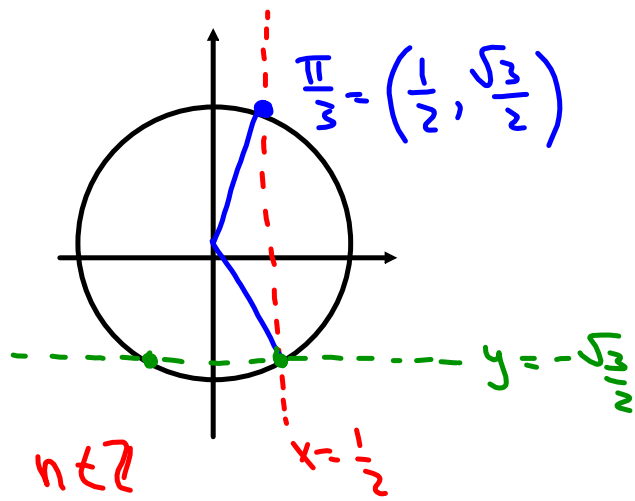
$$\theta = 90^\circ \Rightarrow \theta = \frac{\pi}{2} \text{ rad} + 2\pi n; n \in \mathbb{Z}$$

↪ x-coord

b)  $\cos \theta = 1/2$

$$\theta = \frac{\pi}{3}, \frac{5\pi}{3}$$

$$+ 2\pi n; n \in \mathbb{Z}$$



↪ y-coord

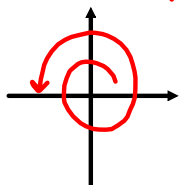
c)  $\sin \theta = -\sqrt{3}/2$

$$\theta = \frac{4\pi}{3}, \frac{5\pi}{3} + 2\pi n; n \in \mathbb{Z}$$

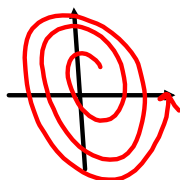
It is also possible to determine coordinates of points when the angle is greater than 360 degrees ( $2\pi$  rad).

Ex: Determine the coordinates of

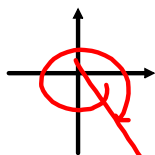
a)  $P(540^\circ) = P(540^\circ - 360^\circ) = P(180^\circ) = (-1, 0)$



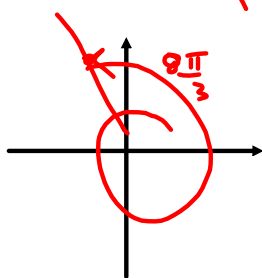
b)  $P(1080^\circ) = P(1080^\circ - 3(360^\circ)) = P(0^\circ) = (1, 0)$



c)  $P(-405^\circ) = P(-405^\circ + 2(360^\circ)) = P(315^\circ) = \left(\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}\right)$

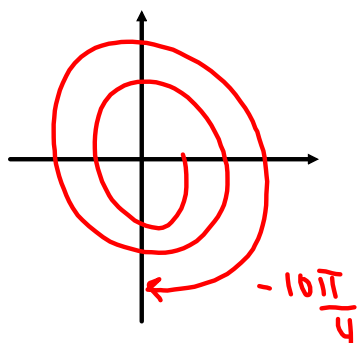


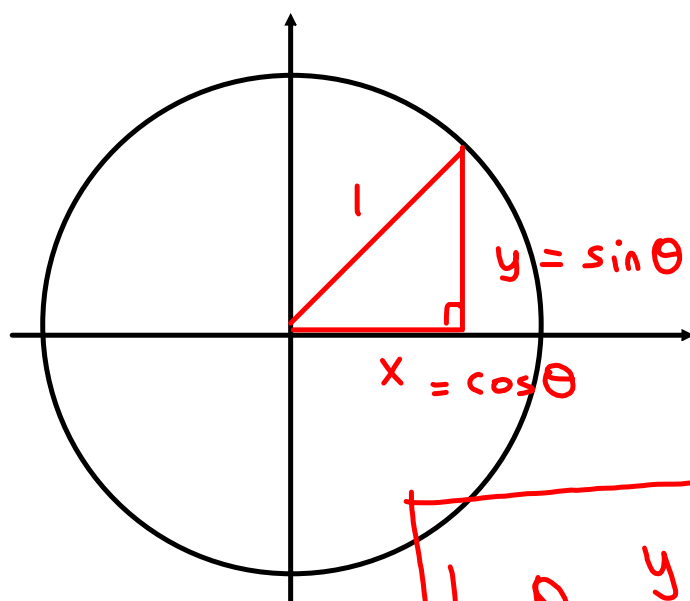
d)  $P(8\pi/3) = P\left(\frac{8\pi}{3} - 2\pi\right) = P\left(\frac{2\pi}{3}\right) = \left(-\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$



e)  $P(-10\pi/4) = P\left(-\frac{10\pi}{4} + 2(2\pi)\right) = P\left(\frac{6\pi}{4}\right) = P\left(\frac{3\pi}{2}\right)$

$= (0, -1)$





$$\tan \theta = \frac{y}{x} = \frac{\sin \theta}{\cos \theta}$$