

Supplemental WS II 2

① a)

$$2 \cos x = 2$$

$$\cos x = 1$$

$$x = 0^\circ, 360^\circ$$

b)

$$5 \tan x + 4 = 0$$

$$5 \tan x = -4$$

$$\tan x = -\frac{4}{5}$$

← $\tan x$ is negative
so in Q II or Q IV

$$x_r = \tan^{-1}\left(\frac{4}{5}\right)$$

$$x_r = 38.7^\circ$$

$$\text{Q II} \quad x = 180^\circ - 38.7^\circ = 141.3^\circ$$

$$\text{Q IV} \quad x = 360^\circ - 38.7^\circ = 321.3^\circ$$

c)

$$4 \tan x - 7 = 5 \tan x - 6$$

$$4 \tan x - 5 \tan x = -6 + 7$$

$$-\tan x = 1$$

$$\tan x = -1$$

← $\tan x$ is negative
so in Q II or Q IV

$$\text{Q II} \quad x = 135^\circ$$

$$\text{Q IV} \quad x = 315^\circ$$

$$② \quad a) \quad \tan x + \sqrt{3} = 0$$

$$\tan x = -\sqrt{3}$$

$$Q_{II}: x = \frac{2\pi}{3}$$

$$Q_{IV}: x = \frac{5\pi}{3}$$

← $\tan x$ is negative
so in Q_{II} or Q_{IV}

$$b) \quad 2 \tan x + 2\sqrt{3} = 0$$

$$2 \tan x = -2\sqrt{3}$$

$$\tan x = \frac{-2\sqrt{3}}{2}$$

$$\tan x = -\sqrt{3}$$

$$x = \frac{2\pi}{3}, \frac{5\pi}{3}$$

$$c) \quad 2 \cos x + \sqrt{3} = 0$$

$$2 \cos x = -\sqrt{3}$$

$$\cos x = \frac{-\sqrt{3}}{2}$$

← $\cos x$ is negative
so in Q_{II} or Q_{III}

$$Q_{II}: x = \frac{5\pi}{6}$$

$$Q_{III}: x = \frac{7\pi}{6}$$

③

$$2 \sin x + \sqrt{2} = 0$$

$$2 \sin x = -\sqrt{2}$$

$$\sin x = -\frac{\sqrt{2}}{2}$$

← $\sin x$ is negative

so Q III or ~~Q IV~~

↑
not in
the interval

$$\frac{\pi}{2} \leq x \leq \frac{3\pi}{2}$$

$$\text{Q III: } x = \frac{5\pi}{4}$$

④

$$\sin \frac{2\pi}{3} \cdot \cos \frac{7\pi}{6} \cdot \tan \left(-\frac{3\pi}{4} \right)$$

$$= \left(\frac{\sqrt{3}}{2} \right) \cdot \left(-\frac{\sqrt{3}}{2} \right) \cdot (1)$$

$$= -\frac{3}{4}$$

⑤

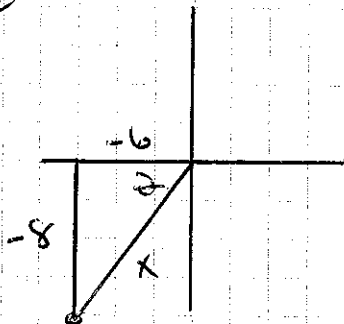
27π is coterminal with π

$$27\pi - 13(2\pi) = \pi$$

∴ it is not in a quadrant

and $P(27\pi)$ has coordinates $(-1, 0)$

⑥



$$x^2 = (-6)^2 + (-8)^2$$

$$x = 10$$

$$\cos \theta = \frac{-6}{10}$$

or

$$\boxed{-\frac{3}{5}}$$