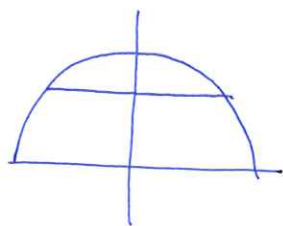


16 $0^\circ \leq \theta \leq 180^\circ$ とする。以下の問いに答えよ。【**】

(1) $\sin \theta = \frac{3}{5}$ のとき, $\cos \theta, \tan \theta$ の値を求めよ。



$$\sin^2 \theta + \cos^2 \theta = 1 \quad (*)$$

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

$$= 1 - \left(\frac{3}{5}\right)^2$$

$$= \frac{4^2}{5^2}$$

$$\therefore \cos \theta = \pm \frac{4}{5}$$

$$\tan \theta = \frac{\sin \theta}{\cos \theta} \quad (*)$$

$$i) \cos \theta = \frac{4}{5} \text{ ならば}$$

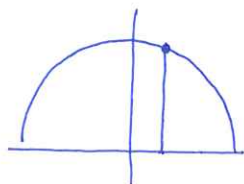
$$\tan \theta = \frac{3}{4}$$

$$ii) \cos \theta = -\frac{4}{5} \text{ ならば}$$

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



(2) $\cos \theta = \frac{1}{4}$ のとき, $\sin \theta, \tan \theta$ の値を求めよ。



$$\sin^2 \theta + \cos^2 \theta = 1 \quad (*)$$

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

$$= 1 - \frac{1}{4^2}$$

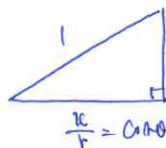
$$0^\circ \leq \theta \leq 180^\circ \quad \sin \theta \geq 0$$

$$\therefore \sin \theta = \frac{\sqrt{15}}{4}$$

$$\tan \theta = \frac{\sin \theta}{\cos \theta} \quad (*)$$

$$\tan \theta = \sqrt{15}$$

$$\therefore \sin \theta = \frac{\sqrt{15}}{4}, \quad \tan \theta = \sqrt{15}$$



$$\frac{3}{4} = \sin \theta$$

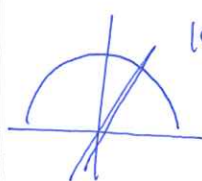
$$\frac{4}{5} = \cos \theta$$

$$\sin^2 \theta + \cos^2 \theta = 1$$

$$\left(\frac{3}{4}\right)^2 + 1 = \frac{1}{\cos^2 \theta}$$

(3) $\tan \theta = 3$ のとき, $\sin \theta, \cos \theta$ の値を求めよ。

$$\tan^2 \theta + 1 = \frac{1}{\cos^2 \theta} \quad (*)$$



$$10 = \frac{1}{\cos^2 \theta}$$

$$\cos^2 \theta = \frac{1}{10}$$

$$\tan \theta > 0 \text{ ならば } 0^\circ \leq \theta \leq 180^\circ$$

$$0 \leq \cos \theta \leq 1 \quad \therefore \cos \theta = \frac{1}{\sqrt{10}}$$

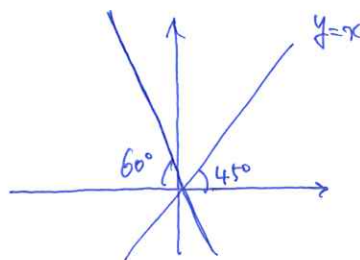
$$\tan \theta = \frac{\sin \theta}{\cos \theta} \quad (*) \quad \sin \theta = \tan \theta \cdot \cos \theta$$

$$= \frac{3}{\sqrt{10}}$$

$$\therefore \cos \theta = \frac{1}{\sqrt{10}}, \quad \sin \theta = \frac{3}{\sqrt{10}}$$



(4) 直線 $y = x$ と直線 $y = -\sqrt{3}x$ のなす鋭角 θ を求めよ。



左図より

$$\theta = 45^\circ + 30^\circ$$

$$= 75^\circ$$

