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Exercice 1 (2 points)

Compléter le tableau.

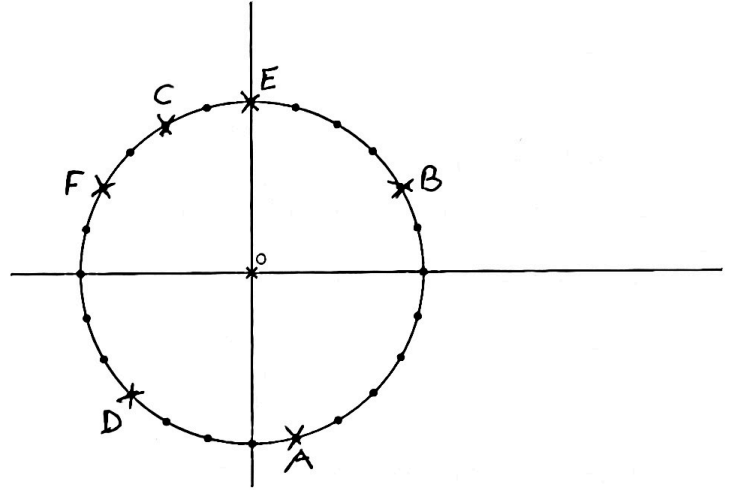
x	$-\frac{\pi}{4}$	$\frac{2\pi}{3}$	$\pi + \frac{\pi}{6}$	$\frac{\pi}{2} + \frac{\pi}{3}$
cos x	$\frac{\sqrt{2}}{2}$	$-\frac{1}{2}$	$-\frac{\sqrt{3}}{2}$	$-\frac{\sqrt{3}}{2}$
sin x	$-\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	$-\frac{1}{2}$	$\frac{1}{2}$

Exercice 2 (3 points)

Sur le cercle trigonométrique, placer les points

$$A\left(-\frac{5\pi}{12}\right), B\left(\frac{\pi}{6}\right), C\left(\frac{2\pi}{3}\right)$$

$$D\left(-\frac{3\pi}{4}\right), E\left(-\frac{3\pi}{2}\right), F\left(\frac{5\pi}{6}\right)$$

**Exercice 3 (2 points)**Les angles suivants sont donnés en radian. Donner leur mesure dans l'intervalle $[0; 2\pi[$.

$$\frac{35\pi}{11}, \frac{-23\pi}{13}, \frac{50\pi}{3}, -\frac{37\pi}{17}$$

Exercice 4 (4 points)

1) Résoudre l'équation suivante :

$$\sin x = \frac{1}{2} \text{ dans } [0; 2\pi[$$

2) Résoudre l'équation suivante :

$$2 \sin x + \sqrt{3} = 0 \text{ dans } [0; 2\pi[$$

3) Résoudre l'inéquation suivante :

$$\cos x < \frac{-\sqrt{2}}{2} \text{ dans }]-\pi; \pi]$$

Ex 3

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$$a) \frac{35\pi}{11} = \frac{22\pi}{11} + \frac{13\pi}{11}$$

$$\frac{35\pi}{11} \equiv \left(\frac{13\pi}{11} \right) [2\pi]$$

$$0 \leq \frac{13\pi}{11} < 2\pi$$

$$b) -\frac{23\pi}{13} = -\frac{26\pi}{13} + \frac{3\pi}{13}$$

$$-\frac{23\pi}{13} \equiv \left(\frac{3\pi}{13} \right) [2\pi]$$

$$0 \leq \frac{3\pi}{13} < 2\pi$$

$$c) \frac{50\pi}{3} = \frac{48\pi}{3} + \frac{2\pi}{3}$$

$$\frac{50\pi}{3} \equiv \frac{2\pi}{3} [2\pi]$$

$$0 \leq \frac{2\pi}{3} < 2\pi$$

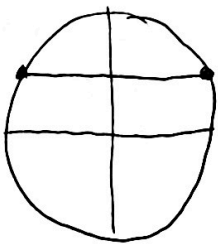
$$d) -\frac{37\pi}{17} = -\frac{68\pi}{17} + \frac{31\pi}{17}$$

$$-\frac{37\pi}{17} \equiv \frac{31\pi}{17} [2\pi]$$

$$0 \leq \frac{31\pi}{17} < 2\pi$$

Exercice 4

1)



$$\sin x = \frac{1}{2}$$

$$\sin x = \sin \frac{\pi}{6}$$

$$x = \frac{\pi}{6} + 2k\pi$$

ou

$$x = \frac{5\pi}{6} + 2k\pi$$

$$S_{[0; 2\pi[} = \left\{ \frac{\pi}{6} ; \frac{5\pi}{6} \right\}$$

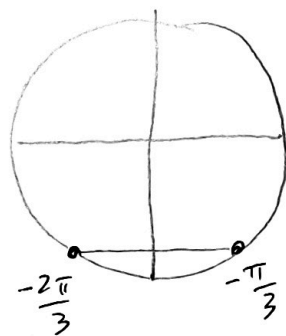
2)

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

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

$$\sin x = \sin -\frac{\pi}{3}$$

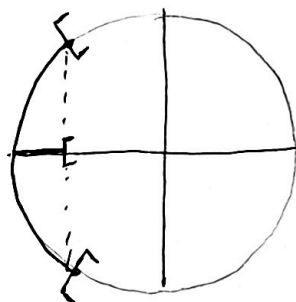
$$x = -\frac{2\pi}{3} + 2k\pi \quad \text{ou} \quad x = -\frac{\pi}{3} + 2k\pi$$



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$$S_{[0; 2\pi[} = \left\{ \frac{4\pi}{3}; \frac{5\pi}{3} \right\}$$

3)



$$\cos x < -\frac{\sqrt{2}}{2}$$

$$\frac{3\pi}{4} + 2k\pi < x < \frac{5\pi}{4} + 2k\pi$$

$$S_{]-\pi; \pi]} = \left] -\pi; -\frac{3\pi}{4} \right[\cup \left] \frac{3\pi}{4}; \pi \right]$$

Exercice 5

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

$$\left(\frac{3}{5}\right)^2 + \sin^2 a = 1$$

$$\sin^2 a = 1 - \frac{9}{25}$$

$$\sin^2 a = \frac{16}{25}$$

$$\sin a = \sqrt{\frac{16}{25}}$$

$$\text{ou} \quad \sin a = -\sqrt{\frac{16}{25}}$$

~~$$\sin a = \frac{4}{5}$$~~

ou

$$\sin a = -\frac{4}{5}$$

car $a \in \left[-\frac{\pi}{2}; 0\right]$ donc $\sin a < 0$

$$2) \cos(-a) = \cos a = \frac{3}{5}$$

$$\cos(\pi + a) = -\cos a = -\frac{3}{5}$$

$$\cos(\pi - a) = -\cos a = -\frac{3}{5}$$

$$\cos\left(\frac{\pi}{2} + a\right) = -\sin a = \frac{4}{5}$$

$$\sin(-a) = -\sin a = \frac{4}{5}$$

$$\sin(\pi + a) = -\sin a = \frac{4}{5}$$

$$\sin(\pi - a) = \sin a = -\frac{4}{5}$$

$$\sin(2\pi + a) = \sin a = -\frac{4}{5}$$

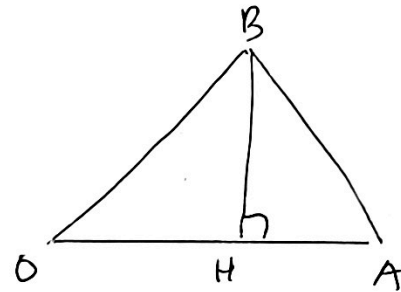
Exercice 6

$$1) \widehat{AOD} = 135^\circ$$

$$2) \text{La circonférence : } P = 2 \times \pi \times 4 = 8\pi \text{ cm}$$

$$\text{Le petit arc } \widehat{BE} = \frac{3}{8} P = 3\pi \text{ cm}$$

$$3) A_{AOB} = \frac{OA \times h}{2}$$



$$A_{AOB} = \frac{4 \times 2\sqrt{2}}{2} = 4\sqrt{2} \text{ cm}^2$$

$$h = BH = \frac{\sqrt{2}}{2} \times 4 = 2\sqrt{2}$$

$$4) A_{\text{octogone}} = 8 \times 4\sqrt{2} = 32\sqrt{2} \text{ cm}^2$$