

# Trigonométrie

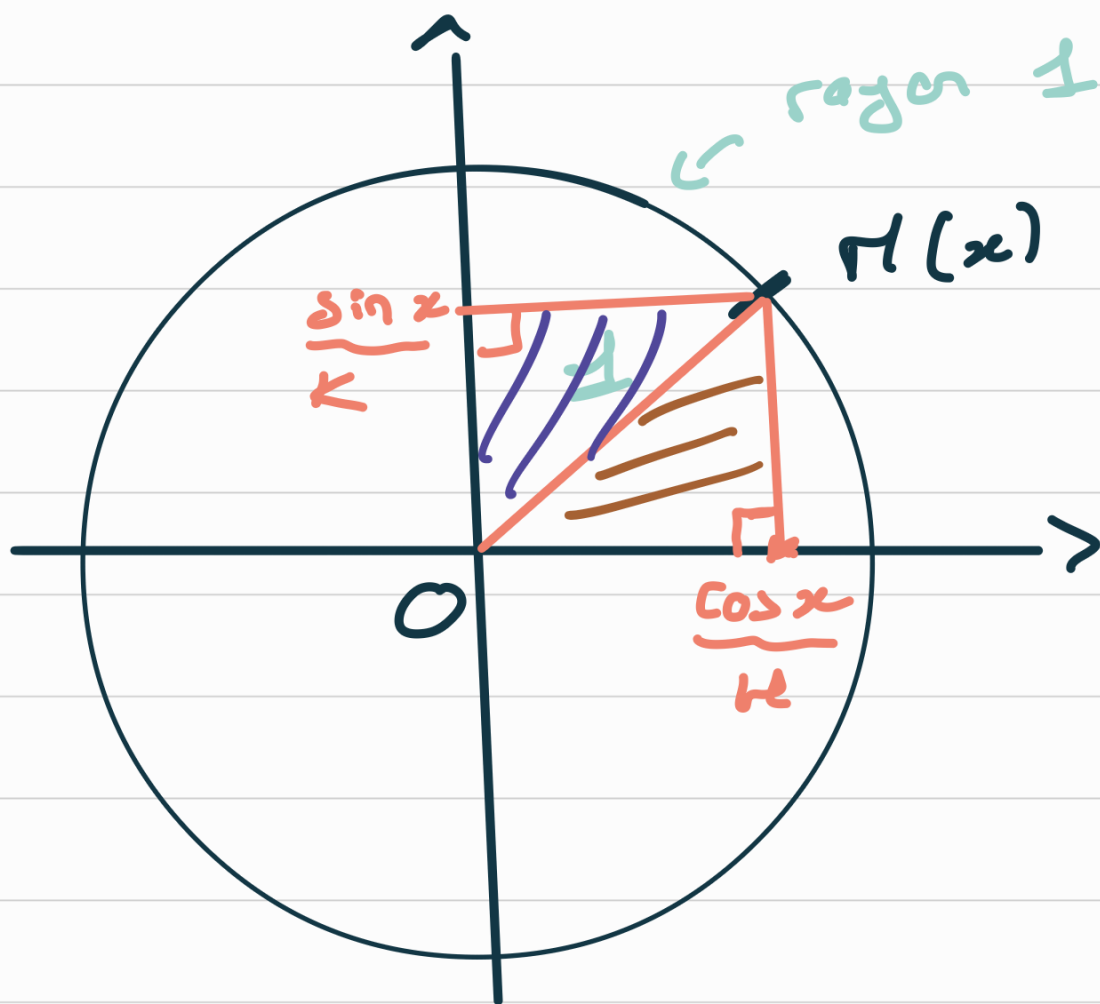
$$2\pi \text{ rad} = 360^\circ$$

Exemple : Combien vaut  
en degré  $\frac{4\pi}{5}$  .

|                  |             |
|------------------|-------------|
| $2\pi$           | $360^\circ$ |
| $\frac{4\pi}{5}$ | $144^\circ$ |

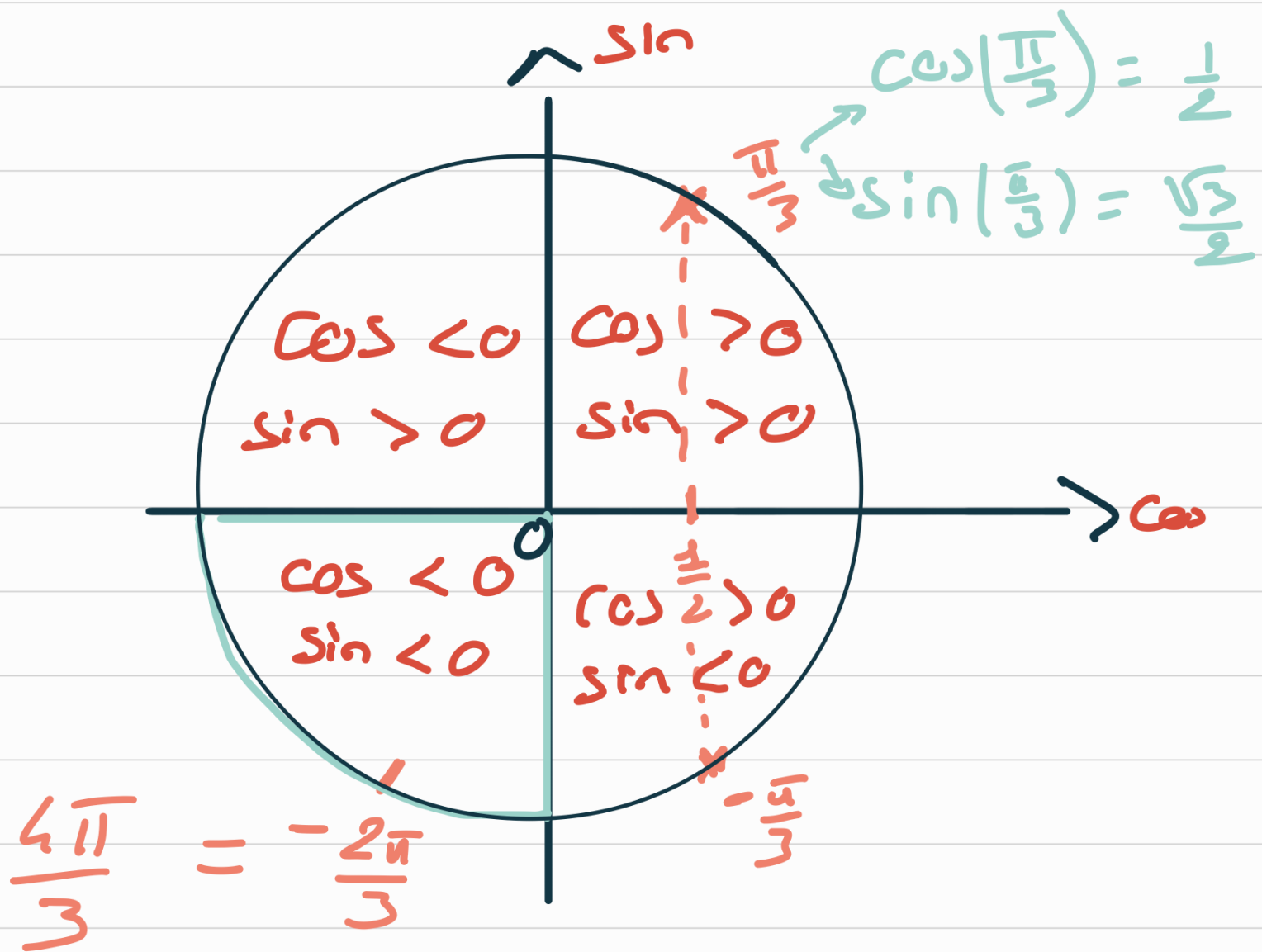
$$\frac{360 \times \frac{4\pi}{5}}{2\pi} = \frac{360 \times 2}{5}$$

$$= \frac{36 \times 2 \times 2}{1} \\ = 144$$



$$\cos(x) = \frac{OH}{OM}$$

$$\sin(x) = \frac{OK}{OM}$$



① Placer le point  $-\frac{2\pi}{3}$

② se rappeler des valeurs remarquables.

③ regarder dans quel quadrant on se trouve.

$$\text{done: } \begin{cases} \cos\left(-\frac{2\pi}{3}\right) = -\frac{1}{2} \\ \sin\left(-\frac{2\pi}{3}\right) = -\frac{\sqrt{3}}{2} \end{cases}$$


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$$\begin{aligned} & \cos\left(-\frac{2\pi}{3}\right) \\ &= \cos\left(\frac{4\pi}{3}\right) \\ & \quad \frac{4}{3} = \frac{1}{3} + \frac{3}{3} \quad \swarrow \\ &= \cos\left(\frac{\pi}{3} + \frac{\cancel{3\pi}}{\cancel{3}}\right) \\ &= \cos\left(\frac{\pi}{3} + \pi\right) \\ &= -\cos\left(\frac{\pi}{3}\right) = -\frac{1}{2} \end{aligned}$$

$$\begin{cases} \sin\left(-\frac{2\pi}{3}\right) \\ = \sin\left(\frac{4\pi}{3}\right) \\ = \sin\left(\frac{\pi}{3} + \frac{3\pi}{3}\right) \\ = \sin\left(\frac{\pi}{3} + \pi\right) \\ = -\sin\left(\frac{\pi}{3}\right) \\ = -\frac{\sqrt{3}}{2} \end{cases}$$

résoudre sur  $] -\pi ; \pi ]$

↳ solution soit entre  $-1$  et  $1$  sans les  $\pi$

$$\Rightarrow -\frac{\pi}{3} \checkmark \quad \frac{\pi}{4} \checkmark \quad \frac{5\pi}{4} \times$$
$$\Downarrow$$
$$-\frac{3\pi}{4} \checkmark$$

résoudre sur  $[0 ; 2\pi[$

↳ pas de négatif

$$-\frac{\pi}{3} \times \Rightarrow \frac{5\pi}{3} \checkmark$$

résoudre sur  $\mathbb{R}$

$$\hookrightarrow \frac{\pi}{3} + 2k\pi, \quad k \in \mathbb{Z}.$$

- $\sqrt{2} \cos(x) + 1 = 0$

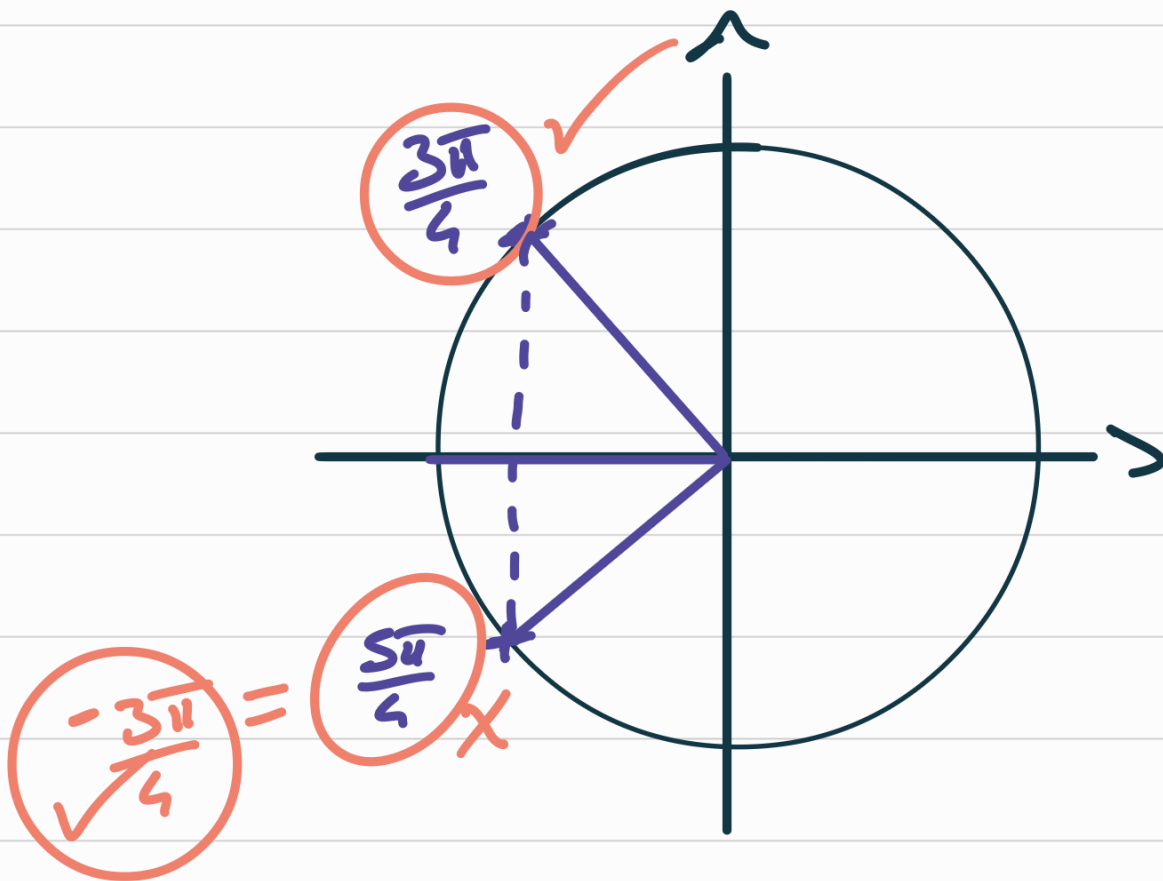
$$\sqrt{2} \cos(x) = -1$$

$$\cos(x) = -\frac{1}{\sqrt{2}}$$



$$\frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

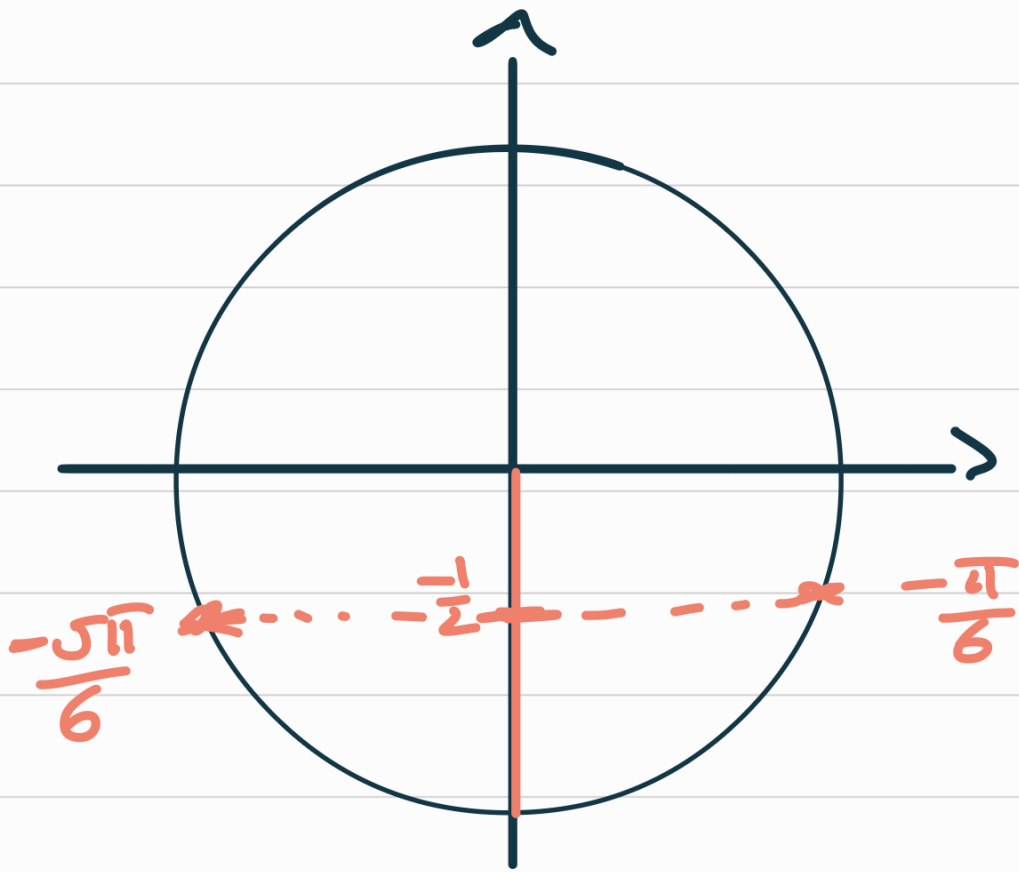
$$= -\frac{\sqrt{2}}{2}$$



donc  $\mathcal{S} = \left\{ \frac{3\pi}{4} ; -\frac{3\pi}{4} \right\}$ .

- $\sin(x) + 1 = 0$

$$\sin(x) = -\frac{1}{2}$$



donc  $\mathcal{S} = \left\{ -\frac{\pi}{6} ; -\frac{5\pi}{6} \right\}$