

# Trigonometrie

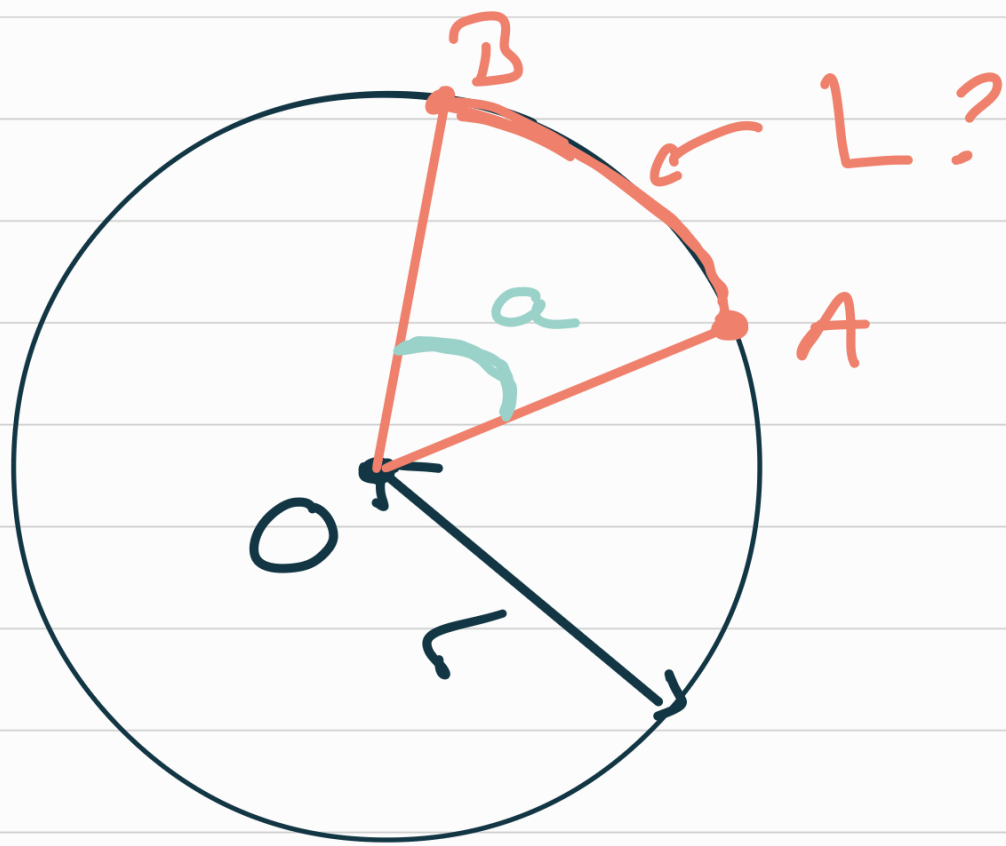
•  $360^\circ = 2\pi$  ♥

↪ passer de degré à radian  
ou de radian de degré.

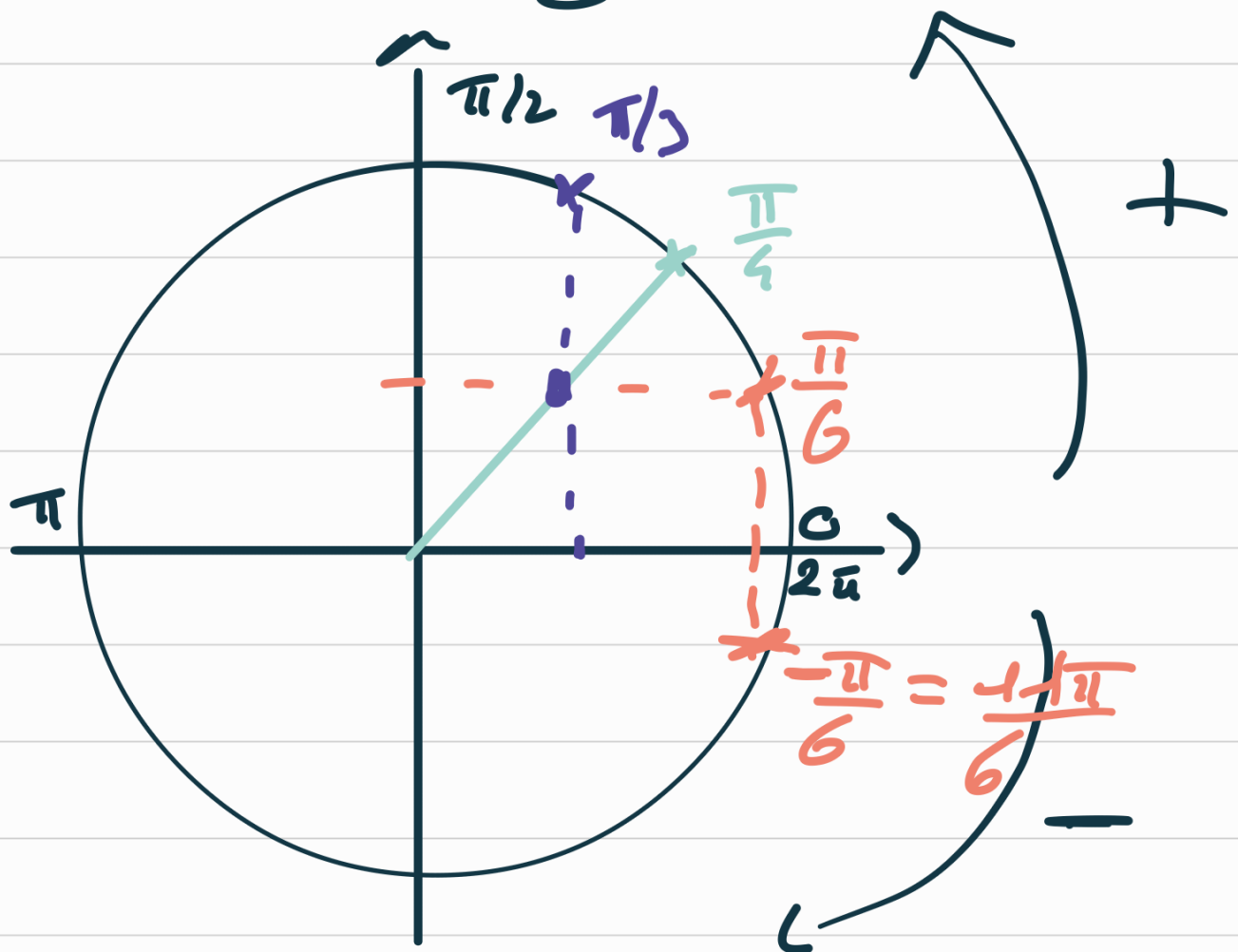
$$\frac{360^\circ}{148^\circ} = \frac{2\pi}{\frac{37\pi}{45}}$$

• calculer la longueur  
d'un arc de cercle :

$$L = r \times \frac{\pi \times a}{180}$$
 ♥



• cercle trigonométrique :

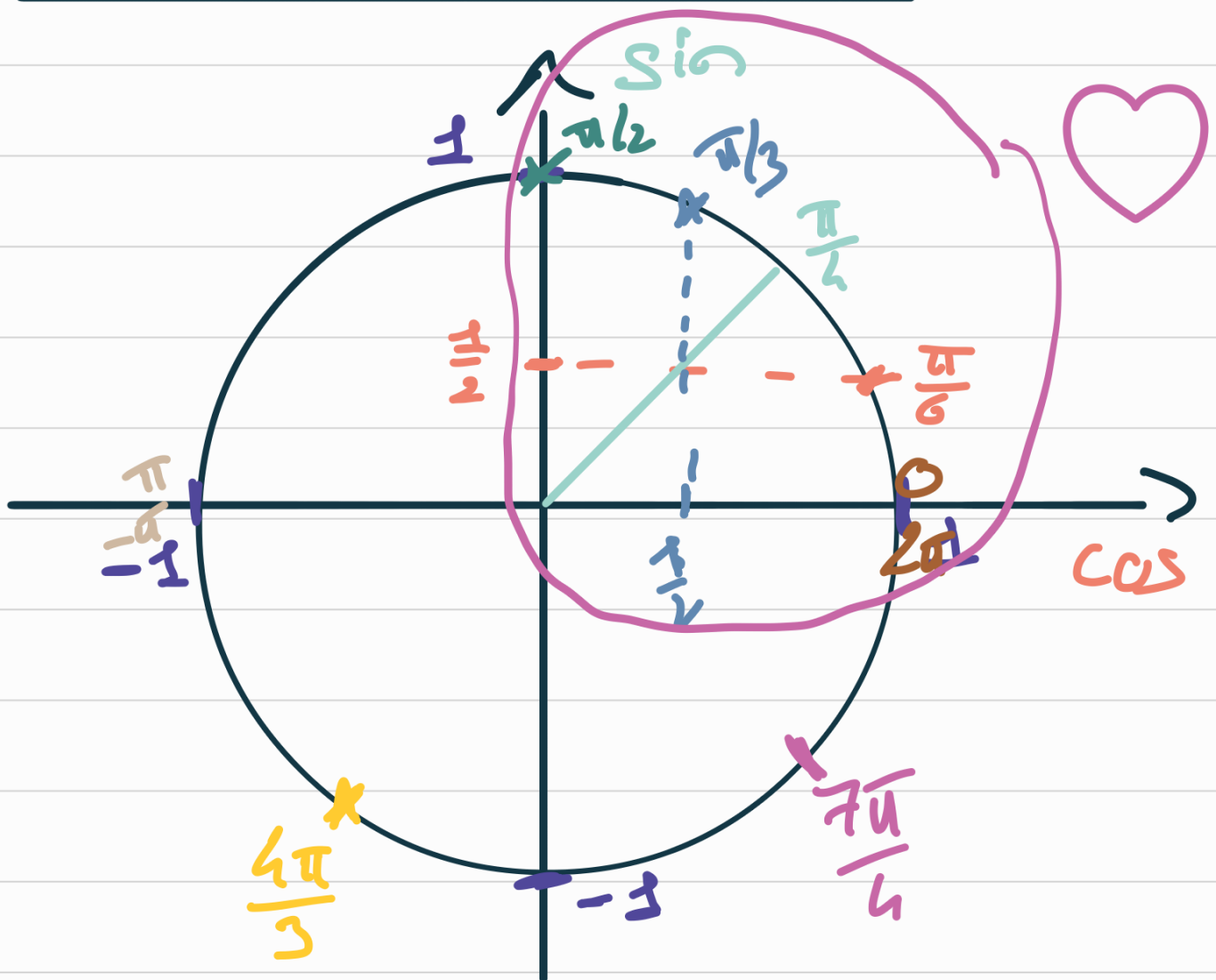


$$\frac{-\pi}{6} \in ]-\pi; \pi]$$

$$\frac{11\pi}{6} \in [0; 2\pi[$$



## • Cosinus et sinus



$$-1 \leq \cos(x) \leq 1$$

$$-1 \leq \sin(x) \leq 1$$

$$\cos^2(x) + \sin^2(x) = 1$$

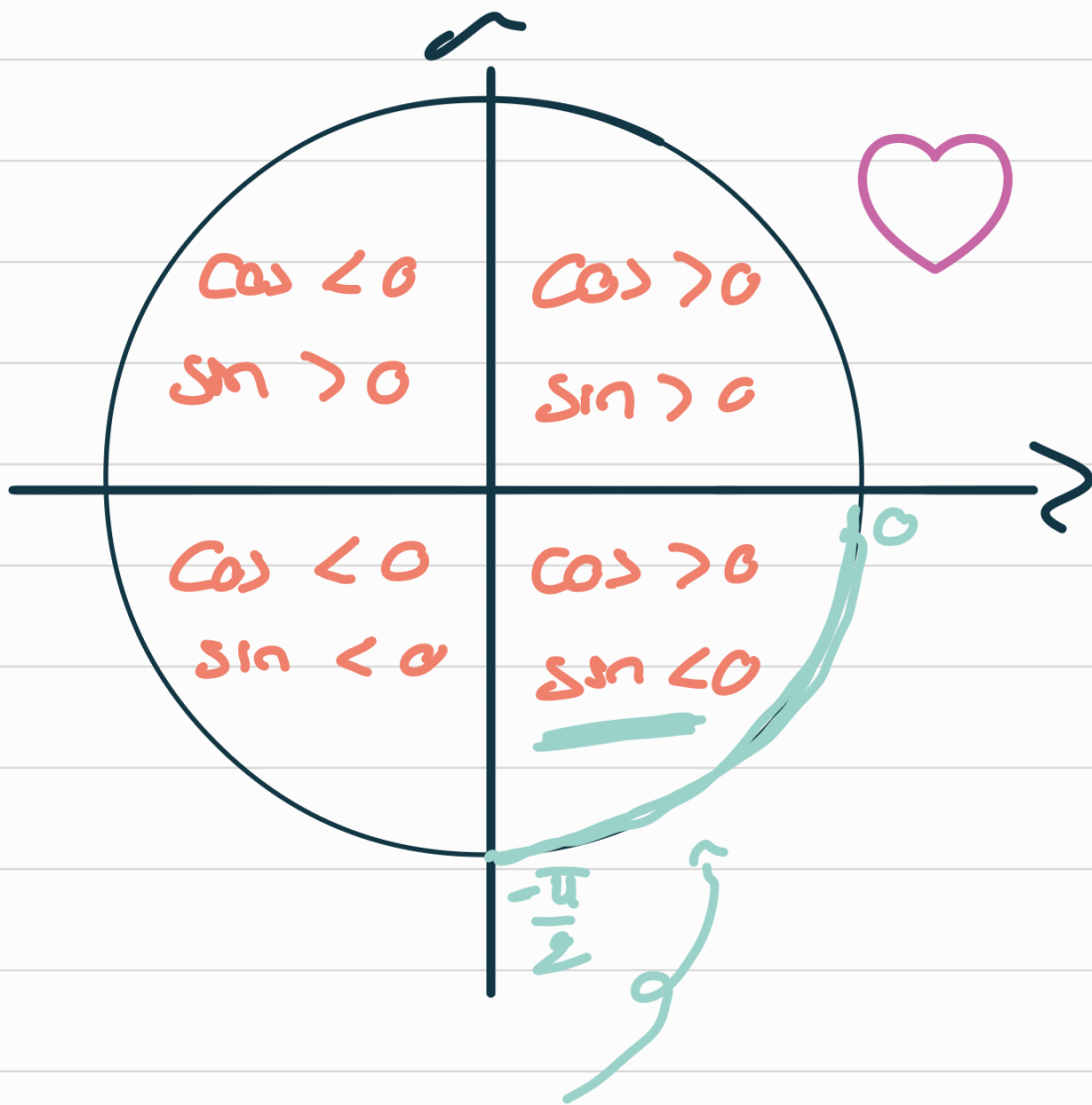


| $x$    | $0 / 2\pi$ | $\frac{\pi}{6}$      | $\frac{\pi}{4}$      | $\frac{\pi}{3}$      | $\frac{\pi}{2}$ | $-\pi / \pi$ |
|--------|------------|----------------------|----------------------|----------------------|-----------------|--------------|
| $\cos$ | 1          | $\frac{\sqrt{3}}{2}$ | $\frac{\sqrt{2}}{2}$ | $\frac{1}{2}$        | 0               | -1           |
| $\sin$ | 0          | $\frac{1}{2}$        | $\frac{\sqrt{2}}{2}$ | $\frac{\sqrt{3}}{2}$ | 1               | 0            |



Donner la valeur de

$$\cos\left(\frac{4\pi}{3}\right) = -\frac{1}{2} \quad \sin\left(\frac{7\pi}{4}\right) = -\frac{\sqrt{2}}{2}$$



Soit  $x \in \left[-\frac{\pi}{2}, 0\right]$ ,  $\cos(x) = \frac{1}{3}$

Calculer  $\sin(x)$ .

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$$\forall x \in \mathbb{R}, \cos^2(x) + \sin^2(x) = 1$$

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

$$\frac{1}{9} + \sin^2(x) = 1$$

$$\sin^2(x) = 1 - \frac{1}{9}$$

$$\sin^2(x) = \frac{9}{9} - \frac{1}{9} = \frac{8}{9}.$$

$$\text{d'où } \sin(x) = \sqrt{\frac{8}{9}} \text{ ou } \sin(x) = -\sqrt{\frac{8}{9}}$$

$$\text{or } x \in \left[-\frac{\pi}{2}, 0\right], \text{ donc } \sin(x) \leq 0.$$

$$\text{Donc } \sin(x) = -\sqrt{\frac{8}{9}} = -\frac{2\sqrt{2}}{3}$$