

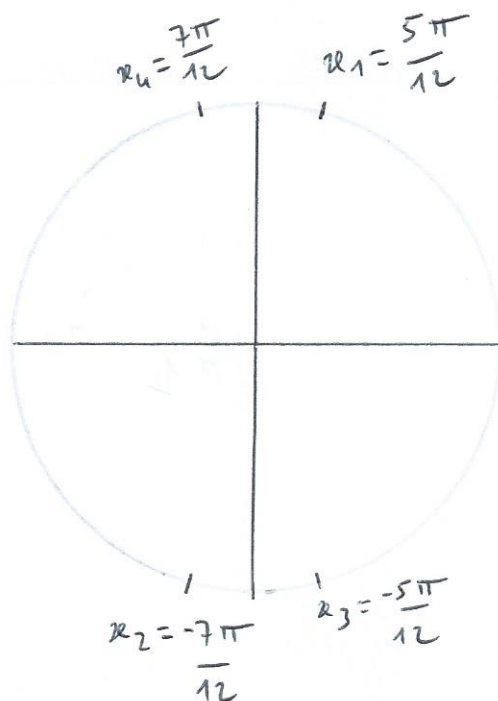
Exercice 6

$$\textcircled{1} \quad a) \quad \cos x = -\frac{\sqrt{3}}{2} \quad \Leftrightarrow \quad \cos x = \cos \frac{5\pi}{6} \quad \Leftrightarrow \quad \begin{cases} x = \frac{5\pi}{6} + 2k\pi \quad k \in \mathbb{Z} \\ \text{ou} \\ x = -\frac{5\pi}{6} + 2k\pi \quad k \in \mathbb{Z} \end{cases}$$

$$\text{Donc } S = \left\{ \frac{5\pi}{6} + 2k\pi \text{ avec } k \in \mathbb{Z}; \quad -\frac{5\pi}{6} + 2k\pi \quad k \in \mathbb{Z} \right\}$$

$$b) \quad \cos(2x) = -\frac{\sqrt{3}}{2} \quad \Leftrightarrow \quad \cos 2x = \cos \frac{5\pi}{6} \quad \Leftrightarrow \quad \begin{cases} 2x = \frac{5\pi}{6} + 2k\pi \quad k \in \mathbb{Z} \\ \text{ou} \\ 2x = -\frac{5\pi}{6} + 2k\pi \quad k \in \mathbb{Z} \end{cases}$$

$$\Leftrightarrow \begin{cases} x = \frac{5\pi}{12} + k\pi \quad k \in \mathbb{Z} \quad (x_1 \text{ et } x_2) \\ \text{ou} \\ x = -\frac{5\pi}{12} + k\pi \quad k \in \mathbb{Z} \quad (x_3 \text{ et } x_4). \end{cases}$$



$$\textcircled{2} \quad 2x^3 + x^2 - x = 0 \quad \Leftrightarrow \quad x(2x^2 + x - 1) = 0 \quad \Leftrightarrow \quad x(2x - 1)(x + 1) = 0$$

$$\Leftrightarrow \quad x = 0 \quad \text{ou} \quad x = 1/2 \quad \text{ou} \quad x = -1$$

$$\text{Donc } S = \{-1; 0; 1/2\}$$

b) on pose  $y = \cos x$

Donc  $2 \cos^3 x + \cos^2 x - \cos x = 0 \Leftrightarrow 2y^3 + y^2 - y = 0$

$\Leftrightarrow y = 0$  ou  $y = -1$  ou  $y = 1/2$

$\Leftrightarrow \cos x = 0$  ou  $\cos x = -1$  ou  $\cos x = 1/2$

$\cos x = 0 \Leftrightarrow x = -\pi/2$  ou  $x = \pi/2$

$\cos x = -1 \Leftrightarrow x = \pi$

$\cos x = 1/2 \Leftrightarrow x = \pi/3$  ou  $x = -\pi/3$

$x_1 = -\pi/2$  ;  $x_2 = -\pi/3$  ;  $x_3 = \pi/3$  ;  $x_4 = \pi/2$  ;  $x_5 = \pi$

