

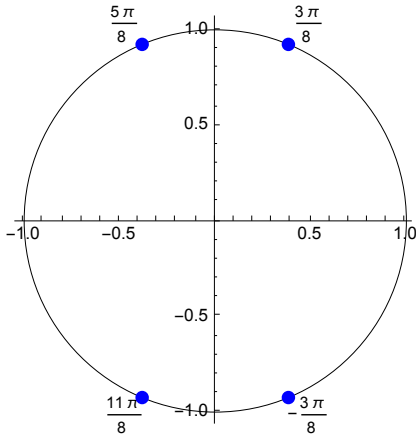
Equations trigonométriques - Exercices

Résoudre dans \mathbb{R}

• $\sqrt{2} \cos(2x) + 1 = 0$

$$\cos(2x) = -\frac{1}{\sqrt{2}} \iff \cos(2x) = \cos\left(\frac{3\pi}{4}\right)$$

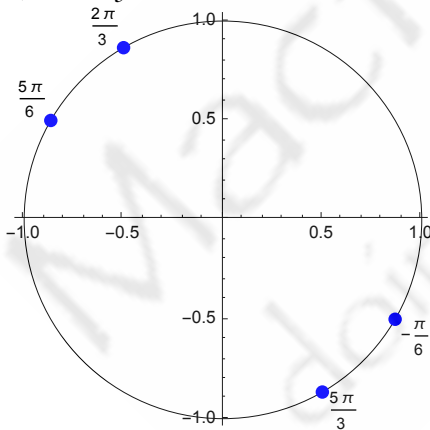
$$\begin{cases} 2x = \frac{3\pi}{4} + 2k\pi & (1) \\ 2x = -\frac{3\pi}{4} + 2k\pi & (2) \end{cases} \iff \begin{cases} x = \frac{3\pi}{8} + k\pi & (1) \\ x = -\frac{3\pi}{8} + k\pi & (2) \end{cases} \quad (k \in \mathbb{Z})$$



• $2 \sin(2x) + \sqrt{3} = 0$

$$\sin(2x) = -\frac{\sqrt{3}}{2} \iff \sin(2x) = \sin\left(-\frac{\pi}{3}\right)$$

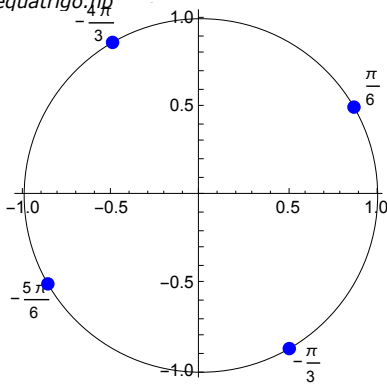
$$\begin{cases} 2x = -\frac{\pi}{3} + 2k\pi & (1) \\ 2x = \frac{4\pi}{3} + 2k\pi & (2) \end{cases} \iff \begin{cases} x = -\frac{\pi}{6} + k\pi & (1) \\ x = \frac{2\pi}{3} + k\pi & (2) \end{cases} \quad (k \in \mathbb{Z})$$



• $\text{tg}\left(2x + \frac{\pi}{3}\right) + \sqrt{3} = 0$

$$\text{tg}\left(\frac{\pi}{3} + 2x\right) = -\sqrt{3} \iff \text{tg}\left(\frac{\pi}{3} + 2x\right) = \text{tg}\left(-\frac{\pi}{3}\right)$$

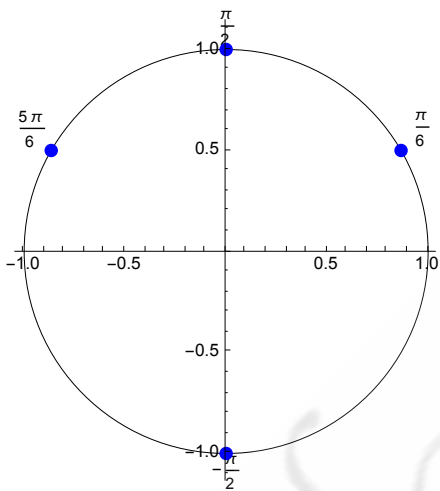
$$\frac{\pi}{3} + 2x = -\frac{\pi}{3} + k\pi \iff x = -\frac{\pi}{3} + \frac{k\pi}{2} \quad (k \in \mathbb{Z})$$



- $\cos(x) = \sin(2x)$

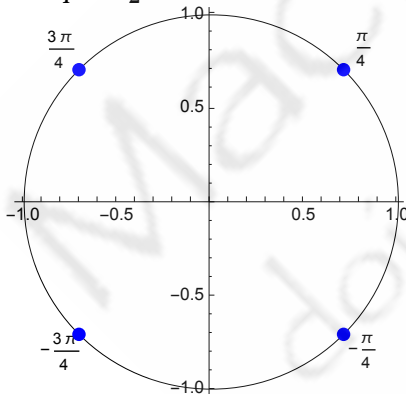
$$\cos(x) = \cos\left(\frac{\pi}{2} - 2x\right)$$

$$\begin{cases} x = \frac{\pi}{2} - 2x + 2k\pi & (1) \\ x = 2x - \frac{\pi}{2} + 2k\pi & (2) \end{cases} \Leftrightarrow \begin{cases} x = \frac{\pi}{6} + \frac{2k\pi}{3} & (1) \\ x = \frac{\pi}{2} - 2k\pi & (2) \end{cases} \quad (k \in \mathbb{Z})$$



- $2 \cos^2(x) - 1 = 0$

$$x = \frac{\pi}{4} + k \frac{\pi}{2}$$

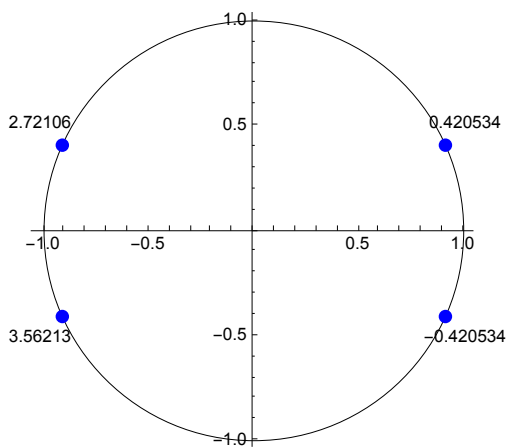


- $3 \cos(2x) - 2 = 0$

$$\cos(2x) = \frac{2}{3}$$

$$\begin{cases} 2x = 0.841069 + 2k\pi \\ 2x = 0.841069 + 2k\pi \end{cases}$$

$$\begin{cases} x = 0.420534 + k\pi \\ x = -0.420534 + k\pi \end{cases}$$

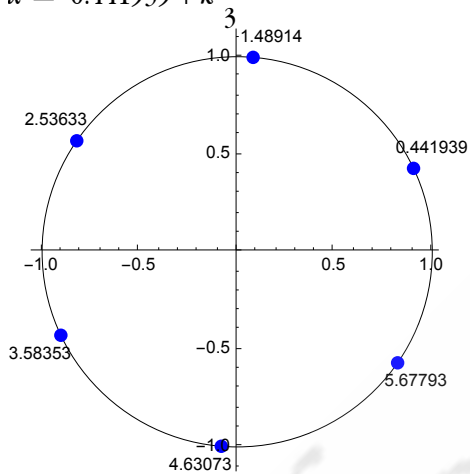


• $\text{tg}(3x) - 4 = 0$

$\text{tg}(3x) = \text{tg}(1.32582)$

$3x = 1.32582 + k\pi$

$x = 0.441939 + k \frac{\pi}{3}$



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