

ESEMPIO (OMOGENEES DI 2° GRADO)

$$\sqrt{3} \operatorname{sen}^2 x + 2 \operatorname{sen} x \cos x - \sqrt{3} \cos^2 x - \sqrt{3} = 0$$

la riconduco ad omogenea moltiplicando $-\sqrt{3}$ per $1 = \operatorname{sen}^2 x + \cos^2 x$

$$\sqrt{3} \operatorname{sen}^2 x + 2 \operatorname{sen} x \cos x - \sqrt{3} \cos^2 x - \sqrt{3} \operatorname{sen}^2 x - \sqrt{3} \cos^2 x = 0$$

$$\cos x (2 \operatorname{sen} x - 2\sqrt{3} \cos x) = 0$$

$$\cos x = 0 \quad \boxed{x = \frac{\pi}{2} + k\pi \quad k \in \mathbb{N}}$$

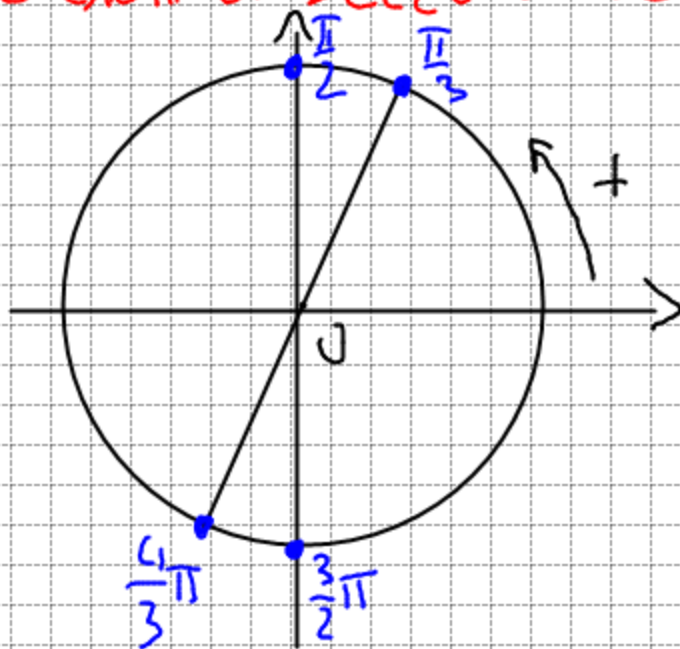
$$2(\operatorname{sen} x - \sqrt{3} \cos x) = 0 \quad \operatorname{sen} x - \sqrt{3} \cos x = 0$$

pongo $\cos x \neq 0$ e divido per $\cos x$:

$$\operatorname{tg} x - \sqrt{3} = 0 \quad \operatorname{tg} x = \sqrt{3} \quad \boxed{x = \frac{\pi}{3} + k\pi \quad k \in \mathbb{N}}$$

se $\cos x = 0 \Rightarrow x = \frac{\pi}{2} + k\pi \quad k \in \mathbb{N} \Rightarrow \pm 1 = 0$ NO!

INTERPRETAZIONE GRAFICA DELLE SOLUZIONI



SISTEMI GONIOMETRICI

2/3

$$\begin{cases} x+y = \frac{\pi}{2} \\ \sin x + \cos y = 1 \end{cases}$$

$$\begin{cases} y = \frac{\pi}{2} - x \\ \sin x + \cos\left(\frac{\pi}{2} - x\right) = 1 \end{cases}$$

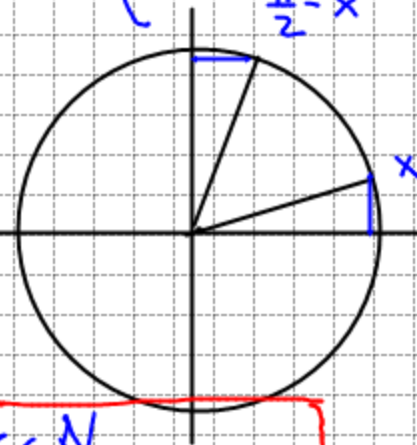
$$\begin{cases} y = \frac{\pi}{2} - x \\ \sin x + \sin x = 1 \end{cases}$$

$$\begin{cases} y = \frac{\pi}{2} - x \\ 2\sin x = 1 \end{cases}$$

$$\begin{cases} y = \frac{\pi}{2} - x \\ \sin x = \frac{1}{2} \end{cases}$$

$$x = \frac{\pi}{6} + 2k\pi \quad k \in \mathbb{N}$$

$$x_2 = \frac{5\pi}{6} + 2k\pi \quad k \in \mathbb{N}$$



$$\begin{cases} x = \frac{\pi}{6} + 2k\pi \quad k \in \mathbb{N} \\ y = \frac{\pi}{2} - \frac{\pi}{6} - 2k\pi \quad k \in \mathbb{N} \end{cases} \Rightarrow$$

$$\begin{cases} x = \frac{\pi}{6} + 2k\pi \quad k \in \mathbb{N} \\ y = \frac{1}{3}\pi - 2k\pi \quad k \in \mathbb{N} \end{cases}$$

\Rightarrow

$$\begin{cases} x = \frac{\pi}{6} + 2k\pi \quad k \in \mathbb{N} \\ y = \frac{1}{3}\pi - 2k\pi \quad k \in \mathbb{N} \end{cases}$$

$$\begin{cases} x = \frac{5\pi}{6} + 2k\pi \quad k \in \mathbb{N} \\ y = \frac{\pi}{2} - \frac{5\pi}{6} - 2k\pi \quad k \in \mathbb{N} \end{cases} \Rightarrow$$

$$\begin{cases} x = \frac{5\pi}{6} + 2k\pi \quad k \in \mathbb{N} \\ y = -\frac{1}{3}\pi - 2k\pi \quad k \in \mathbb{N} \end{cases}$$

\Rightarrow

$$\begin{cases} x = \frac{5\pi}{6} + 2k\pi \quad k \in \mathbb{N} \\ y = -\frac{1}{3}\pi - 2k\pi \quad k \in \mathbb{N} \end{cases}$$

SOLUZIONI

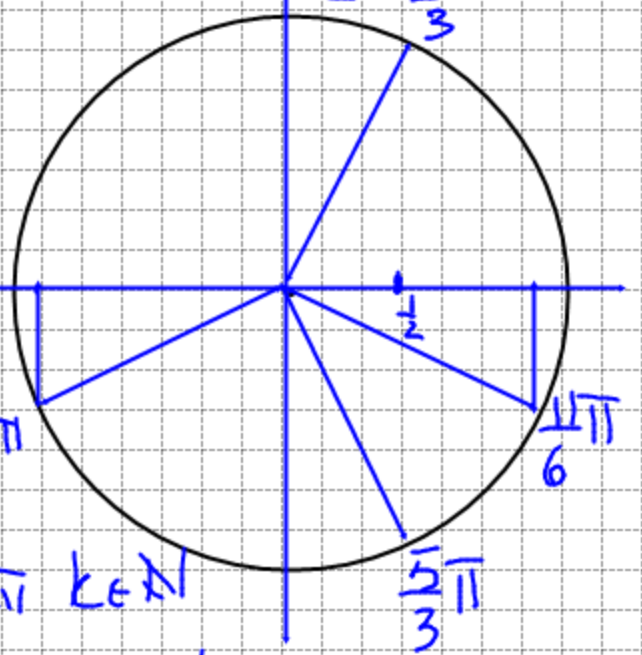
ESEMPIO

$$\begin{cases} \cos y - \sin x = 1 \\ 4 \sin x \cos y + 1 = 0 \end{cases} \quad \begin{cases} \cos y = 1 + \sin x \\ 4 \sin x (1 + \sin x) + 1 = 0 \end{cases} \quad \begin{cases} \cos y = 1 + \sin x \\ 4 \sin x + 4 \sin^2 x + 1 = 0 \end{cases}$$

$$\begin{cases} \cos y = 1 + \sin x \\ (2 \sin x + 1)^2 = 0 \end{cases} \quad \begin{cases} \cos y = 1 + \sin x \\ 2 \sin x + 1 = 0 \end{cases} \quad \begin{cases} \cos y = 1 + \sin x \\ \sin x = -\frac{1}{2} \end{cases}$$

$$\begin{cases} \cos y = 1 - \frac{1}{2} \\ x_2 = \frac{11}{6}\pi + 2k\pi \quad k \in \mathbb{N} \\ x_1 = \frac{7}{6}\pi + 2k\pi \quad k \in \mathbb{N} \end{cases}$$

$$\begin{cases} \cos y = \frac{1}{2} \\ x_1 = \frac{7}{6}\pi + 2k\pi \quad k \in \mathbb{N} \\ x_2 = \frac{11}{6}\pi + 2k\pi \quad k \in \mathbb{N} \end{cases}$$



$$\begin{cases} y_1 = \frac{\pi}{3} + 2k\pi \quad k \in \mathbb{N} \\ y_2 = \frac{5}{3}\pi + 2k\pi \quad k \in \mathbb{N} \\ x_1 = \frac{7}{6}\pi + 2k\pi \quad k \in \mathbb{N} \\ x_2 = \frac{11}{6}\pi + 2k\pi \quad k \in \mathbb{N} \end{cases}$$

$$\begin{cases} * x = \frac{7}{6}\pi + 2k\pi \quad k \in \mathbb{N} \\ y = \frac{\pi}{3} + 2k\pi \quad k \in \mathbb{N} \\ * x = \frac{7}{6}\pi + 2k\pi \quad k \in \mathbb{N} \\ y = \frac{5}{3}\pi + 2k\pi \quad k \in \mathbb{N} \end{cases}$$

* Solutioni

$$* \begin{cases} x = \frac{11}{6}\pi + 2k\pi \quad k \in \mathbb{N} \\ y = \frac{\pi}{3} + 2k\pi \quad k \in \mathbb{N} \end{cases}$$

$$* \begin{cases} x = \frac{11}{6}\pi + 2k\pi \quad k \in \mathbb{N} \\ y = \frac{5}{3}\pi + 2k\pi \quad k \in \mathbb{N} \end{cases}$$