131

$$\frac{\cos\left(\frac{9}{2}\pi+\alpha\right)+\sin(-\pi+\alpha)+\cos(\alpha-5\pi)}{2\cos\left(\frac{\pi}{2}+2\alpha\right)+\sin\left(\frac{3}{2}\pi-\alpha\right)+4}, \quad \text{con } \alpha=\frac{3}{2}\pi.$$

$$= \frac{\cos\left(\frac{9}{2}\pi+\frac{3}{2}\pi\right)+\sin\left(-\pi+\frac{9}{2}\pi\right)+\cos\left(\frac{3}{2}\pi-5\pi\right)}{2\cos\left(\frac{\pi}{2}+2\cdot\frac{3}{2}\pi\right)+\sin\left(\frac{3}{2}\pi-\frac{3}{2}\pi\right)+4} =$$

$$= \frac{\cos(6\pi)+\sin\left(\frac{\pi}{2}\right)+\cos\left(-\frac{7}{2}\pi\right)}{2\cos\left(\frac{4}{2}\pi\right)+4} =$$

$$= \frac{1+1+0}{0+4} =$$

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

GRAFICI DELLE FUNZIONI SENO E COSENO

$y = \sin x$ $\quad$ $y = \cos x$

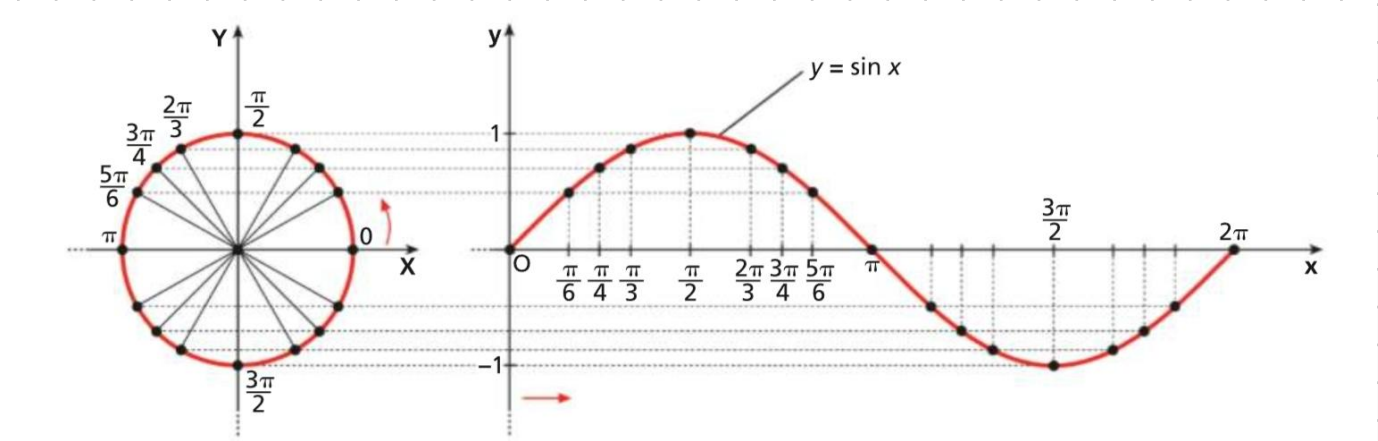
$\sin : \mathbb{R} \longrightarrow [-1, 1]$ $\quad$ $\cos : \mathbb{R} \longrightarrow [-1, 1]$

in ingresso x rappresenta la misura di un angolo in RADIANTI

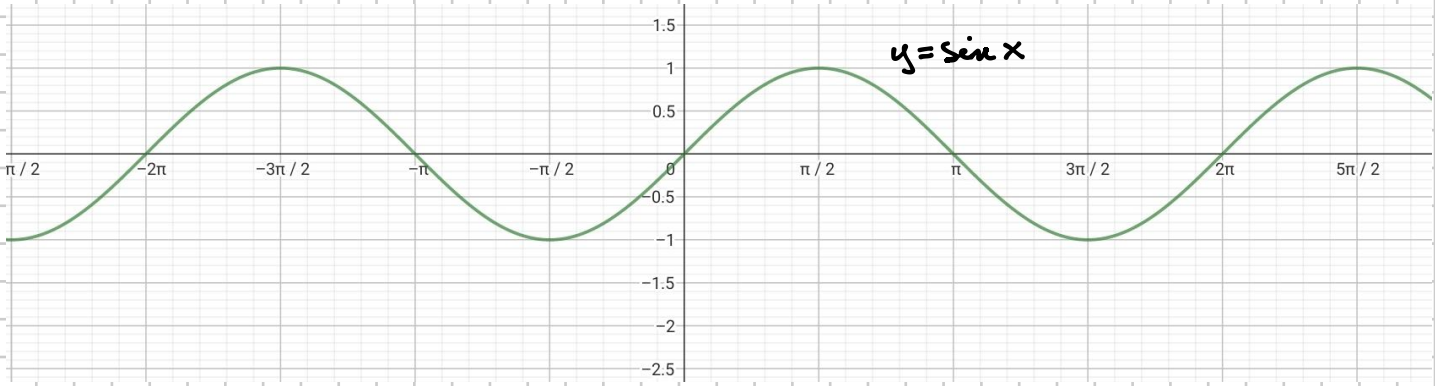
sin, cos sono FUNZIONI PERIODICHE di periodo 2π

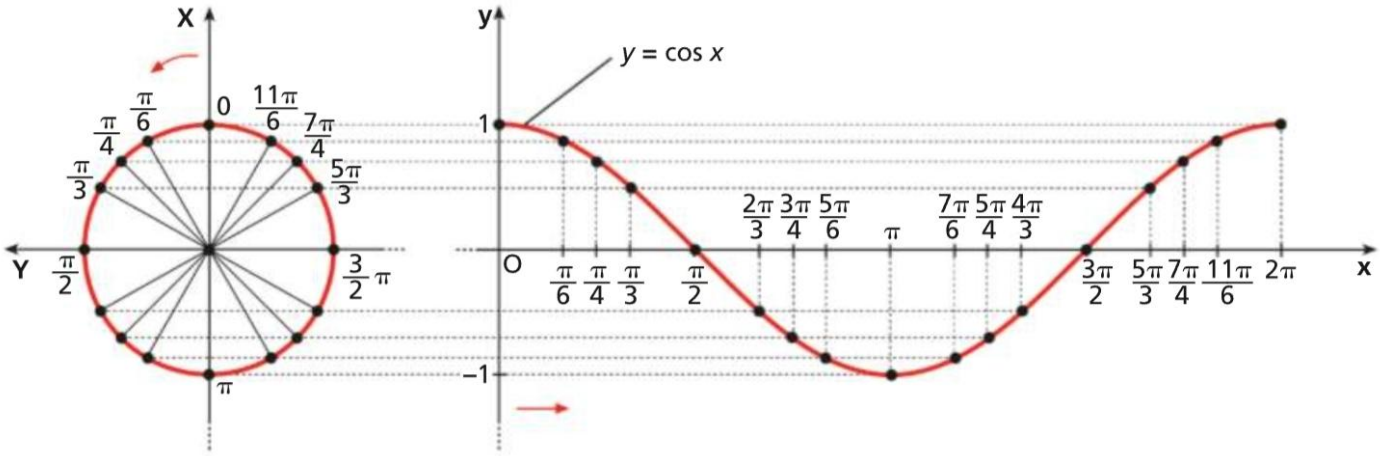
$k \in \mathbb{Z}$ $\quad$ $\sin(x + 2k\pi) = \sin x \quad \forall x \in \mathbb{R}$

$\cos(x + 2k\pi) = \cos x$

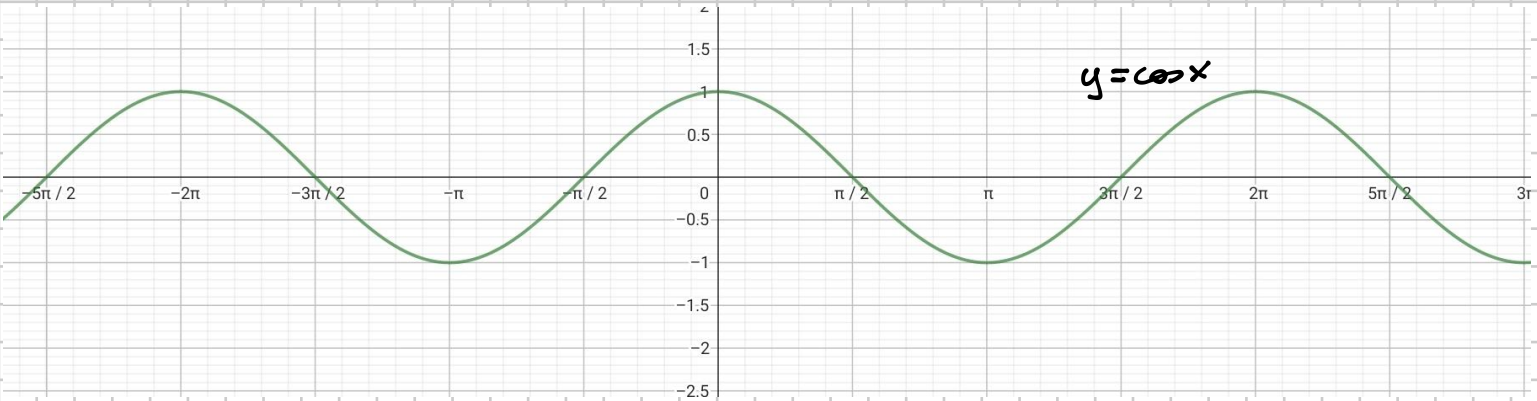


SINUSOIDE





COSINUSOIDE



Trova il dominio delle seguenti funzioni.

134 $y = \dfrac{\sqrt{1+\sin x}}{\cos x}$ $\left[x \neq \dfrac{\pi}{2} + k\pi\right]$ **135** $y = \dfrac{2}{\sin x}$ $[x \neq k\pi]$ **136** $y = \dfrac{1}{\sqrt{1-\cos x}}$ $[x \neq 2k\pi]$

$$y = \frac{\sqrt{1+\sin x}}{\cos x} \qquad \begin{cases} 1+\sin x \geq 0 \\ \cos x \neq 0 \end{cases} \qquad \begin{cases} \sin x \geq -1 \rightarrow \forall x \in \mathbb{R} \\ x \neq \frac{\pi}{2} + k\pi \end{cases}$$

$$D = \left\{ x \in \mathbb{R} \mid x \neq \tfrac{\pi}{2} + k\pi,\ k \in \mathbb{Z} \right\}$$

$$y = \frac{1}{\sin x} \qquad \sin x \neq 0 \qquad x \neq k\pi$$

$$D = \left\{ x \in \mathbb{R} \mid x \neq k\pi,\ k \in \mathbb{Z} \right\}$$

$$y = \frac{1}{\sqrt{1-\cos x}} \qquad \begin{cases} 1-\cos x \geq 0 \\ 1-\cos x \neq 0 \end{cases} \qquad \begin{cases} \cos x \leq 1 \rightarrow \forall x \in \mathbb{R} \\ \cos x \neq 1 \rightarrow x \neq 0 + 2k\pi \end{cases}$$

$$D = \left\{ x \in \mathbb{R} \mid x \neq 2k\pi,\ k \in \mathbb{Z} \right\}$$