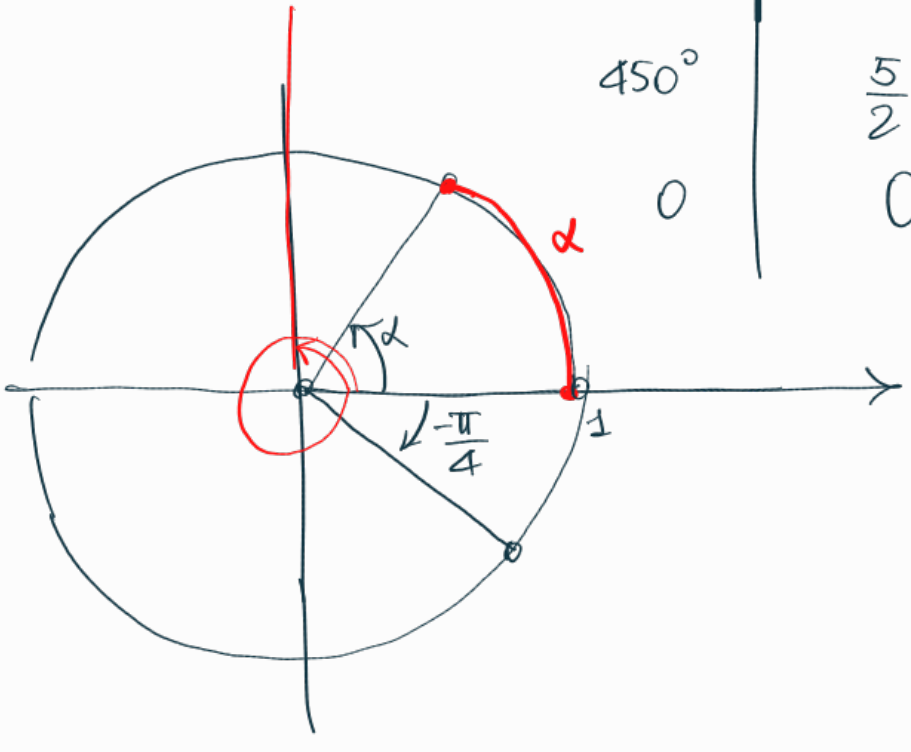
Misurazione degli angoli

	gradi sessagesimali	radianti	$\sin\alpha$	$\cos\alpha$
angolo giro	$360°$	2π	0	1
angolo piatto	$180°$	π	0	-1
angolo retto	$90°$	$\pi/2$	1	0
α	$60°$	$\pi/3$	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$
	$45°$	$\pi/4$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{2}}{2}$
	$30°$	$\pi/6$		
	$-45°$	$-\pi/4$		
	$450°$	$\frac{5}{2}\pi$		
	0	0	0	1

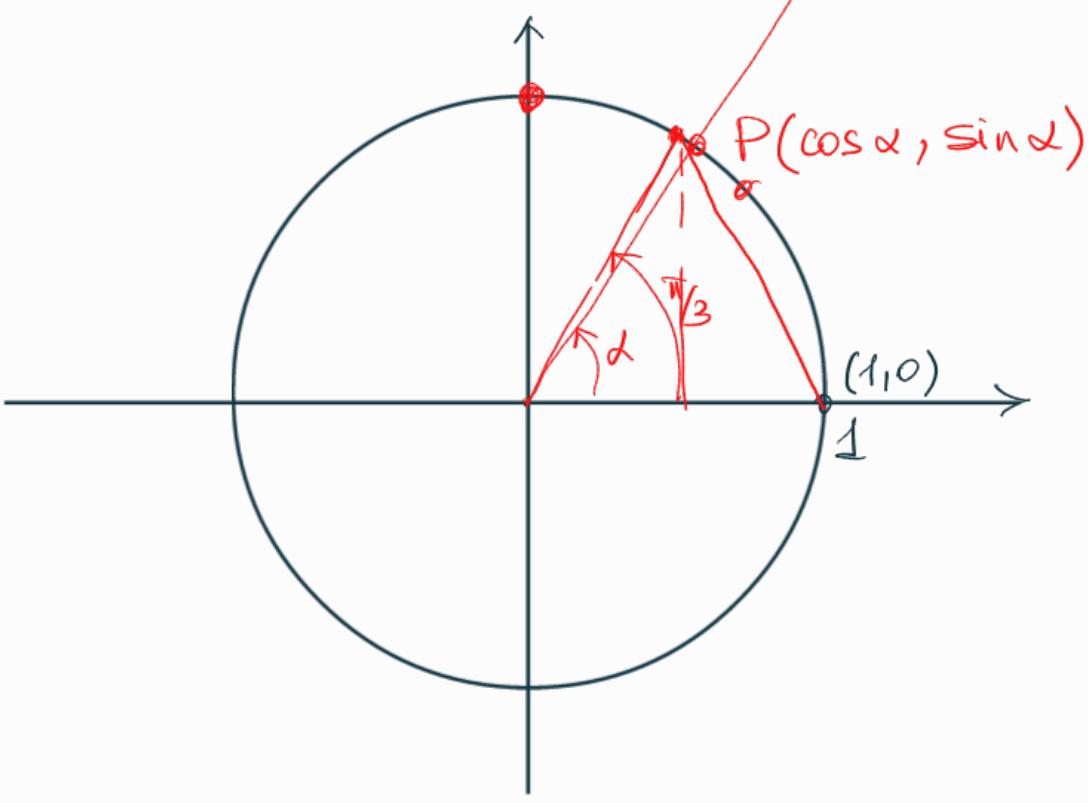


Uno dei principali vantaggi di usare i radianti è che

$D(\sin x) = \cos x$

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

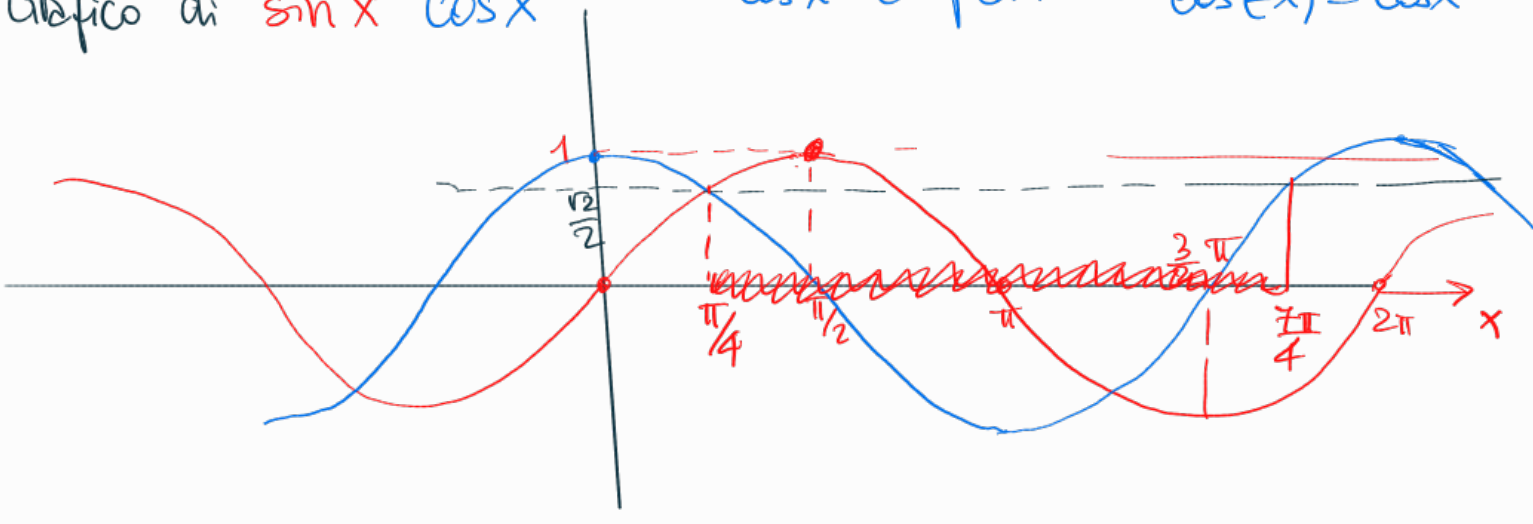
(altrimenti ci sarebbero delle costanti a moltiplicare)



$\sin x$ è dispari $\sin(-x) = -\sin x$

$\cos x$ è pari $\cos(-x) = \cos x$

Grafico di $\sin x$ $\cos x$

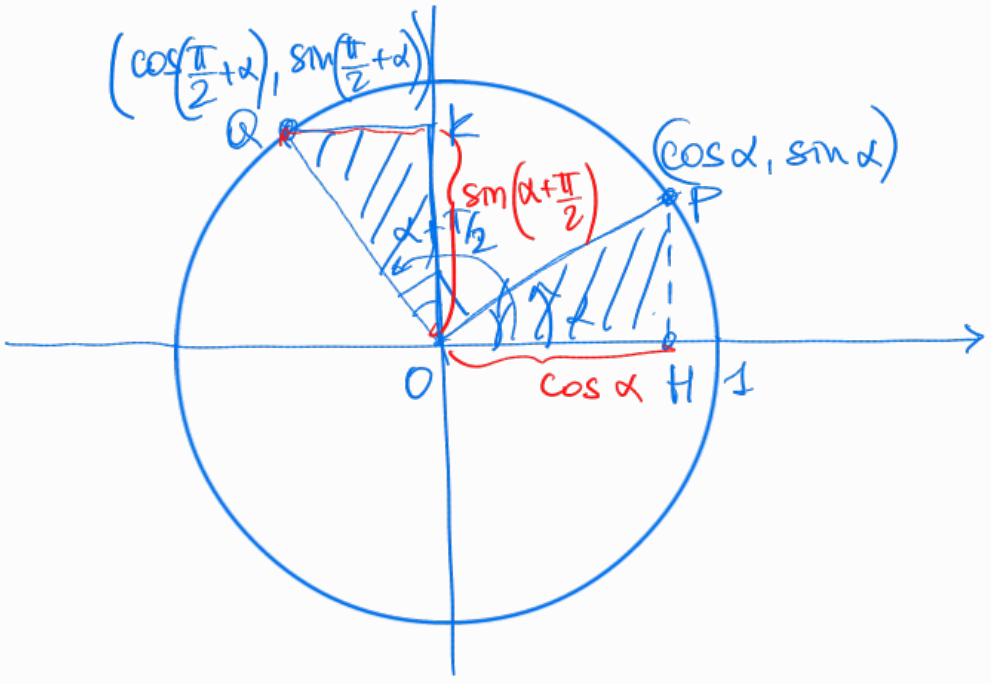


$\sin(x+2\pi) = \sin x \quad \forall x \in \mathbb{R}$ funzione periodica di periodo 2π

$$\boxed{\cos x = \sin\left(x+\frac{\pi}{2}\right)} \quad \forall x \in \mathbb{R}$$

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

Quindi i grafici di $\cos x$ e $\sin x$ sono ottenuti uno dall'altro per traslazione.



Identità fondamentale della trigonometria

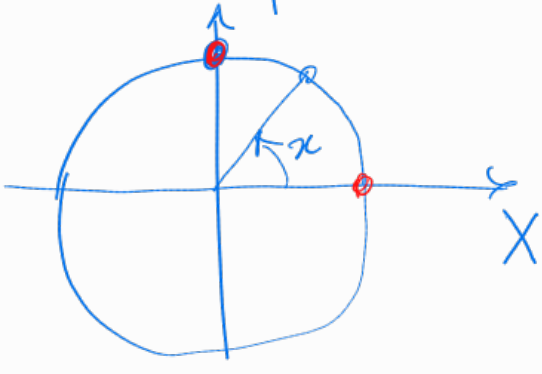
$$\sin^2 x + \cos^2 x = 1 \qquad \forall x \in \mathbb{R}.$$

$$\cos x = \pm\sqrt{1-\sin^2 x}$$

$$\sin x = \pm\sqrt{1-\cos^2 x}$$

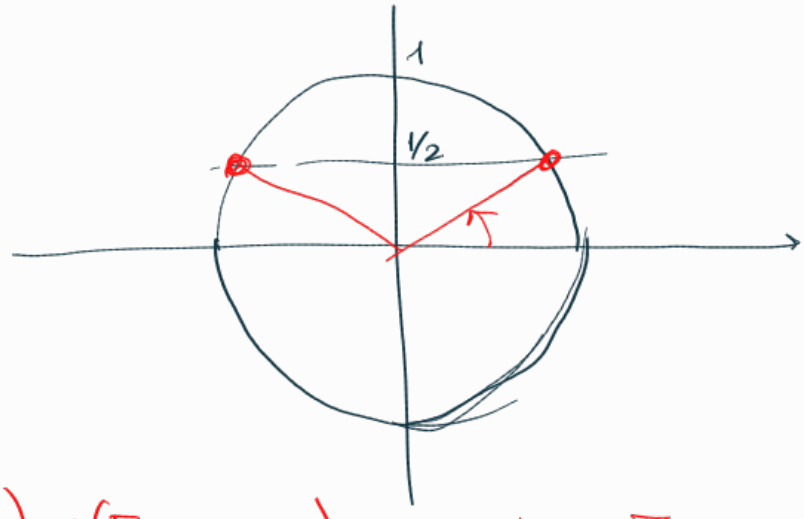
Equazioni e disequ trigonometriche

$\sin x = 1$ $\Longleftrightarrow$ $x = \frac{\pi}{2} + 2k\pi \quad (k \in \mathbb{Z})$



$\cos x = 1 \iff x = 0 + 2k\pi = 2k\pi \quad (k \in \mathbb{Z})$

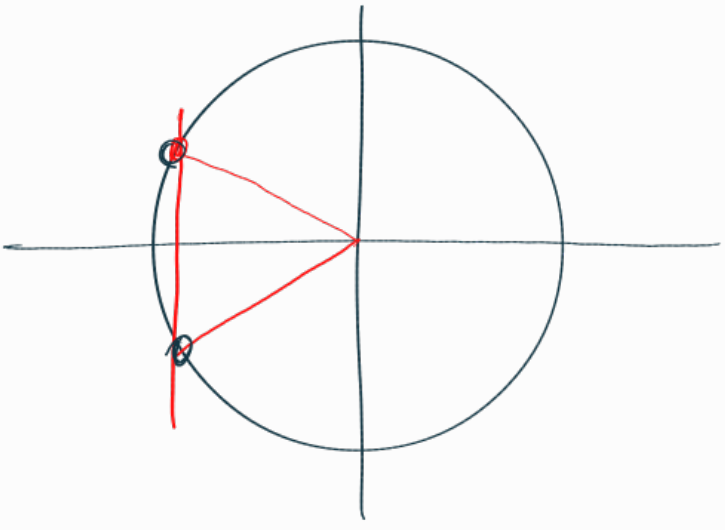
$\sin x = \frac{1}{2}$



$\Updownarrow$

$x = \left(\frac{\pi}{6} + 2k\pi\right) \vee \left(\frac{5}{6}\pi + 2k\pi\right) \qquad k \in \mathbb{Z}$

$\cos x = -\frac{\sqrt{3}}{2}$

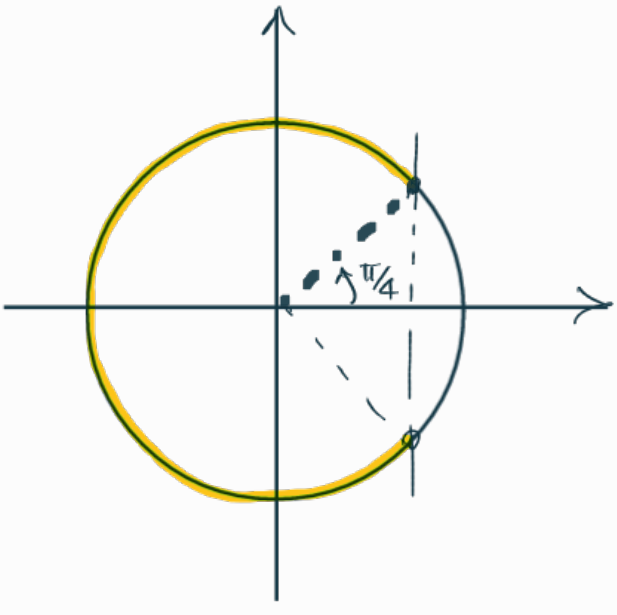


$\Updownarrow$

$x = \pm \frac{5}{6}\pi + 2k\pi$

Diseq^mi

$\cos x \leq \frac{\sqrt{2}}{2}$

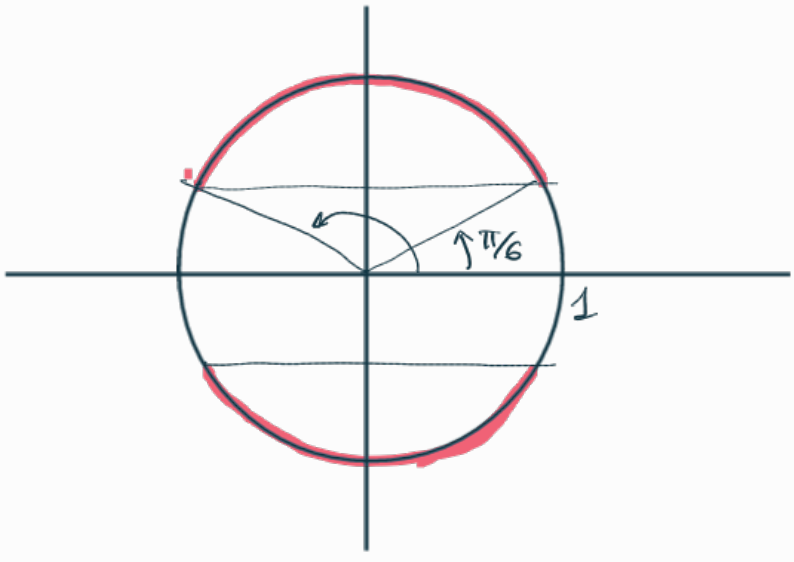


$\Updownarrow$

$\frac{\pi}{4} + 2k\pi \leq x \leq \frac{7}{4}\pi + 2k\pi$

$$\sin^2 x > \frac{1}{4} \iff \left(\sin x < -\frac{1}{2}\right) \vee \left(\sin x > \frac{1}{2}\right)$$

$$\sin x = t \qquad t^2 > \frac{1}{4} \iff \left(t < -\frac{1}{2}\right) \vee \left(t > \frac{1}{2}\right)$$



$$\text{Sol}^{ni} \quad \left(\frac{\pi}{6} + 2k\pi < x < \frac{5}{6}\pi + 2k\pi\right) \vee \left(-\frac{5}{6}\pi + 2k\pi < x < -\frac{\pi}{6} + 2k\pi\right)$$

oppure $\left(\frac{7}{6}\pi + 2k\pi < x < \frac{11}{6}\pi + 2k\pi\right)$