Calcola seno, coseno e tangente dei seguenti angoli, sfruttando le conoscenze sugli angoli particolari.

440 $330°, 225°, 495°$.

442 $\frac{11}{4}\pi, \frac{17}{6}\pi, -\frac{7}{3}\pi, \frac{13}{6}\pi$.

$\sin 330° = \sin(360° - 30°) = \sin(-30°) = -\sin 30° = -\frac{1}{2}$

$\cos 330° = \dots\dots\dots = \cos(-30°) = \cos 30° = \frac{\sqrt{3}}{2}$

$\tan 330° = \tan(360° - 30°) = \tan(-30°) = -\tan 30° = -\frac{\sqrt{3}}{3}$

$\sin 225° = \sin(180° + 45°) = -\sin 45° = -\frac{\sqrt{2}}{2}$

$\vdots$

$\sin 495° = \sin(360° + 135°) = \sin 135° = \sin(180° - 45°) = \sin 45° = \frac{\sqrt{2}}{2}$

$\sin \frac{11}{4}\pi = \sin\left(2\pi + \frac{3}{4}\pi\right) = \sin \frac{3}{4}\pi = \sin\left(\pi - \frac{\pi}{4}\right) = \sin \frac{\pi}{4} = \frac{\sqrt{2}}{2}$

$\cos \frac{17}{6}\pi = \cos\left(2\pi + \frac{5}{6}\pi\right) = \cos \frac{5}{6}\pi = \cos\left(\pi - \frac{\pi}{6}\right) = -\cos \frac{\pi}{6} = -\frac{\sqrt{3}}{2}$

$\tan\left(-\frac{7}{3}\pi\right) = -\tan \frac{7}{3}\pi = -\tan\left(2\pi + \frac{\pi}{3}\right) = -\tan \frac{\pi}{3} = -\sqrt{3}$

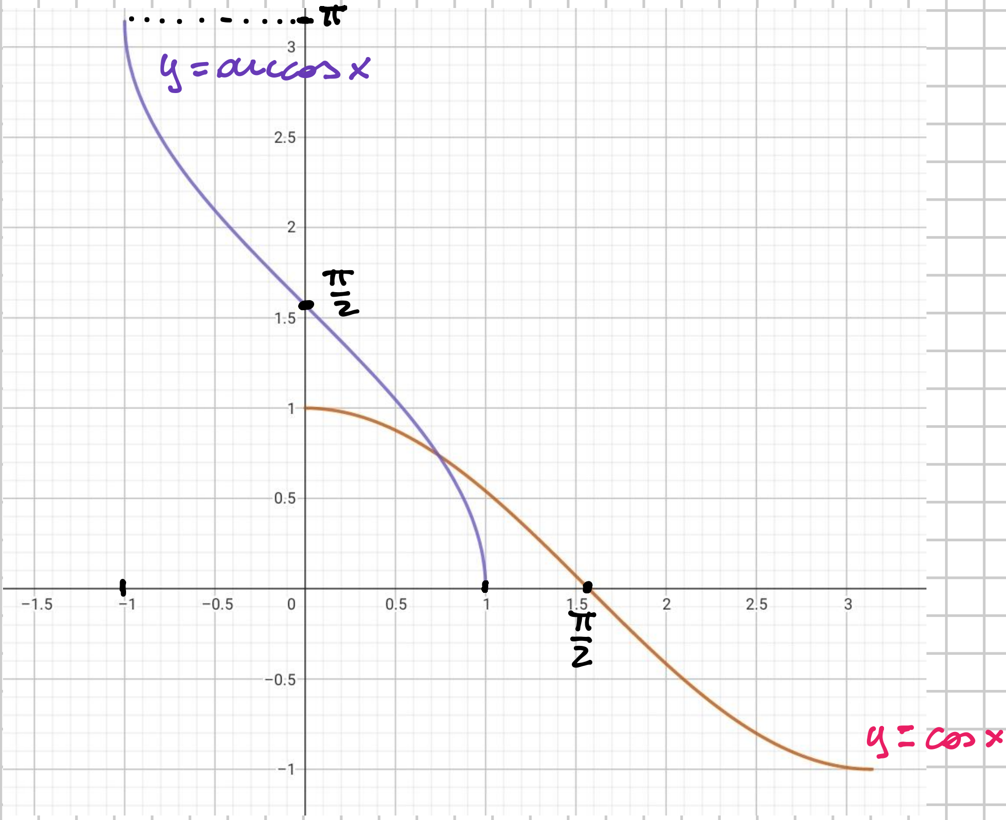
$\sin \frac{13}{6}\pi = \sin\left(2\pi + \frac{\pi}{6}\right) = \sin \frac{\pi}{6} = \frac{1}{2}$

$\cos \frac{13}{6}\pi = \cos\left(2\pi + \frac{\pi}{6}\right) = \cos \frac{\pi}{6} = \frac{\sqrt{3}}{2}$

$\tan \frac{13}{6}\pi = \tan\left(2\pi + \frac{\pi}{6}\right) = \tan \frac{\pi}{6} = \frac{\sqrt{3}}{3}$

ARCOCOSENO = inversa della RESTRIZIONE della funzione coseno a $[0, \pi]$

$$\arccos : [-1, 1] \to [0, \pi]$$

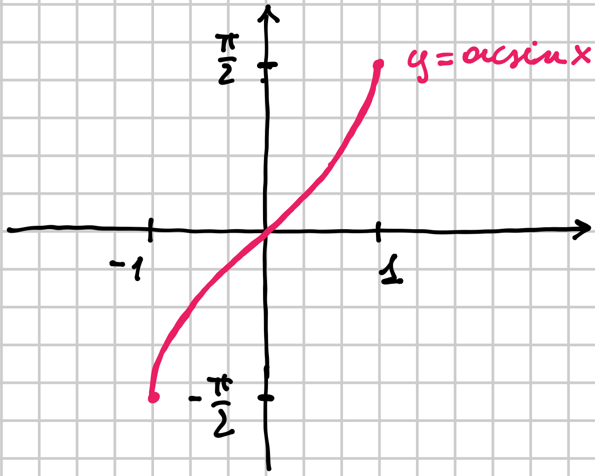


ARCOTANGENTE = inversa della restrizione della funzione tangente a $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$

$$\arctan : \mathbb{R} \to \left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$$

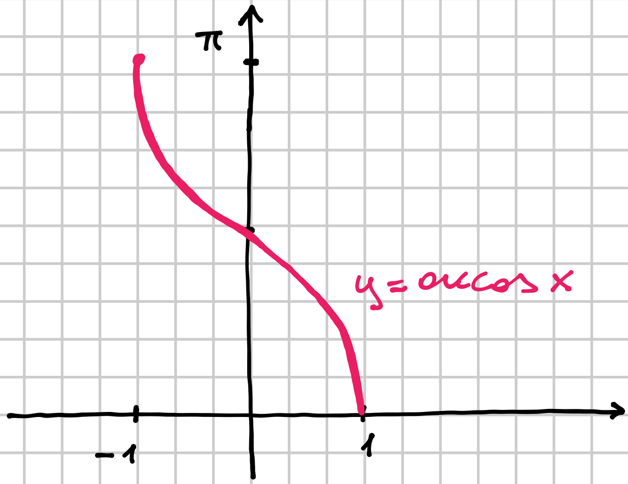
$y = \arcsin x$

$\arcsin : [-1, 1] \to \left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$



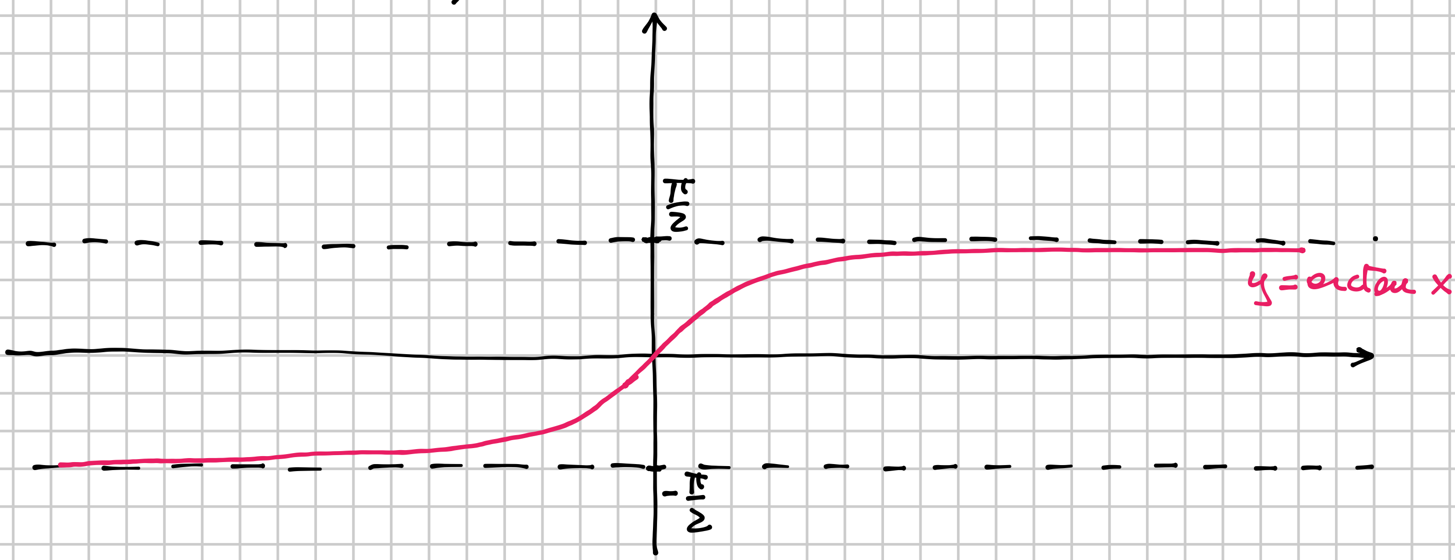
$y = \arccos x$

$\arccos : [-1, 1] \longrightarrow [0, \pi]$



$y = \arctan x$

$\arctan : \mathbb{R} \to \left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$



527 **COMPLETA**

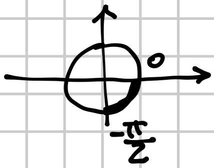
$\arccos\left[\sin\left(-\frac{\pi}{6}\right)\right] = \boxed{}$, $\quad \sin\left[\arctan\left(-\frac{4}{3}\right)\right] = \boxed{}$,

$$\arccos\left[\sin\left(-\frac{\pi}{6}\right)\right] = \arccos\left[-\frac{1}{2}\right] = \frac{2}{3}\pi$$

qual è l'angolo
tra 0 e π il
cui coseno è $-\frac{1}{2}$?

$$\sin\left[\arctan\left(-\frac{4}{3}\right)\right] = (*)$$

$\arctan\left(-\frac{4}{3}\right)$ è negativo, e dà quindi un angolo compreso fra $-\frac{\pi}{2}$ e 0. Il seno di un tale angolo è negativo



$$(*) = \frac{\tan\left(\arctan\left(-\frac{4}{3}\right)\right)}{\sqrt{1+\tan^2\left(\arctan\left(-\frac{4}{3}\right)\right)}} =$$

$$= \frac{-\frac{4}{3}}{\sqrt{1+\left(-\frac{4}{3}\right)^2}} = \frac{-\frac{4}{3}}{\sqrt{1+\frac{16}{9}}} =$$

$$= \frac{-\frac{4}{3}}{\sqrt{\frac{25}{9}}} = \frac{-\frac{4}{3}}{\frac{5}{3}} = -\frac{4}{5}$$

A PARTE

$$\tan\alpha = \frac{\sin\alpha}{\cos\alpha}$$

$$\tan^2\alpha = \frac{\sin^2\alpha}{\cos^2\alpha}$$

$$\tan^2\alpha = \frac{\sin^2\alpha}{1-\sin^2\alpha}$$

$$\tan^2\alpha - \tan^2\alpha\sin^2\alpha = \sin^2\alpha$$

$$\sin^2\alpha + \tan^2\alpha\sin^2\alpha = \tan^2\alpha$$

$$\sin^2\alpha\left(1+\tan^2\alpha\right) = \tan^2\alpha$$

$$\sin^2\alpha = \frac{\tan^2\alpha}{1+\tan^2\alpha}$$

$$\sin\alpha = \pm\frac{\tan\alpha}{\sqrt{1+\tan^2\alpha}}$$

DISEGNARE IL GRAFICO DI QUESTA FUNZIONE

608 $y = 4\cos\left(2x+\frac{\pi}{4}\right)$

1] $y=\cos x$

2] $y=\cos 2x$

3] $y=\cos 2\left(x+\frac{\pi}{8}\right)$

4] $y=4\cos\left(2x+\frac{\pi}{4}\right)$

ALTERNATIVA

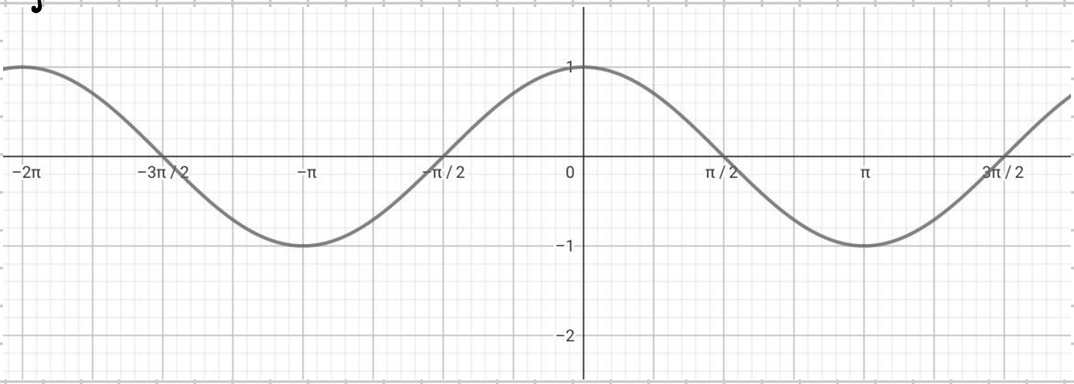
1] $y=\cos x$

2] $y=\cos\left(x+\frac{\pi}{4}\right)$

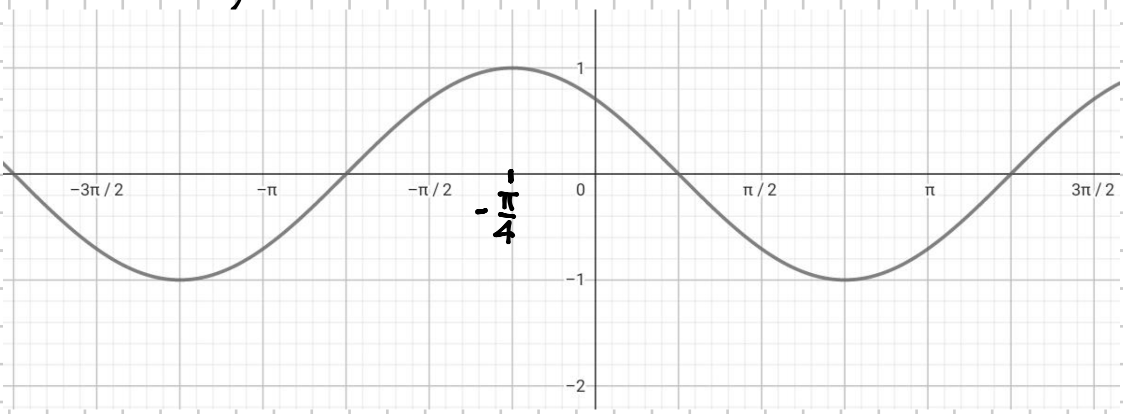
3] $y=\cos\left(2x+\frac{\pi}{4}\right)$

4] $y=4\cos\left(2x+\frac{\pi}{4}\right)$

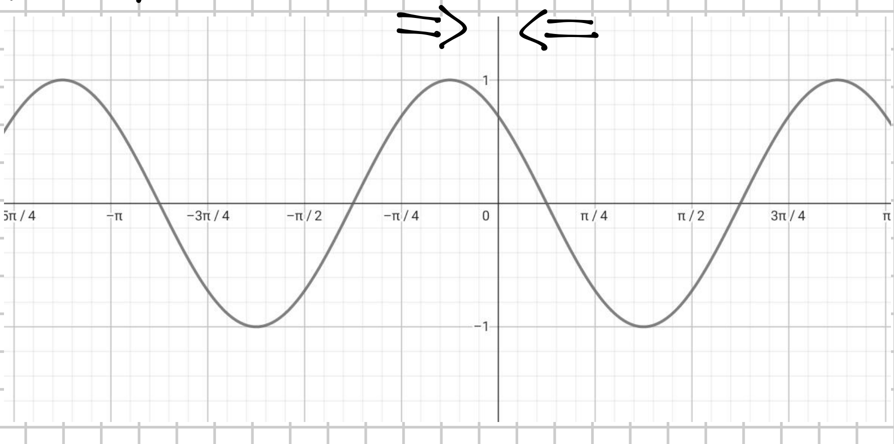
$y=\cos x$



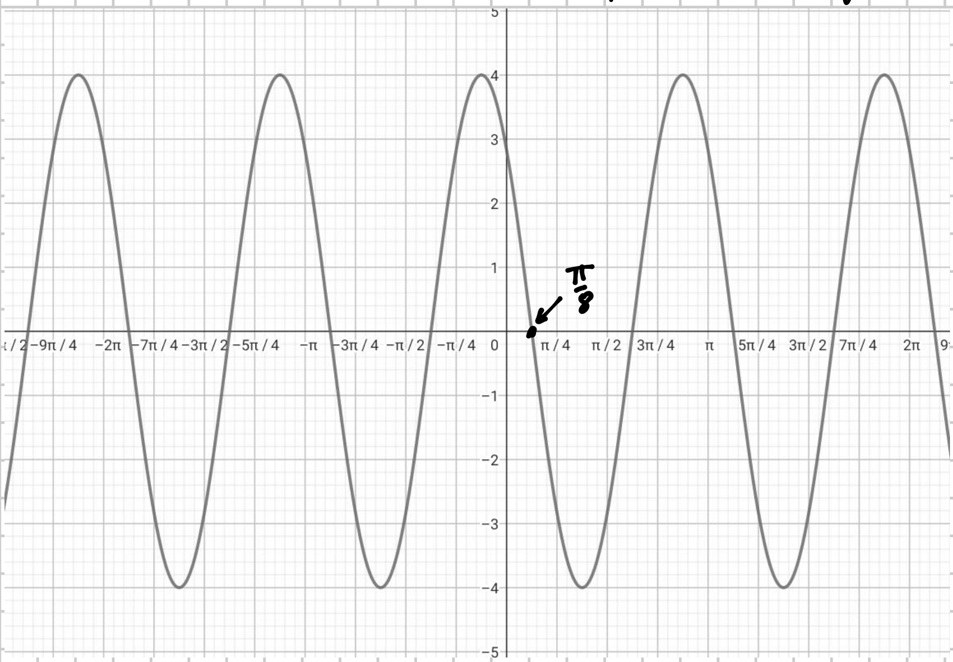
$y=\cos\left(x+\frac{\pi}{4}\right)$: TRASLAZIONE DI $\frac{\pi}{4}$ VERSO SINISTRA



$y=\cos\left(2x+\frac{\pi}{4}\right)$: "COMPRIMO" DI UN FATTORE 2



$y = 4\cos\left(2x + \frac{\pi}{4}\right)$ DILATAZIONE VERTICALE DI FATTORE 4



IL PERIODO È π

In generale, dato che $\sin x$ e $\cos x$ hanno periodo 2π, le funzioni $\sin(ax + b)$ e $\cos(ax + b)$ hanno periodo $\frac{2\pi}{a}$