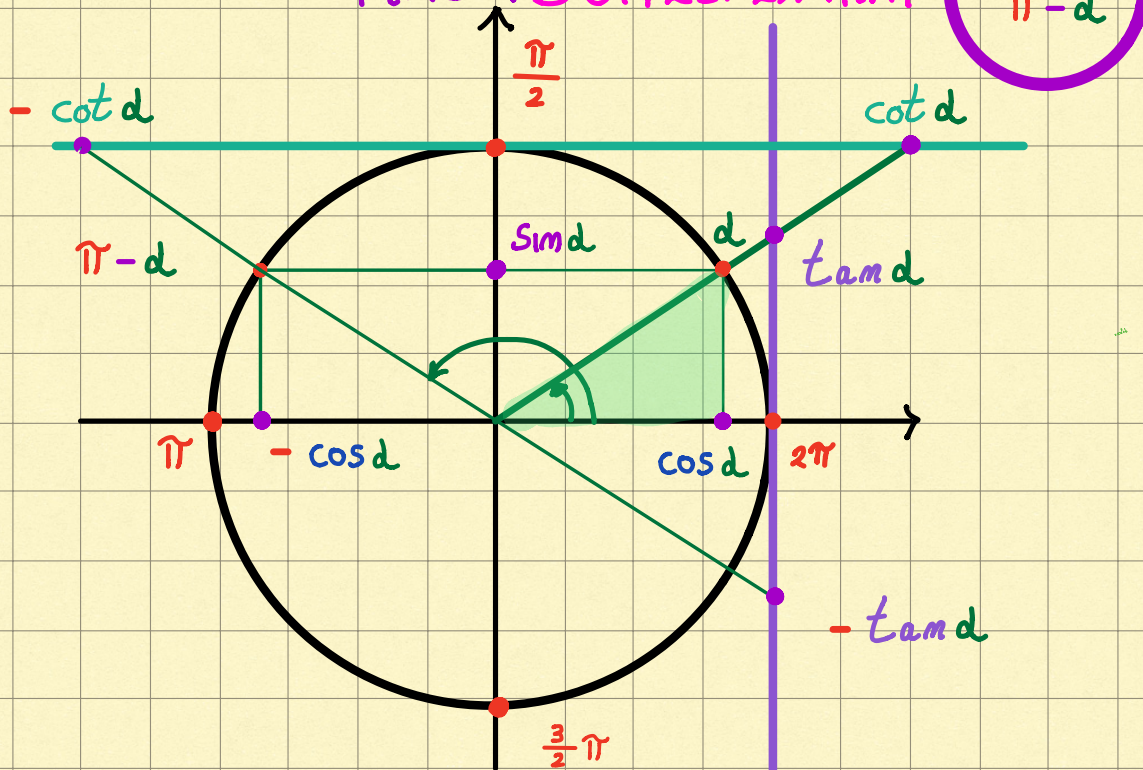


GONIOMAGIA A COLORI PER TUTTI

ARCHI ASSOCIATI

ARCHI SUPPLEMENTARI



IN BASE AL QUADRANTE PUO' CAMBIARE SOLO IL SEGNO

$$\begin{aligned}\sin(\pi - d) &= + \sin d \\ \cos(\pi - d) &= - \cos d \\ \tan(\pi - d) &= - \tan d \\ \cot(\pi - d) &= - \cot d\end{aligned}$$

ARCHI SUPPLEMENTARI

NOTEVOLI

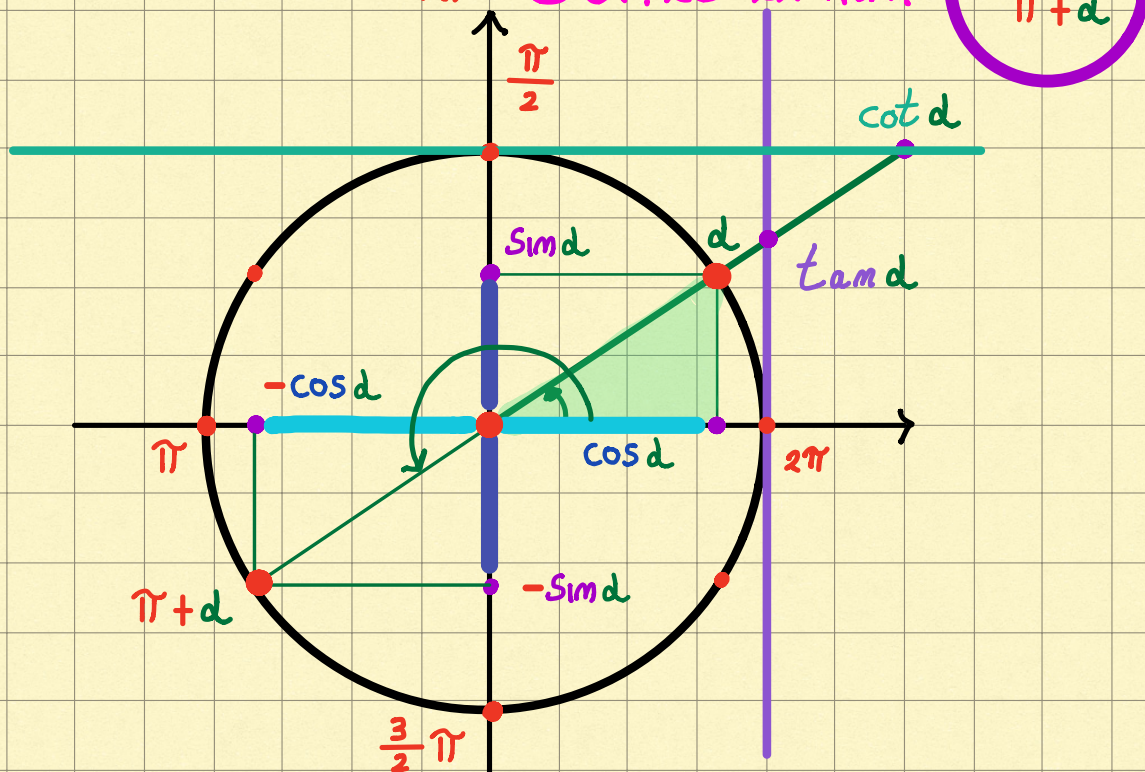
d	$\pi - d$
$\frac{\pi}{6}$ 30°	$\frac{5}{6}$ π 150°
$\frac{\pi}{4}$ 45°	$\frac{3}{4}$ π 135°
$\frac{\pi}{3}$ 60°	$\frac{2}{3}$ π 120°

ESEMPI $\sin \frac{5}{6} \pi = \sin \frac{\pi}{6} = \frac{1}{2}$

$\tan \frac{2}{3} \pi = - \tan \frac{\pi}{3} = -\sqrt{3}$

GONIOMAGIA A COLORI PER TUTTI

ARCHI ASSOCIATI ANTISUPPLEMENTARI



IN BASE AL QUADRANTE PUO' CAMBIARE SOLO IL SEGNO

$$\begin{aligned}\sin(\pi + d) &= -\sin d \\ \cos(\pi + d) &= -\cos d \\ \tan(\pi + d) &= +\tan d \\ \cot(\pi + d) &= +\cot d\end{aligned}$$

ANTISUPPLEMENTARI

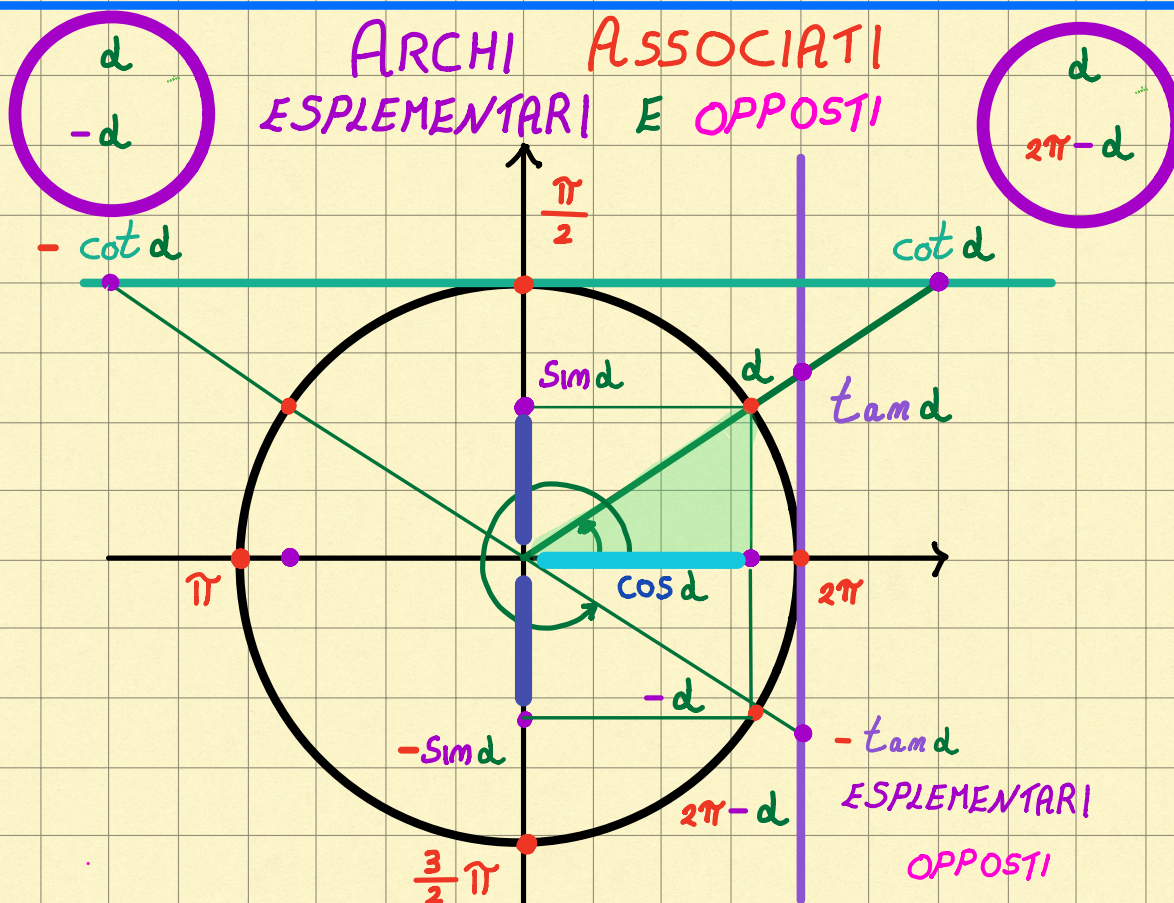
NOTEVOLI

d	$\pi + d$
$\frac{\pi}{6}$ 30°	$\frac{7}{6}\pi$ 210°
$\frac{\pi}{4}$ 45°	$\frac{5}{4}\pi$ 225°
$\frac{\pi}{3}$ 60°	$\frac{4}{3}\pi$ 240°

ESEMPI $\cos \frac{4}{3}\pi = -\cos \frac{\pi}{3} = -\frac{1}{2}$

$\cot \frac{5}{4}\pi = \cot \frac{\pi}{4} = 1$

GONIOMAGIA A COLORI PER TUTTI



IN BASE AL QUADRANTE PUO' CAMBIARE SOLO IL SEGNO

$$\begin{aligned}\sin(2\pi - d) &= \sin(-d) = -\sin d \\ \cos(2\pi - d) &= \cos(-d) = +\cos d \\ \tan(2\pi - d) &= \tan(-d) = -\tan d \\ \cot(2\pi - d) &= \cot(-d) = -\cot d\end{aligned}$$

ARCHI ESPLEMENTARI

NOTEVOLI

d	$2\pi - d$
$\frac{\pi}{6}$ 30°	$\frac{11\pi}{6}$ 330°
$\frac{\pi}{4}$ 45°	$\frac{7\pi}{4}$ 315°
$\frac{\pi}{3}$ 60°	$\frac{5\pi}{3}$ 300°

ESEMPI $\sin \frac{5\pi}{3} = -\sin \frac{\pi}{3} = -\frac{\sqrt{3}}{2}$ $\tan -\frac{\pi}{6} = -\tan \frac{\pi}{6} = -\frac{\sqrt{3}}{3}$

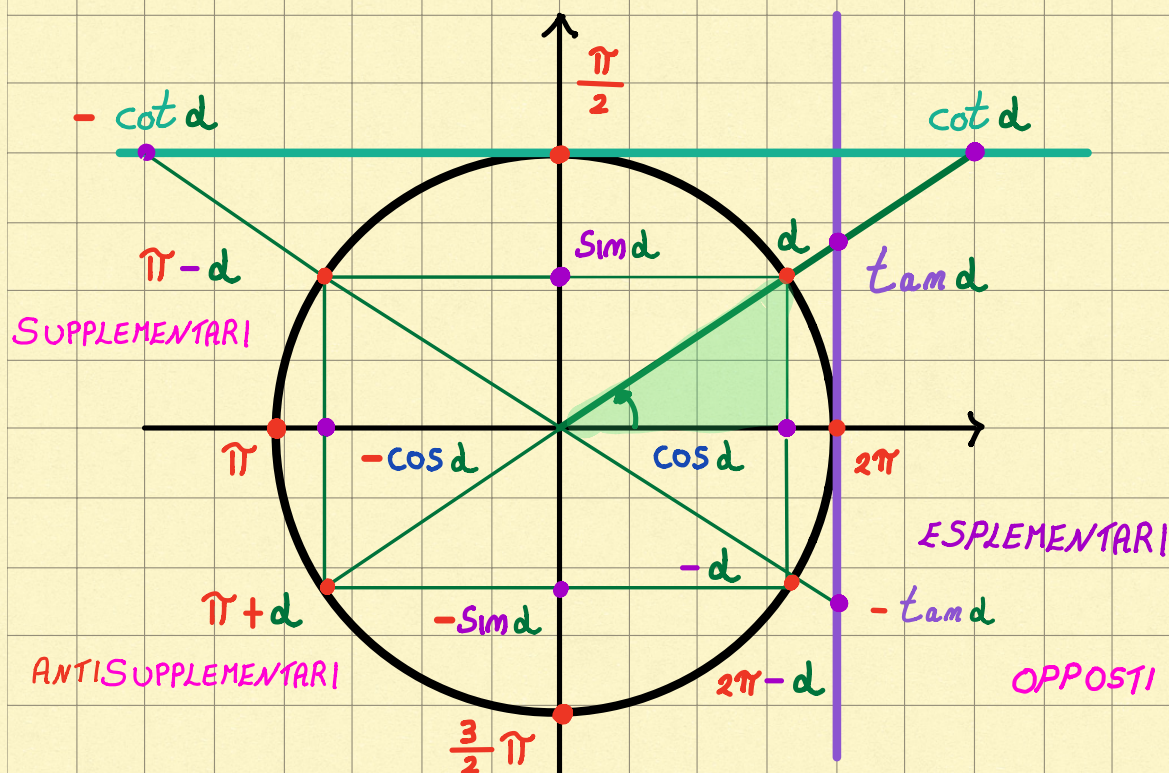
GONIOMAGIA A COLORI PER TUTTI

ARCHI ASSOCIATI

ANTISUPPLEMENTARI

ESPLEMENTARI

OPPOSTI



IN BASE AL QUADRANTE PUO' CAMBIARE SOLO IL SEGNO

$$\tan(-d) =$$

$$\cot(\pi + d) =$$

$$\tan(\pi - d) =$$

$$\cot(2\pi - d) =$$

$$\sin(2\pi - d) =$$

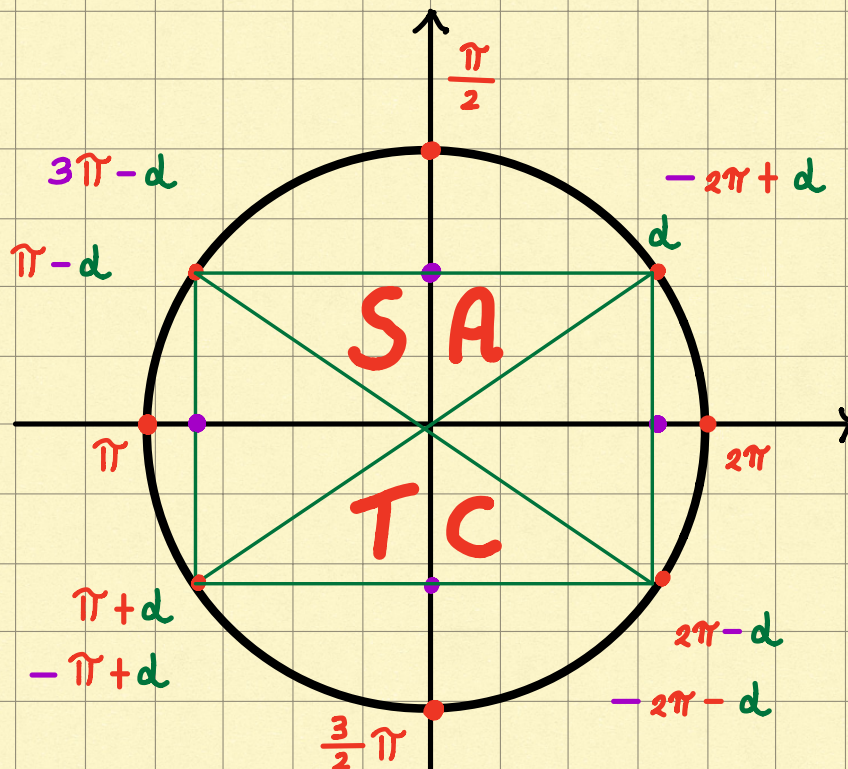
$$\cos(-d) =$$

$$\sin(\pi + d) =$$

$$\cos(\pi - d) =$$

GONIOMAGIA A COLORI PER TUTTI

ARCHI ASSOCIATI GENERALIZZATI



IN BASE AL QUADRANTE PUO' CAMBIARE SOLO IL SEGNO

PROVACI TU...

$$\tan(3\pi - d) =$$

$$\cot(-2\pi - d) =$$

$$\tan(-\pi - d) =$$

$$\cot(-\pi + d) =$$

$$\sin(-\pi + d) =$$

$$\cos(-2\pi + d) =$$

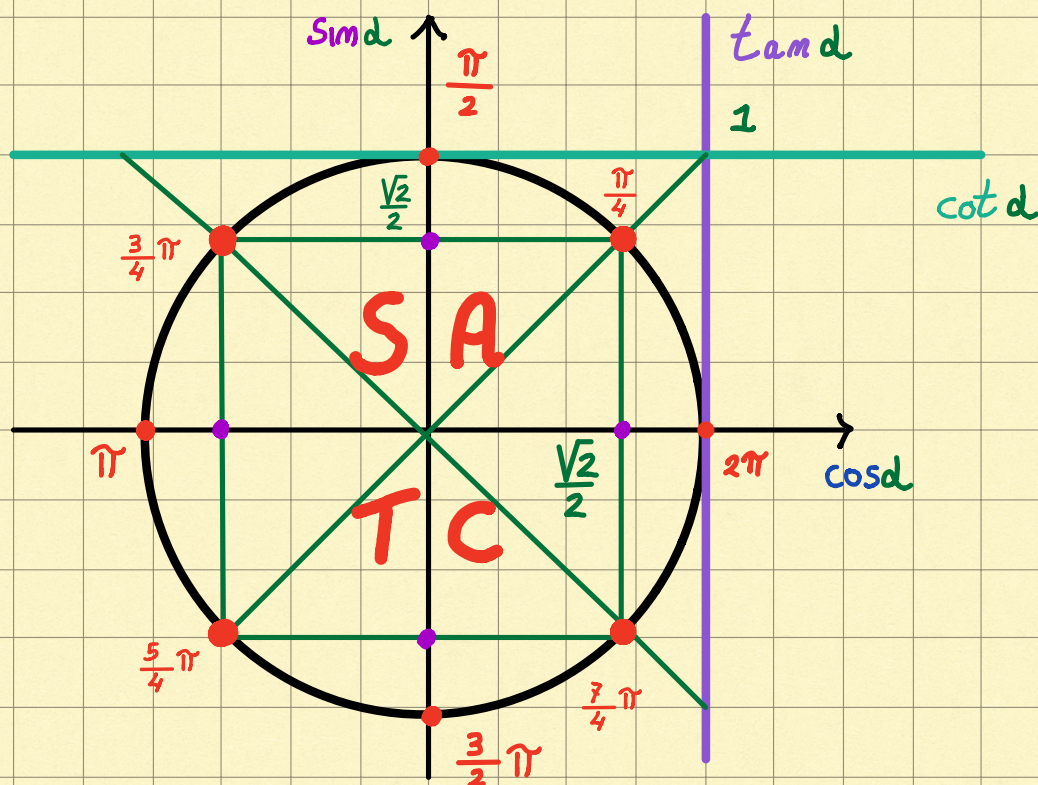
$$\sin(3\pi - d) =$$

$$\cos(-\pi - d) =$$

GONIOMAGIA A COLORI PER TUTTI

FAMIGLIA DEI QUARTI

COMPLETALO TU...



PROVACI TU...

$$\tan \frac{3}{4}\pi =$$

$$\cot \frac{3}{4}\pi =$$

$$\sin \left(-\frac{3}{4}\pi\right) =$$

$$\cos \frac{5}{4}\pi =$$

$$\tan \frac{5}{4}\pi =$$

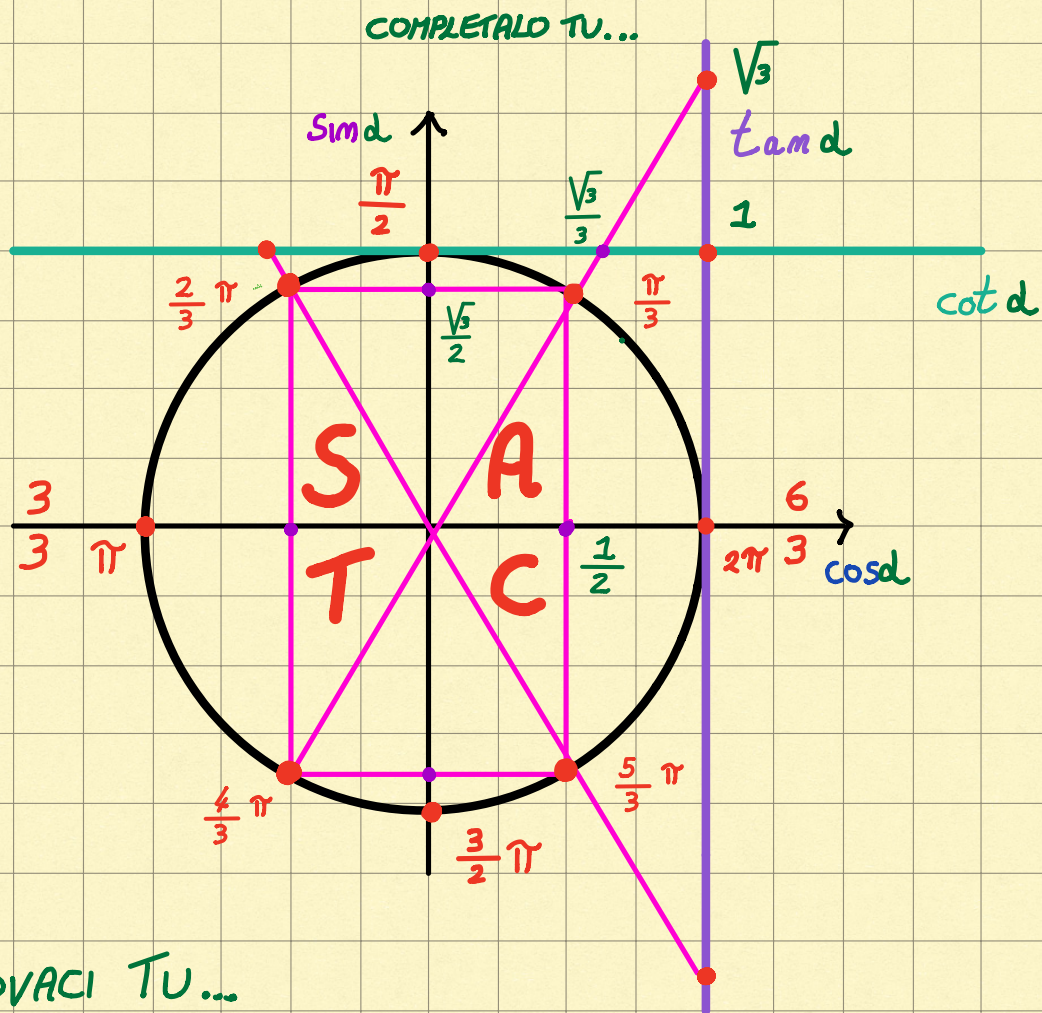
$$\cot \frac{7}{4}\pi =$$

$$\sin \frac{5}{4}\pi =$$

$$\cos \frac{7}{4}\pi =$$

GONIOMAGIA A COLORI PER TUTTI

FAMIGLIA DEI TERZI



$$\tan \frac{2}{3}\pi =$$

$$\cot \frac{4}{3}\pi =$$

$$\sin \frac{2}{3}\pi =$$

$$\cos \frac{2}{3}\pi =$$

$$\tan \frac{4}{3}\pi =$$

$$\cot \frac{5}{3}\pi =$$

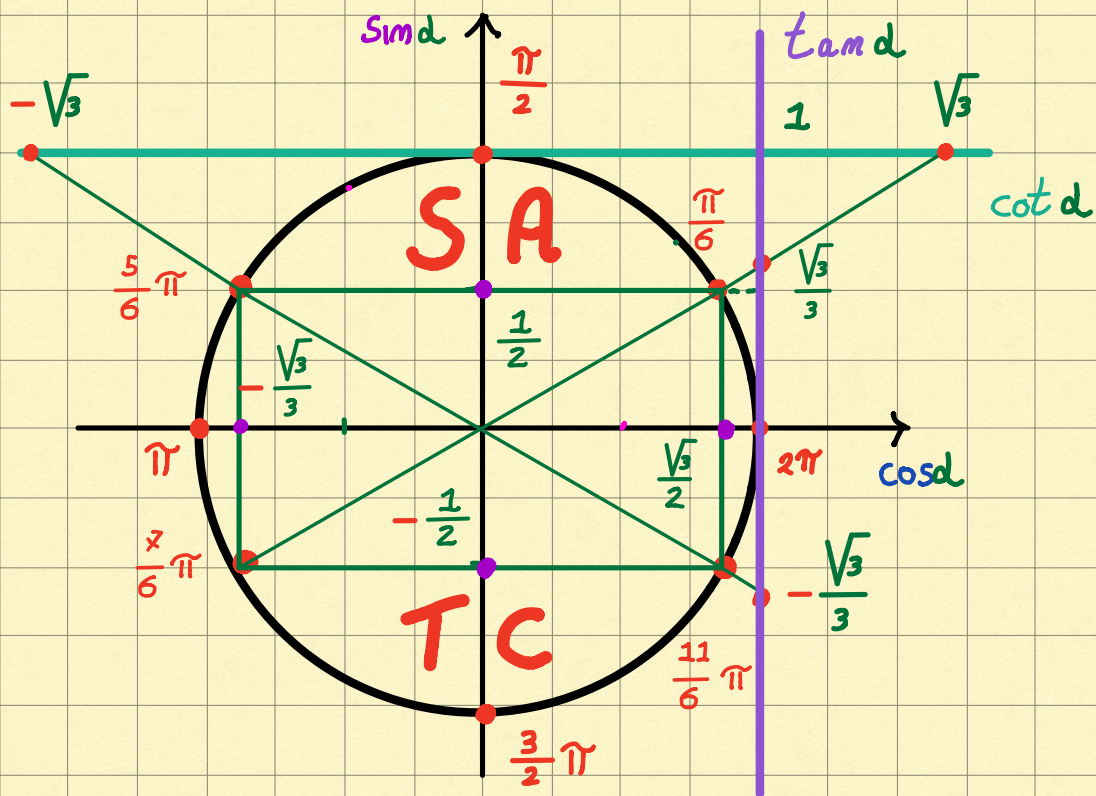
$$\sin \frac{5}{3}\pi =$$

$$\cos \frac{4}{3}\pi =$$

GONIOMAGIA A COLORI PER TUTTI

FAMIGLIA DEI SESTI

COMPLETALO TU...



PROVACI TU...

$$\tan \frac{7}{6}\pi =$$

$$\cot \frac{5}{6}\pi =$$

$$\sin \frac{5}{6}\pi =$$

$$\cos \frac{5}{6}\pi =$$

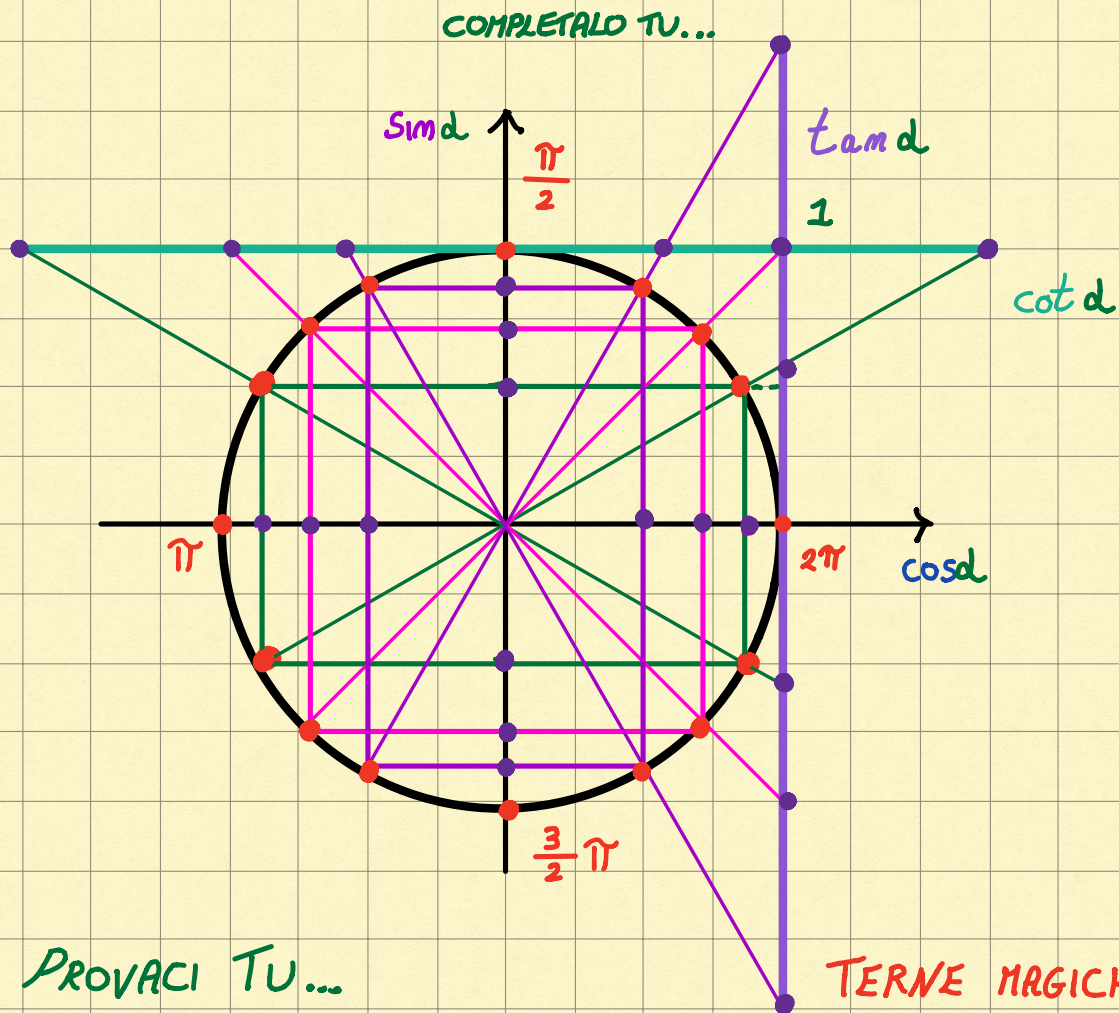
$$\tan \frac{11}{6}\pi =$$

$$\cot \frac{7}{6}\pi =$$

$$\sin \frac{11}{6}\pi =$$

$$\cos \frac{7}{6}\pi =$$

GONIOMAGIA A COLORI PER TUTTI GENERALIZZANDO



$$\tan \frac{13\pi}{4} =$$

$$\cot \frac{17\pi}{6} =$$

$$\sin \frac{13\pi}{6} =$$

$$\cos \frac{7\pi}{3} =$$

$$\tan \frac{9\pi}{4} =$$

$$\cot \frac{11\pi}{4} =$$

$$\sin \frac{8\pi}{3} =$$

$$\cos \frac{10\pi}{3} =$$

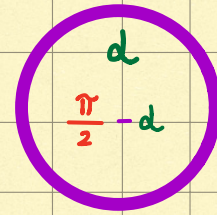
$$\frac{1}{2} \quad \frac{\sqrt{2}}{2} \quad \frac{\sqrt{3}}{2}$$

$$\frac{\sqrt{3}}{3} \quad 1 \quad \sqrt{3}$$

GONIOMAGIA A COLORI PER TUTTI

ARCHI ASSOCIATI COMPLEMENTARI

" SE C'È DI MEZZO IL MEZZO ... "

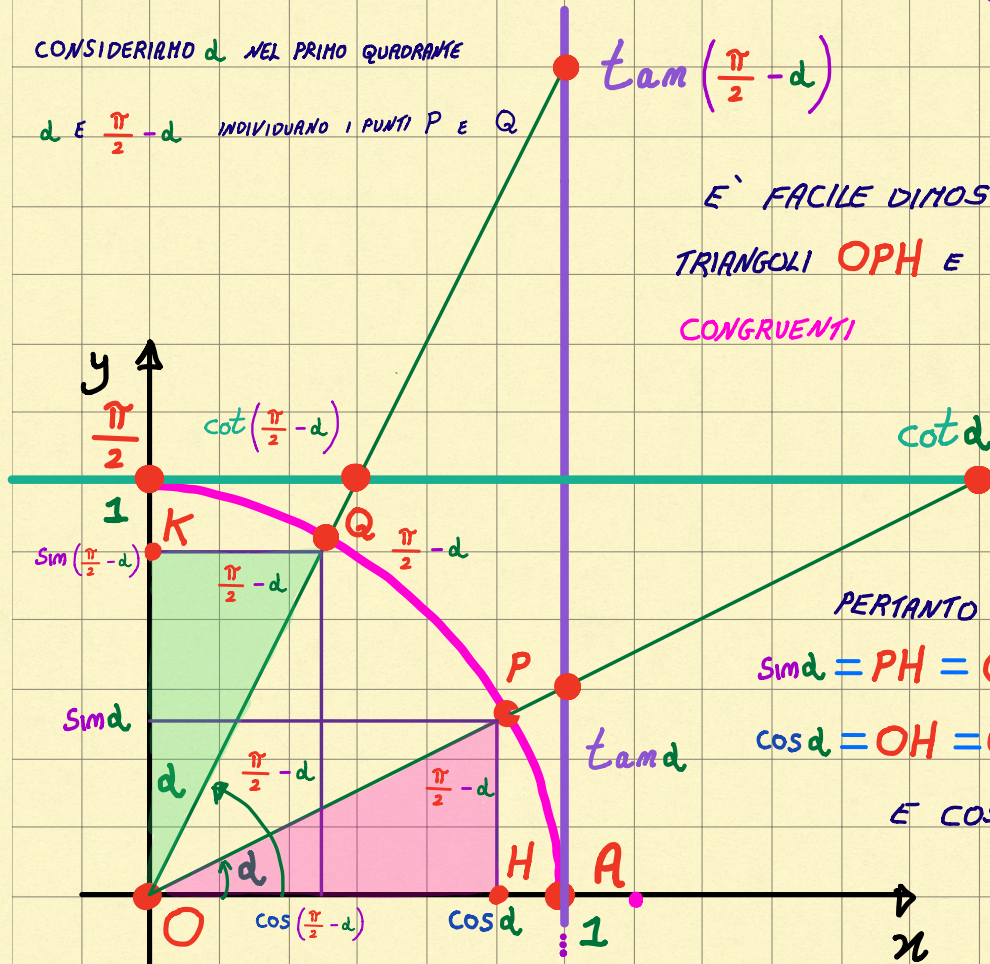


CONSIDERIAMO d NEL PRIMO QUADRANTE

d E $\frac{\pi}{2} - d$ INDIVIDUANO I PUNTI P E Q

$$\tan\left(\frac{\pi}{2} - d\right)$$

È FACILE DIMOSTRARE CHE I
TRIANGOLI **OPH** E **OQK** SONO
CONGRUENTI



PERTANTO :

$$\sin d = PH = QK = \cos\left(\frac{\pi}{2} - d\right)$$

$$\cos d = OH = OK = \sin\left(\frac{\pi}{2} - d\right)$$

E COSÌ VIA...

" ... CAMBIA LA FUNZIONE GONIOMETRICA ... "

$$\tan\left(\frac{\pi}{2} - d\right) = \cot d$$

$$\cot\left(\frac{\pi}{2} - d\right) = \tan d$$

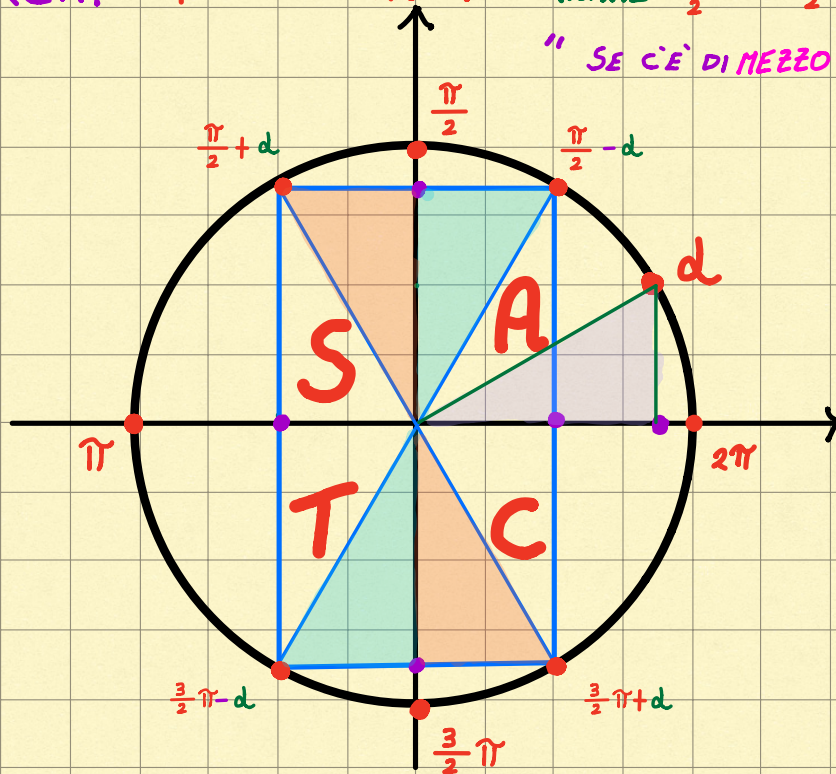
$$\sin\left(\frac{\pi}{2} - d\right) = \cos d$$

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

GONIOMAGIA A COLORI PER TUTTI

ARCHI ASSOCIATI TRAMITE $\frac{\pi}{2}$ E $\frac{3}{2}\pi$

" SE C'E' DI MEZZO IL MEZZO ...



... CAMBIA LA FUNZIONE GONIOMETRICA ... " E SI FA ATTENZIONE AL SEGNO!

$$\tan\left(\frac{\pi}{2} + d\right) = -\cot d$$

$$\cot\left(\frac{\pi}{2} + d\right) = -\tan d$$

$$\sin\left(\frac{\pi}{2} + d\right) = +\cos d \quad \text{POSITIVO}$$

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

$$\tan\left(\frac{3}{2}\pi - d\right) = +\cot d \quad \text{POSITIVO}$$

$$\cot\left(\frac{3}{2}\pi - d\right) = +\tan d \quad \text{POSITIVO}$$

$$\sin\left(\frac{3}{2}\pi - d\right) = -\cos d$$

$$\cos\left(\frac{3}{2}\pi - d\right) = -\sin d$$

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

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

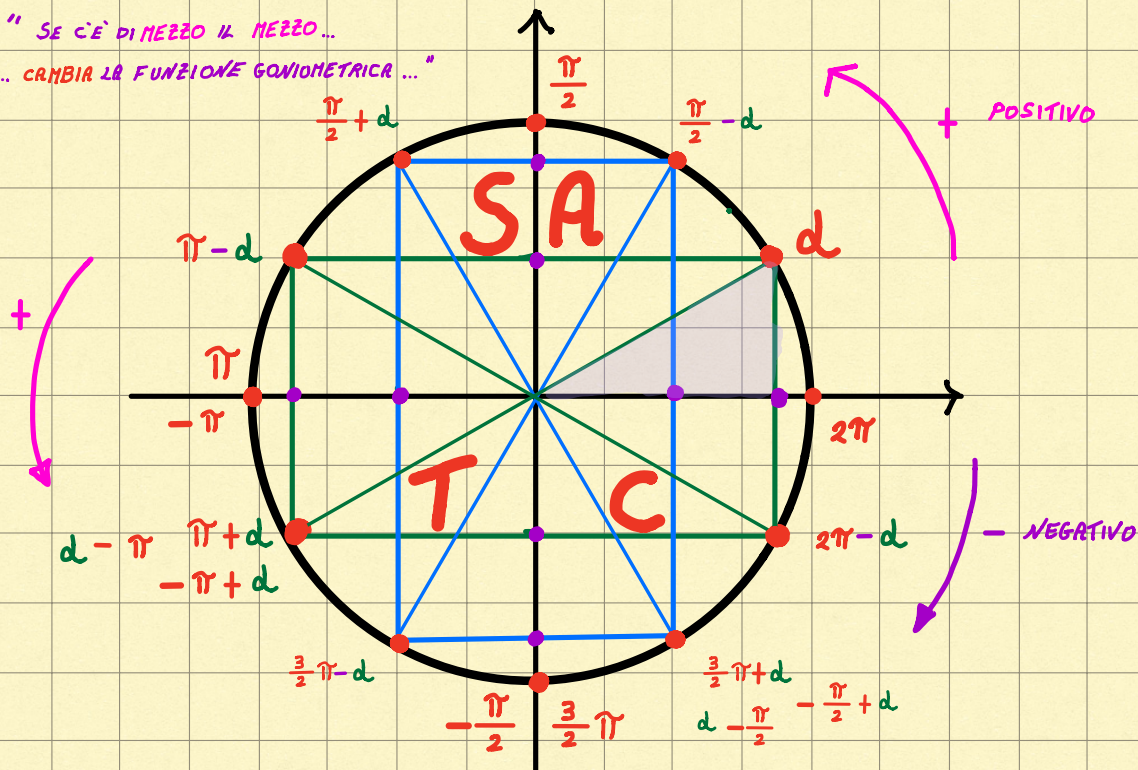
$$\sin\left(\frac{3}{2}\pi + d\right) = -\cos d$$

$$\cos\left(\frac{3}{2}\pi + d\right) = +\sin d \quad \text{POSITIVO}$$

GONIOMAGIA A COLORI PER TUTTI

ARCHI ASSOCIATI

" SE C'È DI MEZZO IL MEZZO ...
... CAMBIA LA FUNZIONE GONIOMETRICA ... "



$$\tan(-\pi + d) = + \tan d \quad \text{POSITIVO} \quad \sin(-\frac{\pi}{2} + d) = + \cos d \quad \text{CAMBIA}$$

$$\cot(d - \frac{\pi}{2}) = - \cot d \quad \text{CAMBIA} \quad \cos(d - \pi) = - \cos d \quad \text{NEGATIVO}$$

PROVACI TU...

$$\tan(-\frac{3}{2}\pi - d) =$$

$$\sin(\frac{7}{2}\pi - d) =$$

$$\cot(-\pi - d) =$$

$$\cos(d - \frac{3}{2}\pi) =$$

$$\tan(\frac{5}{2}\pi + d) =$$

$$\sin(2\pi - d) =$$

$$\cot(-\frac{3}{2}\pi + d) = -$$

$$\cos(d - \frac{7}{2}\pi) =$$