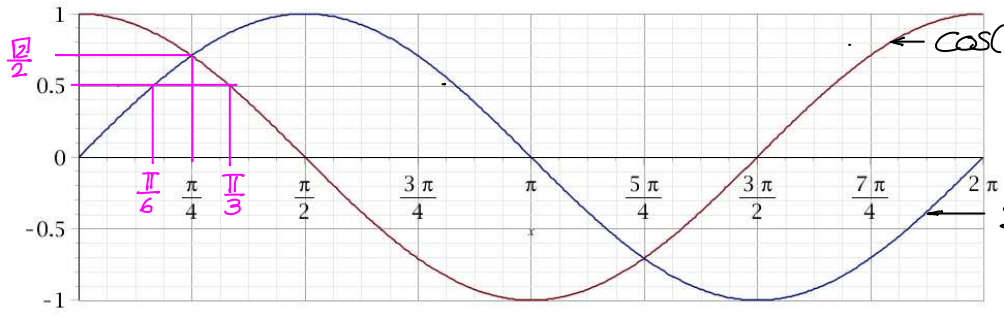
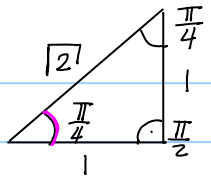
Prélude

Voir série -1

Fonctions élémentaires (exemples)

$\sin(x)$, $\cos(x)$, $\tan(x)$

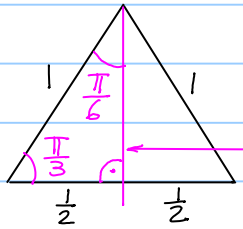




triangle isocèle ($\sqrt{2} = \sqrt{1^2+1^2}$ par Pythagore)

$$\sin\left(\frac{\pi}{4}\right) = \frac{1}{\sqrt{2}} = \frac{1}{\sqrt{2}} \cdot 1 = \frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{\sqrt{2}\sqrt{2}} = \frac{\sqrt{2}}{2}$$

$$\cos\left(\frac{\pi}{4}\right) = \frac{1}{\sqrt{2}}$$



triangle équilatéral

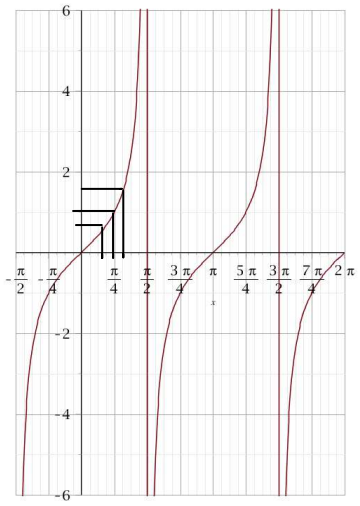
$$\sqrt{1-\left(\frac{1}{2}\right)^2} = \sqrt{\frac{3}{4}} = \frac{\sqrt{3}}{2}$$

$$\sin\left(\frac{\pi}{6}\right) = \frac{\frac{1}{2}}{1} = \frac{1}{2}, \quad \cos\left(\frac{\pi}{6}\right) = \frac{\frac{\sqrt{3}}{2}}{1} = \frac{\sqrt{3}}{2}$$

$$\sin\left(\frac{\pi}{3}\right) = \frac{\frac{\sqrt{3}}{2}}{1} = \frac{\sqrt{3}}{2}, \quad \cos\left(\frac{\pi}{3}\right) = \frac{\frac{1}{2}}{1} = \frac{1}{2}$$

$\sqrt{2} = 1.414\ldots$, $\frac{\sqrt{2}}{2} = 0.707\ldots$,

$\sqrt{3} = 1.732\ldots$, $\frac{\sqrt{3}}{2} = 0.866\ldots$, $\frac{\sqrt{3}}{3} = 0.577\ldots$



$$tg(x) \equiv \tan(x)$$

↑ notations équivalentes

$$\tan(x) := \frac{\sin(x)}{\cos(x)}$$

↑ "est par définition égal à"

$$\tan\left(\frac{\pi}{4}\right) = \frac{\sin\left(\frac{\pi}{4}\right)}{\cos\left(\frac{\pi}{4}\right)} = \frac{\frac{\sqrt{2}}{2}}{\frac{\sqrt{2}}{2}} = 1.$$

$$\tan\left(\frac{\pi}{6}\right) = \frac{\sin\left(\frac{\pi}{6}\right)}{\cos\left(\frac{\pi}{6}\right)} = \frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

$$\tan\left(\frac{\pi}{3}\right) = \frac{\sin\left(\frac{\pi}{3}\right)}{\cos\left(\frac{\pi}{3}\right)} = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \sqrt{3}$$