Définition :

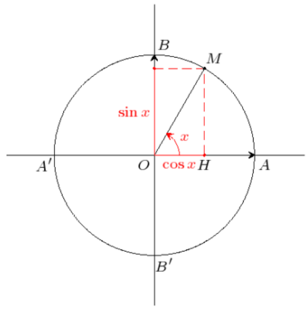
Soit $\mathcal{C}$ le cercle trigonométrique de centre O et A, B deux points du cercle $\mathcal{C}$ tels que le repère $\left(O\,;\overrightarrow{OA}\,;\overrightarrow{OB}\right)$ soit orthonormal direct.

Soit x un réel.

Il existe un unique point M du cercle trigonométrique $\mathcal{C}$ tel que $\left(\overrightarrow{OA}\,;\overrightarrow{OM}\right) = x\ [2\pi]$.

$\cos x$: abscisse du point M

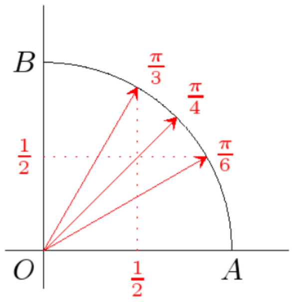
$\sin x$: ordonnée du point M.



Propriétés : Pour tout $x \in \mathbb{R}$ et tout $k \in \mathbb{Z}$:

$$\begin{aligned}
\cos(x+2k\pi) &= \cos x \\
\sin(x+2k\pi) &= \sin x \\
\cos^2 x + \sin^2 x &= 1 \\
-1 \leq \cos x &\leq 1 \\
-1 \leq \sin x &\leq 1
\end{aligned}$$

x	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	π
$\cos x$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0	-1
$\sin x$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1	0

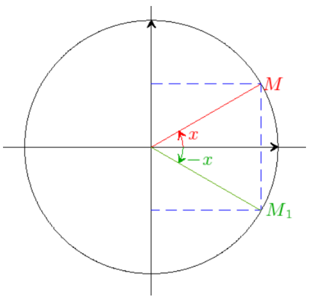


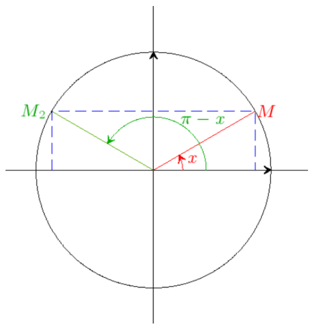
Angles associés : Pour tout $x \in \mathbb{R}$:

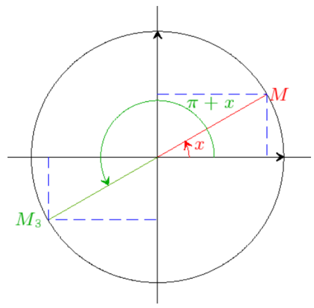
$$\begin{aligned}
\cos(-x) &= \cos x \\
\sin(-x) &= -\sin x
\end{aligned}$$

$$\begin{aligned}
\cos(\pi-x) &= -\cos x \\
\sin(\pi-x) &= \sin x
\end{aligned}$$

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







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

$$\begin{aligned}
\cos\left(\frac{\pi}{2}+x\right) &= -\sin x \\
\sin\left(\frac{\pi}{2}+x\right) &= \cos x
\end{aligned}$$