Formules de trigonométrie

symétries

	$-x$	$\pi - x$	$\pi + x$	$\frac{\pi}{2} - x$	$\frac{\pi}{2} + x$
cos	$\cos x$	$-\cos x$	$-\cos x$	$\sin x$	$-\sin x$
sin	$-\sin x$	$\sin x$	$-\sin x$	$\cos x$	$\cos x$
tan	$-\tan x$	$-\tan x$	$\tan x$	$\operatorname{cotan} x$	$-\operatorname{cotan} x$

formules fondamentales

$$\cos^2 x + \sin^2 x = 1 \qquad 1 + \tan^2 x = \frac{1}{\cos^2 x}$$

$$\cos(a+b) = \cos a \cos b - \sin a \sin b \qquad \cos(a-b) = \cos a \cos b + \sin a \sin b$$
$$\sin(a+b) = \sin a \cos b + \sin b \cos a \qquad \sin(a-b) = \sin a \cos b - \sin b \cos a$$

$$\tan(a+b) = \frac{\tan a + \tan b}{1 - \tan a \tan b} \qquad \tan(a-b) = \frac{\tan a - \tan b}{1 + \tan a \tan b}$$

angles doubles

$$\cos 2a = 2\cos^2 a - 1 = \cos^2 a - \sin^2 a = 1 - 2\sin^2 a \qquad \sin 2a = 2 \sin a \cos a \qquad \tan 2a = \frac{2\tan a}{1 - \tan^2 a}$$

$$\cos^2 a = \frac{1 + \cos 2a}{2} \qquad \sin^2 a = \frac{1 - \cos 2a}{2}$$

linéarisation

$$\cos a \cos b = \frac{1}{2}\big(\cos(a+b) + \cos(a-b)\big) \qquad \sin a \sin b = \frac{1}{2}\big(\cos(a-b) - \cos(a+b)\big) \qquad \sin a \cos b = \frac{1}{2}\big(\sin(a+b) + \sin(a-b)\big)$$

factorisation

$$\cos x + \cos y = 2\cos\frac{x+y}{2}\cos\frac{x-y}{2} \qquad \cos x - \cos y = -2\sin\frac{x+y}{2}\sin\frac{x-y}{2}$$
$$\sin x + \sin y = 2\sin\frac{x+y}{2}\cos\frac{x-y}{2} \qquad \sin x - \sin y = 2\sin\frac{x-y}{2}\cos\frac{x+y}{2}$$

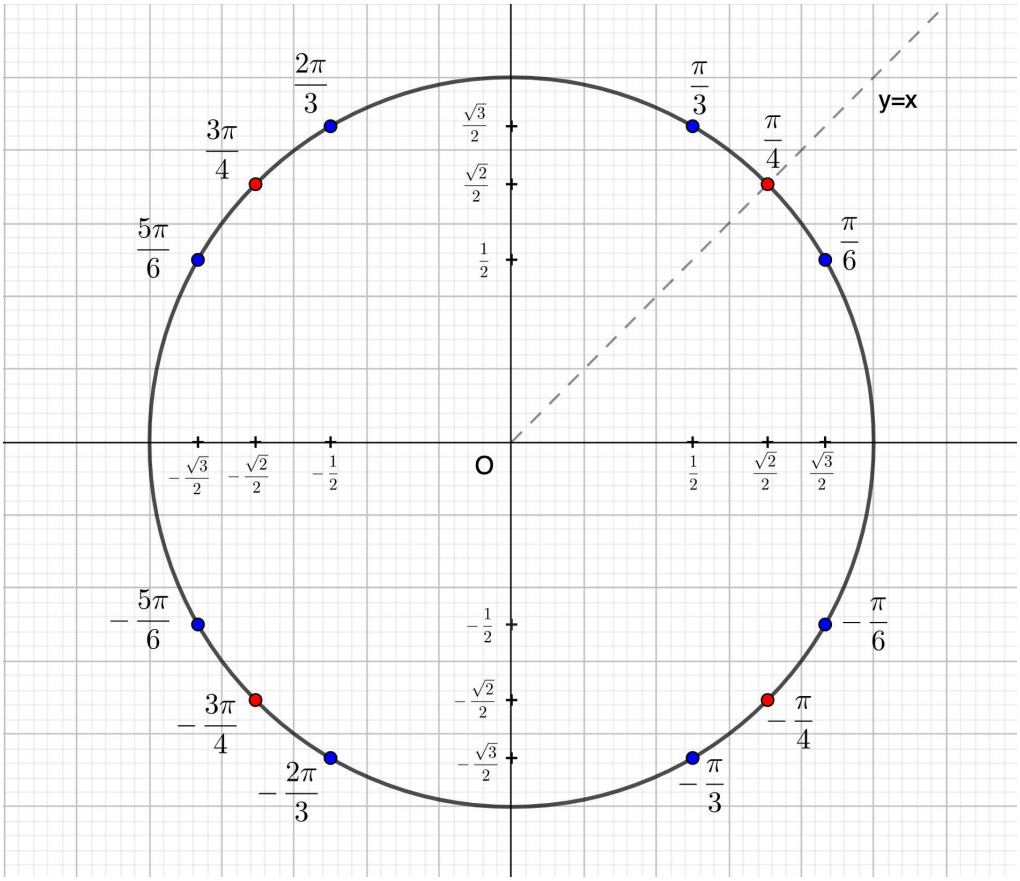
formules en $t = \tan\frac{x}{2}$

$$\cos x = \frac{1-t^2}{1+t^2} \qquad \sin x = \frac{2t}{1+t^2} \qquad \tan x = \frac{2t}{1-t^2}$$

équations trigonométriques

$$\cos x = \cos a \iff x = a\ [2\pi] \text{ ou } x = -a\ [2\pi]$$
$$\sin x = \sin a \iff x = a\ [2\pi] \text{ ou } x = \pi - a\ [2\pi]$$
$$\tan x = \tan a \iff x = a\ [\pi]$$

Remarque : $\cos x = \sin y \iff \cos x = \cos(\frac{\pi}{2} - y) \iff x = \frac{\pi}{2} - y\ [2\pi]$ ou $x = y - \frac{\pi}{2}[2\pi]$


$\frac{2\pi}{3}$
$\frac{\pi}{3}$
y=x
$\frac{3\pi}{4}$
$\frac{\pi}{4}$
$\frac{5\pi}{6}$
$\frac{\pi}{6}$
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