Lycée LAKANAL

2025 - 2026

Rappels de trigonométrie

Valeurs remarquables

x	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$
$\cos x$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
$\sin x$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
$\tan x$	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	
$\text{cotan}\, x$		$\sqrt{3}$	1	$\frac{1}{\sqrt{3}}$	0

Symétries des fonctions trigonométriques

$\cos(-x) = \cos(x)$	$\sin(-x) = -\sin(x)$	$\tan(-x) = -\tan(x)$
$\cos(\pi + x) = -\cos(x)$	$\sin(\pi + x) = -\sin(x)$	$\tan(\pi + x) = \tan(x)$
$\cos(\pi - x) = -\cos(x)$	$\sin(\pi - x) = \sin(x)$	$\tan(\pi - x) = -\tan(x)$
$\cos\left(\frac{\pi}{2} - x\right) = \sin(x)$	$\sin\left(\frac{\pi}{2} - x\right) = \cos(x)$	$\tan\left(\frac{\pi}{2} - x\right) = \text{cotan}(x)$
$\cos\left(\frac{\pi}{2} + x\right) = -\sin(x)$	$\sin\left(\frac{\pi}{2} + x\right) = \cos(x)$	$\tan\left(\frac{\pi}{2} + x\right) = -\text{cotan}(x)$

Formules d'addition

formules d'addition	$\cos(a + b) = \cos a \cos b - \sin a \sin b$	$\sin(a + b) = \sin a \cos b + \cos a \sin b$	$\tan(a + b) = \frac{\tan a + \tan b}{1 - \tan a \tan b}$
	$\cos(a - b) = \cos a \cos b + \sin a \sin b$	$\sin(a - b) = \sin a \cos b - \cos a \sin b$	$\tan(a - b) = \frac{\tan a - \tan b}{1 + \tan a \tan b}$
cas des arcs doubles	$\cos 2a = 2\cos^2 a - 1 = 1 - 2\sin^2 a$ $= \cos^2 a - \sin^2 a$	$\sin 2a = 2\cos a \sin a$	$\tan 2a = \frac{2\tan a}{1 - \tan^2 a}$
expressions en fonction de $t = \tan\frac{a}{2}$	$\cos a = \frac{1 - t^2}{1 + t^2}$	$\sin a = \frac{2t}{1 + t^2}$	$\tan a = \frac{2t}{1 - t^2}$

Conséquences des formules d'addition :

$$\cos a \cos b = \frac{1}{2}\left(\cos(a + b) + \cos(a - b)\right)$$

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

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

Équations trigonométriques

$$\cos a = \cos b \Leftrightarrow \begin{cases} a \equiv b \quad [2\pi] \\ \quad ou \\ a \equiv -b \quad [2\pi] \end{cases}$$

$$\sin a = \sin b \Leftrightarrow \begin{cases} a \equiv b \quad [2\pi] \\ \quad ou \\ a \equiv \pi - b \quad [2\pi] \end{cases}$$

$$\tan a = \tan b \Leftrightarrow a \equiv b \quad [\pi]$$