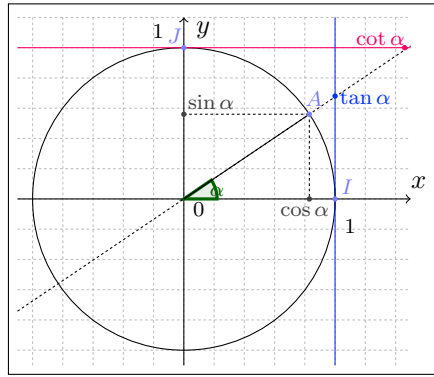


TRIGONOMÉTRIE : FORMULAIRE



1. Angles remarquables

α	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$
$\sin \alpha$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1	0	-1
$\cos \alpha$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0	-1	0
$\tan \alpha$	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	∞	0	∞
$\cot \alpha$	∞	$\sqrt{3}$	1	$\frac{\sqrt{3}}{3}$	0	∞	0

2. Angles associés

Angles supplémentaires	Angles anti-supplémentaires
$\sin(\pi - \alpha) = \sin \alpha$ $\cos(\pi - \alpha) = -\cos \alpha$ $\tan(\pi - \alpha) = -\tan \alpha$ $\cot(\pi - \alpha) = -\cot \alpha$	$\sin(\pi + \alpha) = -\sin \alpha$ $\cos(\pi + \alpha) = -\cos \alpha$ $\tan(\pi + \alpha) = \tan \alpha$ $\cot(\pi + \alpha) = \cot \alpha$
Angles opposés	Angles complémentaires
$\sin(-\alpha) = -\sin \alpha$ $\cos(-\alpha) = \cos \alpha$ $\tan(-\alpha) = -\tan \alpha$ $\cot(-\alpha) = -\cot \alpha$	$\sin\left(\frac{\pi}{2} - \alpha\right) = \cos \alpha$ $\cos\left(\frac{\pi}{2} - \alpha\right) = \sin \alpha$ $\tan\left(\frac{\pi}{2} - \alpha\right) = \cot \alpha$ $\cot\left(\frac{\pi}{2} - \alpha\right) = \tan \alpha$

3. Identités fondamentales

$$\sin^2 a + \cos^2 a = 1$$

$$1 + \tan^2 a = \frac{1}{\cos^2 a}$$

$$1 + \cot^2 a = \frac{1}{\sin^2 a}$$

4. Formules de duplication

$$\cos 2a = \cos^2 a - \sin^2 a$$

$$\cos 2a = 2\cos^2 a - 1$$

$$\cos 2a = 1 - 2\sin^2 a$$

$$\sin 2a = 2\sin a \cos a$$

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

5. Formules d'addition

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

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

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

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

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

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

6. Formules de Simpson

$$\sin p + \sin q = 2 \sin \frac{p+q}{2} \cos \frac{p-q}{2}$$

$$\sin p - \sin q = 2 \cos \frac{p+q}{2} \sin \frac{p-q}{2}$$

$$\cos p + \cos q = 2 \cos \frac{p+q}{2} \cos \frac{p-q}{2}$$

$$\cos p - \cos q = -2 \sin \frac{p+q}{2} \sin \frac{p-q}{2}$$

7. Formules de Carnot¹

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

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

8. Formules de Simpson inverses²

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

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

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

9. Equations trigonométriques

$$\sin x = \sin a \Leftrightarrow \begin{cases} x = a + 2k\pi \\ x = \pi - a + 2k\pi \end{cases} \quad k \in \mathbb{Z}$$

$$\cos x = \cos a \Leftrightarrow \begin{cases} x = a + 2k\pi \\ x = -a + 2k\pi \end{cases} \quad k \in \mathbb{Z}$$

$$\tan x = \tan a \Leftrightarrow x = a + k\pi \quad k \in \mathbb{Z}$$

RÉSUMÉ

