Trigonométrie

Relations fondamentales : $\sin^2 a + \cos^2 a = 1 \qquad 1 + \tan^2 a = \dfrac{1}{\cos^2 a}$

Valeurs et relations particulières :

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

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

$\sin(\pi - a) = \sin a \qquad \cos(\pi - a) = -\cos a$

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

$\sin(\frac{\pi}{2} + a) = \cos a \qquad \cos(\frac{\pi}{2} + a) = -\sin a$

$\sin(\frac{\pi}{2} - a) = \cos a \qquad \cos(\frac{\pi}{2} - a) = \sin a$

Formules d'addition :

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

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

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

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

Duplication :

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

$$\cos 3a = -3\cos a + 4\cos^3 a$$

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

$$\sin 3a = 3\sin a - 4\sin^3 a$$

Formule de linéarisation :

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

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

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

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

Transformation d'une somme en produit :

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

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

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