Formulaire de trigonométrie.

(Toutes les formules sont données sous réserve de définition)

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

Formules d'addition

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

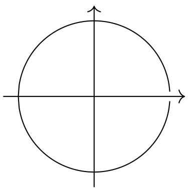
$$\tan(a+b) = \frac{\tan a + \tan b}{1 - \tan a \tan b}$$
$$\tan(a-b) = \frac{\tan a - \tan b}{1 + \tan a \tan b}$$

Formules de duplication

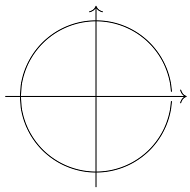
$$\begin{aligned} \cos(2x) &= \cos^2 x - \sin^2 x \\ &= 2\cos^2 x - 1 \\ &= 1 - 2\sin^2 x \\ \sin(2x) &= 2 \sin x \cos x \\ \tan(2x) &= \frac{2\tan x}{1 - \tan^2 x} \end{aligned}$$

$$\cos^2 x = \frac{1 + \cos(2x)}{2}$$
$$\sin^2 x = \frac{1 - \cos(2x)}{2}$$

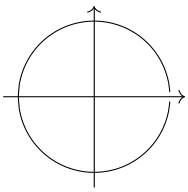
$\cos(-x) = \cos(x)$
$\sin(-x) = -\sin(x)$
$\tan(-x) = -\tan(x)$



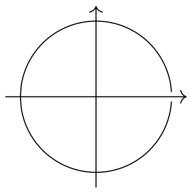
$\cos(\frac{\pi}{2} + x) = -\sin(x)$
$\sin(\frac{\pi}{2} + x) = \cos(x)$



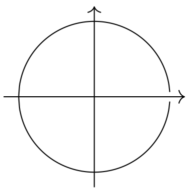
$\cos(\pi - x) = -\cos(x)$
$\sin(\pi - x) = \sin(x)$
$\tan(\pi - x) = -\tan(x)$



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



$\cos(\pi + x) = -\cos(x)$
$\sin(\pi + x) = -\sin(x)$
$\tan(\pi + x) = \tan(x)$



À savoir retrouver :

Transformation de produits en sommes

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

Transformation de sommes en produits

$$\cos p + \cos q = 2\cos\left(\frac{p+q}{2}\right)\cos\left(\frac{p-q}{2}\right)$$
$$\cos p - \cos q = -2\sin\left(\frac{p+q}{2}\right)\sin\left(\frac{p-q}{2}\right)$$
$$\sin p + \sin q = 2\sin\left(\frac{p+q}{2}\right)\cos\left(\frac{p-q}{2}\right)$$
$$\sin p - \sin q = 2\cos\left(\frac{p+q}{2}\right)\sin\left(\frac{p-q}{2}\right)$$