AIDE-MÉMOIRE DE TRIGONOMÉTRIE

$\operatorname{ch}^2 x - \operatorname{sh}^2 x = 1$

$e^{ix} = \cos x + i \sin x$

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

$\cos^2 x = \dfrac{1}{1+\tan^2 x}$

$\sin^2 x = \dfrac{\tan^2 x}{1+\tan^2 x}$

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

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

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

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

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

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

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

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

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

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

$\tan p + \tan q = \dfrac{\sin(p+q)}{\cos p \cos q}$

$\tan p - \tan q = \dfrac{\sin(p-q)}{\cos p \cos q}$

$(\cos x + i \sin x)^n = \cos nx + i \sin nx$

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

$\sin^2 x = \dfrac{1-\cos 2x}{2}$

$\cos^2 x = \dfrac{1+\cos 2x}{2}$

$\sin 2x = 2 \sin x \cos x$

$\tan 2x = \dfrac{2\tan x}{1-\tan^2 x}$

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

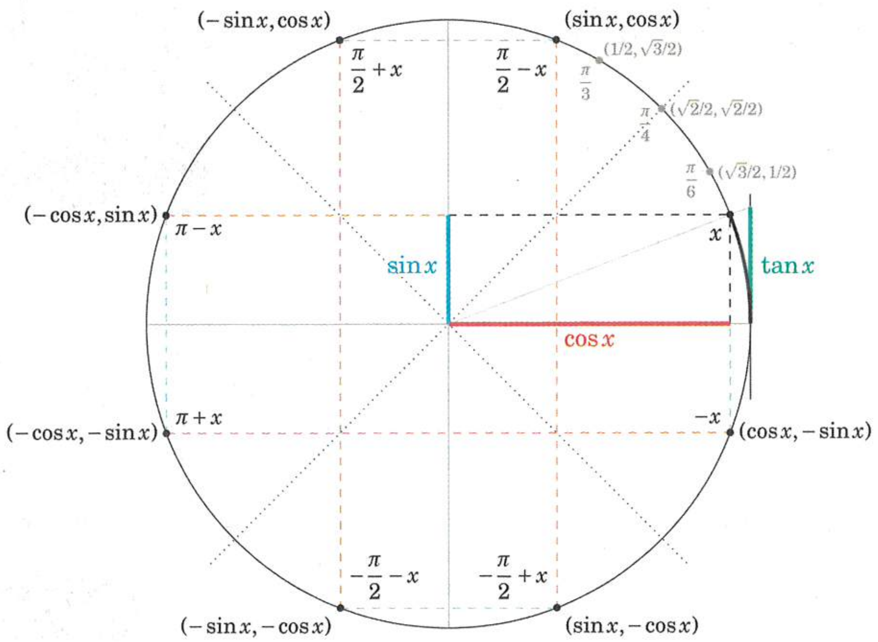
$\cos x = \dfrac{1-\tan^2(x/2)}{1+\tan^2(x/2)}$

$\sin x = \dfrac{2\tan(x/2)}{1+\tan^2(x/2)}$

$\tan x = \dfrac{2\tan(x/2)}{1-\tan^2(x/2)}$

$\cos 3x = 4\cos^3 x - 3\cos x$

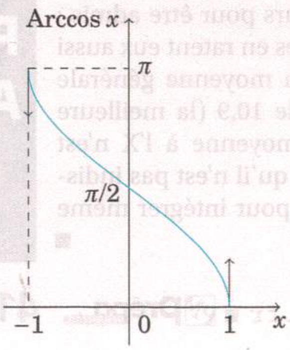
$\sin 3x = 3 \sin x - 4 \sin^3 x$

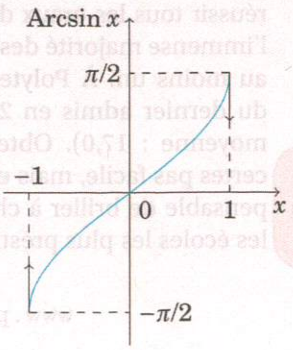


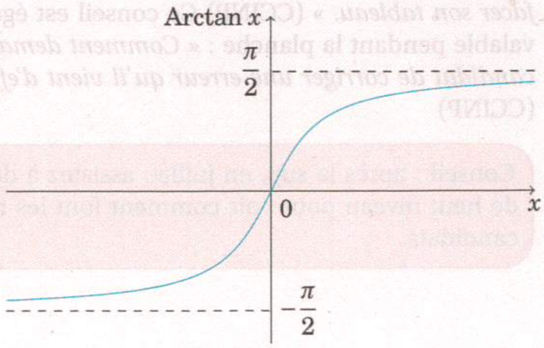
$\operatorname{Arccos} x + \operatorname{Arcsin} x = \dfrac{\pi}{2}$

$\operatorname{Arctan} x + \operatorname{Arctan} \dfrac{1}{x} = \operatorname{sign}(x) \times \dfrac{\pi}{2}$

$$\operatorname{Arctan} x + \operatorname{Arctan} y = \operatorname{Arctan} \frac{x+y}{1-xy} + \varepsilon\pi \quad \text{où } \varepsilon = \begin{cases} 0 & \text{si } xy < 1 \\ 1 & \text{si } xy > 1 \text{ et } x, y \geqslant 0 \\ -1 & \text{si } xy > 1 \text{ et } x, y \leqslant 0 \end{cases}$$







PONSOLLE - PCSI 3