

Analyse I

Résumé: Formules trigonométriques.

Soient $x, y \in \mathbb{R}$.

1.

$$\begin{aligned}\sin(x+y) &= \sin x \cos y + \cos x \sin y & \sin(x-y) &= \sin x \cos y - \cos x \sin y \\ \cos(x+y) &= \cos x \cos y - \sin x \sin y & \cos(x-y) &= \cos x \cos y + \sin x \sin y.\end{aligned}$$

2.

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

3.

$$\sin\left(x + \frac{\pi}{2}\right) = \cos x, \quad \cos\left(x - \frac{\pi}{2}\right) = \sin x.$$

4.

$$\operatorname{tg} x = \frac{\sin x}{\cos x} \quad \operatorname{cotg} x = \frac{\cos x}{\sin x}.$$

5.

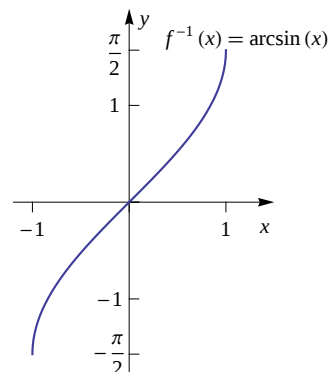
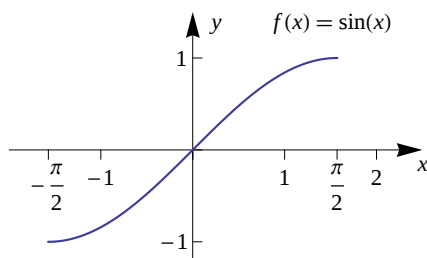
$$\begin{aligned}\sin \frac{\pi}{6} &= \frac{1}{2} = \cos \frac{\pi}{3}, & \sin \frac{\pi}{3} &= \frac{\sqrt{3}}{2} = \cos \frac{\pi}{6}. \\ \sin \frac{\pi}{4} &= \frac{\sqrt{2}}{2} = \cos \frac{\pi}{4}, & \sin 0 &= \cos \frac{\pi}{2} = \sin \pi = \cos \frac{3\pi}{2} = 0 \\ \sin \frac{\pi}{2} &= 1 = \cos 0, & \sin \frac{3\pi}{2} &= -1 = \cos \pi.\end{aligned}$$

6.

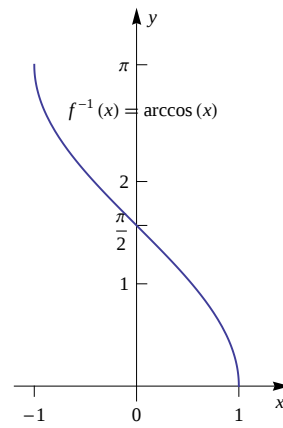
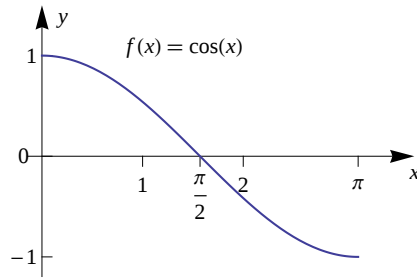
$$\sin(-x) = -\sin x \quad \cos(-x) = \cos x.$$

Fonctions trigonométriques et leur fonctions réciproques.

a) $f(x) = \sin x, D(f) = \left[-\frac{\pi}{2}, \frac{\pi}{2}\right].$
 $f^{-1}(x) = \arcsin x, D(f^{-1}) = [-1, 1].$



b) $f(x) = \cos x$, $D(f) = [0, \pi]$.
 $f^{-1}(x) = \arccos x$, $D(f^{-1}) = [-1, 1]$.



c) $f(x) = \operatorname{tg} x$, $D(f) =]-\frac{\pi}{2}, \frac{\pi}{2}[$.
 $f^{-1}(x) = \arctan x$, $D(f^{-1}) = \mathbb{R}$.

