Anna Lachowska
octobre 2018

Analyse I

Résumé: Formules trigonométriques.

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

1.

$$\sin(x+y) = \sin x \cos y + \cos x \sin y \qquad \sin(x-y) = \sin x \cos y - \cos x \sin y$$

$$\cos(x+y) = \cos x \cos y - \sin x \sin y \qquad \cos(x-y) = \cos x \cos y + \sin x \sin y.$$

2.

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

3.

$$\sin(x + \tfrac{\pi}{2}) = \cos x, \qquad \cos(x - \tfrac{\pi}{2}) = \sin x.$$

4.

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

5.

$$\sin\frac{\pi}{6} = \frac{1}{2} = \cos\frac{\pi}{3}, \qquad \sin\frac{\pi}{3} = \frac{\sqrt{3}}{2} = \cos\frac{\pi}{6}.$$

$$\sin\frac{\pi}{4} = \frac{\sqrt{2}}{2} = \cos\frac{\pi}{4}, \qquad \sin 0 = \cos\frac{\pi}{2} = \sin\pi = \cos\frac{3\pi}{2} = 0$$

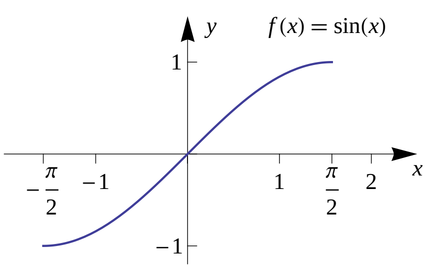
$$\sin\frac{\pi}{2} = 1 = \cos 0, \qquad \sin\frac{3\pi}{2} = -1 = \cos\pi.$$

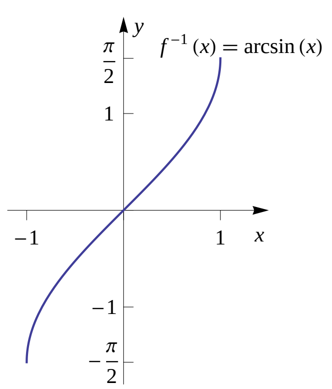
6.

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

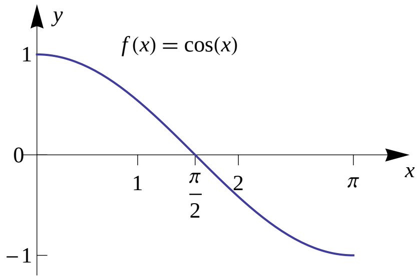
Fonctions trigonométriques et leur fonctions réciproques.

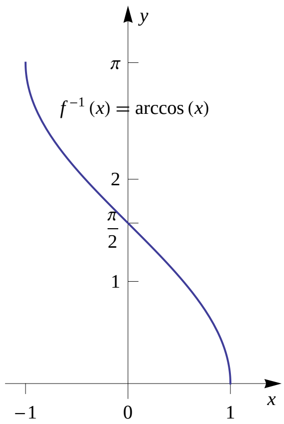
a) $f(x) = \sin x,\ D(f) = [-\frac{\pi}{2}, \frac{\pi}{2}]$.
$f^{-1}(x) = \operatorname{Arcsin} x, D(f^{-1}) = [-1, 1]$.



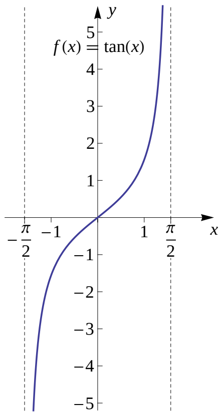


$b)$ $f(x) = \cos x,\ D(f) = [0, \pi].$
$f^{-1}(x) = \operatorname{Arccos} x, D(f^{-1}) = [-1, 1].$





$c)$



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