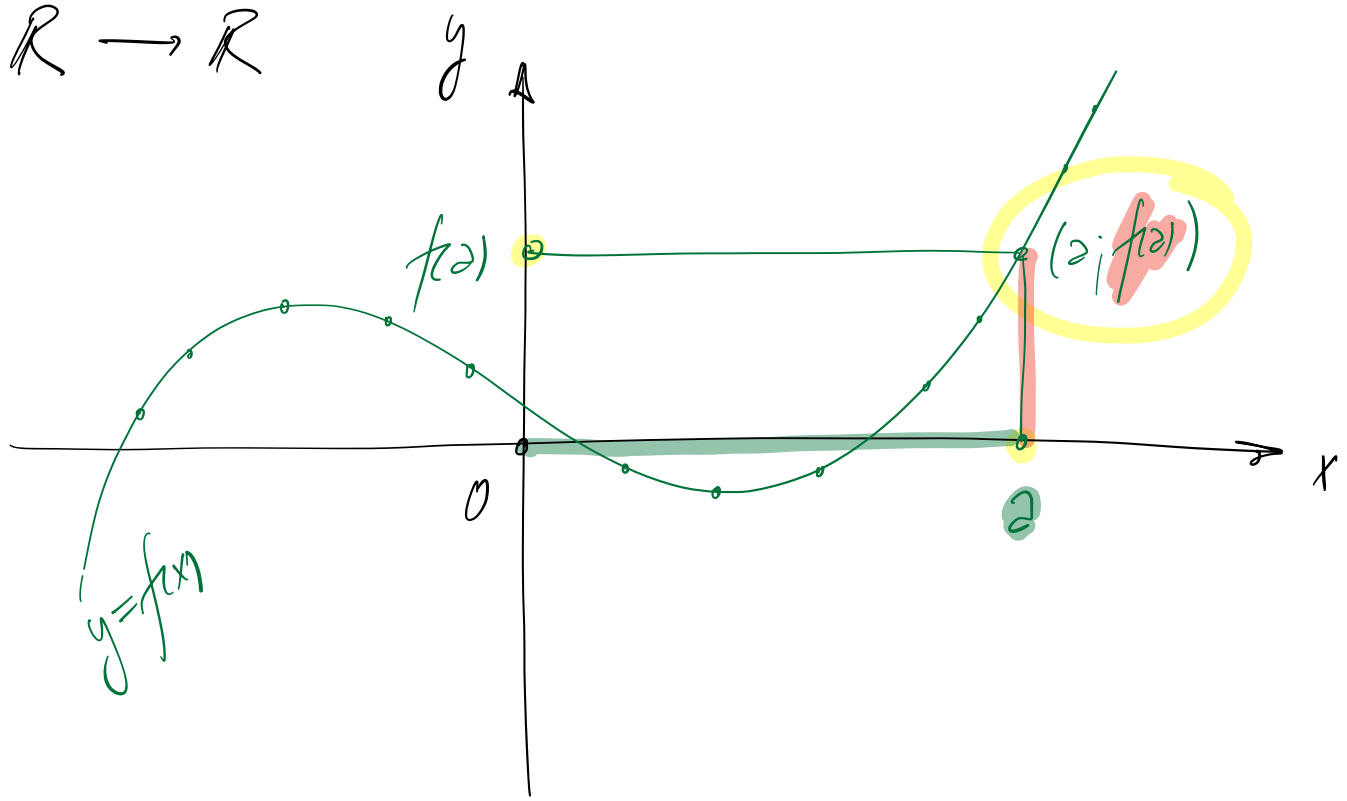
$f : \mathbb{R} \longrightarrow \mathbb{R}$



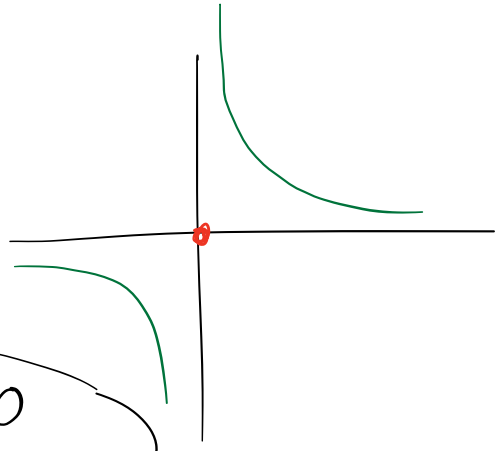
Soit $f : \mathbb{R} \longrightarrow \mathbb{R}$

$x \longmapsto f(x)$

$\frac{1}{0,1}, \frac{1}{0,01}, \frac{1}{0,001}$

① D_f l'ensemble de définition

Exemple : $f(x) = \frac{1}{x}$



définie si $x \neq 0$

$D_f = \mathbb{R}^* = \mathbb{R} - \{0\} = \mathbb{R} \setminus \{0\}$

⚠ On ne peut pas diviser par 0.

⚠ $\sqrt{a}$ n'existe pas dans $\mathbb{R}$ si $a < 0$.

Exemple: $\sqrt{1-x} = g(x)$

$g : \mathbb{R} \to \mathbb{R}$ existe si $1 - x \geq 0$

$\Leftrightarrow 1 \geq x$

$\Leftrightarrow x \leq 1$

$D_g =]-\infty ; 1]$

$g :]-\infty ; 1] \longrightarrow [0 ; +\infty[$

$\cos(x+y) = \cos x \cos y - \sin x \sin y$ (*) (3)

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

$\cos y$

$-\sin y$ (2)

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

$= \cos x \cos y + \sin x \sin y$ (**)

(*) + (**)

$\cos(x+y) + \cos(x-y) = 2\cos x \cos y - \sin x \sin y + \sin x \sin y$

$\Leftrightarrow \quad \frac{1}{2}\left(\cos(x+y) + \cos(x-y)\right) = \cos x \cdot \cos y$

$\Leftrightarrow \quad \cos x \cos y = \frac{1}{2}\left(\cos(x+y) + \cos(x-y)\right)$

$\sin x = a \qquad a \in [-1; 1]$

$$x = \arcsin(a) + k \cdot 2\pi$$

$$x = \pi - \arcsin(a) + k \cdot 2\pi$$

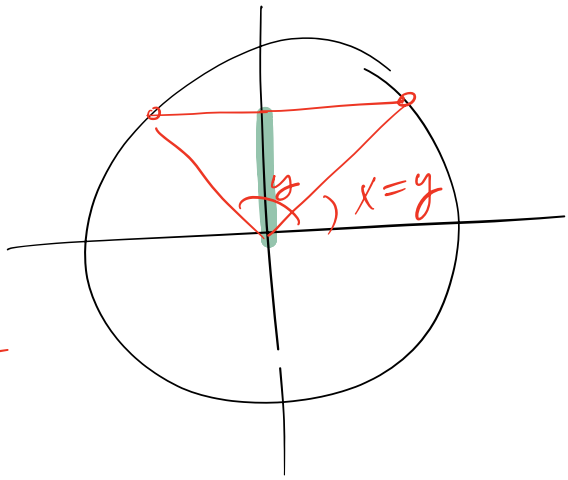
$$x = \frac{3t}{2} - \frac{\pi}{4}$$

$$\frac{3t}{2} - \frac{\pi}{4} = \arcsin(a) + k \cdot 2\pi$$

$$\frac{3t}{2} = \frac{\pi}{4} + \arcsin(a) + k \cdot 2\pi$$

$$3t = 2 \cdot \frac{\pi}{4} + 2\arcsin(a) + k \cdot 4\pi$$

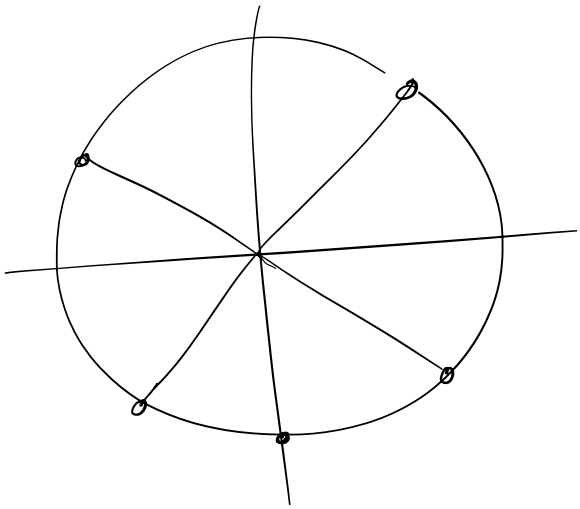
$\sin x = \sin y$



$$\begin{cases} x = y + k \cdot 2\pi \\ x = \pi - y + k \cdot 2\pi \end{cases}$$

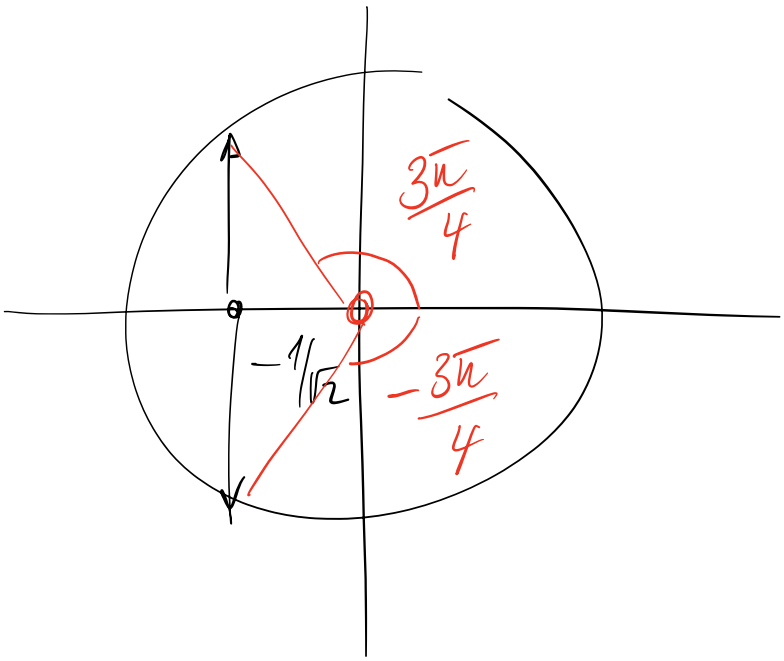
$k \cdot \pi$

$\frac{\pi}{4} + k \cdot \frac{\pi}{2}$



$\sin 2t = \sin \omega t$

$\pm \frac{\pi}{4} + k \cdot 2\pi$



$$\sin\alpha\cos\alpha - 2\sin^2\alpha = 0$$

$\div \cos^2\alpha$ si $\alpha \neq \pm\frac{\pi}{2} + k\pi$

A tester

$$\frac{\sin\alpha\cos\alpha}{\cos\alpha\cos\alpha} - 2\cdot\frac{\sin^2\alpha}{\cos^2\alpha} = 0$$

$$\tan\alpha = \frac{\sin\alpha}{\cos\alpha}$$

$$\frac{\sin\alpha}{\cos\alpha} - 2\cdot\left(\frac{\sin\alpha}{\cos\alpha}\right)^2 = 0$$

$$\tan\alpha - 2\tan^2\alpha = 0$$

$$x - 2x^2 = 0 \iff x = 0 \;/\; x = \frac{1}{2}$$

$$x(1-2x) = 0$$

$$\tan\alpha = 0 \longrightarrow \alpha$$

$$\tan\alpha = \frac{1}{2} \longrightarrow \alpha$$