

31.

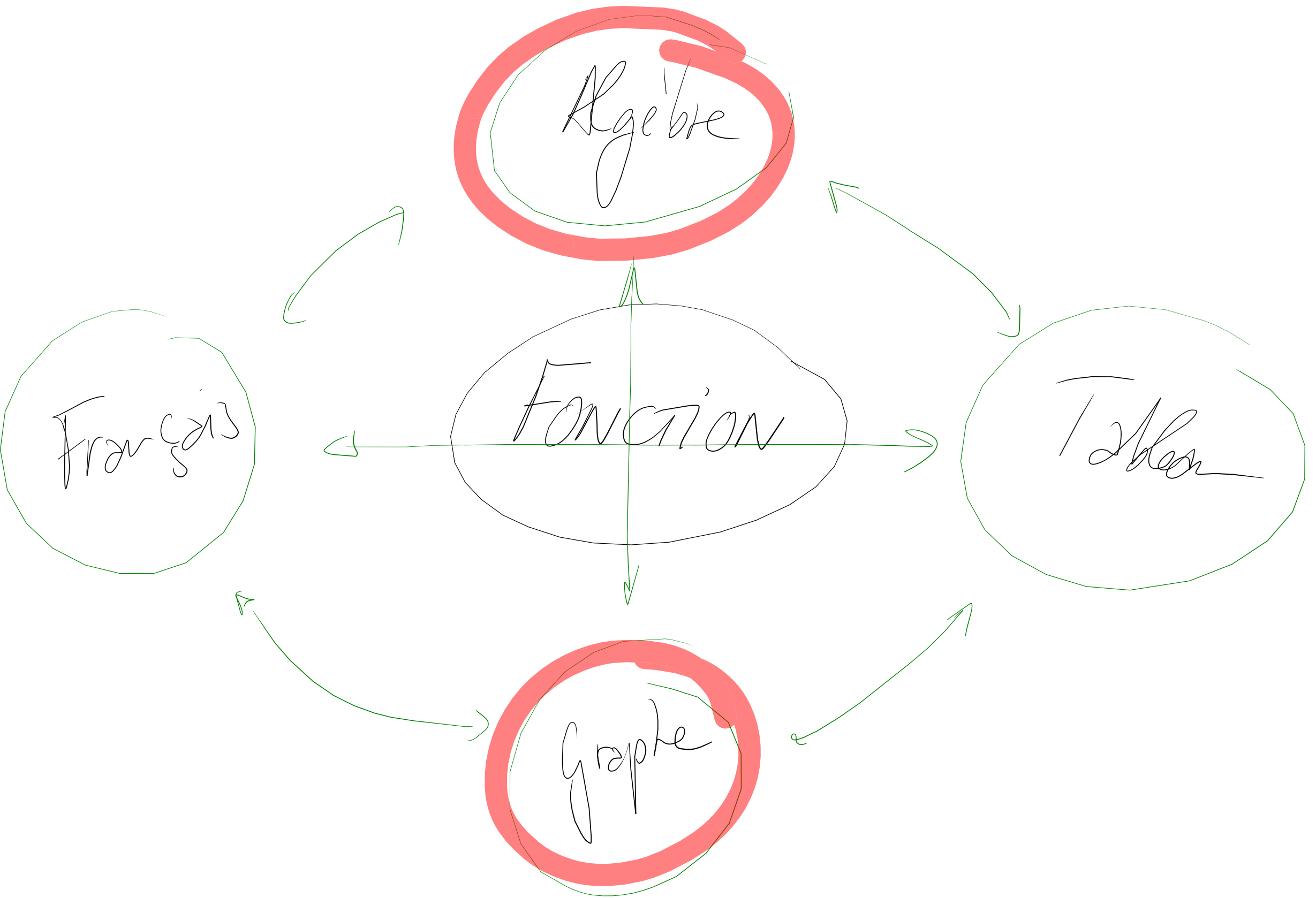
32

37 1) 2) 3)

38 2) 3)

41 a) 43

# Chapitre 1



$$f(x) = ax + b$$

$$f(x) = ax^2 + bx + c$$

$$f(x) = \frac{ax + b}{cx + d}$$

$$f(x) = e^x$$

$$f(x) = 2^x$$

$$f(x) = \frac{P(x)}{Q(x)}$$

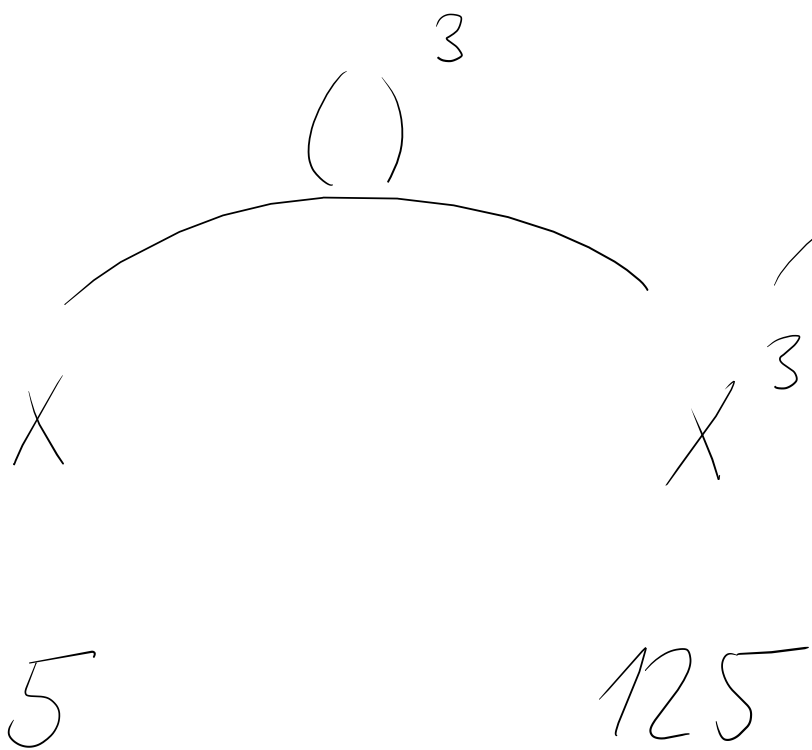
$$= \frac{x^2 - 2x + 1}{x^2 + 1}$$

$$f(x) = \sqrt{x}$$

$$f(x) = \log_2(x)$$

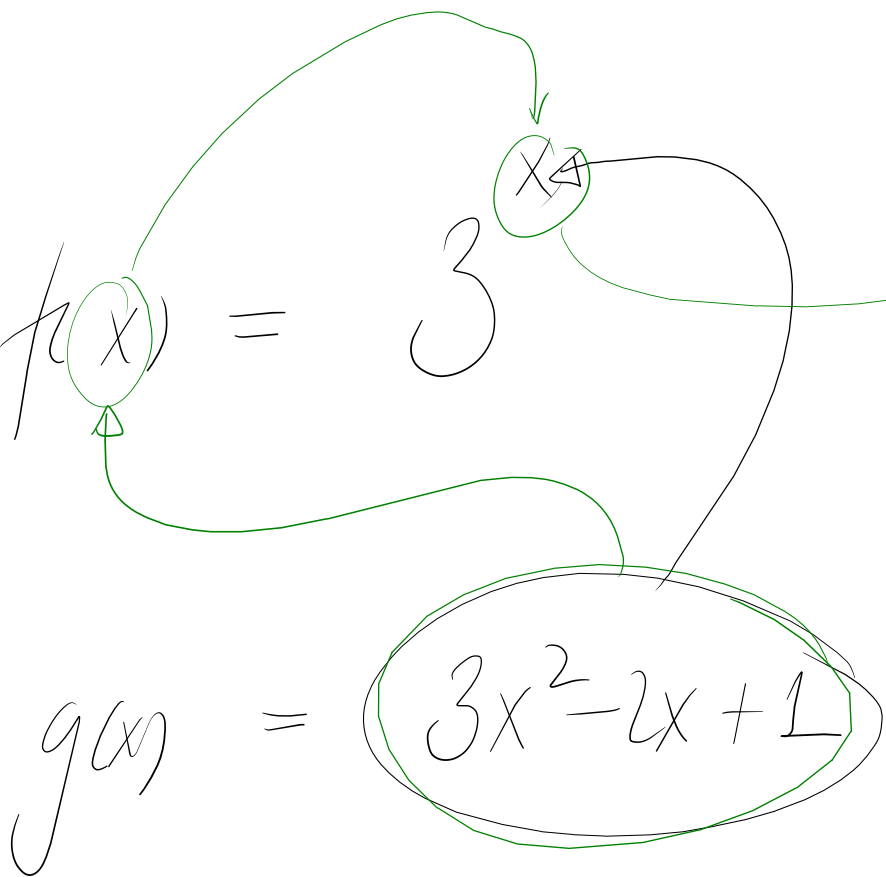
# Composition

$$\left. \begin{aligned} f(x) &= x^3 \\ g(x) &= \sqrt{x} \end{aligned} \right\} g \circ f(x)$$



$$\sqrt{x^3} = x^{\frac{3}{2}}$$

$\sqrt{125}$



$$f(g(x)) = 3$$

$$3x^2 - 2x + 1$$

$$f(0) = 3^0 = 1$$

$$x \mapsto 3x^2 - 2x + 1$$

$$x \mapsto 3^{3x^2 - 2x + 1} = 3^{3x^2 - 2x + 1}$$

Notation

$$f \circ g(x) = f(g(x))$$

composition

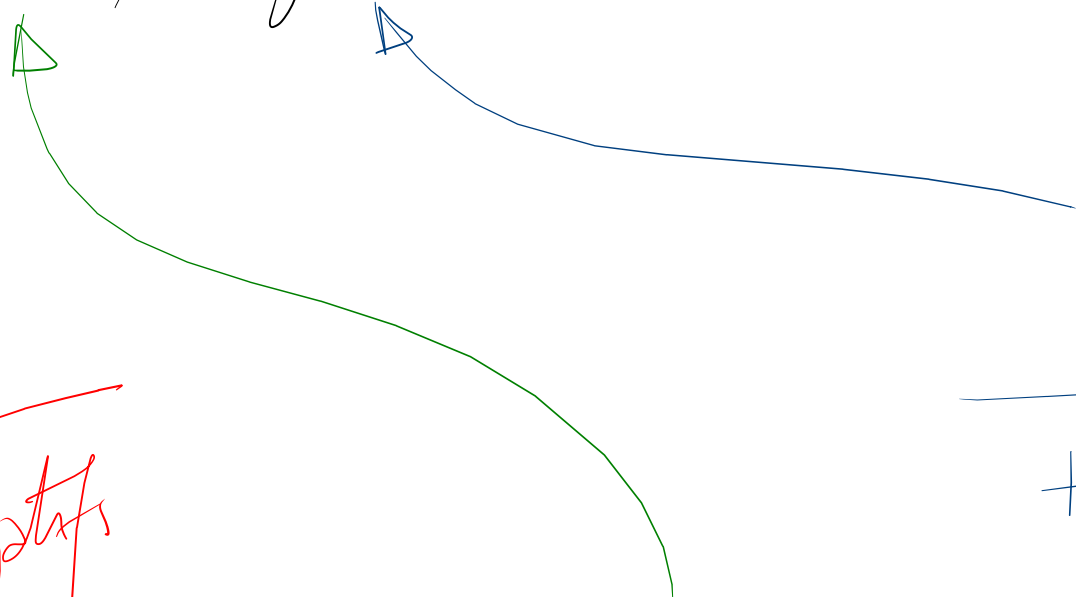
$$\frac{A}{B} + \frac{C}{D} = \frac{AD + BC}{BD}$$

$$\frac{1}{A} + \frac{1}{B} = \frac{B+A}{AB}$$

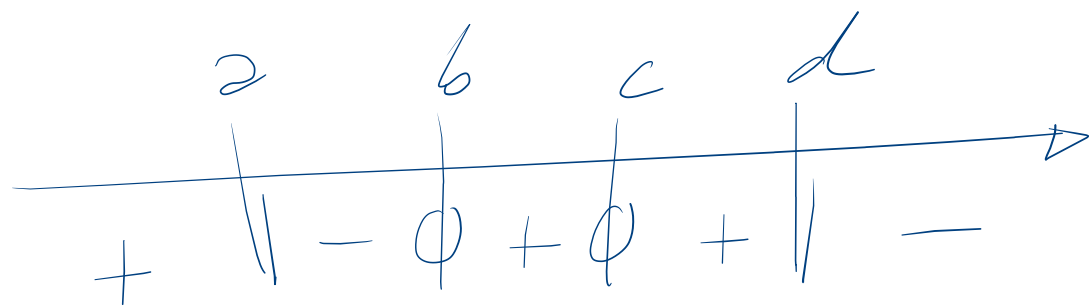
$$\frac{1}{x-1} + \frac{1}{x-2} = \frac{1 \cdot (x-2) + (x-1) \cdot 1}{(x-1)(x-2)} = \frac{2x-3}{(x-1)(x-2)}$$

$ED_f$  / zeros / signe

$\frac{?}{0}$  /  $\sqrt{\text{negatifs}}$



$f(x)=0$





$$y = ax + b$$

↑  
pente

pas une fraction

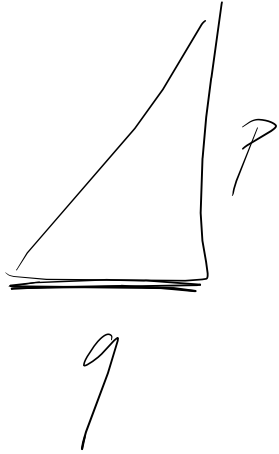
$$a < 0$$



$$a > 0$$



$$a = \frac{P}{q}$$



$$f_1(x) = 3x - 5$$

$$f_2(x) = 2 - 4x$$

$$f_1 \circ f_2(x) = f_1(f_2(x)) = 3(2 - 4x) - 5$$

$$= 3 \cdot f_2(x) - 5$$

$$= 6 - 12x - 5$$

$$= 1 - 12x = -12x + 1$$

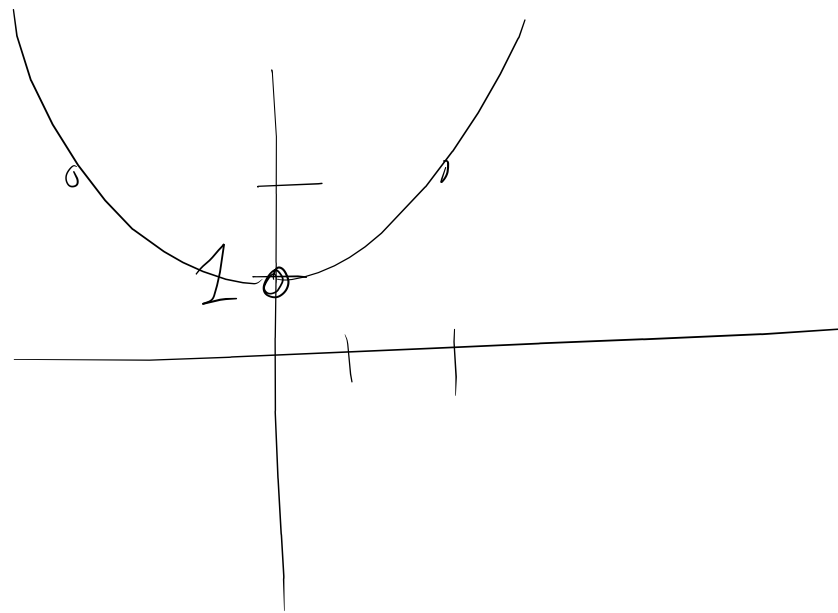
$$f_2 \circ f_1(x) = f_2(f_1(x))$$

$$\frac{1}{4}x^2 + 0x + 1$$

$$a \quad b \quad c$$

$$a = \frac{1}{4} \quad b = 0 \quad c = 1$$

$$x = \frac{-0 \pm \sqrt{0 - 4 \cdot \frac{1}{4} \cdot 1}}{2 \cdot \frac{1}{4}}$$



$$\Delta = b^2 - 4ac = 0^2 - 4 \cdot \frac{1}{4} \cdot 1 = -1$$

$\Rightarrow$  ~~Zeros~~

$$f \circ g(x) = f(g(x))$$

$$f_1(x) = 3 - 5x$$

$$f_2(x) = 2x + 8$$

$$f_1 \circ f_2(x) = f_1(f_2(x))$$

$$= f_1(2x + 8) = 3 - 5(2x + 8)$$

$$= 3 - 10x - 40 = -10x - 37$$

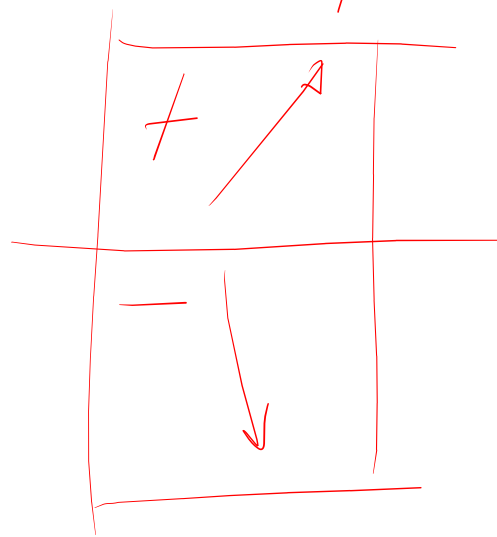
$$f(x) = ax + b$$

↑  
pente

↑  
ordonnée à l'origine

$$a = \pm \frac{P}{q}$$

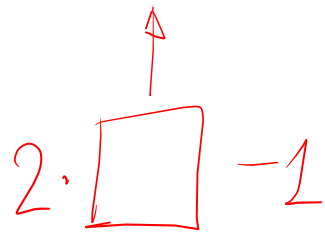
← vertical  
← horizontal



TE 11 septembre

Selon 2 listes

$$f_1(x) = x+1 \quad f_2(x) = 2x-1 \quad f_3(x) = x^2+x$$


$$2 \cdot \square - 1$$


$$f_4(x) = \sqrt{x+3}$$

$$f_1 \circ f_2(x) = f_1(f_2(x))$$

$$f_1 \circ f_2(x) = f_1(f_2(x))$$

$$= f_2(x) + 1 = (2x-1) + 1 = 2x$$

$$f_2 \circ f_3(x) = f_2(f_3(x)) = 2 \cdot (x^2+x) - 1 = 2x^2 + 2x - 1$$


$$\log_2 8 = 3 \iff 2^3 = 8$$

*(Note: In the original image, the '2' in the log base and the '8' are circled in red, and a red arrow points from the '2' to the word 'base' written below it.)*

$$2^1 = 2$$

$$2^2 = 4$$

$$2^3 = 8$$

$$2^3 = 8$$

Quelle est la puissance à laquelle  
élever 2 pour trouver 8 ?

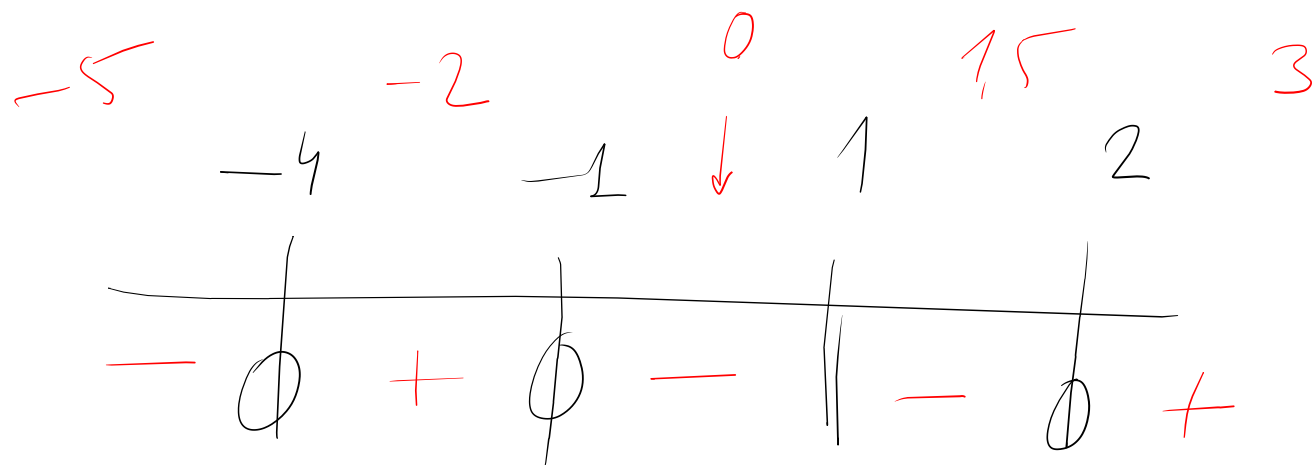


$$(x-1)$$

---

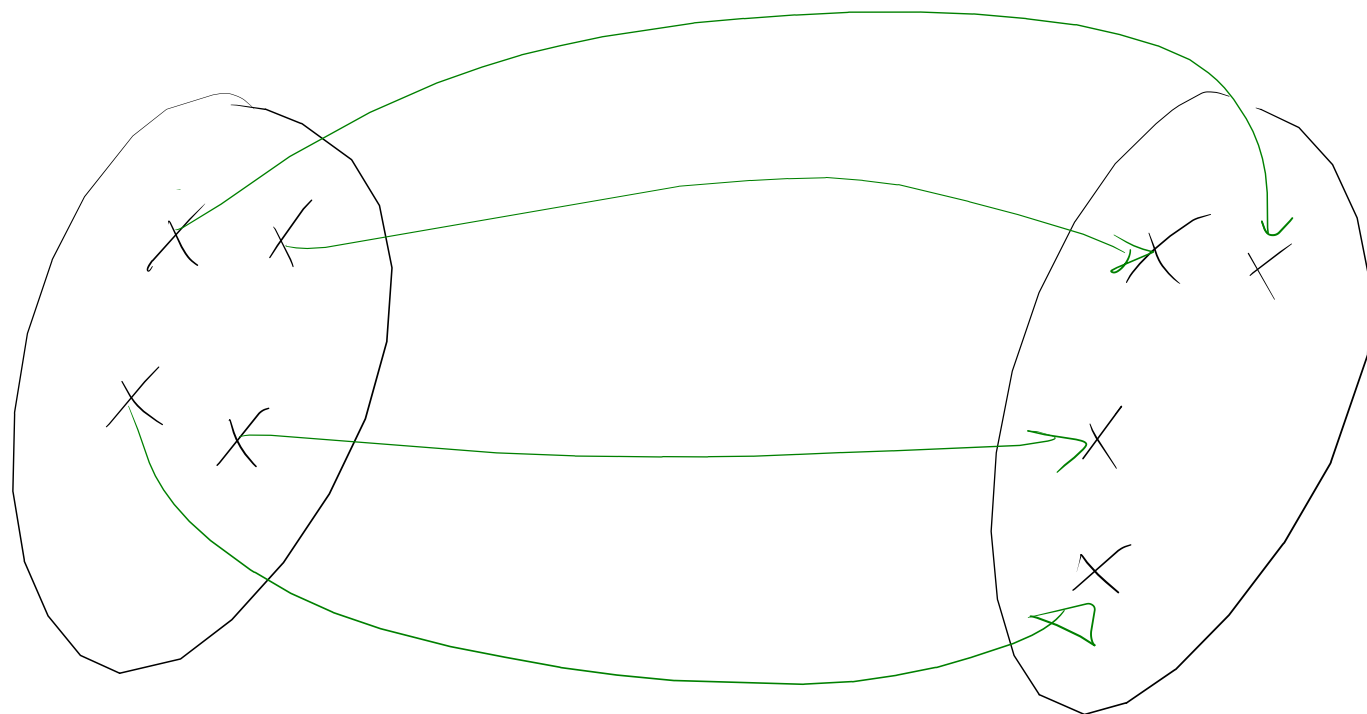
$$(x+1)(x-1)(x+4)(x-2)$$

$$\boxed{x=0} \quad \frac{\cancel{x} \cdot 1}{1 \cdot (\cancel{-1}) \cdot 4 \cdot (-2)} < 0$$



Bijection (function bijective)

One-to-one



$$a \neq 0$$

$$y = 2x + b$$

$$f^{-1}(f(x)) = x$$

$$y = f(x)$$

$$f^{-1}(y) = x$$

$$f(f^{-1}(y)) = y$$

$$y - b = 2x$$

$$x = \frac{y - b}{2} = \frac{1}{2}y - \frac{b}{2}$$

$\Rightarrow 2x + b$  est bijective

et sa réciproque

$$\text{est } \frac{1}{2}x - \frac{b}{2}$$