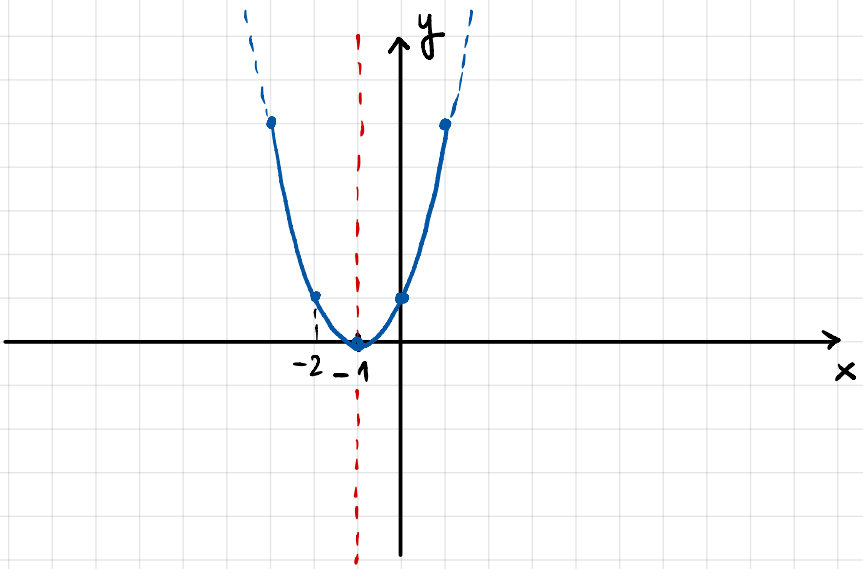
$f(x) = (x+1)^2 = x^2 + 2x + 1$ polinomi $\quad \text{dom} f = \mathbb{R}$

$g(x) = x$ monomio, più in generale è un polinomio

$\text{dom} g = \mathbb{R}$



$y = x^2 + 2x + 1 = (x+1)^2$

$a = 1 \quad b = 2 \quad c = 1$

$V\left(-\frac{b}{2a}, -\frac{\Delta}{4a}\right)$

$\Delta = 2^2 - 4 \cdot 1 \cdot 1 = 0$

$V\left(-\frac{2}{2}, -\frac{0}{4 \cdot 1}\right) =$

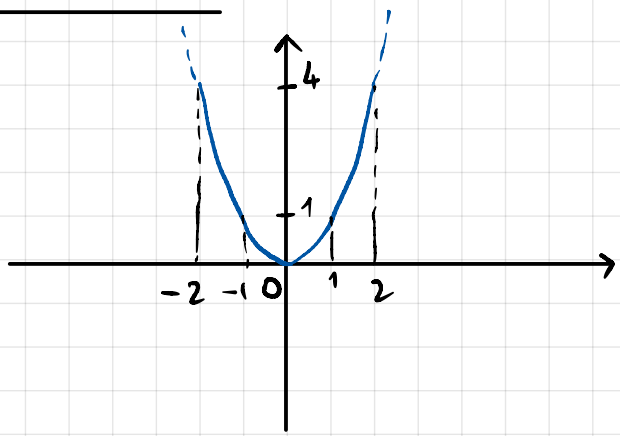
$= (-1, 0)$

x	y
0	1
-2	1
1	4
-3	4

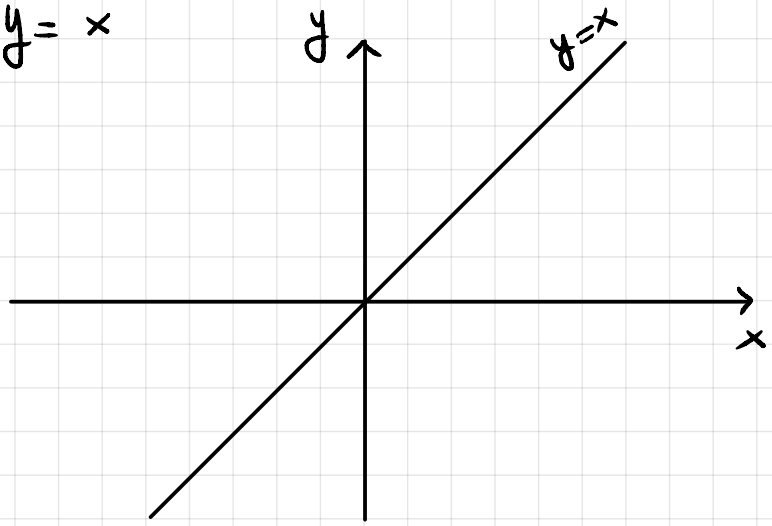
OPPURE CON TRASLAZIONI

$y = x^2$

$x \longmapsto x+1$

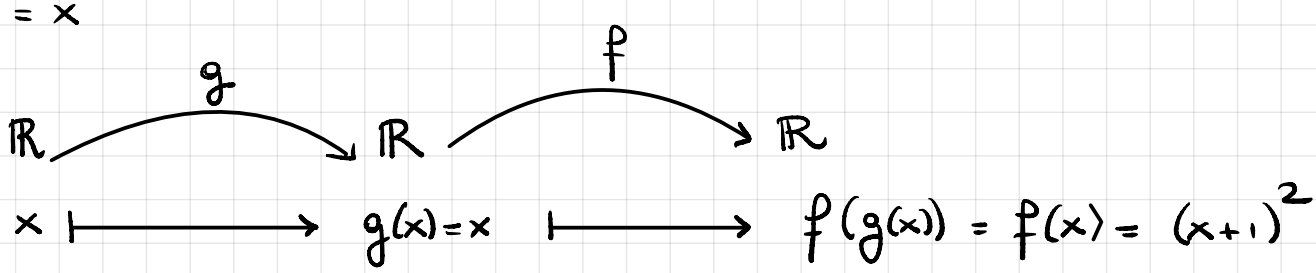


g) $y = x$



$f(x) = (x+1)^2$

$g(x) = x$



$(f \circ g)(x) = f(g(x)) = f(x) = (x+1)^2 \quad \Rightarrow \boxed{f \circ g = f}$

($g(x)=x$; chi è $f(x)$?)

$(g \circ f)(x) = g(f(x)) = g((x+1)^2) = (x+1)^2 = f(x)$

(al posto di x in $g(x)$ inserisco $(x+1)^2$)

$\Rightarrow \boxed{g \circ f = f}$

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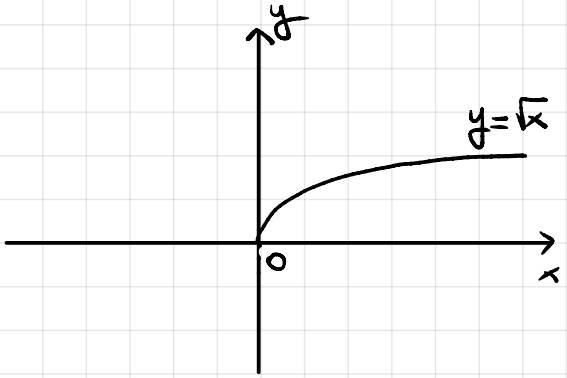
(3) $f(x) = x^2$ $\quad \text{dom} f = \mathbb{R}$

$g(x) = \sqrt{x}$ $\quad \text{dom} g = [0, +\infty)$



$y = \sqrt{x} \rightarrow y^2 = x \rightarrow x = y^2$

$f \circ g : [0, +\infty) \longrightarrow \mathbb{R}$ $\quad (f \circ g)(x) = f(g(x)) = f(\sqrt{x}) = (\sqrt{x})^2 = |x| = x$

$g \circ f : \mathbb{R} \longrightarrow \mathbb{R}$ $\quad (g \circ f)(x) = g(f(x)) = g(x^2) = \sqrt{x^2} = |x|$

$f(x) = \sqrt{x}$ $\quad$ $g(x) = x^2 + 1$