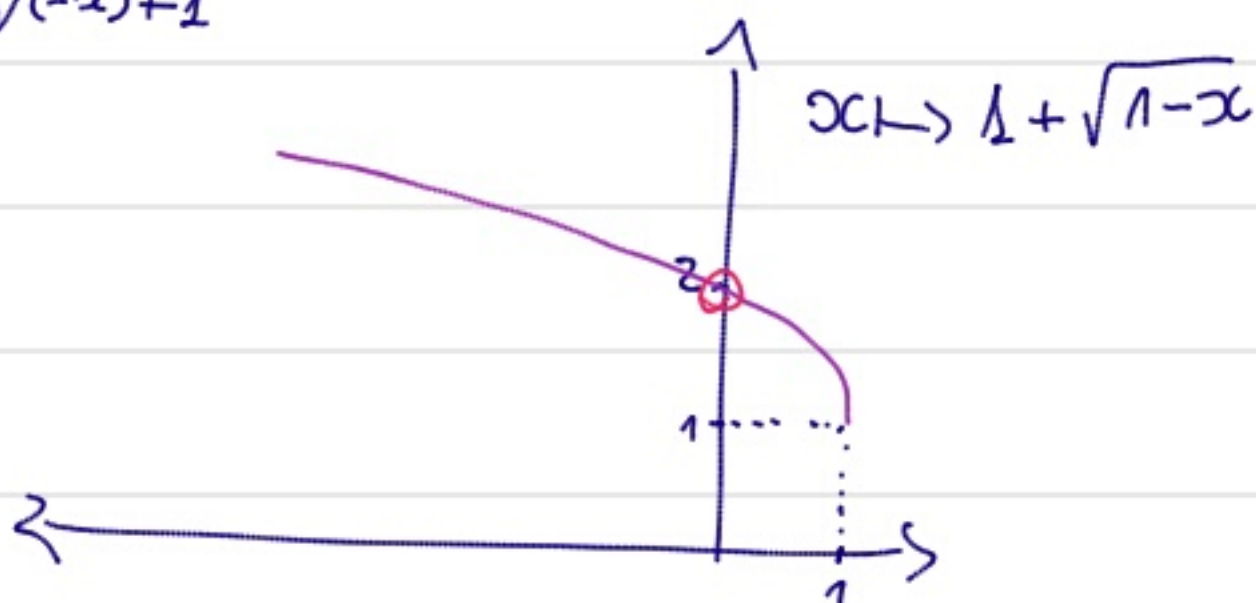
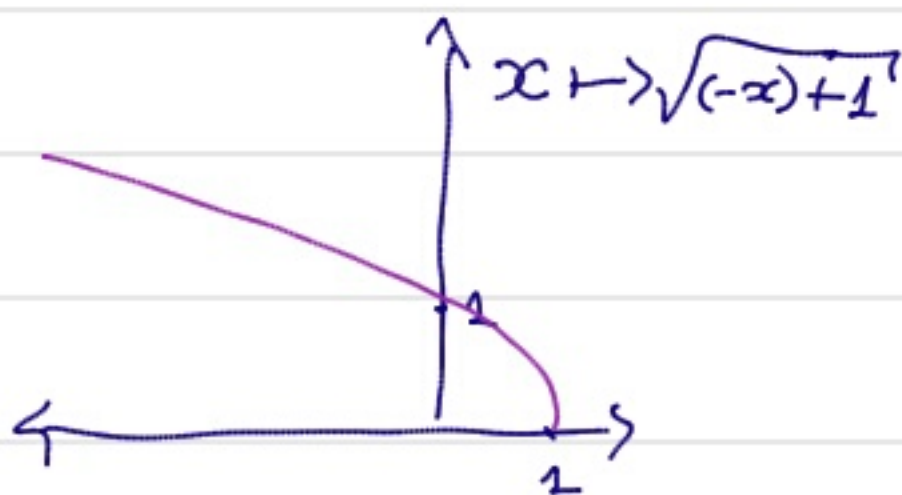
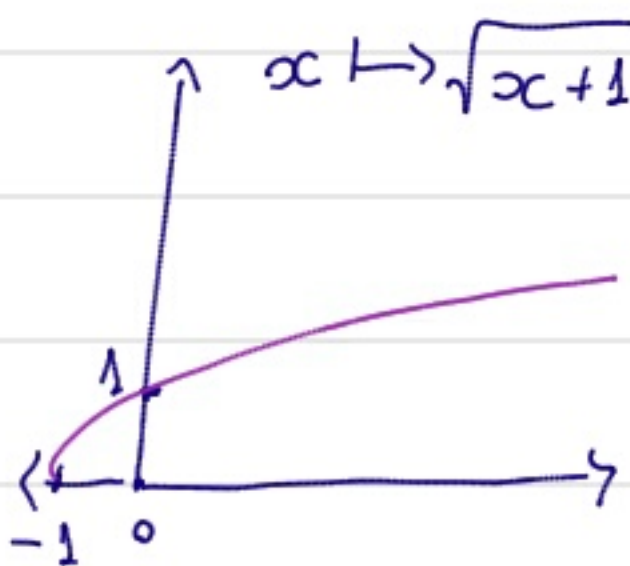
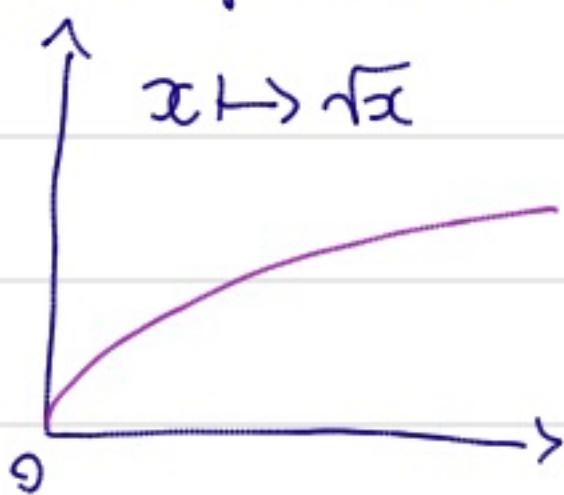


Ayudantía 03, problema 5, parte c):

$$f(x) = \frac{x}{1 - \sqrt{1-x}}, \text{ pero si } x \neq 0, x \leq 1,$$

$$f(x) = 1 + \sqrt{1-x}.$$

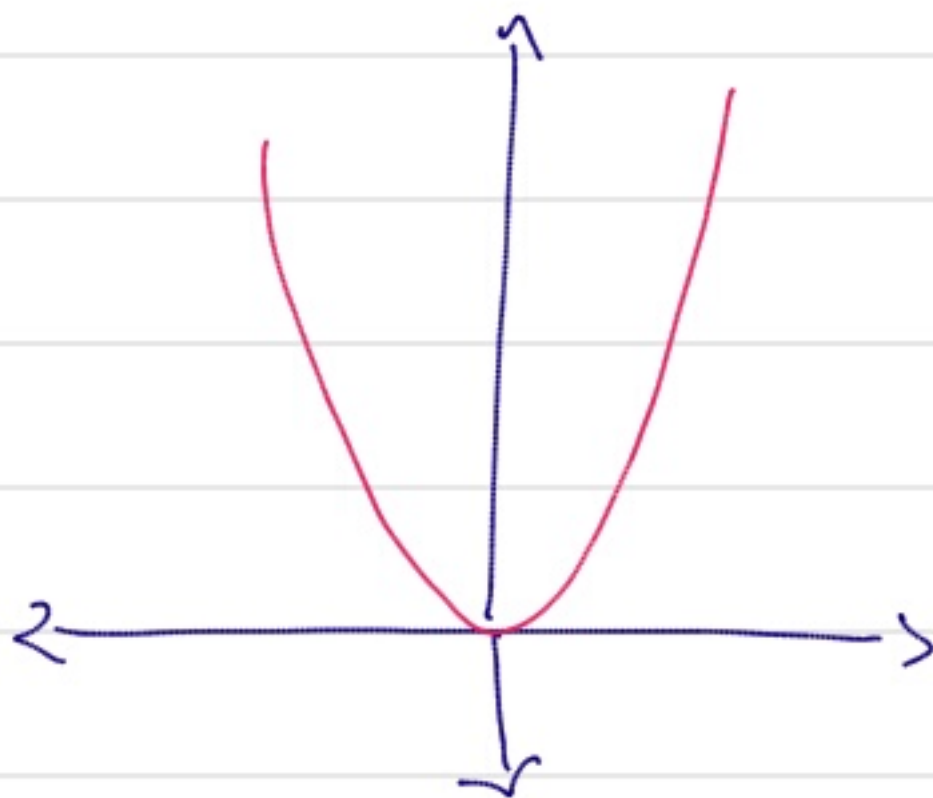
Conocemos el gráfico de $x \mapsto \sqrt{x}$. Aplicando transformaciones:



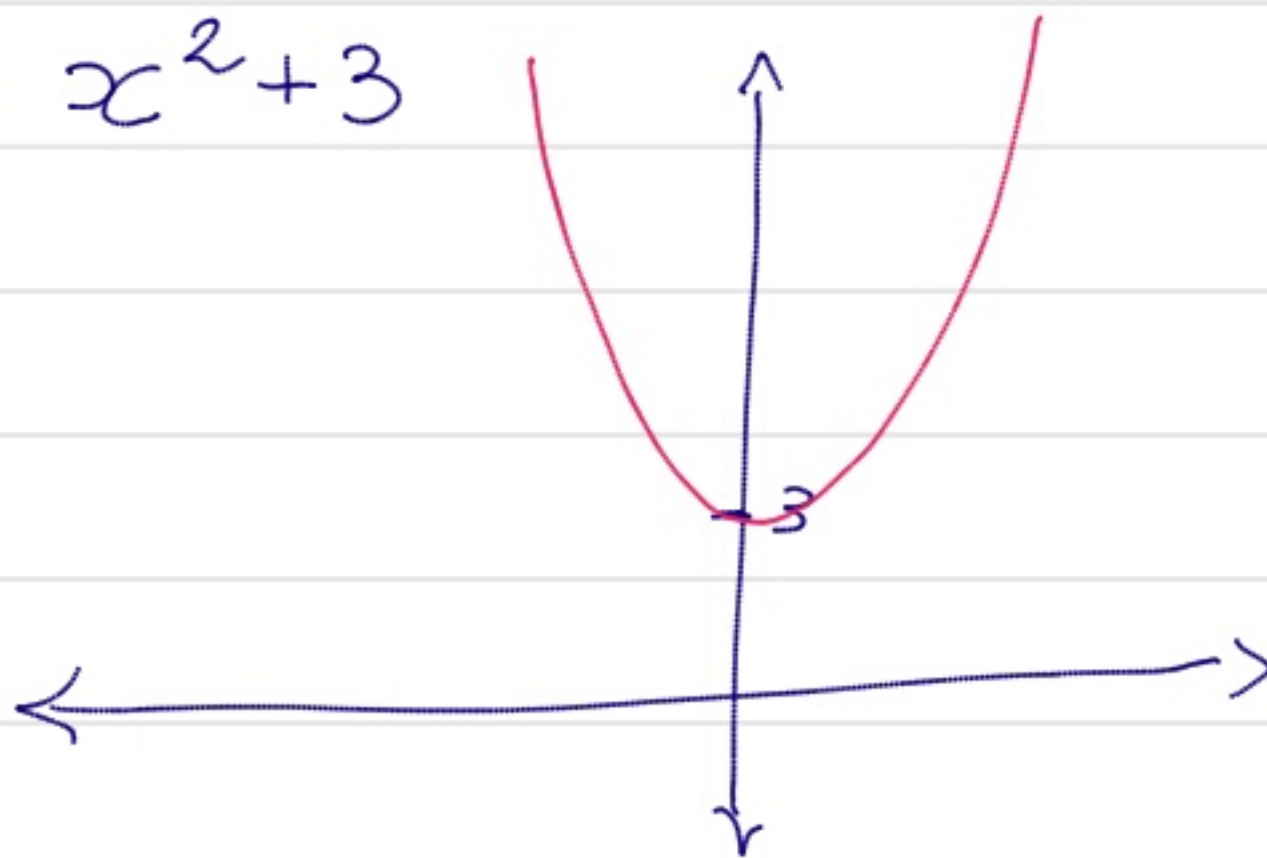
Como $\text{Dom } f = (-\infty, 1] \setminus \{0\}$, debemos quitar $x=0$ del gráfico.

MAT 1107 - Introducción al Cálculo
Ayudantía 04, 7-04-2022

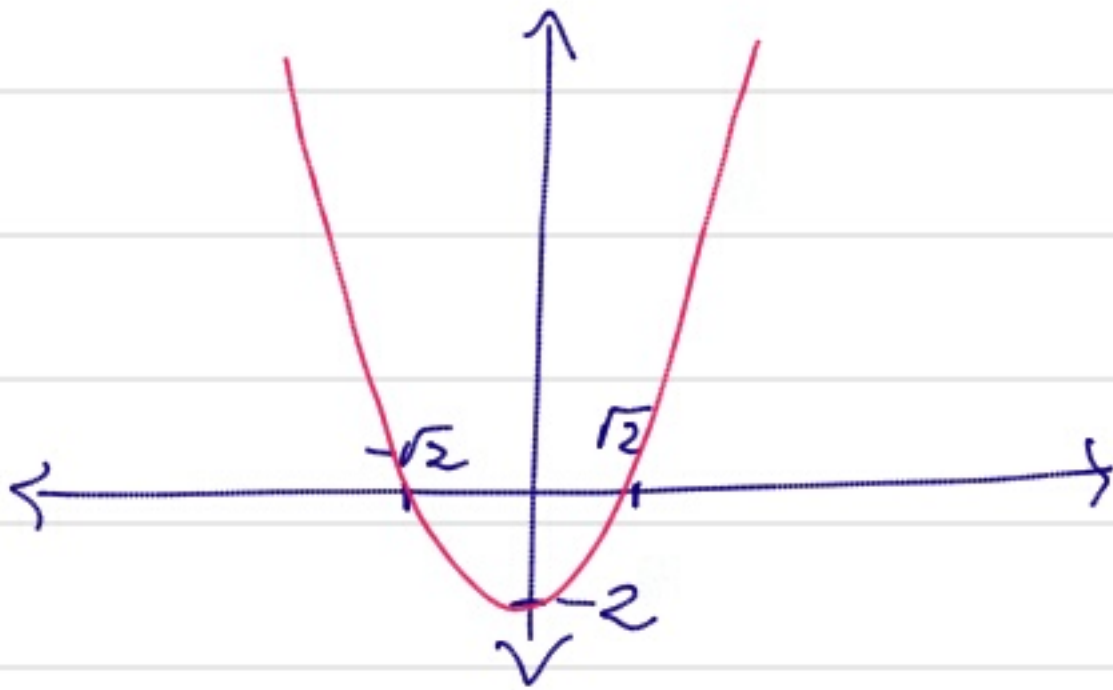
Problema 1. $f(x) = x^2$



1. $g(x) = x^2 + 3$



2. $h(x) = x^2 - 2$, $h(x) = 0$ ssi $x = \pm\sqrt{2}$.

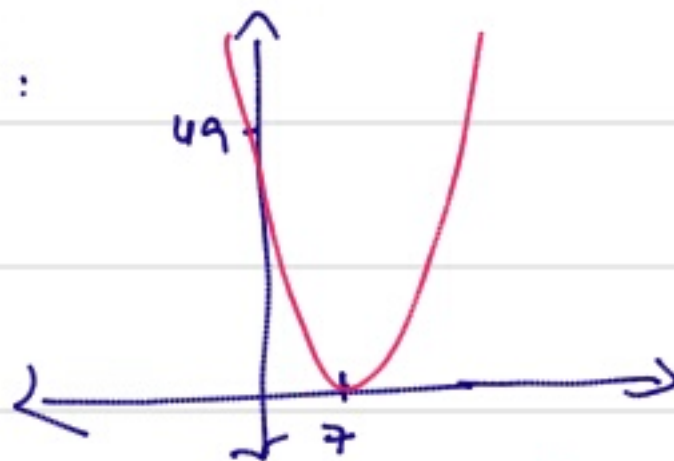


3. $k(x) = x^2 - 14x - 36$

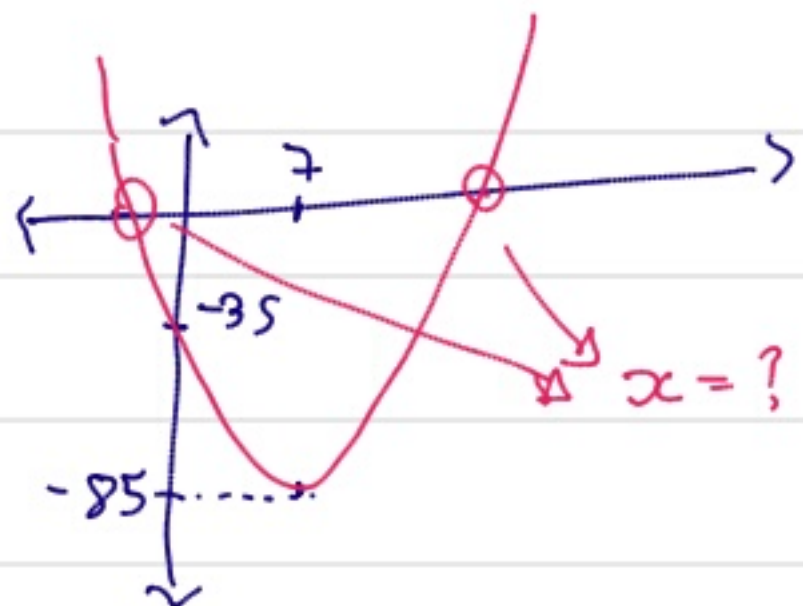
$$= x^2 - 2 \cdot 7x + 49 - 49 - 36$$

$$= (x - 7)^2 - 85.$$

$x \mapsto (x - 7)^2$:

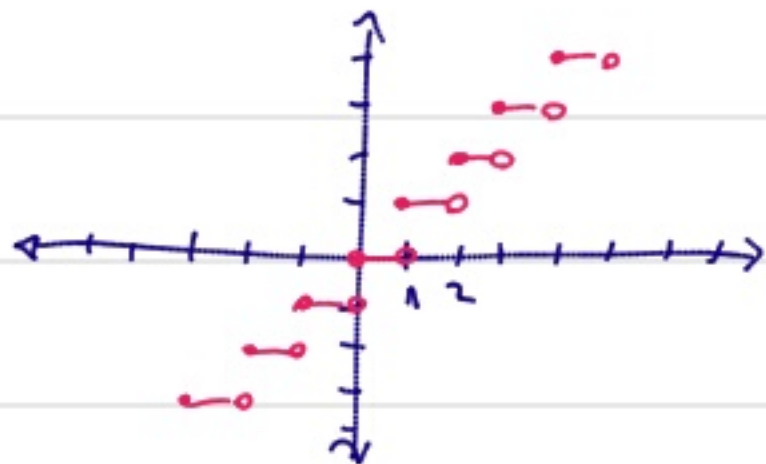


$x \mapsto (x - 7)^2 - 85$

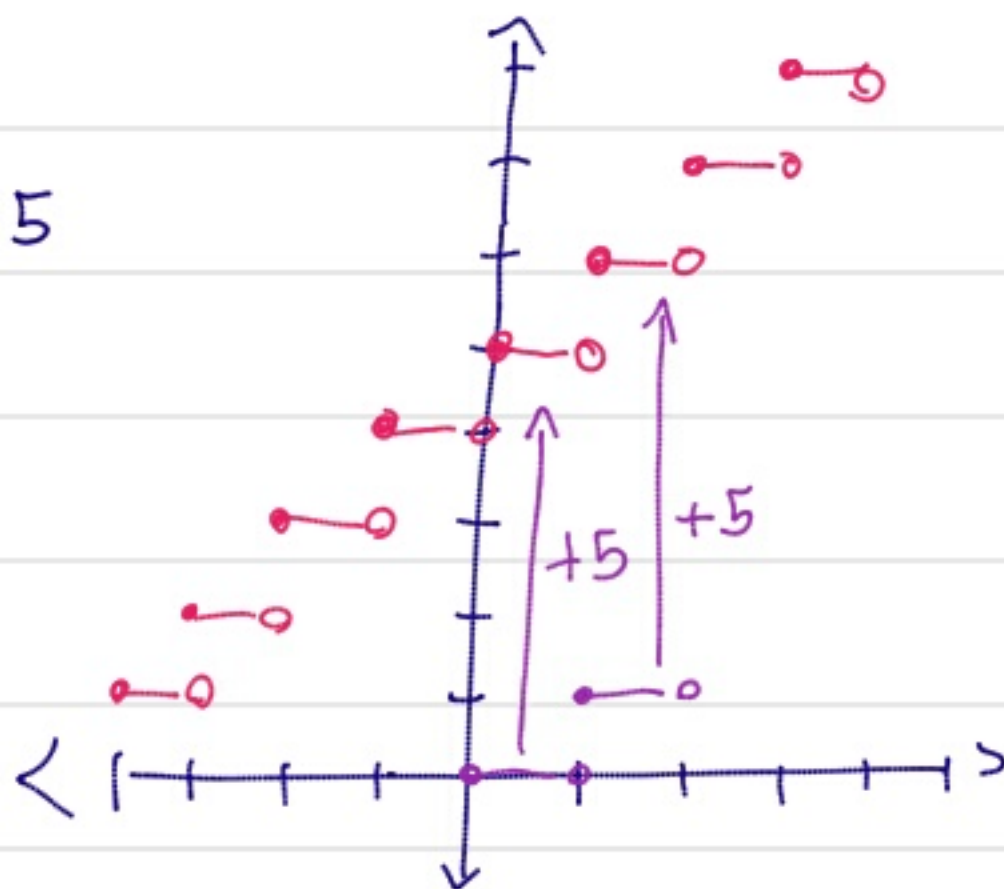


P2. $[\cdot]: \mathbb{R} \rightarrow \mathbb{Z}$.

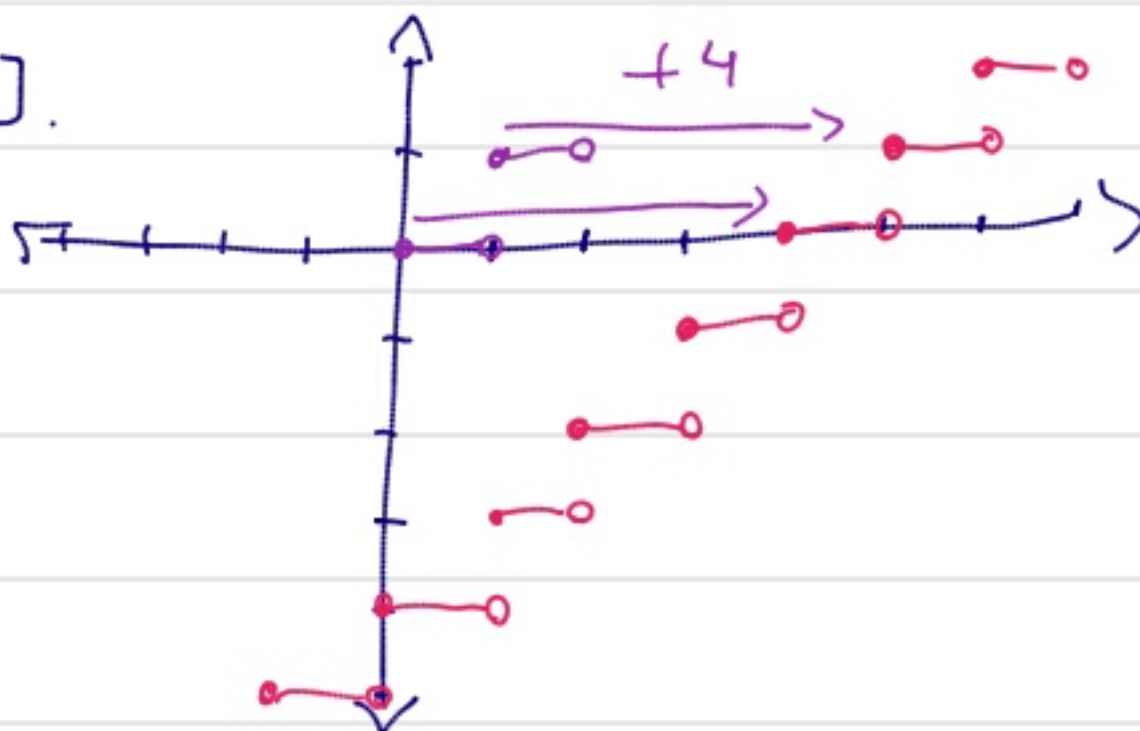
$$[x] = n \Leftrightarrow n \leq x < n+1 \quad \forall n \in \mathbb{Z}.$$



1. $f(x) = [x] + 5$

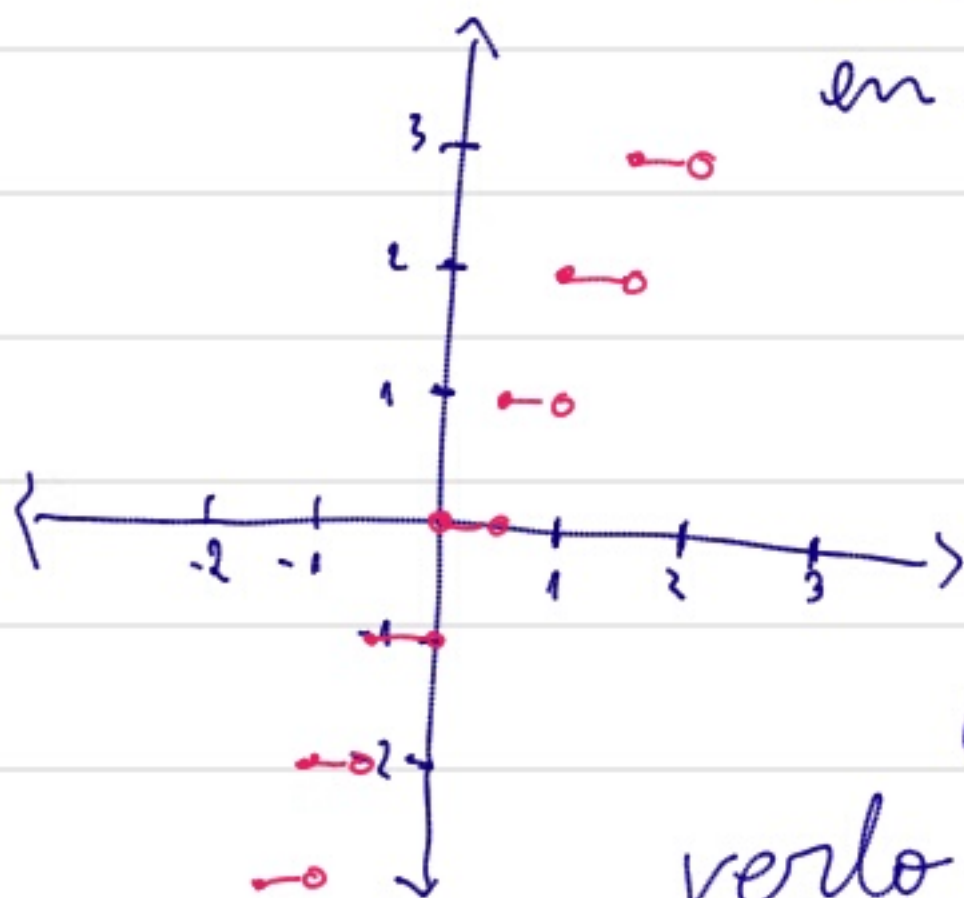


2. $g(x) = [x-4]$



3. $h(x) = [2x]$.

lo contraer $\rightarrow \leftarrow$ el gráfico
en razón $\frac{1}{2}$. (horizontalmente)



Otra manera de verlo es con la definición.

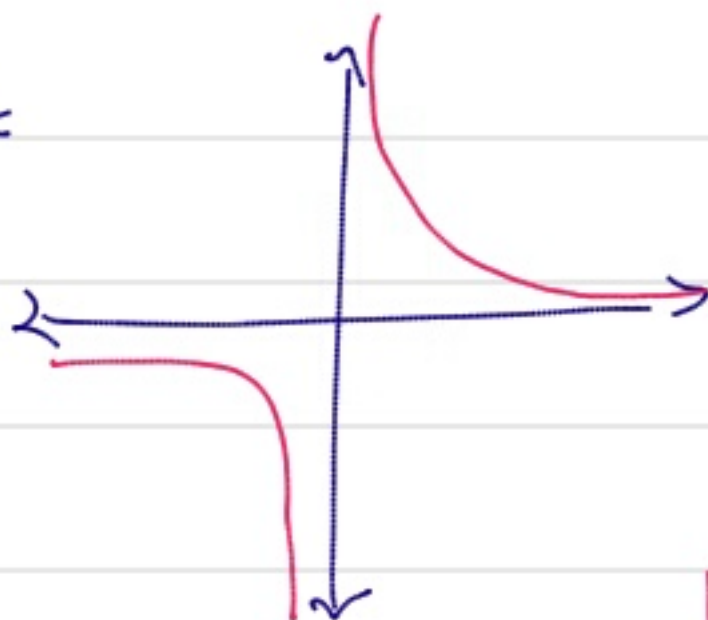
Para $m \in \mathbb{Z}$, $[2x] = m$ ssi

$$m \leq 2x < m+1$$

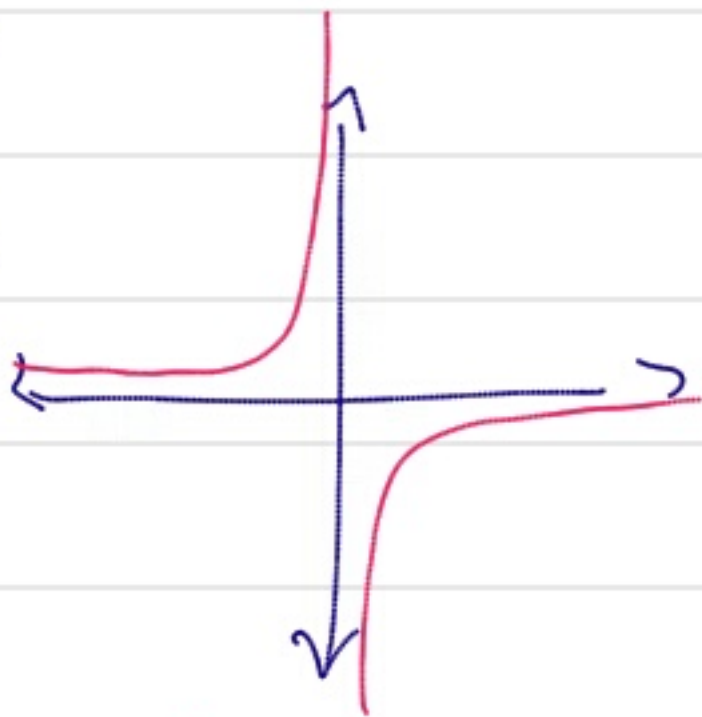
$$\Leftrightarrow \underbrace{\frac{m}{2} \leq x < \frac{m+1}{2}}$$

h sería constante en los intervalos.

P3. $f(x) = \frac{1}{x}$



1. $g(x) = \frac{1}{-x} = f(-x)$

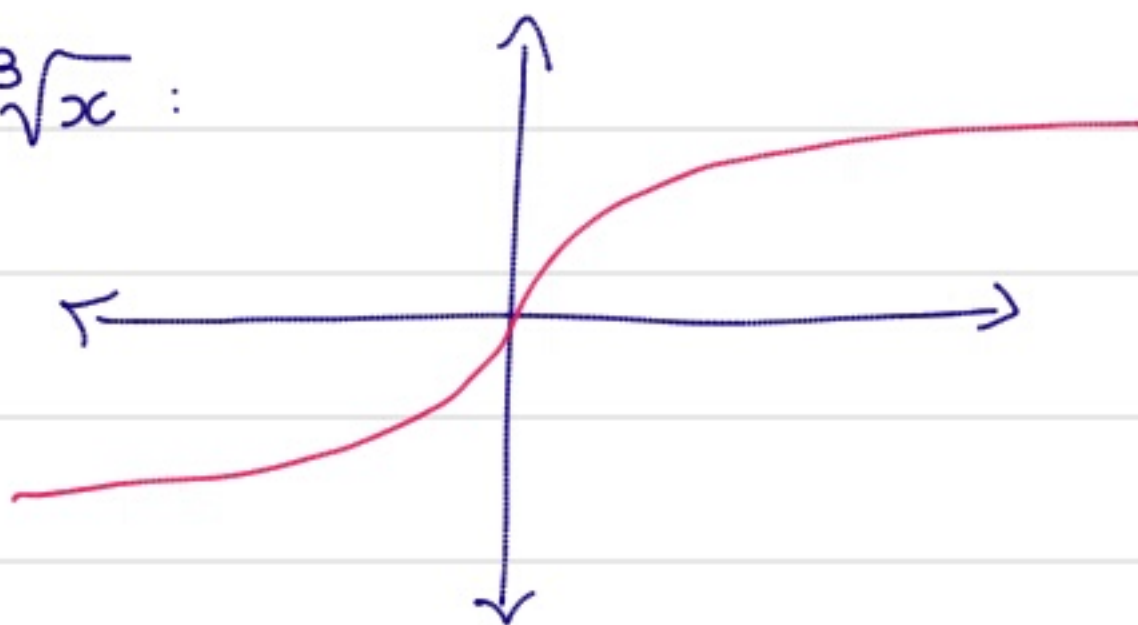


2. $h(x) = \frac{1}{|x|} = f(|x|)$

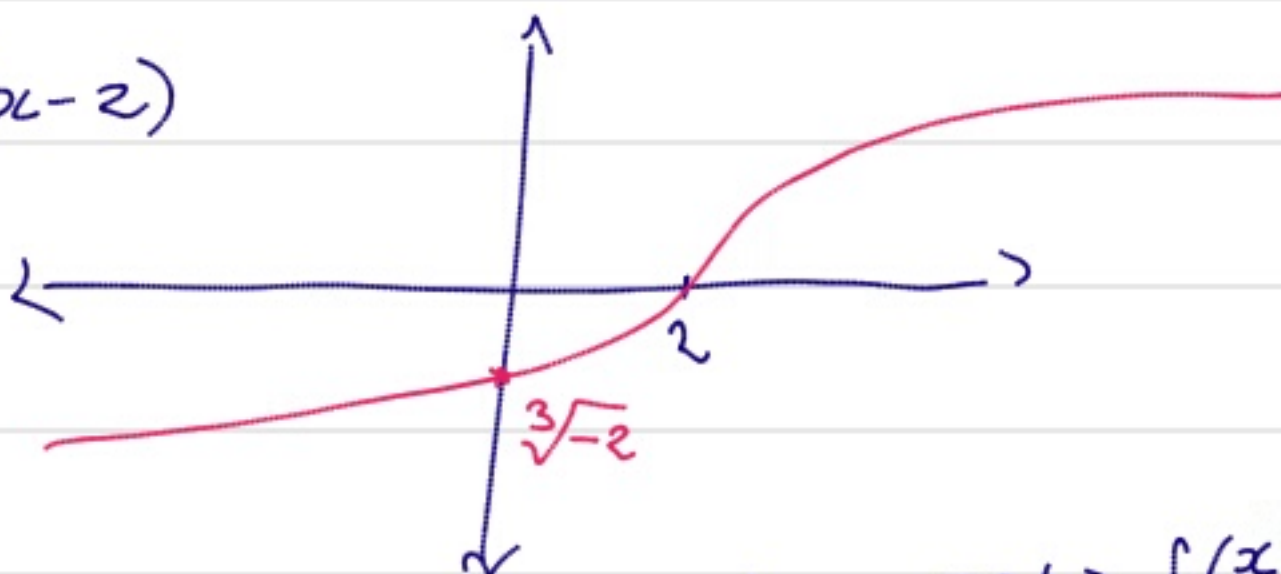
$$= \begin{cases} \frac{1}{x}, & x > 0 \\ \frac{1}{-x}, & x < 0 \end{cases}$$



P4. $f(x) = \sqrt[3]{x}$:



1. $g(x) = f(x-2)$



2. $h(x) = f(\frac{x}{5}) + 5$

