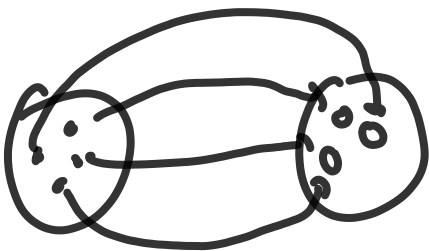


$$7 + 4 \times (5 - 2 \times (2 - 6)) + 2 \times 4$$

$$7 + 4 \times \downarrow \quad \quad \quad 13 \quad \quad \quad \uparrow + 2 \times 4$$

$$5 - 2 \times \downarrow \quad \quad \quad (-4) \quad \quad \quad \uparrow$$

$$(2 - 6) \uparrow$$

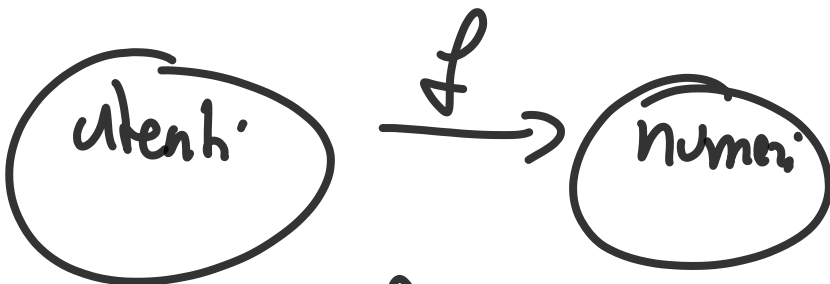
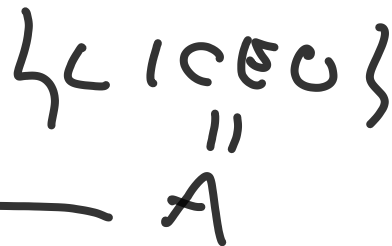
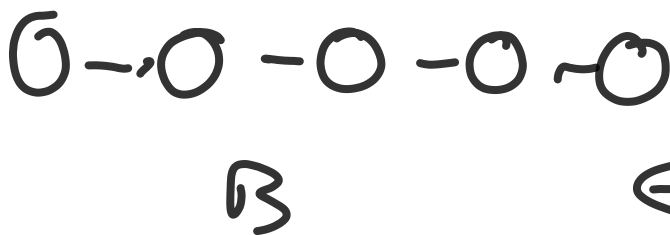


dominio A codominio B

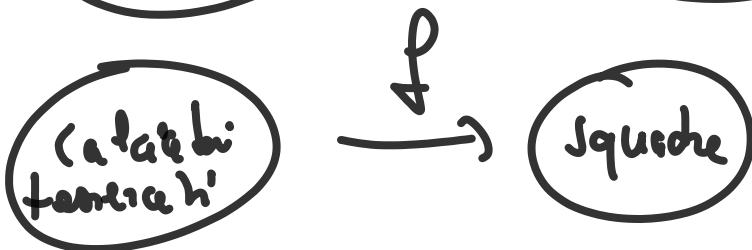
$$f: A \rightarrow B$$

Ad ogni oggetto del dominio corrisponde un oggetto del codominio

Es: $f: \mathbb{R} \rightarrow \mathbb{R}$
 $f(x) = \sin x$



$f(A) =$
 n° di telefoni di a .



suriettiva = in ogni elem. del codominio arriva almeno una freccia

iniettiva = in ogni elem. del codominio arriva al più una freccia

$f(x) = x^3$ $f: \mathbb{R} \rightarrow \mathbb{R}$
 iniettiva e suriettiva

$f(x) = x^2$
 non suriett. non iniett.
 -2 non è un quadrato 2 e -2 hanno lo stesso quadrato

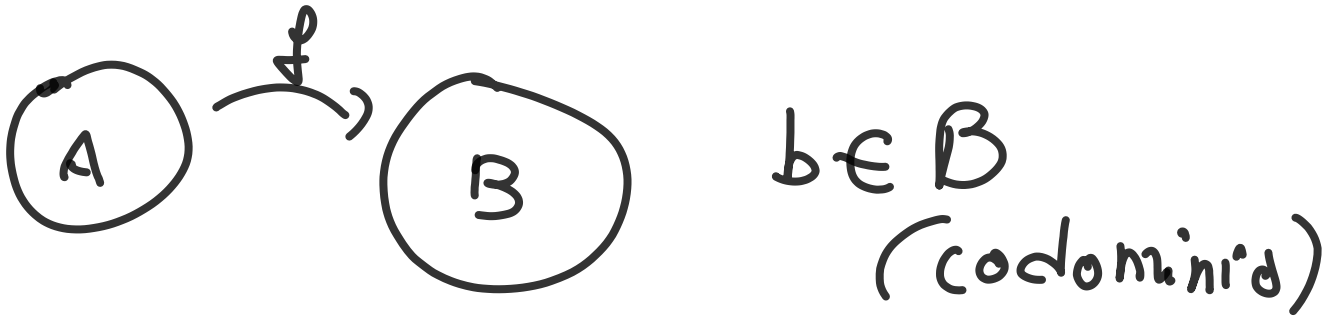
grafica $f(x) = x^3$

$f(x) = x^2$



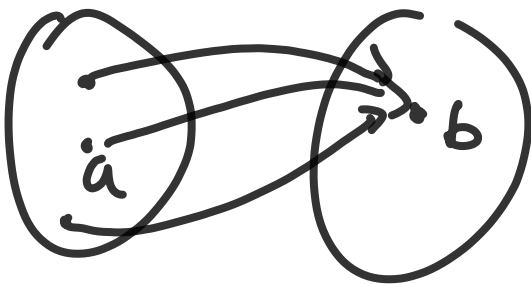
Juve				
Milan		X		
Inter	X			X
Benepe				
Leao				
Castelli				
Difazio				

Controimmagine



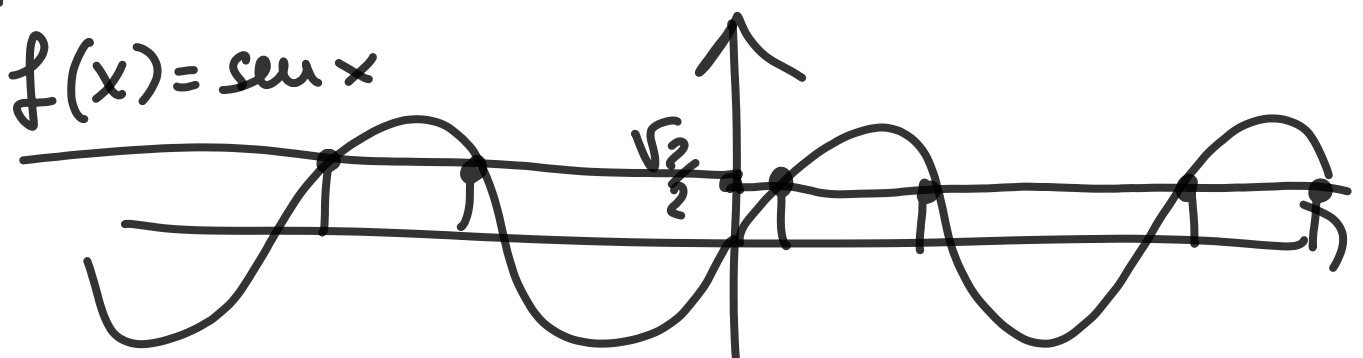
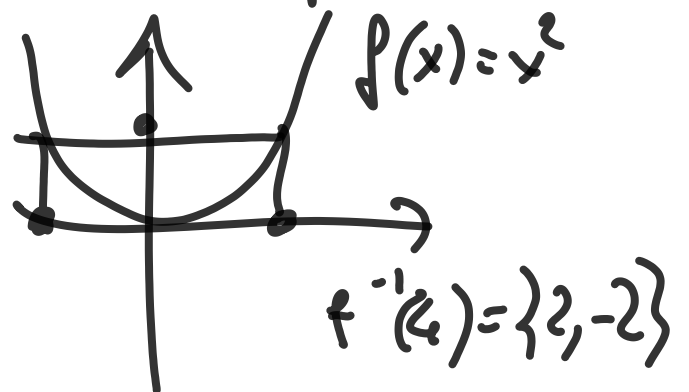
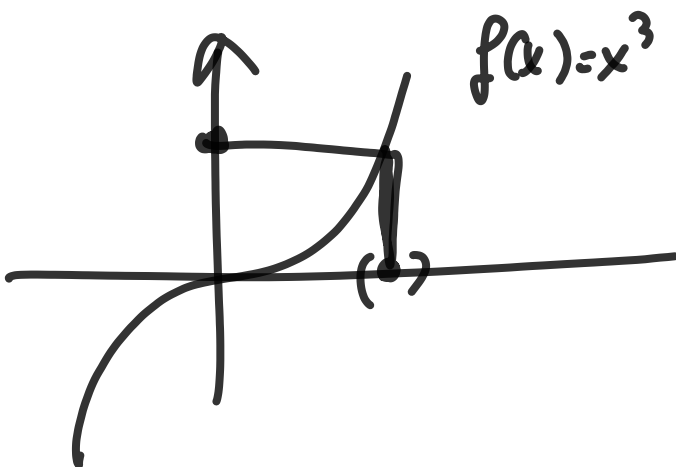
$$f^{-1}(b) = \{ a : f(a) = b \}$$

è un insieme



suriettiva $\Leftrightarrow \forall b \in B \quad f^{-1}(b) \neq \emptyset$

iniettiva $\Leftrightarrow \forall b \in B \quad f^{-1}(b)$ ha al più un elem.



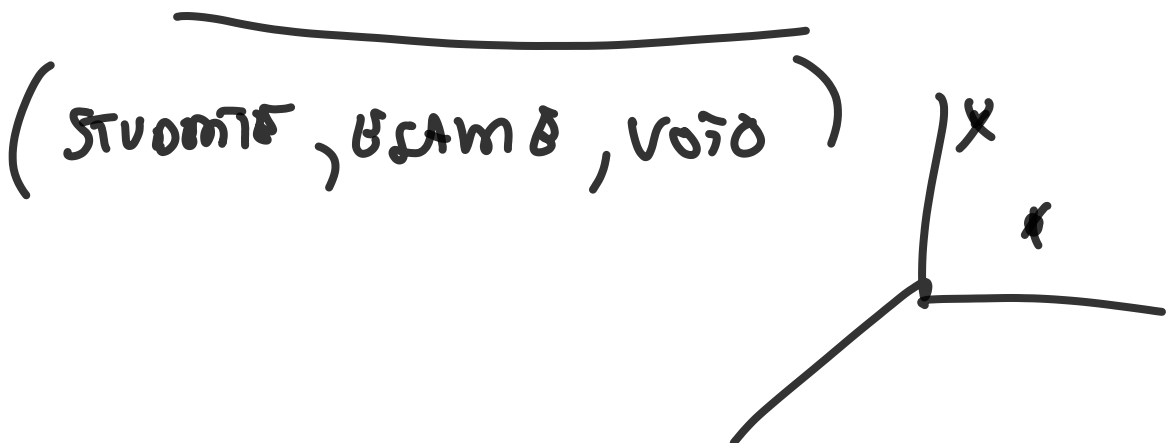
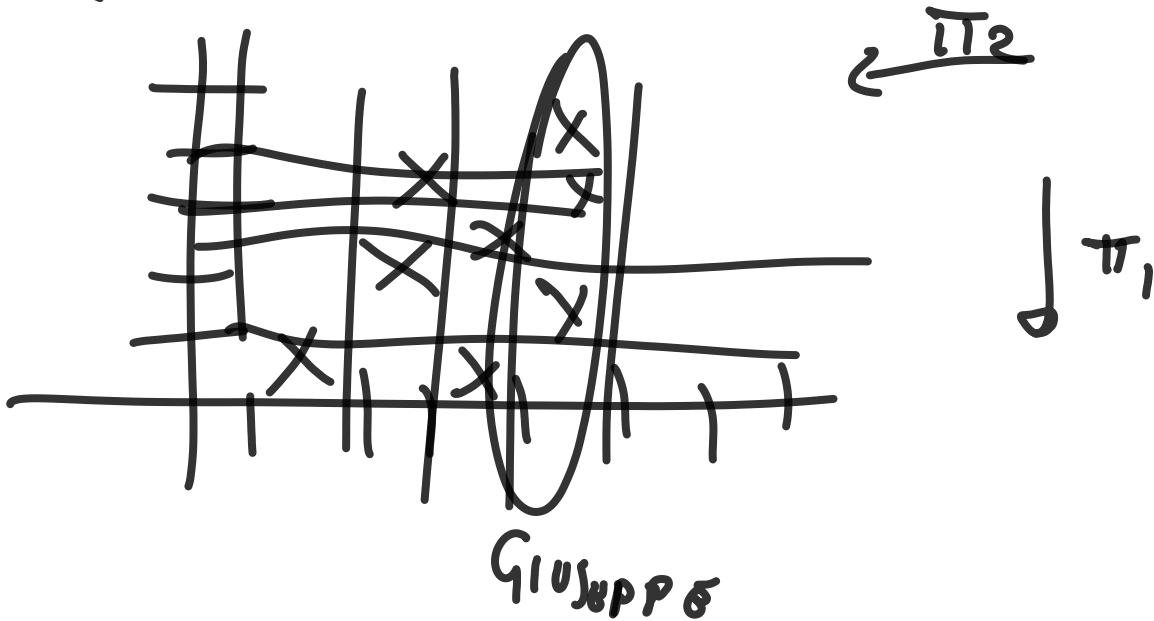
$$\text{sen}^{-1}\left(\frac{\sqrt{2}}{2}\right) = \left\{ \frac{\pi}{4} \pm 2k\pi, \frac{3\pi}{4} \pm 2k\pi \right\}$$

$\{ (\text{studente}, \text{esame}) \}$ } Record }

π_1
↓
studente

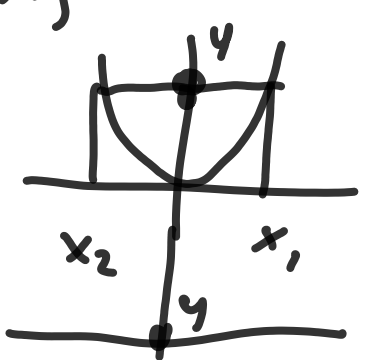
π_2
↓
proiezioni
esame

$\pi_2(\pi_1^{-1}(\text{studente})) = \text{SELECT DISTINCTROW WHERE STUDENTE = 'GIUSEPPE'}$



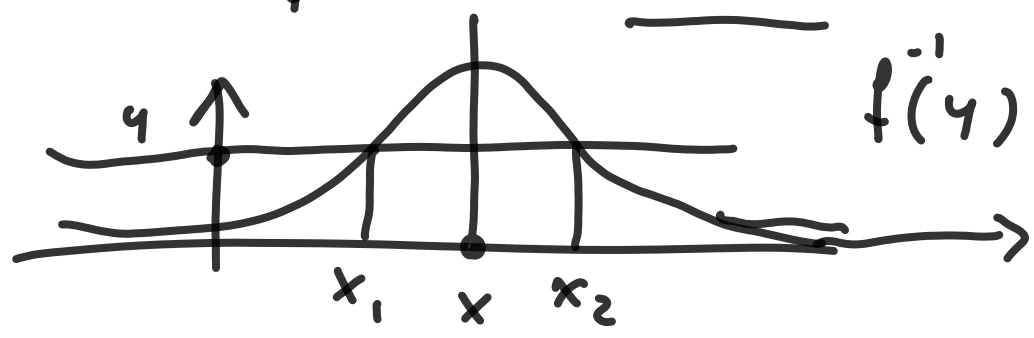
$$f: \{\text{calciatori}\} \rightarrow \{\text{squadre}\}$$

Database $\{(x, f(x))\} = \text{Grafico}$
 \downarrow $x \in \text{dominio}$ \downarrow $f(x) \in \text{Codominio}$



$$f(x) = x^2 \quad y = x^2$$

$$\text{grafico} = \{(x, y) : y = x^2\}$$



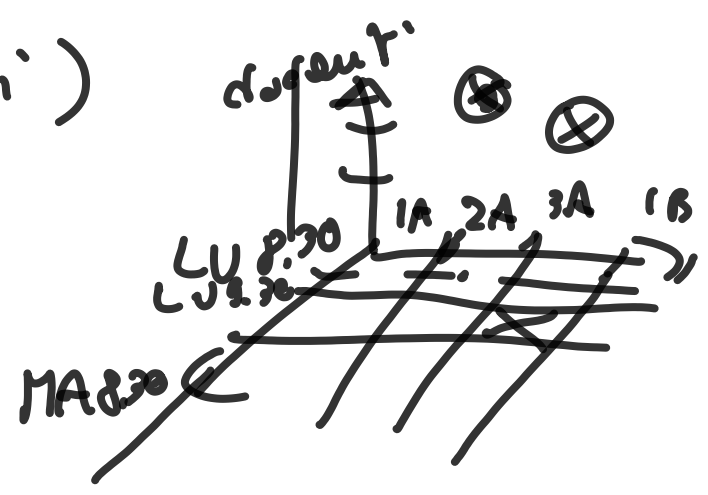
$f^{-1}(y) = \{ \text{valore di } x \text{ per cui si hanno } y \text{ soggetti che realizzano quel valore} \}$

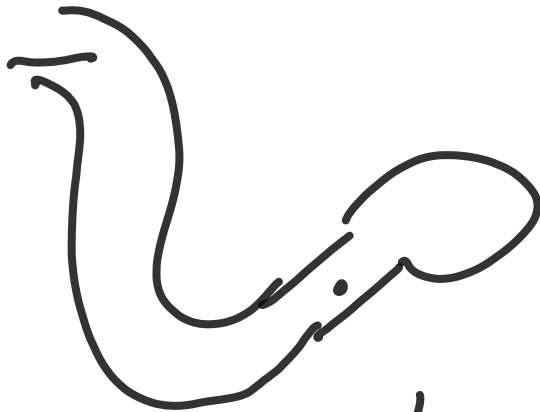
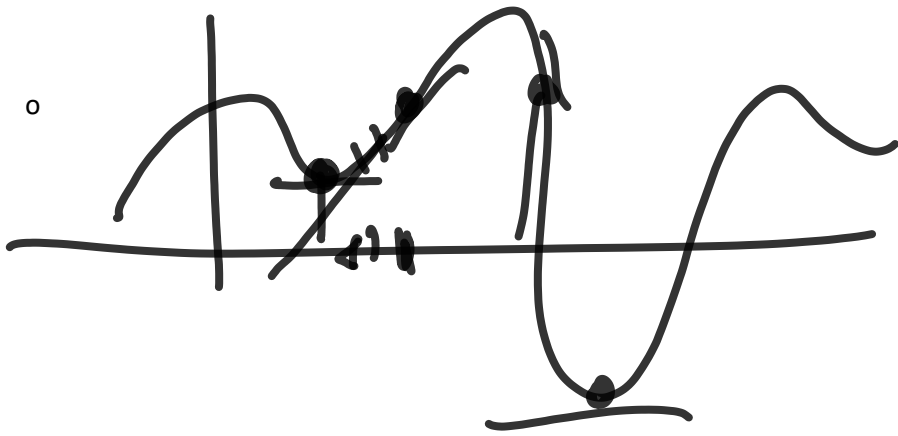
orario (giorno/ora, classi, docente)

$O(\text{giorno/ora, classe}) \rightarrow \text{docente}$

inidiativa NO suriettiva OK

$O^{-1}(\text{Giuseppe})$





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

