

FUNZIONE INIETTIVA

Definizione

○ Date una funzione $f: A \rightarrow B$.

f è iniezione nel suo dominio (A) quando

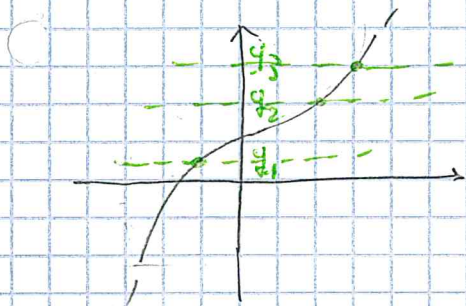
per ogni $x_1, x_2 \in A$ con $f(x_1) = f(x_2)$ si ha che $x_1 = x_2$
(\Rightarrow)

(cioè "immagini uguali" provengono da elementi x_1, x_2 uguali.)

Quindi

f non è iniettiva se esistono alcuni casi in cui $\underbrace{f(x_1)}_{y_1} = \underbrace{f(x_2)}_{y_2}$
e $x_1 \neq x_2$

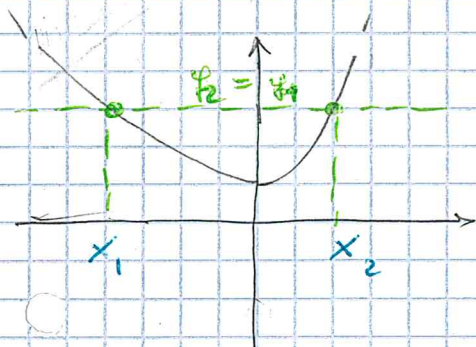
Esempi



Non si trovano casi in cui $f(x_1) = f(x_2)$

cioè non si trovano casi con $y_1 = y_2$

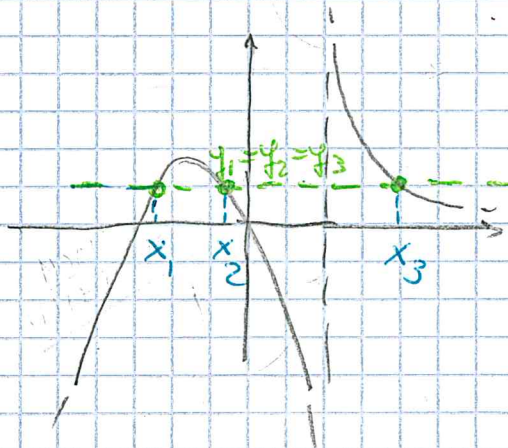
Quindi la funzione è iniezione



Ci sono casi in cui $f(x_1) = f(x_2)$ [cioè $y_1 = y_2$]

con $x_1 \neq x_2$

Quindi la funzione è NON iniettiva



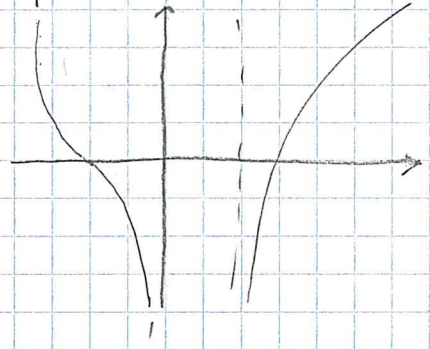
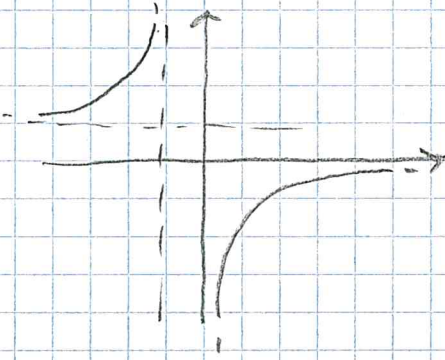
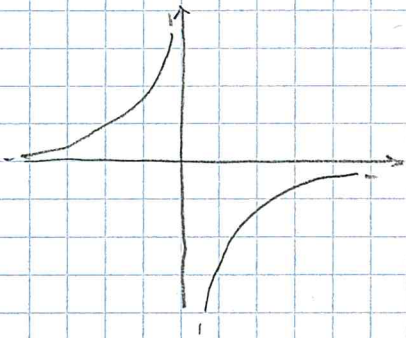
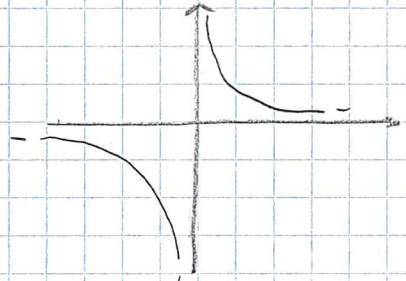
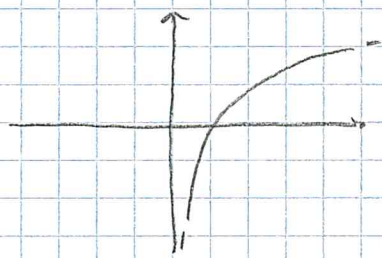
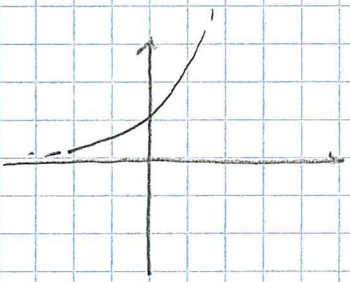
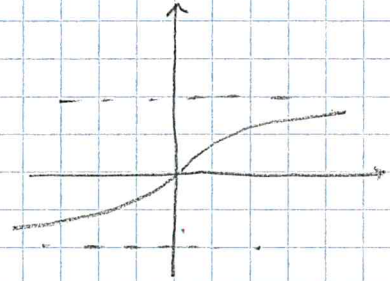
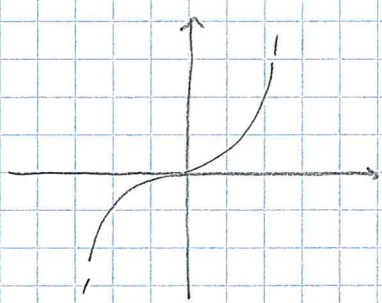
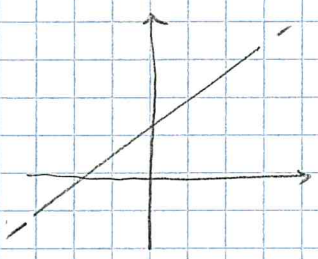
Ci sono casi in cui $f(x_1) = f(x_2)$ [cioè $y_1 = y_2$]

con $x_1 \neq x_2$

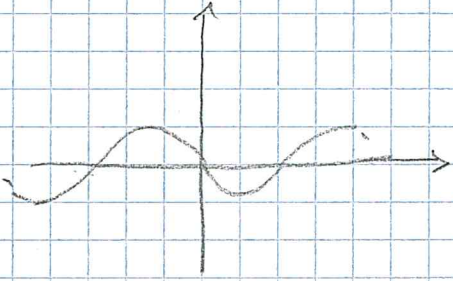
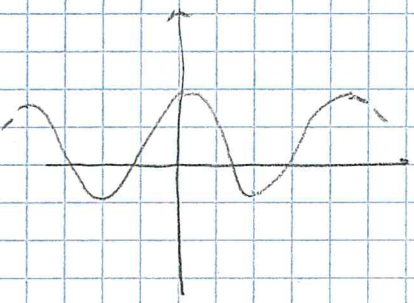
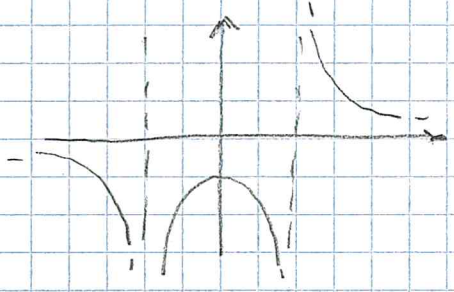
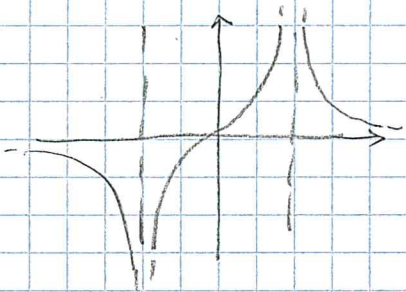
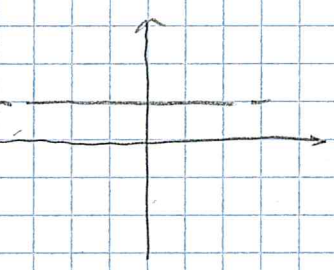
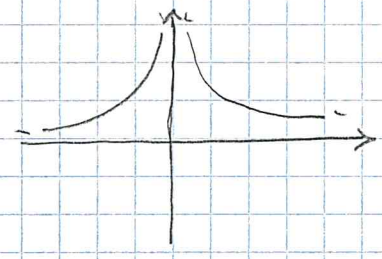
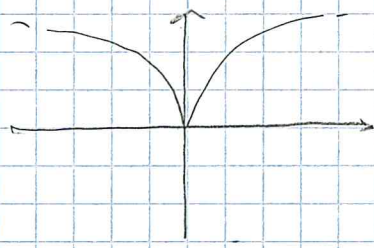
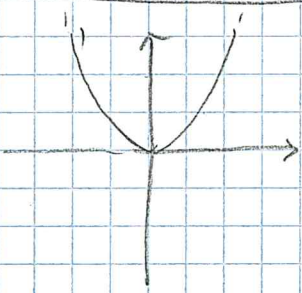
Quindi la funzione è NON iniettiva

|| Riconoscere dal grafico se le seguenti funzioni sono iniettive nel loro dominio

CASI DI FUNZIONI INIETTIVE



CASI DI FUNZIONI NON INIETTIVE



|| Determinare (colorelando) se le seguenti funzioni sono iniettive

1) $f(x) = 2 - 3x$

$D = \mathbb{R}$

considero $f(x_1) = f(x_2)$

~~$2 - 3x_1 = 2 - 3x_2$~~

~~$\frac{-3x_1}{-3} = \frac{-3x_2}{-3}$~~

$x_1 = x_2$ f è iniettiva

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

$D: 2-3x \neq 0$

$x \neq \frac{2}{3}$

considero $f(x_1) = f(x_2)$

$\frac{1}{2-3x_1} = \frac{1}{2-3x_2}$

~~$\frac{2-3x_2}{(2-3x_1)(2-3x_2)} = \frac{2-3x_1}{(2-3x_1)(2-3x_2)}$~~

~~$2-3x_2 = 2-3x_1$~~

~~$\frac{-3x_2}{-3} = \frac{-3x_1}{-3}$~~

$x_2 = x_1$ f è iniettiva

3) $f(x) = \frac{3x}{1-x}$

$D: 1-x \neq 0$

$x \neq 1$

considero $f(x_1) = f(x_2)$

~~$\frac{3x_1}{1-x_1} = \frac{3x_2}{1-x_2}$~~

~~$3x_1(1-x_2) = 3x_2(1-x_1)$~~

~~$3x_1 - 3x_1x_2 = 3x_2 - 3x_1x_2$~~

~~$\frac{3x_1}{3} = \frac{3x_2}{3}$~~

$x_1 = x_2$ f è iniettiva