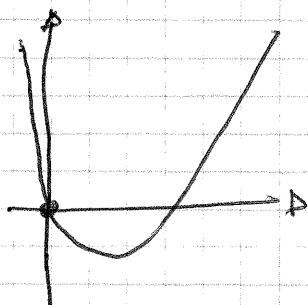
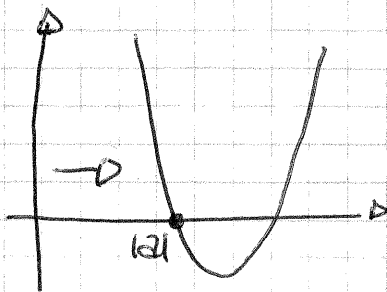


data la funzione $y = f(x)$

- Il grafico della funzione $y = f(x+a)$ si ottiene effettuando una traslazione parallela all'asse delle x , del grafico di $y = f(x)$, di ampiezza $|a|$, verso destra se $a < 0$, verso sinistra se $a > 0$

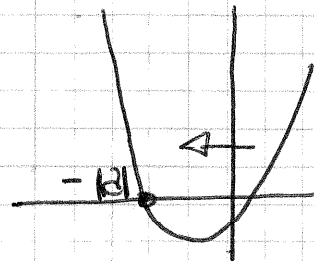


$$y = f(x)$$



$$y = f(x+a)$$

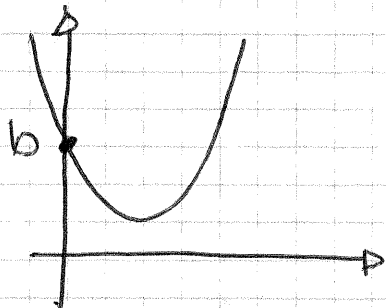
$$a < 0$$



$$y = f(x+a)$$

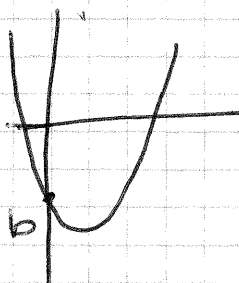
$$a > 0$$

- Il grafico di $y = f(x) + b$ si ottiene effettuando una traslazione parallela all'asse delle y , del grafico di $y = f(x)$, di ampiezza $|b|$, verso l'alto se $b > 0$, verso il basso se $b < 0$.



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

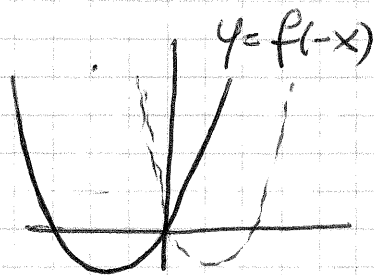
$$b > 0$$



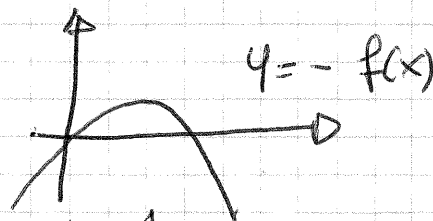
$$y = f(x) + b$$

$$b < 0$$

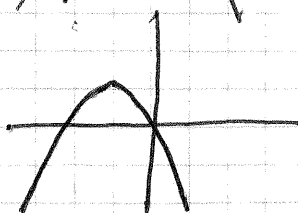
$y = f(-x)$ Grafico ^{è il} simmetrico _{rispetto} di f _{rispetto} all'asse y



$y = -f(x)$ Grafico ^{è il} simmetrico _{rispetto} di f _{rispetto} all'asse x

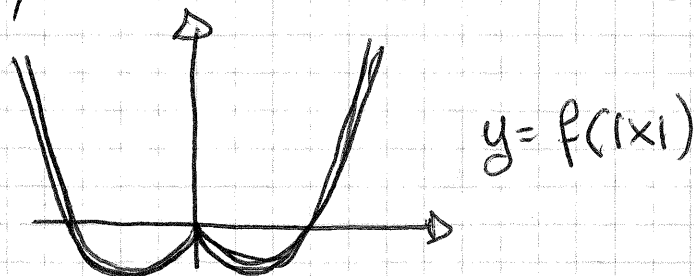


$y = -f(-x)$ Grafico ^{è il} simmetrico _{rispetto} di f _{rispetto} all'origine

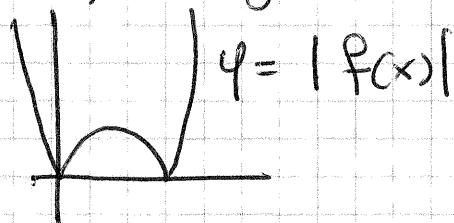


$$y = f(|x|) = \begin{cases} f(x), & x > 0 \\ f(-x), & x < 0 \end{cases}$$

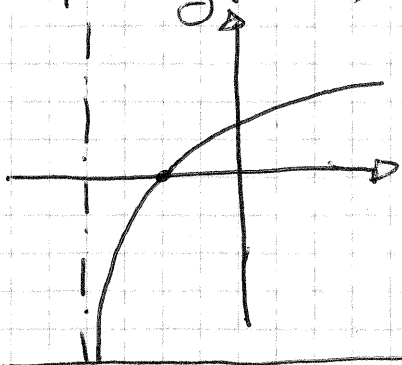
Il grafico di $y = f(|x|)$ coincide col grafico di $f(x)$ per $x > 0$, e il suo simmetrico rispetto all'asse y , per $x < 0$.



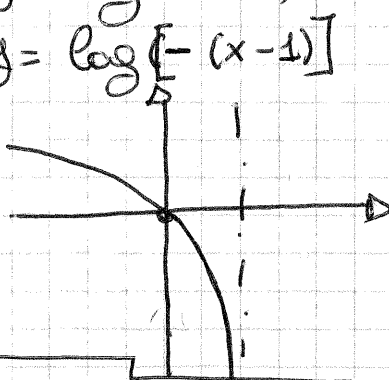
$y = |f(x)|$ il suo grafico coincide col grafico di $f(x)$ ove $f(x) \geq 0$, coincide col suo simmetrico rispetto all'asse x , ove $f(x) < 0$.



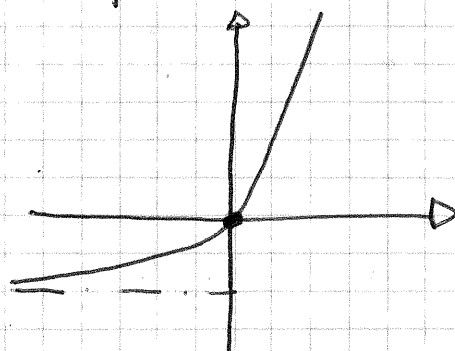
$$y = \log(x+2)$$



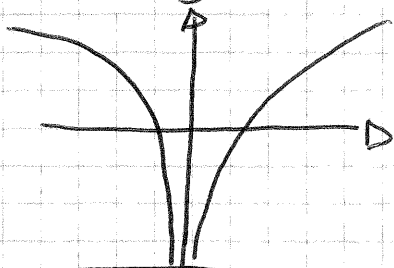
$$y = \log(1-x) \Leftrightarrow y = \log[-(x-1)]$$



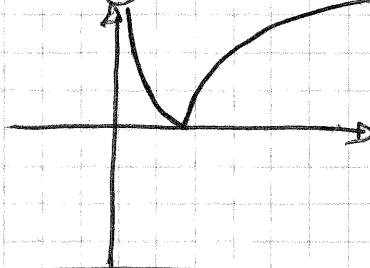
$$y = e^x - 1$$



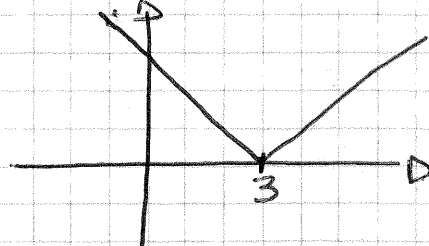
$$y = \log|x|$$



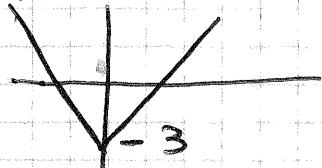
$$y = |\log x|$$



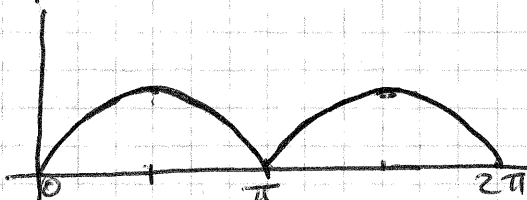
$$y = |x-3|$$



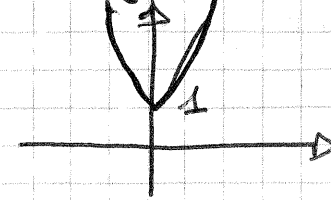
$$y = |x| - 3$$



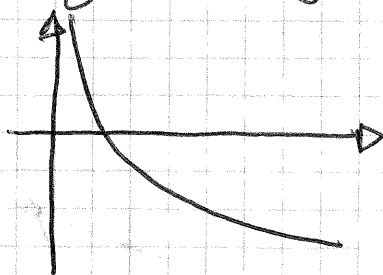
$$y = |\sin x|$$



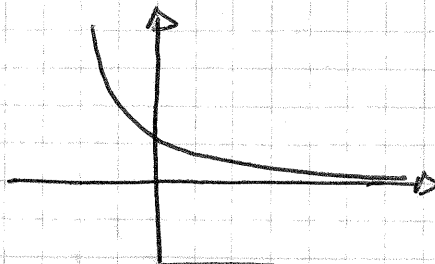
$$y = e^{|x|}$$



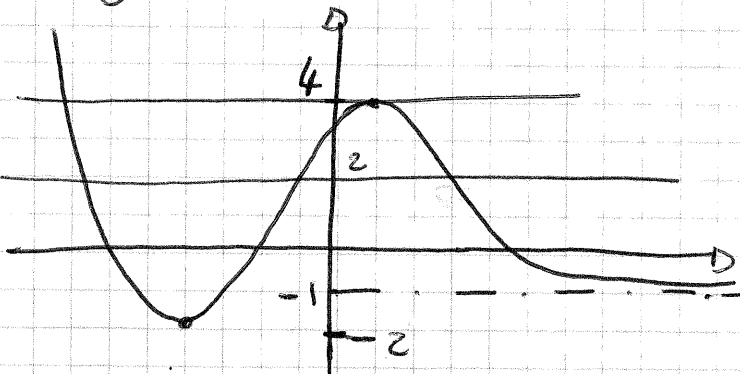
$$y = \log \frac{1}{x} = -\log x$$



$$y = \frac{1}{e^x} = e^{-x}$$



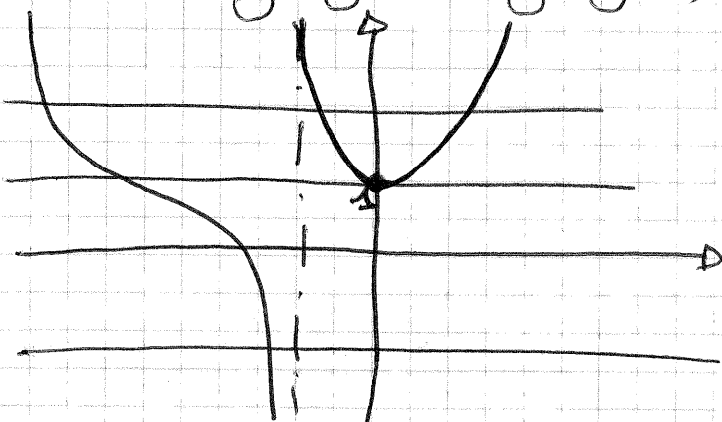
Dato il grafico
 $y = f(x)$



Determinare il numero
delle soluzioni distinte
delle equazioni

$$\begin{array}{ll} f(x) = 4 & f(x) = 5 \\ f(x) = 2 & f(x) = -\frac{3}{2} \\ f(x) = -1 & f(x) = -3 \end{array}$$

Dato il grafico $y = f(x)$



Determinare il numero
delle soluzioni distinte
delle equazioni

$$\begin{array}{ll} f(x) = 3 & f(x) = 1 \\ f(x) = -2 & \end{array}$$

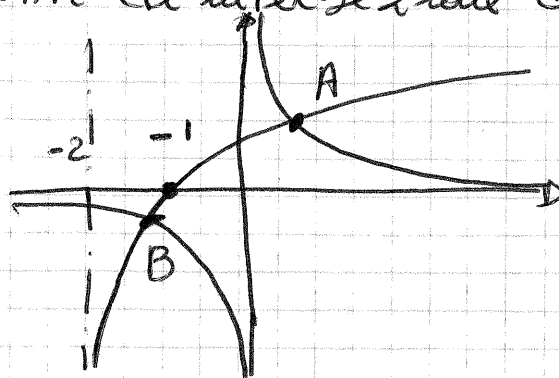
Determinare graficamente le soluzioni delle seguenti equazioni.

$x \log(x+2) = 1$ le soluzioni dell'equazione sono date
dalle ~~ascisse~~ ascisse dei punti di intersezione delle curve

$$y = \log(x+2) \text{ e } y = \frac{1}{x}$$

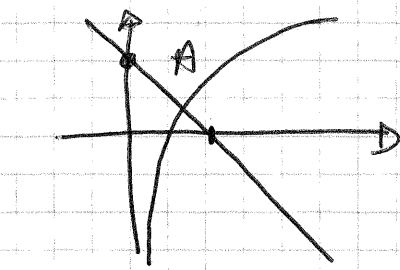
L'equazione ammette 2
soluzioni

$$x_1 \in (-2, -1) \quad x_2 \in (0, 1)$$



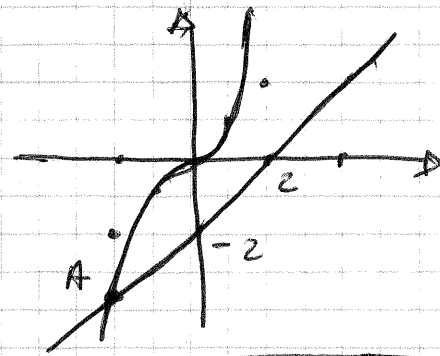
$$\log x + x = 1$$

$$\begin{cases} y = \log x \\ y = 1 - x \end{cases}$$



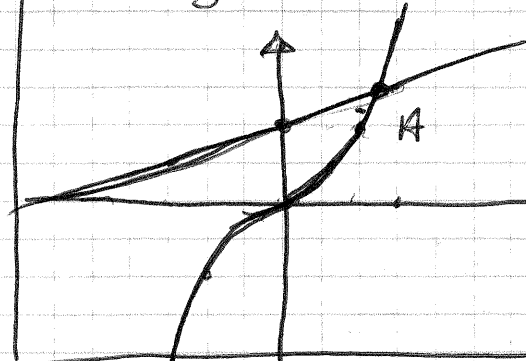
$$x^3 = x - 2$$

$$\begin{cases} y = x^3 \\ y = x - 2 \end{cases}$$



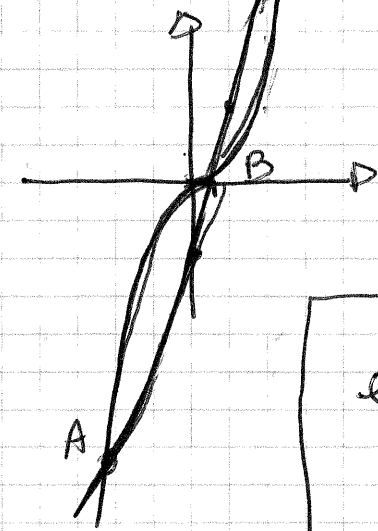
$$3x^3 - x - 3 = 0$$

$$\begin{cases} y = x^3 \\ y = \frac{1}{3}x + 1 \end{cases}$$



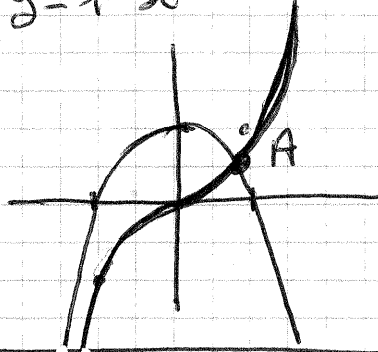
$$x^3 = 4x - 1$$

$$\begin{cases} y = x^3 \\ y = 4x - 1 \end{cases}$$



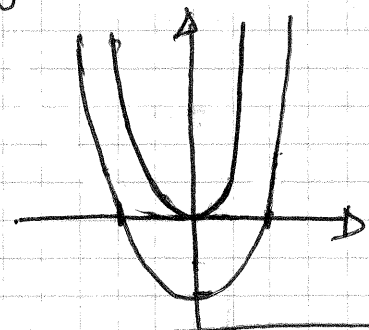
$$x^3 + x^2 - 1 = 0$$

$$\begin{cases} y = x^3 \\ y = 1 - x^2 \end{cases}$$



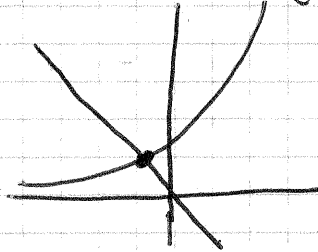
$$x^4 - x^2 + 1 = 0$$

$$\begin{cases} y = x^4 \\ y = x^2 - 1 \end{cases}$$

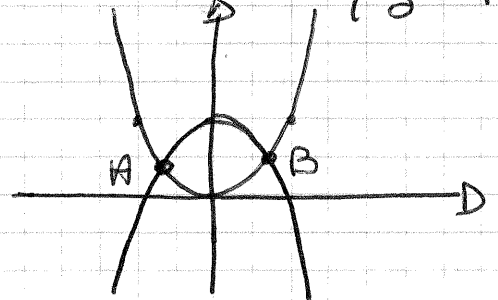


Nessuna soluzione

$$e^x + x = 0 \quad \begin{cases} y = e^x \\ y = -x \end{cases}$$

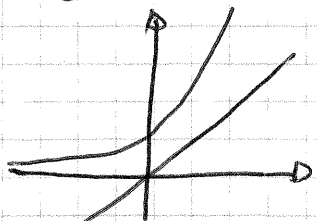


$$x^4 + x^2 - 1 = 0 \quad \begin{cases} y = x^4 \\ y = 1 - x^2 \end{cases}$$



$$e^x - x = 0$$

$$\begin{cases} y = e^x \\ y = x \end{cases}$$



Nessuna soluzione

Determinare graficamente il numero di soluzioni delle seguenti equazioni

$$\bullet x^3 = 2 + x - x^2$$

$$\bullet \log x^3 = x - 3$$

$$\bullet x^4 = 2x^3 + 1$$

$$\bullet \log x^2 + x + 1 = 0$$

$$\bullet e^x \log x = 2$$

$$\bullet \log x^2 + 2x + 6 = 0$$

$$\bullet x^2 = e^x + \frac{1}{2}$$

$$\bullet \log(3-x) + 1 = 2x$$

$$\bullet \log(|x| + 1) = 2x^2 - 1$$

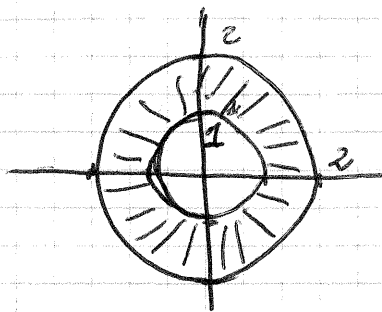
$$e^x + 2 \sin x = 0$$

$$x \in [0, 2\pi]$$

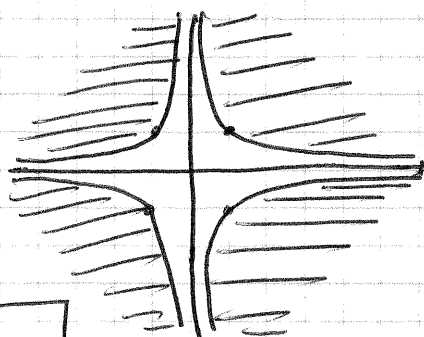
$$\begin{cases} \operatorname{tg} x = x \\ x \in [-\pi, \pi] \Rightarrow x \end{cases}$$

Rappresentare i seguenti sottoinsiemi di \mathbb{R}^2

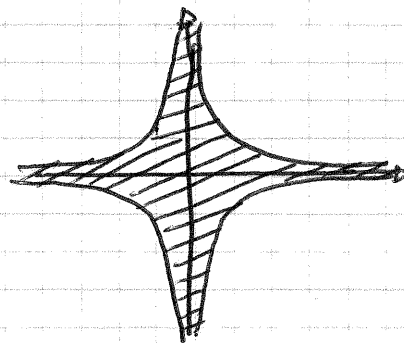
$$1 \leq x^2 + y^2 \leq 4$$



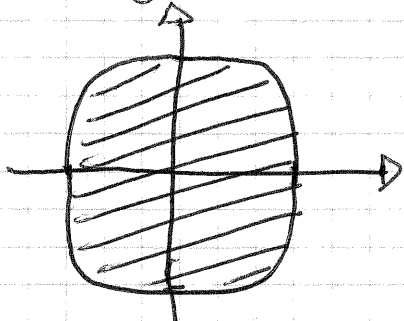
$$x^2 y^2 \geq 1$$



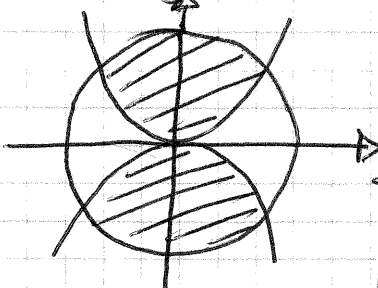
$$x^2 y^2 \leq 1$$



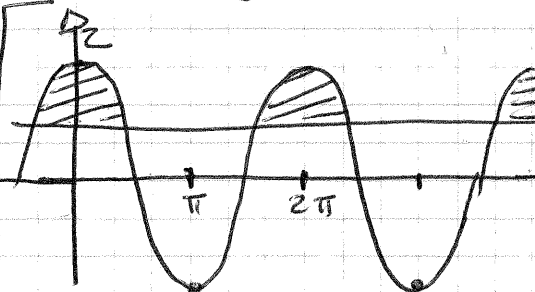
$$x^4 + y^4 \leq 1$$



$$x^4 \leq y^2 \leq 1 - x^2$$

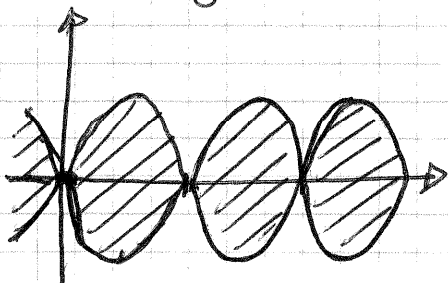


$$1 \leq y \leq 2 \cos x$$

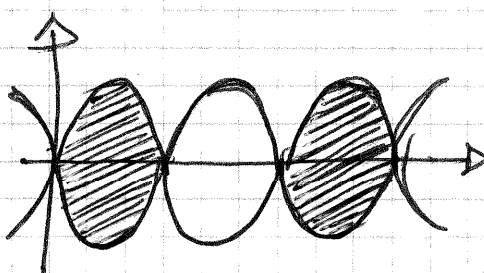


$$y^2 \leq \sin^2 x$$

$$-|\sin x| \leq y \leq |\sin x|$$

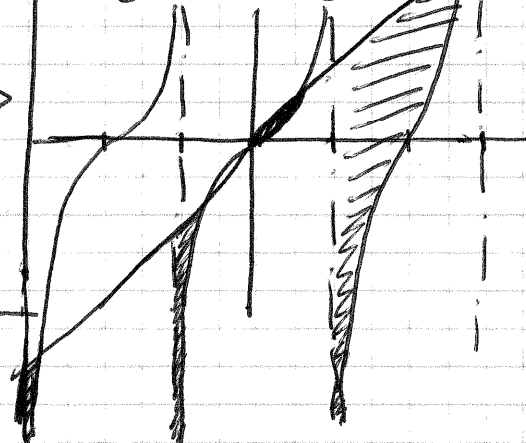


$$-\sin x \leq y \leq \sin x$$

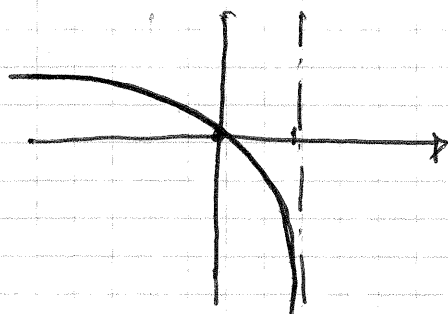


$$\frac{1}{3}x \leq y \leq x$$

$$-\frac{3\pi}{2} < x < \frac{3\pi}{2}$$



$$x + e^{3y} = 1$$



$$2e^y = \frac{1}{3^x}$$