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pagine personali

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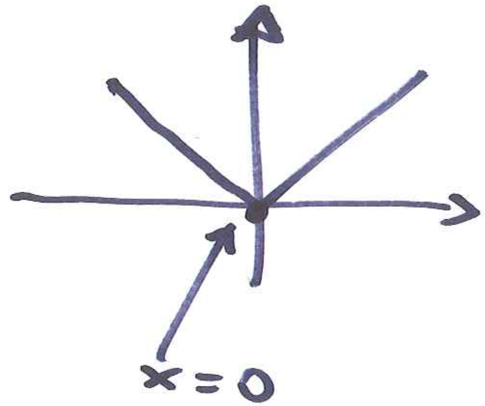
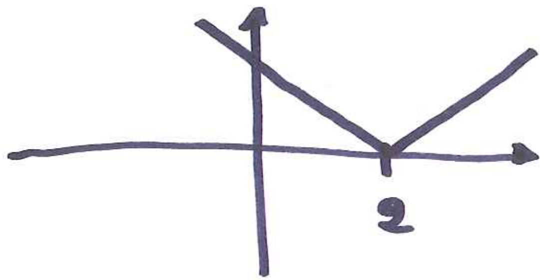
graf $f(x)$

graf $f(x+c)$

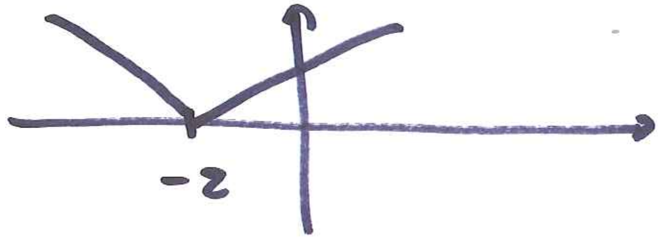
es. $f(x) = |x|$



$f(\underbrace{x-2}_{c})$



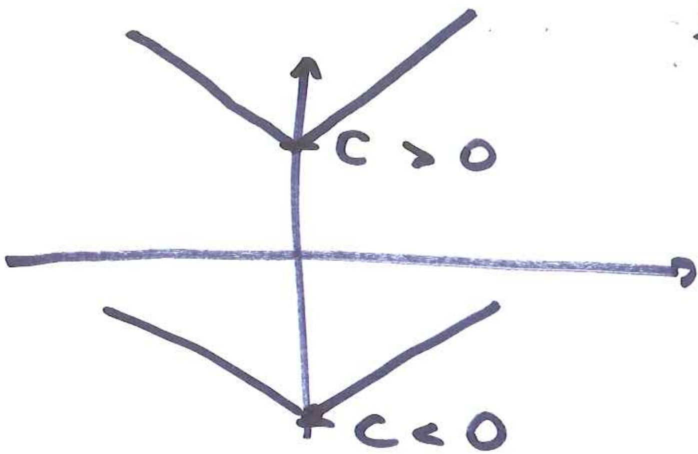
$f(x+2)$
"
$|x+2|$



2

graf. $[f(x)+c]$

es. $f(x)+c = |x|+c$

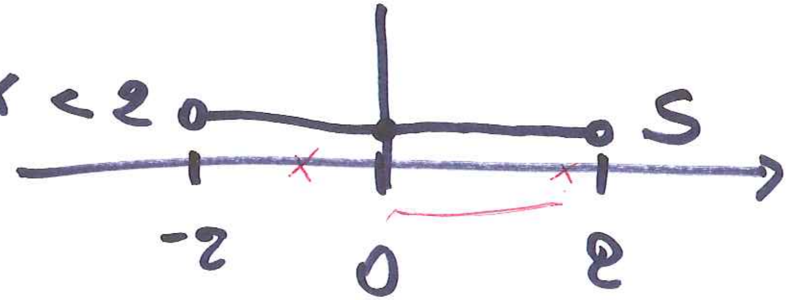


ex risolvere $\boxed{|x| < 2}$

se $x \geq 0$ si chiede $x < 2$

se $x < 0$ " $-x < 2$

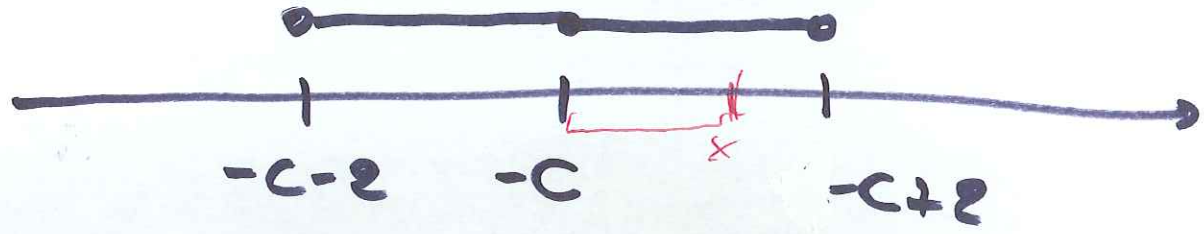
$x > -2$



$S = \{x : \boxed{-2 < x < 2}\}$

ex risolvere $\boxed{|x+c| < 2}$, $c \in \mathbb{R}$

$$|x+c| = \begin{cases} x+c & \text{se } x+c \geq 0 \,,\ x \geq -c \\ -x-c & x+c < 0 \,,\ x < -c \end{cases}$$



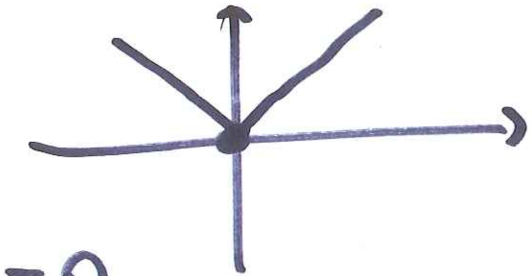
se $x \geq -c$ ho $x+c < 2$, $x < 2-c$

se $x < -c$ ho $-x-c < 2$, $x > -c-2$

$$S = \left\{ x : \boxed{-c-2 < x < -c+2} \right\}$$

PROPRIETÀ di |.|

- $|x| \geq 0$, $|g(x)| \geq 0$
- $|x| = 0$ sse $x = 0$

  $|g(x)| = 0$ sse $g(x) = 0$
- $|-x| = |x|$

  $|-3| = 3$, $|3| = 3$
- $|x_1 \cdot x_2| = |x_1| \cdot |x_2|$

  $$\left|\frac{x_1}{x_2}\right| = \frac{|x_1|}{|x_2|}$$

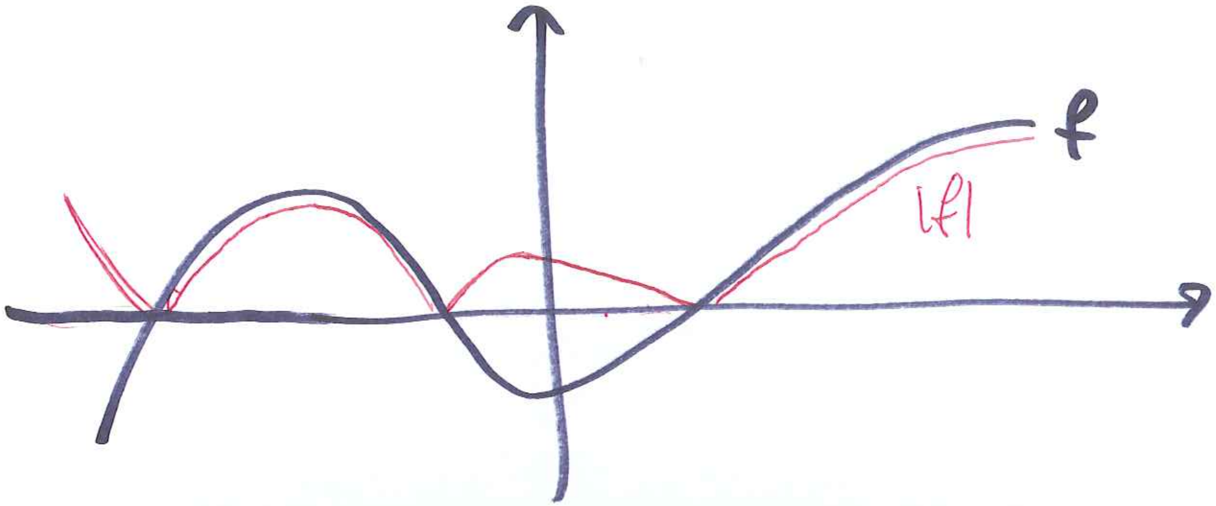
EX $\dfrac{|x^3-2|}{(x-1)^2} \overset{?}{\underset{SI}{=}} \left|\dfrac{x^3-2}{(x-1)^2}\right| = \dfrac{|x^3-2|}{\underbrace{|(x-1)^2|}} = \dfrac{|x^3-2|}{(x-1)^2}$

EX $\dfrac{|x^3-2|}{(x-1)^3} \overset{?}{\underset{NO}{=}} \left|\dfrac{x^3-2}{(x-1)^3}\right|$

se $x<1$

$\dfrac{|x^3-2|}{(x-1)^3} < 0$

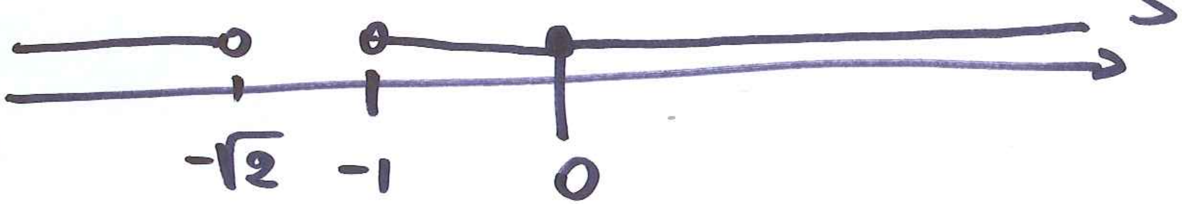
REGOLA GEN. graf $|f(x)|$ coincide con graf f se $f \geq 0$, coincide con graf $(-f)$ quando $f<0$



EX Risolvere $$\frac{x+1}{x\cdot|x|+2} > 0$$

$\boxed{\text{se}}$ $x \geq 0$ devo

ris. $$\frac{x+1}{x^2+2} > 0$$



Den $\neq 0$: ok

Den. > 0 la dis. vera sse $x+1>0$, $\underline{\underline{x>-1}}$

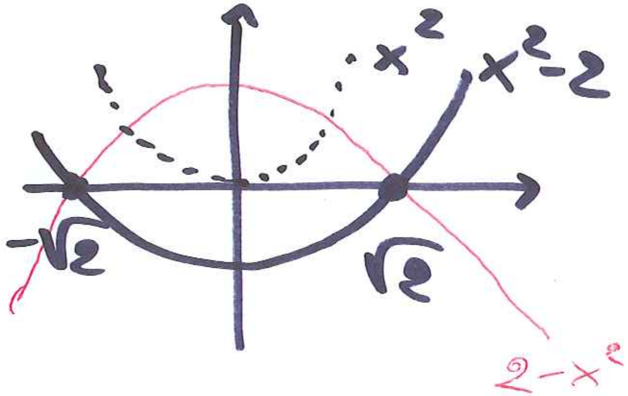
$\forall\, x \geq 0$ ho $x>-1 \Rightarrow x$ è sol.

$\boxed{\text{se}}$ $x<0$ devo ris.

$$\frac{x+1}{-x^2+2} > 0$$

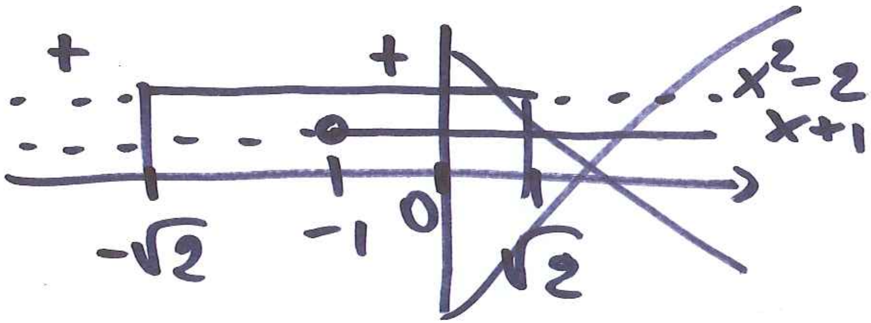
Den $\neq 0$: $-x^2+2 \neq 0$, $x^2-2 \neq 0$

$x \neq \pm\sqrt{2}$



sgn $(x+1)$: $x+1>0$, $x>-1$

sgn $(2-x^2)$:



EX per quali $a \in \mathbb{R}$

$$f(x) = \frac{1 - 2\sin^2 x}{2x^2 - a}$$ ha $D(f) = \mathbb{R}$?

$D(f) = \{x : 2x^2 - a \neq 0\}$

$2x^2 - a = 0$ per $\boxed{x^2 = \frac{a}{2}}$: se $a \geq 0$, $x = \pm\sqrt{\frac{a}{2}}$

se $a < 0$ $\nexists x$

se $a < 0$: $x^2 \neq \frac{a}{2} \Rightarrow D(f) = \mathbb{R}$

se $a \geq 0$, $D(f) = \{x : x \neq \pm\sqrt{\frac{a}{2}}\}$