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esame

Parte 1) 1) grafico di 2 rette 1p
2) data $f(x) \rightarrow f'(x)$ 1p
3) data $f(x) \rightarrow$ dominio
$\rightarrow$ Tutti i grafici 2p

parte 2) 10 pt.

10 domande a crocette

- insiemi
- Funzioni

parte 3) "18 punti" dipende da anno a anno

1) teorico

2-4) $\rightarrow$ algebra lineare
uno sicuramente (spazi vettoriali)
gli altri $\rightarrow$ { integrali
algebra lineare
tutto il programma

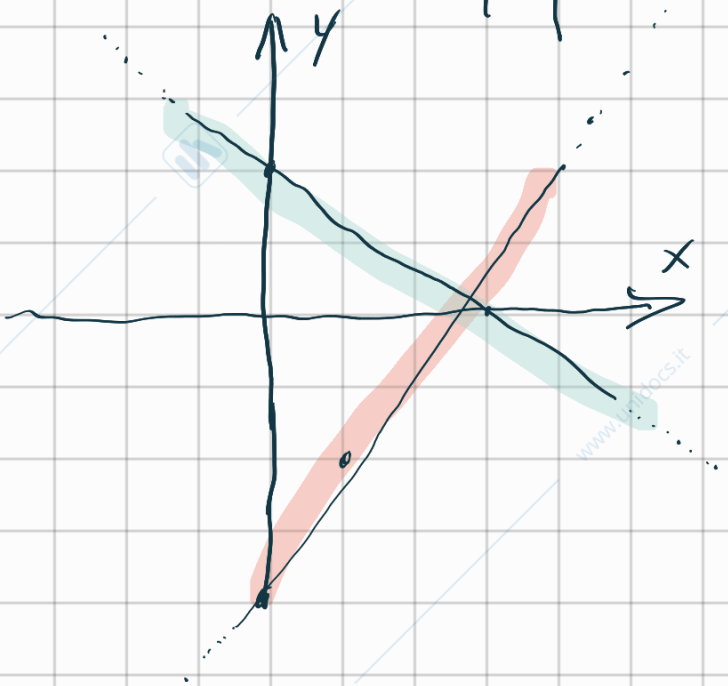
di scrivi nello stesso piano cartesiano le 2 seguenti rette

es 1) $y = 2x - 4$

$y = -\frac{2}{3}x + 2$

	x	y
a	0	-4
b	1	-2

	x	y
c	0	2
d	3	0



es 2)

$3x - 2y + 4 = 0$

$3y + 9 = 0$

$2x = -4$

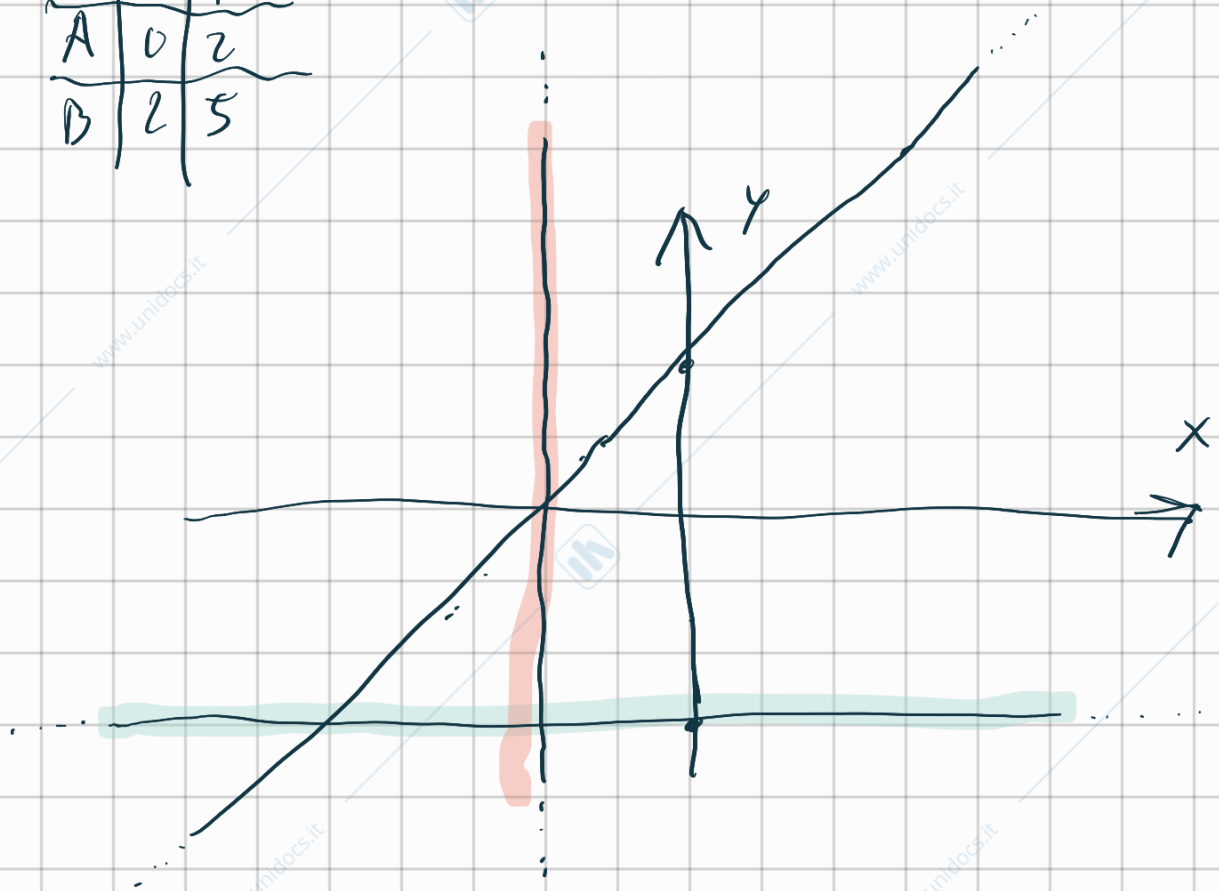
$-2y = -3x - 4$

$y = \frac{3}{2}x + 2$

$y = -3$

$x = -2$

	x	y
A	0	2
B	2	5

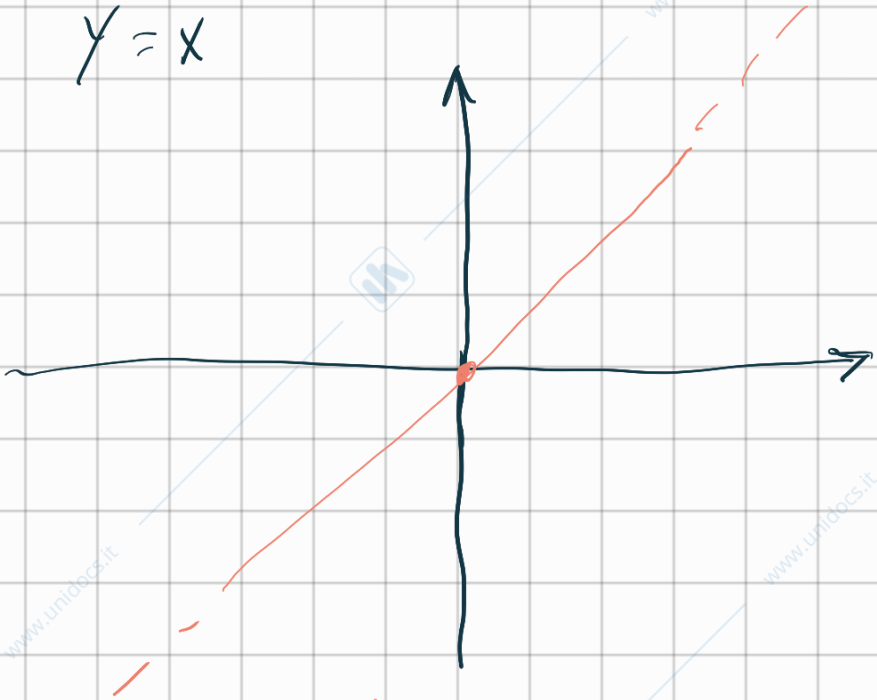


Punto 2 Si farà quando tratteremo le derivate

Punto tre

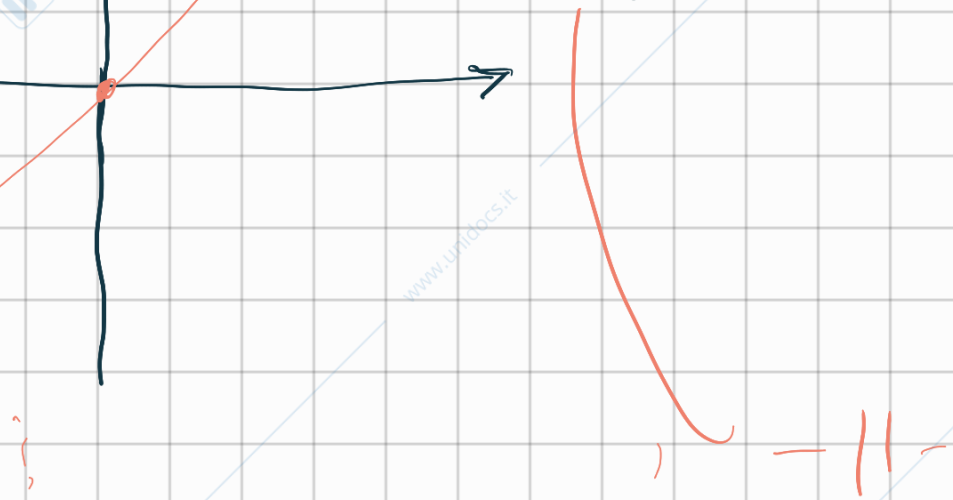
trasformazione geometriche di grafici elementari

1) $y = x$

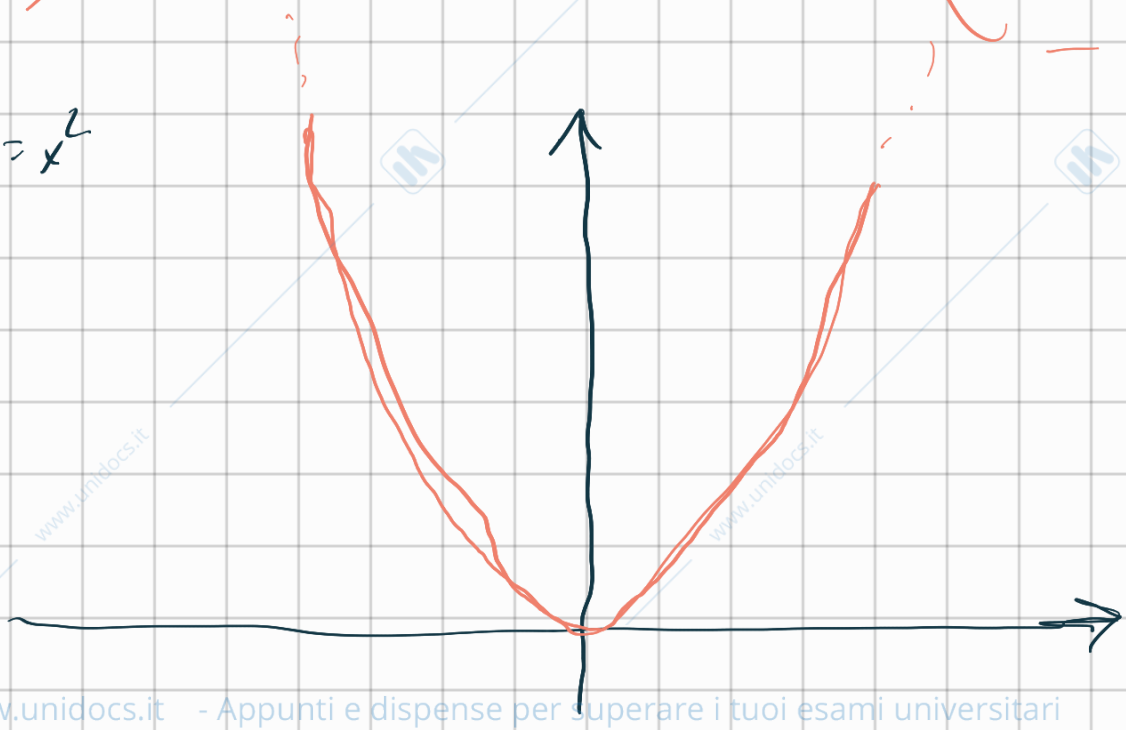


$D: (-\infty, +\infty) = \mathbb{R}$

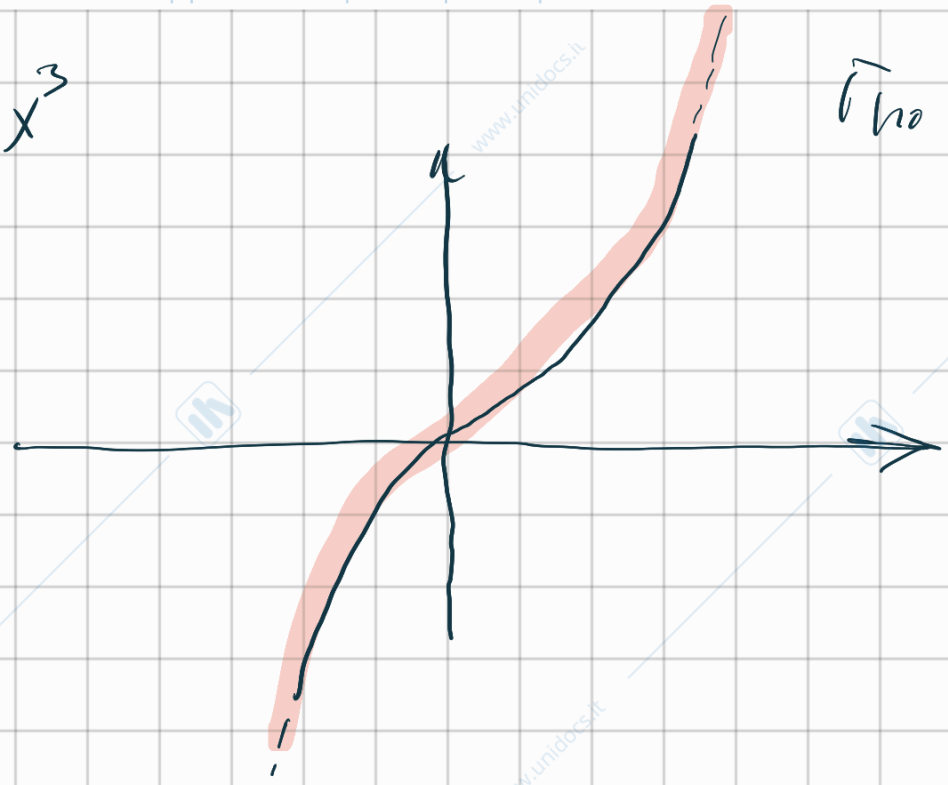
Tre condizioni



2) $y = x^2$



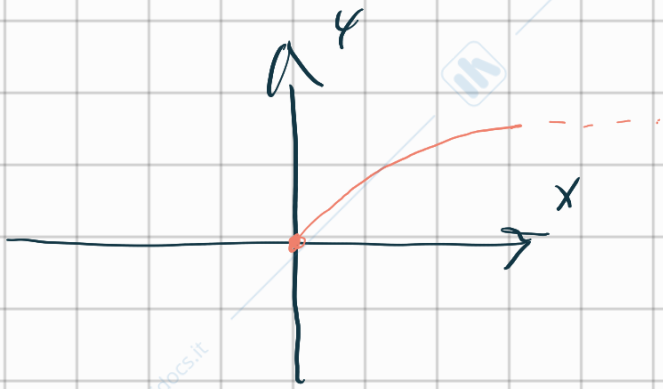
3) $y = x^3$



Vale con condizioni

4) $y = \sqrt{x}$

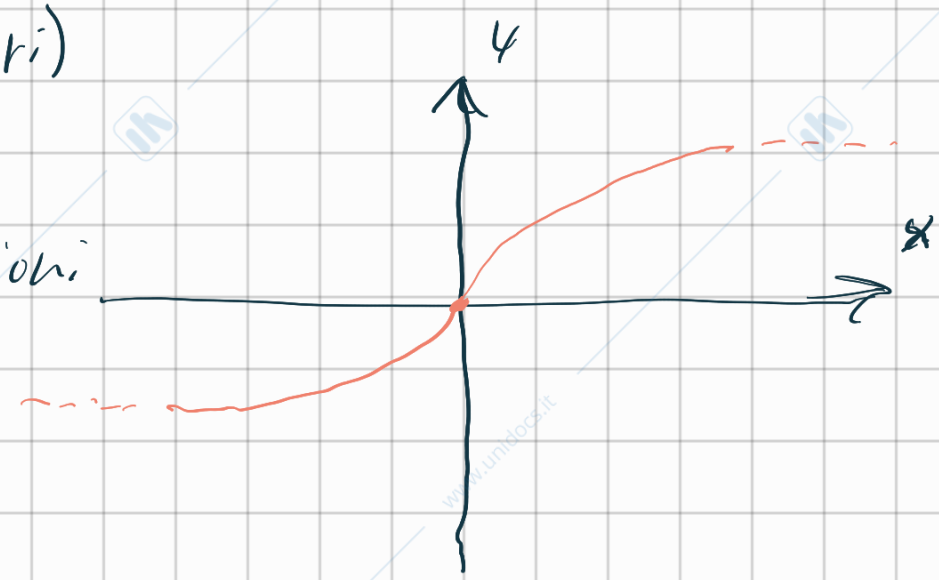
(indice pari)



ID: radicando della radice ≥ 0

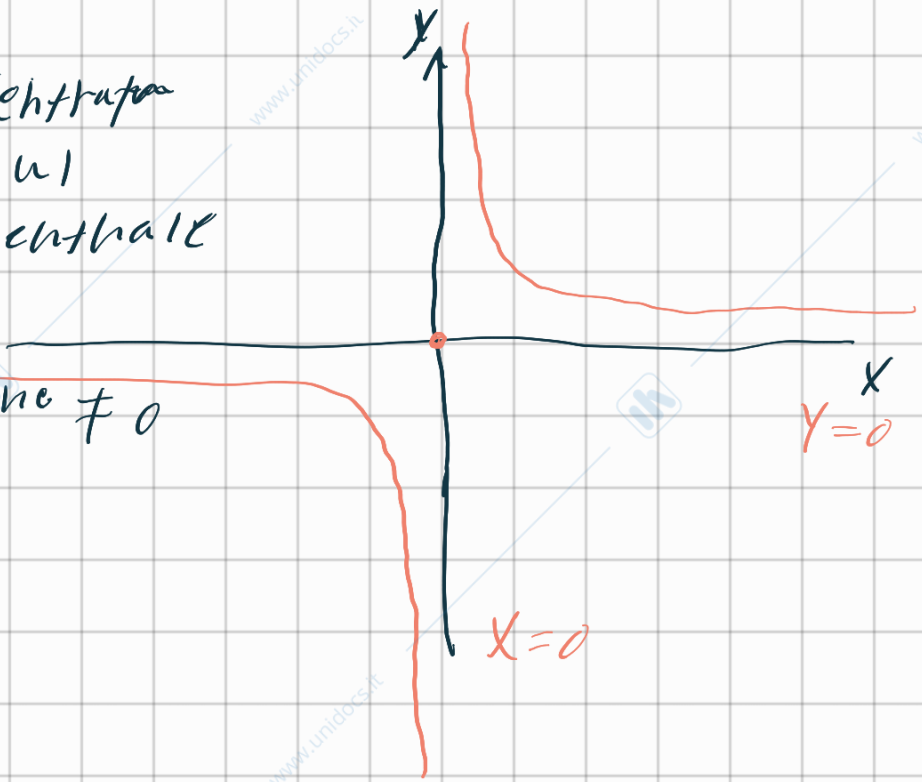
5) $y = \sqrt[3]{x}$

(indice dispari)



senza condizioni

6) $y = \frac{1}{x}$ Centrata sui centrali

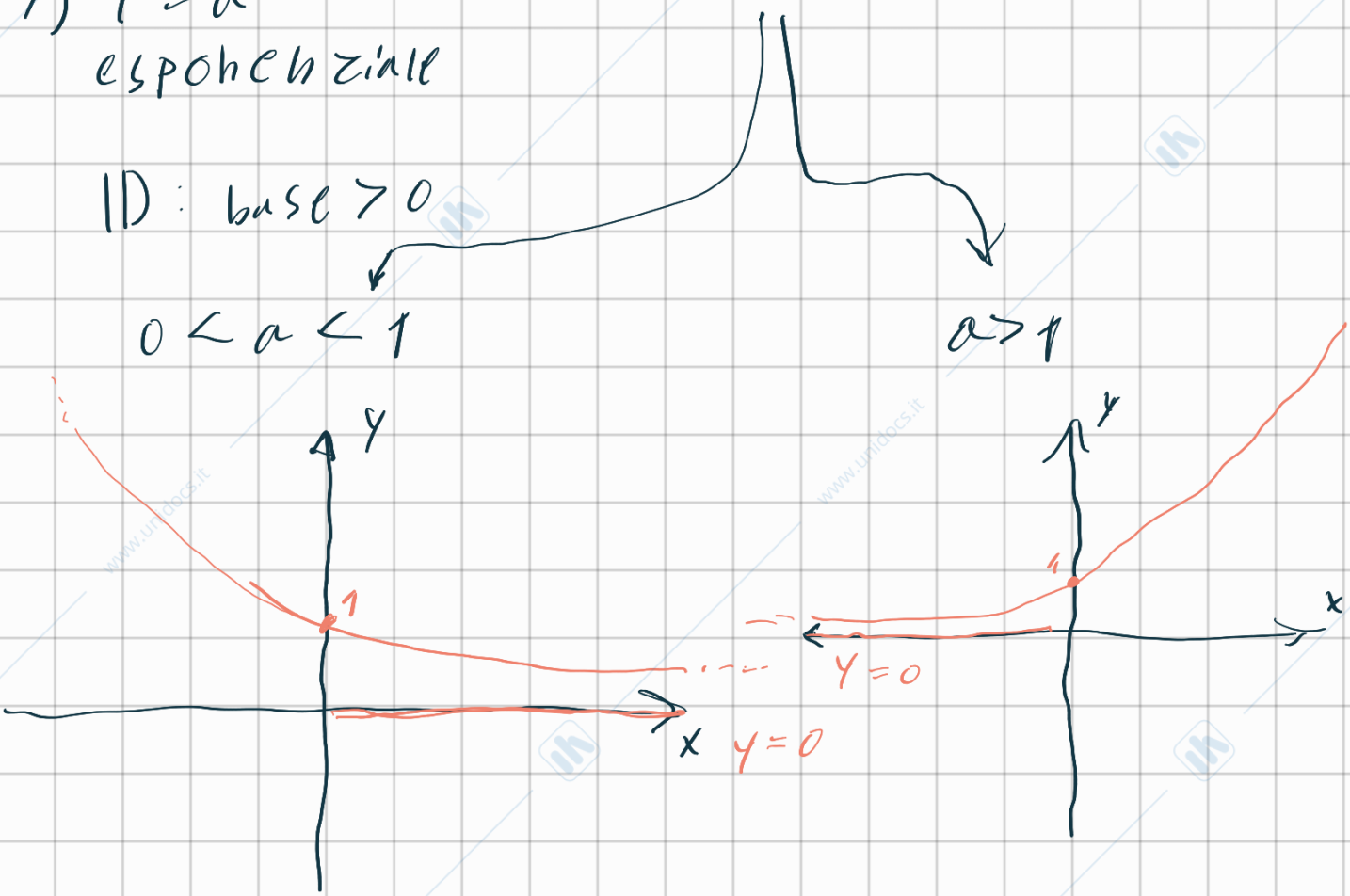


ID: denominatore $\neq 0$

7) $y = a^x$ esponenziale

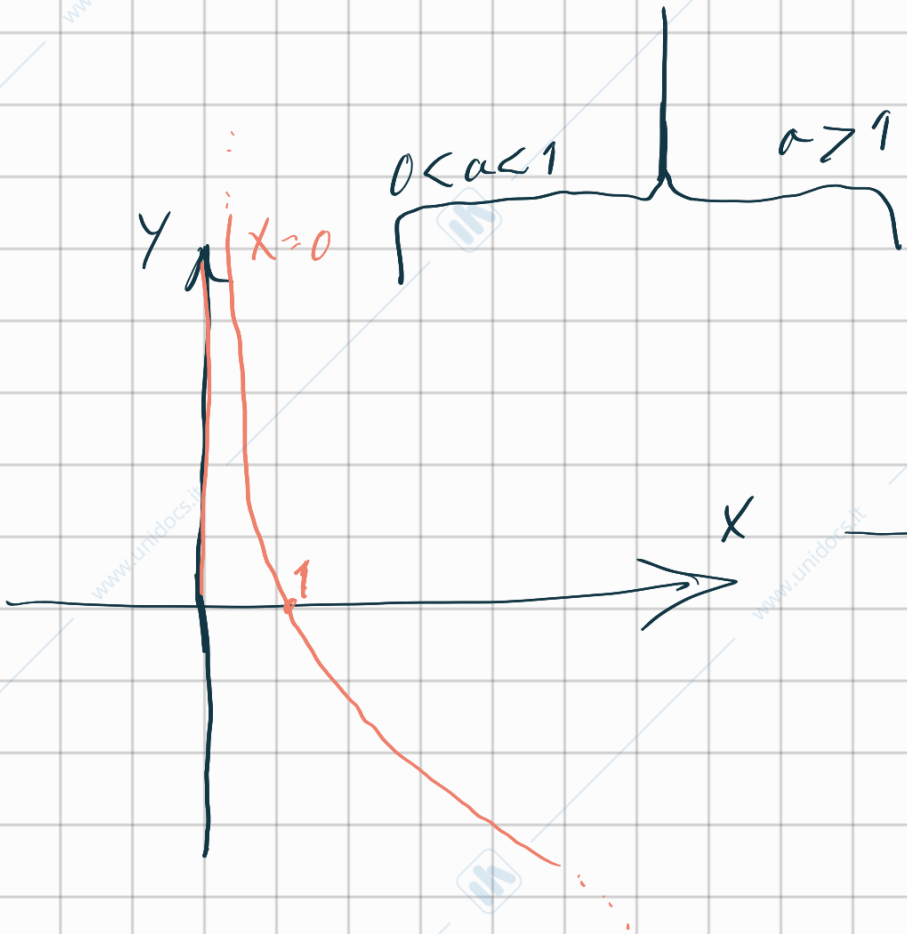
ID: base > 0

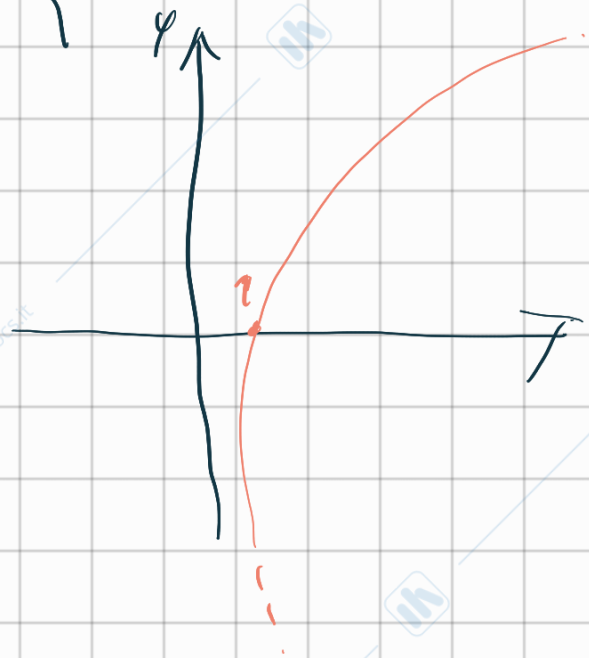
$0 < a < 1$ $\qquad$ $a > 1$



f) $y = \log_a(x)$ D: argomento > 0

usiamo praticamente $\log_e = \ln$ (logaritmo naturale)

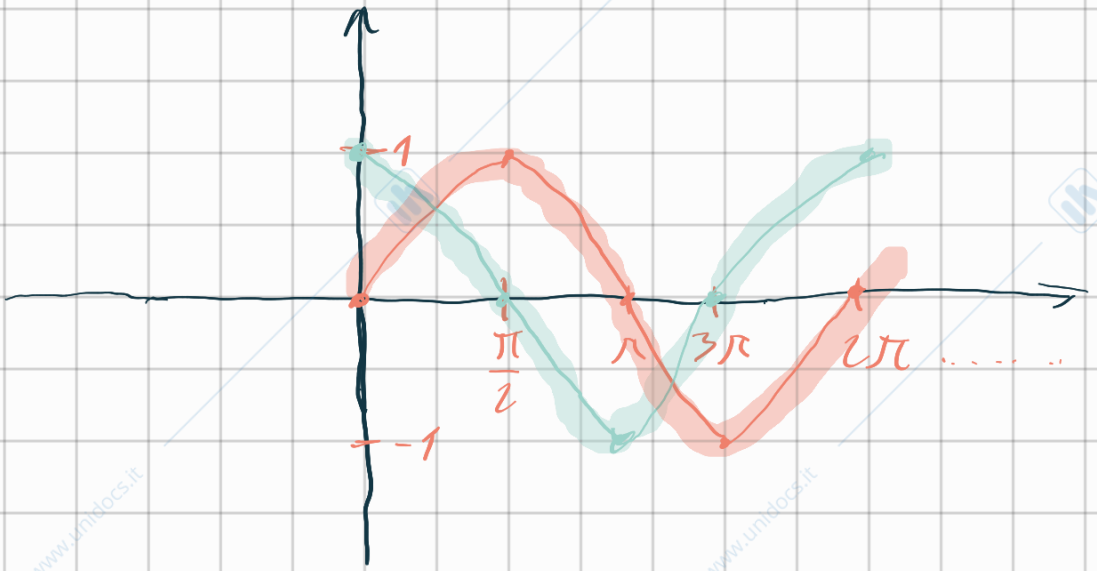




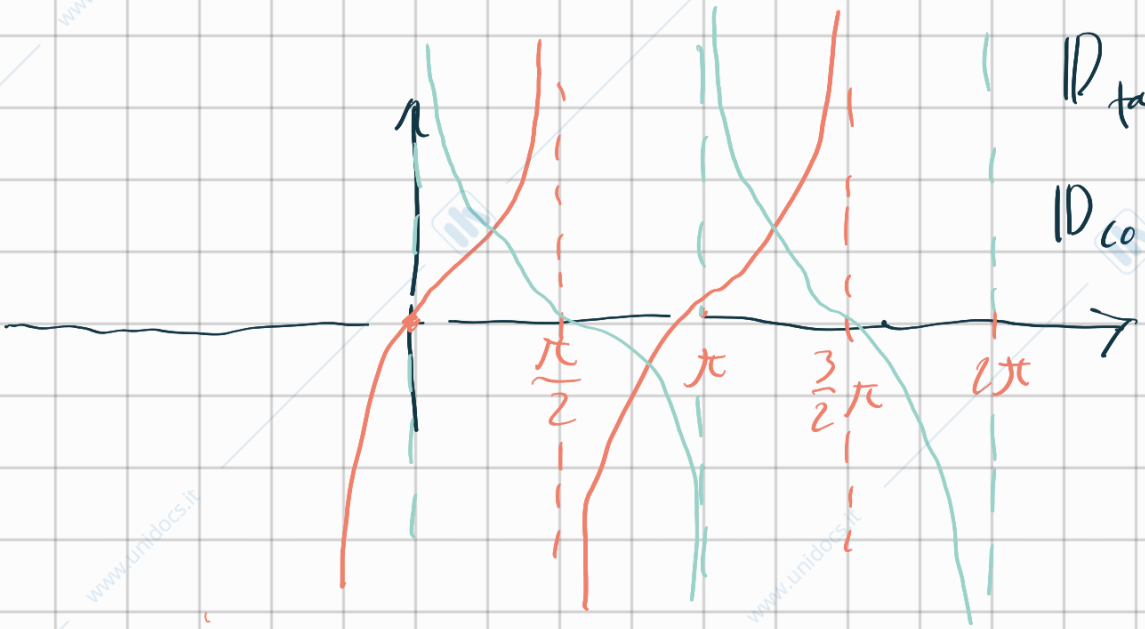
g) $y = \text{sen}(x)$ E $y = \cos(x)$

$\text{sen}: \mathbb{R} \to [-1, 1]$

D no condizioni



10) $y = \tan(x)$ E $y = \cot\tan(x)$

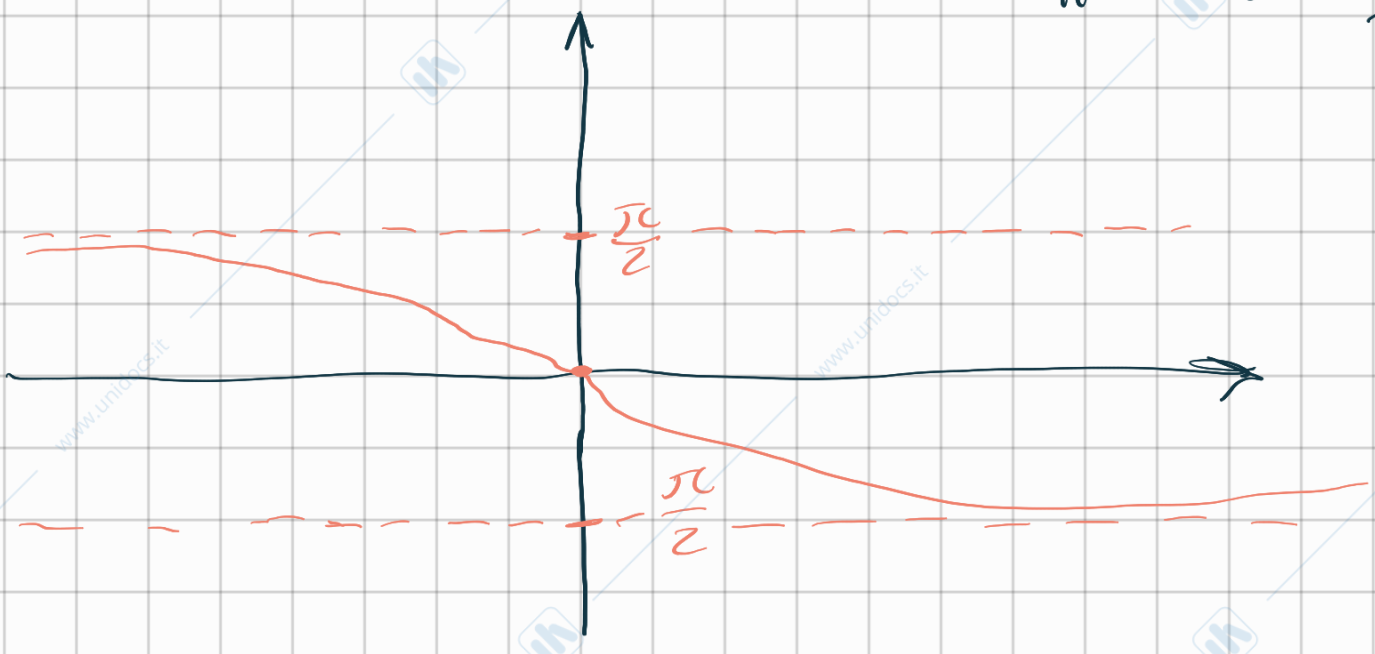


$\mathbb{D}_{\tan}: x \neq \frac{\pi}{2} + k\pi$

$\mathbb{D}_{\cot\tan}: x \neq k\pi$

11) $y = \arctan(x)$

$\mathbb{D}: (-\infty, +\infty)$
No condizioni



Vediamo le possibili trasformazioni geometriche

1) traslazioni $(k \in \mathbb{R})$

$f(x) + k$ (verticale) | $f(x+k)$ (orizzontale)

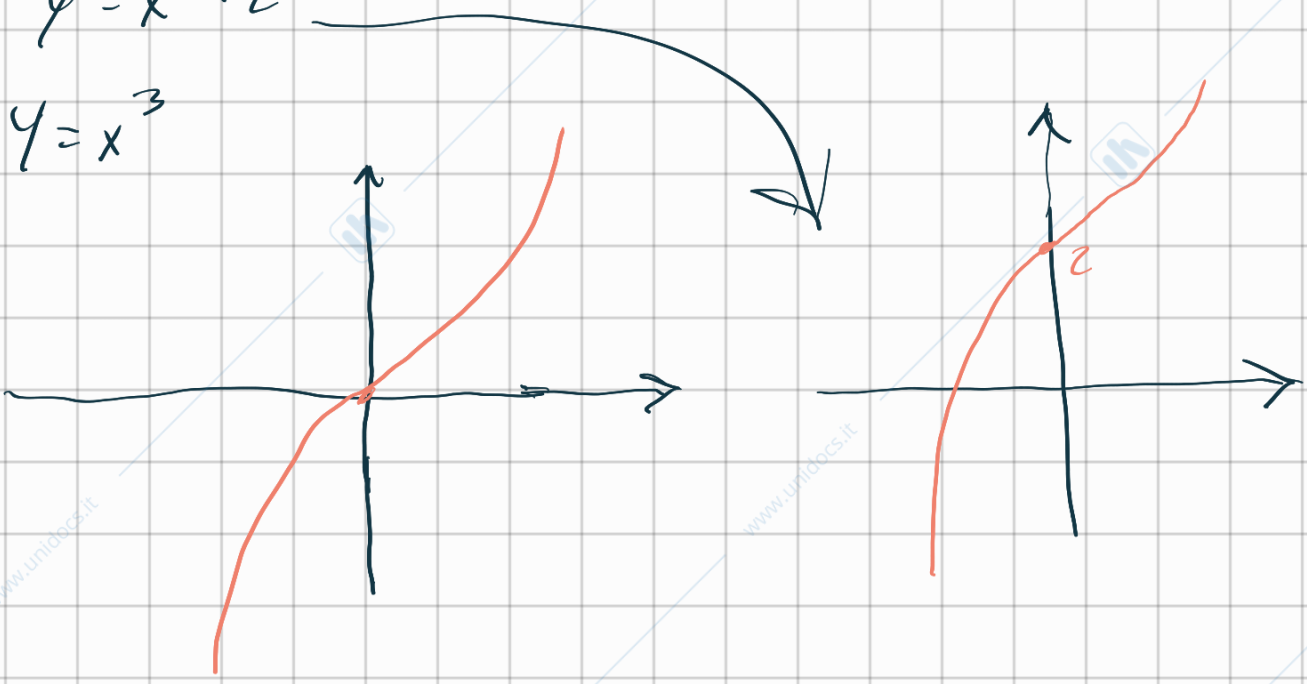
Sposto verticalmente il grafico di $f(x)$

se $k > 0 \rightarrow$ mi alzo di k

se $k < 0 \rightarrow$ mi abbasso di k

es) $y = x^3 + 2$

$y = x^3$

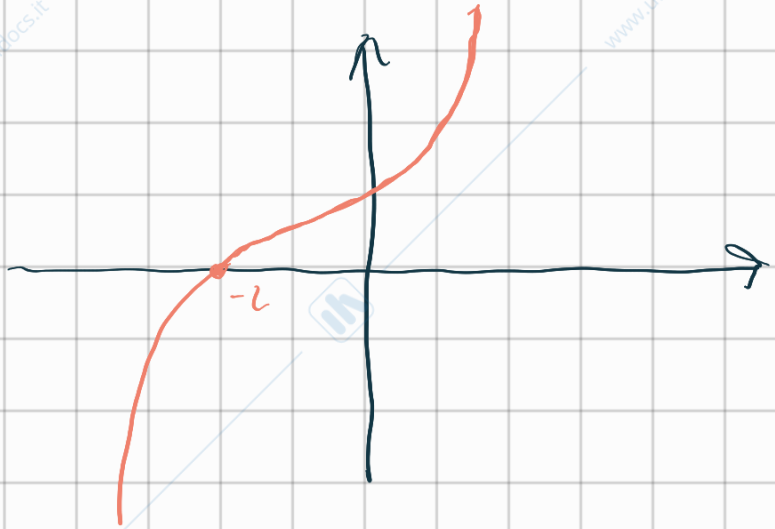


es) $y = (x+2)^3$

se $k > 0 \rightarrow$ mi sposto a sinistra di k

se $k < 0 \rightarrow$ mi sposto a destra di k

$y = (x+2)^3$



2) Simetrie

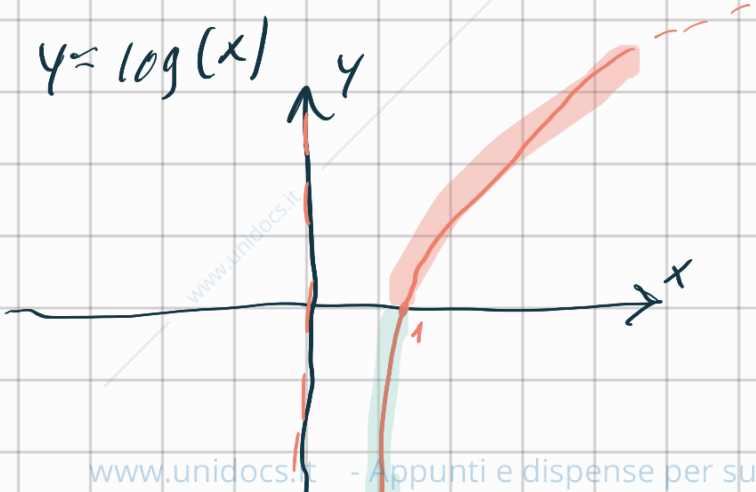
$-f(x)$ $\qquad$ $f(-x)$

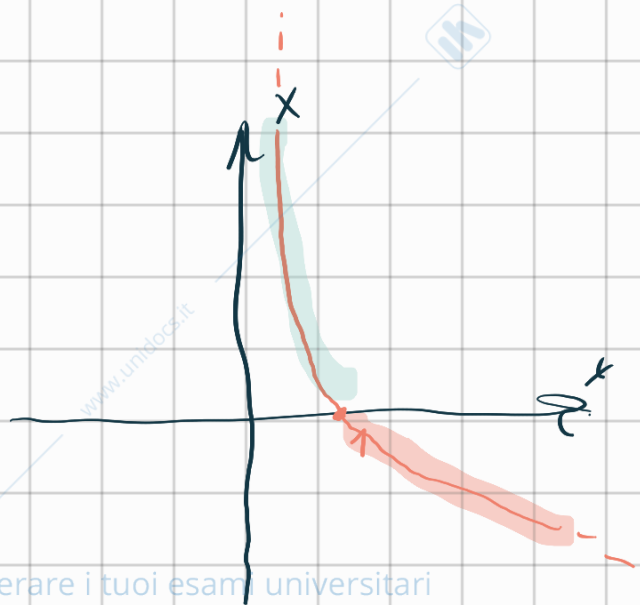
ribalto a specchio rispetto al asse x

I tratti di curva sopra l'Asse x vanno specchiati sotto l'asse x (e viceversa)

es: $y = -\log(x)$

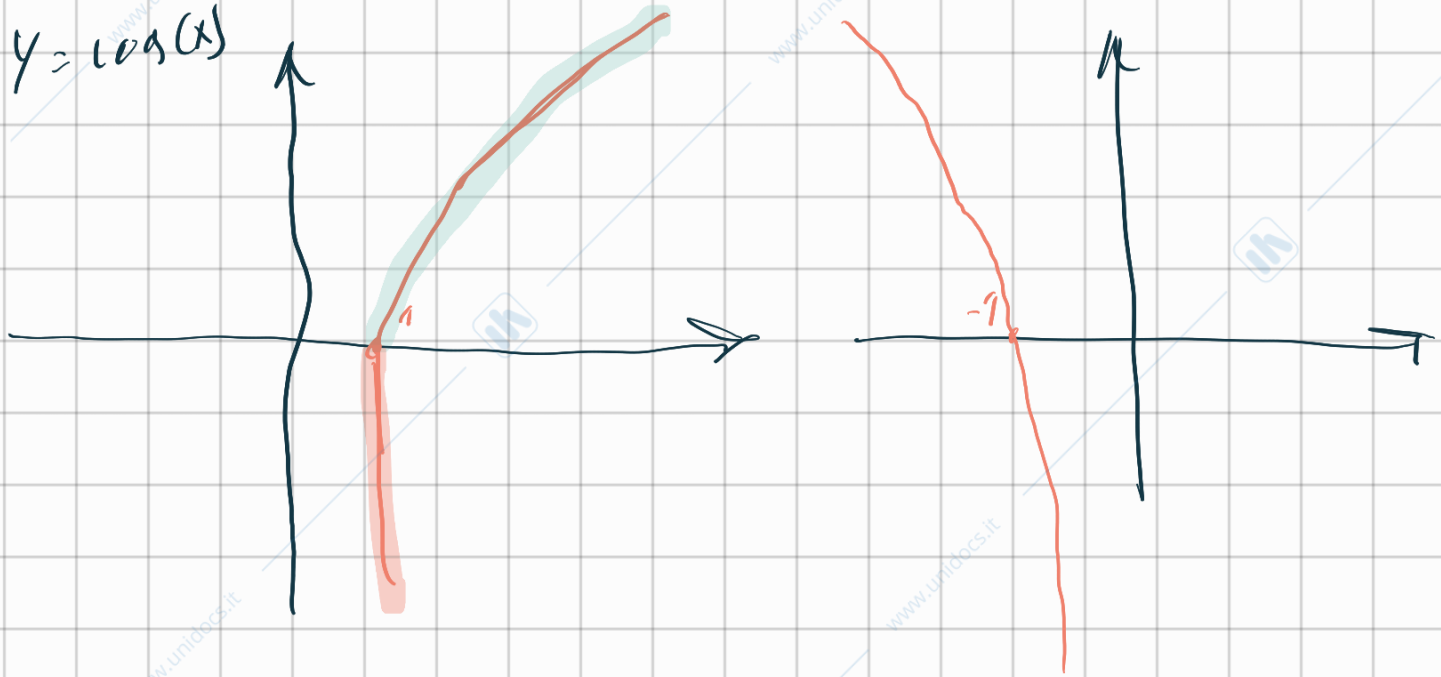
$y = \log(x)$





ribalto a specchio rispetto al asse y i tratti di curva a destra del asse y vanno a sinistra (e viceversa

es: $y = \log(-x)$

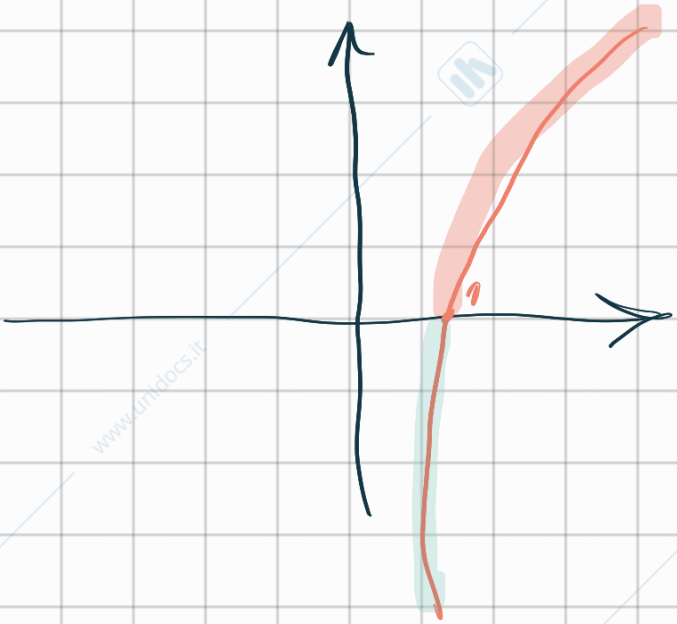


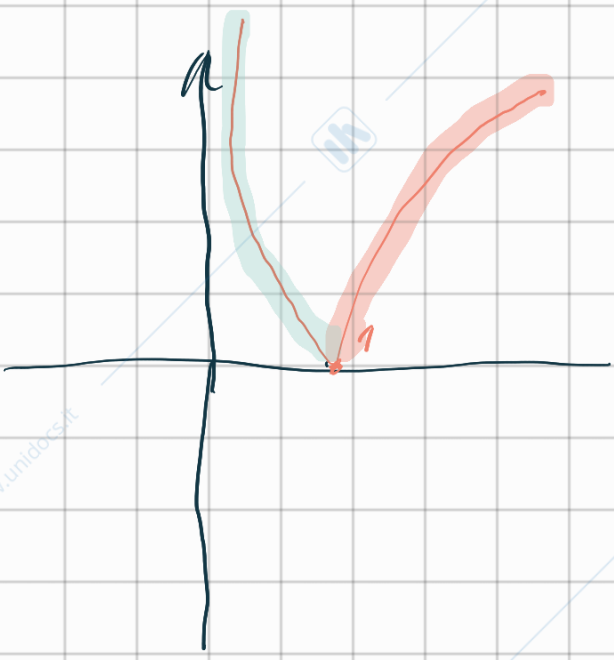
B) $|f(x)|$

tratti positivi di X non cambiano
Quelli sotto vengono specchiati

es: $y = |\log(x)|$

$y = \log(x)$





$f(|x|)$

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

$y = e^x$