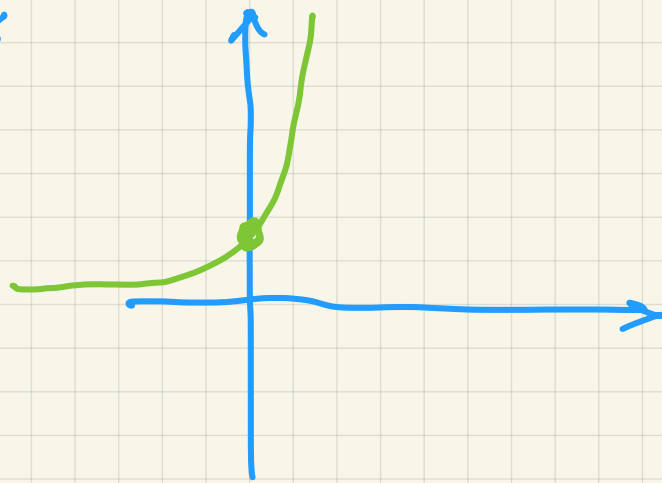


EQUAZIONI LOGARITMICHE



M3052

se $y = e^x$



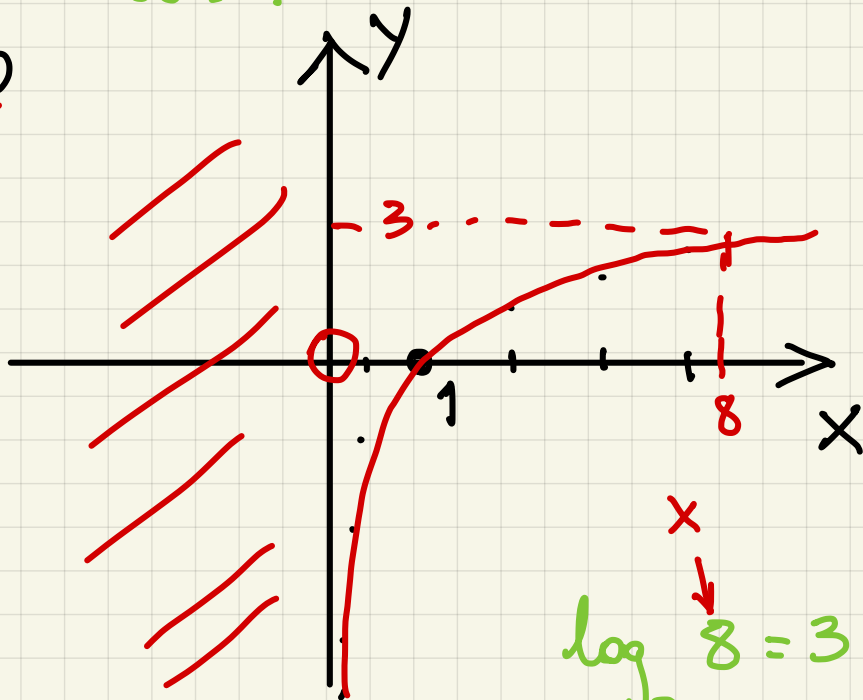
COME É FATTA LA FUNZIONE

$y = \log_a x$

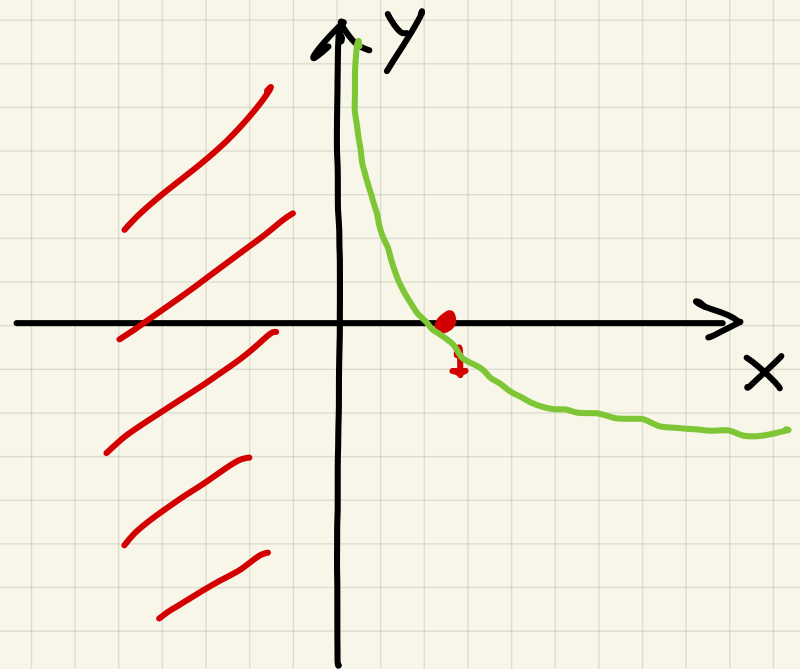
$a > 1$

$0 < a < 1$

$\log_a 1 = 0$



$\log_2 8 = 3$



SE HO LA funzione $y = \log x$ qual è il dominio? quali x posso scegliere? $x > 0$

EQUAZIONI

$$\dots (x) \dots = 0$$

1) $\log_5 x + \log_5 3 = \log_5 6$ $x > 0$ ^{CE}

~~$\log_5 3 \cdot x = \log_5 6 \rightarrow 3x = 6$~~

COME SE...

2) $\log_2 (x+1) = 2 \log_2 3 \rightarrow \log_2 (x+1) = \log_2 3^2$

$x+1 = 9 \quad x = 8$ CE $x+1 > 0$
 $x > -1$

3) $\log (x^2 - 3) = 0 \quad \log (x^2 - 3) = \log 1 \quad x^2 - 3 = 1$

$x^2 = 4 \quad x_1 = +2 \quad ; \quad x_2 = -2$ $x^2 - 3 > 0$ CE
 $x > \sqrt{3} \quad x < -\sqrt{3}$

$$4) \log x - 2 \log 3 = \log (x-1)$$

$$\log x - \log 3^2 = \log (x-1)$$

$$\log \frac{x}{9} = \log (x-1) \rightarrow \frac{x}{9} = x-1 \rightarrow \frac{x}{9} = \frac{9x-9}{9}$$

$$x = \frac{9}{8} \quad \checkmark \quad \text{ok}$$

CE

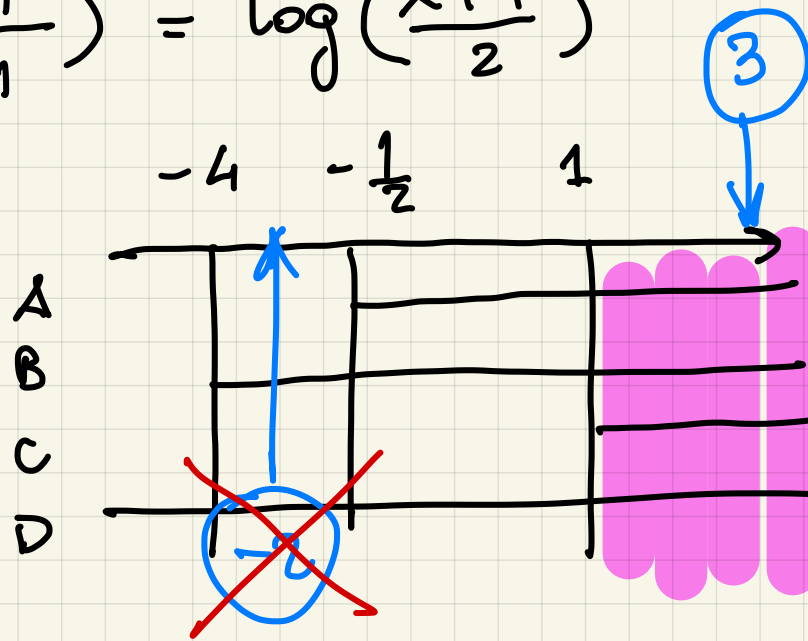
$$\begin{cases} x > 0 \\ x-1 > 0 \end{cases} \Rightarrow x > 1$$

$$\boxed{x > 1}$$

$$5) \log (2x+1) - \log (x-1) = \log (x+4) - \log 2$$

$$\log \left(\frac{2x+1}{x-1} \right) = \log \left(\frac{x+4}{2} \right)$$

- A } $x > -\frac{1}{2}$
- B } $x > 1$
- C } $x > -4$
- D } $\forall x \in \mathbb{R}$



- ESISTONO SE
- A } $2x+1 > 0$
 - B } $x-1 > 0$
 - C } $x+4 > 0$
 - D } $2 > 0$

DEVO CAPITARE QUI

$$\frac{2x+1}{x-1} = \frac{x+4}{2}$$

$$\frac{4x+2}{2(\cancel{x-1})} = \frac{(x-1)(x+4)}{2(\cancel{x-1})}$$

$$\cancel{4x}+2 = x^2 + \cancel{4x} - x - 4 \rightarrow x^2 - x - 6 = 0$$

$$x = \frac{1 \pm \sqrt{1+24}}{2}$$

$$\begin{cases} 3 \\ -2 \end{cases}$$

$$\begin{array}{l} x_1 = 3 \quad ? \quad \checkmark \\ x_2 = -2 \quad ? \quad \text{NO} \end{array}$$

OGNI ARGOMENTO DEL TESTO VA POSTO > 0

$$\log(\dots) = \log(x \times x \times x) \quad \begin{cases} \dots > 0 \\ x \times x > 0 \end{cases}$$