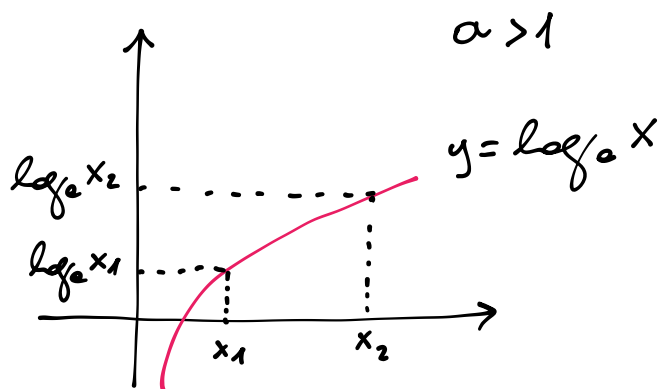


22/3/2018



FUNZ. CRESCENTE

$$x_1 < x_2 \Leftrightarrow \log_a(x_1) < \log_a(x_2)$$

APPLICAZIONE

$$\log_2(x-1) < \log_2(x^2+3)$$

c.e.

$$\begin{cases} x-1 > 0 \\ x^2+3 > 0 \end{cases} \begin{cases} x > 1 \\ \forall x \in \mathbb{R} \end{cases}$$

↓

$$\begin{cases} x-1 < x^2+3 \\ x > 1 \end{cases}$$

c.e. $\boxed{x > 1}$

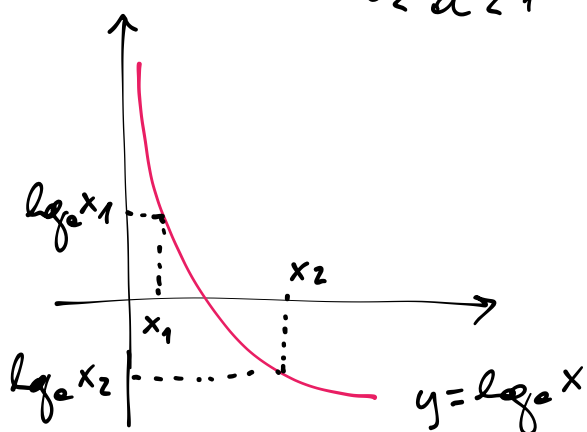
$$\begin{cases} -x^2+x-4 < 0 \\ x > 1 \end{cases}$$

$$\begin{cases} x^2-x+4 > 0 \\ x > 1 \end{cases}$$

$$\begin{cases} \Delta < 0 \\ \forall x \in \mathbb{R} \\ x > 1 \end{cases}$$

$\Rightarrow \boxed{x > 1}$

$0 < a < 1$



FUNZ. DECRESCENTE

$$x_1 < x_2 \Leftrightarrow \log_a x_1 > \log_a x_2$$

455

$$\log_{\frac{3}{5}}(2-x) + \log_{\frac{3}{5}}(x+2) > \log_{\frac{3}{5}} 3x$$

prof. 640

$$0 < a = \frac{3}{5} < 1$$

$$\text{C.E.} \begin{cases} 2-x > 0 \\ x+2 > 0 \\ 3x > 0 \end{cases} \begin{cases} x < 2 \\ x > -2 \\ x > 0 \end{cases}$$

$$\log_{\frac{3}{5}}[(2-x)(x+2)] > \log_{\frac{3}{5}}(3x)$$

$$\Downarrow \\ 0 < x < 2$$

$$(2-x)(x+2) < 3x$$

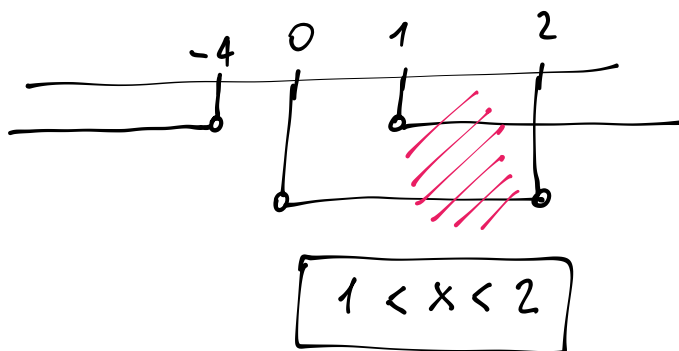
$$4 - x^2 < 3x$$

$$-x^2 - 3x + 4 < 0$$

$$\begin{cases} x^2 + 3x - 4 > 0 \\ 0 < x < 2 \end{cases}$$

$$\begin{cases} (x+4)(x-1) > 0 \\ 0 < x < 2 \end{cases}$$

$$\begin{cases} x < -4 \vee x > 1 \\ 0 < x < 2 \end{cases}$$



INVERTO LA
DISUGUAGLIANZA PERCHÉ $0 < a < 1$

470

$$[\log_2(x+5)]^2 - \log_2(x+5) - 6 > 0$$

$$\left[-5 < x < -\frac{19}{4} \vee x > 3\right]$$

C.E.

$$x+5 > 0$$

$$t = \log_2(x+5)$$

$$x > -5$$

$$t^2 - t - 6 > 0$$

$$(t-3)(t+2) > 0$$

$$t < -2 \vee t > 3$$

$$\Downarrow$$

$$\log_2(x+5) < -2$$

$$\vee \log_2(x+5) > 3$$

$$\log_2(x+5) < \log_2 2^{-2}$$

$$\vee \log_2(x+5) > \log_2 2^3$$

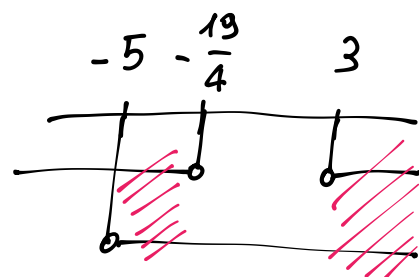
$$x+5 < 2^{-2}$$

$$\vee x+5 > 2^3$$

$$x+5 < \frac{1}{4}$$

$$\begin{cases} x < -\frac{19}{4} \\ x > -5 \end{cases}$$

$$\vee x > 3$$



$$-5 < x < -\frac{19}{4} \vee x > 3$$

$$\frac{(\log_2 x)^2 - 9\log_2 x + 20}{|\log_2 x|} \leq 0$$

$$[16 \leq x \leq 32]$$

$$\text{C.E. } \begin{cases} x > 0 \\ x \neq 1 \end{cases}$$

$$(\log_2 x)^2 - 9\log_2 x + 20 \leq 0$$

$$x > 0 \wedge x \neq 1$$

$$t = \log_2 x$$

$$t^2 - 9t + 20 \leq 0$$

$$(t-5)(t-4) \leq 0$$

$$4 \leq t \leq 5$$

$$4 \leq \log_2 x \leq 5 \rightarrow 2^4 \leq 2^{\log_2 x} \leq 2^5$$

$$\begin{cases} 2^4 \leq x \leq 2^5 \\ x > 0 \wedge x \neq 1 \end{cases}$$

$$\begin{cases} 16 \leq x \leq 32 \\ x > 0 \wedge x \neq 1 \end{cases}$$

$$16 \leq x \leq 32$$