RIPASSO

20 gen 2021

ex $y = \ln(-x^2 - 2x + 3)$

CE $-x^2 - 2x + 3 > 0$

$x \in (-3; 1)$

zeri $\begin{cases} y = 0 \\ y = f(x) \end{cases}$ ...

$x = -1 - \sqrt{3} \rightarrow A(-1-\sqrt{3}; 0)$

V

$x = -1 + \sqrt{3} \rightarrow B(-1+\sqrt{3}; 0)$

$\begin{cases} x = 0 \\ y = f(x) \end{cases}$ ...

$C(0; \ln 3)$

segno $f(x) > 0 \iff x \in (-1-\sqrt{3}; -1+\sqrt{3})$

studio come $y = \ln f(x)$

1. $\exists \ln f(x) \iff f(x) > 0$
2. $f(x) = 1 \iff \ln f(x) = 0$
3. $f(x) \to 0^+ \Rightarrow \ln f(x) \to -\infty$
4. $\max f(x) \to \max \ln f(x)$

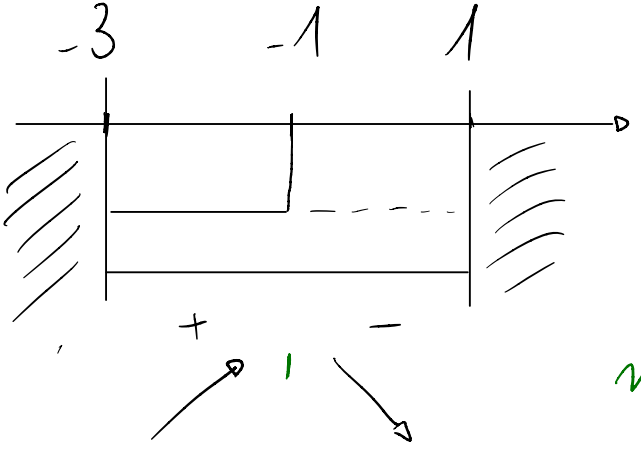
asintoti $\lim_{x \to -3^+} f(x) = -\infty$ | $x = -3$ A.O.

$\lim_{x \to 1^-} f(x) = -\infty$ | $x = 1$ A.O.

derivata prima $y' = \frac{1}{-x^2 - 2x + 3}(-2x - 2) = \frac{-2(x+1)}{(-x^2 - 2x + 3)}$

$y' = 0 \Rightarrow x = -1$ pto stazionario

$y > 0 \Rightarrow$



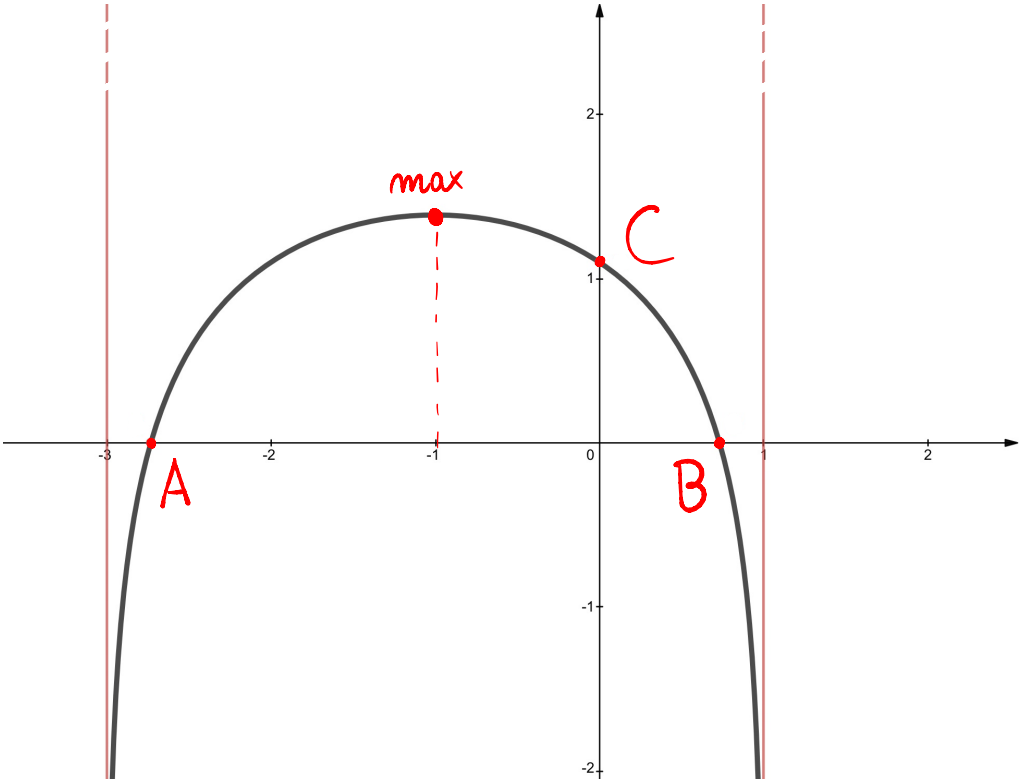
$x = -1$ max

derivata seconda

$$y'' = \frac{-2(x^2+2x+5)}{(x^2+2x-3)^2}$$

$y'' = 0 \quad \nexists\, x \rightsquigarrow$ NO PUNTI DI FLESSO

$y'' > 0 \quad \nexists\, x \in CE$



ex $y = \ln(x^2 - 2x + 3)$ CE $x \in \mathbb{R}$ $\rightsquigarrow$ NO A.V.

intersezioni asse x $\ln(x^2 - 2x + 3) = 0$

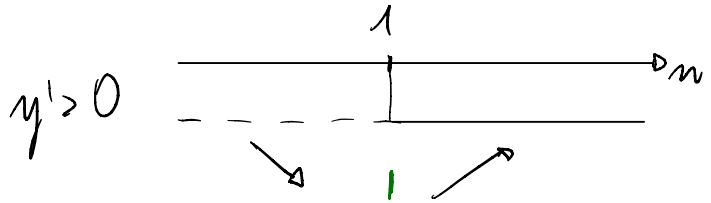
$x^2 - 2x + 3 = 1$

$x^2 - 2x + 2 = 0$ $\Delta < 0$ $\nexists\, x$

asse y $y = \ln 3 \Rightarrow A(0; \ln 3)$

segno $x^2 - 2x + 3 > 1 \Rightarrow \forall x \in \mathbb{R}$

derivata prima $y' = \dfrac{2x - 2}{x^2 - 2x + 3}$ $y' = 0 \Rightarrow x = 1$ pto stazionario



$x = 1$ pt min $B(1; \ln 2)$

derivata seconda $y'' = \dfrac{-2(x^2-2x-1)}{(x^2-2x+3)^2}$

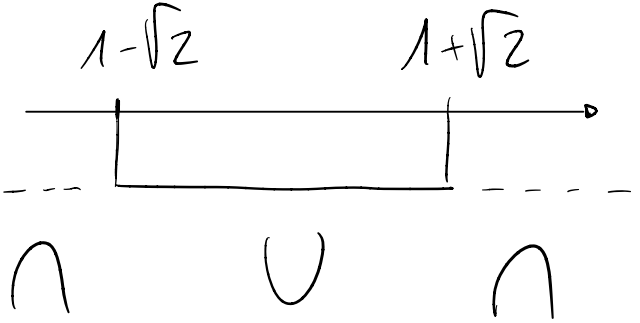
$y'' = 0 \Rightarrow x^2-2x-1=0$

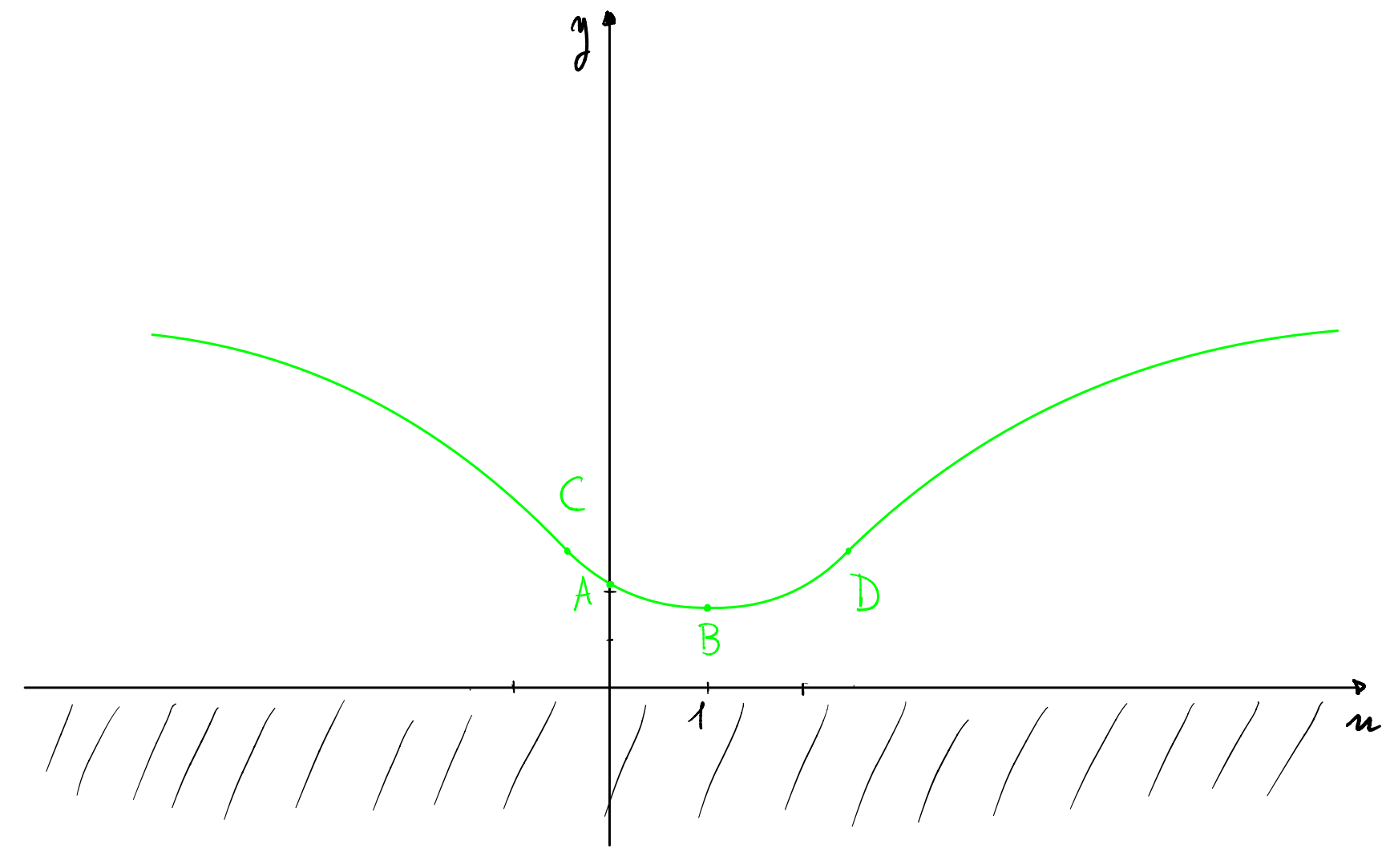
$x = 1 \pm \sqrt{2}$

$C(1-\sqrt{2}; \ln 4)$

$D(1+\sqrt{2}; \ln 4)$

$y'' > 0 \Rightarrow$




y
C
A
B
D
1
x