STUDIARE LA FUNZIONE $\boxed{y = \frac{x-1}{\sqrt{x-2}}}$ (B)

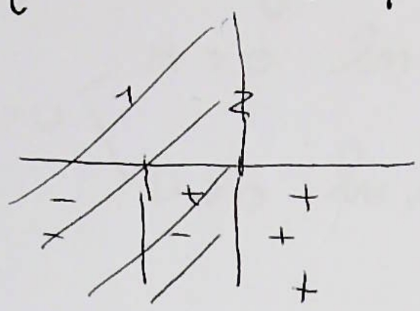
1) DOMINIO $x-2>0 \quad x>2 \quad D: (2, +\infty)$

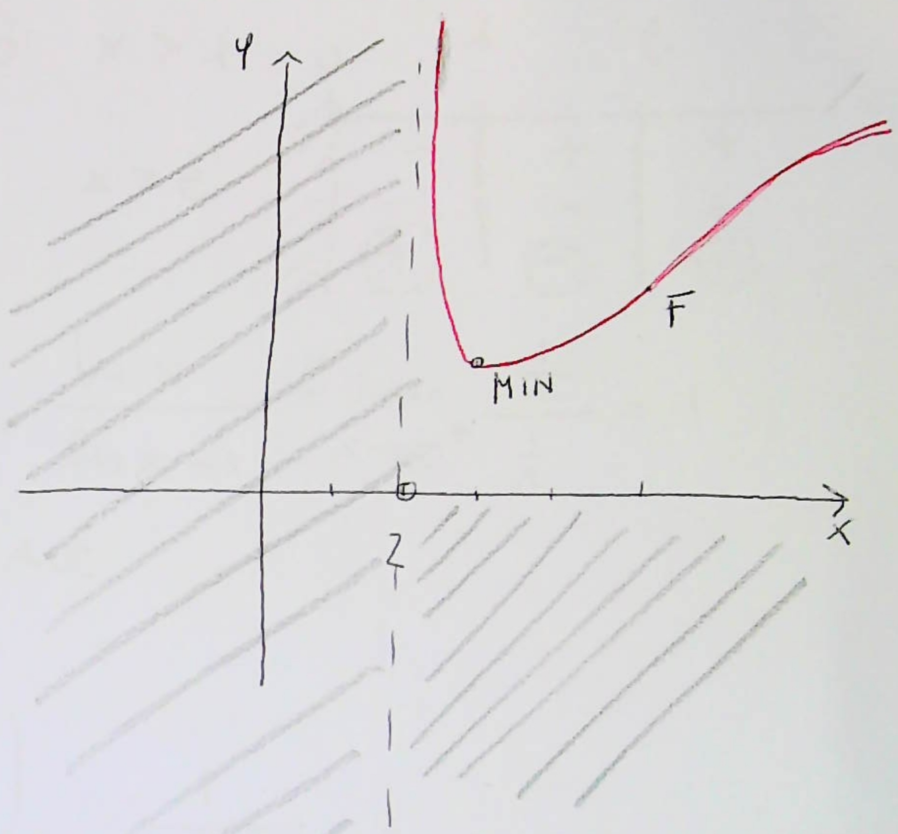
2) SIMMETRIE $f(-x) = \frac{-x-1}{\sqrt{-x-2}}$ NO PARI $\quad -f(-x) = \frac{x+1}{\sqrt{x-2}}$ NO DISPARI

3) INTERSEZIONE ASSI $\begin{cases} x=0 \\ y=\nexists \end{cases} \quad \begin{cases} x=1 \\ y=0 \end{cases} \quad A(1,0) \notin$ DOMINIO

4) SEGNO di $f(x)$

$\frac{x-1}{\sqrt{x-2}} > 0 \quad \begin{cases} N>0 & x>1 \\ D>0 & x>2 \end{cases}$





NEL DOMINIO è SEMPRE POSITIVA.

5) LIMITI e ASINTOTI

$\lim_{x\to+\infty} \frac{x-1}{\sqrt{x-2}} = +\infty$

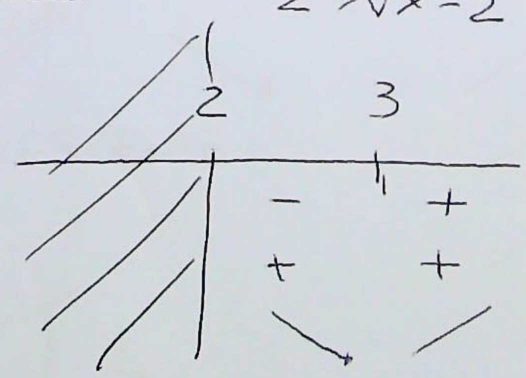
$\lim_{x\to 2^+} \frac{x-1}{\sqrt{x-2}} = \frac{1}{0^+} = +\infty \quad x=2$ ASINTOTO VERTICALE DX

$y = mx+q \quad m = \lim_{x\to\infty} \frac{x-1}{x\sqrt{x-2}} = 0 \quad \nexists$ AS. OBL.

6) STUDIO DELLA DERIVATA PRIMA

$$y' = \frac{\sqrt{x-2} - (x-1)\frac{1}{2\sqrt{x-2}}}{(x-2)} = \frac{2(x-2) - x + 1}{2\sqrt{x-2}\,(x-2)} = \frac{2x-4-x+1}{2(x-2)\sqrt{x-2}} = \frac{x-3}{2(x-2)^{\frac{3}{2}}}$$

$y' > 0 \quad \begin{cases} N>0 & x>3 \\ D>0 & x>2 \end{cases}$



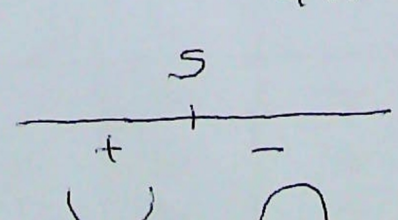
MIN $(3, 2)$

7) STUDIO DELLA DERIVATA SECONDA

$$y'' = \frac{2(x-2)^{3/2} - (x-3)\cdot\cancel{2}\cdot\frac{3}{\cancel{2}}(x-2)^{3/2-1}}{4(x-2)^3} = \frac{2(x-2)^{\frac{3}{2}} - 3(x-3)(x-2)^{\frac{1}{2}}}{4(x-2)^3}$$

$$= \frac{2\sqrt{(x-2)^3} - 3(x-3)\sqrt{x-2}}{4(x-2)^3} = \frac{2(x-2)\sqrt{x-2} - 3(x-3)\sqrt{x-2}}{4(x-2)^3} = \frac{\sqrt{x-2}\,(2x-4-3x+9)}{//}$$

$\frac{\sqrt{x-2}\,(5-x)}{4(x-2)^3} > 0 \quad x<5$ nel suo dominio



$\begin{cases} x=5 \\ y = \frac{4}{\sqrt{3}} = \frac{4}{3}\sqrt{3} \end{cases} \quad \left(5, \frac{4}{3}\sqrt{3}\right)$ FLESSO