$$y = e^{\frac{x+\sqrt{x^2+1}}{2x+3}}$$

$$y' = e^{\frac{x+\sqrt{x^2+1}}{2x+3}} \cdot \frac{\left(1+\frac{1}{2\sqrt{x^2+1}}\cdot 2x\right)(2x+3) - 2\left(x+\sqrt{x^2+1}\right)}{(2x+3)^2}$$

$$y = \begin{cases} \ln(x+1) & 0 \le x \le 1 \\ x(x+1) & -1 < x < 0 \\ \sqrt[3]{x+1} & x \le -1 \end{cases} \qquad D =]-\infty; 1]$$

$$\left.\begin{array}{l} \lim_{x \to -1^-} \sqrt[3]{x+1} = 0 \\ \lim_{x \to -1^+} x^2 + x = 0 \\ f(-1) = 0 \end{array}\right\} \text{ in } x=-1 \text{ é continua}$$

$$\left.\begin{array}{l} \lim_{x \to 0^-} x^2 + x = 0 \\ \lim_{x \to 0^+} \ln(x+1) = 0 \\ f(0) = 0 \end{array}\right\} \text{ in } x=0 \text{ é continua}$$

$$\left.\begin{array}{l} \lim_{x \to 1^-} \ln(x+1) = \ln 2 \\ f(1) = \ln 2 \end{array}\right\} \text{ in } x=1 \text{ é continua a sinistra}$$

$f(x)$ é continua nel suo dominio

$$y' = \begin{cases} \frac{1}{x+1} & 0 \le x < 1 \\ 2x+1 & -1 < x < 0 \\ \frac{1}{3\left(\sqrt[3]{x+1}\right)^2} & x < -1 \end{cases} \qquad D' = D - \{-1\}$$

$$\lim_{x \to -1^-} f'(x) = \lim_{x \to -1^-} \frac{1}{3\left(\sqrt[3]{x+1}\right)^2} = +\infty \Rightarrow$$

$$\Rightarrow \lim_{\Delta x \to 0^-} \frac{\Delta f}{\Delta x} = +\infty$$

$$\lim_{x \to -1^+} f'x = \lim_{x \to -1^+} 2x+1 = -1 \Rightarrow f'_+(-1) = -1$$

$$\Downarrow$$

$f(x)$ in $x=1$ presenta un punto angoloso

$$\lim_{x \to 0^-} f'(x) = \lim_{x \to 0^-} 2x+1 = 1 \qquad f'_-(0)=1$$

$$\lim_{x \to 0^+} f'(x) = \lim_{x \to 0^+} \frac{1}{x+1} = 1 \qquad f'_+(0)=1$$

$\left.\begin{array}{l} f'_-(0)=1 \\ f'_+(0)=1 \end{array}\right\}$ f(x) é derivabile in $x=0$

feb 3-11.47

$$y = x^4 + 5x^2 + 4$$

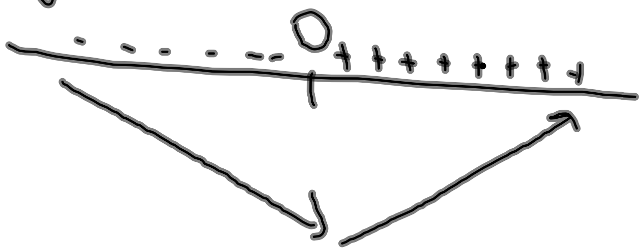
$$y' = 4x^3 + 10x$$

$$4x^3 + 10x > 0$$

$$2x(2x^2+5) > 0$$

$$x > 0$$

f'



$f(x)$ è monotona crescente per $x>0$,

" " " decrescente per $x<0$