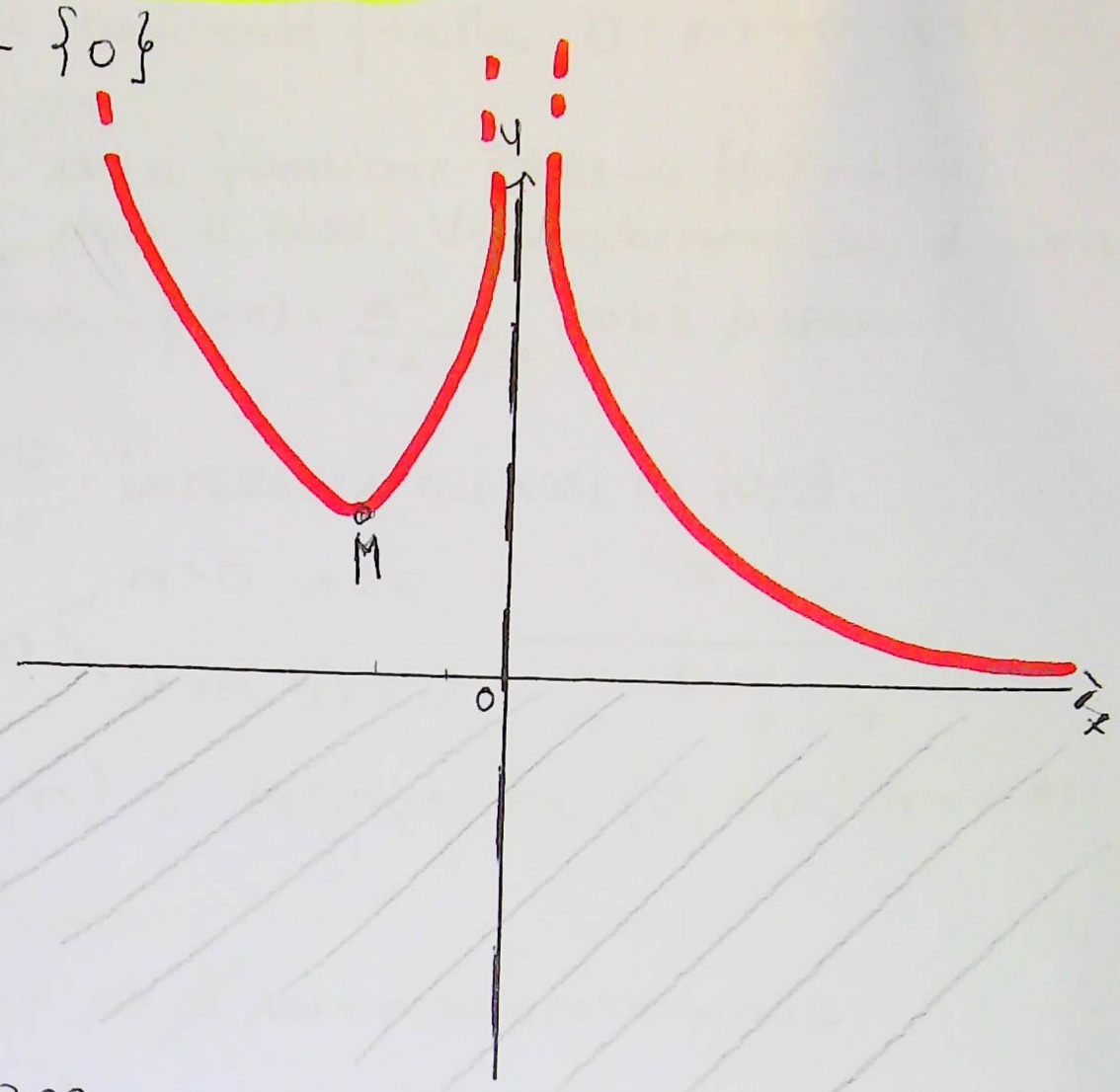
STUDIARE LA FUNZIONE $y = \frac{e^{-x}}{x^2}$ (D)

DOMINIO $x^2 \neq 0 \quad x \neq 0 \quad D: \mathbb{R} - \{0\}$

SIMMETRIE $f(-x) = \frac{e^{x}}{x^2}$ NO PARI

$-f(-x) = -\frac{e^{x}}{x^2}$ NO DISPARI;



INTERSEZIONE ASSI

$\begin{cases} x = 0 \\ y = \nexists \end{cases} \quad \begin{cases} e^{-x} = 0 \text{ MAI} \\ y = 0 \end{cases}$

NON INTERSECA GLI ASSI.

SEGNO di $f(x)$

$\frac{e^{-x}}{x^2} > 0 \quad \forall x \in D$

LIMITI e ASINTOTI

$\lim_{x \to +\infty} \frac{e^{-x}}{x^2} = 0$ $\boxed{y = 0}$ AS. ORIZZ. (destro)

$\lim_{x \to -\infty} \frac{e^{-x}}{x^2} = \frac{\infty}{\infty} = +\infty$

$\lim_{x \to 0^+} \frac{e^{-x}}{x^2} = \frac{1}{0^+} = +\infty$ $\boxed{x = 0}$ AS. VERT.

$\lim_{x \to 0^-} \frac{e^{-x}}{x^2} = \frac{1}{0^+} = +\infty$

DERIVATA PRIMA: $y' = \frac{-e^{-x} \cdot x^2 - e^{-x} \cdot 2x}{x^4 3} = \frac{e^{-x}(-x-2)}{x^3} > 0$

$+ e^{-x} > 0 \quad \forall x$

$-x - 2 > 0 \quad x < -2$

$x > 0$

	-2	0	
+	+	+	+
+	+	−	−
−	−	−	+
−	−	+	∄ D

MIN $\left(-2, \frac{e^2}{4}\right)$

TRALASCIARE y''