es. 49

$y = \frac{2-x}{x^3}$

DOMINIO

$x \neq 0 \qquad D = \mathbb{R} - \{0\}$

SIMMETRIA

$f(-x) = \frac{2-(-x)}{(-x)^3} = \frac{2+x}{-x^3}$ NO

INTERSEZIONE CON GLI ASSI

$\begin{cases} y = \frac{2-x}{x^3} \\ y = 0 \end{cases}$

$\frac{2-x}{x^3} = 0$

$2 - x = 0$

$-x = -2$

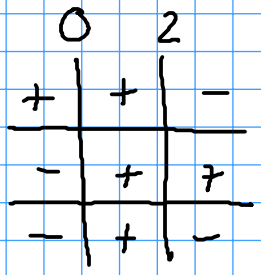
$x = 2$

SEGNO

$\frac{2-x}{x^3} > 0$

N: $2 - x > 0 \Rightarrow -x > -2 \Rightarrow x < 2$

D: $x^3 > 0 \Rightarrow x > 0$



$0 < x < 2$

ASINTOTO VERTICALE

$$\lim_{x \to 0^+} \frac{2-x}{x^3} = \frac{2^-}{0^+} = +\infty$$

$$\lim_{x \to 0^-} \frac{2-x}{x^3} = \frac{2^+}{0^-} = -\infty$$

ASINTOTO ORIZZONTALE

(GRAD N $\leq$ D : ORIZZONTALE
GRAD N $>$ D : OBLIQUO)

$$\lim_{x \to +\infty} \frac{2-x}{x^3} = \frac{2-\infty}{+\infty} = \frac{-\infty}{+\infty}$$

$$\rightarrow \frac{x^{\not 3^2}\left(\frac{2}{x} \overset{=0}{-} 1\right)}{x^{\not 3^2}} = -\frac{1}{x^2} = 0^-$$

$$\lim_{x \to -\infty} \frac{2-x}{x^3} = \frac{2+\infty}{-\infty} = \frac{\infty}{-\infty}$$

$$\rightarrow \frac{x^{\not 3^2}\left(\frac{2}{x} \overset{=0}{-} 1\right)}{x^{\not 3^2}} = -\frac{1}{x^2} = 0^-$$

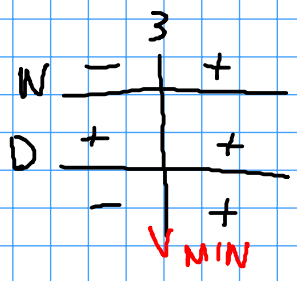
DERIVATA I°

$$f'(x) = \frac{-1(x^3) - 3x^2(2-x)}{x^6} = \frac{-x^3 - 6x^2 + 3x^3}{x^6} = \frac{x^{\not 2^2}(-x-6+3x)}{x^{\not 6_4}} =$$

$$= \frac{2x-6}{x^4}$$

N: $2x - 6 > 0 \Rightarrow 2x > 6 \Rightarrow x > 3$

D: $x^4 > 0$



$$\begin{cases} y = \frac{2-x}{x^3} \\ x = 3 \end{cases} \qquad y = \frac{-1}{27} = -\frac{1}{27}$$

$$\text{MIN}\left(3; -\frac{1}{27}\right)$$

DERIVATA II°

$$f'(x) = \frac{2x-6}{x^4}$$

$$f''(x) = \frac{2(x^4) - (2x-6)4x^3}{x^8} = \frac{2x^4 - 8x^4 + 24x^3}{x^8} = \frac{x^3(2x - 8x + 24)}{x^8} =$$

$$= \frac{-6x+24}{x^5}$$

N: $-6x + 24 > 0 \Rightarrow -6x > -24 \Rightarrow x < 4$

D: $x^5 > 0$

	4	
N	+	−
D	+	+
	+	−
	∪	∩

$$\begin{cases} y = \frac{2-x}{x^3} \\ x = 4 \end{cases} \qquad y = \frac{-2}{64} = -\frac{1}{32}$$

$$P\left(4; -\frac{1}{32}\right)$$

GRAFICO