$y = \frac{3x^3+1}{x}$ $P(\ ;\ )$

C.E $x \neq 0$ $x \in (-\infty;0) \cup (0;+\infty)$

LIMITI $\lim_{x \to 0^-} f(x) = -\infty$ $\lim_{x \to \infty} f(x) = +\infty$

$\lim_{x \to 0^+} f(x) = +\infty$ $\lim_{x \to \infty} \frac{3x^2+1}{x^2} = \pm\infty$ mente As. Obe.

ZERI

$\frac{3x^3+1}{x} = 0$ $x^3 = -1/3$ $x = -\frac{1}{\sqrt[3]{3}}$

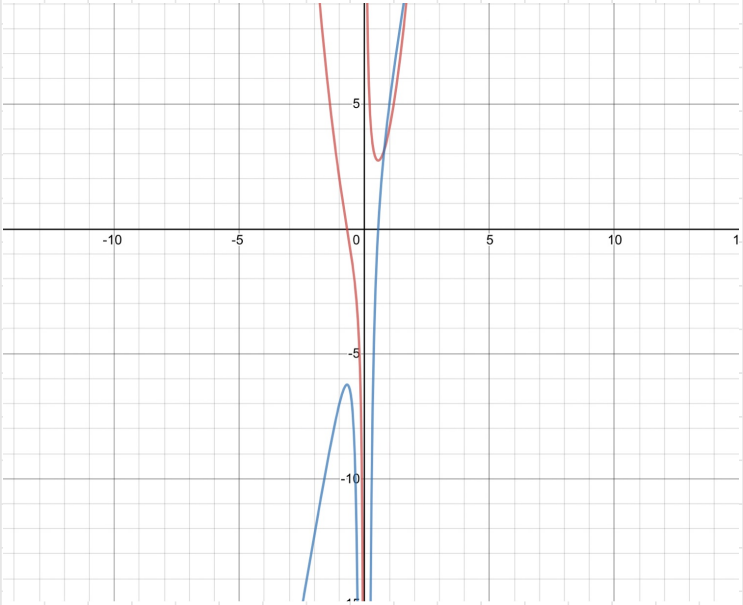
SEGNO $\frac{3x^3+1}{x} > 0$ $3x^3+1>0$ $x > -\frac{1}{\sqrt[3]{3}}$ $x>0$

$-1/\sqrt[3]{3}$ 0

\+ − +

DERIVATA

$y = \frac{3x^3+1}{x}$ $y' = \frac{9x^3-3x^3-1}{x^2} = \frac{6x^3-1}{x^2}$



Primitiva di f(x)

$$\int \frac{3x^3+1}{x}\,dx = \int 3x^2 + \frac{1}{x}\,dx = x^3 + \ln|x| + K$$

passa per $P(-1;2)$ $\quad -1 + \ln|-1| + K = 2$

$-1 + 0 + K = 2 \quad K = 3$

$f(x) = x^3 + \ln|x| + 3$