$$\lim_{x \to \infty} \frac{5x^2 + x + 10}{4x^5 - 3x^4 - 2}$$

$$\lim_{x \to \infty} \frac{x^2\left(5 + \frac{1}{x} + \frac{10}{x^2}\right)}{x^5\left(4 - \frac{3}{x} - \frac{2}{x^5}\right)}$$

$$\lim_{x \to \infty} \frac{5x^2}{4x^5} = \frac{5}{4x^3} = 0$$

$$\lim_{x \to 1} \frac{x^3 - 1}{x^2 - 5x + 4} \longrightarrow \lim_{x \to 1} \frac{(x-1)(x^2+x+1)}{(x-1)(x-4)}$$

$$= \lim_{x \to 1} \frac{1+1+1}{-3} = -1$$

$a(x - x_1)(x - x_2)$

$\Delta = 25 - 4(1)(4)$

$\Delta = 9$

$x = \frac{5 \pm 3}{2}$

$x_1 = 4$

$x_2 = 1$

$a^3 - b^3 = a^2 + ab + b^2$

$x^3 + 0x^2 + 0x - 1 \;|\; x - 1$

$-x^3 + x^2 \qquad\qquad x^2 + x + 1$

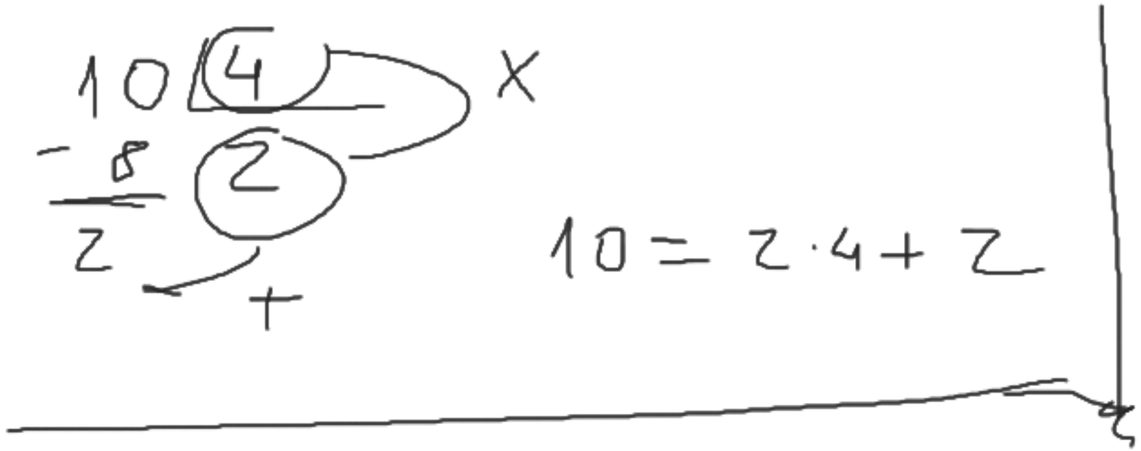
$x^2 + 0x - 1$

$-x^2 + x$

$-x + 1$

$-x + 1$

0



$$\lim_{x \to 0} \frac{3x}{x^3 - x}$$

$$\lim_{x\to\infty} \frac{5x^2+x+10}{4x^5-3x^4-2}$$

$$= \lim_{x\to\infty} \frac{x^5\left(\frac{5}{x^3}+\frac{1}{x^4}+\frac{10}{x^5}\right)}{x^5\left(4-\frac{3}{x}-\frac{2}{x^5}\right)}$$

$$= \lim_{x\to\infty} \frac{0}{4} = 0$$

$$\lim_{x\to\infty} \frac{1}{x^n} = 0$$

$n \geq 1$

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

$$\lim_{x \to 0} \frac{3x}{x(x^2 - x)}$$

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

$x \to 0$ ⊕ $\sim +\infty$

$$\lim_{x \to 0^+} \frac{3}{x(x-1)} = -\infty$$

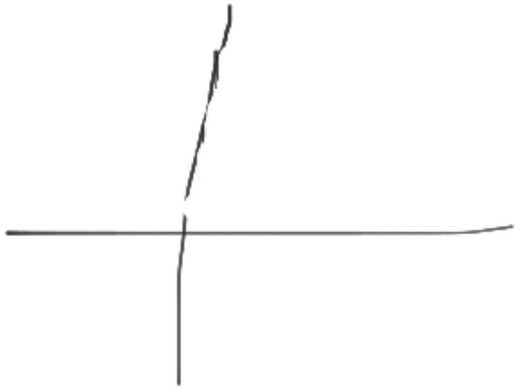
$x \to 0^+$ ⊕ ⊖

$$\frac{1}{x}$$

$0,5 \cdot 0$
$\times 0,5 = 0,25$

$0,5 > 0,25$

$-\infty$



$\} \neq, = +\infty$

$$\lim_{x\to 0}\frac{(x-1)^3-1}{x}=\lim_{x\to 0}\frac{(x-1)'(x-1)^2-1}{x}$$ $(x-1)(x^2-2x+1)$

$$=\lim_{x\to 0}\frac{x^3-1-3x(x-1)-1}{x}\to\lim_{x\to 0}\frac{x^3-3x^2+3x-2}{x}$$

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

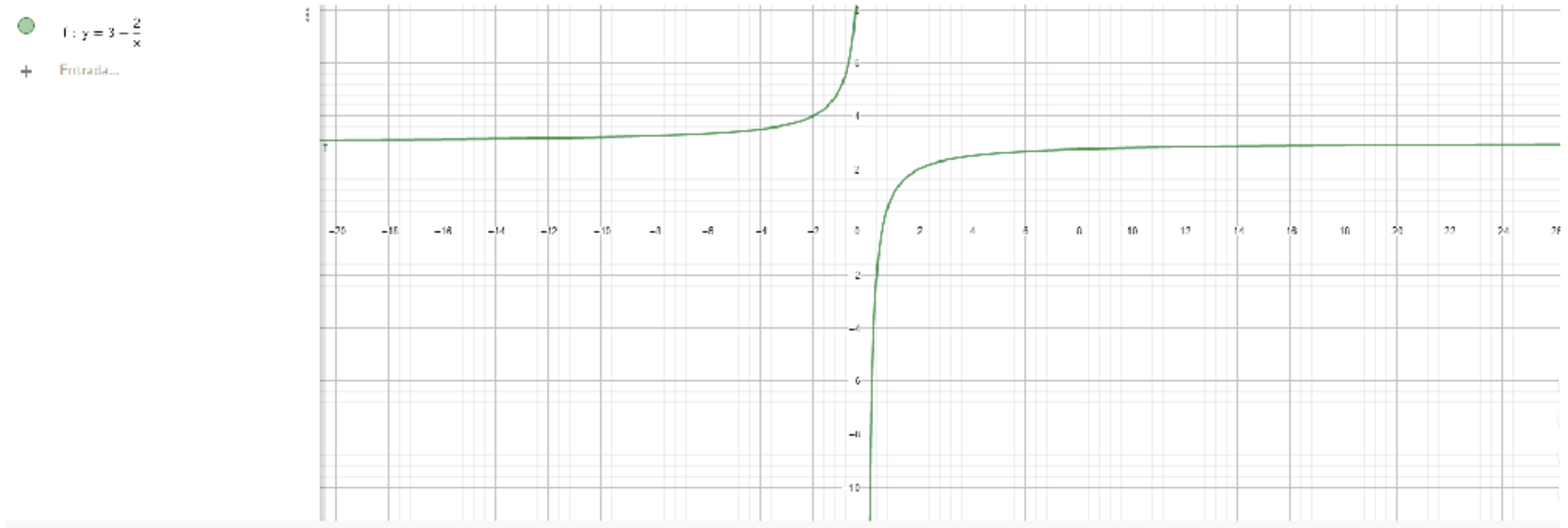
$$=\lim_{x\to 0}\frac{0-0+3-2/x}{1}$$

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

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

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

$\nexists$


f : y = 3 − 2/x
Entrada...

$$\lim_{x \to 0} \frac{x^3 - 1 - 3x(x-1) - 1}{x}$$

$$\frac{4\sqrt{3} + 8}{16} \quad \begin{matrix} :4 \\ :4 \end{matrix} \rightsquigarrow \frac{1\sqrt{3} + 2}{4}$$

$$= \lim_{x \to 0} \frac{x^3 - 3x^2 + 3x - 2}{x} \quad \begin{matrix} :x \\ :x \end{matrix} \rightsquigarrow \frac{x^2 - 3x + 3 - \frac{2}{x}}{1}$$

$$= \lim_{x \to 0} \frac{x\left(x^2 - 3x + 3 - \frac{2}{x}\right)}{x}$$

$$\lim_{x \to 0} \; 0 - 0 + 3 - \frac{2}{x}$$