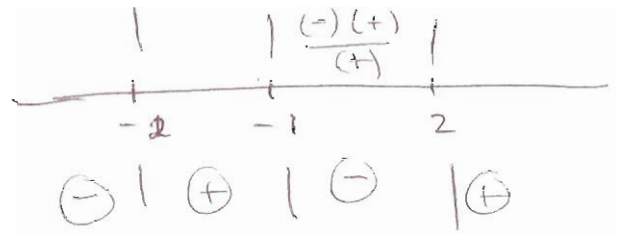


$$6) \quad f(x) = \frac{(x-2)(x+1)}{x+2}$$



$$a) \quad \text{Dom } f = \mathbb{R} \setminus \{-2\}$$

Intersecções

$$\underline{X}: \quad y = 0 \rightarrow \boxed{x = 2} \quad \boxed{x = -1}$$

$$\underline{Y}: \quad x = 0 \rightarrow \boxed{y = \frac{-2 \cdot 1}{2} = -1}$$

b) Assíntotas de f:

$$\underline{V}: \quad \boxed{x = -2} \quad \lim_{x \rightarrow -2^+} f(x) = +\infty \quad \left| \quad \lim_{x \rightarrow -2^-} f(x) = -\infty \right.$$

$$\underline{H}: \quad \lim_{x \rightarrow +\infty} f(x) = +\infty, \quad \lim_{x \rightarrow -\infty} f(x) = -\infty$$

$$\underline{O}: \quad \lim_{x \rightarrow +\infty} \frac{f(x)}{x} = \lim_{x \rightarrow +\infty} \frac{x^2 - x - 2}{x^2 + 2x} = \boxed{1 = m}$$

$$\lim_{x \rightarrow +\infty} \frac{f(x)}{x} = \lim_{x \rightarrow -\infty} \frac{x^2 - x - 2}{x^2 + 2x} = 1$$

$$b = \lim_{x \rightarrow +\infty} (f(x) - x) = \lim_{x \rightarrow +\infty} \left(\frac{x^2 - x - 2}{x + 2} - x \right)$$

$$= \lim_{x \rightarrow +\infty} \frac{\cancel{x^2} - x - 2 - \cancel{x^2} - 2x}{x + 2} = \lim_{x \rightarrow +\infty} \frac{-3x - 2}{x + 2} = \boxed{-3}$$

$$\therefore \quad y = x - 3 \text{ é A.O.}$$

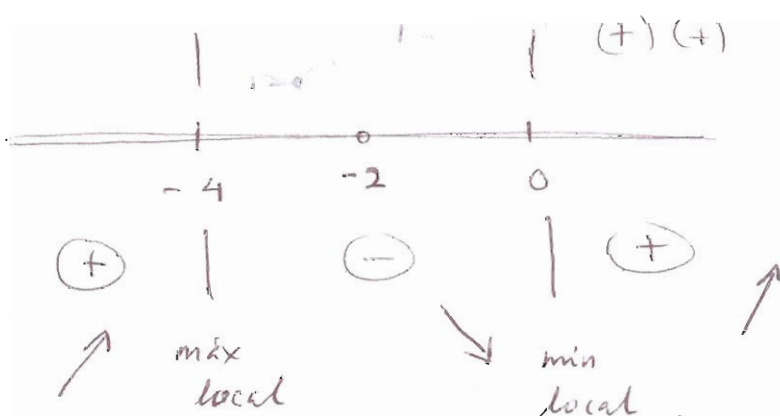
6) $f'(x) = \frac{(2x-1)(x+2) - (x^2-x-2)}{(x+2)^2}$

c)

$$= \frac{\cancel{2x^2} + \cancel{4x} - \cancel{x} - \cancel{2} - \cancel{x^2} + \cancel{x} + \cancel{2}}{(x+2)^2}$$

$$= \frac{x^2 + 4x}{(x+2)^2} = \frac{x(x+4)}{(x+2)^2}$$

Análise de crescimento

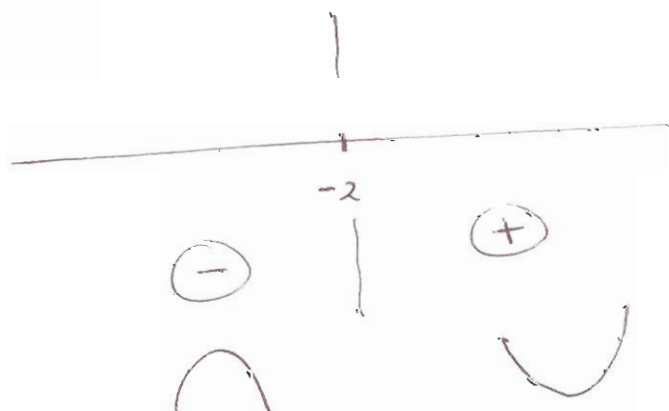


d) $f''(x) = \frac{(2x+4)(x+2)^2 - (x^2+4x)2(x+2)}{(x+2)^4}$

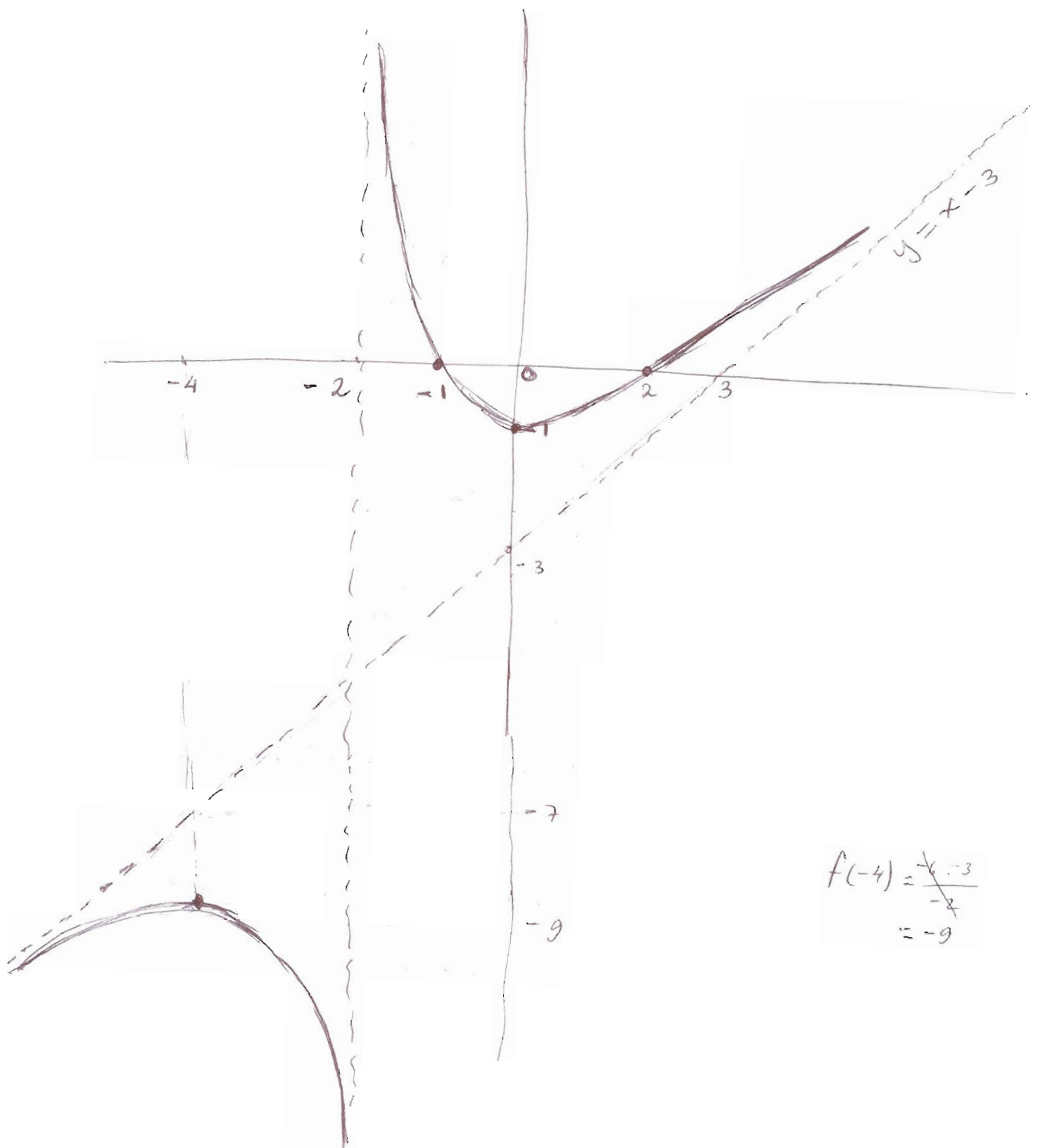
$$= \frac{\cancel{2x^2} + \cancel{4x} + \cancel{4x} + 8 - \cancel{2x^2} - \cancel{8x}}{(x+2)^3}$$

Análise de concavidade

$$= \frac{8}{(x+2)^3}$$



Esboço da gráfica de f



$$f(-4) = \frac{-4 - 3}{-2} = -9$$