

forme canonique

exemple:

$a < 0$

$$f(x) = -3x^2 + 2x + 5.$$

$$\alpha = \frac{-b}{2a} = \frac{-2}{2 \times -3} = -\frac{1}{3}$$

$$B = f(\alpha)$$

$$= 3 \times \left(-\frac{1}{3}\right)^2 + 2 \times -\frac{1}{3} + 5$$

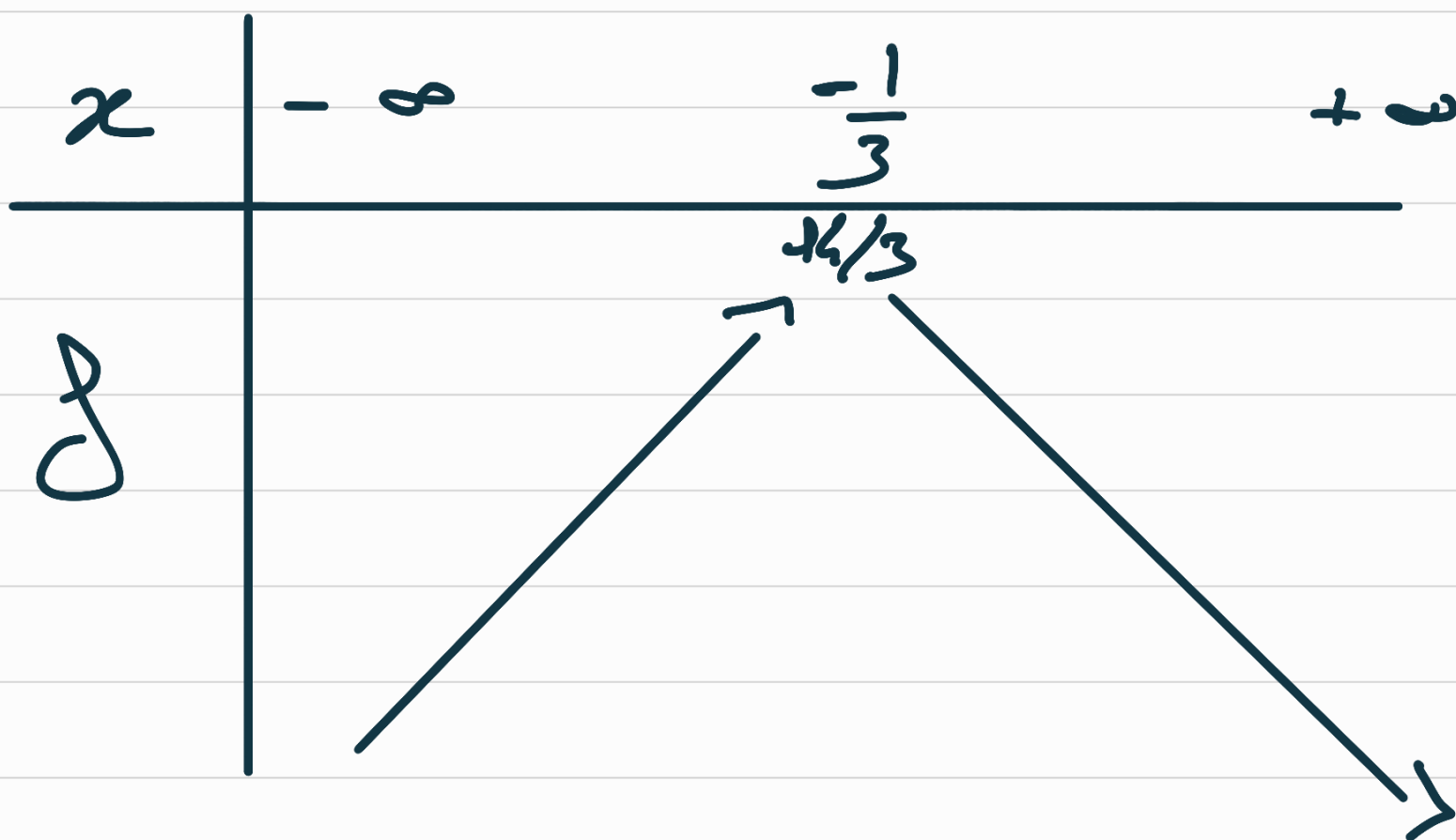
$$= 3 \times \frac{1}{9} - \frac{2}{3} + 5$$

$$= \frac{1}{3} - \frac{2}{3} + 5$$

$$p = -\frac{1}{3} + 5$$

$$= \frac{-1 + 3 \times 5}{3}$$

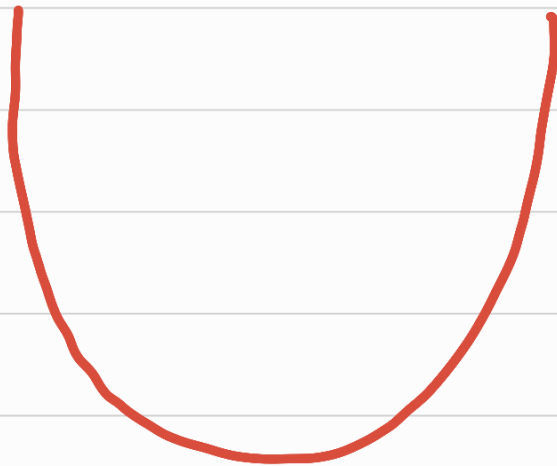
$$= \frac{14}{3}.$$



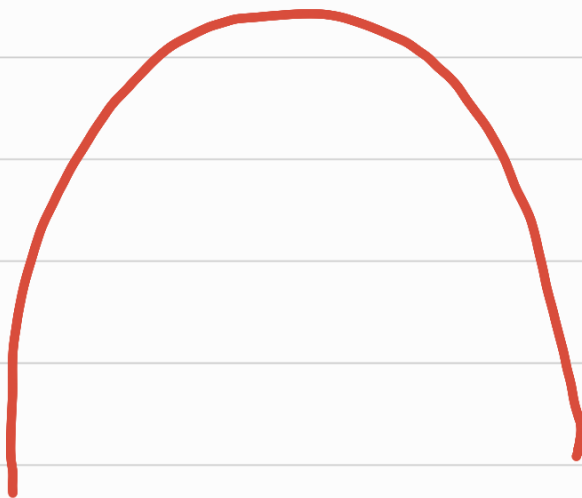
$$f(x) = -3\left(x + \frac{1}{3}\right)^2 + \frac{14}{3}.$$

$$a(x - \alpha)^2 + p$$

$$\underline{a > 0}$$



$$\underline{a < 0}$$

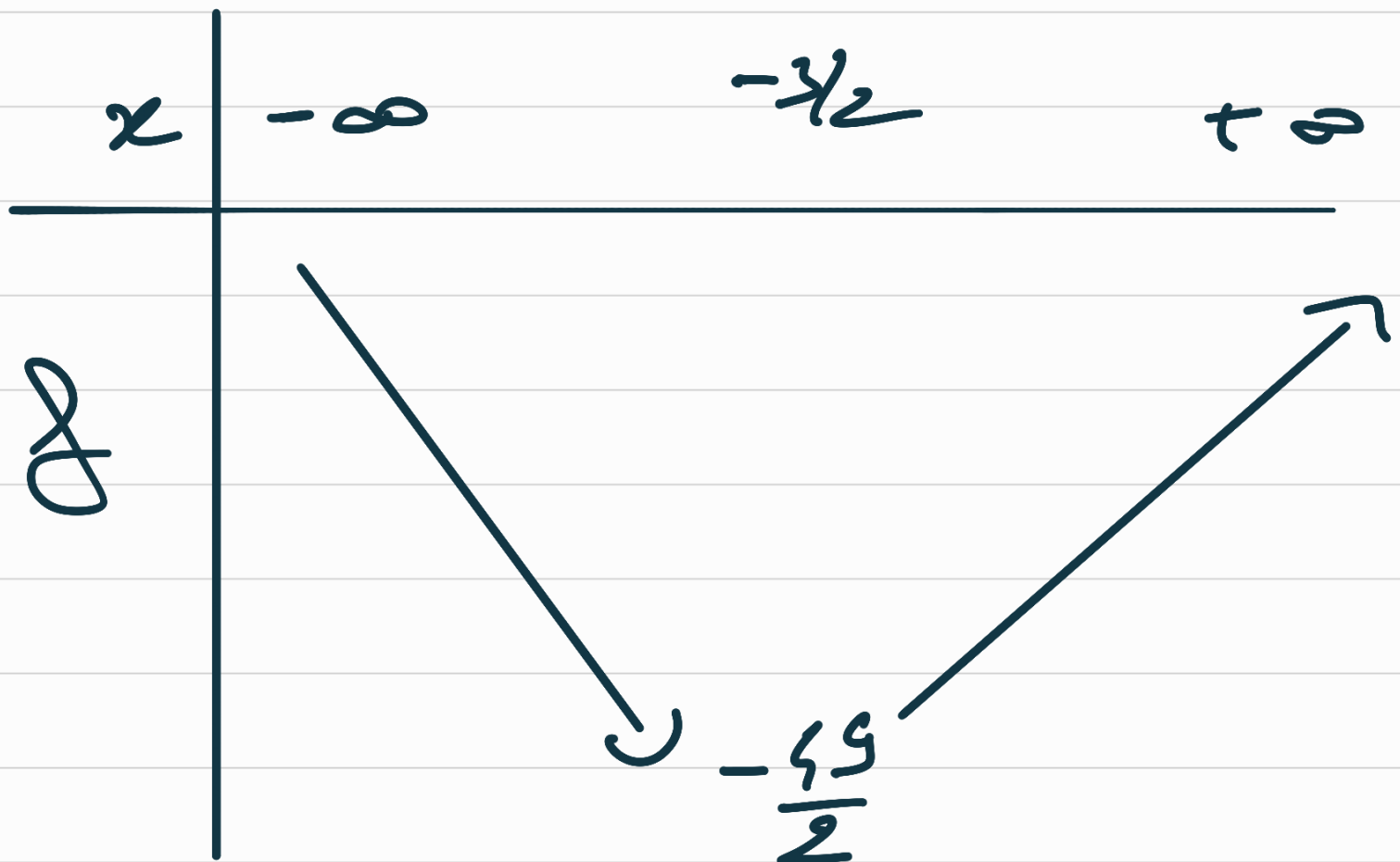


exercice:

$$f(x) = x^2 + 3x - 10.$$

$$\alpha = -\frac{3}{2}$$

$$\beta = \frac{-98}{8} = -\frac{\cancel{2} \times 49}{\cancel{2} \times 4} = -\frac{49}{2}$$



$$\bullet f(x) = x^2 - 7x + 6.$$

$$\alpha = \frac{7}{2}$$

$$\beta = f\left(\frac{7}{2}\right)$$

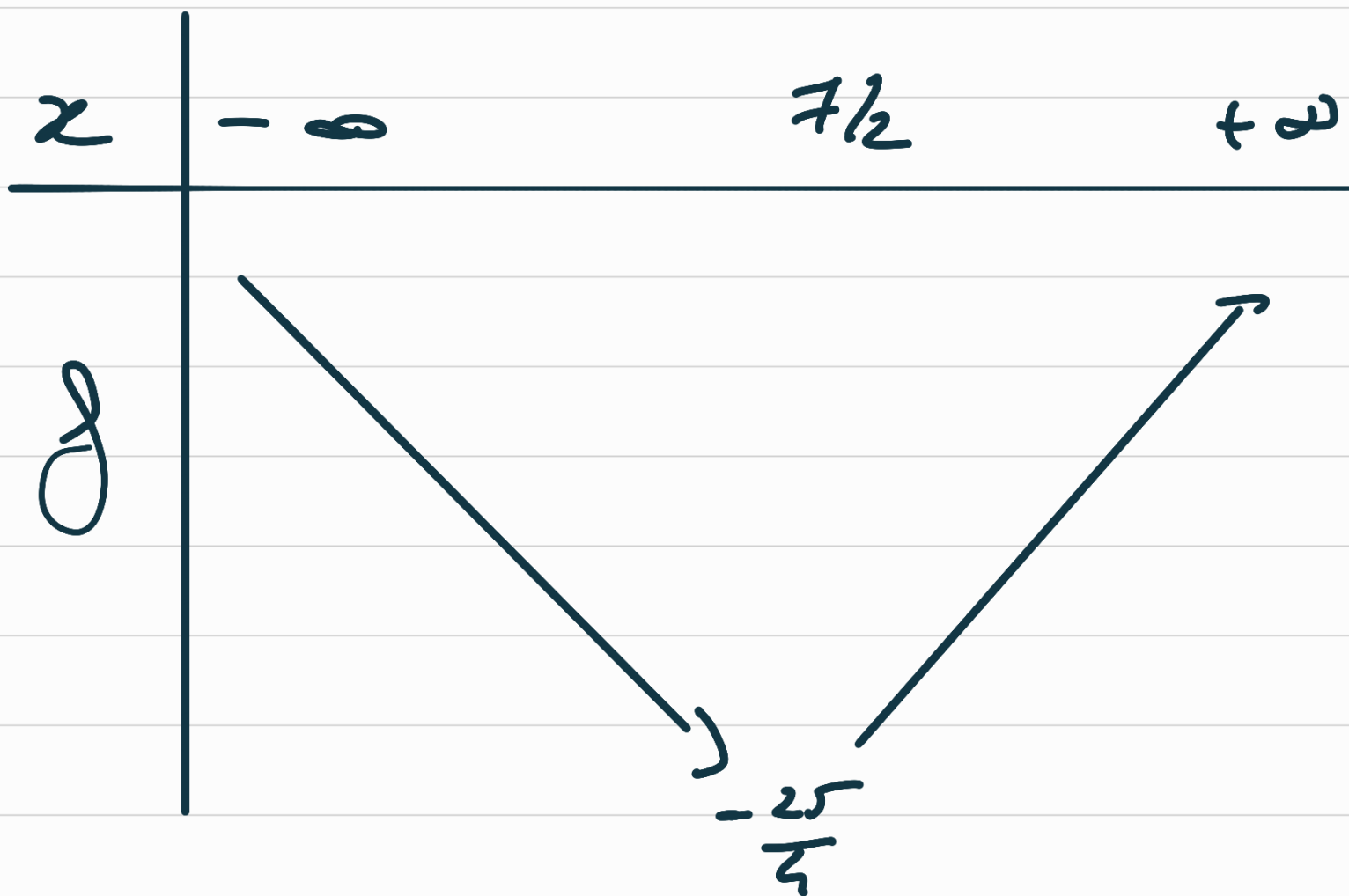
$$= \frac{49}{4} - 7 \times \frac{7}{2} + 6$$

$$= \frac{49}{4} - \frac{49 \times 2}{2 \times 2} + 6$$

$$= \frac{49}{4} - \frac{98}{4} + 6$$

$$= -\frac{49}{4} + 6 = -\frac{49 + 24}{4}$$

$$= -\frac{25}{4}$$



$$\bullet \quad 3x^2 + 2x + 4.$$

$$\alpha = -\frac{2}{2 \times 3} = -\frac{1}{3}$$

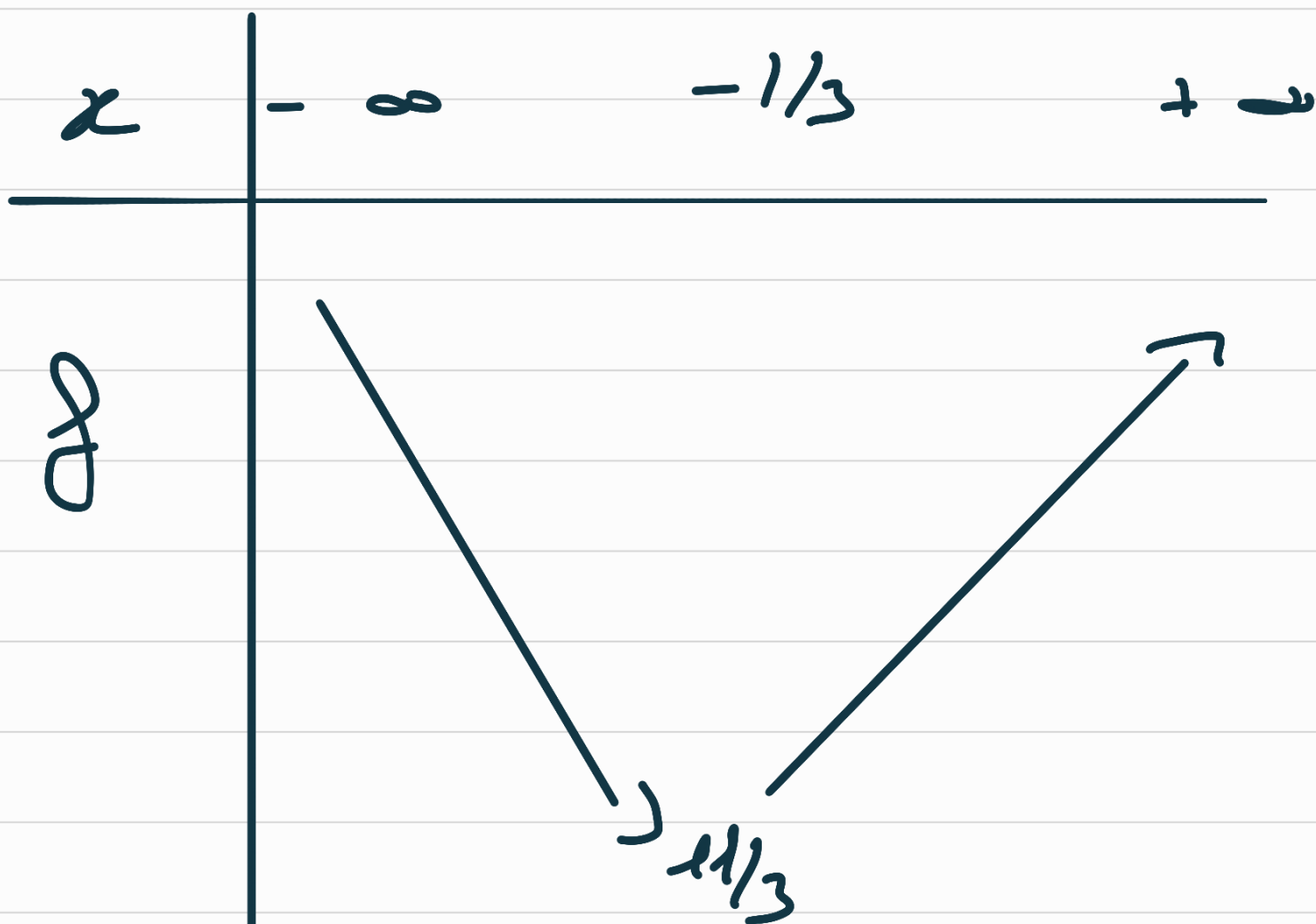
$$\beta = 3x \left(-\frac{1}{3}\right)^2 + 2x - \frac{1}{3} + 4$$

$$= \cancel{3}x \frac{1}{\cancel{3}} - \frac{2}{3} + 4$$

$$= \frac{1}{3} - \frac{2}{3} + 4$$

$$= -\frac{1}{3} + 4$$

$$= \frac{-1 + 4 \times 3}{3} = \frac{11}{3}.$$



• $\overset{a}{-3}x^2 + \overset{b}{4}x + \overset{c}{1}$

$$\alpha = \frac{-b}{2a} = \frac{2}{3}$$

$$\beta = -\cancel{3}x \cdot \frac{4}{\cancel{3}} + 4x \cdot \frac{2}{3} + 1$$

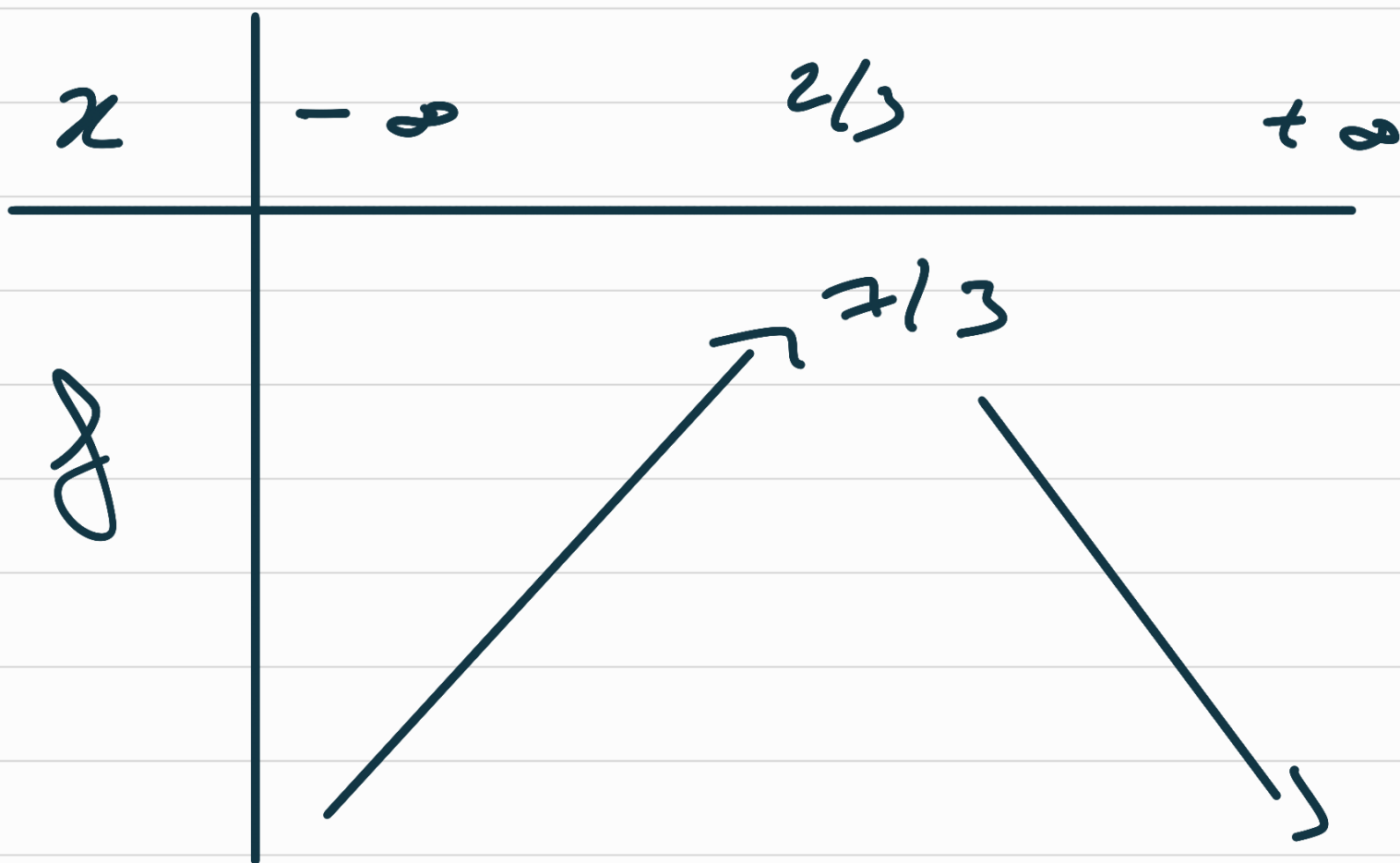
(Note: The original image includes additional annotations: a brown circle around the first term, a red arrow pointing to the 3 in the denominator, and purple annotations for the second term: $-\frac{12}{3} + \frac{8 \times 3}{3 \times 3} + 1$)

$$\beta = -\frac{4}{3} + \frac{8}{3} + 1$$

$$= \frac{4}{3} + 1$$

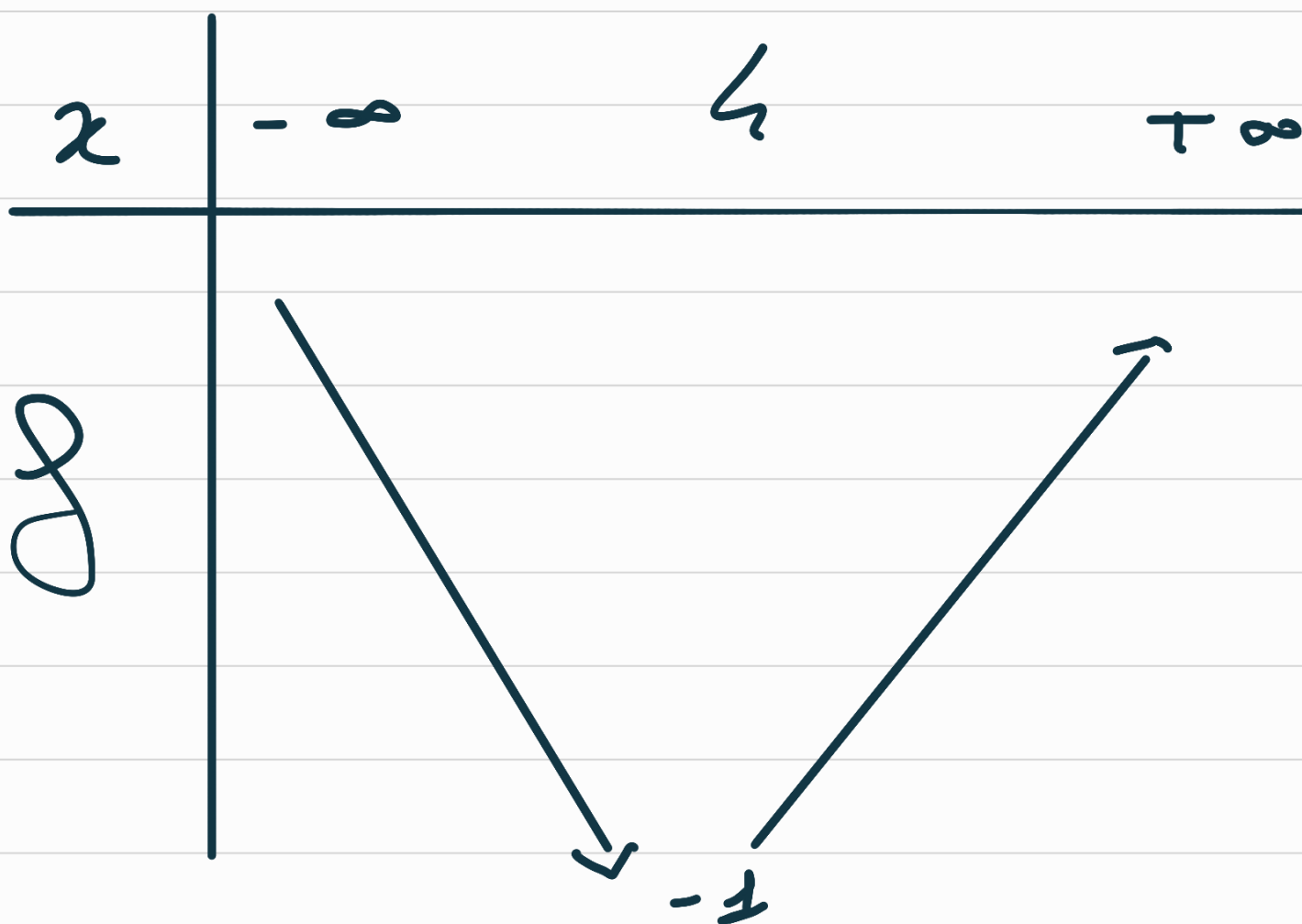
$$= \frac{4+3}{3}$$

$$= \frac{7}{3}$$



$$\cdot x^2 - 8x + 15.$$

$$\begin{cases} \alpha = 4 \\ \beta = -1 \end{cases}$$



$$\bullet x^2 + x - 6.$$

$$\alpha = -\frac{1}{2}$$

$$\beta = \frac{1}{4} - \frac{1}{2} - 6$$

$$= \frac{1}{4} - \frac{2}{4} - 6$$

$$= -\frac{1}{4} - 6$$

$$= -\frac{25}{4}$$

