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$$\begin{cases} 2x - 3y = 9 & \cdot 2 \\ 5x + 2y = \frac{1}{3} & \cdot 3 \end{cases}$$

Riduzione

$$4x - 6y + 15x + 6y = 18 + 1$$

$$19x = 19 \quad x = 1$$

$$-3y = 4 \rightsquigarrow y = -\frac{4}{3}$$

$$P = (1, -\frac{4}{3})$$

$$\begin{cases} 4(y-2) - \frac{1}{3}x = 2(\frac{x}{3}+1) \\ 4(x-2) + 6 = 2(x-y) + x \end{cases}$$

$$\begin{cases} 4y - 8 - \frac{1}{3}x = \frac{2}{3}x + 2 \\ 4x - 8 + 6 = 2x - 2y + x \end{cases}$$

$$\begin{cases} -x + 4y = 10 \\ x + 2y = 2 \end{cases}$$

↓ +

$$6y = 12 \rightsquigarrow y = 2$$

$$x + 4 = 2 \quad x = -2$$

$$P = (-2, 2)$$

Inventato:

$$\begin{cases} \frac{3x^2 - 2x - 8}{x^3} \leq 0 \\ \frac{(x+8)(x-4)}{(x^2+4x-32)(x+7)} \geq 0 \end{cases}$$

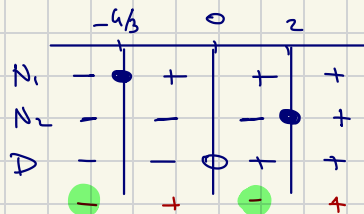
$$\begin{cases} x \leq -\frac{4}{3} \vee 0 < x \leq 2 \\ -8 \leq x \leq -7 \vee x > 4 \end{cases}$$

$$(I) \quad \frac{3x^2 - 2x - 8}{x^3} = \frac{3x(x-2) + 4(x-2)}{x^3} = \frac{(3x+4)(x-2)}{x^3} \leq 0$$

$$N_1 \geq 0 \quad 3x+4 \geq 0 \rightsquigarrow x \geq -\frac{4}{3}$$

$$N_2 \geq 0 \quad x-2 \geq 0 \rightsquigarrow x \geq 2$$

$$D > 0 \quad x^3 > 0 \rightsquigarrow x^3 > 0 \rightsquigarrow x > 0$$



$$\text{Sol: } x \leq -\frac{4}{3} \vee 0 < x \leq 2$$

$$(-\infty; -\frac{4}{3}] \cup (0; 2]$$

$$(II) \frac{(x-4)(x+7)(x+8)}{|x|} \geq 0$$

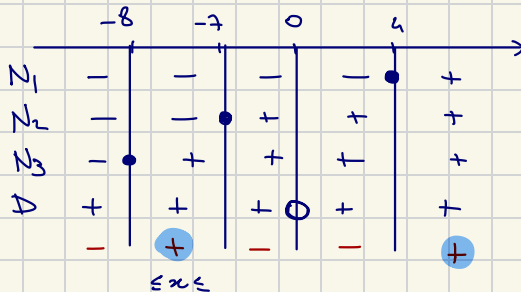
$$N_1 \geq 0 \quad x \geq 4$$

$$N_2 \geq 0 \quad x \geq -7$$

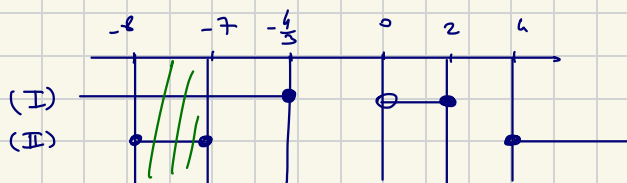
$$N_3 \geq 0 \quad x \geq -8$$

$$D > 0 \quad |x| > 0 \quad \forall x \in \mathbb{R} \setminus \{0\}$$

Sempre  $x \neq 0$



$$\text{Sol: } -8 \leq x \leq -7 \vee x \geq 4$$

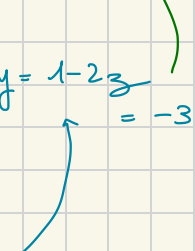


$$\text{Sol: } -8 \leq x \leq -7$$

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$$\begin{cases} x+3y = -5z-3 \\ 4x + (y-3)^2 = z + (y+2)^2 + 17 \\ x+y+z = -5 \end{cases}$$

$$\begin{cases} x+3y+5z = -3 \\ 4x-10y-z = 12 \\ x+y+z = -5 \rightsquigarrow x = -5-y-z \end{cases}$$

$$\begin{cases} \overbrace{-5-y-z} + 3y + 5z = -3 \\ \overbrace{-20-4y-4z} - 10y - z = 12 \end{cases} \quad \begin{cases} y + 2z = 1 \leadsto y = 1 - 2z \\ -14y - 5z = 32 \end{cases}$$


$$-14 + 28z - 5z = 32 \leadsto 23z = 46 \leadsto z = 2$$

$$P = (-4, -3, 2)$$