

EQUAZIONI E DISEQUAZIONI FRATTE

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$$\frac{f(x)}{g(x)} = 0$$

EQUAZIONE FRATTA

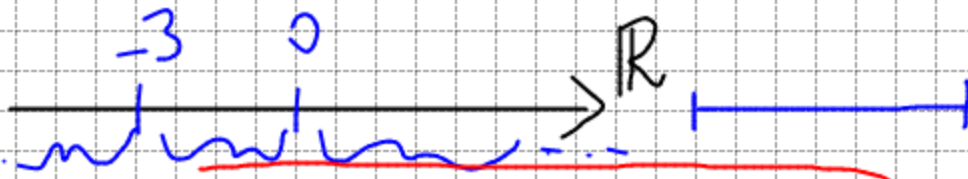
$$\frac{f(x)}{g(x)} > 0 \quad \left(< 0 \right) \quad \text{DISEQUAZIONE FRATTE}$$
$$\geq \quad \leq$$

ESEMPIO

$$\frac{x^2 - 4}{x^2 + 3x} = 0$$

$$x^2 - 4 = 0$$

$$x = \pm 2$$

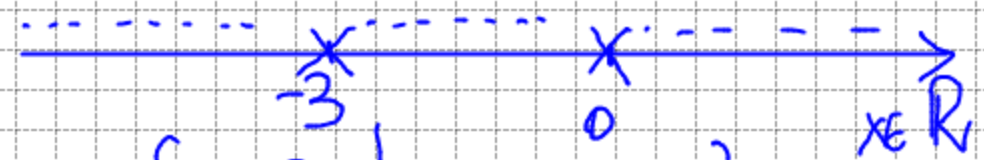


$$\frac{x-3}{x+1} + \frac{1+x}{1-x} = 0$$

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

$$x - x^2 - 3 + 3x + 1 + x^2 + 2x = 0$$

$$6x - 2 = 0 \quad x = \frac{1}{3}$$



$$C.E. = \{x \in \mathbb{R} \mid x^2 + 3x \neq 0\} =$$

$$= \{x \in \mathbb{R} \mid x(x+3) \neq 0\} =$$

$$= \{x \in \mathbb{R} \mid x \neq 0, x \neq -3\} =$$

$$= (-\infty, -3) \cup (-3, 0) \cup (0, +\infty)$$

$$C.E. = \{x \in \mathbb{R} \mid x \neq -1, x \neq 1\} =$$

$$= (-\infty, -1) \cup (-1, 1) \cup (1, +\infty)$$



ESEMPIO

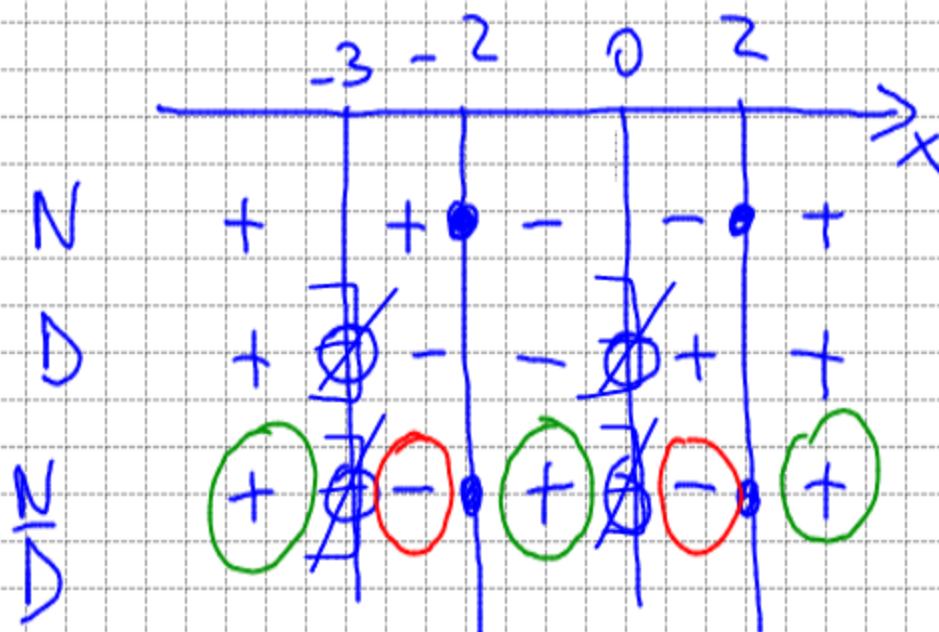
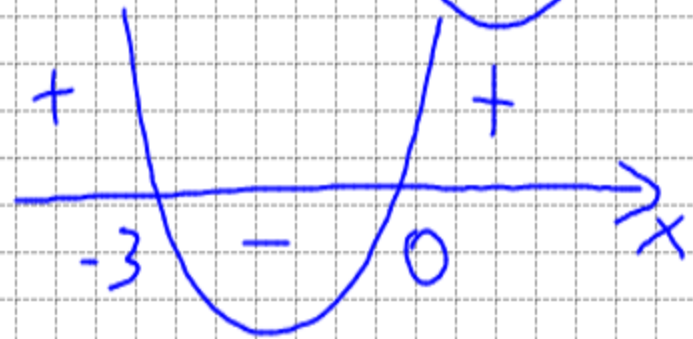
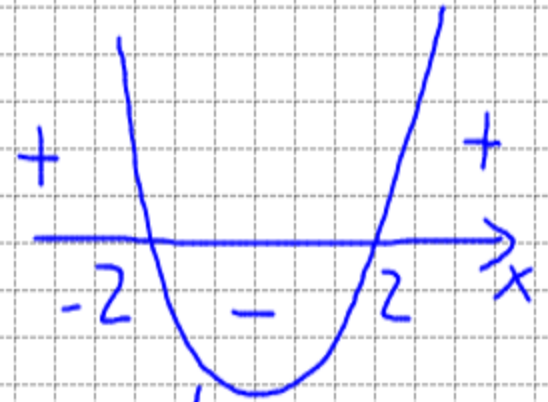
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$$\frac{x^2 - 4}{x^2 + 3x} \geq 0$$

N) $x^2 - 4 \geq 0 \rightarrow x^2 - 4 = 0 \quad x = \pm 2$

D) $x^2 + 3x > 0$

$x(x+3) = 0 \quad x = 0 \quad x = -3$



Sol: $\{x \in \mathbb{R} \mid x < -3 \vee -2 \leq x < 0 \vee x \geq 2\} =$

$= (-\infty; -3) \cup [-2; 0) \cup [2; +\infty)$

$$\frac{x^2 - 4}{x^2 + 3x} \leq 0$$

Sol: $\{x \in \mathbb{R} \mid -3 < x \leq -2 \vee 0 < x \leq 2\} =$

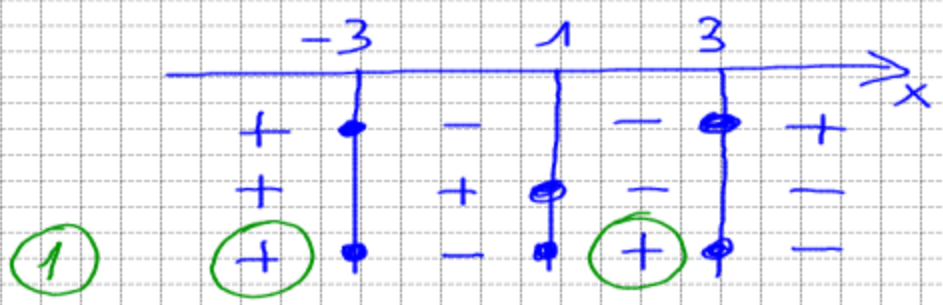
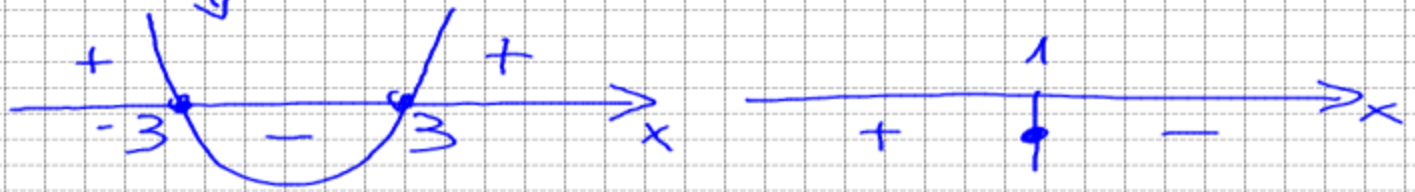
$(-3; -2] \cup (0; 2]$

SISTEMI DI DISEQUAZIONI

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- ① $(x^2 - 9)(1 - x) \geq 0$
- ② $(x + 4)^3 (x - 2)^2 \leq 0$
- ③ $\frac{2x}{3x - 9} < 1$

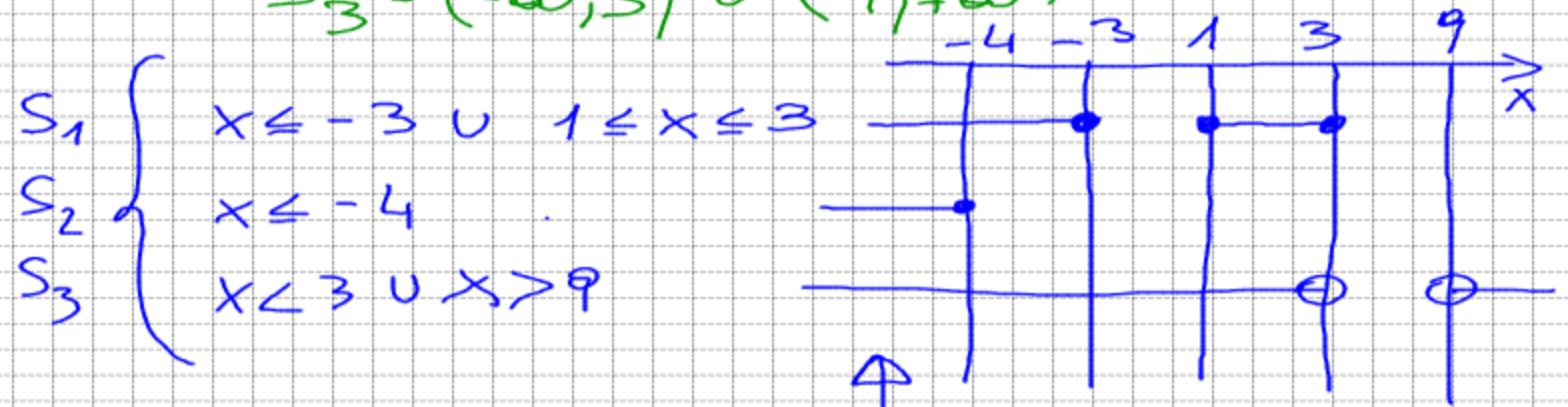
① $(x^2 - 9)(1 - x) \geq 0 \quad (x^2 - 9)(1 - x) = 0 \Rightarrow \begin{cases} x = 3 \\ x = -3 \\ x = 1 \end{cases}$



① $S_1 = (-\infty; -3] \cup [1; 3]$

② fare i conti a caso:
 $S_2 = (-\infty; -4]$

③ fare i conti a caso:
 $S_3 = (-\infty; 3) \cup (9; +\infty)$



$S_S = \{x \in \mathbb{R} \mid x \leq -4\} = (-\infty; -4]$ ↑
Soluzioni comuni