

ESERCIZI IN PIÙ**LE DISEQUAZIONI CON VALORI ASSOLUTI**

Risolvi le seguenti disequazioni con valori assoluti.

$$1 \quad |2x - 1| + \frac{|25x + 18| - 93}{x^2 + 4|x| - 21} \geq -2x \quad [x \leq -4 \vee -3 < x < 3 \vee x > 3]$$

$$2 \quad 2 \left| x + 2 + \frac{3}{x-2} \right| + 2 \leq |3 - x| \quad [-4 \leq x \leq 0 \vee x = 1]$$

$$3 \quad \frac{6}{|x^2 - 9| - 8x} + \frac{x - 3}{x^2 - 8|x| - 9} > \frac{1}{|x - 4| - 5} \quad [-9 < x < -3 \vee -1 < x < 1 \vee x > 9]$$

$$4 \quad |x^3 - 7x - 6| - \left| \frac{25}{2} - 7x \right| + \frac{13}{2} \geq 0 \quad \left[x \leq -\sqrt{14} \vee 0 \leq x \leq \sqrt[3]{25} \vee x \geq \frac{\sqrt{53} - 1}{2} \right]$$

$$5 \quad |x^2 + x - 6| - |x^2 - x - 6| - \frac{22}{x} - 12 < 0 \quad [x < -\sqrt[3]{11} \vee 0 < x < 3 + 2\sqrt{5}]$$

$$6 \quad \frac{x - 2}{x^2 + |x - 2|} - \frac{1}{|x + 2|} + \frac{5}{2(x + 2)} > 0 \quad \left[-2 < x < -\frac{2}{5} \vee x > 1 \right]$$

$$7 \quad \left| |x^2 - x - 20| - x^2 - 7x - 10 \right| - 1 > 25 \quad [x < -7 \vee x > 3]$$

$$8 \quad |x^3 - 4x^2 - 7x + 10| > |x^2 - x|(x + 1) + 10(x - 1) \quad [x < 1]$$

$$9 \quad \frac{(x - |x + 2|)(x - |2x - 1|)}{x + 1} - \frac{(2x - |x - 3|)(-x + |x + 4|)}{x - 1} > 0 \quad \left[-1 < x < -\frac{5}{9} \right]$$

$$10 \quad \left| \frac{x^2 - x - 2}{x - 1} + \frac{x + 2}{x + 1} - (x + 1) \right| - \left| \frac{2x^2 + 3x}{x^2 - 1} - 2 \right| + 1 \leq 0 \quad [-1 + \sqrt{3} \leq x < 1 \vee 1 < x \leq 2]$$

Determina le condizioni di esistenza di questi radicali.

$$11 \quad \sqrt{\frac{3 - |x|}{x^2 - 5x}} \quad [-3 \leq x < 0 \vee 3 \leq x < 5]$$

$$12 \quad \sqrt{\frac{|x - 2| + |x|}{x^2 - 4}} \quad [x < -2 \vee x > 2]$$

$$13 \quad \sqrt[3]{\frac{5x^2 - 3}{1 - |x|}} \quad [x \neq \pm 1]$$

$$14 \quad \sqrt[4]{\frac{-x^2 - 4}{5 - |x + 3|}} \quad [x < -8 \vee x > 2]$$

$$15 \quad \sqrt{\frac{|x^2 - 9|^2(4 - x)}{-3x^2 + 3x + 6}} \quad [x = -3 \vee -1 < x < 2 \vee x = 3 \vee x \geq 4]$$

Risolvi i seguenti sistemi di disequazioni.

$$16 \quad \begin{cases} |2x^3 - 7| < 9 \\ 10|x| - 1 > 0 \\ |x^3 - 7x - 6| - 6(x + 1) > 0 \end{cases} \quad \left[\frac{1}{10} < x < 1 \right]$$

$$17 \quad \begin{cases} x^3 - x^2 + 6 \geq 6x + |x|(x - 1) \\ x^2 - 8 \leq |x - 2| + 4x \\ \frac{2x}{|x + 3|} \geq 1 \end{cases} \quad [3 \leq x \leq 6]$$

$$18 \quad \begin{cases} |x|(x^2 - 19) + 2x^2 < 20 \\ \frac{|x^2 - 3x| + |x|(x - 1) - 2x^2 + 5x - 3}{2x - 3} \leq |x - 3| \\ \frac{2x - 1}{x + 5} > 0 \end{cases} \quad \left[\frac{1}{2} < x < \frac{3}{2} \vee 3 \leq x < 4 \right]$$

$$19 \quad \begin{cases} \frac{10x + 11}{x^2 + 4x - 5} \leq 1 \\ x^3 + 216 > 0 \\ \left| 3 - \frac{7}{x - 1} - \frac{32}{x + 8} \right| > 3|x + 2| \end{cases} \quad [0 < x < 1]$$