ESERCIZI IN PIÙ
I SISTEMI DI DISEQUAZIONI

Risolvi i seguenti sistemi di disequazioni.

1
$$\begin{cases} \dfrac{28x+6}{x^2-25} + \dfrac{3x+2}{x+5} > \dfrac{6x}{2x-10} \\ \dfrac{x+5}{x^2+2x} - \dfrac{4}{3x+6} \le 0 \end{cases}$$
$$[-2 < x < 0]$$

2
$$\begin{cases} \dfrac{2}{x+3} > \dfrac{2x+3}{x^2-9} \\ \dfrac{x^2+x+5}{x^2+6x+5} \ge 1 \end{cases}$$
$$[-1 < x \le 0]$$

3
$$\begin{cases} \dfrac{2x+5}{x^3+3x^2-4x} \le \dfrac{3}{x^2+4x} \\ \dfrac{8-x}{x^2+17} \ge 0 \end{cases}$$
$$[x < -4 \lor 0 < x < 1 \lor x = 8]$$

4
$$\begin{cases} \dfrac{5x^2+6}{x^3-8} < \dfrac{5}{x-2} \\ \dfrac{x^2-6x}{7-x} \ge 0 \end{cases}$$
$$\left[x < -\dfrac{7}{5} \lor 6 \le x < 7\right]$$

5
$$\begin{cases} \dfrac{x-1}{x^2+x-12} - \dfrac{x}{x^2-16} + \dfrac{4}{2x^2-18} \le 0 \\ \dfrac{(2x+7)(2x^2+7)}{(x+10)^4} < 0 \end{cases}$$
$$[-10 < x < -4]$$

6
$$\begin{cases} (2x-1)^2 - 3x + 4 \le 4x(x-2) + 5x \\ \dfrac{x-4}{3} - \dfrac{1}{6} > \dfrac{2x-5}{2} \end{cases}$$
$$\left[\dfrac{5}{4} \le x < \dfrac{3}{2}\right]$$

7
$$\begin{cases} \dfrac{1}{4} - 3\left(1 - \dfrac{1}{2}\right)(x+2) \le \dfrac{x-5}{6} \\ (x-4)(x+4) - (x+2)^2 \le 3x - 2 \end{cases}$$
$$\left[x \ge -\dfrac{23}{20}\right]$$

8
$$\begin{cases} \left(\dfrac{5}{3} - 2\right)^2 (x+4) - \dfrac{3x-2}{3} > \dfrac{x+1}{9} \\ 2(x-3)(x+1) - 2x(x+5) < (x+1)^2 - x^2 \end{cases}$$
$$\left[-\dfrac{7}{16} < x < 1\right]$$

9
$$\begin{cases} (x-2)^2 + 3x - 4 > x^2 - x - 2 \\ \dfrac{3x-4}{5} - \left(2 - \dfrac{1}{3}\right)\dfrac{3x-3}{10} \le -x + 2 \end{cases}$$
$$\left[x \le \dfrac{23}{11}\right]$$

10
$$\begin{cases} (x-5)(x+5) - (x+1)^2 \le 3x(x-2) - x(3x+1) \\ \dfrac{x^2-4x+4}{3} < 0 \end{cases}$$
$$[\text{impossibile}]$$

11 $\begin{cases} \dfrac{3}{x-2}+1 \le \dfrac{3x+4}{2x-4} \\ x^2-5x+6 \le 0 \end{cases}$
$\qquad\qquad\qquad\qquad\qquad [2 < x \le 3]$

12 $\begin{cases} \dfrac{3x-1}{x+3} < 1 \\ x^2-2x \ge 0 \end{cases}$
$\qquad\qquad\qquad\qquad\qquad [-3 < x \le 0]$

13 $\begin{cases} (x-3)^2+2x+4 \le x(x+1)-3 \\ \dfrac{x-5}{3-x} \ge 0 \\ \dfrac{x+5}{4}-\dfrac{3}{2} > \dfrac{1}{6} \end{cases}$
$\qquad\qquad\qquad \left[\dfrac{16}{5} \le x \le 5\right]$

14 $\begin{cases} x^3+3x^2-4x-12 \le 0 \\ \dfrac{(x-1)^2}{3}+2x-5 > \dfrac{1}{3}x^2-2x+4 \\ \dfrac{x-2}{3(x-3)} < 0 \end{cases}$
$\qquad\qquad\qquad [\text{impossibile}]$

15 $\begin{cases} \dfrac{3x+1}{x^2-3x}-\dfrac{4}{3-x} \le \dfrac{2}{x} \\ \dfrac{x^2-6x+9}{2} \ge 0 \\ \dfrac{3-5x}{2x} < 0 \end{cases}$
$\qquad\qquad\qquad \left[x \le -\dfrac{7}{5} \vee \dfrac{3}{5} < x < 3\right]$