Disequazioni algebriche

1) $x^2 - x > 0$ $\quad [x < 0 \vee x > 1]$

2) $2x - x^2 \geq 0$ $\quad [0 \leq x \leq 2]$

3) $x^2 + 4 > 0$ $\quad [\forall x \in R]$

4) $x^2 - 2x + 1 > 0$ $\quad [\forall x \neq 1]$

5) $4x^2 - 4x + 1 \geq 0$ $\quad [\forall x \in R]$

6) $x^2 + 5x + 6 \leq 0$ $\quad [-3 \leq x \leq -2]$

7) $4x^2 + 1 > 0$ $\quad [\forall x \in R]$

8) $-3x^2 < 0$ $\quad [\forall x \neq 0]$

9) $x^2 - 10x + 32 < 0$ $\quad [\text{Impossibile}]$

10) $15 - x - 2x^2 > 0$ $\quad \left[-3 < x < \frac{5}{2}\right]$

11) $x^2 + x > 7x - 10$ $\quad [\forall x \in R]$

12) $x^2 - 4x + 7 \leq 0$ $\quad [\text{Impossibile}]$

13) $x^2 + 16x - 80 < 0$ $\quad [-20 < x < 4]$

14) $6x^2 + 5x + 1 > 0$ $\quad \left[x < -\frac{1}{2} \vee x > -\frac{1}{3}\right]$

15) $4x^2 > 0$ $\quad [\forall x \neq 0]$

16) $-5x^2 > 0$ $\quad [\text{Impossibile}]$

17) $\frac{2-x}{5x+4} > 0$ $\quad \left[-\frac{4}{5} < x < 2\right]$

18) $\frac{x}{3x-1} < 0$ $\quad \left[0 < x < \frac{1}{3}\right]$

19) $\frac{\sqrt{2}x}{\sqrt{3}x-3} > 0$ $\quad [x < 0 \vee x > \sqrt{3}]$

20) $\frac{x+5}{x-1} < 1$ $\quad [x < 1]$

21) $\frac{3x-\sqrt{2}}{\sqrt{3}x-1} < \sqrt{3}$ $\quad \left[x < \frac{\sqrt{3}}{3}\right]$

22) $\frac{x-1}{x^2+2x+2} < 0$ $\quad [x < 1]$

23) $\frac{x^2+5x+4}{x^2-5x-6} < 0$ $\quad [-4 < x < -1 \vee -1 < x < 6]$

24) $\frac{x^2-5x+6}{x^2-3x-10} > 0$ $\quad [x < -2 \vee 2 < x < 3 \vee x > 5]$

25) $\frac{x^2-4x+4}{3x^2-5x+2} > 0$ $\quad \left[x < \frac{2}{3} \vee 1 < x < 2 \vee x > 2\right]$

26) $\frac{3x^2-x-2}{6x^2-x-7} < 0$ $\quad \left[-1 < x < -\frac{2}{3} \vee 1 < x < \frac{7}{6}\right]$

27) $\frac{x^2+10x-56}{x^2-2x-48} > 0$ $\quad [x < -14 \vee -6 < x < 4 \vee x > 8]$

28) $\frac{8x^2+3x}{x^2-1} + \frac{5}{x-1} < \frac{4x}{x+1}$ $\quad \left[-\frac{5}{2} < x < -1 \vee -\frac{1}{2} < x < 1\right]$

29) $\frac{7}{x-2} < 3 - \frac{8}{x-5}$ $\quad [x < 2 \vee 3 < x < 5 \vee x > 9]$

30) $\frac{x}{x-6} < \frac{x+3}{6} + \frac{x+6}{6-x}$ $\quad [-3 < x < 6 \vee x > 18]$

31) $\frac{1}{9x^2-18x+5} - \frac{2}{3x^2-8x+5} \leq \frac{3}{3x^2-4x+1}$ $\quad \left[x < \frac{1}{3} \vee 1 < x \leq \frac{8}{7} \vee x > \frac{5}{3}\right]$

32) $\frac{2x^2}{2x^2+x-3} \geq 1 - \frac{x}{4x+6}$ $\quad \left[x < -\frac{3}{2} \vee x > 1\right]$

33) $\frac{x-5}{x+3} + \frac{x-8}{3-x} < 0$ $\quad [x > 13 \vee -3 < x < 3]$

34) $9 + \frac{82}{x^2-x} + \frac{3}{x-1} < 0$ $\quad [0 < x < 1]$

35) $1 - \frac{6}{1-4x^2} > \frac{2}{2x-1} - \frac{3}{2x+1}$ $\quad \left[x < -\frac{1}{2} \vee -\frac{1}{2} < x < 0 \vee x > \frac{1}{2}\right]$

36) $\frac{x+1}{x^2-4} - \frac{1}{x+2} - \frac{2-x}{x^2+4x+4} \leq 0$ $\quad [x < 2 \wedge x \neq -2]$

37) $\frac{3}{x^2-5x+6} + \frac{4-x}{3-x} > \frac{6-x}{2-x}$ $\quad \left[2 < x < \frac{7}{3} \vee x > 3\right]$

38) $\begin{cases} 3x^2 - 4x - 7 < 0 \\ \frac{4x-6}{3} + x < x + 1 \end{cases}$ $\quad \left[-1 < x < \frac{9}{4}\right]$

39) $\begin{cases} 3x^2 - x + 5 < 0 \\ \frac{x+2}{3} - x > \frac{x-1}{4} \end{cases}$ $\quad [\text{Impossibile}]$

40) $\begin{cases} 7 + 2x > 1 + \frac{x}{3} \\ 2 - x > \frac{5x-1}{2} \\ x^2 - 5x + 6 < 0 \end{cases}$ $\quad [\text{Impossibile}]$

41) $\begin{cases} x^2 - 5x + 6 \geq 0 \\ 2(2x-9) < x \\ x^2 + 2x - 15 \leq 0 \end{cases}$ $\quad [-5 \leq x \leq 2 \vee x = 3]$

42) $\begin{cases} \frac{3x+7}{x+1} < \frac{3x-7}{x-1} \\ 3(x-1)^2 \leq 25 - x \end{cases}$ $\quad [-2 \leq x < -1 \vee 0 < x < 1]$