

Problemas de Matemáticas 4º de ESO
Noviembre 2002

1 Inecuaciones:

1. $3x - 9 > 0$ Sol: $(3, +\infty)$
2. $4x - 20 < 0$ Sol: $(-\infty, 5)$
3. $5x + 3 > 2x + 6$ Sol: $(-3, +\infty)$
4. $10 - 3x < 4x - 4$ Sol: $(2, +\infty)$
5. $2(5 - 7x) \geq 52$ Sol: $(-\infty, -3]$
6. $3(2x - 1) + 1 < -13 - 5x$ Sol: $(-\infty, -1)$
7. $\frac{x}{10} > 4x - \frac{78}{10}$ Sol: $(-\infty, 2)$
8. $\frac{6x-22}{20} - \frac{10x+2}{14} \geq \frac{2x-14}{10} - \frac{10x-12}{21}$ Sol: $(-\infty, -3]$
9. $\frac{2x}{3} + \frac{5x-1}{2} < \frac{26}{3}$ Sol: $(-\infty, 3)$
10. $\frac{3(4x-7)}{4} - \frac{x}{8} \geq \frac{3x}{8} - \frac{21}{4}$ Sol: $[0, +\infty)$
11. $\frac{3x+5}{6} - \frac{5-2x}{2} \leq \frac{x-12}{3}$ Sol: $(-\infty, -2]$
12. $\frac{4-3x}{3} - \frac{2x-3}{4} > -\frac{65}{13}$ Sol: $(-\infty, 5)$
13. $\frac{2-3x}{3} + \frac{1-2x}{6} \geq \frac{19-22x}{18}$ Sol: $(-\infty, -2]$
14. $x^2 - 7x + 10 > 0$ Sol: $(-\infty, 2) \cup (5, +\infty)$
15. $x^2 - 7x + 6 < 0$ Sol: $(1, 6)$
16. $x^2 - 7x + 12 \geq 0$ Sol: $(-\infty, 3] \cup [4, +\infty)$
17. $-8x \leq -x^2 - 15$ Sol: $[3, 5]$
18. $6x^2 > 12x$ Sol: $(-\infty, 0) \cup (2, +\infty)$
19. $-27x \leq -12x^2$ Sol: $[0, \frac{9}{4}]$
20. $-2x^2 - 10x - 8 > 0$ Sol: $(-4, -1)$
21. $-(x+2)^2 + 3x \leq 2(-x^2 + 1)$ Sol: $[-2, 3]$
22. $x - 3 + \frac{25}{x} - 7 < 0$ Sol: ϕ

23. $\frac{x-2}{x+3} > 0$ Sol: $(-\infty, -3) \cup (2, +\infty)$
24. $x^3 - 2x^2 - 3x < 0$ Sol: $(-\infty, -1) \cup (0, 3)$
25. $x^4 + 2x^2 - 3x^3 \geq 0$ Sol: $(-\infty, 1] \cup [2, +\infty)$
26. $\frac{x^2+x}{x-2} > 0$ Sol: $(-1, 0) \cup (2, +\infty)$
27. $(x^2 + 1)(x - 1) > 0$ Sol: $(1, +\infty)$
28. $(x^2 - 3)(x^2 - 5x + 6) < 0$ Sol: $(-\sqrt{3}, \sqrt{3}) \cup (2, 3)$
29. $4x^4 + 2x^2 + 1 \geq 0$ Sol: R
30. $2x^3 + 5x^2 - 4x - 3 > 0$ Sol: $(-3, -\frac{1}{2}) \cup (1, +\infty)$
31. $\frac{x-3}{x+1} > 0$ Sol: $(-\infty, -1) \cup [3, +\infty)$
32. $\frac{2x(x-3)+x^2}{x-1} < 3(x-1)$ Sol: $(1, +\infty)$
33. $\frac{(x^2+1)(x^2-9x+8)}{x^2+2} \leq 0$ Sol: $[1, 8]$
34. $\frac{x^2-25}{x^2-7x+10} \leq 0$ Sol: $[-5, 2]$
35. $\frac{x^2-5x+6}{x^2-4x-5} \geq 0$ Sol: $(-\infty, -1) \cup [2, 3] \cup (5, +\infty)$
36. $\frac{x^3-2x^2-5x+6}{x+1} < 0$ Sol: $(1, 3) \cup (-2, -1)$
37. $\frac{x^2-4x+3}{x^2+3x+2} \leq 0$ Sol: $(-2, -1) \cup (1, 3)$
38. $\frac{x^2-8x+7}{x^2-3x-10} < 0$ Sol: $(5, 7) \cup (-2, 1)$
39. $\frac{x^2-2x-8}{x^2-1} \geq 0$ Sol: $(-\infty, -2] \cup (-1, 1) \cup [4, +\infty)$
40. $x^2 - 6x + 9 > 0$ Sol: $(-\infty, 3) \cup (3, +\infty)$
41. $3x^2 + 5x - 2 \leq 0$ Sol: $[-2, \frac{1}{3}]$
42. $x^2 + 2x > 0$ Sol: $(-\infty, -2) \cup (0, +\infty)$
43. $x^2 + 1 \leq 0$ Sol: No tiene solución.
44. $(x - 3)^3 \leq 4$ Sol: $(-\infty, 2^{\frac{2}{3}} + 3]$
45. $3(x^2 - 1) - 5(x - 2) < 0$ Sol: No tiene solución.
46. $x^2 - 7 \geq -3(x - 1)$ Sol: $(-\infty, -5] \cup [2, +\infty)$
47. $x^2 + \frac{1}{4} < x - 2$ Sol: No tiene solución.

48. $2(5 - x^2) > 3x$ Sol: $(-3, 11; 1, 61)$
49. $\frac{2x-1}{5} > \frac{3x^2}{2}$ Sol: No tiene solución.
50. $\frac{x-3}{x+1} > 0$ Sol: $(-\infty, -1) \cup (3, +\infty)$
51. $\frac{2x-1}{x} \leq 0$ Sol: $(0, \frac{1}{2}]$
52. $\frac{x^2-3x-4}{x} > 0$ Sol: $(-1, 0) \cup (4, +\infty)$
53. $\frac{x^2-2x-3}{x^2-4} > 0$ Sol: $(-\infty, -2) \cup (-1, 2) \cup (3, +\infty)$
54. $5x - 3(1 - 4x) \leq 4x - 1$ Sol: $(-\infty, \frac{2}{13}]$
55. $\frac{5x-2}{3} - \frac{x-3}{2} \geq \frac{x-2}{3} + \frac{29}{6}$ Sol: $(-\infty, 0]$
56. $7(2x - 1) - 3x \leq 2(x + 1) - 9$ Sol: $(-\infty, 0]$
57. $3(x - 7) + 2x \leq 5(x - 1)$ Sol: $(-\infty, +\infty)$
58. $4(3x - 1) - 5x < 7(x - 1) + 3$ Sol: ϕ
59. $3x - \frac{x+2}{3} > \frac{2x+1}{4} - \frac{5-x}{2}$ Sol: $(-\frac{19}{20}, +\infty)$
60. $(x - 2)(x + 1) \geq 18$ Sol: $(-\infty, -4] \cup [5, +\infty)$
61. $9x^2 - 6x + 1 \leq 0$ Sol: $\{\frac{1}{3}\}$
62. $\frac{x-3}{4} > (x - 2)(x + 7) + 17$ Sol: $(-\frac{15}{4}, -1)$

2 Sistemas de Inecuaciones:

1.

$$\begin{cases} x^2 - 2x - 8 \leq 0 \\ \frac{x-1}{x+1} > 0 \end{cases}$$

Sol: $[-2, -1) \cup (1, 4]$

2.

$$\begin{cases} x < 3 \\ 2(x - 1) < 5(x - 1) \end{cases}$$

Sol: $(-1, 3)$

3.

$$\begin{cases} 5 \cdot \frac{x-1}{2} \leq 3(x - 1) \\ x < -2 \end{cases}$$

Sol: ϕ