

Raccolta di disequazioni - Solved linear inequalities

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- 1.** $x - 1 > 2$ [$x > 3$]
- 2.** $3 > x + 4$ [$x < -1$]
- 3.** $2x - 1 > x - 1$ [$x > 1$]
- 4.** $4x + 1 < 6 - x$ [$x < 1$]
- 5.** $3x + 2 > 5x - 2$ [$x < 2$]
- 6.** $-x - 3 + 2x < 3 + 3x$ [$x > -3$]
- 7.** $x - 1 < 3 - 3x$ [$x < 1$]
- 8.** $-2x - 8 < 2 - 3x - 2$ [$x < 8$]
- 9.** $4 \cdot (1 - x) \leq 3 \cdot (2 - 2x)$ [$x \leq 1$]
- 10.** $3 \cdot (x - 1) - 6x \leq 1 - 2x$ [$x \geq -4$]
- 11.** $3 \cdot (x - 1) - 5x \leq 1 - 2x$
- 12.** $8x - 1 > 11x - 7$
- 13.** $2x - 20 \leq 8 - 5x$
- 14.** $6 \cdot (x - 1) + 2 \geq 6x$
- 15.** $9 \cdot (20 - 5x) + 27 > 8 \cdot (5x - 6)$ (*)
- 16.** $12x - 5 \cdot (x - 3) - 6x \leq -3 - 4 \cdot (3x - 11)$
- 17.** $3 \cdot (x - 3) - 2x \geq 5 - 2 \cdot (2 - 3x)$
- 18.** $5 \cdot (x - 1) - 4 \cdot (3x - 2) > -6x$
- 19.** $3 \cdot (x - 1) - 2 < 5x + 1$ *
- 20.** $4x - \frac{1}{2}x < \frac{3}{4}x + 2$
- 21.** $\frac{1 - 2x}{2} + \frac{4 - 4x}{10} < \frac{2x - 13}{10} - \frac{4x - 3}{5}$ (*)

- 22.** $3 - x(x+1) - [x - 2(1 - 3x)] < (3 - x)(3 + x)$ (*)
- 23.** $x - \frac{3}{4} > \frac{1}{2}x - \frac{1}{4}$ $[x > 1]$
- 24.** $\frac{3 \cdot (x-2)}{2} - \frac{4 \cdot (x+1)}{3} > 4x - \frac{x+3}{4} - \frac{5 \cdot (x+1)}{3}$
- 25.** $\frac{(x+1)^2}{2} - \frac{(x-2)^2}{2} + \frac{1}{2} \geq \frac{1}{2}(x+1) \cdot (x-1) - \frac{(x+1)^2}{2}$
- 26.** $\frac{x+4}{2} > \frac{7x-5}{4} + 1$
- 27.** $(3x + 1)(2x - 3) \leq 6x(x - 1) - x$ $[\forall x \in \mathbf{R}]$ (*)
- 28.** $(2x + 1)^2 < 6 + (2x - 1)^2 - 3(1 - 2x)$ $[x < \frac{3}{2}]$ (*)
- 29.** $(3x + 1)^2 - 4x(x - 2) \leq 5x(x + 6) - 16x$ [impossibile] (*)
- 30.** $\frac{3x+1}{4} - \frac{x+5}{3} \leq 1 - \frac{x+2}{6}$ $[x \leq \frac{25}{7}]$ (*)
- 31.** $\frac{1}{3}x - \frac{x-4}{2} > \frac{5-x}{6} + 1$ $[\forall x \in \mathbf{R}]$ (*)
- 32.** $4 \left[\frac{x-2}{3} - 2 \left(\frac{x-1}{6} - \frac{1-x}{9} \right) \right] < x - 8$ $[x > 4]$ (*)

(*) Per gentile concessione della Commissione e-learning IPSSCART B. Stringher – Udine



Soluzioni

$$x - 1 > 2$$

$$x > 2 + 1$$

$$x > 3$$

$$3 > x + 4$$

$$-x > 4 - 3$$

$$-x > 1$$

$$x < -1$$

$$2x - 1 > x - 1$$

$$2x - x > 1 - 1$$

$$x > 0$$

$$4x + 1 < 6 - x$$

$$4x + x < 6 - 1$$

$$5x < 5$$

$$x < \frac{5}{5}$$

$$x < 1$$

$$3x + 2 > 5x - 2$$

$$3x - 5x > -2 - 2$$

$$-2x > -4$$

$$2x < 4$$

$$x < \frac{4}{2}$$

$$x < 2$$

$$-x - 3 + 2x < 3 + 3x$$

$$-x + 2x - 3x < 3 + 3$$

$$-2x < 3 + 3$$

$$-2x < 6$$

$$2x > -6$$

$$x > -\frac{6}{2}$$

$$x > -3$$

$$x - 1 < 3 - 3x$$

$$x + 3x < 3 + 1$$

$$4x < 4$$

$$x < \frac{4}{4}$$

$$x < 1$$

$$-2x - 8 < 2 - 3x - 2$$

$$-2x - 8 < -3x$$

$$-2x + 3x < 8$$

$$x < 8$$

$$4 \cdot (1 - x) \leq 3 \cdot (2 - 2x)$$

$$4 - 4x \leq 6 - 6x$$

$$-4x + 6x \leq 6 - 4$$

$$2x \leq 2$$

$$x \leq \frac{2}{2}$$

$$x \leq 1$$

$$3 \cdot (x - 1) - 6x \leq 1 - 2x$$

$$3x - 3 - 6x \leq 1 - 2x$$

$$3x - 6x + 2x \leq 1 + 3$$

$$-x \leq 4$$

$$x \geq -4$$

$$8x - 1 > 11x - 7$$

$$8x - 11x > -7 + 1$$

$$-3x > -6$$

$$3x < 6$$

$$x < 2$$

$$2x - 20 \leq 8 - 5x$$

$$2x + 5x \leq 8 + 20$$

$$7x \leq 28$$

$$x \leq \frac{28}{7} \leq 4$$

$$6 \cdot (x - 1) + 2 \geq 6x$$

$$6x - 6 + 2 \geq 6x$$

$$6x - 6x \geq 6 - 2$$

$$0x \geq 4$$

impossibile

$$9 \cdot (20 - 5x) + 27 > 8 \cdot (5x - 6)$$

$$180 - 45x + 27 > 40x - 48$$

$$-45x - 40x > -48 - 180 - 27$$

$$-85x > -255$$

$$85x < 255$$

$$x < \frac{255}{85}$$

$$x < 3$$

$$12x - 5 \cdot (x - 3) - 6x \leq -3 - 4 \cdot (3x - 11)$$

$$12x - 5 \cdot (x - 3) - 6x \leq -3 - 4 \cdot (3x - 11)$$

$$12x - 5x + 15 - 6x \leq -3 - 12x + 44$$

$$12x - 5x - 6x + 12x \leq -3 + 44 - 15$$

$$13x \leq 26$$

$$x \leq \frac{26}{13}$$

$$x \leq 2$$

$$3 \cdot (x - 3) - 2x \geq 5 - 2 \cdot (2 - 3x)$$

$$3x - 9 - 2x \geq 5 - 4 + 6x$$

$$3x - 2x - 6x \geq 5 - 4 + 9$$

$$-5x \geq 10$$

$$\frac{-5x}{-5} \leq \frac{10}{-5}$$

$$x \leq -2$$

$$5 \cdot (x-1) - 4 \cdot (3x-2) > -6x$$

$$5x - 5 - 12x + 8 > -6x$$

$$5x - 12x + 6x > 5 - 8$$

$$-x > -3$$

$$x < 3$$

$$3 \cdot (x-1) - 2 < 5x + 1$$

$$3x - 3 - 2 < 5x + 1$$

$$3x - 5x < +1 + 3 + 2$$

$$-2x < 6$$

$$x > \frac{6}{-2} > -3$$

$$x - \frac{3}{4} > \frac{1}{2}x - \frac{1}{4}$$

$$x - \frac{1}{2}x > -\frac{1}{4} + \frac{3}{4}$$

$$\frac{1}{2}x > \frac{2^1}{4_2}$$

$$x > \frac{1}{2} \cdot \frac{2}{1}$$

$$x > 1$$

$$4x - \frac{1}{2}x < \frac{3}{4}x + 2$$

$$16x - 2x < 3x + 8$$

$$16x - 2x - 3x < 8$$

$$11x < 8$$

$$x < \frac{8}{11}$$

$$\frac{1-2x}{2} + \frac{4-4x}{10} < \frac{2x-13}{10} - \frac{4x-3}{5}$$

$$5 - 10x + 4 - 4x < 2x - 13 - 8x + 6$$

$$8x - 10x - 4x - 2x < -13 + 6 - 5 - 4$$

$$-8x < -16$$

$$8x > 16$$

$$x > 2$$

$$\frac{1-x}{4} - \frac{2x-1}{2} \geq \frac{3x-1}{4} - 5\left(x + \frac{1}{3}\right)$$

$$\frac{1-x}{4} - \frac{2x-1}{2} \geq \frac{3x-1}{4} - 5x - \frac{5}{3}$$

$$3 \cdot (1-x) - 6 \cdot (2x-1) \geq 3 \cdot (3x-1) - 12 \cdot 5x - 4 \cdot 5$$

$$3 - 3x - 12x + 6 \geq 9x - 3 - 60x - 20$$

$$-3x - 12x - 9x + 60x \geq -3 - 20 - 3 - 6$$

$$-3x - 12x - 9x + 60x \geq -32$$

$$36x \geq -32$$

$$9x \geq -8$$

$$x \geq -\frac{8}{9}$$

$$3 - x(x+1) - [x - 2(1-3x)] < (3-x)(3+x)$$

$$3 - x^2 - x - [x - 2 + 6x] < 9 - x^2$$

$$3 - x - [x - 2 + 6x] < 9$$

$$3 - x - x + 2 - 6x < 9$$

$$-x - x - 6x < 9 - 3 - 2$$

$$-8x < 4$$

$$8x > -4$$

$$x > -\frac{4}{8}$$

$$x > -\frac{1}{2}$$

$$\frac{3 \cdot (x-2)}{2} - \frac{4 \cdot (x+1)}{3} > 4x - \frac{x+3}{4} - \frac{5 \cdot (x+1)}{3}$$

$$18 \cdot (x-2) - 16 \cdot (x+1) > 12 \cdot 4x - 3 \cdot (x+3) - 20 \cdot (x+1)$$

$$18x - 36 - 16x - 16 > 48x - 3x - 9 - 20x - 20$$

$$18x - 16x - 48x + 3x + 20x > -9 - 20 + 36 + 16$$

$$2x - 48x + 3x + 20x > -29 + 36 + 16$$

$$-46x + 3x + 20x > 7 + 16$$

$$-43x + 20x > 23$$

$$-23x > 23$$

$$23x < -23$$

$$x < -\frac{23}{23}$$

$$x < -1$$

$$\frac{(x+1)^2}{2} - \frac{(x-2)^2}{2} + \frac{1}{2} \geq \frac{1}{2}(x+1) \cdot (x-1) - \frac{(x+1)^2}{2}$$

$$x^2 + 2x + 1 - x^2 + 4x - 4 + 1 \geq x^2 - 1 - x^2 - 2x - 1$$

$$+ 2x + 1 + 4x - 4 + 1 \geq -1 - 2x - 1$$

$$2x + 4x + 2x \geq -1 - 1 - 1 - 1 + 4$$

$$8x \geq 0$$

$$x \geq 0$$

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$$\frac{x+4}{2} > \frac{7x-5}{4} + 1$$

$$\frac{1}{2}x + \frac{4}{2} > \frac{7}{4}x - \frac{5}{4} + 1$$

$$\frac{1}{2}x - \frac{7}{4}x > -\frac{5}{4} + 1 - 2$$

$$\frac{2-7}{4}x > \frac{-5+4-8}{4}$$

$$-\frac{5}{4}x > -\frac{9}{4}$$

$$\frac{5}{4}x < \frac{9}{4}$$

$$x < \frac{9}{4} \cdot \frac{4}{5} < \frac{9}{5}$$

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$$(3x+1)(2x-3) \leq 6x(x-1) - x$$

$$6x^2 - 9x + 2x - 3 \leq 6x^2 - 6x - x$$

$$-9x + 2x - 3 \leq -6x - x$$

$$-9x + 2x + 6x + x \leq +3$$

$$0x \leq +3$$

$$\forall x \in R$$

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$$(2x+1)^2 < 6 + (2x-1)^2 - 3(1-2x)$$

$$4x^2 + 4x + 1 < 6 + 4x^2 - 4x + 1 - 3 + 6x$$

$$4x + 1 < 6 - 4x + 1 - 3 + 6x$$

$$4x + 4x - 6x < 6 + 1 - 3 - 1$$

$$2x < 3$$

$$x < \frac{3}{2}$$

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$$(3x + 1)^2 - 4x(x - 2) \leq 5x(x + 6) - 16x$$

$$9x^2 + 6x + 1 - 4x^2 + 8x \leq 5x^2 + 30x - 16x$$

$$6x + 8x + 16x - 30x \leq -1$$

$$30x - 30x \leq -9$$

$$0x \leq -9 \quad \textit{impossibile}$$

$$\frac{3x+1}{4} - \frac{x+5}{3} \leq 1 - \frac{x+2}{6}$$

$$\left[x \leq \frac{25}{7} \right]$$

$$\frac{1}{3}x - \frac{x-4}{2} > \frac{5-x}{6} + 1$$

$$[\forall x \in \mathbb{R}]$$

$$4 \left[\frac{x-2}{3} - 2 \left(\frac{x-1}{6} - \frac{1-x}{9} \right) \right] < x - 8$$

$$[x > 4]$$