

DISUGUAGLIAMENTI DI PRIMO GRADO E FRAZIONARI

Titolo nota

12/07/2018

$$11 - (2^{12} : 2^9)x \geq -3(1 - 2x)$$

$$11 - 8x \geq -3 + 6x$$

$$-8x - 6x \geq -3 - 11$$

$$-14x \geq -14$$

$$x \leq 1$$

$$-2 - [2x - (10^{13}x - 10^{12}) : 10^{11}] \geq (10^{14} : 10^{12})x$$

$$-2 - [2x - 100x + 10] \geq 100x$$

$$-2 - 2x + \cancel{100x} - 10 \geq \cancel{100}x$$

$$-2x \geq +12$$

$$x \leq -6$$

$$x^2 (x+1)^2 \geq (x+2)^2 - (x-1)(x+1)$$

$$\cancel{x^2} - \cancel{x^2} - 1 - 2x \geq \cancel{x^2} + 4 + 4x - \cancel{x^2} + 1$$

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

$$-6x \geq 6$$

$$x \leq -1$$

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

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

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

$$8x \leq -3$$

$$x \leq -\frac{3}{8}$$

$$(x^2 + x + 2)^2 - x^2(x^2 + 5) \geq 2x(x-3)(x+3)$$

$$x^4 + x^2 + 4 + 2x^3 + 4x + 4x^2 - x^4 - 5x^2 \geq 2x^3 - 18x$$

$$4x + 18x \geq -4$$

$$22x \geq -4$$

$$x \geq -\frac{2}{11}$$

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

$$x \left(\frac{3-2}{6} \right)^{-1} + \frac{x^2+1-2x}{2} + \frac{1}{2}x^2 \geq 5x \left(\frac{3+2}{6} \right)^{-1} + \frac{4x^2+1-4x}{4}$$

$$6x + \frac{x^2+1-2x}{2} + \frac{1}{2}x^2 \geq 6x + \frac{4x^2+1-4x}{4}$$

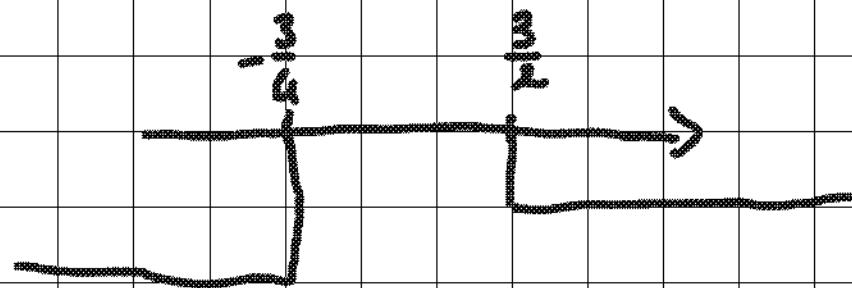
$$4 \cdot \frac{2x^2+2-4x+2x^2}{4} \geq \frac{4x^2+1-4x}{4} \cdot 4$$

$$2 \geq 1 \quad \forall x \in \mathbb{R}$$

$$\begin{cases} 2(x-1) > 1 \\ -x > 3(x+1) \end{cases}$$

$$\begin{cases} 2x-2 > 1 \\ -x > 3x+3 \end{cases}$$

$$\begin{cases} x > \frac{3}{2} \\ x < -\frac{3}{4} \end{cases}$$



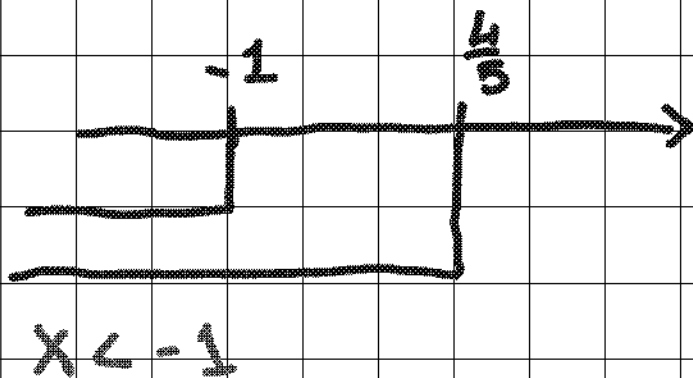
impossible

$$\begin{cases} \frac{1}{2}(x-1) > x \\ 2(2-x) > 3x \end{cases}$$

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

$$\begin{cases} -\frac{1}{2}x > \frac{1}{2} \\ -5x > -4 \end{cases}$$

$$\begin{cases} x < -1 \\ x < \frac{4}{5} \end{cases}$$



$$\left\{ \begin{array}{l} -x^2 \leq (1-x)(x+2) \end{array} \right.$$

$$\left\{ \begin{array}{l} \left(\frac{1}{2} - \frac{1}{3}\right)x + \frac{1}{2}\left(x - \frac{1}{3}\right) > \frac{1}{3}\left(x - \frac{1}{2}\right) \end{array} \right.$$

$$\left\{ \begin{array}{l} -x^2 \leq x+2 \\ -x^2 - 2x \end{array} \right.$$

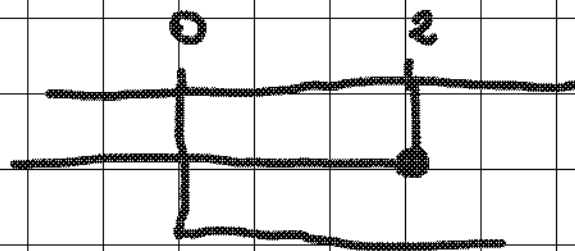
$$\left\{ \begin{array}{l} x \leq 2 \end{array} \right.$$

$$\left\{ \begin{array}{l} \frac{1}{2}x - \frac{1}{3}x + \frac{1}{2}x - \frac{1}{6} > \frac{1}{3}x - \frac{1}{6} \end{array} \right.$$

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

$$\left\{ \begin{array}{l} x \leq 2 \end{array} \right.$$

$$\left\{ \begin{array}{l} x > 0 \end{array} \right.$$



$$0 < x \leq 2$$

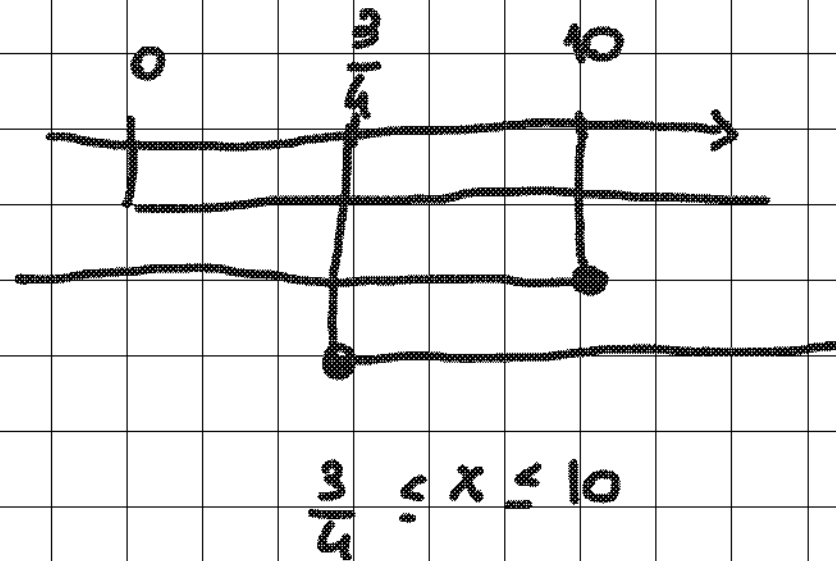
$$\begin{cases} \frac{x-2}{2} > \frac{x-3}{3} \\ 10-x \geq 0 \\ -0,5x \leq x-1 \end{cases}$$

$$\begin{cases} 3x-6 > 2x-6 \\ x \leq 10 \\ -\frac{1}{3}x \leq x-1 \end{cases}$$

$$\begin{cases} x > 0 \\ x \leq 10 \\ -\frac{1}{3}x - x \leq -1 \end{cases}$$

$$\begin{cases} x > 0 \\ x \leq 10 \\ -4x \leq -3 \end{cases}$$

$$\begin{cases} x > 0 \\ x \leq 10 \\ x \geq \frac{3}{4} \end{cases}$$



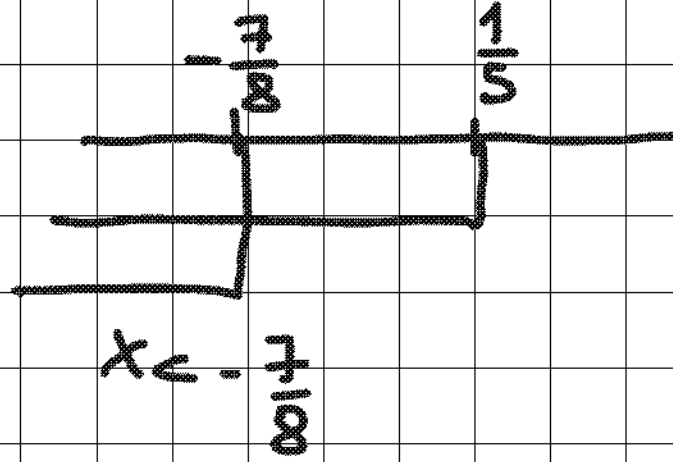
$$\begin{cases} (x - 0,3)^2 \geq (0,1 - x)^2 \\ (x-1)(x+1) - (x+1)(x+2) > 2^{-1} - (-4,5 - x) \end{cases}$$

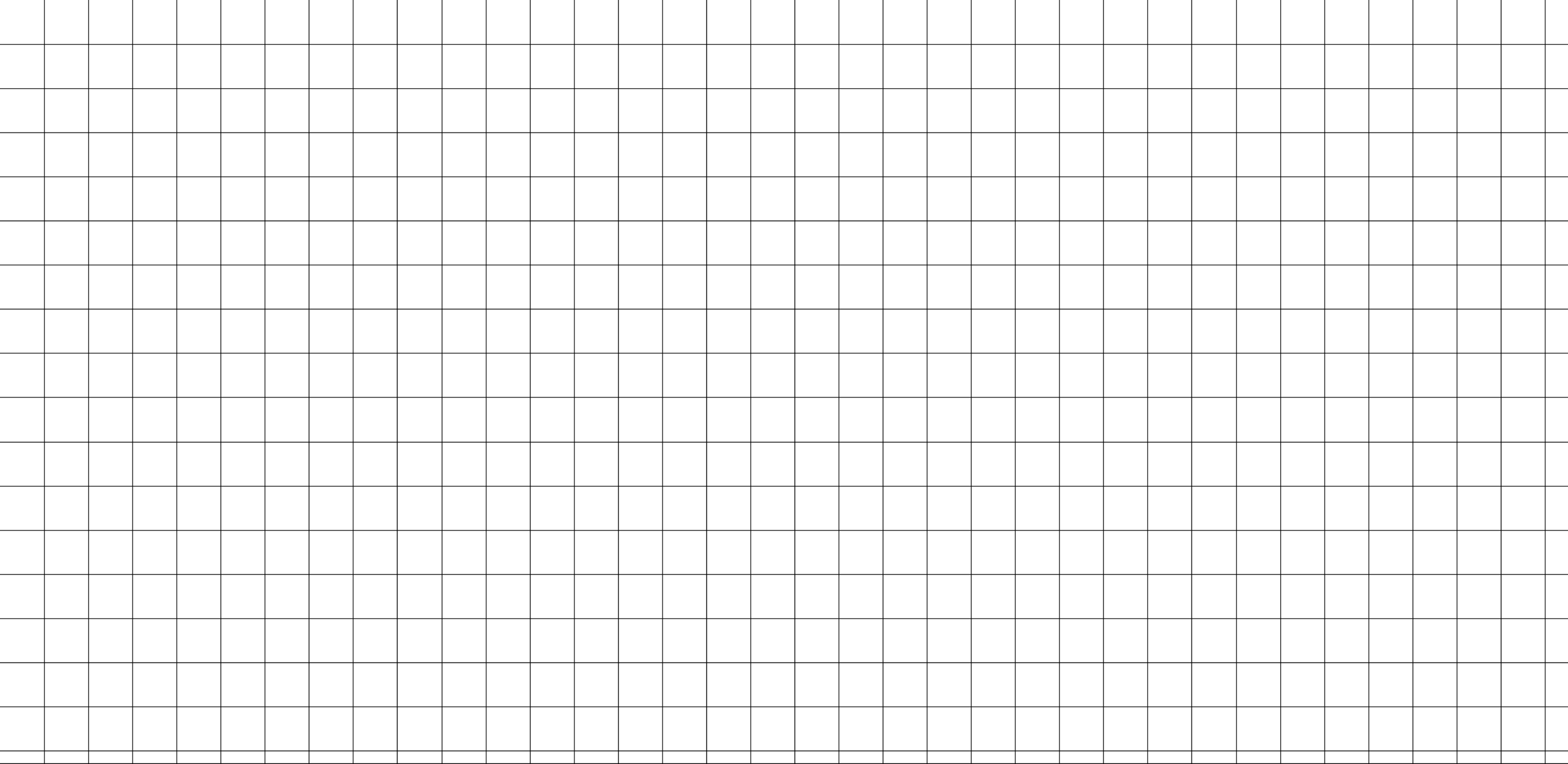
$$\begin{cases} \left(x - \frac{3}{10}\right)^2 \geq \left(\frac{1}{10} - x\right)^2 \end{cases}$$

$$\begin{cases} x^2 + \frac{9}{100} - \frac{3}{5}x \geq \frac{1}{100} + x^2 - \frac{1}{5}x \\ x^2 - 1 - x^2 - 2x - x - 2 > \frac{1}{2} + \frac{9}{2} + x \end{cases} \quad \begin{cases} -\frac{2}{5}x \geq \frac{1}{100} - \frac{9}{100} \\ -4x > +3 + \frac{1}{2} \end{cases}$$

$$\left\{ \begin{array}{l} \frac{-40x}{100} \geq \frac{-8}{100} \\ \frac{-8x}{2} > \frac{7}{2} \end{array} \right.$$

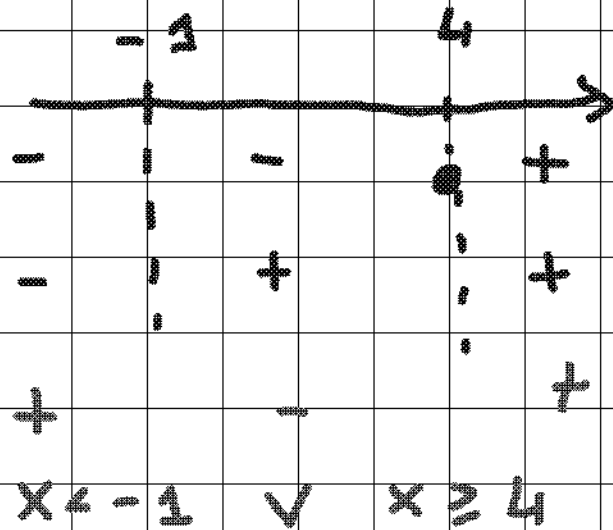
$$\left\{ \begin{array}{l} x \leq \frac{1}{5} \\ x < -\frac{7}{80} \end{array} \right.$$





$$\begin{cases} \frac{x-4}{x+1} \geq 0 \\ -4(2-x) \leq 0 \end{cases}$$

$$\frac{x-4}{x+1} \geq 0 \quad \begin{cases} N \geq 0 & x-4 \geq 0 & \Rightarrow x \geq 4 \\ D > 0 & x+1 > 0 & \Rightarrow x > -1 \end{cases}$$



$$\begin{cases} x < -1 \vee x \geq 4 \\ x \leq 2 \end{cases}$$

