

**CORSO DI AZZERAMENTO DA SVILUPPARE
DAL 14 SETTEMBRE AL 30 SETTEMBRE**

**ARGOMENTI DI MATEMATICA
CLASSE SECONDA**

Equazioni di 1° grado

D'Andrea

$$1) 3x - 4 + 6 - x + 8x = 2x + 1 - 10 + x$$

$$3x - x + 8x - 2x - x = 1 - 10 - 4 - 6$$

$$4x = -11$$

$$x = -\frac{11}{4}$$

$$\begin{array}{r|l} \textcircled{+} & - \\ 3 & 2 \\ 8 & 1 \\ \hline 11 & 1 \\ 4 & 2 \\ \hline & 2 \end{array}$$

$$\begin{array}{r|l} + & \textcircled{-} \\ 1 & 10 \\ 4 & 6 \\ \hline 5 & 16 \\ & 5 \\ \hline & 11 \end{array}$$

$$2) 3x - 4 + 6 - x + 8x = 2x + 1 - 10 + x$$

$$10x + 2 = 3x - 9$$

$$10x - 3x = -9 - 2$$

$$4x = -11$$

$$x = -\frac{11}{4}$$

UN NUMERO È DIVISIBILE PER 2, SE L'ULTIMA CIFRA È 0 OPPURE È PARI

UN NUMERO È DIVISIBILE PER 5 SE L'ULTIMA CIFRA È 0 O 5

UN NUMERO È DIVISIBILE PER 3 SE LA SOMMA DELLE SINGOLE CIFRE È UN MULTIPLO DI 3

UN'EQUAZIONE FRATTA SI HA QUANDO LA X È AL DENOMINATORE

$$7x - \frac{3}{2} + \frac{1}{4}x = \frac{2}{3}x - \frac{1}{9} + \frac{4}{5}$$

$$4x + \frac{1}{4}x - \frac{2}{3}x = -\frac{1}{9} + \frac{4}{5} + \frac{3}{2} \quad \text{mcm} = 180$$

$$1260x + 45x - 120x = -20 + 144 + 270$$

$$1185x = 394$$

$$x = \frac{394}{1185}$$

$$\frac{5}{8}x - \frac{1}{4} - \frac{1}{5} + 2x = \frac{10}{4} \quad \text{mcm} = 40$$

$$\frac{5}{8}x + \frac{2}{5}x = \frac{10}{4} + \frac{1}{4} + \frac{1}{5}$$

$$25x + 16x = 100 + 10 + 8$$

$$41x = 118$$

$$x = \frac{118}{41}$$

$$= 3 \frac{7}{8} - \frac{1}{5}$$

$$\frac{2}{3}x + \frac{6}{7}x + \frac{10}{7}x = \frac{24}{5} + \frac{1}{8}$$

$$\frac{1}{7}x + \frac{2}{3}x = \frac{192+5}{40}$$

$$\frac{x+2x}{3} = \frac{197}{40}$$

$$\frac{8x}{3} = \frac{197}{40}$$

$$x = \frac{197}{40} \cdot \frac{3}{8}$$

$$x = \frac{591}{320}$$

$$\frac{5}{6}x - \frac{1}{3}x = \frac{4}{7} - \frac{1}{8}x$$

m.c.m. 336

$$\frac{5}{6}x - \frac{1}{3}x + \frac{1}{8}x = \frac{4}{7}$$

$$280x - 112x + 42x = 192$$

$$210x = 192$$

$$x = \frac{192}{210}$$

+	-
280	112
42	
322	
112	
210	

$$3x^2 + 2x - 8 = 3x^2 + 3x - x - 8$$

$$\cancel{3x^2} + 2x - \cancel{3x^2} - 3x + x = -8 + 8$$

INDETERMINATA

$$2x + 5(x - 6) = x + 6(x + 1)$$

$$\underline{2x} + \underline{5x} - 30 = x + 6x + 6$$

$$7x - 30 = 7x + 6$$

$$\cancel{7x} - \cancel{7x} = 6 + 30$$

IMPOSSIBILE

$$(x + 2)(x - 3) = x^2$$

$$x^2 - 3x + 2x - 6 = x^2$$

$$x^2 - 3x + 2x - x^2 = 6$$

$$-x = 6$$

$$x = -6$$

h

$$(a+b)^2 = a^2 + 2ab + b^2$$

$$(a-b)^2 = a^2 - 2ab + b^2$$

QUADRATO DI UN TRINOMIO

$$(a+b+c)^2 = a^2 + b^2 + c^2 + 2ab + 2ac + 2bc$$

CUBO DI UN BINOMIO

$$(a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$$

$$(a-b)^3 = a^3 - 3a^2b + 3ab^2 - b^3$$

$$(2x+1)^3 + (2x-1)^3 = (2x+3)^3 + (2x-3)^3$$

$$8x^3 + 12x^2 + 6x + 1 - 12x^2 + 6x$$

$$8x^3 + 12x^2 + 36x^2 + 54x + 8x - 12x^2 - 36x^2 - 54x$$

$$16x^3 + 12x = 16x^2 + 108x$$

$$16x^3 + 12x - 16x^2 - 108x = 0$$

$$-96x = 0$$

$$96x = 0$$

$$x = 0$$

5

$$\frac{x+3}{x-2} - \frac{x+4}{x+2} = \frac{2(x+7)}{x^2-4}$$

$$\frac{x+3}{x-2} - \frac{x+4}{x+2} = \frac{2x+14}{(x+2)(x-2)}$$

$$\text{mem} = (x-2)(x+2)$$

$$x-2 \neq 0 \Rightarrow x \neq 2$$

$$x+2 \neq 0 \Rightarrow x \neq -2$$

$$(x+2)(x+3) - (x-2)(x+4) = 2x+14$$

$$x^2 + 3x + 2x + 6 - (x^2 + 4x - 2x - 8) = 2x + 14$$

$$x^2 + 5x + 6 - x^2 - 4x + 2x + 8 = 2x + 14$$

$$3x + 14 = 2x + 14$$

$$3x - 2x = 14 - 14$$

$$\boxed{x = 0}$$

$$(x+3)^2 = (x+1)^2$$

$$x^2 + 6x + 9 = x^2 + 1 + 2x$$

$$x^2 + 6x - x^2 - 2x = 1 - 9$$

$$4x = -8$$

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

$$\Rightarrow \boxed{x = -2}$$

$$\begin{cases} 2x - y = 7 \\ 4x + 3y = 4 \end{cases}$$

$$\begin{cases} -y = 4 - 2x \\ 4x + 3y = 4 \end{cases} \Rightarrow \begin{cases} y = 2x - 4 \\ 4x + 3(2x - 4) = 4 \end{cases}$$

$$\begin{cases} 4x + 6x - 12 = 4 \\ y = 2x - 4 \end{cases} \Rightarrow \begin{cases} 10x = 4 + 12 \\ y = 2x - 4 \end{cases}$$

$$\begin{cases} 10x = 16 \\ y = 2x - 4 \end{cases} \Rightarrow \begin{cases} x = \frac{16}{10} \\ y = 2x - 4 \end{cases}$$

$$\begin{cases} x = \frac{8}{5} \\ y = 2 \cdot \frac{8}{5} - 4 \end{cases} \Rightarrow \begin{cases} x = \frac{8}{5} \\ y = -\frac{8}{5} \end{cases}$$

$$\begin{cases} 2x - 5y = 7 \\ x - 3y = 1 \end{cases} \Rightarrow \begin{cases} 2(1+3y) - 5y = 7 \\ x = 1+3y \end{cases} \Rightarrow$$

$$\begin{cases} x = 1+3y \\ 2 + 6y - 5y = 7 \end{cases} \Rightarrow \begin{cases} x = 1+3y \\ y = 4 - 2 \end{cases} \Rightarrow \begin{cases} x = 1+3y \\ y = 5 \end{cases}$$

$$\begin{cases} x = 1+3 \cdot (5) \\ y = 5 \end{cases} \Rightarrow \begin{cases} x = 16 \\ y = 5 \end{cases}$$

$$(2x-1)^3 + 12(x+1)^2 = 8x^3$$

$$8x^3 - 1 + 12x^2 + 6x + 12(x^2 + 1 + 2x) = 8x^3$$

$$\cancel{8x^3} - 1 + \cancel{12x^2} + 6x + \cancel{12x^2} + 12 + \cancel{24x} - \cancel{8x^3} = 0$$

$$30x = 10 - 12$$

$$30x = -11$$

$$\boxed{x = -\frac{11}{30}}$$

$$(x+3) = (x-3) + 18x(x+3)$$

9

$$x^3 + 27 + 9x^2 + 27x = x^3 - 27 - 9x^2 + 27x + 18x^2 + 54x$$

$$\cancel{x^3 + 9x^2 + 27x} - \cancel{x^3 + 9x^2 - 27x - 18x^2 - 54x} = -27 - 27$$

$$-54x = -54$$

$$54x = 54$$

$$x = \frac{54^1}{54} \Rightarrow \boxed{x = 1}$$

$$6(x+3) - 3(x+4) + 3 = 2x + 4(x+1)$$

$$\underset{0}{6}x + \cancel{18} - \underset{0}{3}x - \cancel{12} + 3 = \underset{=}{2}x + \underset{=}{4}x + 4$$

$$3x + 3 = 6x + 4$$

$$3x - 6x = 4 - 3$$

$$-3x = 1$$

$$3x = -1$$

$$x = -\frac{1}{3}$$

9

$$3x^2 - 1 - x = x(3x + 1) + 5$$

$$3x^2 - 1 - x = 3x^2 + x + 5$$

$$\cancel{3x^2} - x - 1 - \cancel{3x^2} = 5 + 1$$

$$-2x = 6$$

$$2x = -6$$

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

$$\Rightarrow \boxed{x = -3}$$

Disuguaglianza numerica intera di 1° grado

$$2(x-1)^2 - 2(x-1) > 2(x+1)(x-2)$$

$$2(x^2 + 1 - 2x) - 2x + 2 > 2(x^2 - 2x + x - 2)$$

$$2x^2 + 2 - 2x + 2 > 2x^2 - 4x + 2x - 4$$

~~$$2x^2 + 4x + 4 - 2x > 2x^2 - 4x - 4$$~~

$$2x^2 - 4x + 4 > 2x^2 - 2x - 4$$

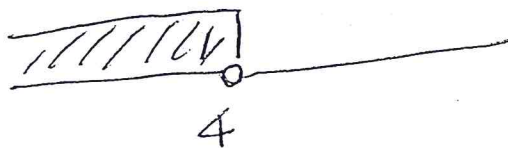
$$\cancel{2x^2} - 4x - \cancel{2x^2} + 2x > -4 - 4$$

$$-2x > -8$$

$$2x < 8$$

$$x < \frac{8}{2}$$

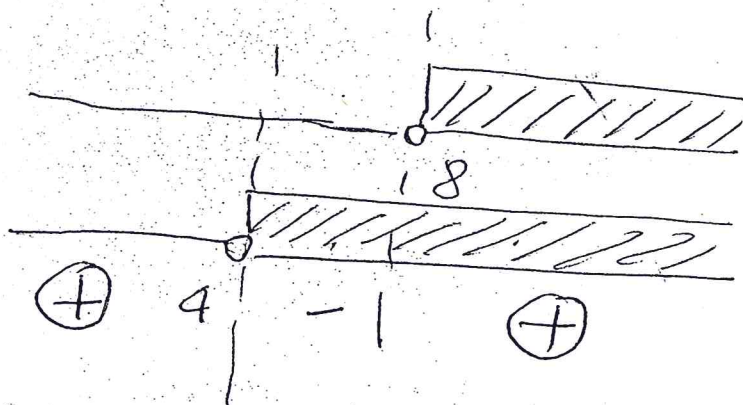
$$\boxed{x < 4}$$



equazioni frazionarie

$$\frac{x-8}{x-4} > 0$$

$$\begin{cases} x-8 > 0 \\ x-4 > 0 \end{cases} \Rightarrow \begin{cases} x > 8 \\ x > 4 \end{cases}$$



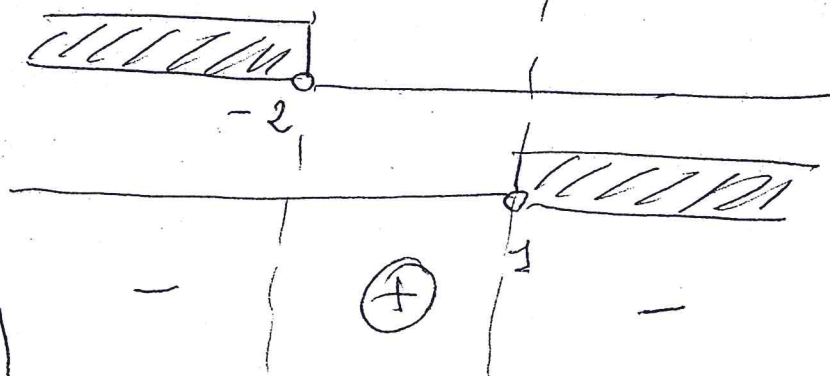
$$\boxed{x < 4 \vee x > 8}$$

$$\frac{4+2x}{x-1} < 0$$

$$\begin{cases} 4+2x < 0 \\ x-1 > 0 \end{cases}$$

$$\Rightarrow \begin{cases} 2x < -4 \\ x > 1 \end{cases} \Rightarrow \begin{cases} x < -2 \\ x > 1 \end{cases}$$

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



$$\boxed{-2 < x < 1}$$

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

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

$$6x^2 - 7x - 3 \leq 6x^2 - 7x$$

$$\cancel{6x^2} - \cancel{7x} - \cancel{6x^2} + \cancel{7x} \leq 3$$

$$0 \leq 3$$

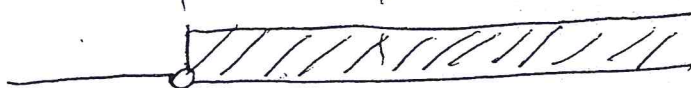
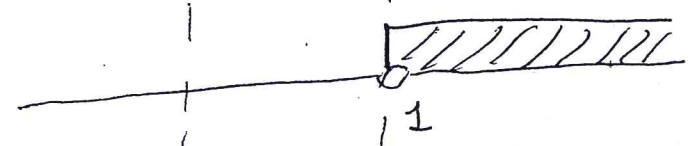
|||||

$\forall = \text{per ogni}$

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

$$\frac{x-1}{x+1} > 0$$

$$\begin{cases} x-1 > 0 \\ x+1 > 0 \end{cases} \Rightarrow \begin{cases} x > 1 \\ x > -1 \end{cases}$$



⊕ -1 - ⊕

$x < -1 \vee x > 1$

$$\begin{cases} 3x - y = -1 \\ x + y = 5 \end{cases} \Rightarrow \begin{cases} 3x - y = -1 \\ y = 5 - x \end{cases}$$

$$\begin{cases} 3x - (5 - x) = -1 \\ y = 5 - x \end{cases} \Rightarrow \begin{cases} 3x - 5 + x = -1 \\ y = 5 - x \end{cases}$$

$$\begin{cases} 4x = -1 + 5 \\ y = 5 - x \end{cases} \Rightarrow \begin{cases} 4x = 4 \\ y = 5 - x \end{cases} \Rightarrow \begin{cases} x = \frac{4}{4} \\ y = 5 - x \end{cases}$$

$$\begin{cases} x = 1 \\ y = 5 - 1 \end{cases} \Rightarrow \begin{cases} x = 1 \\ y = 4 \end{cases}$$

$$\begin{cases} 2x - 4 = 3y \\ 4y - 1 = 2x \end{cases} \Rightarrow \begin{cases} 2x - 3y = 4 \\ -2x + 4y = 1 \end{cases}$$

$$\begin{cases} 2x - 3y = 4 \\ 2x - 4y = -1 \end{cases} \Rightarrow \begin{cases} 2x = 3y + 4 \\ 2x - 4y = -1 \end{cases}$$

$$\begin{aligned} & \therefore = \frac{3y+4}{2} \\ & \text{R. } \frac{3y+4}{2} - 4y = -1 \end{aligned} \Rightarrow \begin{cases} x = \frac{3y+4}{2} \\ 3y+4 - 4y = -1 \end{cases}$$

$$\begin{aligned} & \therefore = \frac{3y+4}{2} \\ & -y = -1 - 4 \end{aligned} \Rightarrow \begin{cases} x = \frac{3y+4}{2} \\ -y = -5 \end{cases} \Rightarrow \begin{cases} x = \frac{3y+4}{2} \\ y = 5 \end{cases}$$

$$y = 5 \Rightarrow \begin{cases} y = 5 \\ y = 5 \end{cases} \Rightarrow \begin{cases} y = 5 \\ y = 5 \end{cases}$$

$$(1+2x)^2 - (1-2x)^2 < 8$$

$$1 + 4x^2 + 4x - (1 + 4x^2 - 4x) < 8$$

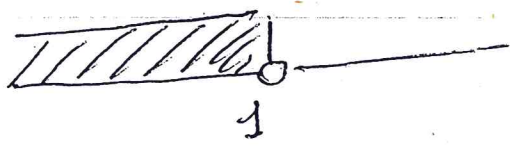
~~$1 + 4x^2 + 4x - 1 - 4x^2 + 4x < 8$~~

~~or simplified~~

$$1 + 4x^2 + 4x - 1 - 4x^2 + 4x < 8$$

$$8x < 8$$

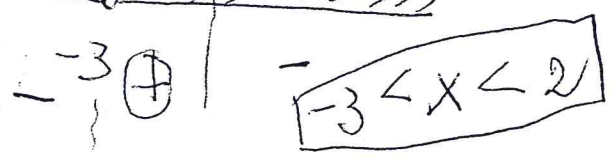
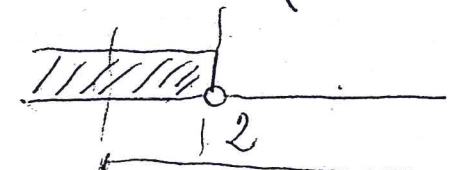
$$x < \frac{8}{8} \Rightarrow x < 1$$



$$\frac{4-2x}{x+3} > 0$$

$$\begin{cases} 4-2x > 0 \\ x+3 > 0 \end{cases} \Rightarrow \begin{cases} -2x > -4 \\ x > -3 \end{cases} \Rightarrow \begin{cases} 2x < 4 \\ x > -3 \end{cases}$$

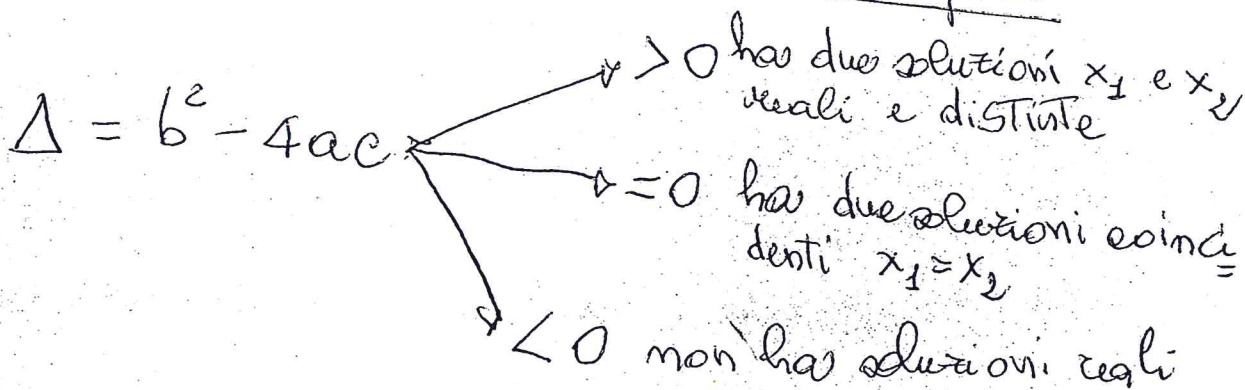
$$\begin{cases} x < \frac{4}{2} \\ x > -3 \end{cases} \Rightarrow \begin{cases} x < 2 \\ x > -3 \end{cases}$$



Equazioni di II grado

$$|| ax^2 + bx + c = 0$$

completa



$$x = \frac{-b \pm \sqrt{\Delta}}{2a}$$

$$b = 0; a \neq 0; c \neq 0$$

puria

$$ax^2 + c = 0$$

$$2x^2 + 8 = 0 \Rightarrow 2x^2 = -8 \Rightarrow x^2 = \frac{-8}{2}$$

$$x^2 = 4$$

$$x = \pm \sqrt{4}$$

$$x = \pm 2$$

$$x_1 = -2; x_2 = 2$$

$$c = 0; a \neq 0; b \neq 0$$

spuria

$$ax^2 + bx = 0$$

$$(ax + b) = 0$$

$$= 0$$

$$ax + b = 0$$

$$ax = -b$$

$$x = -\frac{b}{a}$$

$$(2x-3)^2 < 4x^2$$

$$4x^2 + 9 - 12x < 4x^2$$

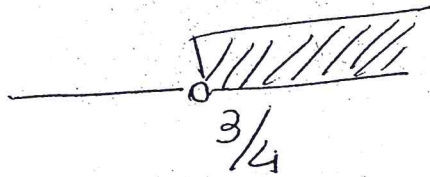
$$\cancel{4x^2} - 12x - \cancel{4x^2} < -9$$

$$-12x < -9$$

$$12x > 9$$

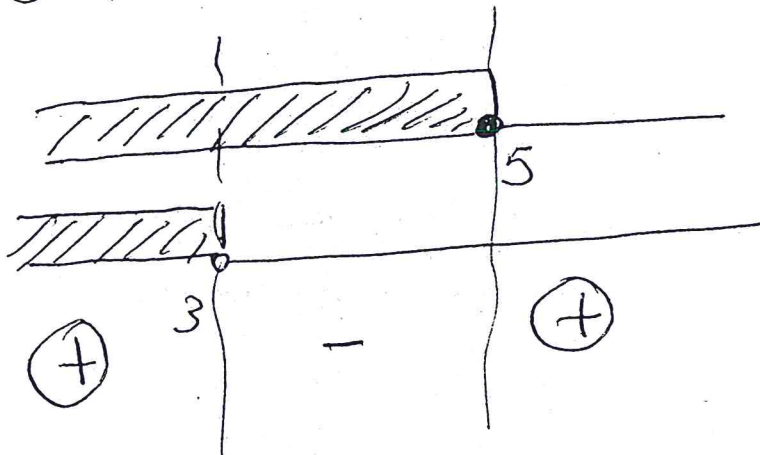
$$x > \frac{9}{12}$$

$$x > \frac{3}{4}$$



$$\frac{5-x}{3-x} \geq 0$$

$$\begin{cases} 5-x \geq 0 \\ 3-x > 0 \end{cases} \Rightarrow \begin{cases} -x \geq -5 \\ -x > -3 \end{cases} \Rightarrow \begin{cases} x \leq 5 \\ x < 3 \end{cases}$$



$$x < 3 \vee x \geq 5$$

$$x^2 - 4x - 3 = 0$$

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$$\Delta = 4 + 12 = 16 > 0$$

$$x = \frac{2 \pm \sqrt{16}}{2} = \frac{2 \pm 4}{2}$$

$$\frac{2-4}{2} = \frac{-2}{2} = -1$$
$$\frac{2+4}{2} = \frac{6}{2} = 3$$

$$x_1 = -1; x_2 = 3$$

$$9x^2 - 12x + 4 = 0$$

$$\Delta = 144 - 144 = 0$$

$$(3x - 2)^2 = 0$$

$$3x - 2 = 0$$

$$3x = 2 \Rightarrow x = \frac{2}{3}$$

$$x_1 = x_2 = \frac{2}{3}$$

$$2x^2 + x = 0$$

$$2x^2 - x = 0$$

$$x(2x - 1) = 0$$

$$x = 0$$

$$2x - 1 = 0$$

$$2x = 1$$

$$x = \frac{1}{2}$$

17

$$-3x^2 = -12$$

$$3x^2 = 12$$

$$x^2 = \frac{12}{3}$$

$$x^2 = 4 \Rightarrow x = \pm 2$$

$$x_1 = -2$$

$$x_2 = 2$$

$$2x^2 + 1 = 0$$

$$2x^2 = -1$$

$$x^2 = -\frac{1}{2} \text{ IMPOSSIBILE}$$

$$-4x^2 = 36$$

$$4x^2 = -36$$

$$x^2 = -\frac{36}{4}$$

$$x^2 = -9 \text{ IMPOSSIBILE}$$

$$16x^2 = 1$$

$$x^2 = \frac{1}{16}$$

$$\Rightarrow x = \pm \sqrt{\frac{1}{16}} \Rightarrow x = \pm \frac{1}{4}$$

$$x_1 = -\frac{1}{4}$$

$$x_2 = \frac{1}{4}$$

$$4(x-5)^2 = (2x-10)^2$$

19

$$4(x^2 - 10x + 25) = 4x^2 - 40x + 100$$

$$4x^2 - 40x + 100 = 4x^2 - 40x + 100$$

$$\cancel{4x^2} - \cancel{40x} - \cancel{4x^2} + \cancel{40x} = \cancel{100} - \cancel{100}$$

INDETERMINATA

$$(2x+1)(x-2) = 2(x+1)(x-4)$$

$$2x^2 - 4x + x - 2 = 2(x^2 - 4x + 2x - 8)$$

$$2x^2 - 4x + x - 2 = 2x^2 - 8x + 4x - 16$$

$$\cancel{2x^2} - \cancel{4x} + x - \cancel{2} = \cancel{2x^2} + \cancel{8x} - \cancel{4x} - 16$$

$$x = -14$$

$$(2x+3)(3x-6) = 3x(2x-1)$$

$$6x^2 + 9x - 12x - 18 = 6x^2 - 3x$$

$$\cancel{6x^2} + \cancel{9x} - \cancel{12x} - \cancel{18} = \cancel{6x^2} + \cancel{3x} - 18$$

Impossible

19

$$\boxed{f = x}$$

$$\begin{aligned} \frac{8}{8} &= x \\ 8 &= x \\ 4x + x &= 13 - 5 \\ x + 5 &= -7x + 13 \end{aligned}$$

$$\begin{aligned} 3(x+2) - (2x+8) &= 10 - 3(x-1) - 4x \\ 3x + 6 - 2x - 8 &= 10 - 3x + 3 - 4x \\ x - 2 &= 13 - 7x - 1 \\ x - 2 &= 12 - 7x \\ 8x &= 14 \\ x &= \frac{7}{4} \end{aligned}$$

Impossible

$$0 = \frac{x^2 + 2x - 4}{2} - \frac{x^2 + 2x - 4}{2} = 0$$

$$0 = \frac{x^2 + 2x - 4}{2} + \frac{x^2 + 4x - 4}{2} = 0$$

$$0 = (x+2)(x-2) + (x+2)(x-2) = 0$$

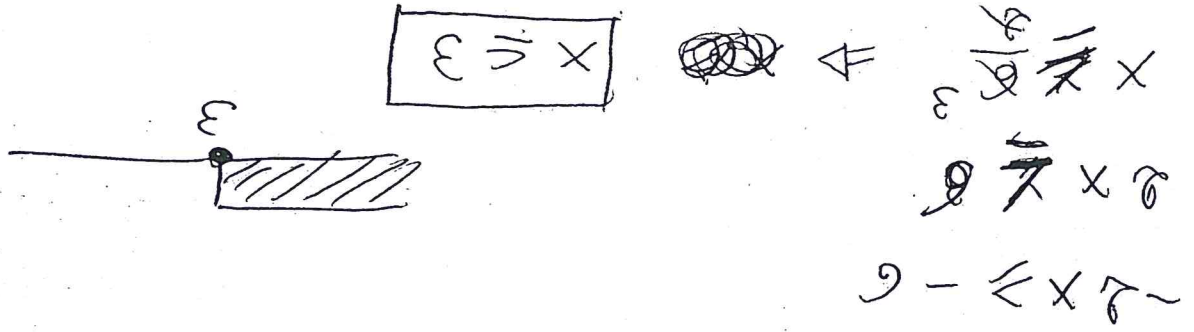
$x \neq 2$

$x \neq -2$

mem = $(x+2)(x-2)$

$$0 = \frac{(x+2)}{x} + \frac{x-2}{x} - \frac{(x+2)(x-2)}{x}$$

$$0 = \frac{x^2 + 4x + 4}{x} + \frac{x-2}{x} - \frac{x^2 - 4}{x}$$



$$x^2 + 8x + 15 \geq x^2 + 10x + 9$$

$$(x+5)(x+3) \geq (x+3)(x+7)$$

$$x^2 - 1 = 1 - x^2$$

$$x^2 - 5 = 0$$

$$5x^2 - 16x + 3 - 8 + 16x = 0$$

$$5x^2 - 16x + 3 - 8 - 16x =$$

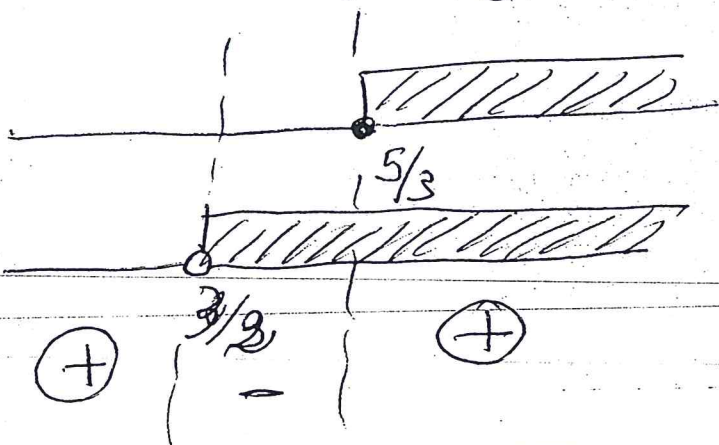
$$4 + 9x^2 - 12x - (4x^2 + 1 + 4x) = 8 - 16x$$

$$(8-3x)^2 - (2x+1)^2 = 4(2-4x)$$

$$\frac{3x-5}{3-2x} \leq 0$$

$$\begin{cases} 3x-5 \geq 0 \\ 3-2x < 0 \end{cases} \Rightarrow \begin{cases} 3x \geq 5 \\ -2x < -3 \end{cases}$$

$$\begin{cases} x \geq \frac{5}{3} \\ 2x > 3 \end{cases} \Rightarrow \begin{cases} x \geq \frac{5}{3} \\ x > \frac{3}{2} \end{cases}$$



$$\boxed{x < \frac{3}{2} \vee x \geq \frac{5}{3}}$$

$$(x-4)(x+8) + 20 = 0$$

$$x^2 + 8x - 4x - 32 + 20 = 0$$

$$x^2 + 4x - 12 = 0$$

$$\Delta = 16 + 48 = 64 = 8^2 > 0$$

$$x = \frac{-4 \pm \sqrt{64}}{2} = \frac{-4 \pm 8}{2}$$

$$\begin{aligned} & \frac{-4+8}{2} = 2 \quad \boxed{x_1 = -3} \\ & \frac{-4-8}{2} = -6 \quad \boxed{x_2 = 6} \end{aligned}$$

$$(x-1)^3 = x^2(x-1) - (x+3)(x-2) - 19$$

23

~~23~~

$$x^3 - 1 - 3x^2 + 3x = x^3 - x^2 - (x^2 - 2x + 3x - 6) - 19$$

$$x^3 - 1 - 3x^2 + 3x = x^3 - x^2 - x^2 + 2x - 3x + 6 - 19$$

$$\cancel{x^3} - 1 - 3x^2 + 3x - \cancel{x^3} + \cancel{x^2} + x^2 - 2x + 3x - 6 + 19 = 0$$

$$-x^2 + 4x + 12 = 0$$

$$x^2 - 4x - 12 = 0$$

$$\Delta = 16 + 48 = 64 = 8^2 > 0$$

$$x = \frac{4 \pm \sqrt{64}}{2} = \frac{4 \pm 8}{2}$$

$$x_1 = 6$$

$$x_2 = -2$$

$$\frac{12}{2}$$

$$\frac{-4}{2}$$

$$1 - (x-3)(x+3) < 4x - (x-2)^2$$

$$1 - (x^2 - 9) < 4x - (x^2 + 4 - 4x)$$

$$1 - x^2 + 9 < 4x - x^2 - 4 + 4x$$

$$-x^2 + 10 < -x^2 + 12x - 4$$

$$\cancel{-x^2} + \cancel{x^2} - 12x < -4 - 10$$

$$-12x < -14$$

$$12x > 14$$

$$\rightarrow x > \frac{14}{12} \rightarrow x > \frac{7}{6}$$

23

24

$$\frac{(x+1)^2 - 1}{(2x-1)^2} + \frac{4x}{2x-1} = 0$$

$$(x+1)^2 - 1 + 4x(2x-1) = 0$$

$$x^2 + 1 + 2x - 1 + 8x^2 - 4x = 0$$

$$9x^2 - 2x = 0$$

$$x(9x-2) = 0$$

$$x = 0$$

$$9x - 2 = 0$$

$$9x = 2 \Rightarrow x = \frac{2}{9}$$

$$\text{mcm} = (2x-1)^2$$

$$(2x-1)^2 \neq 0$$

$$2x-1 \neq 0$$

$$2x \neq 1$$

$$x \neq \frac{1}{2}$$

$$\frac{x+3}{x^2-2x+1} + \frac{1}{2x-2} + \frac{5+x}{1-x^2} = 0$$

$$\frac{x+3}{(x-1)^2} + \frac{1}{2(x-1)} + \frac{5+x}{(1-x)(1+x)} = 0$$

$$\frac{x+3}{(x-1)^2} + \frac{1}{2(x-1)} - \frac{5+x}{(x-1)(1+x)} = 0$$

$$\text{mcm} = 2(x-1)^2(1+x)$$

$$(x-1)^2 \neq 0$$

$$x-1 \neq 0$$

$$1+x \neq 0$$

$$\Rightarrow x \neq 1$$

$$\Rightarrow x \neq -1$$

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$$3(x+3)(1+x) + (x-1)(1+x) - 3(5+x)(x-1) = 0$$

$$3(x^2 + x^2 + 3 + 3x) + \overset{x^2-1}{\cancel{10+10+10}} - 3(3x^2 - 5 + x^2 - x) = 0$$

$$2(x^2 + 4x + 3) + x^2 - 1 - 2(x^2 + 4x - 5) = 0$$

$$\cancel{2x^2} + \cancel{8x} + 6 + x^2 - 1 - \cancel{2x^2} - \cancel{8x} + 10 = 0$$

$$x^2 + 15 = 0$$

$$x^2 = -15 \text{ NO!}$$

IMPOSSIBILE

$$x^2 - x - 20 = 0$$

$$\Delta = 1 + 80 = 81 = 9^2 > 0$$

$$x = \frac{1 \pm \sqrt{81}}{2} = \frac{1 \pm 9}{2}$$

$$\rightarrow -\frac{8}{2}$$

$$\rightarrow \frac{10}{2}$$

$$x_1 = -4 ; x_2 = 5$$

$$x^2 - 7x + 10 = 0$$

$$\Delta = 49 - 40 = 9 = 3^2 > 0$$

$$x = \frac{7 \pm \sqrt{9}}{2} = \frac{7 \pm 3}{2}$$

$$\rightarrow \frac{10}{2}$$

$$\rightarrow \frac{4}{2}$$

$$x_1 = 5 ; x_2 = 2$$

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$$\frac{x+1}{x+5} - \frac{4}{x-3} = \frac{x-7}{x+1}$$

$$\text{mcm} = (x+5)(x-3)(x+1)$$

$$x-5 \neq 0 \Rightarrow x \neq 5$$

$$x-3 \neq 0 \Rightarrow x \neq 3$$

$$x+1 \neq 0 \Rightarrow x \neq -1$$

$$(x-3)(x+1)(x+1) - 4(x+5)(x+1) = (x-7)(x+5)(x-3)$$

$$(x-3)(x+1)^2 - 4(x^2+x+5x+5) = (x-7)(x^2-3x+5x-15)$$

$$(x-3)(x^2+1+2x) - 4(x^2+6x+5) = (x-7)(x^2+2x-15)$$

$$x^3 + x + 2x^2 - 3x^2 - 3 - 6x - 4x^2 - 24x - 20 =$$

$$= x^3 + 2x^2 - 15x - 7x^2 - 14x + 105$$

$$x^3 - 5x^2 - 29x - 23 = x^3 - 5x^2 - 29x + 105$$

~~$$x^3 - 5x^2 - 29x - 23 - x^3 - 5x^2 - 29x - 105 = 0$$~~

IMPOSSIBILE

$$(2x-1)^2 + 18 = 4(2-x)(x+2)$$

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$$4x^2 + 1 - 4x + 18 = 4(4 - x^2)$$

$$4x^2 + 1 - 4x + 18 = 16 - 4x^2$$

$$4x^2 + 4x^2 - 4x + 1 + 18 - 16 = 0$$

$$8x^2 - 4x + 3 = 0$$

$$\Delta = 16 - 96 = -80 < 0$$

IMPOSSIBILE

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PUNTEGGIO : indicato per ciascun esercizio ESATTO.

Equazione di 1^grado Punti 1,5	Risolvi: $(x-4)(x+4)=x(x-2)$
Equazione di 1^grado Punti 1,5	Risolvi: $(3X+2)(3X-2)=9X(X-5)+41$
Equazione di 2^grado Punti 1,5	Risolvi: $2X^2+3X-5=0$
Equazione di 2^grado Punti 2	Risolvi: $X^2+3X=0$
Sistema di equazioni di 1^grado(metodo di sostituzione) Punti 2	Risolvi col metodo di sostituzione: $\begin{cases} 4x + y - 6 = 0 \\ 2x + 3y - 8 = 0 \end{cases}$
Disequazione di 1^grado Punti 1,5	Risolvi e traccia il grafico delle soluzioni: $-3(X+2) > -6(3X-3) + 6$

Copia il testo che intendi svolgere ed esegui, nell'ordine da te preferito.