

EQUAZIONI DI PRIMO GRADO

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(A.S. 2014/2015)

$$255) \frac{1}{2} \left(\frac{1}{2} - 3x \right) + \frac{3}{8}x = \frac{1}{4}x \left(x - \frac{1}{2} \right) - \left(\frac{1}{2}x + 1 \right)^2 ;$$

$$\frac{1}{4} - \frac{3}{2}x + \frac{3}{8}x = \frac{1}{4}x^2 - \frac{1}{8}x - \left(\frac{1}{4}x^2 + 1 + 1x \right);$$

$$\frac{1}{4} - \frac{3}{2}x + \frac{3}{8}x = \frac{1}{4}x^2 - \frac{1}{8}x - \frac{1}{4}x^2 - 1 - 1x;$$

$$-\frac{3}{2}x + \frac{3}{8}x + 1x - \frac{1}{8} = -\frac{1}{4} - 1;$$

$$-12x + 3x + 8x - 1 = -2 - 8;$$

$$0x = -10 \quad \text{IMPOSSIBILE}$$

$$260) 3 \cdot (x-2) + (x+2) \cdot 4x = 2x(x-2);$$

$$3x - 6 + 4x^2 + 8x = 2x^2 - 4x;$$

$$3x + 4x^2 - 8x - 2x^2 + 4x - 6 = 0; \quad (x-2) = 0; x = 2$$

$$2x^2 - x - 6 = 0; (x-2)(2x+3) = 0 \begin{cases} (2x+3) = 0; 2x = -3; x = -\frac{3}{2} \end{cases}$$

556) Trova 3 numeri consecutivi che hanno per somma 99

$$\begin{array}{l} D \left\{ \begin{array}{l} 1^{\circ}N + 2^{\circ}N + 3^{\circ}N = 99 \\ 1^{\circ}N, 2^{\circ}N, 3^{\circ}N \text{ CONSECUTIVI FRA LORO} \end{array} \right. \\ A \\ T \\ I \end{array}$$

$$\begin{array}{l} 1^{\circ}N = ? \\ 2^{\circ}N = ? \\ 3^{\circ}N = ? \end{array}$$

Si pone $1^{\circ}N = x$
 $2^{\circ}N = x+1$
 $3^{\circ}N = x+2$

$$\begin{array}{l} 1^{\circ}N = 32 \\ 2^{\circ}N = 33 \\ 3^{\circ}N = 34 \end{array}$$

$$\begin{array}{l} 1^{\circ}N + 2^{\circ}N + 3^{\circ}N = 99; \\ x + (x+1) + (x+2) = 99; \end{array}$$

$$3x = 99 - 3;$$

$$3x = 96;$$

$$x = 32$$

• Trovare 3 numeri pari consecutivi la cui somma è 366

$$\begin{cases} 1^{\circ}N + 2^{\circ}N + 3^{\circ}N = 366 \\ A \\ T \\ I \end{cases}$$

$$1^{\circ}N = 2m$$

$$2^{\circ}N = 2m + 2$$

$$3^{\circ}N = 2m + 4$$

$$2m + 2m + 2 + 2m + 4 = 366;$$

$$6m = 360;$$

$$m = 60$$

$$\begin{cases} 1^{\circ}N = 60 \cdot 2 = 120 \\ 2^{\circ}N = 62 \cdot 2 + 2 = 122 \\ 3^{\circ}N = 64 \cdot 2 + 4 = 124 \end{cases}$$

558) Trovare 2 numeri la cui somma è 80 e il cui rapporto è $\frac{1}{3}$.

$$1^{\circ}N = x \rightarrow \frac{x}{2^{\circ}N} = \frac{1}{3}; \quad 2^{\circ}N = 3x$$

$$x + 3x = 80$$

$$4x = 80$$

$$x = 20$$

$$\begin{cases} 1^{\circ}N = 20 \\ 2^{\circ}N = 3x = 3 \cdot 20 = 60 \end{cases}$$

$$196) \frac{3}{5} + \frac{2+3x}{2} = \frac{7}{10};$$

$$6 + 10 + 15x = 7;$$

$$15x = 7 - 6 - 10;$$

$$15x = -9; \quad x = -\frac{9}{15}; \quad x = -\frac{3}{5}$$

$$206) 3x - \frac{3-9x}{5} + 7 = 0;$$

$$15x - 3 + 9x + 35 = 0;$$

$$15x + 9x = 3 - 35;$$

$$24x = -32; \quad x = -\frac{32}{24}; \quad x = -\frac{4}{3}$$

$$2011) 4(3-2x) = \frac{5(2-3x)}{2};$$

$$12 - 8x = \frac{10 - 15x}{2};$$

$$24 - 16x = 10 - 15x;$$

$$-16x + 15x = 10 - 24;$$

$$-x = -14;$$

$$x = 14$$

$$216) 4\left(\frac{1}{2} - 2\right) + 3\left(4x - \frac{1}{2}\right) = 1;$$

$$2 - 8 + 12x - \frac{3}{2} = 1;$$

$$12x = 1 - 2 + 8 + \frac{3}{2};$$

$$12x = \frac{2 - 4 + 16 + 3}{2};$$

$$12x = \frac{17}{2}; \quad 24x = 17; \quad x = \frac{17}{24}$$

$$221) 7[3+2(x-1)] = 4x - \frac{x-1}{2};$$

$$7[3+2x-2] = 4x - \frac{x-1}{2};$$

$$21+14x-14 = 4x - \frac{x-1}{2};$$

$$42+28x-28 = 8x - x + 1;$$

$$28x - 8x + x = -42 + 28 + 1;$$

$$21x = -13; x = -\frac{13}{21}$$

$$226) 6\left(\frac{9}{10} + \frac{2}{5}x\right) - \frac{5}{3}\left(\frac{4}{5}x + \frac{2}{3}\right) = \frac{17^2}{45};$$

$$\frac{27}{5} + \frac{12}{5}x - \frac{4}{3}x - \frac{10}{9} = \frac{17^2}{45};$$

$$243 + 108x - 60x - 50 = 17^2;$$

$$108x - 60x = -243 + 50 + 289;$$

$$48x = 96; x = \frac{96}{48}; x = 2$$

$$231) 3[2-5(2x-3)+x] - 5(5-3x) = 2(x-1);$$

$$3[2-10x+15+x] - 25 + 15x = 2x - 2;$$

$$6 - 30x + 45 + 3x - 25 + 15x = 2x - 2;$$

$$-30x + 3x + 15x - 2x = -6 - 45 + 25 - 2;$$

$$-14x = -28; 14x = 28; x = 2$$

$$236) x(2x+3) + \frac{x^2}{5} + 8x = \frac{x(x+1)}{5} + 2x^2 - 54;$$

$$2x^2 + 3x + \frac{x^2}{5} + 8x = \frac{x^2+x}{5} + 2x^2 - 54;$$

$$15x + x^2 + 40x = x^2 + x - 270;$$

$$54x = -270; x = -5$$

$$241) \frac{5(x-2)}{4} - \frac{x}{12} + 5 + x = \frac{5+x}{2} - \frac{x}{2};$$

$$\frac{5x-10}{4} - \frac{x}{12} + 5+x = \frac{5+x}{2} - \frac{x}{2};$$

$$15x - 30 - x + 60 + 12x = 30 + 6x - 6x;$$

$$26x = 0; x = 0$$

$$246) 5x+1 = \left\{ 3 \left[\frac{2x-1}{6} - 1 + \frac{1}{2} \left(\frac{x+1}{9} + 2 \right) \right] - 1 \right\} 3;$$

$$5x+1 = \left\{ 3 \left[\frac{2x-1}{6} - 1 + \frac{1}{2} \left(\frac{x+1+18}{9} \right) \right] - 1 \right\} 3;$$

$$5x+1 = \left\{ 3 \left[\frac{2x-1}{6} - 1 + \frac{1}{18}x + \frac{19}{18} \right] - 1 \right\} 3;$$

$$5x+1 = \left\{ x - \frac{1}{2} - 3 + \frac{3x}{186} + \frac{19}{6} - 1 \right\} 3;$$

$$5x+1 = 3x - \frac{3}{2} - 9 + \frac{1}{2}x + \frac{19}{2} - 3;$$

$$10x+2 = 6x - 3 - 18 + 1x + 19 - 6;$$

$$10x - 6x - x = -3 - 18 + 19 - 6 - 2;$$

$$3x = -10; x = -\frac{10}{3}$$

$$251) \left[-\frac{1}{2}(x+1) - \frac{1}{4}x + \frac{1}{2}(3+x) \right] : \left(-\frac{3}{4} \right) = \left(-\frac{4}{3} \right) [(x-1)^2 - x(x-1)];$$

$$\left[-\frac{1}{2}x - \frac{1}{2} - \frac{1}{4}x + \frac{3}{2} + \frac{1}{2}x \right] \cdot \left(-\frac{4}{3} \right) = \left(-\frac{4}{3} \right) [(x^2 - 2x + 1) - x^2 + x];$$

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

$$4x + 4 + 2x - 12 - 4x = 8x - 8;$$

$$-6x = -8 - 4 + 12;$$

$$-6x = 0; 6x = -0; x = -0/6; x = 0$$

$$560) \frac{35}{m} - \frac{14}{m} = 7 \quad \text{C.E.: } m \neq 0$$

$$35 - 14 = 7m;$$

$$-7m = -35 + 14;$$

$$7m = 21; m = \frac{21}{7}; m = 3 \text{ ACCETTABILE}$$

$$565) \frac{m}{2} + \frac{m+1}{2} = k; \quad \begin{array}{l} \text{SI PONE I}^\circ \text{N INTERO } m \\ \text{II}^\circ \text{N INTERO } m+1 \end{array} \quad I = \mathbb{N}$$

$$m + m + 1 = 2k;$$

$$\frac{2m}{2} = \frac{2k-1}{2};$$

NON ACCETTABILE PERCHÉ
 $\frac{2k-1}{2} \notin \mathbb{N}$

$$256) \frac{1-2x}{2-\frac{3}{4}} - \frac{x-4}{3-\frac{5}{4}} = \frac{1}{2} \left(x + \frac{1}{3} \right) + \frac{23-39x}{42};$$

$$\frac{1+\frac{2}{3}}{1-\frac{3}{4}} \quad \frac{1-\frac{3}{4}}{1-\frac{5}{4}}$$

$$\frac{1-2x}{\frac{5}{4} \cdot \frac{3}{5}} - \frac{x-4}{\frac{7}{4} \cdot \frac{4}{7}} = \frac{1}{2}x + \frac{1}{6} + \frac{23-39x}{42};$$

$$\frac{1-2x}{\frac{3}{4}} - \frac{x-4}{7} = \frac{1}{2}x + \frac{1}{6} + \frac{23-39x}{42};$$

$$(1-2x) \cdot \frac{4}{3} - 7x + 28 = \frac{1}{2}x + \frac{1}{6} + \frac{23-39x}{42};$$

$$\frac{4}{3} - \frac{8x}{3} - 7x + 28 = \frac{1}{2}x + \frac{1}{6} + \frac{23-39x}{42};$$

$$56 - 112x - 6x + 28 = 21x + 7 + 23 - 39x;$$

$$-112x - 6x - 21x + 39x = -56 - 28 + 7 + 23;$$

$$-100x = -50;$$

$$100x = 50; x = \frac{50}{100}; x = \frac{1}{2}$$

$$335) \frac{x}{x-1} + 5 = 2;$$

$$\text{C.E.: } x \neq 1$$

$$\text{m.c.m.} = x-1$$

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

$$x + 5x - 5 = 2x - 2;$$

$$x + 5x - 2x = 5 - 2;$$

$$4x = 3; \quad x = \frac{3}{4} \quad \text{ACCETTABILE}$$

$$\bullet \frac{1}{x} + \frac{1}{3x} + \frac{5}{4x} = 2;$$

$$\text{C.E.: } x \neq 0$$

$$12 + 4 + 15 = 24x;$$

$$-24x = -12 - 4 - 15;$$

$$24x = 31;$$

$$x = \frac{31}{24} \quad \text{ACCETT.}$$

$$\bullet \frac{6}{x-5} + \frac{x}{5-x} = 1;$$

$$\text{C.E. } x \neq 5$$

$$\text{m.c.m.} = x-5$$

$$\frac{6}{x-5} - \frac{x}{x-5} = 1$$

$$6 - x = x - 5;$$

$$-x - x = -6 - 5;$$

$$-2x = -11;$$

$$2x = 11; \quad x = 11/2$$

$$\bullet \frac{2x}{x-3} - \frac{5}{x} = \frac{6x}{3x-9} + \frac{1}{3x};$$

$$\text{C.E.: } x \neq 3$$

$$x \neq 0$$

$$\frac{2x}{x-3} - \frac{5}{x} = \frac{6x}{3(x-3)} + \frac{1}{3x}; \quad \text{m.c.m.} = 3x(x-3)$$

$$3x(2x) - (3x-9) \cdot 5 = 6x^2 + 2(x-3);$$

$$6x^2 - 15x + 45 = 6x^2 + 2x - 6;$$

$$-15x - 2x = -45 - 6;$$

$$+17x = +51;$$

$$x = \frac{51}{17}; \quad x = 3; \quad \text{EQ. NON ACCETTABILE; EQ. IMPOSSIBILE}$$