

Equazioni di secondo grado riconducibili al primo. Complete di verifica e di soluzione guidata.
Solved Linear Equations

$$1. \quad \frac{3 \cdot (x-3)^2}{4} + \frac{1}{4} + (x+2)^2 = \frac{3}{4}x^2 - 6 + (x+1) \cdot (x-1) + 4x$$

[4]
[soluzione](#)

$$2. \quad \frac{(2-3x) \cdot (1+3x)}{9} + \frac{(3x-2)^2}{9} + \frac{5}{6} = 2x - \frac{5x+1}{4}$$

[1]
[soluzione](#)

$$3. \quad \left(\frac{3}{5} + x\right)^2 = x \cdot \left(x - \frac{6}{25}\right) + \frac{9}{5}$$

[1]
[soluzione](#)

$$4. \quad \left(\frac{1}{2}x - \frac{3}{4}\right) \cdot \left(\frac{1}{2}x + \frac{3}{4}\right) = \left(\frac{1}{2}x + \frac{1}{4}\right)^2 + \frac{1}{4}x$$

$\left[-\frac{5}{4}\right]$
[soluzione](#)

$$5. \quad 2 + x + (x+1)(x-1) = -\frac{x+1}{3} - \frac{2}{9} + (x-1)^2$$

$\left[-\frac{1}{6}\right]$
[soluzione](#)

$$6. \quad x^2 - \frac{(x-1)^2}{3} - \frac{(x-2)^2}{3} = 2 + \frac{(x-2)(x+2)}{3}$$

$\left[\frac{7}{6}\right]$
[soluzione](#)

$$7. \quad x + \frac{4}{5}x - 36 = \sqrt{x^2 - \left(\frac{4}{5}x\right)^2}$$

[18]
[soluzione](#)

Soluzioni

$$\frac{3 \cdot (x-3)^2}{4} + \frac{1}{4} + (x+2)^2 = \frac{3}{4}x^2 - 6 + (x+1)(x-1) + 4x$$

$$4 \cdot \frac{3 \cdot (x^2 - 6x + 9) + 1 + 4 \cdot (x^2 + 4x + 4)}{4} = \frac{3x^2 - 4 \cdot 6 + 4 \cdot (x^2 - 1) + 4 \cdot 4x}{4} \cdot 4$$

$$3x^2 - 18x + 27 + 1 + 4x^2 + 16x + 16 = 3x^2 - 24 + 4x^2 - 4 + 16x$$

$$-18x = -24 - 4 - 27 - 1 - 16$$

$$-18x = -72$$

$$9x = 36$$

$$3x = 12$$

$$x = \frac{12}{3} = 4$$

Oppure

$$\frac{3 \cdot (x-3)^2}{4} + \frac{1}{4} + (x+2)^2 = \frac{3}{4}x^2 - 6 + (x+1)(x-1) + 4x$$

$$\frac{3 \cdot (x^2 - 6x + 9)}{4} + \frac{1}{4} + (x^2 + 4x + 4) = \frac{3}{4}x^2 - 6 + (x^2 - 1) + 4x$$

$$\frac{3x^2 - 18x + 27}{4} + \frac{1}{4} + x^2 + 4x + 4 = \frac{3}{4}x^2 - 6 + x^2 - 1 + 4x$$

$$\frac{3}{4}x^2 - \frac{18}{4}x + \frac{27}{4} + \frac{1}{4} + 4x + 4 = \frac{3}{4}x^2 - 6 - 1 + 4x$$

$$-\frac{18}{4}x + 4x - 4x = -6 - 1 - \frac{27}{4} - \frac{1}{4} - 4$$

$$-\frac{18}{4}x = -11 - \frac{28}{4}$$

$$-\frac{18}{4}x = -11 - 7$$

$$x = -18 \cdot \left(-\frac{4}{18}\right) = +4$$

$$\frac{3 \cdot (4-3)^2}{4} + \frac{1}{4} + (4+2)^2 = \frac{3}{4}4^2 - 6 + (4+1)(4-1) + 16$$

$$\frac{3}{4} + \frac{1}{4} + 36 = \frac{3}{4}4 - 6 + (5)(3) + 16$$

$$1 + 36 = 12 - 6 + 15 + 16$$

$$37 = 37$$

$$\frac{(2-3x) \cdot (1+3x)}{9} + \frac{(3x-2)^2}{9} + \frac{5}{6} = 2x - \frac{5x+1}{4}$$

$$\frac{(2-3x) \cdot (1+3x)}{9} + \frac{(3x-2)^2}{9} + \frac{5}{6} = 2x - \frac{5x+1}{4}$$

$$\frac{2+6x-3x-9x^2}{9} + \frac{9x^2-12x+4}{9} + \frac{5}{6} = 2x - \frac{5x+1}{4}$$

$$4 \cdot (2+3x-9x^2) + 4 \cdot (9x^2-12x+4) + 30 = 72x - 9 \cdot (5x+1)$$

$$8+12x-36x^2+36x^2-48x+16+30 = 72x-45x-9$$

$$+12x-48x-72x+45x = -9-8-16-30$$

$$-63x = -63$$

$$x = 1$$

$$\frac{(2-3x) \cdot (1+3x)}{9} + \frac{(3x-2)^2}{9} + \frac{5}{6} = 2x - \frac{5x+1}{4}$$

$$\frac{(2-3) \cdot (1+3)}{9} + \frac{(3-2)^2}{9} + \frac{5}{6} = 2 - \frac{5+1}{4}$$

$$\frac{(-1) \cdot (4)}{9} + \frac{(1)^2}{9} + \frac{5}{6} = 2 - \frac{6}{4}$$

$$-\frac{4}{9} + \frac{1}{9} + \frac{5}{6} = \frac{8-6}{4}$$

$$\frac{-8+2+15}{18} = \frac{8-6}{4}$$

$$\frac{9}{18} = \frac{2}{4}$$

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

Oppure

$$\frac{2+6x-3x-9x^2}{9} + \frac{9x^2-12x+4}{9} + \frac{5}{6} = 2x - \frac{5x+1}{4}$$

$$\frac{2}{9} + \frac{3}{9}x - \frac{9}{9}x^2 + \frac{9}{9}x^2 - \frac{12}{9}x + \frac{4}{9} + \frac{5}{6} = \frac{2}{1}x - \frac{5}{4}x - \frac{1}{4}$$

$$\frac{2}{9} + \frac{3}{9}x - \frac{12}{9}x + \frac{4}{9} + \frac{5}{6} = \frac{2}{1}x - \frac{5}{4}x - \frac{1}{4}$$

$$+\frac{3}{9}x - \frac{12}{9}x - \frac{2}{1}x + \frac{5}{4}x = -\frac{1}{4} - \frac{2}{9} - \frac{4}{9} - \frac{5}{6}$$

$$+12-48-72+45 \quad x = \frac{-9-8-16-30}{36}$$

$$-\frac{63}{36}x = -\frac{63}{36}$$

$$x = -\frac{63}{36} \cdot \left(-\frac{36}{63}\right) = 1$$

$$\left(\frac{3}{5} + x\right)^2 = x \cdot \left(x - \frac{6}{25}\right) + \frac{9}{5}$$

$$\frac{9}{25} + \frac{6}{5}x + x^2 = x^2 - \frac{6}{25}x + \frac{9}{5}$$

$$\frac{6}{5}x + \frac{6}{25}x = +\frac{9}{5} - \frac{9}{25}$$

$$\frac{30+6}{25}x = \frac{45-9}{25}$$

$$\frac{36}{25}x = \frac{36}{25}$$

$$x = 1$$

Verifica

$$\left(\frac{3}{5} + x\right)^2 = x \cdot \left(x - \frac{6}{25}\right) + \frac{9}{5}$$

$$\left(\frac{3}{5} + 1\right)^2 = 1 \cdot \left(1 - \frac{6}{25}\right) + \frac{9}{5}$$

$$\left(\frac{8}{5}\right)^2 = \frac{19}{25} + \frac{9}{5}$$

$$\frac{64}{5} = \frac{19+45}{25}$$

$$\frac{64}{5} = \frac{64}{25}$$

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

$$\frac{1}{4}x^2 - \frac{9}{16} = \frac{1}{4}x^2 + \frac{1}{4}x + \frac{1}{16} + \frac{1}{4}x$$

$$-\frac{1}{4}x - \frac{1}{4}x = +\frac{1}{16} + \frac{9}{16}$$

$$-\frac{2}{4}x = +\frac{10}{16}$$

$$x = +\frac{10}{16} \cdot \left(-\frac{2}{1}\right) = -\frac{5}{4}$$

Verifica

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

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

$$\left(-\frac{5}{8} - \frac{3}{4}\right) \cdot \left(-\frac{5}{8} + \frac{3}{4}\right) = \left(-\frac{5}{8} + \frac{1}{4}\right)^2 - \frac{5}{16}$$

$$\left(-\frac{11}{8}\right) \cdot \left(\frac{1}{8}\right) = \left(-\frac{3}{8}\right)^2 - \frac{5}{16}$$

$$-\frac{11}{64} = +\frac{9}{64} - \frac{5}{16}$$

$$-\frac{11}{64} = \frac{9-20}{64}$$

$$-\frac{11}{64} = -\frac{11}{64}$$

$$2 + x + (x + 1)(x - 1) = -\frac{x + 1}{3} - \frac{2}{9} + (x - 1)^2$$

$$2 + x + x^2 - 1 = -\frac{x + 1}{3} - \frac{2}{9} + x^2 - 2x + 1$$

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

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

$$27x - 3(x + 1) - 2$$

$$27x = -3x - 3 - 2$$

$$27x + 3x = -5$$

$$x = -\frac{5}{30} = -\frac{1}{6}$$

Verifica

$$2 + x + (x + 1)(x - 1) = -\frac{x + 1}{3} - \frac{2}{9} + (x - 1)^2$$

$$2 - \frac{1}{6} + \left(-\frac{1}{6} + 1\right)\left(-\frac{1}{6} - 1\right) = -\frac{-\frac{1}{6} + 1}{3} - \frac{2}{9} + \left(-\frac{1}{6} - 1\right)^2$$

$$2 - \frac{1}{6} + \frac{5}{6} \cdot \left(-\frac{7}{6}\right) = -\frac{5}{6} \cdot \frac{1}{3} - \frac{2}{9} + \left(-\frac{7}{6}\right)^2$$

$$2 - \frac{1}{6} - \frac{35}{36} = -\frac{5}{18} - \frac{2}{9} + \frac{49}{36}$$

$$\frac{72 - 6 - 35}{36} = \frac{-10 - 8 + 49}{36}$$

$$\frac{31}{36} = \frac{31}{36}$$

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

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

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

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

Oppure

$$3 \cdot \frac{3x^2 - (x^2 - 2x + 1) - (x^2 - 4x + 4)}{3} = \frac{6 + (x^2 - 4)}{3} \cdot 3$$

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

$$2x + 4x = 6 + 1$$

$$6x = 7$$

$$x = \frac{7}{6}$$

Verifica

$$\frac{49}{36} - \frac{\left(\frac{7}{6} - 1\right)^2}{3} - \frac{\left(\frac{7}{6} - 2\right)^2}{3} = 2 + \frac{\left(\frac{7}{6} - 2\right)\left(\frac{7}{6} + 2\right)}{3}$$

$$\frac{49}{36} - \frac{1}{36} \cdot \frac{1}{3} - \frac{25}{36} \cdot \frac{1}{3} = 2 + \frac{\frac{49}{36} - 4}{3}$$

$$\frac{49}{36} - \frac{1}{108} - \frac{25}{108} = 2 + \frac{49 - 144}{36} \cdot \frac{1}{3}$$

$$\frac{147 - 1 - 25}{108} = 2 - \frac{95}{108}$$

$$\frac{121}{108} = \frac{216 - 95}{108}$$

$$\frac{121}{108} = \frac{121}{108}$$

$$x + \frac{4}{5}x - 36 = \sqrt{x^2 - \left(\frac{4}{5}x\right)^2}$$

$$x + \frac{4}{5}x - \sqrt{x^2 - \frac{16}{25}x^2} = 36$$

$$x + \frac{4}{5}x - \sqrt{\frac{9}{25}x^2} = 36$$

$$x + \frac{4}{5}x - \frac{3}{5}x = 36$$

$$\frac{5 + 4 - 3}{5}x = 36$$

$$\frac{6}{5}x = 36$$

$$x = 36 \cdot \frac{5}{6} = 30$$

Verifica

$$x + \frac{4}{5}x - 36 = \sqrt{x^2 - \left(\frac{4}{5}x\right)^2}$$

$$30 + \frac{4}{5}30 - 36 = \sqrt{30^2 - \left(\frac{4}{5}30\right)^2}$$

$$30 + 24 - 36 = \sqrt{900 - 24^2}$$

$$54 - 36 = \sqrt{900 - 576}$$

$$18 = \sqrt{324}$$

$$18 = 18$$

Keywords



Algebra, equazioni, equazioni di primo grado, problemi traducibili in equazioni, esercizi con soluzioni



Algebra, equation, linear equations, Algebraic Equations solved, Problems and equations, Problem solving, exercises with solution



Algebra, ecuación, ecuaciones de primero grado



Algèbre, équations, système d'équations, équations en première



Algebra, Gleichung, die Gleichung

Arabic: معادله

Chinese (Simplified): 方程式

Chinese (Traditional): 等式

Czech: rovnice

Danish: ligning

Estonian: võrrand

Finnish: yhtälö

Greek: εξίσωση

Hungarian: kiegyenlítés; egyenlet

Icelandic: jafna

Indonesian: persamaan

Italian: equazione

Japanese: 方程式

Korean: 방정식

Latvian: vienādojums

Lithuanian: lygtis

Norwegian: likning, det å betrakte som lik

Polish: równanie

Portuguese: equação

Romanian: ecuație

Russian: уравнение

Slovak: rovnica

Slovenian: enačba

Swedish: ekvation

Turkish: eşitlik