

ESERCIZI IN PIÙ

I SISTEMI DI SECONDO GRADO

Risolvi i seguenti sistemi nelle incognite x, y e z (dove compare).

$$1 \quad \begin{cases} x^2 + y^2 - 4x - 4y + 6 = 0 \\ (y-1)^2 = y^2 + 3\left(x + \frac{1}{3}\right) - 3y \end{cases} \quad \left[(1; 3), \left(\frac{3}{5}; \frac{9}{5}\right) \right]$$

$$2 \quad \begin{cases} \frac{2+y}{y} - \frac{1}{x-1} = \frac{8}{y(x-1)} \\ (x+1)^2 - y(1-x) = x(x+2+y) - x \end{cases} \quad [(3; 4), (-4; -3)]$$

$$3 \quad \begin{cases} x + z = 4 \\ y^2 + 2xy - 8 = 0 \\ y + x = 3 \end{cases} \quad [(-1; 4; 5), (1; 2; 3)]$$

$$4 \quad \begin{cases} xy = 9b^2 - 6ab \\ x + y = 6b - 2a \end{cases} \quad [(3b; 3b - 2a), (3b - 2a; 3b)]$$

$$5 \quad \begin{cases} y - 2 = 1 - (2 - x) \\ xy - y^2 = 6 - (1 - 2x)^2 \end{cases} \quad \left[\left(-\frac{3}{4}; \frac{1}{4}\right), (2; 3) \right]$$

$$6 \quad \begin{cases} \frac{x^2}{2a} - \frac{x}{2} - \frac{2y}{a} = 0 \\ x + y = a \end{cases} \quad (a \neq 0) \quad [(a; 0), (-4; 4 + a)]$$

$$7 \quad \begin{cases} 2x^2 + 2y^2 = 5 \\ 2x + 2y = 3\sqrt{2} \end{cases} \quad \left[\left(\frac{1}{\sqrt{2}}; \sqrt{2}\right), \left(\sqrt{2}; \frac{1}{\sqrt{2}}\right) \right]$$

$$8 \quad \begin{cases} \frac{3-2x}{5} + y = \frac{6}{5}y \\ \frac{x}{x-1} + \frac{y}{(x-1)(x-2)} = -\frac{1}{x-2} \end{cases} \quad [\text{impossibile}]$$

$$9 \quad \begin{cases} 3abx + 6aby = 2a^2b^2 + 9 + 3aby \\ 2xy - 8 = -4 \end{cases} \quad (ab \neq 0) \quad \left[\left(\frac{2ab}{3}; \frac{3}{ab}\right), \left(\frac{3}{ab}; \frac{2ab}{3}\right) \right]$$

$$10 \quad \begin{cases} 4(y-x) = -8\sqrt{2} \\ xy = x - \sqrt{2} \end{cases} \quad [(\sqrt{2} + 2; 2 - \sqrt{2}), (\sqrt{2} - 1; -1 - \sqrt{2})]$$

$$11 \quad \begin{cases} 32(x^2 + y^2) = 29 \\ 4x + 4y = 5 \end{cases} \quad \left[\left(\frac{7}{8}; \frac{3}{8}\right), \left(\frac{3}{8}; \frac{7}{8}\right) \right]$$

$$12 \quad \begin{cases} \left(x + \frac{1}{3}\right)\left(y - \frac{1}{2}\right) = -4 \\ x - \frac{1}{2} - \left(y - \frac{3}{5}\right) = 1 \end{cases} \quad [\text{impossibile}]$$

$$13 \quad \begin{cases} x^2 + y^2 = 2b^2 + a^2 - 2ab \\ x + y = a - 2b \end{cases} \quad [(-b; a-b), (a-b; -b)]$$

$$14 \quad \begin{cases} 2a(y+3) + x^2 = 1 \\ 4a^2 + 1 - x + y = (1-2a)^2 \end{cases} \quad [(2a-1; -2a-1), (1-4a; 1-8a)]$$

$$15 \quad \begin{cases} x^2 + y^2 = 26 \\ 2x + 4y = 6 \end{cases} \quad \left[\left(-\frac{19}{5}; \frac{17}{5} \right), (5; -1) \right]$$

$$16 \quad \begin{cases} x^2 + y^2 = 35 \\ x + 2\sqrt{2} = 3\sqrt{3} - y \end{cases} \quad [(-2\sqrt{2}; 3\sqrt{3}), (3\sqrt{3}; -2\sqrt{2})]$$

$$17 \quad \begin{cases} y^2 - 2b^2 = \frac{2b^2 - bxy}{2} \\ bx - 2b = 2y \end{cases} \quad (b \neq 0) \quad \left[\left(-1; -\frac{3}{2}b \right), (4; b) \right]$$

$$18 \quad \begin{cases} x + 2y + z = 0 \\ 2x - z = 1 \\ 2z^2 + 8x^2 - 8xz - 2 = 0 \end{cases} \quad \left[\text{infinita soluzioni del tipo } \left(\alpha; \frac{1-3\alpha}{2}; 2\alpha-1 \right) \forall \alpha \in \mathbb{R} \right]$$

$$19 \quad \begin{cases} 3x^2 + xy + y^2 = 15 \\ 2x + y = 5 \end{cases} \quad [(2; 1), (1; 3)]$$

$$20 \quad \begin{cases} x^2 + y^2 - 3xy = 7 + 3\sqrt{10} \\ x + y = \sqrt{2} - \sqrt{5} \end{cases} \quad [(\sqrt{2}; -\sqrt{5}), (-\sqrt{5}; \sqrt{2})]$$

$$21 \quad \begin{cases} m^2 + x + y + 4xy = 4(xy+1) + (m^2-2) \\ xy = \frac{m^2-1}{m^2} \end{cases} \quad (m \neq 0) \quad \left[\left(\frac{m+1}{m}; \frac{m-1}{m} \right), \left(\frac{m-1}{m}; \frac{m+1}{m} \right) \right]$$

Risolvi i seguenti sistemi simmetrici di secondo grado nelle incognite x e y .

$$22 \quad \begin{cases} x - a + 3b = -y \\ 2xy = -8b(a+b) \end{cases} \quad [(a+b; -4b), (-4b; a+b)]$$

$$23 \quad \begin{cases} ax + x + ay + y = 2a^2 + 2a \\ a^2 = xy + 1 \end{cases} \quad (a \neq -1) \quad [(a-1; a+1), (a+1; a-1)]$$

$$24 \quad \begin{cases} abx + a^2 = b^2 - aby \\ xy = -1 \end{cases} \quad (a \cdot b \neq 0) \quad \left[\left(-\frac{a}{b}; \frac{b}{a} \right), \left(\frac{b}{a}; -\frac{a}{b} \right) \right]$$

$$25 \quad \begin{cases} 2x - a = -2y + 3b \\ 2xy + a^2 = b^2 \end{cases} \quad \left[\left(a+b; \frac{b-a}{2} \right), \left(\frac{b-a}{2}; a+b \right) \right]$$

$$26 \quad \begin{cases} xy = -(b+2) \\ x + y = \frac{-a^2 + b + 2}{a} \end{cases} \quad (a \neq 0) \quad \left[\left(-a; \frac{b+2}{a} \right), \left(\frac{b+2}{a}; -a \right) \right]$$