

ESERCIZI IN PIÙ

ESERCIZI DI FINE CAPITOLO

■ Equazioni numeriche fratte

Risolvi le seguenti equazioni numeriche fratte.

$$1 \quad \frac{2x^2 + 1}{x^2 - x - 20} + 6x + 2 = \frac{6x^2 - 26x - 15}{x - 5} \quad [7]$$

$$2 \quad \frac{2x^3 + 4x^2 + 18}{x^2 + 8x + 15} + \frac{2x + 2}{x + 3} = -1 + \frac{15 - 9x}{x + 5} + 2x \quad [1]$$

$$3 \quad 3x^2 + 5x + 7 + \frac{2x^3 + 3x + 16}{x^2 + x} = \frac{10x^3 + 12x + 4}{x} - \frac{2 + 7x^3}{x + 1} \quad [3]$$

$$4 \quad \frac{3x + 2}{x^2 - 4} + \frac{4x^2 + 5x + 1}{x^2 - 5x + 6} = \frac{x + 17}{x - 3} + \frac{3x + 2}{x - 2} \quad \left[-\frac{19}{7} \right]$$

$$5 \quad \frac{128x + 16}{x^2 + 12x} - 6 + \frac{8x^2 + 2}{x} = 8x + \frac{10 - 6x}{x} \quad \left[\frac{2}{3} \right]$$

$$6 \quad \frac{3x + 3}{2x} + \frac{5x^2 + 4x + 1}{(x - 2)} = \frac{61x - 116}{2(x - 2)^2} + 5x + \frac{31}{2} \quad [1]$$

■ Equazioni letterali intere

Risolvi le seguenti equazioni letterali intere.

$$7 \quad 2ax - b(2 + 3x) + 5a = 3bx(1 - a) + 3bx(a - 2) \quad \left[a \neq 0, x = \frac{2b - 5a}{2a}; a = 0 \wedge b = 0, \text{indet.}; a = 0 \wedge b \neq 0, \text{imp.} \right]$$

$$8 \quad 2b(x + 2b) + 3ax = (3a - x)^2 - x(x - 6a) \quad \left[b \neq -\frac{3}{2}a, x = 3a - 2b; b = -\frac{3}{2}a, \text{indet.} \right]$$

$$9 \quad a(2x - 5b) + \frac{3}{2}bx - 3ab = 3b\left(\frac{1}{2}x - a\right) + b(x - 3b) + 2a^2 \quad [b \neq 2a, x = a + 3b; b = 2a, \text{indet.}]$$

$$10 \quad ax - 2b + a - 4(bx - 2b + a) = x(2a - b) + 3a - b(1 + 3x) \quad \left[a \neq 0, x = \frac{7b - 6a}{a}; a = 0 \wedge b \neq 0, \text{imp.}; a = 0 \wedge b = 0, \text{indet.} \right]$$

$$11 \quad \left[\left(x + \frac{1}{4}a\right)\left(x - \frac{1}{4}a\right) - x^2 - \frac{1}{16}a^2 \right] a + \left(x + \frac{1}{2}a\right)^3 = x^2\left(\frac{3}{2}a + x\right) + a \quad \left[a \neq 0, x = \frac{4}{3a}; a = 0, \text{indet.} \right]$$

■ Equazioni letterali fratte

Risolvi le seguenti equazioni letterali fratte.

$$12 \quad \frac{b}{x^2 - x} + \frac{2 - 3b}{x} = \frac{1 - b}{1 - x} \quad \left[b \neq \frac{3}{4} \wedge b \neq \frac{1}{2}, x = \frac{2 - 4b}{3 - 4b}; b = \frac{3}{4} \vee b = \frac{1}{2}, \text{imp.} \right]$$

$$13 \quad \frac{(a^2 - a)x}{x^2 - 4} = \frac{a}{x + 2} \cdot \frac{6}{x - 2}$$

$$\left[a \neq 0 \wedge a \neq 1 \wedge a \neq 4 \wedge a \neq -2, x = \frac{6}{a - 1}; a = 0, \text{indet. con } x \neq \pm 2; a = 1 \vee a = 4 \vee a = -2, \text{imp.} \right]$$

$$14 \quad \frac{1 - b}{x - 1} + \frac{2b}{b + 2} = \frac{3b + 1}{x - 1}$$

$$\left[b \neq 0 \wedge b \neq -2, x = 2b + 5; b = 0, \text{indet. con } x \neq 1; b = -2, \text{senza significato} \right]$$

$$15 \quad \frac{b(ax + 1) + 1}{x} - \frac{a + 2b}{2x + 3} = \frac{2abx - a + 2}{2x + 3}$$

$$\left[x = -\frac{b + 1}{ab} \text{ se...} \right]$$

$$16 \quad \frac{ax(a - 2) - 2a}{x + 4} + 2a - 1 = \frac{x^2(a + 1)(a - 1) + 16}{x^2 - 16} + \frac{6a}{x - 4}$$

$$\left[x = -\frac{12}{a} \text{ se...} \right]$$

$$17 \quad \frac{(2x + 1)(2a^2 + 1)}{a^2} - \frac{(2a + 3)(2x - 3)}{(4x + 1)a} = 2 + \frac{(2a^2 + 1)(8x^2 + 3)}{(4x + 1)a^2}$$

$$\left[a \neq \frac{1}{3} \wedge a \neq 0 \wedge a \neq 1, x = \frac{2 - 9a}{6(1 - a)}; a = 1 \vee a = \frac{1}{3}, \text{imp.} \right]$$

$$18 \quad \frac{x}{a(x^2 - 2x + 1)} - \frac{2a}{ax - a} = 0$$

$$\left[a \neq \frac{1}{2} \wedge a \neq 0, x = \frac{2a}{2a - 1}; a = \frac{1}{2}, \text{imp.}; a = 0, \text{senza significato} \right]$$