

EQUAZIONI NUMERICHE INTERE

$$1. \quad \frac{1}{2} \left[-\frac{x-1}{3} \left(\frac{1}{2} - 2 \right) + \frac{1-2x}{6} \right] : 3 = 2 \left(\frac{1}{6} - \frac{x}{3} \right) + \frac{1}{6} \left(5x - \frac{1}{6} \right) + x - \frac{41}{36} x$$

$$\frac{1}{2} \left[-\frac{x-1}{3} \left(-\frac{3}{2} \right) + \frac{1-2x}{6} \right] \cdot \frac{1}{3} = \frac{1}{3} - \frac{2}{3}x + \frac{5}{6}x - \frac{1}{36} + x - \frac{41}{36} x$$

$$\frac{1}{6} \left[\frac{x-1}{2} + \frac{1-2x}{6} \right] = \frac{1}{3} - \frac{2}{3}x + \frac{5}{6}x - \frac{1}{36} + x - \frac{41}{36} x$$

$$\frac{3x-3+1-2x}{36} = \frac{12-24x+30x-1+36x-41x}{36}$$

$$x-2 = x+11$$

$$0x = 13$$

imp.

$$2. \quad \left(2x - \frac{1}{3} \right)^2 + (2-x) \left(2x - \frac{1}{2} \right) - \frac{7}{6}x - 2x(x+1) = 0$$

$$4x^2 - \frac{4}{3}x + \frac{1}{9} + 4x - 1 - 2x^2 + \frac{1}{2}x - \frac{7}{6}x - 2x^2 - 2x = 0$$

$$-24x + 2 + 36x - 18 + 9x - 21x = 0$$

$$0x = 16$$

imp.

$$3. \quad \frac{(2x+2)(1-x)}{3} = \frac{2(1-2x)^2 - 6(x-1)^2}{2} - 3 + \frac{1}{3}(17-5x^2) - 2x$$

$$\frac{2x+2-2x^2-2x}{3} = 1-4x+4x^2-3(x^2-2x+1)-3+\frac{17}{3}-\frac{5}{3}x^2-2x$$

$$\frac{2-2x^2}{3} = 1-4x+4x^2-3x^2+6x-3-3+\frac{17}{3}-\frac{5}{3}x^2-2x$$

$$\frac{2-2x^2}{3} = x^2-5+\frac{17}{3}-\frac{5}{3}x^2$$

$$2-2x^2 = 3x^2-15+17-5x^2$$

$$0x = 0$$

ind.

$$4. \quad \left(2x - \frac{3}{4} \right)^2 + 2x \left(\frac{1}{5} - 2x \right) + \frac{5}{3} = \frac{x^2+1}{4} - 3x \left(2 + \frac{1}{12}x \right) - \frac{3}{5}(2-5x) + \frac{2}{5}x$$

$$4x^2 - 3x + \frac{9}{16} + \frac{2}{5}x - 4x^2 + \frac{5}{3} = \frac{x^2+1}{4} - 6x - \frac{1}{4}x^2 - \frac{6}{5} + 3x + \frac{2}{5}x$$

$$\frac{9}{16} + \frac{5}{3} = \frac{1}{4} - \frac{6}{5}$$

$$\frac{107}{48} = -\frac{19}{20}$$

imp.

$$5. \left(\frac{x + \frac{2}{3}}{3 - \frac{1}{5}} - \frac{x - \frac{1}{4}}{1 + \frac{1}{6}} \right) : \left(1 - \frac{3}{7} \right) = \frac{3x - 1}{4 - \frac{3}{2}} \cdot \left[\left(\frac{2}{5} + \frac{1}{3} \right) - \frac{1}{15} \right]$$

$$\left[\frac{5}{14} \left(x + \frac{2}{3} \right) - \frac{6}{7} \left(x - \frac{1}{4} \right) \right] : \frac{4}{7} = \frac{2}{5} (3x - 1) \cdot \left[\frac{11}{15} - \frac{1}{15} \right]$$

$$\left[\frac{5}{14} x + \frac{5}{21} - \frac{6}{7} x + \frac{3}{14} \right] \cdot \frac{7}{4} = \frac{2}{5} (3x - 1) \cdot \frac{10}{15}$$

$$\frac{5}{8} x + \frac{5}{12} - \frac{3}{2} x + \frac{3}{8} = \frac{4}{15} (3x - 1)$$

$$75x + 50 - 180x + 45 = 96x - 32 \quad -201x = -127$$

$$x = \frac{127}{201}$$

$$6. \frac{1 + x^2}{5} - \frac{1}{4} x - \frac{1}{20} = \frac{(x - 1)^2}{5} + \frac{3}{2} - 1$$

$$4 + 4x^2 - 5x - 1 = 4(x^2 - 2x + 1) + 30 - 20$$

$$4 + 4x^2 - 5x - 1 = 4x^2 - 8x + 4 + 30 - 20 \quad 3x = 11$$

$$x = \frac{11}{3}$$

$$7. \frac{1}{10} (x + 2)(x - 2) - \frac{3x - 2}{10} = \frac{(x - 3)^2}{10} + \frac{1}{2} x - \frac{1}{5}$$

$$\frac{1}{10} (x^2 - 4) - \frac{3x - 2}{10} = \frac{x^2 - 6x + 9}{10} + \frac{1}{2} x - \frac{1}{5}$$

$$x^2 - 4 - 3x + 2 = x^2 - 6x + 9 + 5x - 2 \quad -2x = 9$$

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

$$8. \frac{x}{4} - \frac{1}{2} \left(\frac{1}{2} x + \frac{x - 3}{2} - \frac{x + 2}{3} - \frac{x}{4} \right) = \frac{1}{12} (1 - 3x) - \frac{11}{24}$$

$$\frac{x}{4} - \frac{1}{4} x - \frac{x - 3}{4} + \frac{x + 2}{6} + \frac{x}{8} = \frac{1}{12} - \frac{x}{4} - \frac{11}{24}$$

$$-6x + 18 + 4x + 8 + 3x = 2 - 6x - 11 \quad 7x = -35$$

$$x = -5$$