

EQUAZIONI NUMERICHE INTERE

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

$$\frac{1}{5} \left[\frac{5}{2}x + 2 - \frac{3x+1-4+x}{3} \right] = x - \frac{1}{6}$$

$$\frac{15x+12-8x+6}{30} = x - \frac{1}{6}$$

$$7x+18=30x-5$$

$$x=1$$

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

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

$$2x-6-3x-15=1-3x-3 \quad 2x=19$$

$$x = \frac{19}{2}$$

$$3. \quad \left(\frac{4x-3}{4} \right)^2 - \left(x + \frac{3}{4} \right) \left(x - \frac{3}{4} \right) + \frac{5}{2} \left(\frac{4x+3}{4} \right) - 2 \left(\frac{4x-1}{4} \right) = 0$$

$$\frac{16x^2+9-24x}{16} - \left(x^2 - \frac{9}{16} \right) + \frac{20x+15}{8} - \frac{4x-1}{2} = 0$$

$$\frac{16x^2+9-24x}{16} - x^2 + \frac{9}{16} + \frac{20x+15}{8} - \frac{4x-1}{2} = 0$$

$$16x^2+9-24x-16x^2+9+40x+30-32x+8=0 \quad -16x=-56$$

$$x = \frac{7}{2}$$

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

$$\frac{5}{2} \frac{9x^2-12x+4}{25} + \frac{3x-2}{5} = \frac{5}{2} \left(\frac{9}{25}x^2 - 4 \right)$$

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

$$9x^2-12x+4+6x-4=9x^2-100$$

$$-6x=-100$$

$$x = \frac{50}{3}$$

$$5. \left(x - \frac{2}{3}\right) \left(x^2 + \frac{2}{3}x + \frac{4}{9}\right) - \frac{2}{9}x = x \left(x^2 - \frac{10}{9}\right)$$

$$x^3 - \frac{8}{27} - \frac{2}{9}x = x^3 - \frac{10}{9}x \quad \frac{8}{9}x = \frac{8}{27}$$

$$x = \frac{1}{3}$$

$$6. \frac{x(3x-5)}{3} = \frac{(7+6x)(x-1)}{6}$$

$$6x^2 - 10x = 7x - 7 + 6x^2 - 6x \quad -11x = -7$$

$$x = \frac{7}{11}$$

$$7. \frac{3x(10-2x) - 2x(5+2x)}{15} + \frac{2}{3}(x-3)^2 = 0$$

$$\frac{30x - 6x^2 - 10x - 4x^2}{15} + \frac{2}{3}(x^2 - 6x + 9) = 0$$

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

$$2(2x - x^2) + 2(x^2 - 6x + 9) = 0$$

$$2x - x^2 + x^2 - 6x + 9 = 0 \quad -4x = -9$$

$$x = \frac{9}{4}$$

$$8. \left(x + \frac{3}{2}\right) \left(x - \frac{3}{2}\right) \left(x^2 + \frac{9}{4}\right) - \left(x^2 - \frac{9}{4}\right)^2 + \frac{9}{2}x(2-x) = 0$$

$$\left(x^2 - \frac{9}{4}\right) \left(x^2 + \frac{9}{4}\right) - \left(x^4 - \frac{9}{2}x^2 + \frac{81}{16}\right) + 9x - \frac{9}{2}x^2 = 0$$

$$x^4 - \frac{81}{16} - x^4 + \frac{9}{2}x^2 - \frac{81}{16} + 9x - \frac{9}{2}x^2 = 0 \quad 9x = \frac{81}{8}$$

$$x = \frac{9}{8}$$

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

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

$$1 + x^2 - 4x + 4 - x^2 - 2x - 1 = \frac{1}{2}x - 9 \quad -\frac{13}{2}x = -13$$

$$x = 2$$

$$10. \frac{1}{3} - \left[\frac{x}{3} - \frac{1}{3}(2+x) - \frac{1}{3}(1-3x) \right] = (2-x) - \frac{1}{3}(x-2)$$

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

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

$$x = 4$$

$$11. \frac{1}{5}x \left(1 - \frac{1}{3} \right) + \frac{1}{10}(1-x) - \frac{1}{6} = \frac{1}{6} \left(1 + \frac{1}{5} - \frac{7}{5} \right)$$

$$\frac{2}{15}x + \frac{1}{10} - \frac{1}{10}x - \frac{1}{6} = -\frac{1}{30}$$

$$4x + 3 - 3x - 5 = -1$$

$$x = 1$$

$$12. \frac{5}{3} + x - \frac{x+2}{3} + \left(x - \frac{3}{2} \right) \left(x + \frac{3}{2} \right) = (x+1)^2 - \frac{9}{4}$$

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

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

$$5 + 3x - x - 2 = 6x + 3$$

$$-4x = 0$$

$$x = 0$$

$$13. \frac{x}{6} + \left[\left(3x - \frac{1}{3} \right)^2 - \left(3x - \frac{1}{3} \right) \left(3x + \frac{1}{3} \right) \right] + \frac{7}{3}x = \frac{3x-1}{6} - \frac{7}{18}$$

$$\frac{x}{6} + \left[9x^2 - 2x + \frac{1}{9} - \left(9x^2 - \frac{1}{9} \right) \right] + \frac{7}{3}x = \frac{3x-1}{6} - \frac{7}{18}$$

$$\frac{x}{6} + \left[9x^2 - 2x + \frac{1}{9} - 9x^2 + \frac{1}{9} \right] + \frac{7}{3}x = \frac{3x-1}{6} - \frac{7}{18}$$

$$\frac{x}{6} - 2x + \frac{2}{9} + \frac{7}{3}x = \frac{3x-1}{6} - \frac{7}{18}$$

$$3x - 36x + 4 + 42x = 9x - 3 - 7$$

$$0x = -14$$

imp.