

EQUAZIONI in 2° GRADO

1) $7x^2 + 56x = 0$

EQ. SPURIA

$x(x + 8) = 0$

$x = 0$

$S = \{0, -8\}$ EQ. DET.

$7x + 56 = 0 \quad \frac{7x}{7} = -\frac{56}{7} \quad x = -8$

2) $x^2 + 9 = 0$

EQ. PURA

$x^2 = -9$

$x = \pm \sqrt{-9}$ IMP.

$S = \emptyset$

3) $4x^2 - 1 = 0$

EQ. PURA

$\frac{4x^2}{4} = \frac{1}{4}$

$x = \pm \sqrt{\frac{1}{4}}$

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

$S = \left\{ \frac{1}{2}, \frac{1}{2} \right\}$

EQ. DET

4) $4x^2 + 3x - 1 = 0$

EQ. COMPLETA

$a = 4 \quad b = 3 \quad c = -1$

$\Delta = b^2 - 4ac = 9 - 4 \cdot 4 \cdot (-1) = 9 + 16 = 25$

$x_{1,2} = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-3 \pm \sqrt{25}}{2 \cdot 4} = \frac{-3 \pm 5}{8}$

$S = \left\{ -1, \frac{1}{4} \right\}$ EQ. DET.

$\frac{-3-5}{8} = -\frac{8}{8} = -1$
 $\frac{-3+5}{8} = \frac{2}{8} = \frac{1}{4}$

5) $3x^2 - 5x - 2 = 0$

EQ. COMPLETA

$a = 3 \quad b = -5 \quad c = -2$

$\Delta = b^2 - 4ac = (-5)^2 - 4 \cdot 3 \cdot (-2) = 25 + 24 = 49$

$x_{1,2} = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-(-5) \pm \sqrt{49}}{2 \cdot 3} = \frac{+5 \pm 7}{6}$

$S = \left\{ -\frac{1}{3}, 2 \right\}$ EQ. DET.

$\frac{5-7}{6} = -\frac{2}{6} = -\frac{1}{3}$
 $\frac{5+7}{6} = \frac{12}{6} = 2$

$$6) \quad 25x^2 + 20x + 4 = 0$$

$$a = 25 \quad b = 20 \quad c = 4$$

$$\Delta = b^2 - 4 \cdot a \cdot c = 400 - 4 \cdot 25 \cdot 4 = 400 - 400 = 0$$

$$x_{1,2} = \frac{-20 \pm \sqrt{0}}{50} = \left\langle \begin{array}{l} \frac{-20+0}{50} = -\frac{20}{50} = -\frac{2}{5} \\ \frac{-20-0}{50} = -\frac{20}{50} = -\frac{2}{5} \end{array} \right.$$

$$S = \left\{ -\frac{2}{5}, -\frac{2}{5} \right\} \quad \text{EQ. 1057.}$$

$$7) \quad 2x^2 - x + 3 = 0$$

$$a = 2 \quad b = -1 \quad c = 3$$

$$\Delta = 1 - 4 \cdot 2 \cdot 3 = 1 - 24 = -23 < 0$$

$$S = \emptyset \quad \text{EQ. 1010}$$

$$8) \quad \frac{(x-2) \cdot (2+x)}{3} = x$$

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

$$x^2 - 3x - 4 = 0$$

$$a = 1 \quad b = -3 \quad c = -4$$

$$\Delta = 9 - 4 \cdot 1 \cdot (-4) = 9 + 16 = 25$$

$$x_{1,2} = \frac{3 \pm \sqrt{25}}{2} = \frac{3 \pm 5}{2} = \left\langle \begin{array}{l} \frac{3-5}{2} = -\frac{2}{2} = -1 \\ \frac{3+5}{2} = \frac{8}{2} = 4 \end{array} \right.$$

$$S = \{-1; 4\}$$

$$9) \quad -5x^2 + 12x - 17 = 0$$

$$a = -5 \quad b = 12 \quad c = -17$$

$$\Delta = 144 - 4 \cdot (-5) \cdot (-17) = 144 - 340 = -196 < 0$$

$$S = \emptyset \quad \text{EQ. 1010.}$$