

Lezione 32

Equazioni di 2° grado intere

$$\begin{aligned} a &= 4 \\ b &= -4 \\ c &= -1 \end{aligned}$$

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

$$\Delta = b^2 - 4ac = (-4)^2 - 4(4)(-1) = 16 + 16 = 32 > 0$$

$$x_{1,2} = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{4 \pm \sqrt{32}}{8}$$

$$x_{1,2} = \frac{4 \pm \sqrt{2^5}}{8} = \frac{4 \pm \sqrt{2^4 \cdot 2}}{8}$$

$$x_{1,2} = \frac{4 \pm 4\sqrt{2}}{8} = \frac{1 \pm \sqrt{2}}{2}$$

$$\begin{array}{r|l} 32 & 2 \\ 16 & 2 \\ 8 & 2 \\ 4 & 2 \\ 2 & 2 \\ 1 & 1 \\ \hline 32 & = 2^5 \end{array}$$

$$\boxed{x_1 = \frac{1 - \sqrt{2}}{2} \quad ; \quad x_2 = \frac{1 + \sqrt{2}}{2}}$$

$$x^2 + 4x + 1 = 0$$

$$\Delta = b^2 - 4ac = 4^2 - 4(1)(1) = 16 - 4 = 12 > 0$$

$$a = 1 \\ b = 4 \\ c = 1$$

$$x_1, x_2 = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-4 \pm \sqrt{12}}{2}$$

$$= \frac{-4 \pm \sqrt{2^2 \cdot 3}}{2} = \frac{-4 \pm 2\sqrt{3}}{2} = \cancel{\frac{-2 \pm \sqrt{3}}{1}}$$

$$x_1 = (-2 - \sqrt{3}) \quad x_2 = (-2 + \sqrt{3})$$

$$x^2 + 4x + 1$$

$$(-2 - \sqrt{3})(-2 + \sqrt{3}) = 4 - 3 = 1$$

$$-[-2 - \sqrt{3} + (-2) + \sqrt{3}] = 4$$

$$p = 1 \\ s = 4$$

$$\begin{array}{r} 12 \overline{) 12} \\ \underline{12} \\ 0 \end{array}$$
$$12 = 2 \cdot 3$$

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

$$\cancel{4} \frac{2x - 2x}{\cancel{4}} = \frac{6 + x^2 - 2}{\cancel{4}} \quad \cancel{4}$$

$$8x - 2x = 6 + x^2 - 2$$

$$-x^2 + 6x - 4 = 0$$

$$x^2 - 6x + 4 = 0$$

$$\Delta = b^2 - 4ac = (-6)^2 - 4(1)(4) = 36 - 16 = 20 > 0$$

$$x_{1,2} = -\frac{b \pm \sqrt{\Delta}}{2a} = \frac{6 \pm \sqrt{20}}{2} = \frac{6 \pm \sqrt{2^2 \cdot 5}}{2}$$

$$= \frac{6 \pm 2\sqrt{5}}{2} = \cancel{2} \frac{(3 \pm \sqrt{5})}{\cancel{2}} = \boxed{3 \pm \sqrt{5}} \quad \begin{matrix} 20 & 2 \\ 10 & 2 \\ 5 & 5 \end{matrix}$$

$$\boxed{x_1 = 3 - \sqrt{5}}$$

$$\boxed{x_2 = 3 + \sqrt{5}}$$

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

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

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

$$2(x^2+3x-x-3) + 8 = x^2 + 4 + 4x$$

$$2x^2 + 4x - 6 + 8 = x^2 + 4 + 4x$$

$$\boxed{x^2 - 2 = 0} \Rightarrow x^2 = 2 \Rightarrow \boxed{x = \pm\sqrt{2}}$$

$$x_1 = -\sqrt{2} \quad \vee \quad x_2 = \sqrt{2}$$

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$$x^2 + x - 2$$

$$\left(\begin{array}{l} p = -2 \\ s = 1 \\ -1 + 2 \end{array} \right)$$

$$(x-1)(x+2)$$

C.E.

$$x-1 \neq 0$$

$$x+2 \neq 0$$

$$x \neq 1$$

$$x \neq -2$$

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

$$\frac{4}{x(x-1)} - \frac{3}{x-1} = \frac{2}{1}$$

$$\frac{4-3x}{x(x-1)} = \frac{2x(x-1)}{x(x-1)}$$

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

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

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

$$\Delta = b^2 - 4ac = 1 - 4(2)(-4) = 1 + 32 = 33$$

$$x_{1,2} = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-1 \pm \sqrt{33}}{4}$$

$$x_1 = \frac{-1 - \sqrt{33}}{4} ; x_2 = \frac{-1 + \sqrt{33}}{4}$$

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Q.E.

$$\boxed{x \neq 0}$$

$$\boxed{x \neq 1}$$

$$x-1 \neq 0$$

$$\boxed{x \neq 1}$$

$$2 > 1 \text{ VERA}$$

$$-2 > -1 \text{ FALSA!!}$$

$$\boxed{-2 < -1} \text{ SÌ!!}$$

$$\begin{array}{r} 33 \overline{) 3} \\ 11 \overline{) 11} \\ 11 \overline{) 11} \\ 11 \overline{) 11} \end{array}$$