

## Formule risolutive

$$x^2 - 10x + 25 = 0$$

$$(x-5)^2 = 0 \quad x_1 = 5$$

$$x_2 = 5$$

$$(x-5)(x-5) = 0$$

$$x^2 - 5x + 6 = 0$$

$$(x-2)(x-3) = 0$$

$$x_1 = 2 \quad x_2 = 3$$

$$ax^2 + bx + c = 0$$

$$4a^2x^2 + 4abx + 4ac = 0$$

$$\begin{array}{c} \downarrow \\ 2ax \quad 2 \cdot 2ax \cdot b \quad b^2 \\ \underline{4a^2x^2 + 4abx + b^2} - b^2 + 4ac = 0 \end{array}$$

$$(2ax + b)^2 = b^2 - 4ac$$

$$(2ax + b)^2 = \Delta$$

$$2ax + b = \pm \sqrt{\Delta}$$

$$2ax = -b \pm \sqrt{\Delta}$$

$$x = \frac{-b \pm \sqrt{\Delta}}{2a}$$

$$x = \frac{\frac{-b \pm \sqrt{\Delta}}{2}}{\frac{2a}{2}} =$$

$$= \frac{-\frac{b}{2} \pm \sqrt{\frac{\Delta}{4}}}{1}$$

$$\frac{\Delta}{4} = \left(\frac{b}{2}\right)^2 - ac = \frac{b^2 - 4ac}{4}$$

$$3x^2 - 10x + 7 = 0$$

$$\Delta = \underline{100 - 12 \cdot 7} = 100 - 84 = 16$$

$$\frac{\Delta}{4} = \underline{25 - 21} = 4$$

$$X_{1,2} = \frac{-\frac{b}{2} \pm \sqrt{\frac{\Delta}{4}}}{a} = \frac{5 \pm 2}{3} \begin{matrix} \nearrow 7/3 \\ \searrow 1 \end{matrix}$$

Relazioni tra radici e  
soluzioni:

$$ax^2 + bx + c = 0$$

$$X_{1,2} = \frac{-b \pm \sqrt{\Delta}}{2a}$$

$$X_1 + X_2 = \frac{-b + \sqrt{\Delta}}{2a} + \frac{-b - \sqrt{\Delta}}{2a} =$$

$$= \frac{\cancel{-b + \sqrt{\Delta}} - \cancel{b - \sqrt{\Delta}}}{2a} = \frac{-2b}{2a} = -\frac{b}{a}$$

$$\begin{aligned}
 \underline{x_1 \cdot x_2} &= \left( \frac{-b - \sqrt{\Delta}}{2a} \right) \left( \frac{-b + \sqrt{\Delta}}{2a} \right) = \\
 &= \frac{(-b - \sqrt{\Delta})(-b + \sqrt{\Delta})}{4a^2} = \frac{b^2 - \Delta}{4a^2} = \\
 &= \frac{\cancel{b^2} - \cancel{b^2} + 4ac}{4a^2} = \frac{4ac}{4a^2} = \underline{\underline{\frac{c}{a}}}
 \end{aligned}$$

Scomposizione del trinomio di  
2° grado

$$\begin{aligned}
 ax^2 + bx + c &= a \left( x^2 + \frac{b}{a}x + \frac{c}{a} \right) = \\
 &= a \left[ x^2 - (x_1 + x_2)x + x_1 \cdot x_2 \right] = \\
 &= a \left[ \underline{x^2} - \underline{x_1 x} - \underline{x_2 x} + \underline{x_1 x_2} \right] = \\
 &= a \left[ x(\underline{x - x_1}) - x_2(\underline{x - x_1}) \right] = \\
 &= a(x - x_1)(x - x_2)
 \end{aligned}$$

$$ax^2 + bx + c = a(x - \underline{x_1})(x - \underline{x_2})$$

$$3x^2 - 10x + 7$$

$$x_1 = \frac{7}{3} \quad x_2 = 1$$

$$3\left(x - \frac{7}{3}\right)(x - 1) = (3x - 7)(x - 1)$$

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

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$$\frac{3x^2 - 10x + 7}{\cancel{x^2 - 1}} = 0$$

$$\text{C.E. } x^2 - 1 \neq 0 \quad x \neq \pm 1$$

$$3x^2 - 10x + 7 = 0$$

$$x^2 - 7 \neq 0; \quad x^2 \neq 7; \quad x \neq \pm\sqrt{7}$$

$$6x^2 + x - 1 = 0 \quad x_1 = \frac{1}{3}$$

$$\begin{aligned} x_2 &= S - x_1 = -\frac{b}{a} - x_1 = \\ &= -\frac{1}{6} - \frac{1}{3} = \frac{-1 - 2}{6} = -\frac{3}{6} = -\frac{1}{2} \end{aligned}$$