

$$4x^4 - 13x^2 + 9 = 0$$

risolvere in tre modi diversi

biquadrativa $t = x^2$

$$4t^2 - 13t + 9 = 0$$

$$\Delta = b^2 - 4ac = 169 - 144 = 25$$

$$t_{1,2} = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{13 \pm \sqrt{25}}{8} = \begin{cases} \frac{18}{8} = \frac{9}{4} \\ \frac{8}{8} = 1 \end{cases}$$

$$t = x^2 = \frac{9}{4} \Rightarrow x = \pm \frac{3}{2}$$

$$t = x^2 = 1 \Rightarrow x = \pm 1$$

$$S = \left\{ -\frac{3}{2}; -1; 1; \frac{3}{2} \right\}$$

2° metodo: racc. parziale

$$4x^4 - 4x^2 - 9x^2 + 9 = 0$$

3° metodo: Ruffini (2 volte)

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EQUAZ. TRINOMIE

$$X^6 + 19X^3 - 216 = 0$$

$$t^2 + 19t - 216 = 0$$

variabile ausiliarie
 $t = X^3$

simili alle bi-quadratiche

$$t_{1,2} = \frac{-19 \pm 35}{2} \begin{cases} 8 \\ -27 \end{cases}$$

$$t = 8 \Rightarrow X^3 = 8 \Rightarrow X^3 - 8 = 0 \Rightarrow (X-2)(X^2 + 4 + 2X) = 0$$

$$t = -27 \Rightarrow X^3 = -27 \Rightarrow X^3 + 27 = 0 \Rightarrow (X+3)(X^2 + 9 - 3X) = 0$$

quindi $X^6 + 19X^3 - 216$ si scompone in:

$$(X-2)(X^2 + 4 + 2X)(X+3)(X^2 + 9 - 3X) = 0$$

$$\Downarrow \\ X=2$$

$$\Downarrow \\ \Delta < 0 \\ X_{1,2} \notin \mathbb{R}$$

$$\Downarrow \\ X=-3$$

$$\Downarrow \\ \Delta = 9 - 36 < 0 \\ X_{1,2} \notin \mathbb{R}$$

$$S = \{-3; 2\} \text{ e 4 sol. } \notin \mathbb{R}$$

$$X^8 - 10X^4 + 9 = 0 \quad \text{grado 8} \quad t = X^4$$

$$t^2 - 10t + 9 = 0$$

$$t_{1,2} = \frac{10 \pm \sqrt{64}}{2} = \begin{cases} 1 \\ 9 \end{cases}$$

$$X^4 = 1 \Rightarrow X^4 - 1 = 0$$

$$X^4 = 9 \Rightarrow X^4 - 9 = 0$$

con il racc. parziale

$$X^8 - 9X^4 - X^4 + 9 = 0$$

$$X^4(X^4 - 3) - (X^4 - 9) = 0$$

$$(X^4 - 3)(X^4 - 1) = 0$$

$$X^4 - 1 = 0 \quad (X^2 - 1)(X^2 + 1) = 0 \Rightarrow (X-1)(X+1)(X^2 + 1) = 0$$

\Downarrow $X=1$ \Downarrow $X=-1$ \Downarrow $X^2 = -1$ IMP
 $X_{1,2} \notin \mathbb{R}$

$$X^4 - 9 = 0 \Rightarrow (X^2 - 3)(X^2 + 3) = 0$$

\Downarrow $X^2 = 3 \Rightarrow X = \pm\sqrt{3}$ \Downarrow $X^2 = -3$ IMP
 $X_{1,2} \notin \mathbb{R}$

$$S = \{-\sqrt{3}; -1; 1; \sqrt{3}\} \quad \text{e 4 sol } \notin \mathbb{R}$$

8 solutions in tutto
(come il grado)