

Esercizio: Risolvere in campo complesso

$$iz^2 + (1-i)z + 1 = 0$$

per eq. in campo complesso

$$az^2 + bz + c = 0 \quad \text{con } a, b, c \in \mathbb{C}$$

$$z = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$\Rightarrow z = \frac{-(1-i) \pm \sqrt{(1-i)^2 - 4i}}{2i}$$

$$= \frac{i(1-i) \pm i\sqrt{-6i}}{2}$$

$$\sqrt{-6i} = \sqrt{6} e^{i(-\frac{\pi}{4} + k\pi)} \quad k=0,1$$

infatti $\arg(-i) = -\frac{\pi}{2}$ e $e^{ik\pi} = \pm 1$
per $k=0,1$

$$= \pm \sqrt{6} \left(\cos \frac{\pi}{4} - i \sin \frac{\pi}{4} \right) =$$

$$\pm \sqrt{6} \frac{1}{\sqrt{2}} (1-i) = \pm \sqrt{3} (1-i)$$

$$z = \frac{1+i \pm i\sqrt{3}(1-i)}{2} = \begin{cases} \frac{1+\sqrt{3}}{2} (1+i) \\ \frac{1-\sqrt{3}}{2} (1+i) \end{cases}$$