

$$x^3 = 1 \quad (x-1)(x^2+x+1) = 0$$

$$x_1 = 1$$

$$x_{2,3} = \frac{-1 \pm \sqrt{1-4}}{2} = \frac{-1 \pm \sqrt{3}}{2} = -\frac{1}{2} \pm i \frac{\sqrt{3}}{2}$$

## RADICI NESIME DI UN NUMERO

$$u = \cos \alpha + i \sin \alpha$$

$$\sqrt[n]{1} = u \rightarrow u^n = 1$$

$$\hookrightarrow u^n = \cos n\alpha + i \sin n\alpha$$

$$\cos n\alpha + i \sin n\alpha = 1$$

$$\hookrightarrow \cos 0 + 2k\pi + i \sin(2k\pi)$$

$$\left\{ \begin{array}{l} r=1 \\ n\alpha = 0 + 2k\pi \rightarrow \alpha = \frac{2k\pi}{n} \end{array} \right\} \rightarrow u = \cos \frac{2k\pi}{n} + i \sin \frac{2k\pi}{n}$$

$$\sqrt[n]{1} = \cos\left(\frac{2k\pi}{n}\right) + i \sin\left(\frac{2k\pi}{n}\right)$$

es

$$n=2$$

$$\sqrt[2]{1} = \cos\left(\frac{2k\pi}{2}\right) + i \sin\left(\frac{2k\pi}{2}\right) \rightarrow \sqrt[2]{1} = \cos k\pi + i \sin k\pi$$

$$\text{Se } k=0$$

$$\text{Se } k=1$$

$$u_0 = 1 + i0$$

$$u_1 = -1 + i0$$

es

$$n=3$$

$$\sqrt[3]{1} = \cos\left(\frac{2k\pi}{3}\right) + i \sin\left(\frac{2k\pi}{3}\right) \Rightarrow \sqrt[3]{1} = \cos\left(\frac{2k\pi}{3}\right) + i \sin\left(\frac{2k\pi}{3}\right)$$

$$\text{Se } k=0$$

$$\text{Se } k=1$$

$$\text{Se } k=2$$

$$u_0 = 1 + i0$$

$$u_1 = -\frac{1}{2} + i \frac{\sqrt{3}}{2}$$

$$u_2 = -\frac{1}{2} - i \frac{\sqrt{3}}{2}$$

es

$$n=4$$

$$\sqrt[4]{1} = \cos\left(\frac{2k\pi}{4}\right) + i \sin\left(\frac{2k\pi}{4}\right) \Rightarrow \sqrt[4]{1} = \cos\left(\frac{k\pi}{2}\right) + i \sin\left(\frac{k\pi}{2}\right)$$

$$\text{Se } k=0$$

$$\text{Se } k=1$$

$$\text{Se } k=2$$

$$\text{Se } k=3$$

$$u_0 = 1 + i0$$

$$u_1 = 0 + i$$

$$u_2 = -1 + i0$$

$$u_3 = 0 - i$$