Home work 28/09/2018 seconda settimana

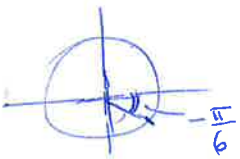
Risultati e traccee

1 - $\frac{1}{\overline{3+2i}} = \frac{1}{3-2i} = \frac{3+2i}{13}$

$\overline{\left(\frac{1}{3+2i}\right)} = \left(\frac{3-2i}{13}\right) = \frac{3+2i}{13}$ \ sono = /

2 - calcoliamo $\rho \geq 0, \theta \in (-\pi, \pi]$

$z = \sqrt{3} - i \rightarrow \rho = 2 \quad \theta = \frac{-1}{6}\pi$



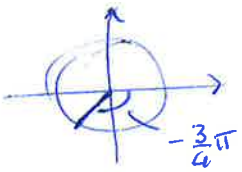
$z = -2+2i \rightarrow \rho = 2\sqrt{2} \quad \theta = \frac{3}{4}\pi$

$z = \sqrt{2}\,i \rightarrow \rho = \sqrt{2} \quad \theta = \frac{\pi}{2}$

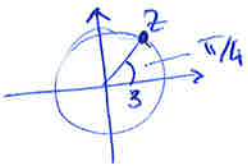
$z = 3 \rightarrow \rho = 3 \quad \theta = 0$

$z = -4 + 4\sqrt{3}\,i \rightarrow \rho = 8 \quad \theta = \frac{2}{3}\pi$

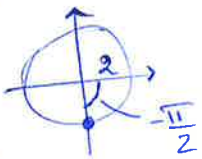
$z = -1 - i \rightarrow \rho = \sqrt{2} \quad \theta = \frac{-3}{4}\pi$



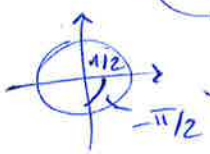
3 - $z = 3\left(\frac{\sqrt{2}}{2} + i\frac{\sqrt{2}}{2}\right)$



$z = -2i$

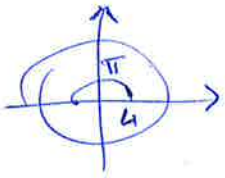


$z = -\frac{i}{2}$



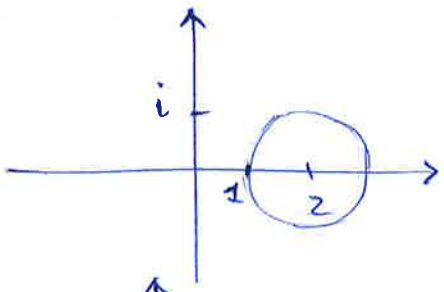
(attenzione a trasformare $\cos\left(\frac{\pi}{2}\right) - i\sin\left(\frac{\pi}{2}\right) = \cos\left(-\frac{\pi}{2}\right) + i\sin\left(-\frac{\pi}{2}\right)$)

$z = -4$



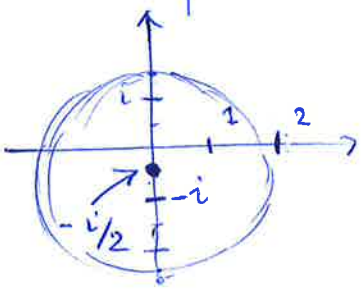
$A = \{ z \in \mathbb{C} : |z-2| = 1 \}$

crf di centro $(2,0)$ e $r=1$



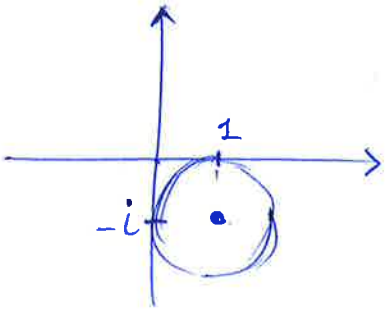
$A = \{ z \in \mathbb{C} : |z + \frac{i}{2}| = 2 \}$

crf di centro $(0, -\frac{1}{2})$

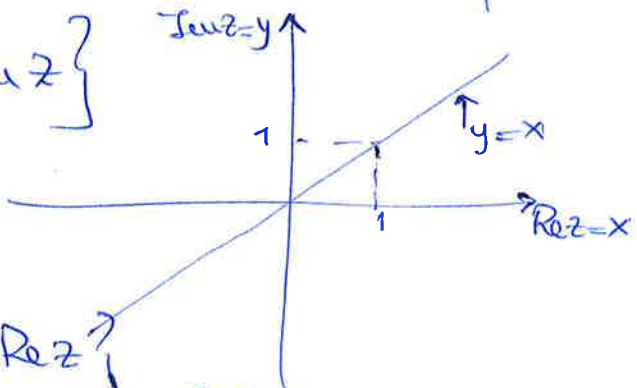


$A = \{ z \in \mathbb{C} : |z - 1 + i| = 1 \}$

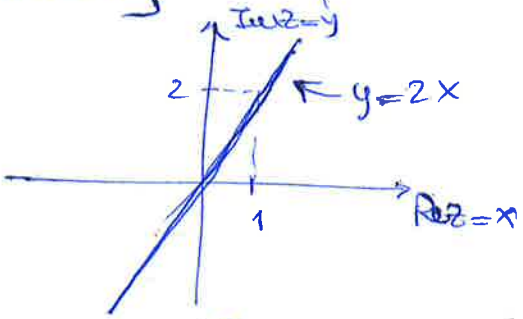
crf di centro $(+1, -1)$ e $r = 1$



$A = \{ z \in \mathbb{C} : \mathrm{Re}\, z = \mathrm{Im}\, z \}$

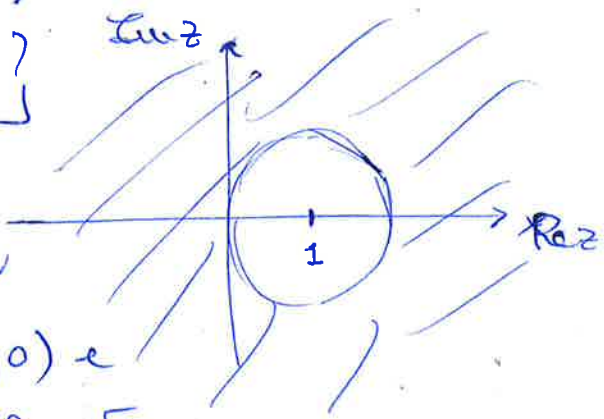


$A = \{ z \in \mathbb{C} : \mathrm{Im}\, z = 2\,\mathrm{Re}\, z \}$



$A = \{ z \in \mathbb{C} : |z - 1| \geq 1 \}$

è la regione del piano complesso esterna alla crf di centro $(1,0)$ e $r = 1$ unita alla crf stessa.



5 - $\frac{1}{2i+1} = \frac{-2i+1}{5} = +\frac{1}{5} - \frac{2}{5}i$

$\frac{1}{2-i} = \frac{2+i}{5} = \frac{2}{5} + \frac{1}{5}i$

$\frac{1}{3i} = \frac{-3i}{9} = -\frac{1}{3}i$

$\frac{1}{-i} = i$

$\frac{1}{3i-1} = \frac{-3i-1}{10} = -\frac{1}{10} - \frac{3}{10}i$

6) $z = (2+i)(i-2) = -5 \qquad |z| = 5$

$z = (3+2i)(2-i) + 4i = 8+5i \qquad |z| = \sqrt{89}$

$z = (1+3i)\frac{1}{2-i} + 3 = \frac{14}{5} + \frac{7}{5}i \qquad |z| = \frac{7\sqrt{5}}{5}$

$z = \frac{4-i}{2i} + 3 = \frac{5}{2} - 2i \qquad |z| = \frac{\sqrt{41}}{2}$