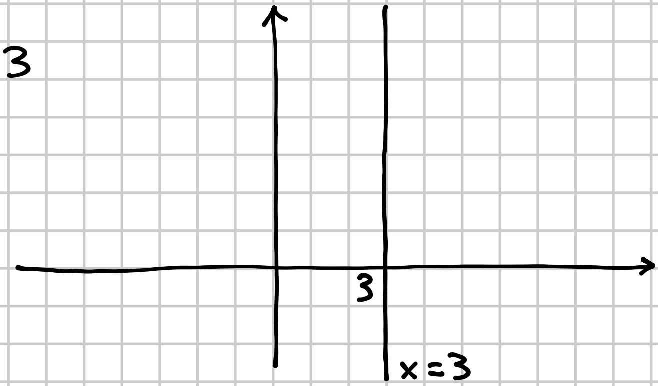
208 $Re(z) = 3$

$z = x + iy$

$Re(z) = x$

$x = 3$

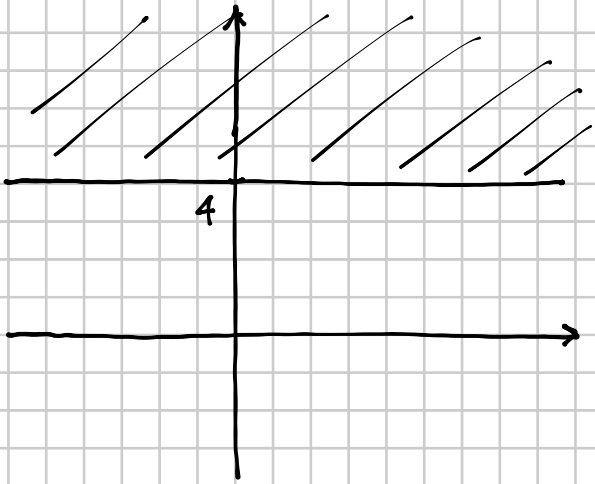


209 $Im(z) \geq 4$

$z = x + iy$

$Im(z) = y$

$y \geq 4$

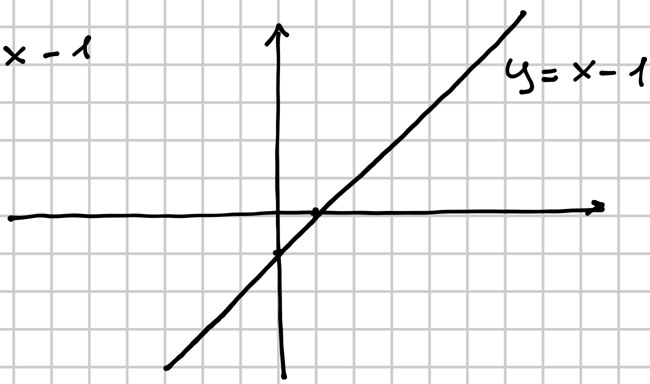


$y \geq 4$ (BORDO COMPRESO)

212 $Re(z) - Im(z) = 1$

$z = x + iy$

$x - y = 1$ $\quad$ $y = x - 1$



218 $|z-1| \leq |2-z|$

$z = x+iy$

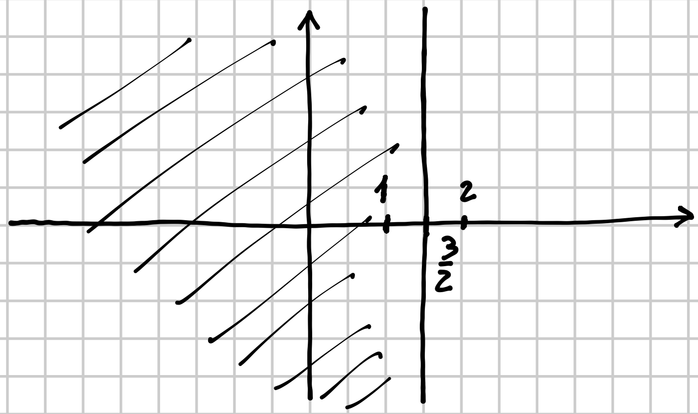
$$|x+iy-1| \leq |2-(x+iy)|$$

$$|(x-1)+iy| \leq |(-x+2)-iy|$$

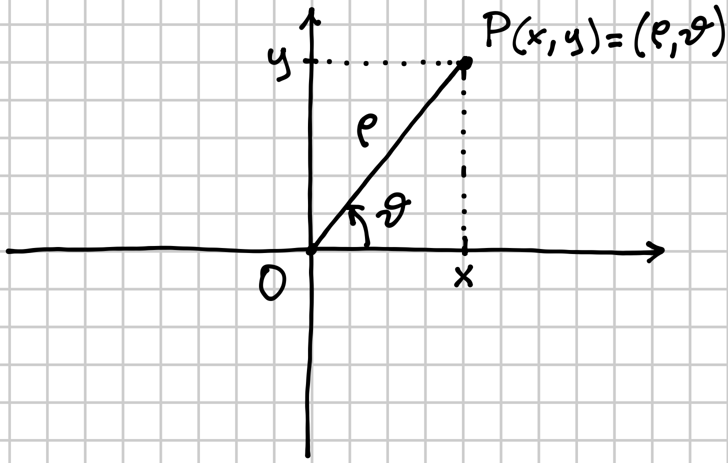
$$\sqrt{(x-1)^2+y^2} \leq \sqrt{(-x+2)^2+y^2}$$

$$\cancel{x^2}+1-2x+\cancel{y^2} \leq \cancel{x^2}+4-4x+\cancel{y^2}$$

$$4x-2x \leq 4-1 \qquad 2x \leq 3 \qquad x \leq \frac{3}{2}$$



COORDINATE POLARI



$\rho = \overline{OP}$ DISTANZA DI O DA P $\qquad \rho \geq 0$

ϑ (IN RADIANTI) ANGOLO TRA LA SEMIRETTA OP E IL SEMIASSE POSITIVO x

$\swarrow$ NON È UNIVOCAMENTE INDIVIDUATO

$(\vartheta + 2k\pi, k \in \mathbb{Z})$

GENERALMENTE SI PRENDE $\vartheta \in [0, 2\pi)$

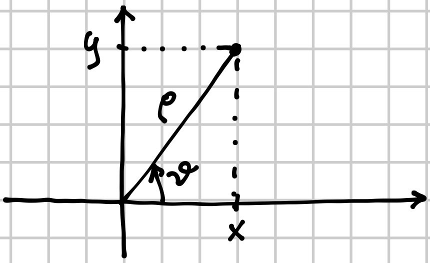
Se $\rho = 0$, ϑ è indeterminato (ho l'origine O)

ρ, ϑ sono le due COORDINATE POLARI del punto P

RELAZIONI TRA I DUE SISTEMI DI COORDINATE

$(\rho, \vartheta) \rightsquigarrow (x, y)$

$$\begin{cases} x = \rho \cos\vartheta \\ y = \rho \sin\vartheta \end{cases}$$

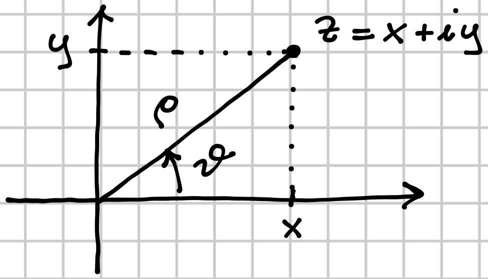


$(x, y) \rightsquigarrow (\rho, \vartheta)$

$$\begin{cases} \rho = \sqrt{x^2+y^2} \\ \tan\vartheta = \dfrac{y}{x} \end{cases}$$

$\leftarrow$ ricavo ϑ tenendo conto del quadrante in cui si trova il punto (generalmente si prende $\vartheta \in [0, 2\pi)$, ma non è vincolante)

FORMA TRIGONOMETRICA DI UN NUMERO COMPLESSO



Il numero complesso $z = x + iy$ (scritto in forma algebrica) si può scrivere

$$z = \rho\cos\vartheta + i\rho\sin\vartheta =$$

$$= \rho\left(\cos\vartheta + i\sin\vartheta\right)$$

$$\boxed{z = \rho\left(\cos\vartheta + i\sin\vartheta\right)}$$

FORMA TRIGONOMETRICA DEL NUMERO COMPLESSO

MODULO

ARGOMENTO
(NON UNIVOCAMENTE INDIVIDUATO)

SCRIVERE IN FORMA TRIGONOMETRICA

251 $6\sqrt{2} + 6\sqrt{2}\,i$ $\left[12\left(\cos\frac{\pi}{4} + i\sin\frac{\pi}{4}\right)\right]$

I QUADR.

$$\rho = \sqrt{x^2+y^2} = \sqrt{(6\sqrt{2})^2 + (6\sqrt{2})^2} =$$

$$= \sqrt{6^2 \cdot 2 \cdot 2} = 12$$

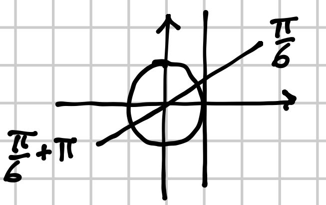
$$\tan\vartheta = \frac{y}{x} = \frac{6\sqrt{2}}{6\sqrt{2}} = 1 \xrightarrow{\text{I QUADR.}} \vartheta = \frac{\pi}{4}$$

$$6\sqrt{2} + 6\sqrt{2}\,i = 12\left(\cos\frac{\pi}{4} + i\sin\frac{\pi}{4}\right)$$

254 $-\sqrt{3} - i$ $\left[2\left(\cos\frac{7}{6}\pi + i\sin\frac{7}{6}\pi\right)\right]$

$$\rho = \sqrt{(-\sqrt{3})^2 + (-1)^2} = 2 \qquad \tan\vartheta = \frac{-1}{-\sqrt{3}} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

III QUADR.



$$\vartheta = \frac{\pi}{6} + \pi = \frac{7}{6}\pi \qquad z = 2\left(\cos\frac{7}{6}\pi + i\sin\frac{7}{6}\pi\right)$$