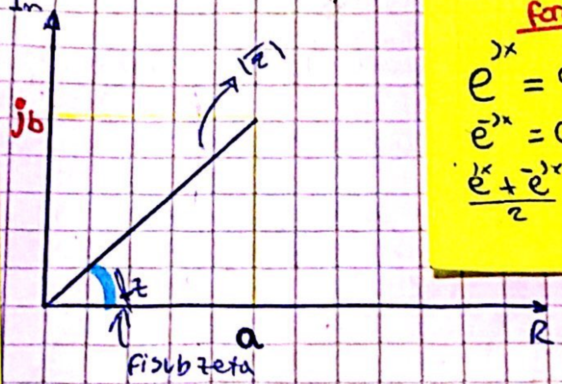
Numeros complejos

$\overline{z} = \overset{z_x}{a} + j\overset{z_y}{b}$

$|\overline{z}| \angle \theta_z$



SOHCAHTOA

formula de Euler

$e^{jx} = \cos(x) + j\,\text{sen}(x)$

$e^{-jx} = \cos(x) - j\,\text{sen}(x)$

$\frac{e^{jx} + e^{-jx}}{2} = \cos(x)$

$\frac{e^{jx} - e^{-jx}}{2j} = \text{sen}(x)$

Polar

$|\overline{z}| = \sqrt{(z_x)^2 + (z_y)^2}$

$\theta_z = \arctan\left(\frac{z_y}{z_x}\right)$

binomica

$z_x = |\overline{z}| \cos(\theta_z)$

$z_y = |\overline{z}| \cdot \text{sen}(\theta_z)$

$\cos \varphi_z = \frac{z_x}{|\overline{z}|}$

$\text{sen}\, \varphi_z = \frac{z_y}{|\overline{z}|}$

forma rectangular = $z = a + bi$

forma polar = $z = |\overline{z}|\, e^{j\theta}$

$z_x \quad z_y$

$7 - 3j$

$R \quad j$

Resolvemos

1) Pasar a polar

$\overline{a} = 1 + j1 \qquad \sqrt{2} \cdot e^{j45°}$

$\overline{b} = 10 + j0 \qquad 10 \cdot e^{j0}$

$\overline{c} = 0 + j10 \qquad 10 \cdot e^{j10}$

$\overline{d} = -20 - j10 \qquad 22{,}36\; e^{j26{,}56}$

$\overline{e} = -5 + j4 \qquad 6{,}4\; e^{j(-38{,}6)}$

$\overline{f} = 3 - j6 \qquad 39 \cdot e^{j(-63{,}43°)}$

$|\overline{a}| = \sqrt{1^2 + 1^2} \qquad \alpha\overline{a} = \tan^{-1}\left(\frac{1}{1}\right)$

$|\overline{a}| = \sqrt{2} \qquad \alpha\overline{a} = 45°$

$|\overline{b}| = \sqrt{10^2 + 0^2} \qquad \alpha\overline{b} = \tan^{-1}\left(\frac{0}{10}\right)$

$|\overline{b}| = \sqrt{100} \qquad \alpha\overline{b} = 0$

$|\overline{b}| = 10$

$|\overline{c}| = \sqrt{0^2 + 10^2} \qquad \alpha\,\overline{c} = \tan^{-1}\left(\frac{10}{0}\right)$

$|\overline{c}| = 10 \qquad \alpha\,\overline{c} = 10$

$|\overline{d}| = \sqrt{(-20)^2 + (-10)^2} \qquad \alpha\,\overline{d} = \tan\left(\frac{-10}{-20}\right)$

$|\overline{d}| = 22{,}36 \qquad \alpha\overline{d} = 26{,}56$

$|\overline{e}| = \sqrt{(-5)^2 + 4^2} \qquad \alpha\,\overline{e} = \tan^{-1}\left(\frac{4}{-5}\right)$

$|\overline{e}| = 6{,}4 \qquad \alpha\,\overline{e} = -38{,}6$

2) Pasar a binomica

$\overline{a} = 3e^{j20°} \qquad 2{,}8 + j1{,}026$

$\overline{b} = 5e^{j\pi/2} \qquad 0 + j5$

$\overline{c} = 2e^{j\pi} \qquad -2 + j0$

$\overline{d} = 6e^{j3/2} \qquad 0 - j6$

$\overline{e} = 8e^{j2\pi} \qquad 8 + j0$

$\overline{f} = 4e^{j3\pi/\pi}$

$\overline{g} = 2e^{j\pi/4} \qquad 1{,}41 + j1{,}41$