

Segunda Lista de Álgebra Elementar
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1. Determine o módulo, argumento principal, a forma polar e a representação gráfica:

(a) $z = \frac{1}{2} + \frac{\sqrt{3}}{2}i$

(b) $z = \frac{\sqrt{3}}{2} + \frac{1}{2}i$

(c) $\frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2}i$

(d) $z = 7$

(e) $z = -2i$

(f) $z = -3$

(g) $z = 4 + 4i$

(h) $z = 1 - \sqrt{3}i$

(i) $z = 10i$

(j) $z = 3 - 3i$

(k) $z = -\sqrt{3} + \sqrt{3}i$

2. Calcule o módulo de z :

(a) $z = 3 - 2i$

(b) $z = -2 + i$

(c) $z = \frac{3}{2}i$

(d) $z = \frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2}i$

(e) $z = \cos\theta + i\operatorname{sen}\theta$

3. Coloque z na forma algébrica, isto é, $z = a + bi$ em que $a, b \in \mathbb{R}$.

(a) $z = -2(\cos\pi + i\operatorname{sen}\pi)$

(b) $z = 5(\cos\frac{\pi}{2} + i\operatorname{sen}\frac{\pi}{2})$

(c) $z = -2(\cos\frac{11\pi}{6} + i\operatorname{sen}\frac{11\pi}{6})$

(d) $z = -(\cos\frac{3\pi}{2} + i\operatorname{sen}\frac{3\pi}{2})$

4. Calcule o módulo dos números abaixo:

(a) $z = (2 - i)(3 - 3i)$

(b) $z = (-1 + \sqrt{3})^7$

(c) $z = \frac{2+3i}{2-i}$

5. Escreva na forma trigonométrica:

(a) $z = (\frac{1}{2} + \frac{\sqrt{3}}{2}i)^2$

(b) $z = \frac{i}{1+i}$

$$(c) z = 3(-\cos\frac{\pi}{6} + i\text{sen}\frac{\pi}{6})$$

$$(d) z = -2(\cos\frac{11\pi}{6} - i\text{sen}\frac{11\pi}{6})$$

6. Represente geometricamente no plano de Argand-Gauss os seguintes subconjuntos de \mathbb{C} :

$$(a) z = \{z \in \mathbb{C} \mid |z| = 1\}$$

$$(b) z = \{z \in \mathbb{C} \mid |z| \leq 2\}$$

$$(c) z = \{z \in \mathbb{C} \mid |z - i| = 1\}$$

7. Represente no plano de Argand-Gauss o conjunto de todos os números complexos da forma $z = \rho(\cos\frac{\pi}{4} + i\text{sen}\frac{\pi}{4})$ em que $\rho \in \mathbb{R}$.