

1.

z	$-z$	\bar{z}	$z^{-1} = \frac{1}{z}$
$z = 2 + i$	$-2 - i$	$2 - i$	$\frac{2}{5} - \frac{1}{5}i$
$z = -1 + 3i$	$1 - 3i$	$-1 - 3i$	$-\frac{1}{10} - \frac{3}{10}i$
$z = -i$	i	i	i
$z = -3 + 4i$	$3 - 4i$	$-3 - 4i$	$-\frac{3}{25} - \frac{4}{25}i$

2.

a. $z \cdot w = 2 - 2i$

b. $\bar{v} - w + (1 + \sqrt{3})i$

c. $(2w - \bar{z}) \cdot (i - v) = 2 - (2 - 2\sqrt{3})i$

d. $2(-z + 3v) = 2 + (-4 + 6\sqrt{3})i$

3.

 b. La longitud de cada diagonal es 2 y $\sqrt{20}$.

6.

• $z = 2 + 2i,$

$|z| = \sqrt{8}, \quad \arg(z) = \frac{\pi}{4},$

Forma trigonométrica $z = \sqrt{8} \cdot [\cos(\frac{\pi}{4}) + i \cdot \sin(\frac{\pi}{4})]$

Forma exponencial $z = \sqrt{8} \cdot e^{\frac{\pi}{4}i}$

• $v = 1 - \sqrt{3}i,$

$|v| = 2, \quad \arg(v) = \frac{5\pi}{3},$

Forma trigonométrica $v = 2 \cdot [\cos(\frac{5\pi}{3}) + i \cdot \sin(\frac{5\pi}{3})]$

Forma exponencial $v = 2 \cdot e^{\frac{5\pi}{3}i}$

• $w = -i,$

$|w| = 1, \quad \arg(w) = \frac{3\pi}{2},$

Forma trigonométrica $w = 1 \cdot [\cos(\frac{3\pi}{2}) + i \cdot \sin(\frac{3\pi}{2})]$

Forma exponencial $w = 1 \cdot e^{\frac{3\pi}{2}i}$

7.

a. $a = -1$

b. $\arg(z) = \frac{4}{3}\pi$, el ángulo del primer cuadrante que se utiliza para realizar el pasaje es $\alpha = \frac{\pi}{3}$.

8.

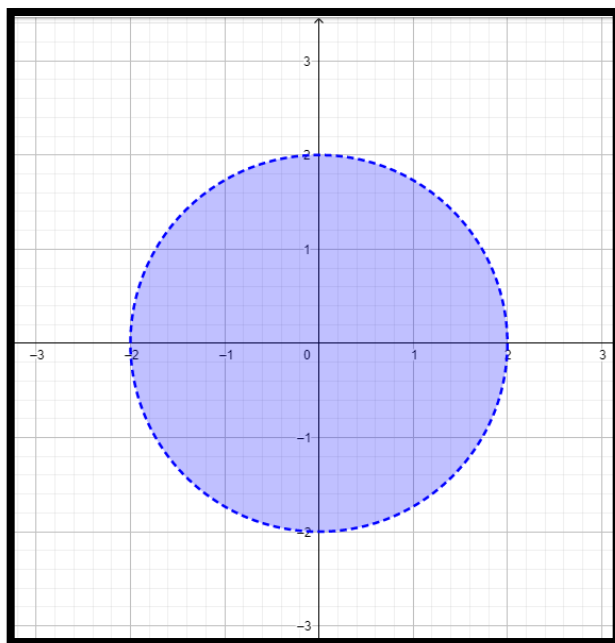
 a. Centro (0,0) y radio $\sqrt[n]{|z|}$. La ecuación $w^n = z$ tiene n soluciones complejas

9.

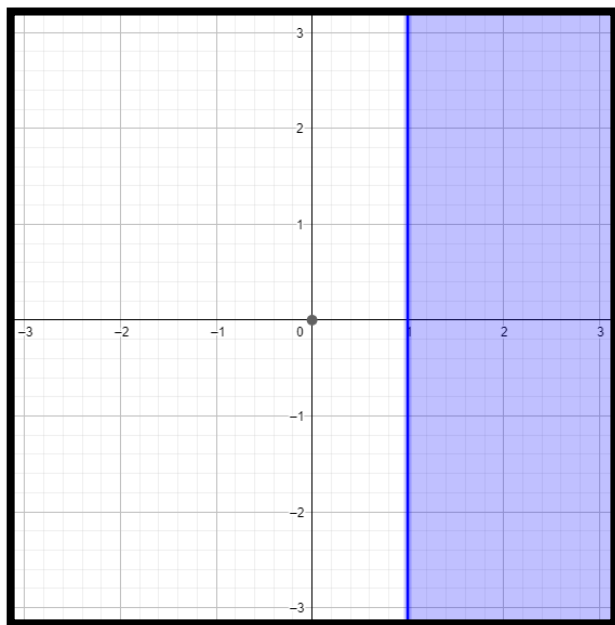
- a. $S = \{1, 2\}$
- b. $S = \left\{ \sqrt[3]{2}e^{\frac{\pi i}{2}}, \sqrt[3]{2}e^{\frac{7\pi i}{6}}, \sqrt[3]{2}e^{\frac{11\pi i}{6}} \right\}$
- c. $S = \{-2, 2, 1 + 2i, 1 - 2i\}$
- d. $S = \left\{ 2e^{\frac{\pi i}{3}}, 2e^{\pi i}, 2e^{\frac{5\pi i}{3}} \right\}$
- e. $S = \left\{ \sqrt[4]{2}e^{\frac{5\pi i}{12}}, \sqrt[4]{2}e^{\frac{11\pi i}{12}}, \sqrt[4]{2}e^{\frac{17\pi i}{12}}, \sqrt[4]{2}e^{\frac{23\pi i}{12}} \right\}$
- f. $S = \left\{ \sqrt[6]{2}e^{\frac{\pi i}{24}}, \sqrt[6]{2}e^{\frac{3\pi i}{8}}, \sqrt[6]{2}e^{\frac{17\pi i}{24}}, \sqrt[6]{2}e^{\frac{25\pi i}{24}}, \sqrt[6]{2}e^{\frac{33\pi i}{24}}, \sqrt[6]{2}e^{\frac{41\pi i}{24}} \right\}$
- g. $S = \{-3, 3, -3i, 3i\}$

10.

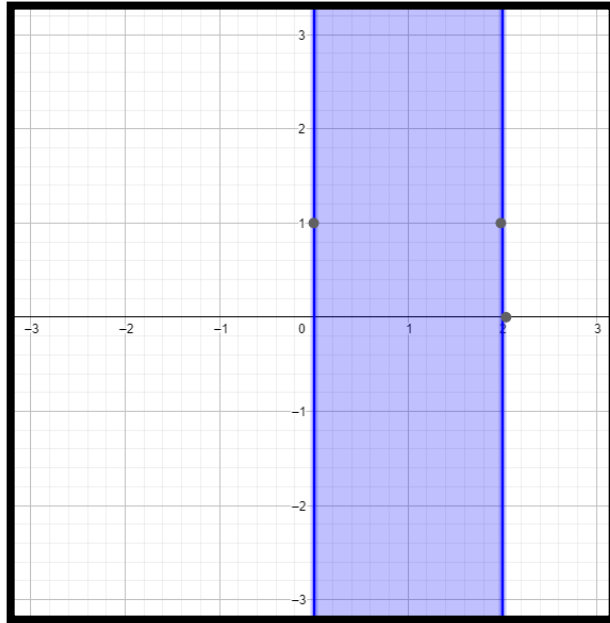
- a. $R = \{z \in \mathbb{C} : |z| < 2\}$



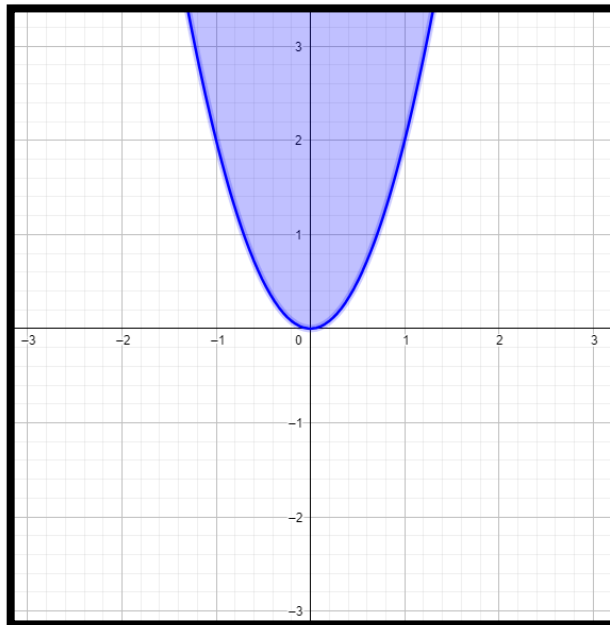
- b. $R = \{z \in \mathbb{C} : \operatorname{Re}(z) \geq 1\}$



c. $M = \{z \in \mathbb{C} : |z - 1|^2 + \operatorname{Re}(z^2) - [\operatorname{Re}(z)]^2 \leq 1\}$



d. $N = \{z \in \mathbb{C} : \operatorname{Re}(iz) + |z|^2 + \operatorname{Re}(z^2) \leq 0\}$



11.

a. $R = \{z \in \mathbb{C} : \operatorname{Re}(z) \leq 3, \operatorname{Im}(z) \leq 2\}$

b. $R = \{z \in \mathbb{C} : \operatorname{Re}(z) \leq \operatorname{Im}(z), \operatorname{Re}(z) \geq 0, \operatorname{Im}(z) \leq 4\}$

c. $R = \{z \in \mathbb{C} : \frac{\pi}{4} \leq \arg(z) \leq \frac{7}{4}\pi \wedge |z| \leq 2\}$