

EJERCICIO

Guia #6.

1. Relaciona cada una de las siguientes graficas construidas en coordena-

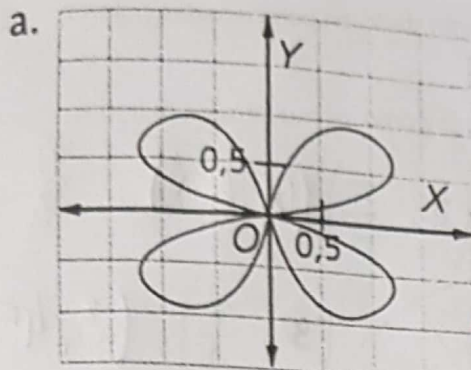


Figura 4.67

$$r = 2\text{sen } 3\theta$$

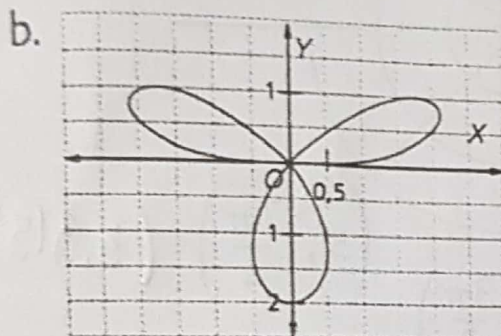


Figura 4.68

$$r = 1 - 2\text{sen } 3\theta$$

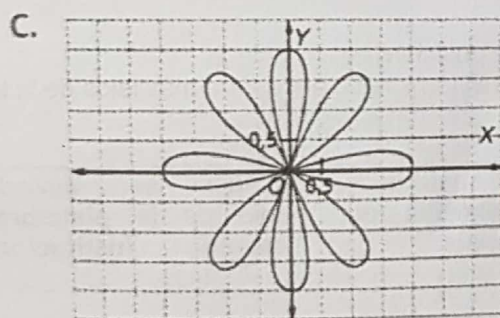


Figura 4.69

$$r = \text{sen } 2\theta$$

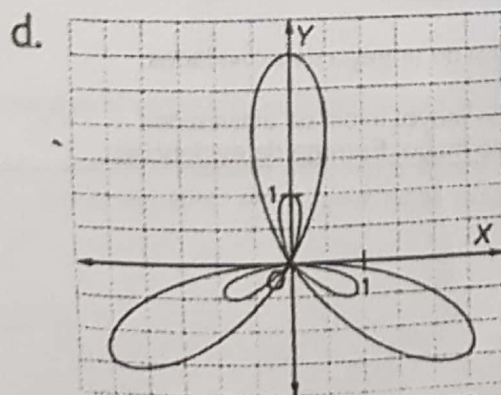


Figura 4.70

$$r = \cos 4\theta$$

- das Polares con la ecuacion que corresponde.

2. Expresa las coordenadas Cartesianas de cada punto dado en coordenadas Polares.

a) $(2\sqrt{3}, 2)$.

Respuesta.

A) $(2\sqrt{3}, 2)$

$$\theta = \text{Arctan}\left(\frac{2}{2\sqrt{3}}\right)$$

$$r = \sqrt{(2\sqrt{3})^2 + 2^2}$$

$$\theta = \text{Arctan} = 30^\circ$$

$$r = \sqrt{2^2 + 12}$$

$$r = \sqrt{4 + 12}$$

$$r = \sqrt{16}$$

$$r = 4$$

$$r = 4$$

b) $(\sqrt{2}, -\sqrt{2})$.

Respuesta.

$(\sqrt{2}, -\sqrt{2})$

$$r = \sqrt{(\sqrt{2})^2 + (-\sqrt{2})^2}$$

$$\theta = \text{Arctan}\left(\frac{-\sqrt{2}}{\sqrt{2}}\right)$$

$$r = \sqrt{2 + 2}$$

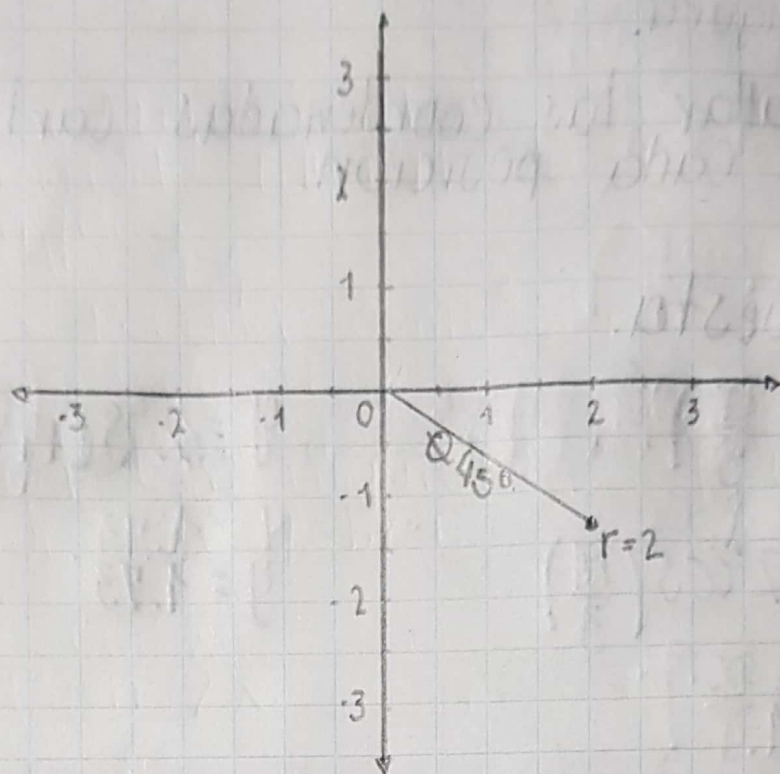
$$\theta = \text{Arctan} = -45^\circ$$

$$r = \sqrt{4}$$

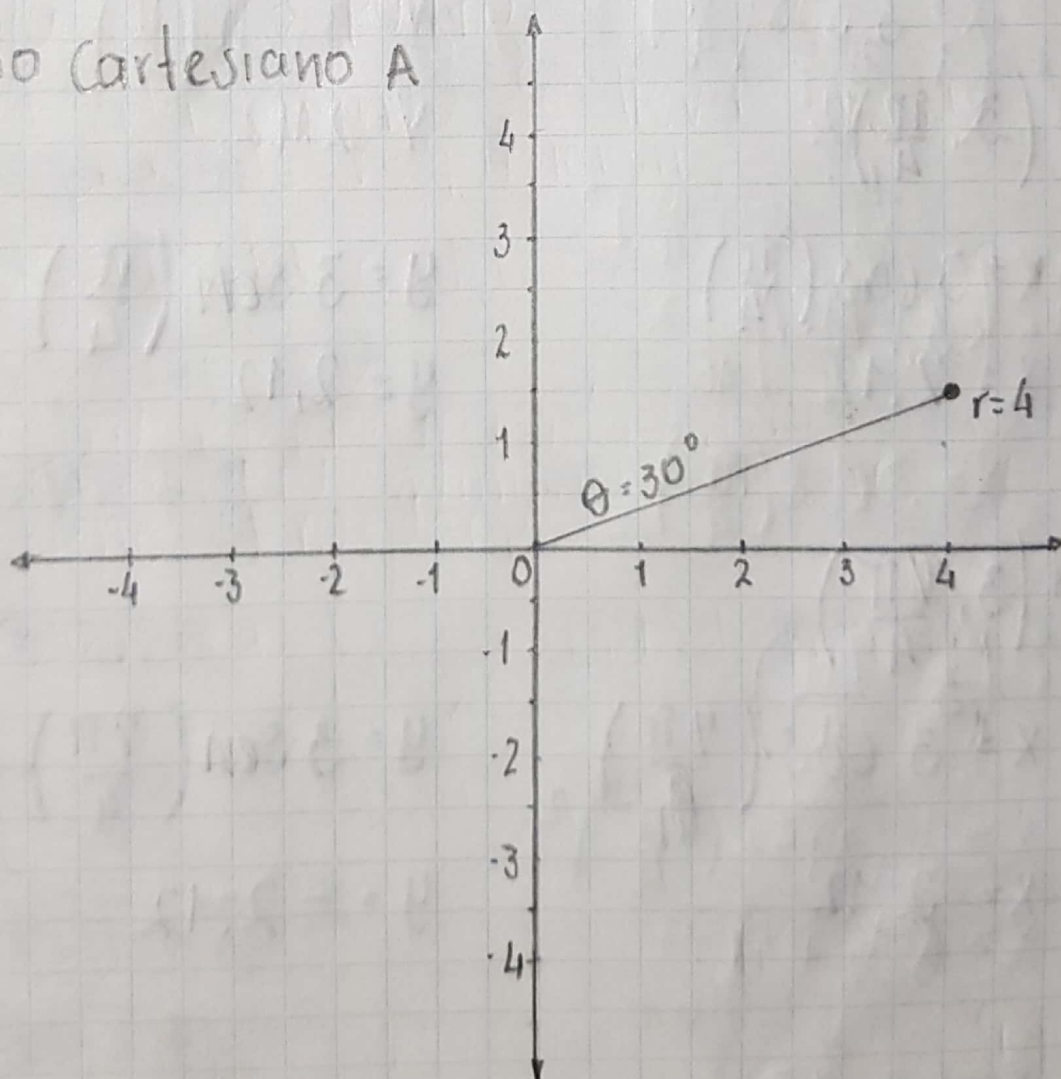
$$r = 2$$

$$r = 2$$

Plano Cartesiano. B



Plano Cartesiano A



3. Un radar registra la posición polar de varios aviones como se muestra en la figura.

A. Hallar las coordenadas cartesianas de cada posición.

Respuesta.

$$1^* \left(2, \frac{\pi}{3} \right)$$

$$x = 2 \cos\left(\frac{\pi}{3}\right)$$

$$x = 1$$

$$y = 2 \sin\left(\frac{\pi}{3}\right)$$

$$y = 1.73$$

$$2^* \left(3, \frac{\pi}{4} \right)$$

$$x = 3 \cos\left(\frac{\pi}{4}\right)$$

$$x = 2.12$$

$$y = 3 \sin\left(\frac{\pi}{4}\right)$$

$$y = 2.12$$

$$y = 3 \sin\left(\frac{\pi}{4}\right)$$

$$y = 2.12$$

$$3^* \left(3, \frac{7\pi}{4} \right)$$

$$x = 3 \cos\left(\frac{7\pi}{4}\right)$$

$$x = 2.12$$

$$y = 3 \sin\left(\frac{7\pi}{4}\right)$$

$$y = -2.12$$

$$4 * \left(3, \frac{3\pi}{2} \right)$$

$$x = 3 \cos\left(\frac{3\pi}{2}\right)$$

$$x = 0$$

$$y = 3 \sin\left(\frac{3\pi}{2}\right)$$

$$y = -3$$

$$5 * \left(1, \pi \right)$$

$$x = 1 \cos(\pi)$$

$$x = -1$$

$$y = 1 \sin(\pi)$$

$$y = 0$$

B. Encierra las coordenadas de la posición del avión que se encuentra mas lejos de la torre de control.

Respuesta.

$$1 * \left(2, \frac{\pi}{3} \right)$$

$$r = \sqrt{(2)^2 + \left(\frac{\pi}{3}\right)^2}$$

$$r = \sqrt{4 + \frac{\pi^2}{9}}$$

$$r = 2.25$$

$$2 * \left(3, \frac{\pi}{4} \right)$$

$$r = \sqrt{(3)^2 + \left(\frac{\pi}{4}\right)^2}$$

$$r = \sqrt{9 + \frac{\pi^2}{16}}$$

$$r = 3.1$$

$$3 * \left(3, \frac{7\pi}{4} \right)$$

$$r = \sqrt{(3)^2 + \left(\frac{7\pi}{4}\right)^2}$$

$$r = \sqrt{9 + \frac{49\pi^2}{16}}$$

$$r = 6.26$$

$$4 * \left(3, \frac{3\pi}{2} \right)$$

$$r = \sqrt{(3)^2 + \left(\frac{3\pi}{2}\right)^2}$$

$$r = \sqrt{9 + \frac{9\pi^2}{4}}$$

$$r = 5.59$$

$$5 \times (1, \pi)$$

$$r = \sqrt{1^2 + (\pi)^2}$$

$$r = \sqrt{1 + \pi^2}$$

$$r = 3.29$$

R1 = El Avion que se encuentra mas re-
-tirado de la torre de control es
el

$$\left(3, \frac{7\pi}{4}\right)$$