

GUIA DE APRENDIZATE N.6

Ejercicios:

1. Relaciona, cada una de las siguientes graficas construidas en coordenadas polares con la ecuación que le corresponde

a)

GRAFICA
A

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

b)

GRAFICA
B

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

c)

GRAFICA
C

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

d)

GRAFICA
D

$$r = \cos 4\theta$$

2. Expresa las coordenadas cartesianas de cada punto dado en coordenadas

R/ A. $(2\sqrt{3}, 2)$

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

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

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

$$r = (\sqrt{2^2 + (\sqrt{3})^2} + 4)$$

$$A. y = \sqrt{4 \cdot 3 + 4}$$

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

$$y = 16$$

$$y = 4$$

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

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

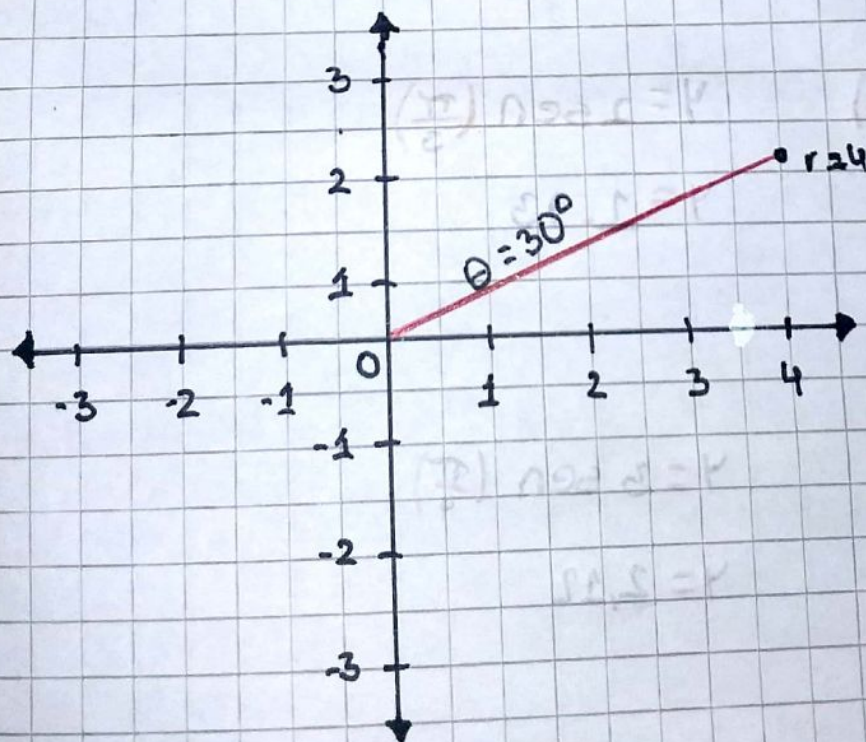
$$r = \sqrt{2 + 2}$$

$$r = \sqrt{4}$$

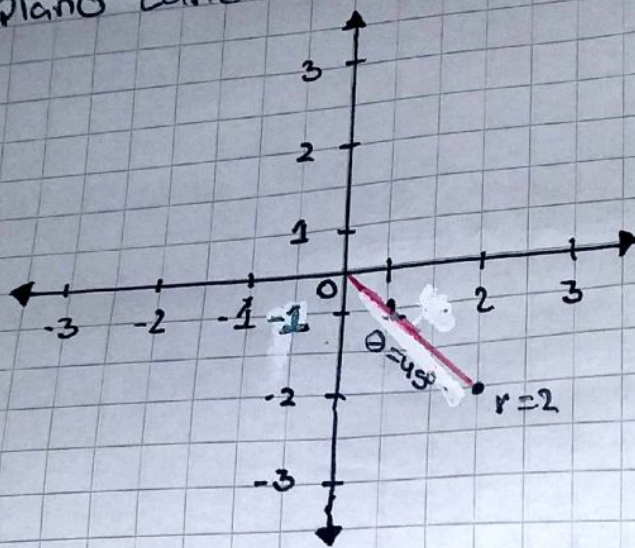
$$r = 2$$

$$r = 2$$

Plano Cartesiano A



Plano cartesiano B



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

A. Hallar las coordenadas cartesianas de cada posición.

1. $(2, \frac{\pi}{3})$

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

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

$$x = 1$$

$$y = 1.73$$

2. $(3, \frac{\pi}{4})$

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

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

$$x = 2.12$$

$$y = 2.12$$

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

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

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

$$x = 2.12$$

$$y = -2.12$$

$$4. (3, \frac{3\pi}{2})$$

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

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

$$x = 0$$

$$y = -3$$

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

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

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

$$x = -1$$

$$y = 0$$

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

$$R// 1. (2, \frac{\pi}{3})$$

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

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

$$r = 2.25$$

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

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

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

$$r = 6.26$$

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

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

$$2. (3, \frac{\pi}{4})$$

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

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

$$r = 3.1$$

$$4. (3, \frac{3\pi}{2})$$

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

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

$$r = 5.59$$

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

$$r = 3.29$$

R// El avión que se encuentra mas lejos de la torre de control es el $(3, 7\frac{\pi}{4})$