graficas construidas en coordenadas polares con la ecuación que le corresponde.

a.

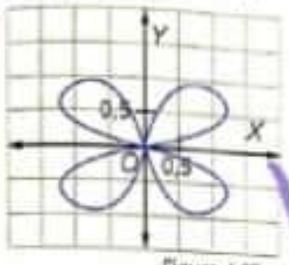

Figura 4.67

b.

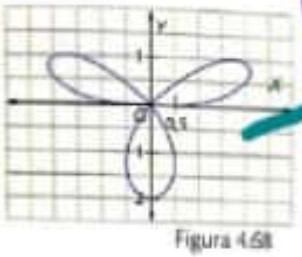

Figura 4.68

c.

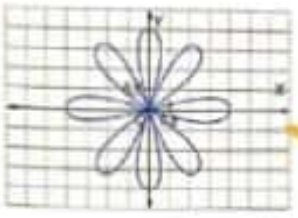

Figura 4.69

d.

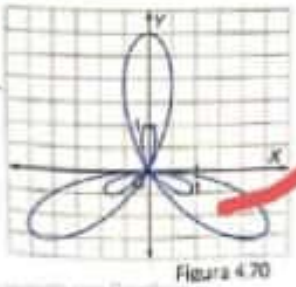

Figura 4.70

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

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

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

$r = \cos 4\theta$

2. Expresa las

Guia # 6

2) Expresa las coordenadas cartesianas de cada punto dado en coordenadas polares

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

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

Solucion:

a) $(2\sqrt{3}, 2) = (x, y)$

$x = 2\sqrt{3}$

$y = 2$

$r^2 = x^2 + y^2$

$r = \sqrt{x^2 + y^2}$

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

$= \sqrt{(4(3)) + 4}$

$= \sqrt{12 + 4}$

$= \sqrt{16}$

$= r = 4$

$\theta = \tan^{-1}\left(\frac{y}{x}\right)$

$\theta = \tan^{-1}\left(\frac{2}{2\sqrt{3}}\right)$

$= \tan^{-1}\left(\frac{1}{\sqrt{3}}\right)$

$\boxed{\theta = 30^\circ}$

$(4, 30^\circ)$

B $(\sqrt{2}, -\sqrt{2}) = (x, y)$

$x = \sqrt{2}$

$y = -\sqrt{2}$

$r^2 = x^2 + y^2$

$r = \sqrt{x^2 + y^2}$

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

$= \sqrt{2+2}$

$= \sqrt{4}$

$r = 2$

$\theta = \tan^{-1}\left(\frac{y}{x}\right)$

$= \tan^{-1}\left(\frac{-\sqrt{2}}{\sqrt{2}}\right)$

$\theta = \tan^{-1}(-1)$

$\theta = -45^\circ$

$(2, -45^\circ)$

3: UN RADAR REGISTRA LA POSICION POLAR DE VARIOS AVIONES COMO SE MUESTRA EN LA FIGURA.

a) HALLE LAS COORDENADAS CARTESIANAS DE CADA POSICION.

$(2, \frac{\pi}{3}) \rightarrow r=2$

$\theta = \frac{\pi}{3}$

$x = r \cdot \cos(\theta)$

$y = r \cdot \text{Sen}(\theta)$

"Solucion"

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

¡ $\cos(\frac{\pi}{3}) = \frac{1}{2}$

$x = 2(\frac{1}{2})$

$x = 1$

AHORA CON y:

$y = 2 \cdot (\text{sen}(\frac{\pi}{3}))$

$y = 2(\frac{\sqrt{3}}{2})$

¡ $\text{Sen}\frac{\pi}{3} = \frac{\sqrt{3}}{2}$

$y = \sqrt{3}$

LA COORDENADA CARTESIANA ES $(1, \sqrt{3})$.

$\left(3, \frac{\pi}{4}\right) \rightarrow r = 3$, $\theta = \frac{\pi}{4}$

$x = r\cos(\theta)$

$y = r \cdot \text{Sen}(\theta)$

Solucion

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

$x = 3\left(\frac{\sqrt{2}}{2}\right) \rightarrow x = \frac{3\sqrt{2}}{2}$

$y = (3) \cdot \left(\text{sen}\left(\frac{\pi}{4}\right)\right)$

$y = 3 \cdot \left(\frac{\sqrt{2}}{2}\right) \rightarrow \underline{y = \frac{3\sqrt{2}}{2}}$

LAS COORDENADAS CARTESIANAS SON $\left(\frac{3\sqrt{2}}{2}, \frac{3\sqrt{2}}{2}\right)$

$\left(3, \frac{7\pi}{4}\right) \rightarrow r = 3$, $\theta = \frac{7\pi}{4}$

$x = r \cdot \cos\theta$

$y = r \cdot \text{Sen}\,\theta$

Solucion

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

$\left[\cos\left(\frac{7\pi}{4}\right) = \frac{\sqrt{2}}{2}\right]$

$x = (3) \cdot \left(\frac{\sqrt{2}}{2}\right)$

$x = \frac{3\sqrt{2}}{2}$

$y = (3).(\operatorname{Sen}\left(\frac{7\pi}{4}\right))$; $\boxed{\operatorname{Sen}\left(\frac{7\pi}{4}\right) = -\frac{\sqrt{2}}{2}}$

$y = 3.\left(-\frac{\sqrt{2}}{2}\right)$

$y = -\frac{3\sqrt{2}}{2}$

LAS COORDENADAS CARTESIANAS ES $\left(\frac{3\sqrt{2}}{2}, -\frac{3\sqrt{2}}{2}\right)$

- $\left(3, \frac{3\pi}{2}\right) \rightarrow r = 3$ $\quad x = r \cdot \cos\theta$

  $\theta = \frac{3\pi}{2}$ $\quad y = r \cdot \operatorname{Sen}\theta$

Solucion:

$x = 3.(\cos\left(\frac{3\pi}{2}\right))$; $\cos\frac{3\pi}{2} = 0$

$x = 3.(0)$

$x = 0$

$y = 3.(\operatorname{Sen}\left(\frac{3\pi}{2}\right))$; $\operatorname{Sen}\frac{3\pi}{2} = -1$

$y = 3(-1)$

$y = -3$

LAS COORDENADAS CARTESIANAS ES $(0, -3)$

- $(1, \pi) \rightarrow$ $r = 1$ $\quad x = r \cdot \cos\theta$

$\theta = \pi$ $\quad y = r \cdot \operatorname{Sen}\theta$

Solucion

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

$x = (1)(-1)$

$x = -1$

$y = (1)(\operatorname{Sen}\pi)$; $\operatorname{Sen}\pi = 0$

$y = 1.(0)$

$y = 0$

LAS COORDENADAS CARTESIANAS ES $(-1, 0)$

B. ENCIERRA LAS COORDENADAS DE LA POSICION DEL AVION QUE SE ENCUENTRA MAS LEJOS DE LA TORRE DE CONTROL.

FIN FOTO.