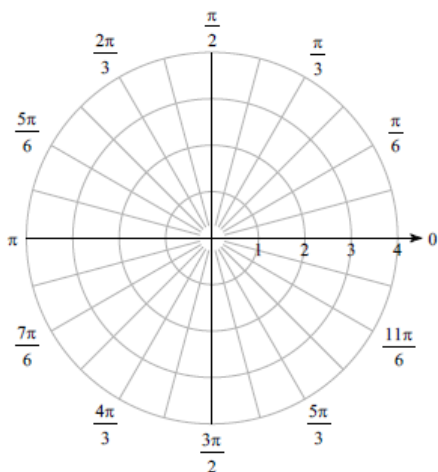


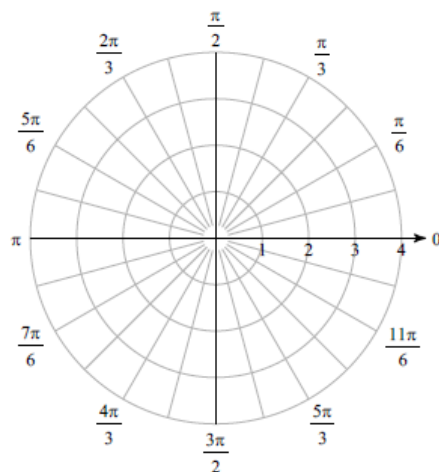
Polar and Parametric Review

Plot the point with the given polar coordinates.

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



2) $\left(4, -\frac{11\pi}{6}\right)$



Find all pairs of polar coordinates that describe the same point as the provided polar coordinates.

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

4) $\left(-1, \frac{11\pi}{6}\right)$

Convert each pair of polar coordinates to rectangular coordinates.

5) $\left(-3, -\frac{11\pi}{6}\right)$

6) $\left(2, \frac{5\pi}{4}\right)$

Convert each pair of rectangular coordinates to polar coordinates where $r > 0$ and $0 \leq \theta < 2\pi$.

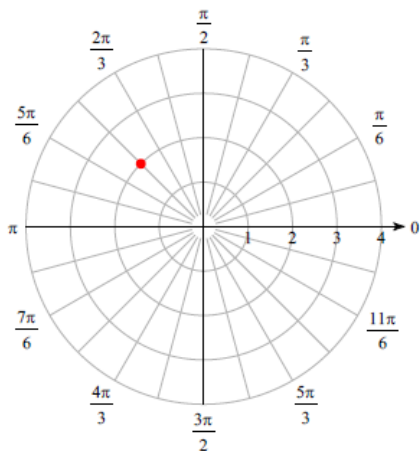
7) $\left(-\frac{3\sqrt{2}}{2}, \frac{3\sqrt{2}}{2}\right)$

8) $(-\sqrt{3}, 1)$

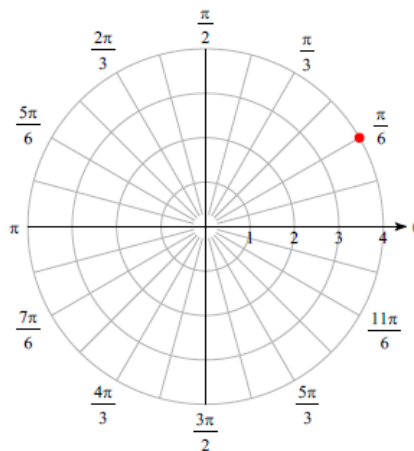
Answers

Plot the point with the given polar coordinates.

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



2) $\left(4, -\frac{11\pi}{6}\right)$



Find all pairs of polar coordinates that describe the same point as the provided polar coordinates.

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

$$\left(-3, -\frac{\pi}{4} + 2\pi n\right) \text{ and } \left(3, \frac{3\pi}{4} + 2\pi n\right)$$

where n is an integer

4) $\left(-1, \frac{11\pi}{6}\right)$

$$\left(-1, -\frac{\pi}{6} + 2\pi n\right) \text{ and } \left(1, \frac{5\pi}{6} + 2\pi n\right)$$

where n is an integer

Convert each pair of polar coordinates to rectangular coordinates.

5) $\left(-3, -\frac{11\pi}{6}\right)$

$$\left(-\frac{3\sqrt{3}}{2}, -\frac{3}{2}\right)$$

6) $\left(2, \frac{5\pi}{4}\right)$

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

Convert each pair of rectangular coordinates to polar coordinates where $r > 0$ and $0 \leq \theta < 2\pi$

7) $\left(-\frac{3\sqrt{2}}{2}, \frac{3\sqrt{2}}{2}\right)$

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

8) $(-\sqrt{3}, 1)$

$$\left(2, \frac{5\pi}{6}\right)$$

Two points are specified using polar coordinates. Find the distance between the points.

9) $(-2, -\pi), \left(-4, \frac{\pi}{3}\right)$

10) $\left(2, -\frac{\pi}{12}\right), \left(-3, \frac{5\pi}{3}\right)$

Convert each equation from rectangular to polar form.

11) $y = x\sqrt{3}$

12) $(x + 3)^2 + (y - 1)^2 = 10$

13) $x = \frac{y^2}{2}$

Answers

Two points are specified using polar coordinates. Find the distance between the points.

9) $(-2, -\pi), \left(-4, \frac{\pi}{3}\right)$

$$2\sqrt{7} \approx 5.292$$

10) $\left(2, -\frac{\pi}{12}\right), \left(-3, \frac{5\pi}{3}\right)$

$$\sqrt{13 + 6\sqrt{2}} \approx 4.635$$

Convert each equation from rectangular to polar form.

11) $y = x\sqrt{3}$

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

12) $(x + 3)^2 + (y - 1)^2 = 10$

$$r = -6\cos \theta + 2\sin \theta$$

13) $x = \frac{y^2}{2}$

$$r = 2\cot \theta \csc \theta$$

Convert each equation from polar to rectangular form.

14) $r^2 = 4\sec(2\theta)$

15) $r^2 = \csc(2\theta)$

16) $r = 4\tan\theta\sec\theta$

17) $r = -2\cos\theta - 6\sin\theta$

Write each pair of parametric equations in rectangular form.

18) $x = t, y = -\frac{t^2}{4}$

Write each pair of parametric equations in rectangular form. State any restrictions on the domain.

19) $x = \sqrt{6t}, y = -\frac{6t}{5}$

Answers

Convert each equation from polar to rectangular form.

14) $r^2 = 4\sec(2\theta)$

$$x^2 - y^2 = 4$$

15) $r^2 = \csc(2\theta)$

$$y = \frac{1}{2x}$$

16) $r = 4\tan\theta\sec\theta$

$$y = \frac{x^2}{4}$$

17) $r = -2\cos\theta - 6\sin\theta$

$$(x+1)^2 + (y+3)^2 = 10$$

Write each pair of parametric equations in rectangular form.

18) $x = t, y = -\frac{t^2}{4}$

$$y = -\frac{x^2}{4}$$

Write each pair of parametric equations in rectangular form. State any restrictions on the domain.

19) $x = \sqrt{6t}, y = -\frac{6t}{5}$

$$y = -\frac{x^2}{5}, x \geq 0$$

Write each pair of parametric equations in rectangular form.

20) $x = 4\cos t, y = 4\sin t$

21) $x = 3\sin t, y = 2\cos t$

22) $x = 4\sec t, y = 4\tan t$

23) $x = 2t - 2, y = \frac{2t^2}{3} - \frac{4t}{3} + \frac{2}{3}$

24) $x = 4\sin 2t - 2, y = 4\cos 2t + 2$

25) $x = \tan \frac{t}{2}, y = 3\sec \frac{t}{2}$

Answers

Write each pair of parametric equations in rectangular form.

20) $x = 4\cos t$, $y = 4\sin t$

$$x^2 + y^2 = 16$$

21) $x = 3\sin t$, $y = 2\cos t$

$$\frac{x^2}{9} + \frac{y^2}{4} = 1$$

22) $x = 4\sec t$, $y = 4\tan t$

$$\frac{x^2}{16} - \frac{y^2}{16} = 1$$

23) $x = 2t - 2$, $y = \frac{2t^2}{3} - \frac{4t}{3} + \frac{2}{3}$

$$y = \frac{x^2}{6}$$

24) $x = 4\sin 2t - 2$, $y = 4\cos 2t + 2$

$$(x + 2)^2 + (y - 2)^2 = 16$$

25) $x = \tan \frac{t}{2}$, $y = 3\sec \frac{t}{2}$

$$\frac{y^2}{9} - x^2 = 1$$