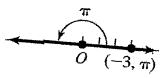
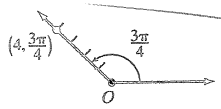
5.1

Quiz 10 key

20.



32.



a. $r>0,\ -2\pi\le\theta<0 \quad \left(4,-\frac{5\pi}{4}\right)$

b. $r<0,\ 0\le\theta<2\pi \quad \left(-4,\frac{7\pi}{4}\right)$

c. $r>0,\ 2\pi\le\theta<4\pi \quad \left(4,\frac{11\pi}{4}\right)$

40. $x=r\cos\theta=4\cos\frac{3\pi}{2}=4\cdot 0=0$

$y=r\sin\theta=4\sin\frac{3\pi}{2}=4\cdot(-1)=-4$

Rectangular coordinates of the point $\left(4,\frac{3\pi}{2}\right)$ are $(0,-4)$.

60. The point $(-3,\ 3)$ lies in quadrant II.

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

$\theta=\tan^{-1}\left(\frac{y}{x}\right)=\tan^{-1}\left(\frac{3}{-3}\right)=\tan^{-1}(-1)=-\frac{\pi}{4}$

Polar coordinates of the point $(-3,3)$ are $\left(3\sqrt{2},\frac{3\pi}{4}\right)$.

68. $x^2+y^2=x$

$r^2=r\cos\theta$

$r=\cos\theta$

76. $r=\sin\theta+1$

$r^2=r\sin\theta+r$

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

80. $r=4$

$r^2=16$

$x^2+y^2=16$

5.2

14. $r=2$

The equation is of the form $r=a,\ a>0$. It is a circle, center at the pole and radius 2. Transform to rectangular form:

$r=2$

$r^2=4$

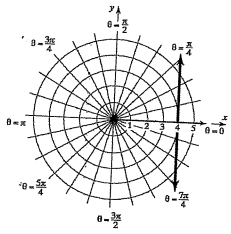
$x^2+y^2=4$

18. $r\cos\theta=4$

The equation is of the form $r\cos\theta=a$. It is a vertical line, 4 units to the right of the pole. Transform to rectangular form:

$r\cos\theta=4$

$x=4$



26. $r\csc\theta=8$

The equation is a circle, passing through the pole, center on the line $\theta=\frac{\pi}{2}$ and radius 4.

Transform to rectangular form:

$r\csc\theta=8$

$r\cdot\frac{1}{\sin\theta}=8$

$r=8\sin\theta$

$r^2=8r\sin\theta$

$x^2+y^2=8y$

$x^2+y^2-8y=0$

$x^2+(y-4)^2=16$

center $(0,\ 4)$; radius 4