Polar and Rectangular Forms of Equations

Convert each equation from polar to rectangular form.

1) $\tan\theta = 2$

2) $r = 4\cos\theta - 4\sin\theta$

3) $r = -2\cos\theta$

4) $r = 2\cos\theta + 2\sin\theta$

Convert each equation from rectangular to polar form.

5) $(x-1)^2 + (y+1)^2 = 2$

6) $x = y^2$

7) $x = y^2$

8) $y = \frac{x^2}{5}$

Convert each equation from polar to rectangular form.

9) $r = 4\csc\left(\theta + \frac{\pi}{6}\right)$

10) $r = 2\sin\left(\theta + \frac{\pi}{4}\right)$

11) $r^2 = 5\sec(2\theta)$

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

Answers

Convert each equation from polar to rectangular form.

1) $\tan\theta = 2$

$y = 2x$

2) $r = 4\cos\theta - 4\sin\theta$

$(x-2)^2 + (y+2)^2 = 8$

3) $r = -2\cos\theta$

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

4) $r = 2\cos\theta + 2\sin\theta$

$(x-1)^2 + (y-1)^2 = 2$

Convert each equation from rectangular to polar form.

5) $(x-1)^2 + (y+1)^2 = 2$

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

6) $x = y^2$

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

7) $x = y^2$

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

8) $y = \frac{x^2}{5}$

$r = 5\tan\theta\sec\theta$

Convert each equation from polar to rectangular form.

9) $r = 4\csc\left(\theta + \frac{\pi}{6}\right)$

$y = -\frac{x\sqrt{3}}{3} + \frac{8\sqrt{3}}{3}$

10) $r = 2\sin\left(\theta + \frac{\pi}{4}\right)$

$\left(x - \frac{\sqrt{2}}{2}\right)^2 + \left(y - \frac{\sqrt{2}}{2}\right)^2 =$

11) $r^2 = 5\sec(2\theta)$

$x^2 - y^2 = 5$

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

$x^2 - y^2 = 4$