9-3

NAME _____ DATE _____ PERIOD _____

Practice

Polar and Rectangular Coordinates

Find the rectangular coordinates of each point with the given polar coordinates.

1. $(6, 120°)$
$(-3, 3\sqrt{3})$

2. $(-4, 45°)$
$(-2\sqrt{2}, -2\sqrt{2})$

3. $\left(4, \frac{\pi}{6}\right)$
$(2\sqrt{3}, 2)$

4. $\left(0, \frac{13\pi}{3}\right)$
$(0, 0)$

Find the polar coordinates of each point with the given rectangular coordinates. Use $0 \leq \theta < 2\pi$ and $r \geq 0$.

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

6. $(2, -3)$
(3.61, 5.30)

7. $(-3, \sqrt{3})$
$\left(2\sqrt{3}, \frac{5\pi}{6}\right)$

8. $(-5, -8)$
(9.43, 4.15)

Write each polar equation in rectangular form.

9. $r = 4$
$x^2 + y^2 = 16$

10. $r \cos \theta = 5$
$x = 5$

Write each rectangular equation in polar form.

11. $x^2 + y^2 = 9$
$r = \pm 3$

12. $y = 3$
$r \sin \theta = 3$ or $r = 3 \csc \theta$

13. ***Surveying*** A surveyor records the polar coordinates of the location of a landmark as $(40, 62°)$. What are the rectangular coordinates?
(18.78, 35.32)

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NA

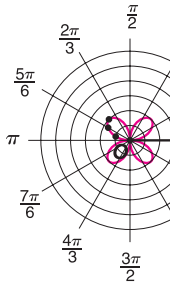
E

Polar Rose

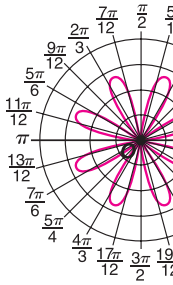
The polar equation
When $n = 1$, the r

Sketch the graphs

1. $r = 2 \sin 2\theta$



3. $r = -2 \sin 4\theta$



5. The graph of th
results from Ex

a. The distance

b. If n is an od

c. If n is an eve

6. Write $r = 2 \sin$

7. The total area A
$r = a \sin 3\theta$ is g
area is $A = \frac{1}{2}a^2$

a. Find the are

b. Write the eq
Sample a