Name:_____ Class:_____ Date:_____

PC_G11_Ch9_Test

Indicate the answer choice that best completes the statement or answers the question.

Determine the symmetry of each function.

1. $r = 10 - 9\cos\theta$

   a. symmetric with respect to the line $\theta = \frac{3\pi}{2}$
   b. symmetric with respect to the polar axis
   c. symmetric with respect to the pole
   d. symmetric with respect to the line $\theta = \pi$

Write each polar equation in rectangular form.

2. $r = \frac{1}{1 - \sin\theta}$

   a. $y^2 = 2(x + 0.5)$ b. $x^2 = -2(y - 0.5)$
   c. $x^2 = 2(y + 0.5)$ d. $y^2 = -2(x - 0.5)$

Determine the symmetry of each function.

3. $r = 10 - 15\sin\theta$

   a. symmetric with respect to the line $\theta = \frac{3\pi}{2}$
   b. symmetric with respect to the line $\theta = \frac{\pi}{2}$
   c. symmetric with respect to the line $\theta = \pi$
   d. symmetric with respect to the pole

Write a polar equation for the conic with the given characteristics.

4. e = 1.6; directrix: $y = 4$

   a. $r = \frac{4}{1 + 1.6\sin\theta}$ b. $r = \frac{6.4}{1 + 1.6\cos\theta}$
   c. $r = \frac{4}{1 + 1.6\cos\theta}$ d. $r = \frac{6.4}{1 + 1.6\sin\theta}$

5. e = 1.6; vertices at $(-15.6, 0)$ and $(-3.6, 0)$

   a. $r = \frac{-9.36}{1 + 1.6\cos\theta}$ b. $r = \frac{-9.36}{1 + 1.6\sin\theta}$
   c. $r = \frac{-9.36}{1 - 1.6\sin\theta}$ d. $r = \frac{-9.36}{1 - 1.6\cos\theta}$

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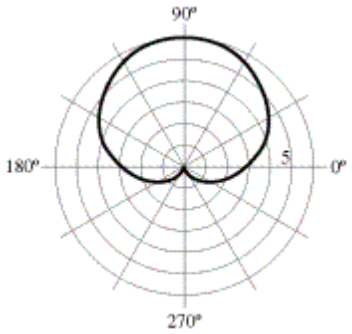
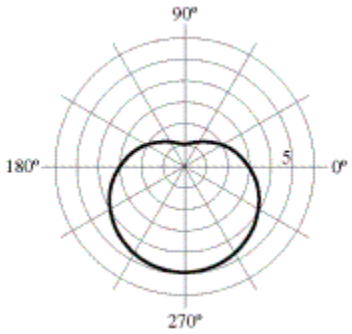
6. Graph the polar equation $r = 3 - 4\cos\theta$.

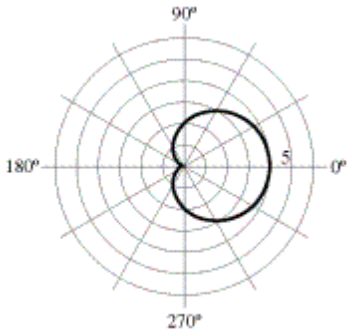
a.



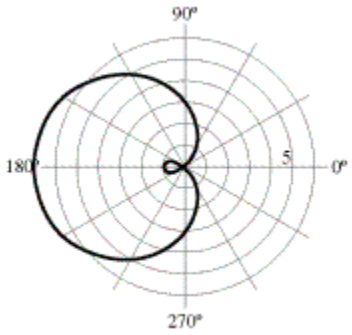
b.



c.



d.



7. Determine the eccentricity for $r = \frac{5}{2 + 1\sin\theta}$.

a. 0.5 b. 5
c. 1 d. 2

Write each equation in rectangular form.

8. $\theta = \frac{4\pi}{3}$

a. $y = x$ b. $y = \sqrt{3}x$
c. $y = \frac{\sqrt{3}}{3}x$ d. $y = -\sqrt{3}x$

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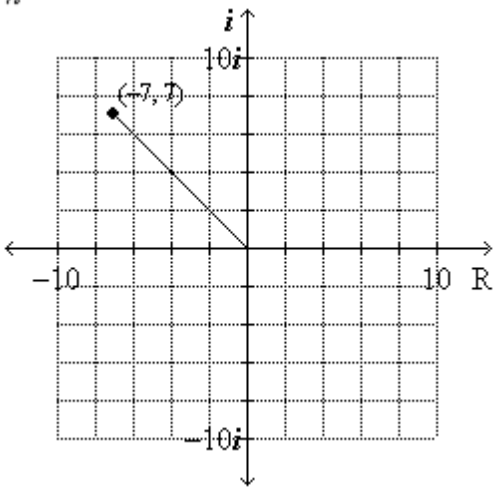
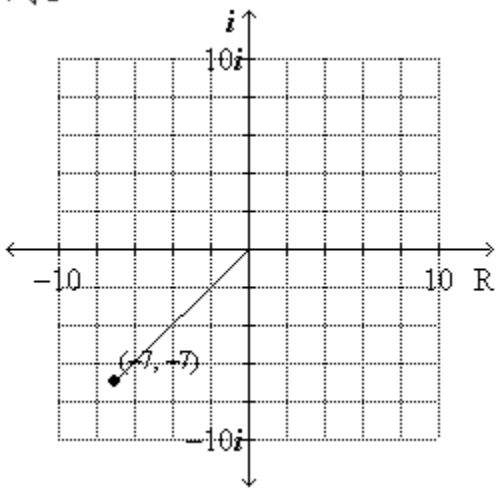
9. Graph the number $-7+7i$ in the complex plane and find its absolute value.

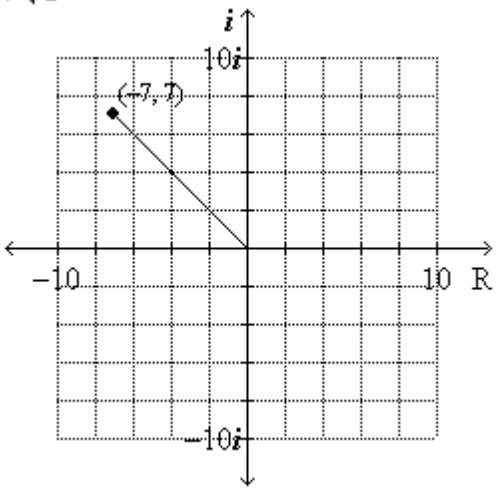
a. $7i$



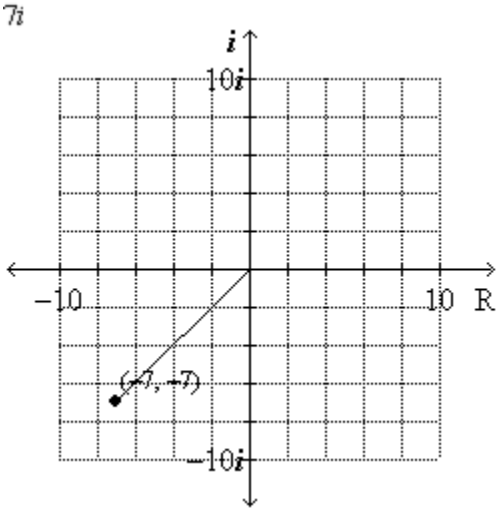
b. $7\sqrt{2}$



c. $7\sqrt{2}$



d. $7i$



Write each polar equation in rectangular form.

10. $r = \dfrac{2.1}{1 + 0.7\sin\theta}$

a. $\dfrac{x^2}{1.24} + \dfrac{(y-1.24)^2}{1.53} = 1$

b. $\dfrac{x^2}{49} + \dfrac{(y-7)^2}{49} = 1$

c. $\dfrac{(x-1.24)^2}{16.96} + \dfrac{y^2}{8.65} = 1$

d. $\dfrac{(x-7)^2}{16.96} + \dfrac{y^2}{8.65} = 1$

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11. $r = \dfrac{1.8}{1 + 0.3\cos\theta}$

a. $\dfrac{(x-2.57)^2}{3.91} + \dfrac{y^2}{3.56} = 1$

b. $\dfrac{x^2}{6.61} + \dfrac{(y-2.57)^2}{6.61} = 1$

c. $\dfrac{x^2}{1.38} + \dfrac{(y-1.38)^2}{1.92} = 1$

d. $\dfrac{(x-1.38)^2}{3.91} + \dfrac{y^2}{3.56} = 1$

12. Determine the equation of the directrix of $r = \dfrac{-3.6}{6 + 0.6\sin\theta}$.

a. $y = 6$ b. $y = -6$

c. $x = -6$ d. $y = -6$

13. Determine the zeros of $r = 8\sin 3\theta$.

a. $\theta = 0, \dfrac{\pi}{3}, \dfrac{2\pi}{3}$ b. $\theta = 0, \dfrac{\pi}{3}$

c. $\theta = 0, \dfrac{2\pi}{3}$ d. $\theta = \dfrac{\pi}{3}, \dfrac{2\pi}{3}$

Identify the type of curve given by each equation.

14. $r = 8 \pm 8\sin\theta$

a. Cardiod b. Spiral of Archimedes

c. Rose d. Lemniscate

15. Find the rectangular coordinates of $(3,\ 30°)$.

a. $\left(\dfrac{3\sqrt{3}}{2}, -\dfrac{3}{2}\right)$ b. $\left(\dfrac{3\sqrt{3}}{2}, \dfrac{3}{2}\right)$

c. $\left(-\dfrac{3\sqrt{3}}{2}, \dfrac{3}{2}\right)$ d. $\left(-\dfrac{3\sqrt{3}}{2}, -\dfrac{3}{2}\right)$

16. Write 5(cos109° + ***i***sin109°) in rectangular form. Round numerical entries in the answer to two decimal places.

a. 1.63 + 4.73***i*** b. 1.63 – 4.73***i***

c. –1.63 + 4.73***i*** d. –1.63 – 4.73***i***

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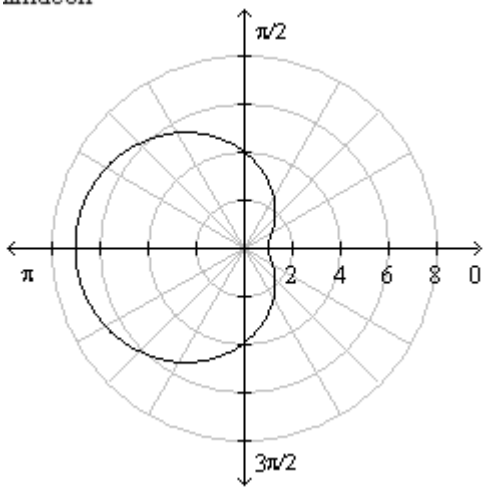
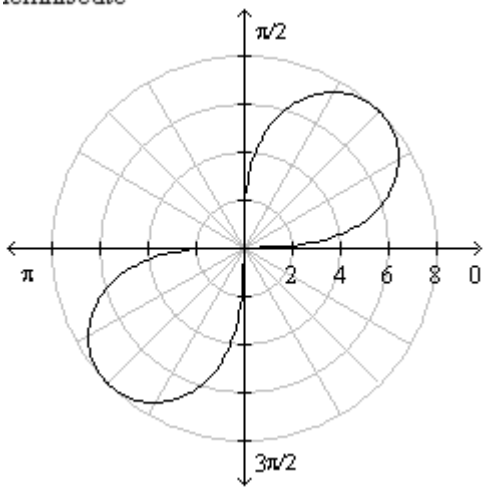
17. Identify the graph and type of curve for $r^2 = 64\cos 2\theta$

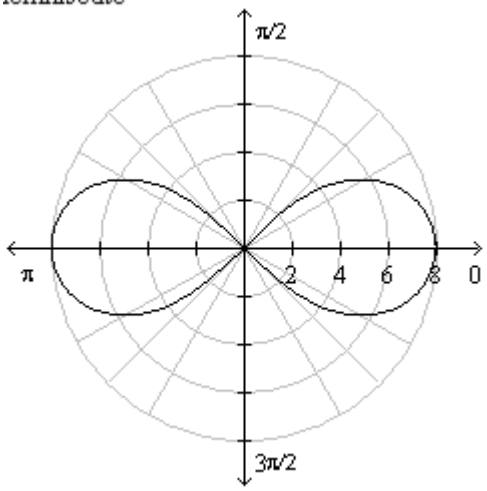
a. limacon



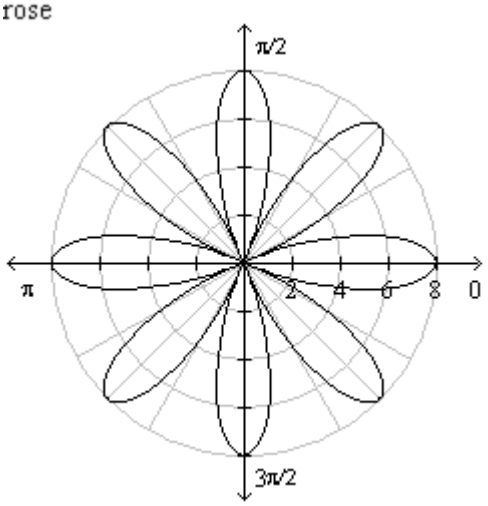
b. lemniscate



c. lemniscate



d. rose



Identify the type of curve given by each equation.

18. $r = 14\sin\theta$

a. Lemniscate b. Spiral of Archimedes
c. Cardiod d. Circle

19. Find $(-2 - 2i)^4$. Express the result in rectangular form.

a. 1.57 + 2.35***i*** b. 0.72 + 1.08***i***
c. 1.08 + 0.72***i*** d. 0.93 + 1.40***i***

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Write each equation in rectangular form.

20. $\theta = \frac{3\pi}{4}$

a. $y = x$

b. $y = -\frac{\sqrt{3}}{3}x$

c. $y = -\sqrt{3}x$

d. $y = -x$

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