

Precalculus G11 Ch9 H.W.

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

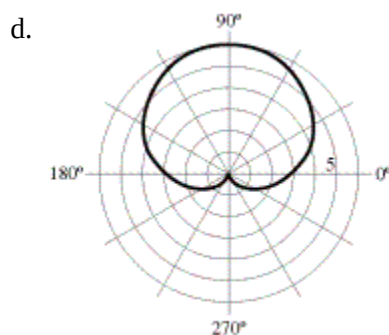
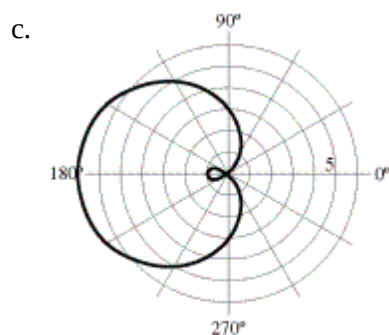
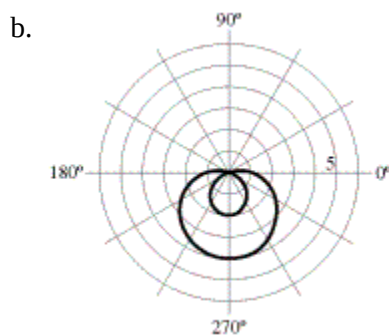
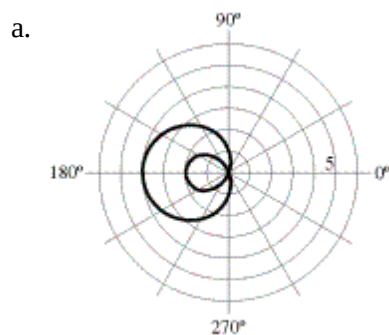
1. Determine the zeros of $r = 7 \cos 4\theta$.

- a. $\theta = \frac{\pi}{12}, \frac{\pi}{4}, \frac{\pi}{2}, \frac{3\pi}{4}, \frac{11\pi}{12}$ b. $\theta = \frac{\pi}{8}, \frac{3\pi}{8}, \frac{5\pi}{8}, \frac{7\pi}{8}$
 c. $\theta = 0, \frac{\pi}{2}$ d. $\theta = 0, \frac{\pi}{3}, \frac{\pi}{2}, \frac{2\pi}{3}, \pi$

2. Find the rectangular coordinates of $(9, 150^\circ)$.

- a. $\left(-\frac{9\sqrt{3}}{2}, -\frac{9}{2}\right)$ b. $\left(\frac{9\sqrt{3}}{2}, -\frac{9}{2}\right)$
 c. $\left(-\frac{9\sqrt{3}}{2}, \frac{9}{2}\right)$ d. $\left(\frac{9\sqrt{3}}{2}, \frac{9}{2}\right)$

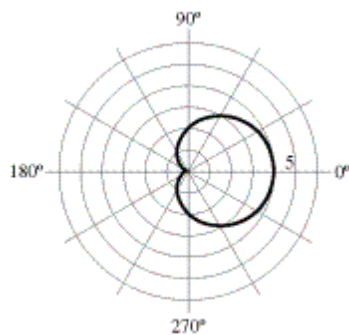
3. Graph the polar equation $r = 1 - 3 \sin \theta$.



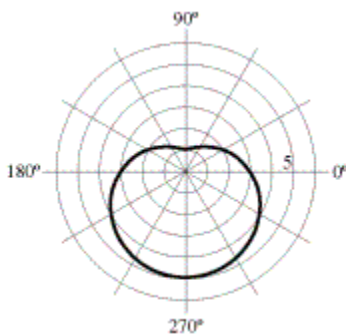
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4. Graph the polar equation $r = 3 - 2 \sin \theta$.

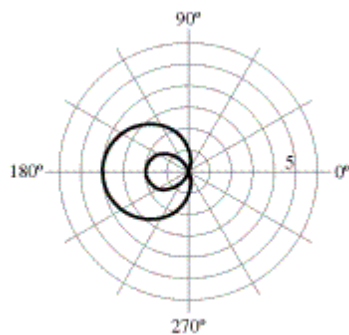
a.



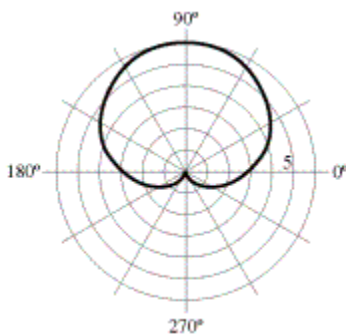
b.



c.



d.



5. Find the rectangular coordinates of $(3, 30^\circ)$.

a.

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

b.

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

c.

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

d.

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

Find each quotient and express it in rectangular form.

6. $2(\cos 150^\circ + i \sin 150^\circ) \div 8(\cos 210^\circ + i \sin 210^\circ)$

a.

$$\frac{1}{4}[\sin(-60^\circ) + i \cos(-60^\circ)]$$

b.

$$0.12 - 0.22i$$

c.

$$\frac{1}{4}[\cos(-60^\circ) + i \sin(-60^\circ)]$$

d.

$$-0.22 + 0.12i$$

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

7. $e = 1.6$; directrix: $y = -2$

a.

$$r = \frac{-3.2}{1 + 1.6 \sin \theta}$$

b.

$$r = \frac{-2}{1 + 1.6 \sin \theta}$$

c.

$$r = \frac{-3.2}{1 + 1.6 \cos \theta}$$

d.

$$r = \frac{-2}{1 + 1.6 \cos \theta}$$

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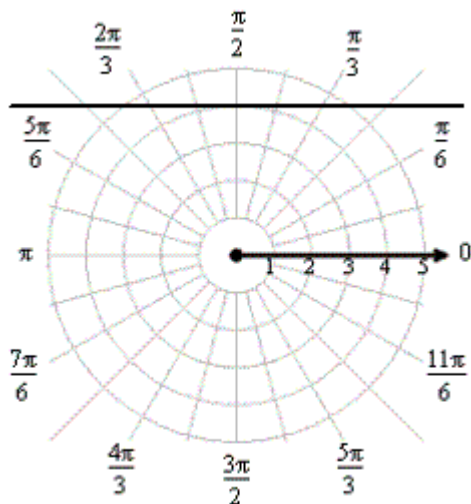
Identify the type of curve given by each equation.

8. $r = 4 + 13\sin \theta$

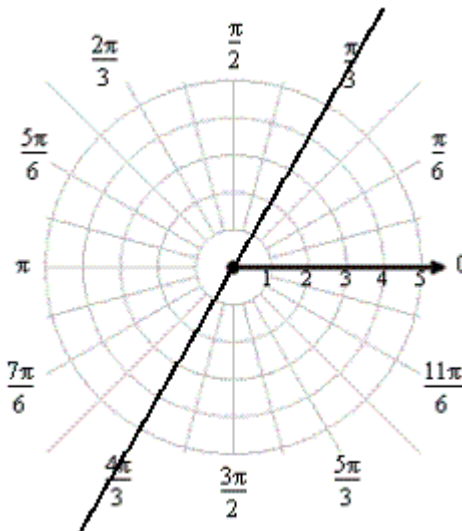
- a. Circle b. Cardioid
c. Limacon d. Lemniscate

9. Graph the polar equation $r = 4$.

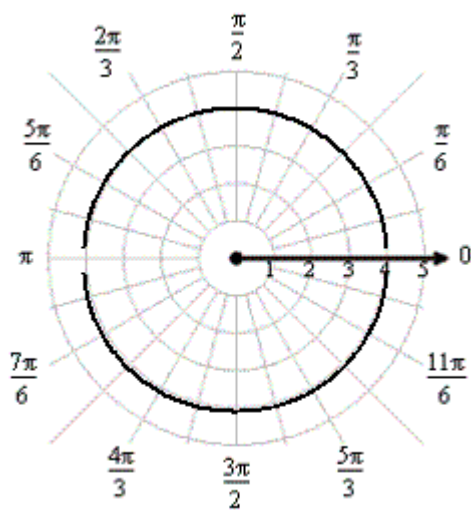
a.



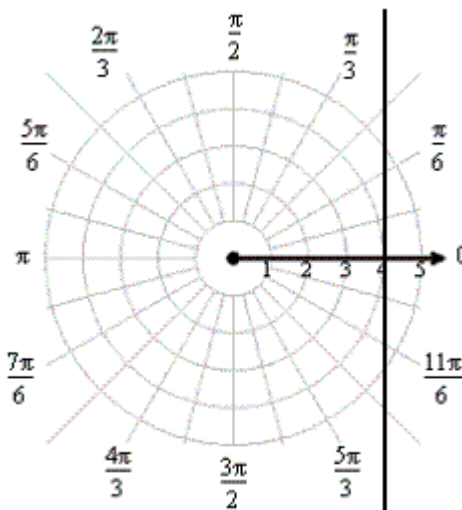
b.



c.



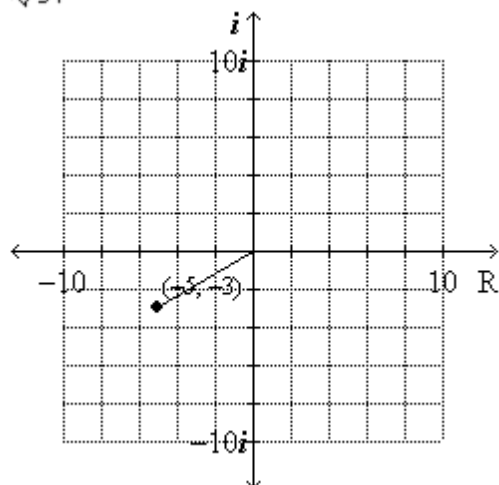
d.



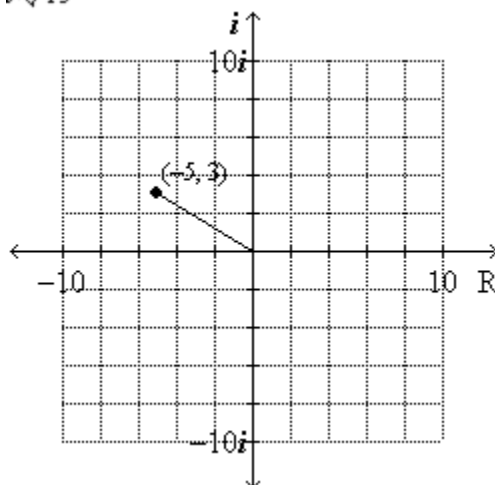
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10. Graph the number $-5 + 3i$ in the complex plane and find its absolute value.

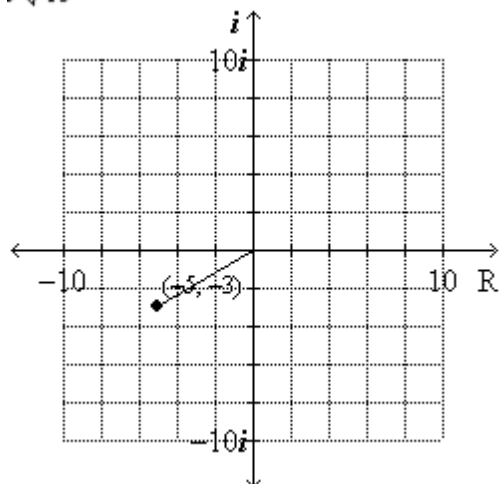
a. $\sqrt{34}$



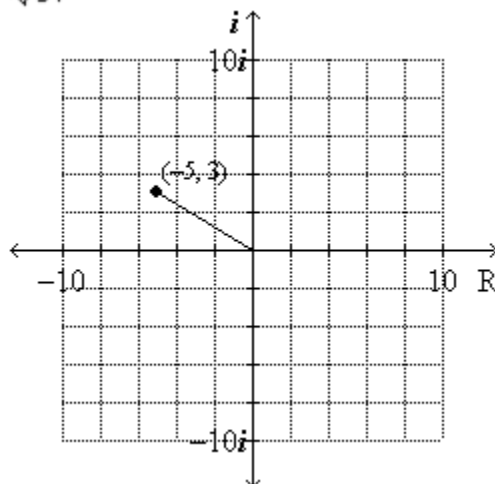
b. $i\sqrt{15}$



c. $i\sqrt{15}$



d. $\sqrt{34}$



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

a. $1.57 + 2.35i$ b. $0.72 + 1.08i$

c. $1.08 + 0.72i$ d. $0.93 + 1.40i$

Write each polar equation in rectangular form.

12. $r = \frac{6}{1 + \sin \theta}$

a. $x^2 = 12(y + 3)$ b. $y^2 = -12(x - 3)$

c. $y^2 = 12(x + 3)$ d. $x^2 = -12(y - 3)$

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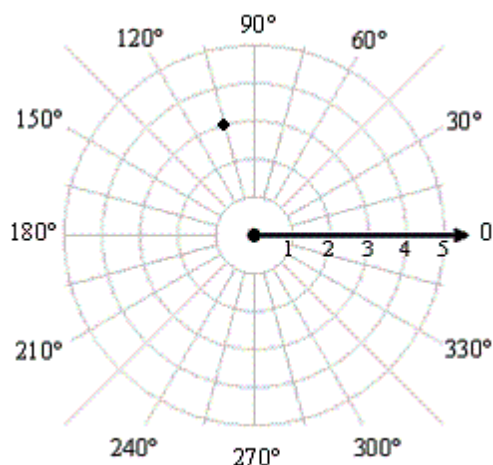
13. Determine the equation of the directrix of $r = \frac{-3.6}{6 + 0.6 \sin \theta}$.

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

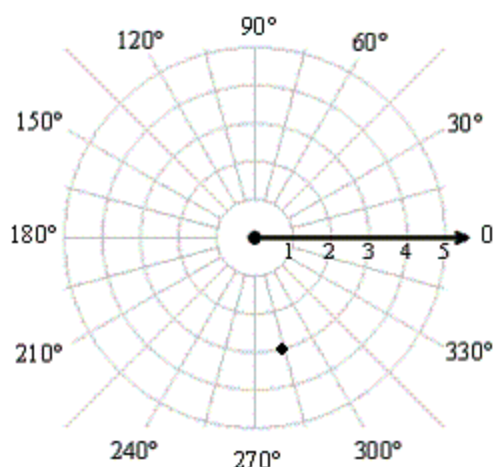
Graph each point on a polar grid.

14. $R(3, -255^\circ)$

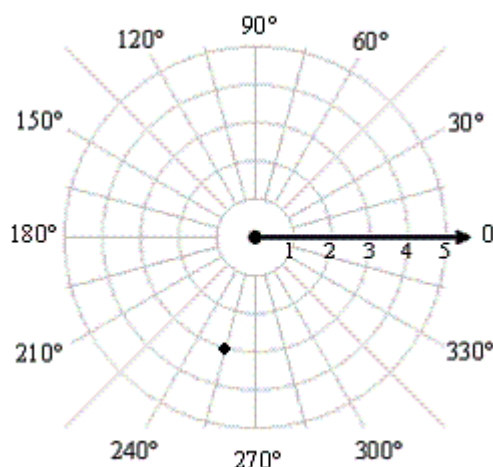
a.



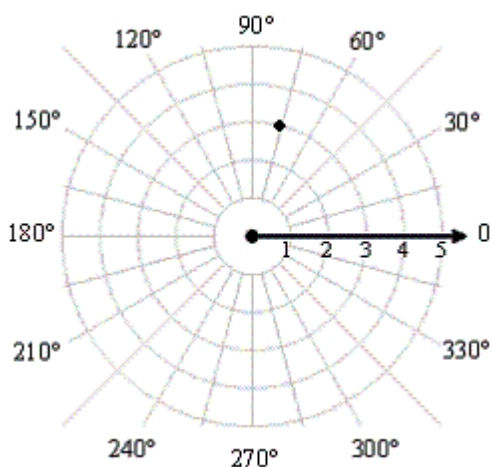
b.



c.



d.



15. Determine the maximum r -values of $r = 5 \sin 5\theta$.

- a. $\theta = \frac{\pi}{10}, \frac{3\pi}{10}, \frac{\pi}{2}, \frac{7\pi}{10}, \frac{9\pi}{10}$ b. $\theta = \frac{\pi}{2}$
c. $\theta = \frac{\pi}{5}, \frac{3\pi}{5}, \frac{\pi}{2}, \frac{7\pi}{5}, \frac{9\pi}{5}$ d. $\theta = \frac{\pi}{10}, \frac{3\pi}{10}, \frac{7\pi}{10}, \frac{9\pi}{10}$

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Write each polar equation in rectangular form.

16. $r = \frac{0.5}{1 - 0.5 \cos \theta}$

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

b. $\frac{(x-0.33)^2}{0.44} + \frac{y^2}{0.33} = 1$

c. $\frac{x^2}{0.33} + \frac{(y-0.33)^2}{0.11} = 1$

d. $\frac{(x-1)^2}{0.44} + \frac{y^2}{0.33} = 1$

17. Write $5(\cos 109^\circ + i \sin 109^\circ)$ in rectangular form. Round numerical entries in the answer to two decimal places.

a. $1.63 + 4.73i$

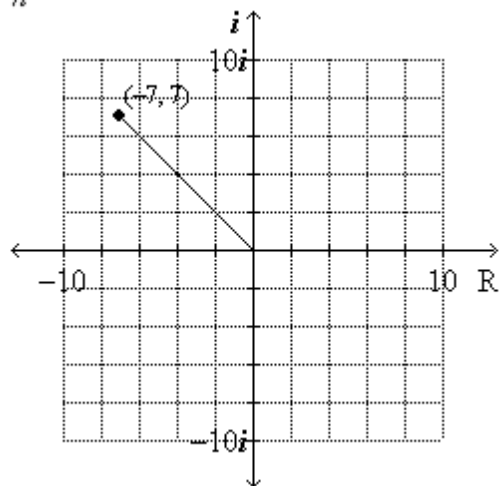
b. $1.63 - 4.73i$

c. $-1.63 + 4.73i$

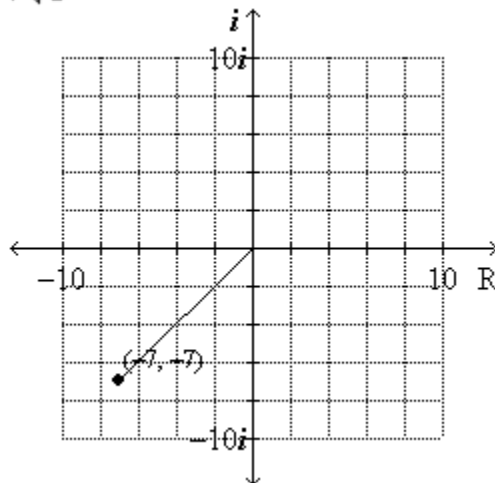
d. $-1.63 - 4.73i$

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

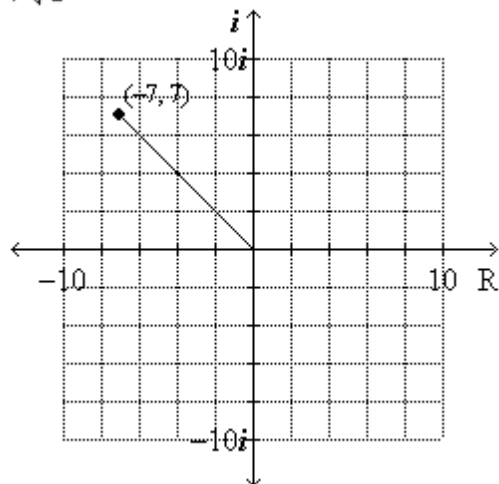
a. $7i$



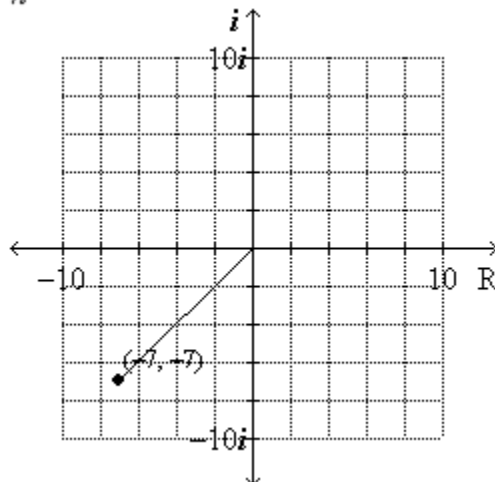
b. $7\sqrt{2}$



c. $7\sqrt{2}$



d. $7i$

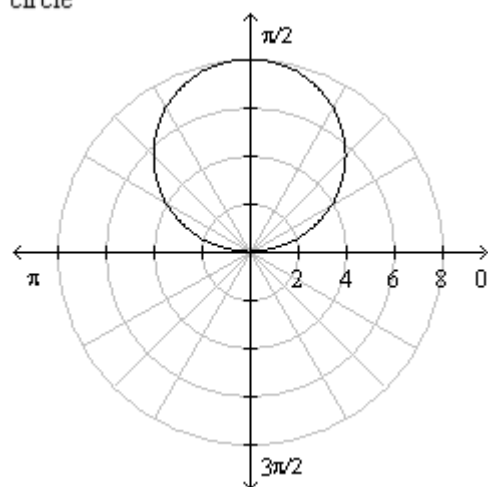


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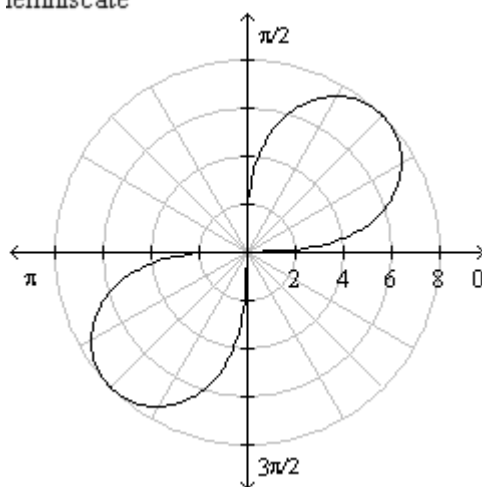
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19. Identify the graph and type of curve for $r = 8 \sin 4\theta$

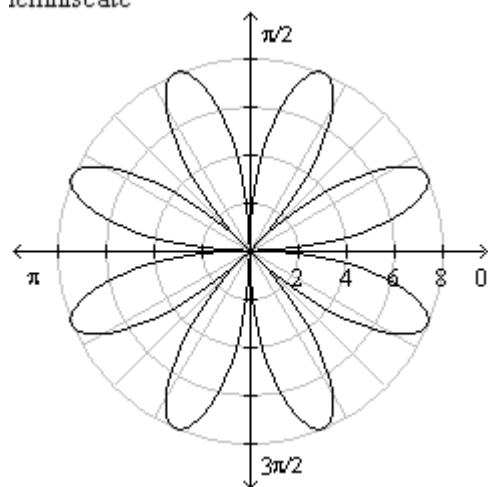
a. circle



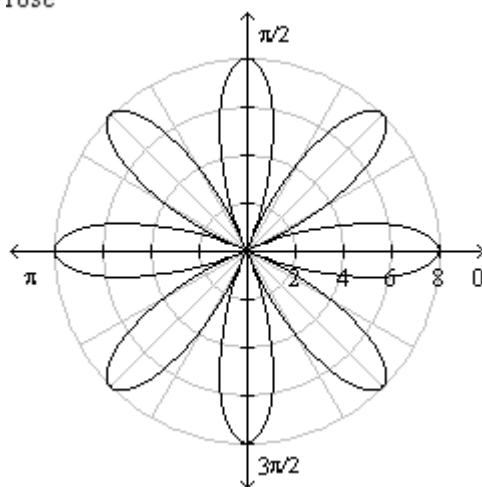
b. lemniscate



c. lemniscate



d. rose

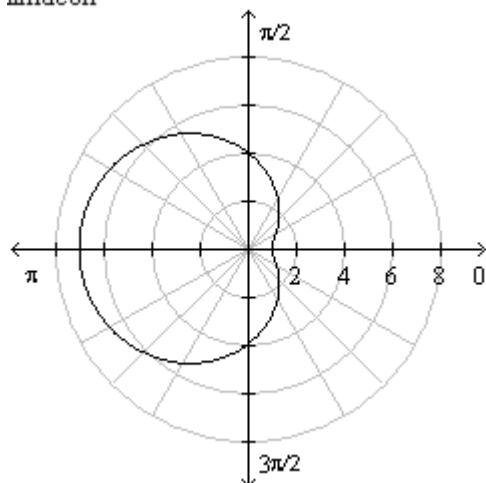


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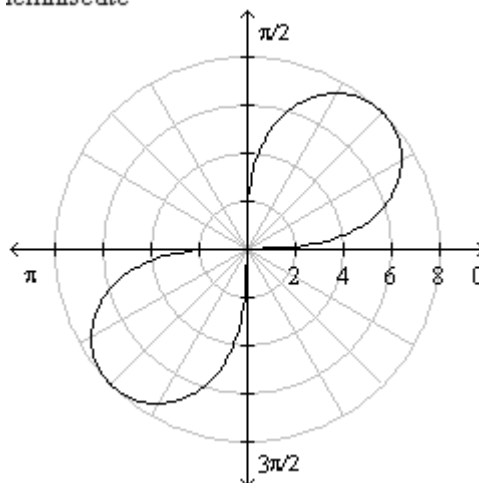
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20. Identify the graph and type of curve for $r^2 = 64 \cos 2\theta$

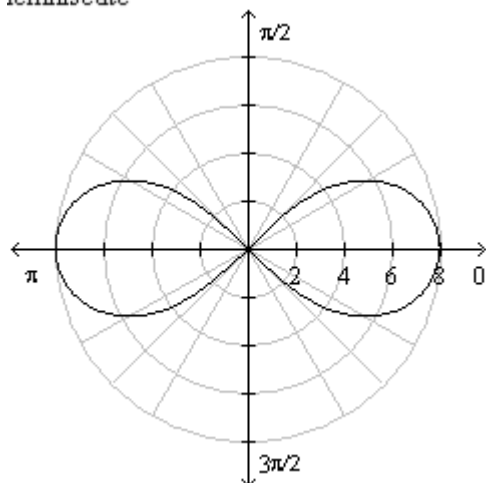
a. limaçon



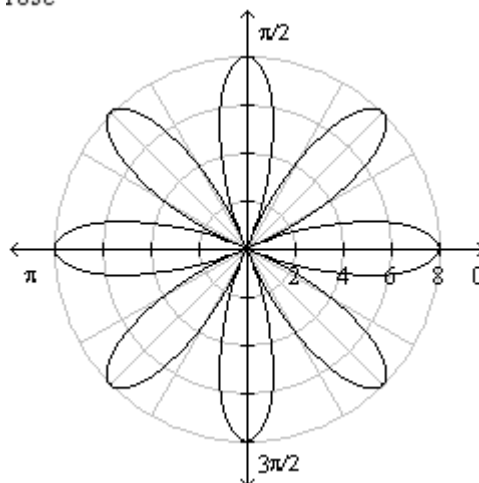
b. lemniscate



c. lemniscate



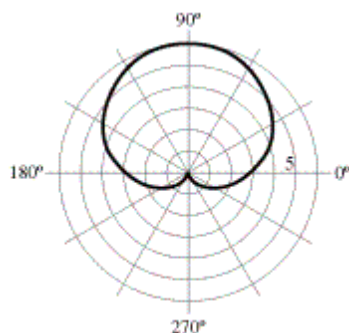
d. rose



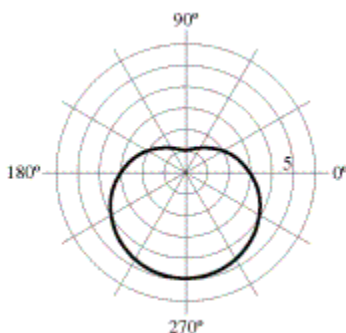
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21. Graph the polar equation $r = 3 - 4 \cos \theta$.

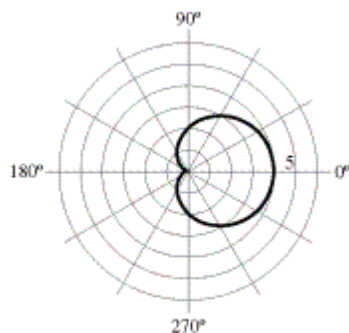
a.



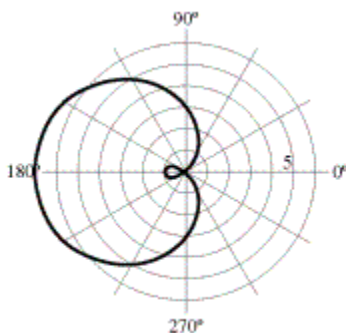
b.



c.



d.



Write each polar equation in rectangular form.

22. $r = \frac{0.9}{1 + 0.3 \sin \theta}$

a. $\frac{(x - 1.29)^2}{0.98} + \frac{y^2}{0.89} = 1$

b. $\frac{x^2}{0.69} + \frac{(y - 0.69)^2}{0.48} = 1$

c. $\frac{(x - 0.69)^2}{0.98} + \frac{y^2}{0.89} = 1$

d. $\frac{x^2}{1.65} + \frac{(y - 1.29)^2}{1.65} = 1$

23. Find the rectangular coordinates of $(3, 150^\circ)$.

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

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

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

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

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24. Determine the equation of the directrix of $r = \frac{-6.4}{4 - 6.4 \sin \theta}$.

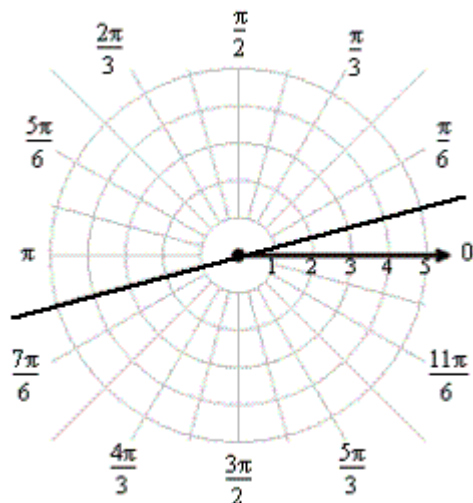
- a. $y = 1$ b. $y = 1$
c. $y = -1$ d. $x = 1$

25. Find the rectangular coordinates of $(7, 30^\circ)$.

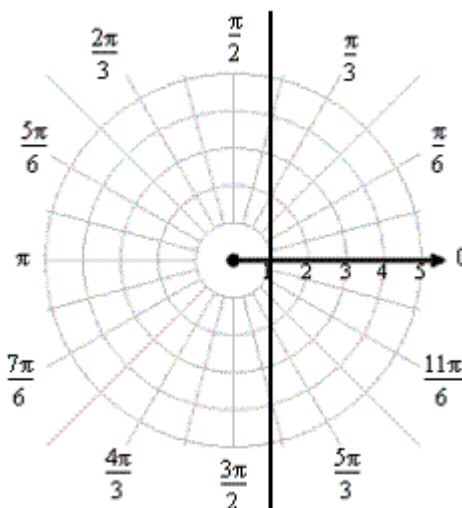
- a. $\left(-\frac{7\sqrt{3}}{2}, \frac{7}{2}\right)$ b. $\left(\frac{7\sqrt{3}}{2}, -\frac{7}{2}\right)$
c. $\left(-\frac{7\sqrt{3}}{2}, -\frac{7}{2}\right)$ d. $\left(\frac{7\sqrt{3}}{2}, \frac{7}{2}\right)$

26. Graph the polar equation $r = 1$.

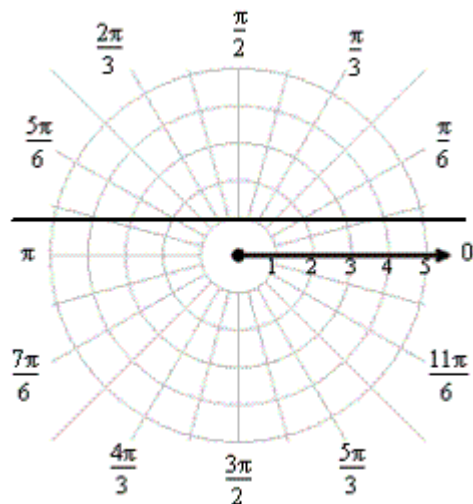
a.



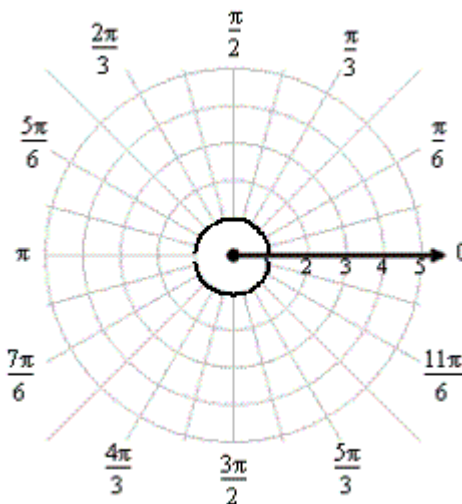
b.



c.



d.



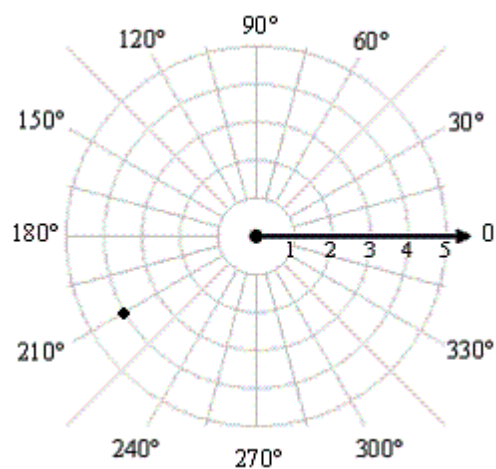
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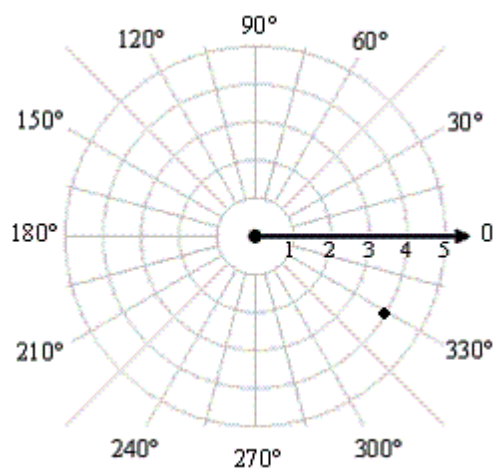
Graph each point on a polar grid.

27. $R(-4, 30^\circ)$

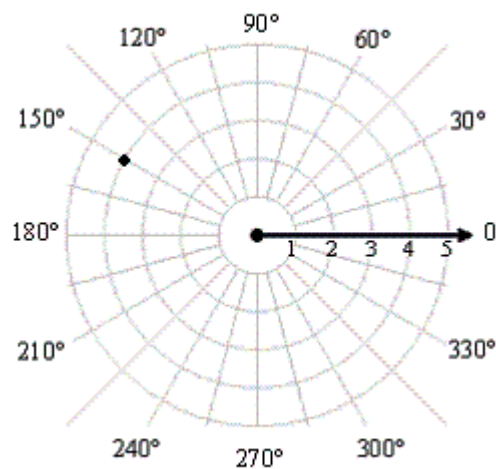
a.



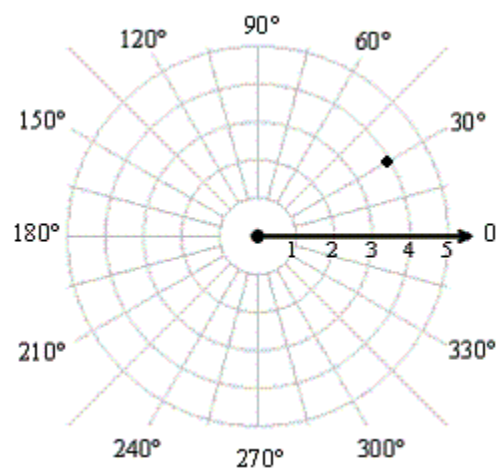
b.



c.



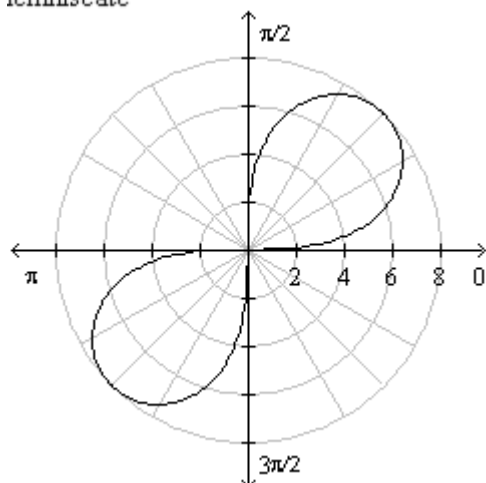
d.



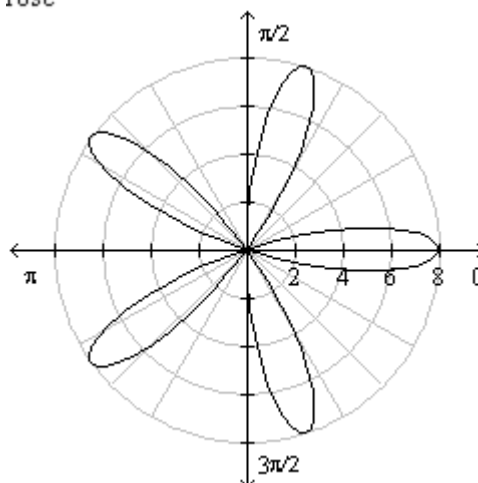
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28. Identify the graph and type of curve for $r^2 = 64 \cos 2\theta$

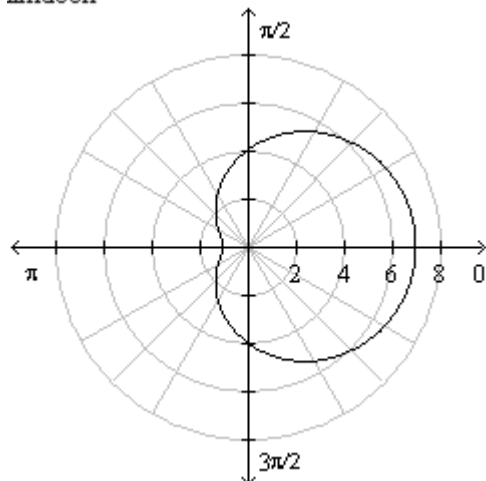
a. lemniscate



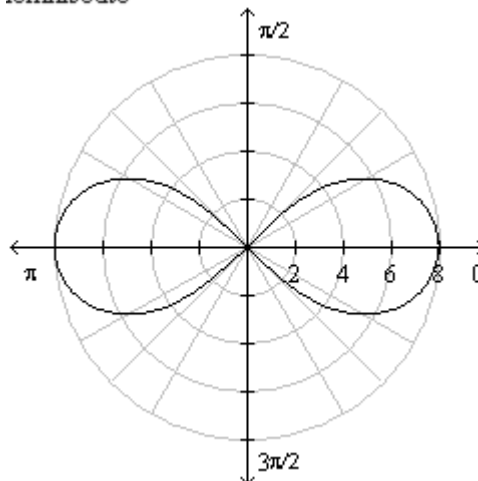
b. rose



c. limaçon



d. lemniscate



Write each equation in rectangular form.

29. $\theta = \frac{5\pi}{6}$

a. $y = -x$

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

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

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

30. $\theta = -\frac{7\pi}{6}$

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

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

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

d. $y = -x$

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