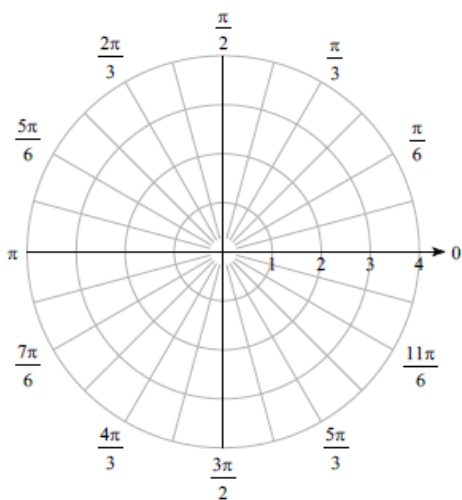


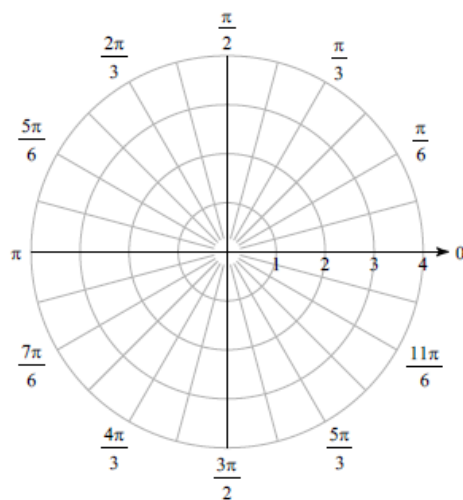
Polar Basic and Graphing Review Packet #2

Plot the point with the given polar coordinates.

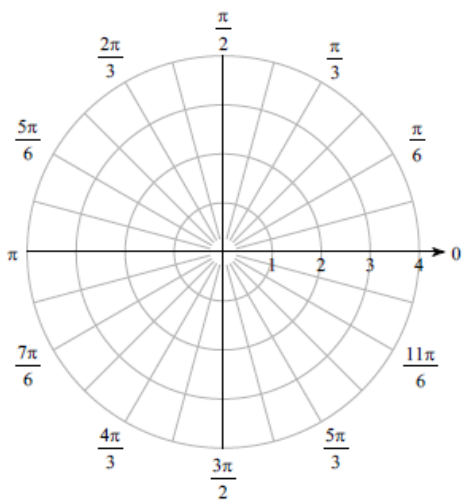
1) $\left(-1, \frac{3\pi}{4}\right)$



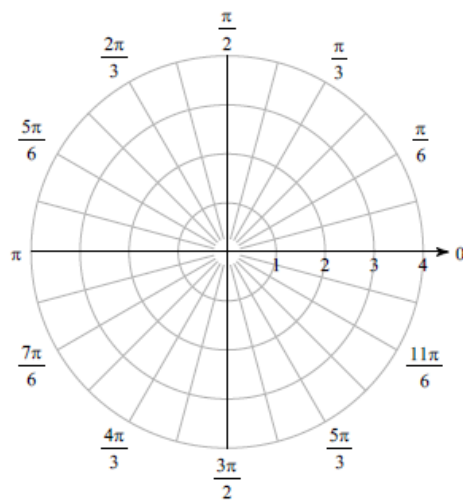
2) $\left(-4, -\frac{5\pi}{6}\right)$



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



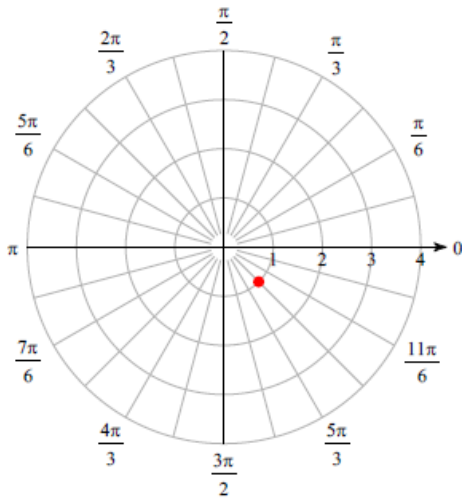
4) $\left(-1, -\frac{\pi}{3}\right)$



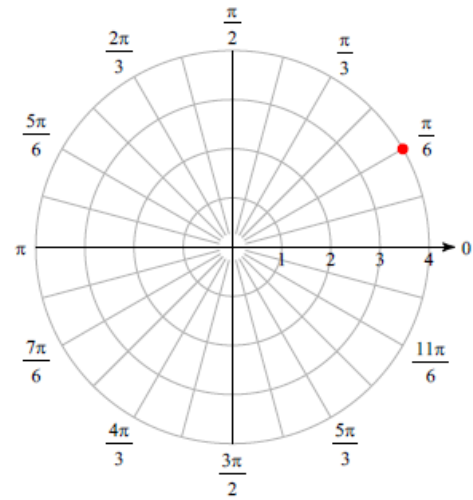
Answers

Plot the point with the given polar coordinates.

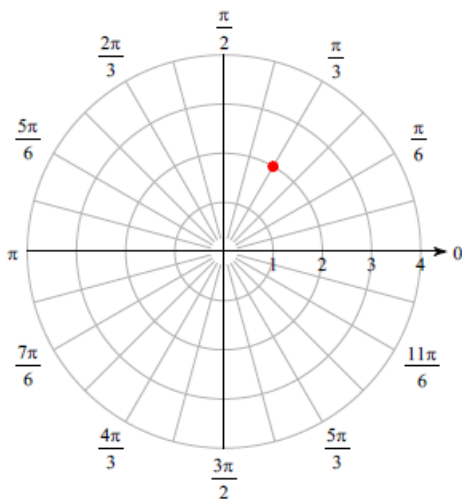
1) $\left(-1, \frac{3\pi}{4}\right)$



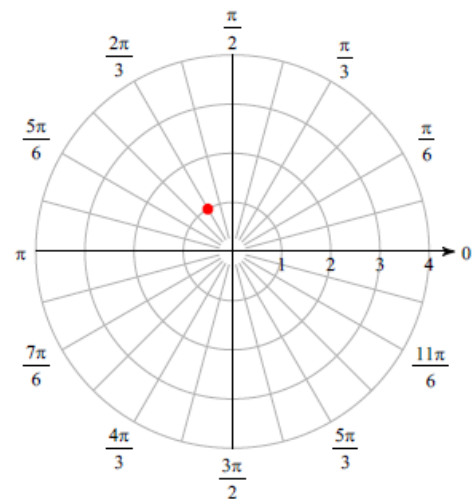
2) $\left(-4, -\frac{5\pi}{6}\right)$



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

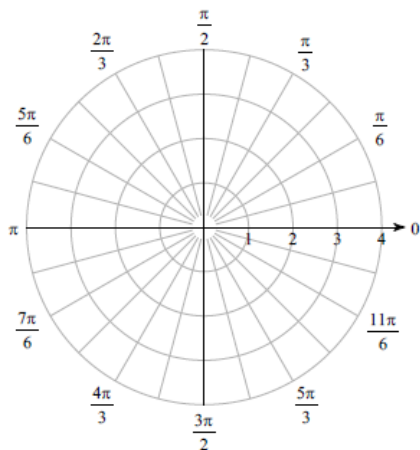


4) $\left(-1, -\frac{\pi}{3}\right)$

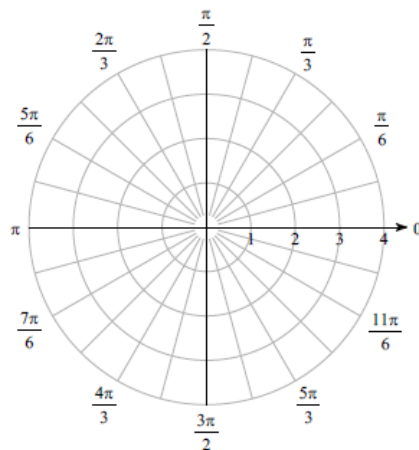


Find all pairs of polar coordinates that describe the same point as the provided polar coordinates.

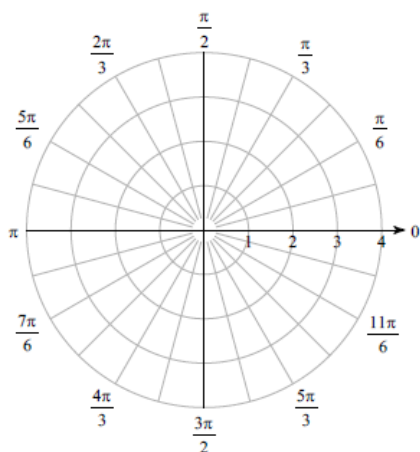
5) $\left(-4, \frac{\pi}{12}\right)$



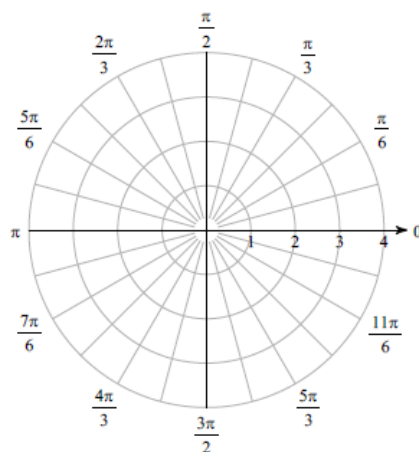
6) $\left(2, -\frac{3\pi}{2}\right)$



7) $\left(-4, -\frac{7\pi}{6}\right)$



8) $\left(2, \frac{23\pi}{12}\right)$



Convert each pair of polar coordinates to rectangular coordinates.

9) $\left(4, -\frac{\pi}{4}\right)$

10) $\left(-1, -\frac{7\pi}{6}\right)$

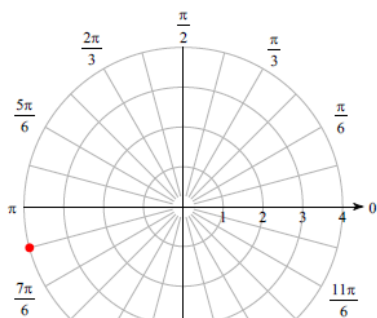
11) $\left(-1, -\frac{11\pi}{6}\right)$

12) $\left(1, \frac{7\pi}{4}\right)$

Answers

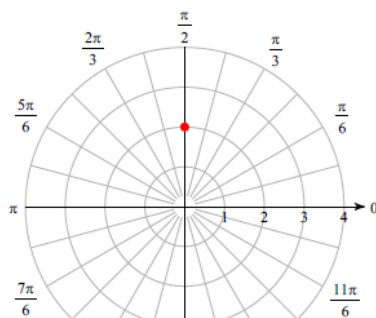
Find all pairs of polar coordinates that describe the same point as the provided polar coordinates.

5) $\left(-4, \frac{\pi}{12}\right)$



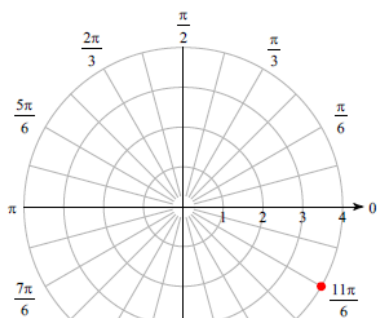
$\left(-4, \frac{\pi}{12} + 2n\pi\right)$ and $\left(4, \frac{\pi}{12} + (2n+1)\pi\right)$
where n is an integer

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



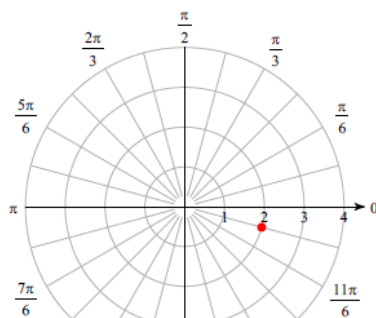
$\left(2, -\frac{3\pi}{2} + 2n\pi\right)$ and $\left(-2, -\frac{3\pi}{2} + (2n+1)\pi\right)$
where n is an integer

7) $\left(-4, -\frac{7\pi}{6}\right)$



$\left(-4, -\frac{7\pi}{6} + 2n\pi\right)$ and $\left(4, -\frac{7\pi}{6} + (2n+1)\pi\right)$
where n is an integer

8) $\left(2, \frac{23\pi}{12}\right)$



$\left(2, \frac{23\pi}{12} + 2n\pi\right)$ and $\left(-2, \frac{23\pi}{12} + (2n+1)\pi\right)$
where n is an integer

Convert each pair of polar coordinates to rectangular coordinates.

9) $\left(4, -\frac{\pi}{4}\right)$

$(2\sqrt{2}, -2\sqrt{2})$

10) $\left(-1, -\frac{7\pi}{6}\right)$

$\left(-\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$

11) $\left(-1, -\frac{11\pi}{6}\right)$

$\left(-\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$

12) $\left(1, \frac{7\pi}{4}\right)$

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

Convert each pair of rectangular coordinates to polar coordinates where $r > 0$ and $0 \leq \theta < 2\pi$.

13) $(3, 0)$

14) $(2, 2\sqrt{3})$

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

16) $\left(\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$

Convert each equation from rectangular to polar form.

17) $y = 5x$

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

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

20) $y = 3x$

Convert each equation from polar to rectangular form.

21) $r = \tan \theta \sec \theta$

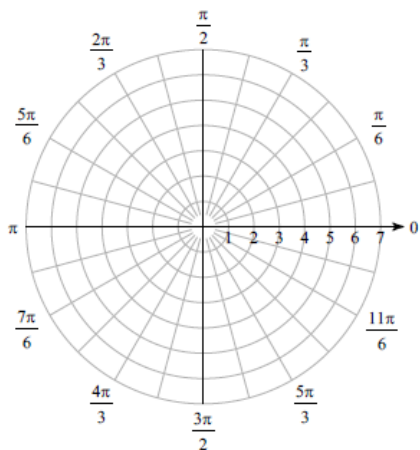
22) $\theta = \frac{5\pi}{6}$

23) $r = -6\cos \theta + 2\sin \theta$

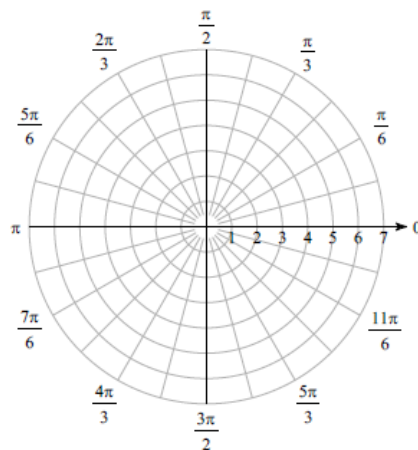
24) $r = 4\tan \theta \sec \theta$

Consider each polar equation. Classify the curve; and sketch the graph.

25) $r = 5$



26) $r = 6$



Answers

Convert each pair of rectangular coordinates to polar coordinates where $r > 0$ and $0 \leq \theta < 2\pi$.

13) $(3, 0)$

$(3, 0)$

14) $(2, 2\sqrt{3})$

$(4, \frac{\pi}{3})$

15) $(-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2})$

$(1, \frac{3\pi}{4})$

16) $(\frac{1}{2}, -\frac{\sqrt{3}}{2})$

$(1, \frac{5\pi}{3})$

Convert each equation from rectangular to polar form.

17) $y = 5x$

$\tan \theta = 5$

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

$r = 2\sin \theta$

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

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

20) $y = 3x$

$\tan \theta = 3$

Convert each equation from polar to rectangular form.

21) $r = \tan \theta \sec \theta$

$y = x^2$

22) $\theta = \frac{5\pi}{6}$

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

23) $r = -6\cos \theta + 2\sin \theta$

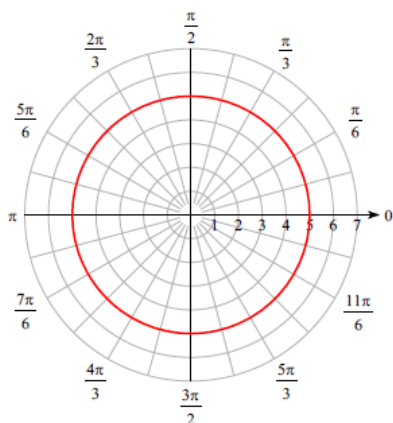
$(x + 3)^2 + (y - 1)^2 = 10$

24) $r = 4\tan \theta \sec \theta$

$y = \frac{x^2}{4}$

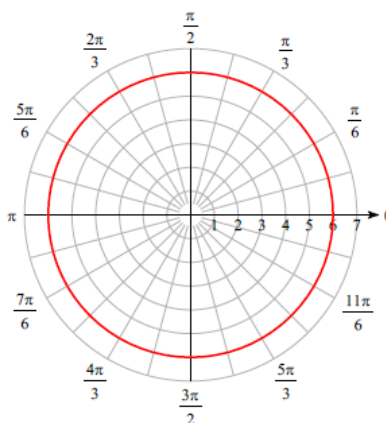
Consider each polar equation. Classify the curve; and sketch the graph.

25) $r = 5$



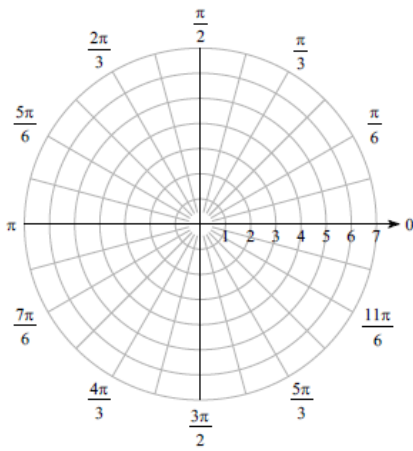
Circle

26) $r = 6$

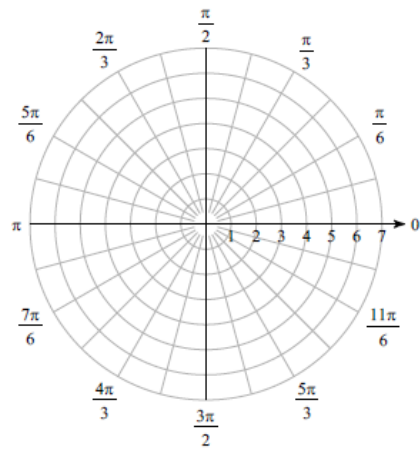


Circle

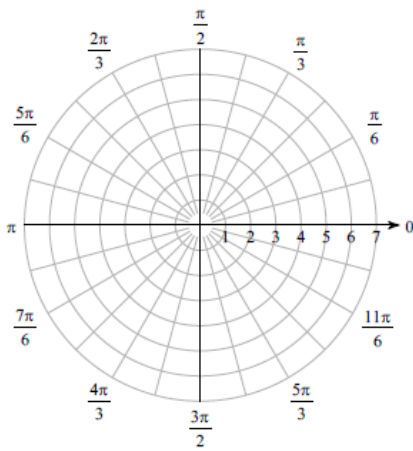
27) $r = 7\cos \theta$



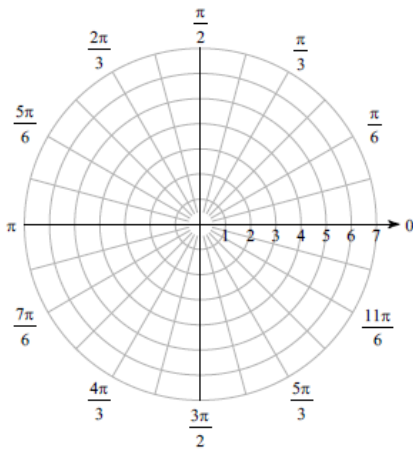
28) $r = -6\sin \theta$



29) $r = 4 + 3\sin \theta$

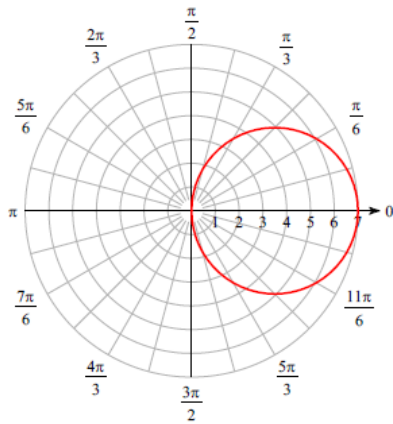


30) $r = 2 + 2\sin \theta$



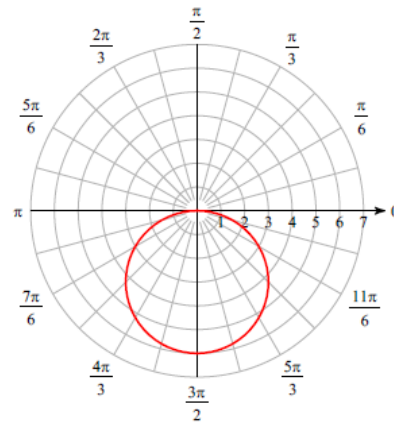
Answers

27) $r = 7\cos \theta$



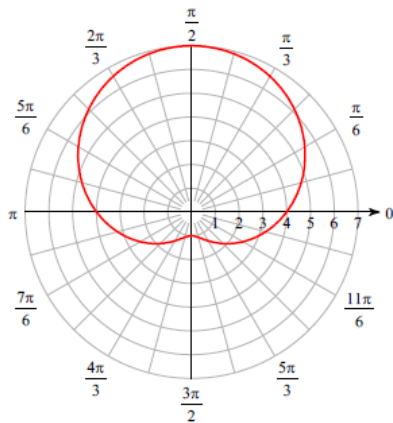
Circle

28) $r = -6\sin \theta$



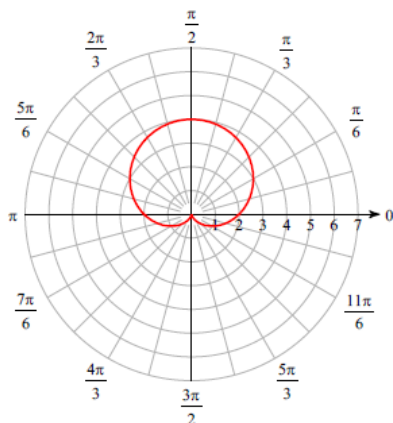
Circle

29) $r = 4 + 3\sin \theta$



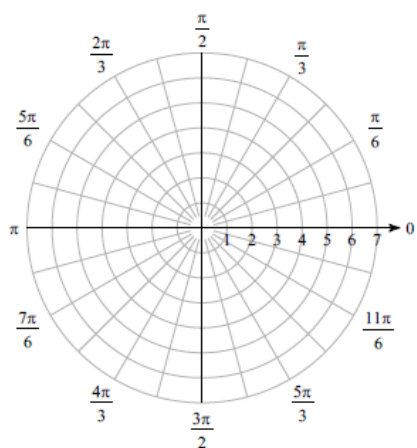
Dimpled limaçon

30) $r = 2 + 2\sin \theta$

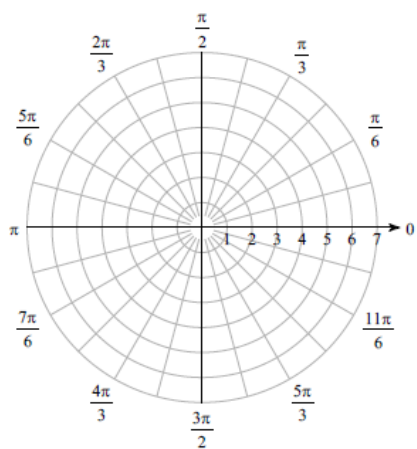


Cardioid (Limaçon)

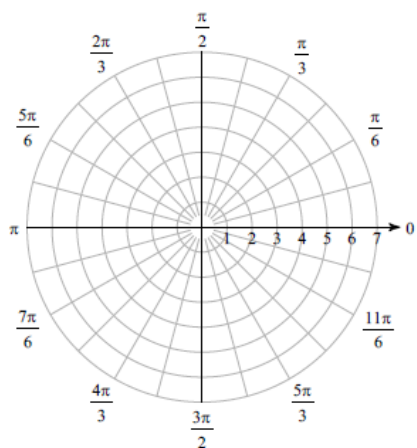
31) $r = 3 - 2\cos \theta$



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

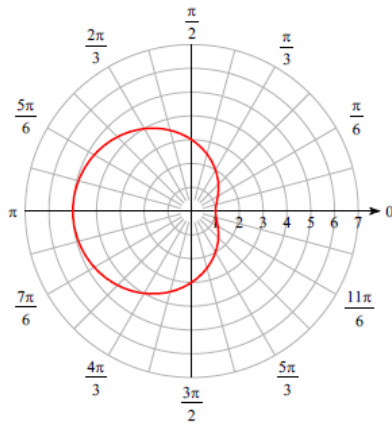


33) $r = 3 - 3\cos \theta$



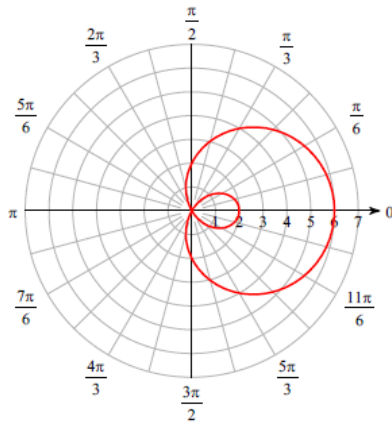
Answers

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



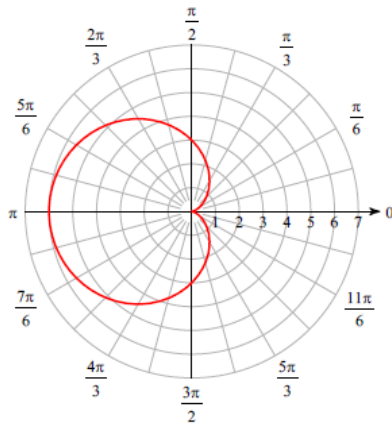
Dimpled limaçon

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



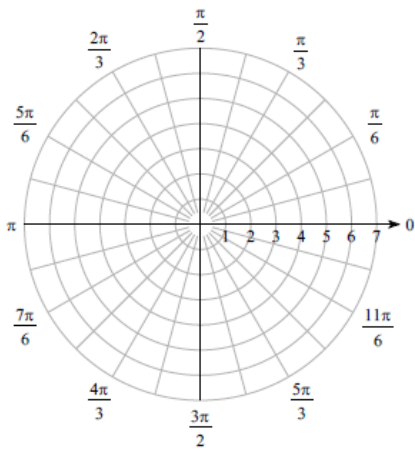
Looped limaçon

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

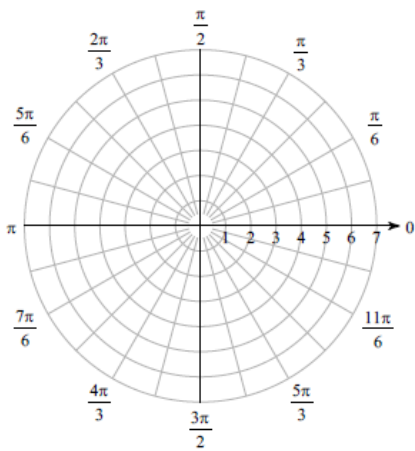


Cardioid (Limaçon)

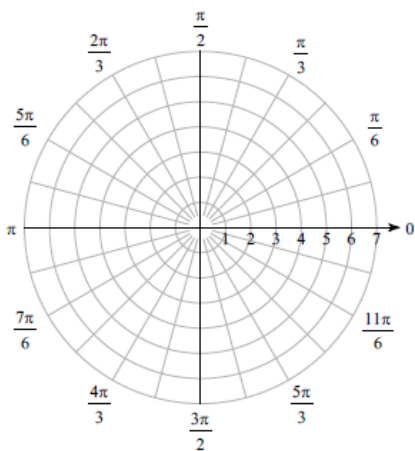
34) $r = 2 + 4\sin \theta$



35) $r = 2 + \cos \theta$

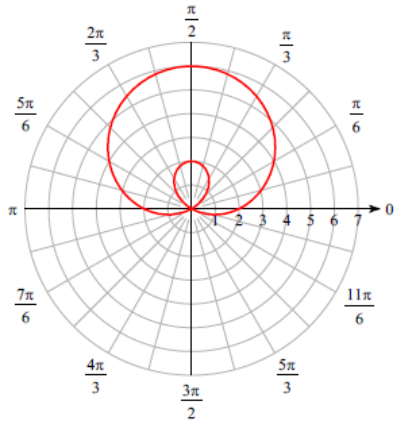


36) $r = 5 - \cos \theta$



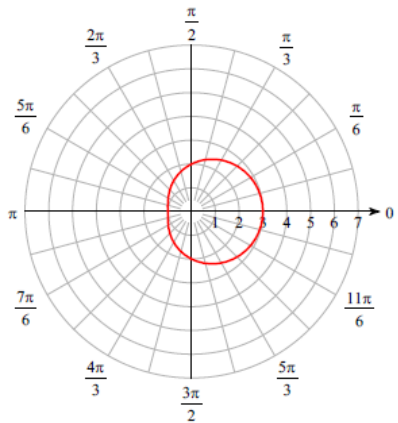
Answers

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



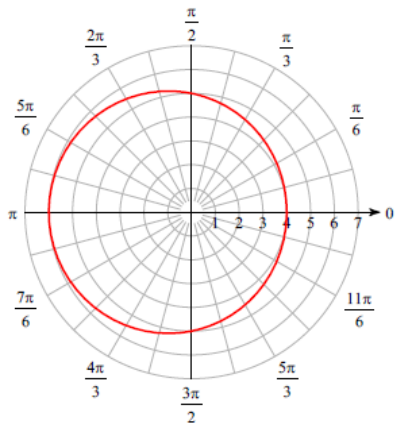
Looped limaçon

35) $r = 2 + \cos \theta$



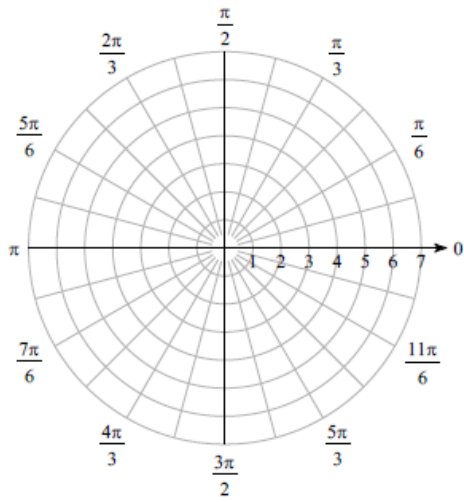
Convex limaçon

36) $r = 5 - \cos \theta$

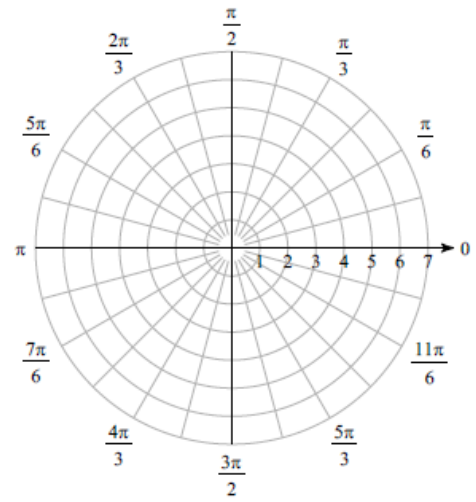


Convex limaçon

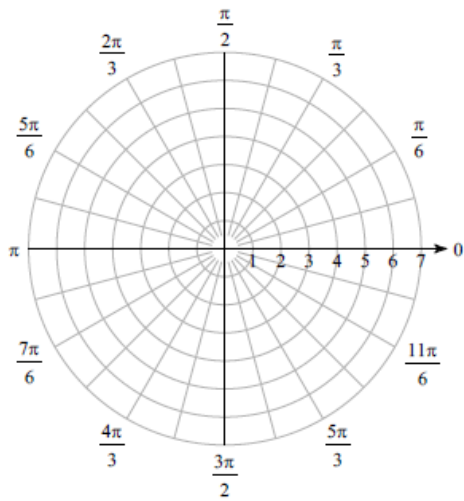
37) $r^2 = 25\sin(2\theta)$



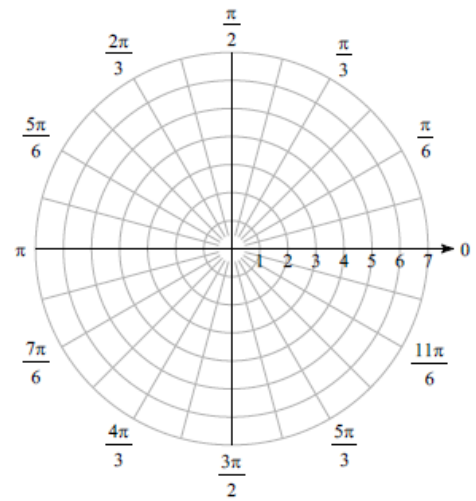
38) $r^2 = 36\cos(2\theta)$



39) $r = 5\cos(3\theta)$

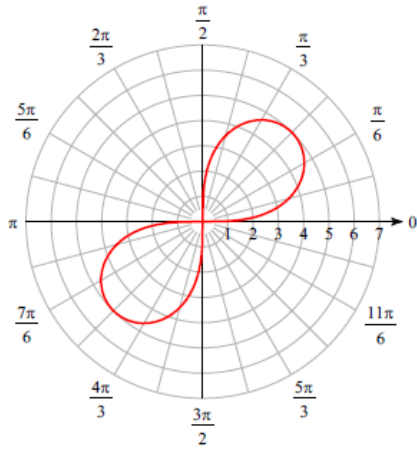


40) $r = 2\cos(2\theta)$



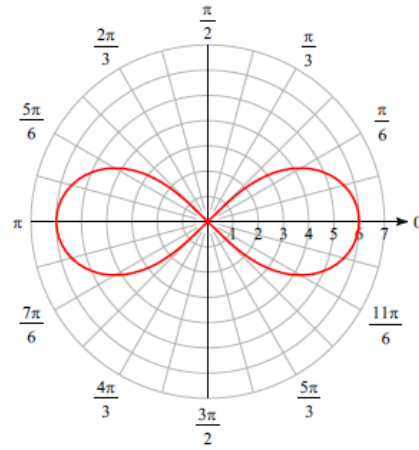
Answers

37) $r^2 = 25\sin(2\theta)$



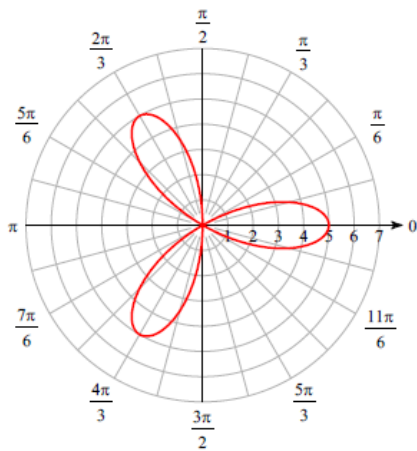
Lemniscate

38) $r^2 = 36\cos(2\theta)$



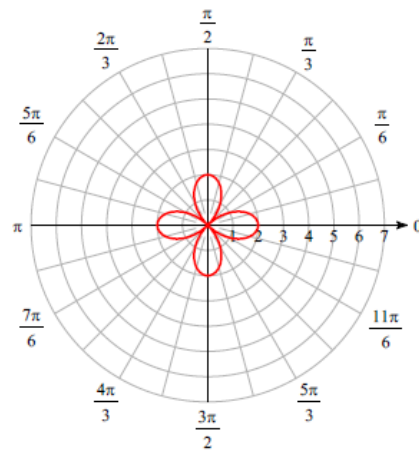
Lemniscate

39) $r = 5\cos(3\theta)$



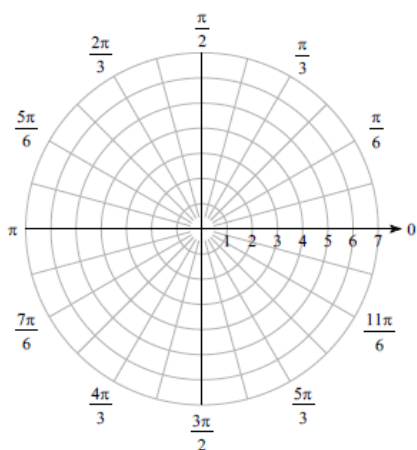
Rose

40) $r = 2\cos(2\theta)$

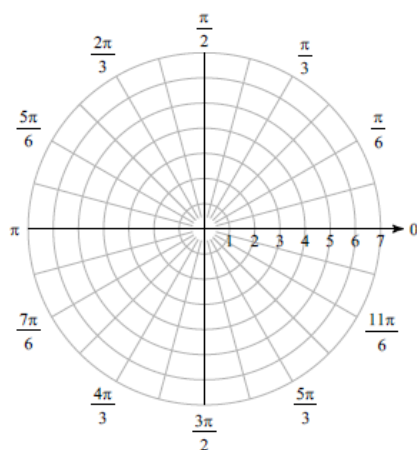


Rose

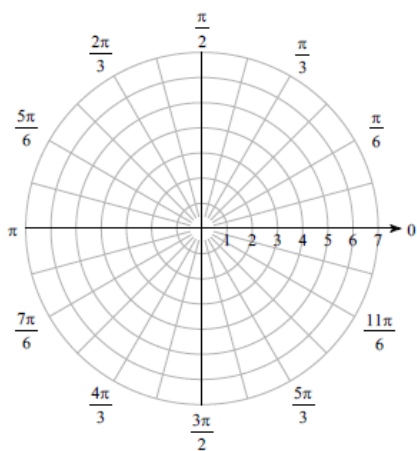
41) $r = 4\sin(3\theta)$



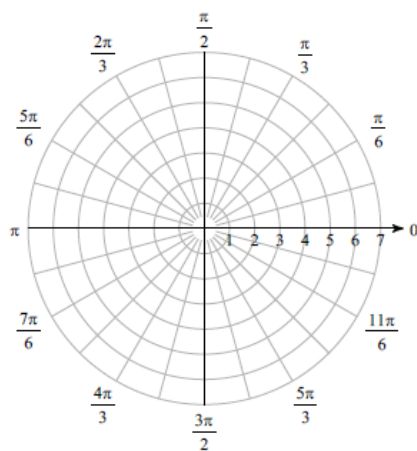
42) $r = 5\sin(2\theta)$



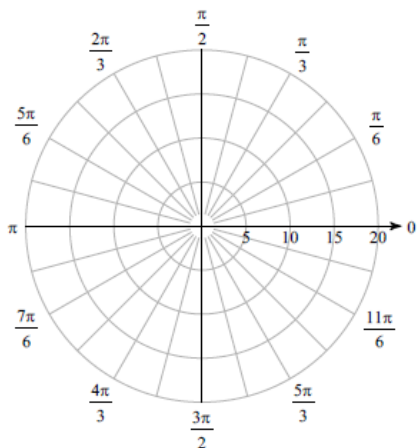
43) $r = 4\sin(5\theta)$



44) $r = 4\cos(5\theta)$

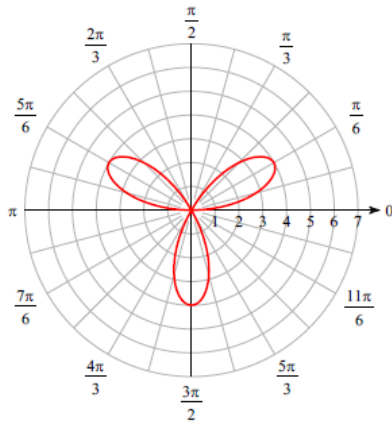


45) $r = 3\theta, \theta > 0$



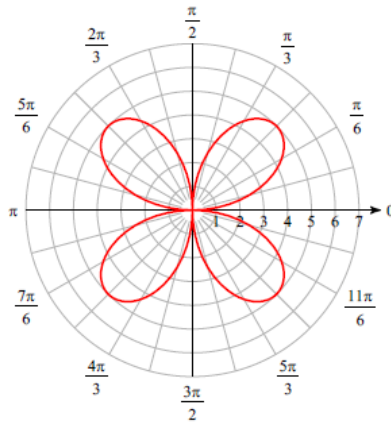
Answers

41) $r = 4\sin(3\theta)$



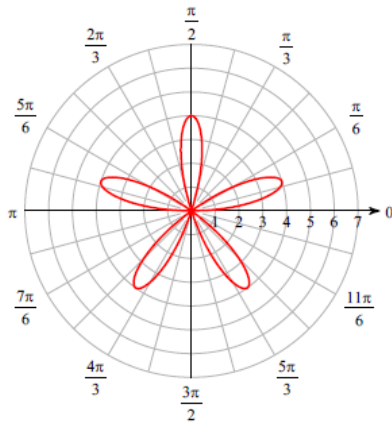
Rose

42) $r = 5\sin(2\theta)$



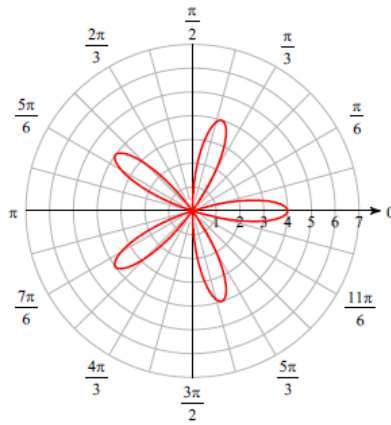
Rose

43) $r = 4\sin(5\theta)$



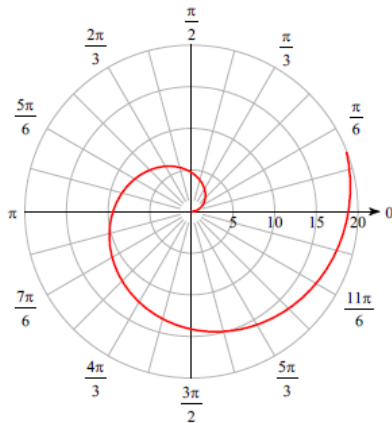
Rose

44) $r = 4\cos(5\theta)$



Rose

45) $r = 3\theta, \theta > 0$



Spiral of Archimedes