

## Graphing Polar Equations Worksheet

Do your own paper.

A. Write a description for each equation.

1.  $r = 3 + \sin \theta$

2.  $r = 2$

3.  $r = 3 \cos 2\theta$

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

5.  $r = 2 - 4 \cos \theta$

6.  $r = -2 \sin 5\theta$

7.  $r = 3(1 + 2 \sin \theta)$

8.  $r = 6(1 + \cos \theta)$

9.  $\theta = 330^\circ$

10.  $r = -8 \sin \theta$

11.  $r = 3 \csc \theta$

12.  $r = 10 \cos \theta$

13.  $r = 4 \sec \theta$

B. Match each equation with a description on the right.

1.  $r = 4 + 4 \sin \theta$

A. Limaçon with an extra loop

2.  $r = 5$

B. Limaçon with no extra loop

3.  $r = 3 \cos 3\theta$

C. Cardioid

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

D. Rose

5.  $r = 4 - 6 \cos \theta$

E. Circle

6.  $r = -2 \sin 2\theta$

F. Line

7.  $r = 3(1 + 2 \sin \theta)$

8.  $r = 5(1 - 10 \sin \theta)$

9.  $\theta = 60^\circ$

10.  $x^2 + y^2 - 10y = 0$

11.  $r = 5 + 5 \cos \theta$

12.  $r = 4 + 3 \sin \theta$

13.  $r = 2 \sec \theta$

14.  $r = 1 + \sin \theta$

C. Answer the following questions.

1. What is the radius of the circle  $r = -7$ ?

2. Given:  $r = 24 \sin 2\theta$

a. What is the length of the petal?

b. Where is the first petal drawn?

c. How far apart are the petals spaced?

d. At what angle measures will the petals be drawn?

D. Find  $r$  value for the given angle.

3.  $r = 4 \cos \theta$  for  $30^\circ$

4.  $r = 3 + 3 \sin \theta$  for  $45^\circ$

5.  $r = 4 + 2 \sin \theta$  for  $150^\circ$

6.  $r = 2 - 4 \cos \theta$  for  $240^\circ$

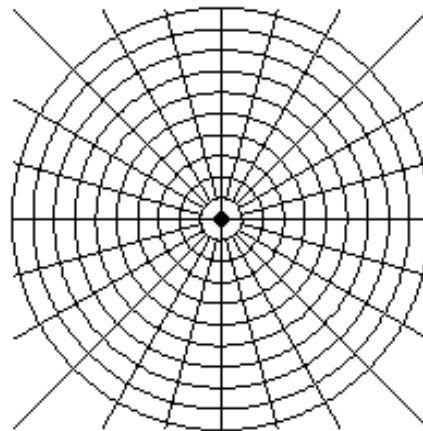
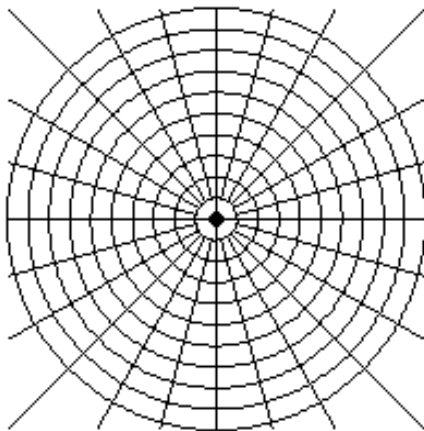
7.  $r = 5 \sin 9\theta$  for  $30^\circ$

8.  $r = 4 \cos 4\theta$  for  $45^\circ$

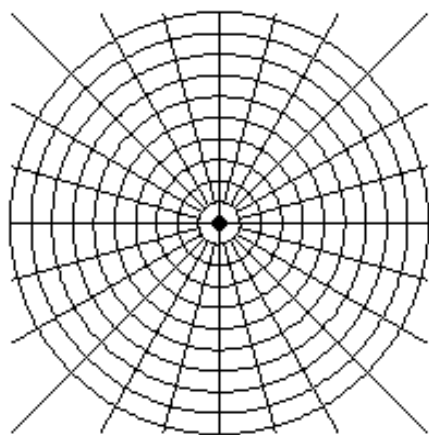
E. Graph the following polar equations.

1.  $r = 5 \cos \theta$

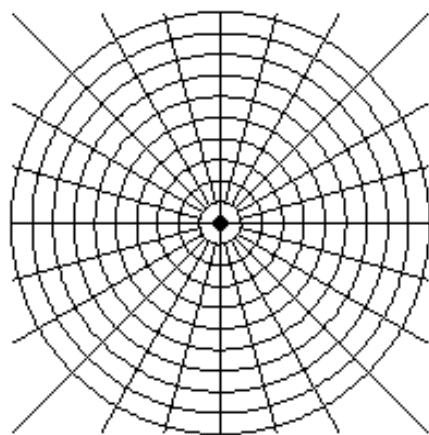
2.  $r = -4 \sin \theta$



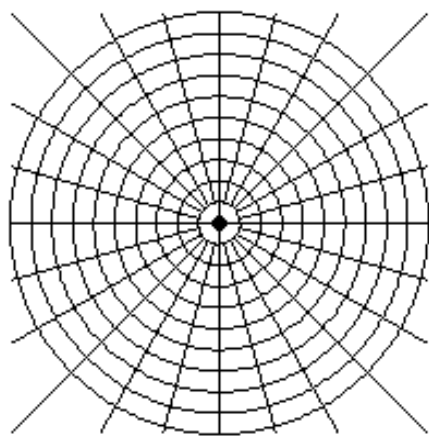
3.  $r = 4 \cos 3\theta$



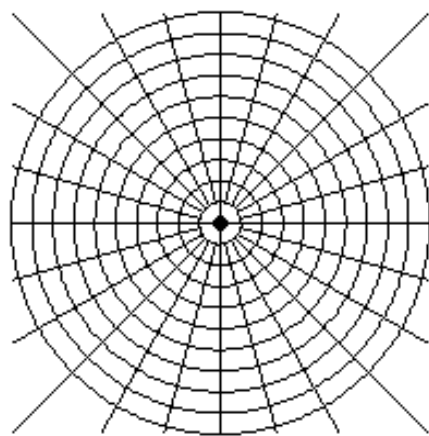
4.  $r = 8 \sin 2\theta$



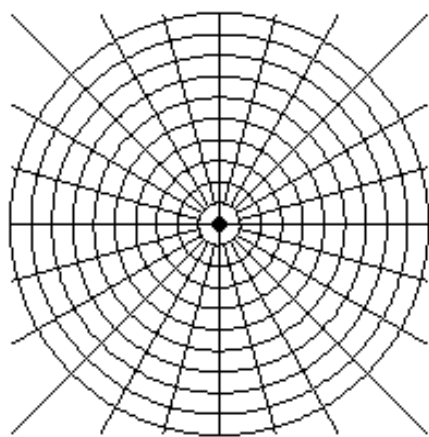
5.  $r = 5 + 5 \cos \theta$



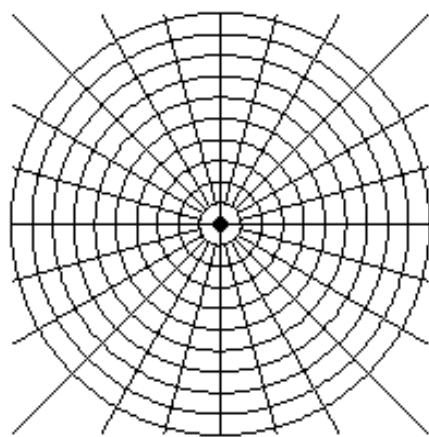
6.  $r = 4 + 3 \cos \theta$



7.  $r = 3 + 6 \sin \theta$



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



9.  $r = 8$

