APPC Lesson 8.4 Homework
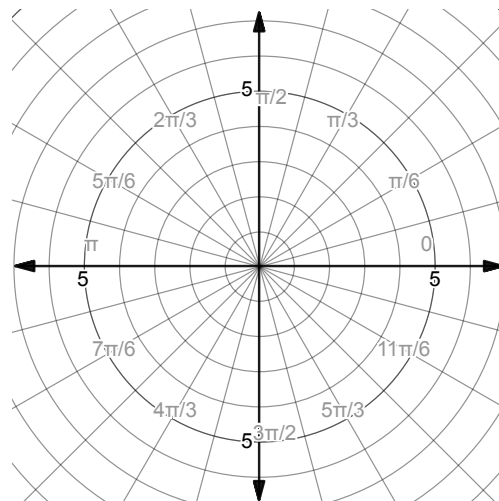
Name _____

1. Let $r = 3 + 4\sin\theta$.

    a. Complete the table.

θ	0	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π
r					

    b. Graph the equation.

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

    a. Complete the table.

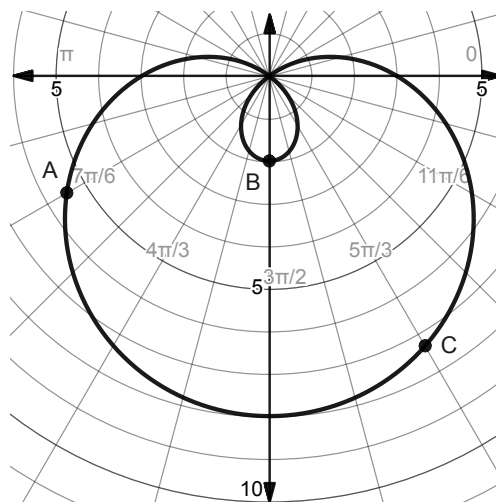 | θ | 0 | $\frac{\pi}{2}$ | π | $\frac{3\pi}{2}$ | 2π |
    |----------|-----|-----------------|-------|------------------|--------|
    | r | | | | | |

    b. Graph the equation.

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3. The graph of a polar function $r = f(\theta)$ is shown where $f(\theta) = 3 - 5\sin\theta$ and $0 \le \theta \le 2\pi$. The points $A, B,$ and C satisfy the equation $r = f(\theta)$.
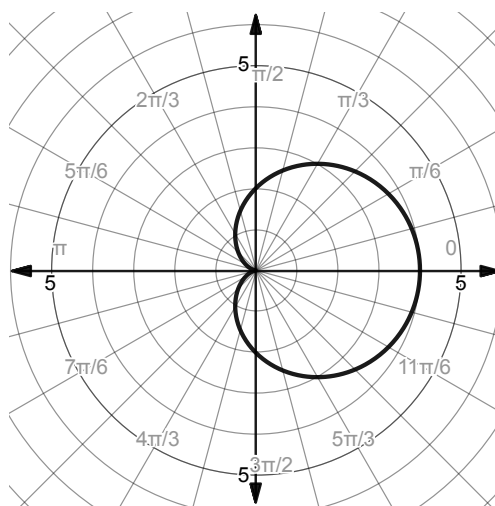
a. Find the coordinates of Point A .

b. Find the coordinates of Point B .
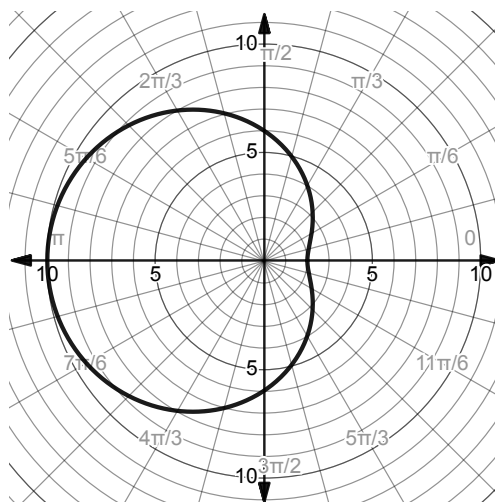
c. Find the coordinates of Point C .

4. Write the equation of the graph shown.

5. Describe the similarities and differences between the graphs of
    $r = 2 + 5\sin\theta$ and $r = 2 + 5\cos\theta$.

6. The graph of
    $r = 6 + k\cos\theta$ is shown
    for some constant k is
    shown. Find the value
    of k .

7. Write the equation of a limaçon with a dent or dimple that has a maximum
    radius of 9 and polar axis symmetry.

8.   At which points (r, θ) for $0 \le \theta \le 2\pi$ does the graph of $r = 1 + 4\sin\theta$ ...

a. cross the line $\theta = 0$?

b. cross the line $\theta = \dfrac{\pi}{2}$?

9.   Consider the graph of $r = 3 + 2\cos\theta$.

a. Identify the maximum radius of the graph. For which value(s) of θ on the interval $[0, 2\pi]$ does the graph attain these values?

b. Identify the minimum radius of the graph. For which value(s) of θ on the interval $[0, 2\pi]$ does the graph attain these values?

c. For which values of θ on the interval $[0, 2\pi]$ does $r = 3$? How do you know?

d. When $r = 4$, what is the value of $2\cos\theta$? What is the value of $\cos\theta$?

e. For which values of θ on the interval $[0, 2\pi]$ does $r = 4$? Check your answers to parts a-e by graphing $r = 3 + 2\cos\theta$ using technology.

10. Determine the maximum and minimum radius of the limaçon given by the equation $r = 4 + 2\sin\theta$.