1. Plot the points whose polar coordinates are given. Find the Cartesian coordinates of each point.

   A \((2, -3\pi/2)\)

   B \((2\sqrt{2}, 3\pi/4)\)

   C \((-1, 2\pi/3)\)

2. The Cartesian coordinates of points are given. Find polar coordinates \((r, \theta)\) for these points where \(r > 0\) and \(0 \leq \theta < 2\pi\).

   (-2, 0)
   (2, \pi)
   (-3, 3)
   (3\sqrt{2}, 3\pi/4)
   (2\sqrt{3}, 2)
   (4, \pi/6)

3. Sketch the region in the plane consisting of the points whose polar coordinates satisfy \(r \geq 1\).
4. Sketch the region in the plane consisting of the points whose polar coordinates satisfy \(0 \leq r < 2, \quad 0 \leq \theta \leq \frac{3\pi}{4}\).

5. Sketch the region in the plane consisting of the points whose polar coordinates satisfy \(1 \leq r \leq 3, \quad -\frac{\pi}{4} \leq \theta \leq \frac{\pi}{2}\).

6. Find a polar equation for the curves represented by the given Cartesian equation. Where possible, solve for \(r\).

   \[
   y = x \\
   \theta = \frac{\pi}{4} \\
   y = 5 \\
   r = 5 \csc \theta \\
   x^2 + y^2 = 6x \\
   r = 6 \cos \theta 
   \]

7. Find a Cartesian equation for the curves represented by the given polar equations

   \[
   r = 4 \sec \theta \\
   x = 4 \\
   \theta = \frac{\pi}{6} 
   \]
$y = \frac{x\sqrt{3}}{3}$
$r = 3$
$x^2 + y^2 = 9$

8. Sketch the curves with the given polar equations. Start by sketching the graph of $r$ as a function of $\theta$.

$r = \cos(3\theta)$

$r = 2\cos(4\theta)$.

$r = 1 + \cos(2\theta)$. 
9. Match the polar equations with the graphs.

(a) \( r = \ln \theta, \ 1 \leq \theta \leq 6\pi \)  
(b) \( r = \theta^2, \ 0 \leq \theta \leq 8\pi \)  
(c) \( r = \cos 3\theta \)  
(d) \( r = 2 + \cos 3\theta \)  
(e) \( r = \cos(\theta/2) \)  
(f) \( r = 1 + \cos(3\theta/2) \)