1. For the Cartesian coordinate points (a) \((2, -2)\), (b) \((1, -2)\) and (c) \((-1, \sqrt{3})\) find the polar coordinate representation.

2. For the polar coordinate points (a) \((1, \pi)\), (b) \((-1, \pi/2)\) and (c) \((1, -\pi/4)\) find the Cartesian coordinate representation.

3. Sketch the graph of the polar curves: (a) \(\theta = -\pi\), (b) \(r = -\pi\), (c) \(r = \cos(\theta)\), and (d) \(r = \cos(2\theta)\).

4. Find the polar equation for:
   (a) \(x^2 + y^2 = 9\).
   (b) \(x + y = 4\).

5. Find the slope of the tangent line to the polar curve \(r = 1/\theta\) at \(\theta = \pi\).

6. Find the point(s) where the tangent line to the polar curve \(r = 2 + \sin \theta\) is horizontal.

7. The area enclosed by the polar curve \(r = f(\theta)\) between the angles \(\theta = a\) and \(\theta = b\) can be computed with the formula

\[
A = \int_a^b \frac{1}{2} [f(\theta)]^2 \, d\theta.
\]

The length of the polar curve \(r = f(\theta)\) between the angles \(\theta = a\) and \(\theta = b\) is given by the formula

\[
L = \int_a^b \sqrt{r^2 + \left(\frac{dr}{d\theta}\right)^2} \, d\theta.
\]

[See section 10.4 for a derivation.] Use these formulas to answer the following questions. It will be useful to draw a picture.

(a) Find the area enclosed by one leaf of the curve \(r = \sin 2\theta\).

(b) Find the area in the first quadrant that lies inside the curve \(r = 2 \cos \theta\) and outside the curve \(r = 1\).

(c) Find the length of the curve \(r = \theta^2\) for \(0 \leq \theta \leq 2\pi\).