1. Find the Cartesian equation of the curve.
   (a) $x = t^2 - 3$, $y = t + 2$, $-3 \le t \le 3$.
   (b) $x = \sin t$, $y = 1 - \cos t$, $0 \le t \le 2\pi$.
   (c) $x = \sqrt{t}$, $y = 1 - t$.
2. Sketch the curve given by $x = \sin(4t)$, $y = \cos(4t)$, $0 \le t \le \pi/4$ and indicate the direction of the curve that is traced os the parameter increases.
3. Describe the motion of the particle with position (x, y) given as $x = 2 + \sin t$, $y = 1 + \cos t$ as t varies from $\pi/2$ to π.
4. Set up, but do not evaluate, the integral for the length of the curve $y = t + e^{-t}$, $y = t^2 + t$, $1 \le t \le 2$.
5. The curve C is given by $x = 3t - t^3$, $y = 3t^2$, $0 \le t \le 2$.
   (a) Find the exact length of the curve.
   (b) Find the area of the surface obtained by rotating the curve C about the x-axis.
   (c) Find the area of the surface obtained by rotating the curve C about the y-axis.
6. Give the polar coordinates for the Cartesian point $(\sqrt{3}, -1)$. Find polar coordinates (r, θ) of the point when $r > 0$ and when $r < 0$.
7. Plot the point with polar coordinates $(-1, -\pi/6)$. Find Cartesian coordinates of the point.
8. Sketch the region given by
   (a) $r \ge 2$
   (b) $0 \le r < 3$, $\pi/2 \le \theta \le 5\pi/4$
   (c) $1 \le r \le 3$, $\pi/6 \le \theta \le 3\pi/2$.
9. Find a Cartesian equation of the curve.
   (a) $r^2 = 5$
   (b) $r = 4 \sec \theta$
   (c) $r = 4 \cos \theta$
   (d) $r^2 \sin(2\theta) = 1$
10. Find a polar equation for the curve
    (a) $y = x$
    (b) $x^2 + y^2 = 4y$
    (c) $4y^2 = x$
11. Sketch the curve with the given polar equation.
    (a) $r = -2 \sin \theta$
    (b) $r = 1 + \sin \theta$
    (c) $r = 1 + 2 \cos \theta$
    (d) $r = 3 \sin(3\theta)$
    (e) $r = 2 \cos(2\theta)$
    (f) $r^2 = 9 \sin(2\theta)$.