1. Find the area enclosed by the curve \( x = t^2 - 2t, \ y = \sqrt{t} \) and the \( y \)-axis.

2. Find the exact length of the curve,
\[
\begin{align*}
  x &= t \sin t, \\
  y &= t \cos t,
\end{align*}
\]
\[0 \leq t \leq 1.\]

3. Find a polar equation for the curve represented by the given Cartesian equation.
\[
(x^2 + y^2)^3 = 4x^2 y^2.
\]

4. Find the slope of the tangent line to the given polar curve at the point specified by the value of \( \theta \).
\[
r = 1 + \cos \theta, \quad \theta = \frac{\pi}{3}.
\]

5. Find the area of 4 leaves of the graph of \( r = \sin 2\theta \).

Course Homework
Jan 27, Mon. : 10.3 15, 17, 21, 25, 56, 57. 10.4 5, 7
Jan 29, Wed. : 10.4 9, 11, 17, 45, 47. 10.5 5, 11, 15, 19 (sketch graphs only)
Jan 31, Fri. : 12.1 13, 15, 31. 12.2 17, 21, 23. 12.3 1, 7, 23, 37