1. Find all values of $t$ at which the parametric curve with equations $x = t^2 - t + 1, y = -2t^3 - 15t^2 - 24t + 7$ has (a) a horizontal tangent and (b) a vertical tangent.

2. Identify each of the following curves:
   (a) $r = 4 \cos \theta + 4 \sin \theta$
   (b) $r^2 \cos 2\theta = 9$
   (c) $r = \frac{3}{1 + \cos \theta}$. 
3. Find the slope(s) of the tangent line(s) to the curve \( r = 1 - 2 \cos \theta \) at the pole.

4. Find the area of the surface generated by revolving the curve \( x = \sin^2 t, \ y = \cos^2 t, \ 0 \leq t \leq \pi/2 \) about the \( y \)-axis.