Q 1. Find the area of surface generated by revolving the parametric curve $C: x = ln(sec t + tan t) - sin t, y = cos t; 0 \leq t \leq \pi/3$, about $x$-axis.

Q 2. Sketch the polar curve: $r^2 = 4 \cos \theta$. 
Q1. Find the length of the parametric curve $C : x = \ln(\sec t + \tan t) - \sin t$, $y = \cos t$; $0 \leq t \leq \pi/3$.

Q2. Graph the set of points whose polar coordinates $(r, \theta)$ satisfy the conditions:

(i) $\theta = -\frac{\pi}{4}$, $0 \leq r \leq 3$
(ii) $\frac{\pi}{3} \leq \theta \leq \frac{2\pi}{3}$, $-2 \leq r \leq 0$
(iii) $0 \leq \theta \leq \frac{\pi}{3}$, $r \leq 1$. 
Q1 Find the slope of the curve \( C: x^3 + 2t^2 = 9, \quad 2y^3 - 3t^2 = 4 \) at \( t = 2 \).

Q2. Sketch the polar curve \( r = -2 \sin \theta \). Is the curve symmetric about axes?
Q 1. Find the area enclosed by the y-axis and the curve C: \( x = t - t^2, \ y = 1 + e^{-t} \).

Q2. Replace the polar equation: \( r \sin \left( \theta + \frac{\pi}{6} \right) = 1 \), by an equivalent Cartesian equation and sketch it.