Arc Length

1. Find the length of the arc of the curve $x = t^2$, $y = t^3$ that lies between the points (1,1) and (4,8).

2. Find the length of the graph of the function $y = \ln(\cos(x))$ on the interval $[0, \frac{\pi}{4}]$.

3. Find the length of the arc of the function $x = y^2 - \frac{1}{8}\ln(y)$ from (1,1) to $(e^2 - \frac{1}{8}, e)$.

4. Find the length of the arc of the parabola $y^2 = x$ from (0,0) to (1,1).