

Assignment 4

1. Use the definition of Taylor series to find the Taylor series, centered at  $c$ , for the function.

$$f(x) = \ln x \quad , \quad c = 1$$

2. Find all points (if any) of horizontal and vertical tangency to the curve.

$$x = \cos \theta \quad , \quad y = 2 \sin 2\theta$$

3. Determine the open  $t$ -intervals on which the curve is concave downward or concave upward.

$$x = 4 \cos t \quad , \quad y = 2 \sin t \quad , \quad 0 < t < 2\pi$$

4. Find the area of the surface generated by revolving the curve about each given axis.

$$x = \frac{t^3}{3} \quad , \quad y = t + 1 \quad , \quad 1 \leq t \leq 2 \quad , \quad y\text{-axis}$$