Quiz 8

1. (5 points) Given the parametric curve: \( x = \cos t + t \sin t \), \( y = \sin t - t \cos t \). Find the arc length of the curve on \([0, \pi]\). (Hint: combine terms as you go. Be careful with the derivatives.)

\[
x' =
\]
\[
y' =
\]

\[\text{Arc Length} =\]

2. Given the region determined by \( y = 4 - x^2 \) and \( y = 0 \). Find the volume of the solid created by rotating the region about the x-axis.

   a. (1 point) Draw a picture of the situation.

   b. (1 point) Determine whether you should use the disk, washer, or shell method.

   c. (3 points) Set up the integral.

   d. (1 point) Find the volume.