

Name: _____

_____ / 25

30 minutes maximum. No aids (book, calculator, etc.) are permitted. Show all work and use proper notation for full credit. Answers should be in reasonably-simplified form. 25 points possible.

1. **[7 points]** Find the area of the region enclosed by the curves $x = 2 - y^2$ and $x = |y|$. (*Hint: Sketch the region first. Which variable to use for integration?*)

2. [13 points]

a. Sketch the region bounded by $y = x^2$, $x = 0$, and $y = 1$.

b. Find the volume of the solid formed by revolving the region in part **a.** around the x -axis.
(*Hint: Use discs or washers.*)

- c. Find the volume of the solid formed by revolving the region in part **a.** around the y -axis.
(*Hint: Use discs or washers.*)

3. **[5 points]** Set up, but do not evaluate, an integral for the area between $y = \cos(x)$ and $y = \cos(x)^2$ on the interval $0 \leq x \leq \pi/2$. (*Hint: Sketch the region first. Which function has larger values?*)

EC. [1 points] (Extra Credit) Evaluate the integral in problem 3.

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