

Printed Name _____ Signature _____

Calculus II Quiz #2

Show your work and clearly label your answers on this quiz. *No scrap paper, calculators, or notes are allowed* (or needed). This quiz is scored out of 40 points. (There are 50 points possible.) You have 30 minutes to complete the quiz.

To get credit on a problem, you *must* show work. Even if you can do the work in your head, the point of these exercises is to get you to articulate your thought processes.

Problem 1 (5+10 pts)

- (a) Sketch the graph of the region completely enclosed by the curves

$$f(x) = 4 - x^2 \text{ and } g(x) = x^2 + 2x.$$

- (b) Compute the area of the region sketched in (a).

Calculus II Quiz #2

Problem 2 (5+10+10 pts)

- (a) Sketch the graph of the region contained by the curves

$$y = \frac{2}{x}, \quad x = 1, \quad x = 2, \quad y = 0.$$

- (b) Compute the volume of the solid obtained by revolving the curve in (a) around the y -axis *using the washer method*. Explain all your steps.
- (c) Compute the volume of the solid obtained by revolving the curve in (a) around the y -axis *using the shell method*. Explain all your steps.

Calculus II Quiz #2

Problem 3 (10 pts)

What is the arc length of the curve $y = \sqrt{1 - x^2}$ over the interval $x \in [-1, 1]$?