

# Homework 4

Due February 3

*Be sure to write your name and section on your homework. Please staple all pages together.*

Do the following problems from the textbook:

**Section 5.5:** 46, 66, 68.

Hint for 66: Symmetry!

**Section 6.1:** 2, 4, 15, 20, 26, 47, 52.

**Section 6.2:** 4, 6, 9, 61.

**Triangle problem:**

Consider the triangle in the  $xy$ -plane with vertices at  $(0, 0)$ ,  $(1, 0)$ , and  $(1, 1)$ .

- (a) Rotate the triangle about the  $x$ -axis. Describe the solid and compute its volume.
- (b) Now rotate the triangle about the  $y$ -axis. Describe this solid and compute its volume.
- (c) Do your answers for part (a) and (b) agree? Why does this make sense? Explain.

**Extra Credit:** Find

$$\lim_{a \rightarrow 0} \int_a^2 \frac{1}{x^2} dx.$$

What does your answer mean? (This should remind you of something from the midterm.)