

Homework 8

Due March 2

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

This is our final homework. Do a good job.

Do the following problems from the textbook:

Section 7.8: 3, 13, 21, 31, 41, 55.

Hint for 55: Let $u = \sqrt{x}$.

A bump: Consider the region under the curve

$$y = e^{-x^2}$$

from $x = 0$ to $x = \infty$. Now rotate this region about the y -axis to form a solid of revolution.

Describe this solid in words, and compute its volume (Hint: shells!).

Extra Credit: Consider the integral

$$\int_0^{\infty} \sin(x) dx.$$

Does this integral converge? Explain why or why not. You may have to think.

Now repeat this question for the integral

$$\int_0^{\infty} \frac{\sin(x)}{x} dx.$$