Math 221: Midterm 3 review sheet

Midterm 3 will cover sections 5.1–5.5, 6.1–6.4.

From Chapter 5, you should...

- ...know the definition of the definite integral in terms of Riemann sums, and what it represents.

- ...be able to compute very simple definite integrals *from the definition* (I will supply you with the formulas on page 369 if necessary).

- ...know and be able to use the properties of definite integrals (see page 373–375).

- ...know both versions of the Fundamental Theorem of Calculus and how to use them.

- ...practice computing indefinite integrals/anti-derivatives.

- ...know the indefinite integrals on page 392.

- ...understand and be able to compute the net change of a function.

- ...practice computing integrals using the substitution method—being able to see the right substitution only comes after lots of practice.

- ...make sure you know how to compute definite integrals when you use substitution.

From Chapter 6, you should...

- ...be able to use integrals to compute areas between curves.

- ...understand the description of volume in terms of integrals of areas of slices.

- ...be able to compute volumes of solids using the definition as an integral of areas of slices *and* using the method of cylindrical shells. Know when to use which method.

- ...know what work is, and how to compute it.

Practice problems: There are a lot of problems here, but this should give you plenty of practice. Make sure you do representatives of the different types of problems.
Section 5.2: 7, 21, 23, 25, 29, 33, 37, 47, 49. Section 5.3: 9, 13, 17, 19–41 odd, 51. Section 5.4: 5–11 odd, 15, 17, 21–43 odd, 49–51 odd, 61. Section 5.5: 7–45, 51–69 odd. Section 6.1: 5–27 odd 49, 53. Section 6.2: 1–35 odd, 43, 49, 53, 57. Section 6.3: 1–25 odd, 37, 39, 41. Section 6.4: 1, 3, 7, 11, 13, 17, 19, 23.