Math 153
Spring 2005
R. Schultz

UPDATED GENERAL INFORMATION — MAY 4, 2005

Here is the sixth homework assignment, which is due in class on **Wednesday, May 4, 2005.** As usual, "Burton" refers to the course text by Burton.

- Burton, p. 243: $7a$

Additional problems

Solve the following using Pappus' Centroid Theorem(s):

1. What are the centers of mass for a semicircular wire $x^2 + y^2 = 1$, $y \geq 0$ and the solid half disk defined by $x^2 + y^2 + \leq 1$, $y \geq 0$? Which is closer to the origin? [*Hint:* What surface and solid of revolution does one obtain by rotating these objects around the x-axis?]

2. The area of an ellipse with major axis of length a and minor axis of length b is $\pi\, ab$, and the volume of an ellipsoid with principal axes of lengths a, b and c is $\frac{4}{3}\pi\, abc$. Find the center of mass for the half ellipse defined by the inequalities $b^2x^2 + a^2y^2 \leq a^2b^2$ and $y \geq 0$.

Suggested quiz preparation for Quiz 2 *on May* 10

Know how to solve the following problems:

- Burton, p. 175: 3, 6, 7
- Burton, p. 220: 2, 6–12 even
- Burton, p. 226: 2