Fall 2005 Math 152

Week in Review I

courtesy: Amy Austin

(covering sections 7.1, 7.2)

Section 7.1

1. Sketch the region bounded by the given curves and find the area of this region.

   a.) $y = \cos x$, $y = 0$, $x = 0$, $x = \dfrac{\pi}{6}$

   b.) $y = \dfrac{1}{x}$, $y = 0$, $x = 1$, $x = 3$

   c.) $y = x^2 + 1$ and $y = 3 - x^2$

   d.) $x + y^2 = 2$, $x + y = 0$

   e.) $y = \cos x$, $y = \sin x$, $x = 0$, $x = \pi$

   f.) $y = |x - 1|$, $y = x^2 - 3$, $x \geq 0$

Section 7.2

2. Find the volume of the solid obtained by rotating the region bounded by the given curve(s) about the specified axis.

   a.) $y = \sqrt{x - 1}$, $x = 2$, $x = 5$, $y = 0$ about the x axis.

   b.) $y = x^3$, $y = 27$, $x = 0$ about the y axis.

   c.) $y^2 = x$, $x = 2y$ about the x axis.

   d.) Same as c, but revolve around the y axis.

   e.) $y = x^4$, $y = 1$, about the line $y = 2$.

   f.) $y = x^2$, $y = 2x$ about the line $x = 3$.

3. Find the volume of the solid S described below:

   The base of S is the ellipse $x^2 + \dfrac{y^2}{4} = 1$ and cross sections perpendicluar to the y axis are squares.