Fall 2005 Math 152

Week in Review 2
courtesy: Amy Austin
(covering sections 7.2 - 7.3)

Section 7.2 and 7.3

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

   a.) $y = \cos(x)$, $x = 0$, $x = \dfrac{\pi}{2}$, $y = 0$ about the x axis. Note: $\cos^2 x = \dfrac{1}{2}(1 + \cos(2x))$.

   b.) $y = \ln x$, $y = 0$, $y = 1$, $x = 0$ about the y-axis.

   c.) $y = \dfrac{1}{x}$, $y = 0$, $x = 1$, $x = 10$. Rotate around the y-axis.

   d.) $y^2 = x$, $x = 0$, $y = 2$, $y = 5$. Rotate around the x-axis.

   e.) $y = x^2$, $y = 0$, $x = 1$, $x = 2$. Rotate around the line $x = 4$.

   f.) $y = \cos x$, $y = 0$, $x = 0$, $x = \dfrac{\pi}{2}$. Rotate around the line $y = 1$. Set up both a dx and dy integral that gives the volume. Do not evaluate the integral.

   g.) $y = e^x$, $y = 0$, $x = 0$, $x = 1$ about the x-axis.

   h.) $y = 2x - x^2$, $y = 0$. Rotate around the y-axis.

   i.) $x = \sqrt[4]{y}$, $x = 0$, $y = 16$. Rotate around the x-axis.

2. Find the volume of the solid described below:

   The base of S is the parabolic region

   $\{(x, y)|x^2 \leq y \leq 1\}$ and cross sections perpendicluar to the y axis are equilateral triangles.