Math1410 **Sections 6.2,3**

Instructions: I have mixed up the problems from sections 6.2 and 6.3. When solving each problem:
(a) Draw a picture which shows a sample "slice",
(b)Indicate what method you will be using (i.e. disk, washer, or cylindrical shells),
(c) set up the integral and solve the problem.

1. Find the volume of the solid obtained by rotating the region bounded by $y = \dfrac{1}{x}$, $y = 0$, $x = 1$, and $x = 10$ about the x-axis.
2. Find the volume of the solid obtained by rotating the region bounded by $y = 4x - x^2$ and $y = 8x - 2x^2$ about the line $x = -2$.
3. Find the volume of the solid obtained by rotating the region bounded by $y = x$ and $y = \sqrt{x}$ about the line $x = 2$.
4. Find the volume of the solid obtained by rotating the region bounded by $y = x^2 - 4x + 5$ and $y = -x^2 + 4x - 1$ about the line $x = -1$.
5. Find the volume of the solid obtained by rotating the region bounded by $y = x^4$ and $y = \sqrt{\sin(\pi x/2)}$ about the x-axis. (Hint: If you have problems finding the upper limit of integration, your graphing calculator can find the intersection of two curves. Or ask me.)

From 6.5:

1. Find the average value of $f(x) = \cos x$ over the interval $[\pi, 2\pi]$.
2. Find the average value of $g(r) = 3/(1 + r)^2$ over the interval $[1, 6]$.