Homework Number Four

This homework assignment is due Tuesday, October 18th by 4 p.m., either to me in my office or else in our Homework Box. You may speak to your classmates and others (and me J) about these problems, but your write-up should be your own. Show your work!

- Schaum, page 335: 13, 16, 17

- Consider a rod 10 meters in length lying on the x-axis for $0 \leq x \leq 10$. Suppose that it thickens as we move from left to right, so that its density function is $\delta(x) = 1 + (x/10)$ kg/m. Find the rod's center of mass.

- Consider a thin plate with constant density that covers the region in the plane bounded above by the parabola $y = 4 - x^2$ and below by the x-axis. Find the center of mass of this plate. *Hint:* One of the needed coordinates is "obvious".

- Consider the same plate as in the previous exercise. This time, assume that the density is variable, and the density can be described by the function $\delta(x, y) = 2y$. Determine the center of mass in this case.