Read Section 7-1 and try the following problems:

Work together and make sure you know how to get the given answers. You will be responsible for these concepts and I will not be teaching these concepts. This is called independent learning and it is important skill for college students to have.

1. $v(t) = 3t^2 - 10t$

    a. Find the displacement on the interval t = [0, 4]   (answer = -16)

    b. Find the total distance travelled on the interval t = [0, 4]   (answer = 21.037)

    c. Set up but do not solve an integral for the total distance in part b that does not include absolute value.

2. $a(t) = 4t, \ v(0) = 3$

    Find the displacement on the interval t = [1,3] without a calculator   (answer = $\frac{70}{3}$)

3. $v(t) = 3cos^2t(sint), \ s\left(\frac{\pi}{2}\right) = 1$

    Find the position at time $t = 2\pi$ without a calculator   (answer = 0)

4. Find the initial velocity (in feet per second) needed for a vertical jump of 4.5 feet

    (given acceleration = -32 ft/sec/sec)   (answer = 16.97 ft/sec)

5. A water tank contains 100,000 gallons of water and is draining at a rate given by $R(t) = 20t(e^{0.5t})$ gallons

    per hour. How many gallons of water will remain in the tank after 10 hours?

    (answer = 52427.789 gallons)