Part I (due at the beginning of class Friday, September 5)

Finish through page number 4 on green Average and Instantaneous Velocity handout from Wednesday's class and then read the paragraphs above question 2 on page number 5. You do not need to do question 2 before class. If you'd like to watch some examples of average velocity, check out this video (optional).

Typos alert: in problem 1(d), the points should be $A(0.4, s(0.4))$ and $B(0.8, s(0.8))$. Similarly, in part (e), the point should be $(0.8, s(0.8))$.

If you want to do the computations in problem 1 more quickly, you can use Desmos.com to make your life easier (and get nice graphs). After opening the graphing calculator on Desmos, type $s(t) = 64 - 16(t-1)^2$ in the first line. In the second line, type $\dfrac{s(b) - s(a)}{b - a}$. In the third line, type $a =$whatever number you want a to be. In the fourth line, type $b =$ whatever number you want b to be. At that point, the value the quantity in the second line should be displayed in the second line. You can then change your a and b as needed to do all your computations.

If you enjoy using Desmos for these computations better than using a calculator, feel free to bring your laptop with you to class on Friday as we will need to do more of these kinds of computations.

Recall, what you turn in for Part I should have 3 subparts, as mentioned in the syllabus:

(a) Your responses to the reading questions. (In this case, the reading questions are the questions on the Average and Instantaneous Velocity handout.)

(b) Your own questions/comments on the reading.

(c) The amount of time you spent on Part I (including the time spent reading/watchinh).

Part II: WeBWorK (due Saturday, September 6, by 11 PM)

Click here for your WeBWorK assignment. This assignment is the introduction to WeBWorK tutorial; in the future, you'll have problems related to what we did in class that day or review problems.

Part III: Homework Problems (due Wednesday, September 10 at the beginning of class)

Review the homework guidelines and the sample homework in the syllabus to ensure that the solutions you turn in meet the guidelines.

1. A colony of microorganisms has an initial population of 100 and a growth rate of 8% per hour. Its population at any time t (in hours) after time zero is given by the function $f(t) = 100(1.08)^t$.

   (a) What are the units of the rate of change of $f(t)$?

(b) Find the average rate of change over $[0, 0.5]$ and $[0, 1]$.

(c) Estimate the instantaneous rate of change at $t = 0.5$ hours by computing the average rate of change over intervals to the left and right of $t = 0.5$.