This Week in SP211:5522

Homework must be submitted stapled in assignment groupings.
Always attempt to complete the readings before class. You are responsible for reading 10 pages past the current lecture. You may not understand the material completely, but you should read it prior to lecture.

Problems to submit <u>on the date listed</u>:

**** STUDY the chapter summary each day before attempting the problems ****

Week of 06 Sep

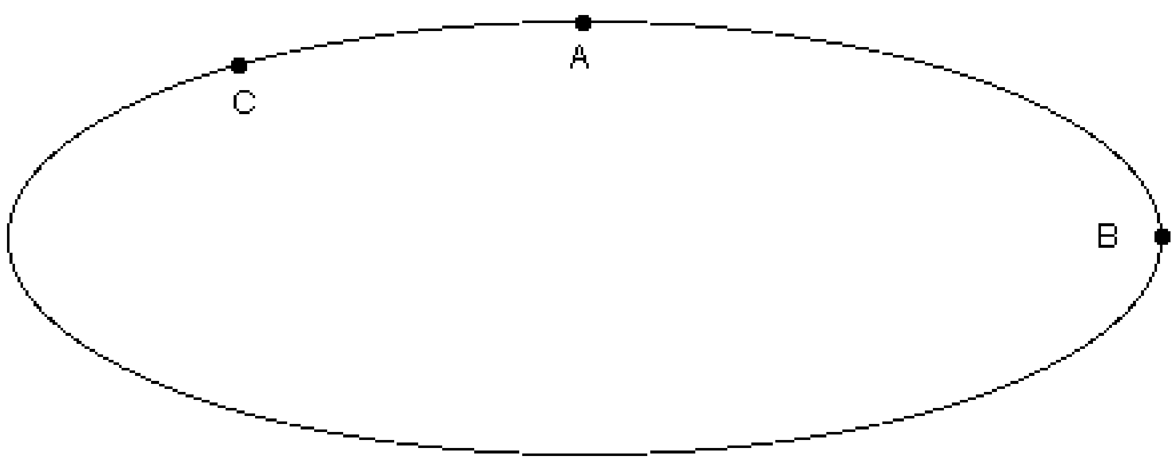
Mon:	**Bay Bridge Run**
Wed:	A5, **2**: 74,89, **3**: 12, 26
Fri:	**3**: 33,44; A6, A7

Q: question P: text problem - ***Assume problem in text if there is not letter.***
A: statement on this assignment sheet

Auxiliary Problems

A6 Oval Exercise. Draw a large oval and label points corresponding to the ones below. A particles travels around the oval path at a uniform speed. Consider the position of the particle a short time Δt before it is at the point A and at Δt after it passes A. Draw the displacement that occurs in the interval $t_A - \Delta t$ to $t_A + \Delta t$. What is the direction of the velocity at time t_A? Repeat for points B and C. Make a general statement about the direction of the instantaneous velocity of a particle in relation to the path that it follows. Represent the velocity at times $t_A - \Delta t$ and $t_A + \Delta t$. What is the direction of the change in velocity during this time interval? Repeat at B and C. As long as a particle travels at constant speed, $\Delta\vec{v}$ is perpendicular to the path. Do your drawings support this conclusion? For the 2 Δt interval about which point is the magnitude of $\Delta\vec{v}$ the largest? ... the smallest? As the particle is traveling at constant speed, a small change $\Delta\vec{v}$ perpendicular to $\vec{v}$ does not change its magnitude (to first order). What does it change? How would $\Delta\vec{v}$ be directed if the particle were increasing its speed? Decreasing? Repeat the graphical exercise above at point B for a particle that is increasing its speed. Resolve $\Delta\vec{v}$ into components perpendicular and parallel to $\vec{v}$.

THIS IS A SMALL OVAL; DRAW A LARGE ONE !



A7. Compute the sequence of values sin(1)/1, sin(0.1)/0.1, sin(0.01)/0.01, sin(0.0001)/0.0001, sin(0.00001)/0.00001, … . Interpret the numerical values as degrees and estimate the limit of the sequence to three places. Switch your calculator to radians and repeat the process. Compute the value $^{\pi}/_{180}$. Does it look familiar? The sequence limit is $^{d(\sin\theta)}/_{d\theta}$. Derivatives of trig functions as taught use radians for measuring angles.