

Assignment 2a revised to include the wording of the exercises
Due Tuesday, September 10, 2013

- Reading: Read the material that was skipped in chapter 3 and all of chapter 4.
- Work and hand in examples 1, 2, 4, and 5 on page 69 of Rigden. They are as follows:

1. Two masses are suspended from identical springs. They both oscillate with equal amplitudes and frequencies. However, they are out of phase. Both masses are observed and the times are recorded when each reaches its lowermost position. These times are:

mass 1: ... 9.6, 10.8, 12.0, 13.2 ... (seconds)

mass 2: ... 10.5, 11.7, 12.9, 14.1 ... (seconds)

What can be said about the relative phase between these two oscillators?

2. When two oscillators have a relative phase of $1/6$ cycle, what is the relative phase angle?
 4. When two identical frequencies f_1 and f_2 are superimposed, how does the pitch vary with the phase difference between the two oscillations?
 5. Two tones with frequencies f_1 and $f_2 = 3/2 f_1$ together form a musical fifth. If two periodic forces with frequencies f_1 and $f_2 = 3/2 f_1$ and amplitudes of 0.2 mm are driving an oscillator:
 - (a) Show the two waveforms on a y (mm) versus t (s) graph when there is an initial phase difference of 180 degrees.
 - (b) Carefully draw the superposition curve.
- I will make an additional assignment on Thursday.