Vibrations Waves and Optics - PHYS 2300

5th Assignment

due in the course drop-box by

9:55am, Tuesday, October 14, 2014

*No partial marks for late submissions*

Reading assignment:

\* study pages 77- 96 of French;

also, read through the various examples of resonance given on pp 101-112

Do the following problems:

* 1. Give three examples of real driven oscillators found in nature, engineering, etc. Be sure to explain what the driving mechanism is. Do not use systems that were discussed in class or in the textbook. You will get bonus marks for each example that is unique (i.e., one that no-one else in the class has come up with).
  2. Problem 4-3 in French
  3. Problem 4-5 in French. Hint: first consider the pendulum in its own reference frame (as if there was no driving force), and set up the coordinate system and force-sum equation for that. Then, to add the driving force, consider how the pivot point of the pendulum moves, and then note that this motion also applies to all the other points of the pendulum too; it’s then best to view this motion as a coordinate transformation that gets applied to the “original”, rest-frame pendulum coordinate system, and at this point you should have the full equation of motion for the driven pendulum case.
  4. Problem 4-6 in French. Hint: this is similar to the hint to problem (3).