PHY1308 - Homework 12

Expectations for the quality of your handed-in homework are available at
http://www.physics.smu.edu/sekula/phy1308/homework.pdf. Failure to meet these guidelines will
result in loss of points as detailed in that document. **This assignment is due on Monday, May 2 by
5:00pm (in my mailbox in FS102).**

Reading Assignment

- Chapter 31

Practice Problems

These are not required; they are odd-numbered problems from Wolfson that may help you to warm up
for the required problems.

- *You'll get practice from some of the odd-numbered problems required below.*

A Note on Significant Figures

Wolfson's representation of numbers can often make interpreting the number of significant figures very difficult.
Here are some rules you can follow and to which the solutions will adhere:

1. If an integer number has a trailing zero (e.g. 50 or 100), but no decimal point to indicate that zero is
   significant, TREAT THE TRAILING ZEROS AS SIGNIFICANT.

   a) Example: 100 will have three significant figures. 50 will have two.

2. If an integer less than 10 is given, assume it is INFINITELY SIGNIFICANT

   a) Example: 2 has infinite precision, and should be treated like 2.0000000...

Substitute for Quiz 9

One of the following two problems will be randomly graded and used as your grade on "Quiz 9",
which would have happened in class if we had more time.

- CH31-20
- CH31-38

Required Problems

- CH31-22 [10 Points]
- CH31-24 [5 Points]
- CH31-28 [5 Points]
- SS-20 [10 Points] (See below)

Problem SS-20: House, O.D.

You are an eye doctor (an optometrist) in residence following your formal medical training. You see patients under the supervision of the head optometrist at your office. As a resident, you are often put in situations where you have to provide answers to the head optometrist's questions. You are expected to think clearly and carefully and understand optics in order to do your job.

You see a patient who cannot read unless they hold their book or magazine at least 65.0cm rom their eyes. The head optometrist asks you to determine the corrective lens prescription for the patient.

- Part (a): What kind of lens - converging or diverging - do you need to prescribe for your patient? *Explain your answer in 1-2 sentences*.

- Part (b): What corrective power is required to fix their eyesight problem?

- Part (c): You go home after a long day of work. You share an apartment with a friend (you're still paying off those loans from medical school!). You notice that your roommate has mixed up your contact lens boxes. You remember that you can't focus on distant objects, while your roommate can't focus objects that are close. One box lists a corrective power of -1.5 diopters, and the other lists a corrective power of +2.2 diopters. Which box of contact lenses is yours?