General Physics - E&M (PHY 1308) Lecture Notes

Homework014

SteveSekula, 30 November 2010 (created 30 November 2010)

no tags

Homework 14

Expectations for the quality of your handed-in homework are available at http://www.physics.smu.edu/sekula/phy1308/HomeworkPolicy.pdf. Failure to meet these guidelines will result in loss of points as detailed in that document. This assignment covers material from Wolfson Chapter 31.

The total assignment is worth 50 points.

This homework is due by 5pm on Monday, December 6 (place in my mailbox in Fondren Science 102)

Reading Assignment:

Chapter 31.2-31.4

Required Problems from Wolfson and Sekula

These are **required problems that are part of the official homework assignment.**

- CH31-22 (10 Points)
- CH31-24 (10 Points)
- CH31-28 (10 Points)

Problem *SS-18* (20 Points)

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 from 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?

Optional Warm-Up Problems from Wolfson

These are not required but are meant to help you warm up to the problems that are required. They are odd numbered, and solutions to the odd-numbered problems are available in the back of the book and fully detailed in the student solution manual.

- CH31-23
- CH31-33
- CH31-35