Homework Assignment 1
Physics 212

Handed out:	Friday, January 15, 1999
Due in class on:	Thursday, January 21, 1999

Overview

For this and future homework assignments, please write clearly in complete sentences and explain your answers in sufficient detail. You will not receive credit for parts of your homework that can not be easily read or that give answers without explanation or justification. Your homework grade will depend especially on your demonstrating that you understand what you are doing. As an example, if you need to derive a result and you just write down three successive equations and a final answer, you will get little or no credit. You must show the logic or insight for various steps (as if you were explaining what you were doing to someone else). The 212 syllabus contains further information about grading, e.g., giving units for all physical quantities and fully labeling any plots.

Although you should strive to work out and understand the answers on your own, you are welcome (even encouraged) to collaborate with other members of the class. If you do collaborate, *you must write your homework assignment in your own words and with your own understanding.* Please do not copy any answers verbatim from another classmate! At the beginning of your assignment, you must also acknowledge explicitly who your collaborators were (if any) and on what answers you collaborated. Failure to write your assignments in your own words or to acknowledge help when given can lead to severe academic penalties so please play by the rules.

If you have difficulties of any kind, please send me e-mail, give me a call, or drop by my office (the course web page and syllabus have the necessary information). If you can't answer a question, at least try to describe a strategy for finding an answer. If you can't prove some theoretical result, see if you can at least demonstrate the result with some simpler case (e.g., a one-variable example of a two-variable problem) or with a numerical example (e.g., plug in some numbers and see if the result holds) or with a plot, i.e., try to convince yourself of the truth of the result.

There will occasionally be extra credit problems. These are completely optional and are given mainly to suggest further interesting avenues of thought.

Late homework assignments are not accepted. If you will not be able to get an assignment in on time, please get in touch with me soon as possible (at least three days before the due date of the homework) to discuss your situation.

Problem 1: Problems in French and Taylor

Please do the following problems in the French and Taylor book. Since some answers are given in the back of the book, your answers should have more complete discussions and explanations.

1. Problem 6-1 on page 270.
2. Problem 6-4 on pages 272-273.
3. Problem 6-5 on page 273.
4. Problem 6-7 on page 274.
5. Problem 6-9 on page 275.

By the way, a fun book that discusses light polarization at a sophomore level and that suggests many elementary home experiments to test your understanding is the book "Waves" by Frank S. Crawford, Jr. (McGraw-Hill, New York, 1968). Check it out!

Problem 2: Two Quiz Problems On Chapter 6

Please invent and write down two short quiz problems with solutions, concerning the material discussed so far in class and in Chapter 6 of the French and Taylor book. Your quiz problems should be similar in style and in length to the ones that you saw in Physics 211 (which are still available via the web page http://www.phy.duke.edu/~hsg/211/misc/). Each problem should take at most five minutes to complete. Your problems should strive to emphasize conceptual understanding or some important technical point.

This coming Thursday (January 21), I'll ask two or three students in turn to go up to the board and present one of their quiz problems for the rest of us to discuss and to solve.

Problem 3: Time for Completion

Please tell me the approximate time in hours that it took to finish this assignment.