Physics 5B **Homework Set #6** **Winter 2008**

DUE: WEDNESDAY FEBRUARY 20, 2008

ANNOUNCEMENT: Monday February 18 is Presidents' Day; no classes will be held on that day. Consequently, my usual Monday office hours next week will be rescheduled for Tuesday from 1–2 pm (note the slight shift in time). The Monday office hours of the discussion TA, Jeff Jones, will also be rescheduled for Tuesday. The Monday discussion section will be canceled next week, but the Tuesday afternoon and evening discussion sections will be held at their usual times.

Assigned reading: Giancoli, Chapter 16, section 8, Chapter 31, sections 6 and 7, and Chapter 32, sections 1–4.

1. True/false questions: For each of the following statements, indicate whether the statement is true or false. Briefly explain your reasoning (for example, if false, provide a counter-example).
   (a) Since no particle can travel faster than the speed of light, there is no analog of the sonic boom for light waves.
   (b) An electromagnetic wave can travel through a perfect vacuum.
   (c) The wavelengths of radio and television signals are longer than those detectable by the human eye.
   (d) If a concave mirror produces a real image, then the image is necessarily inverted.
   (e) It is possible for a spherical mirror to have a negative object distance.
   (f) An object is placed along the principal axis of a spherical mirror. The magnification of the object is -3.0. Then, the image of the object is real and inverted.

To earn full credit on the following problems, you must exhibit the steps that lead to your final results. The graded homework will be based on the clarity of your method of solution as well as on your final answer.

2. Giancoli, Chapter 16, problem 72
3. Giancoli, Chapter 31, problem 18
4. Giancoli, Chapter 32, problem 4

5. Giancoli, Chapter 32, problem 7
6. Giancoli, Chapter 32, problem 8
7. Giancoli, Chapter 32, problem 16
8. Giancoli, Chapter 32, problem 21
9. Giancoli, Chapter 32, problem 24
10. Giancoli, Chapter 32, problem 31
11. Giancoli, Chapter 32, problem 36