

PHYS-2020: General Physics II

Problem Set 4, Spring 2012

There are 8 problems you are to complete via the web at

<http://capa.etsu.edu/>

You will gain access to this set by typing in your CAPA Student Number and CAPA ID which will be supplied to you. These problems will be graded and must be completed by 6:00 p.m. on Monday, April 23, 2012. **Start working on these problems immediately! Don't wait until the last day to start them. One never knows when the network will go down, and you will not be able to use this as an excuse for not doing your CAPA problems.** As a matter of fact, there will be no allowed excuses for not doing your CAPA homework.

The following problems will not be graded, but should be done for review. These problems are from your textbook (College Physics, 9th Edition, Serway & Vuille). The solutions are posted on the course web page. **Try to work these problems out by yourself before looking at the solutions I have supplied for you.**

1. Problem 22.9, Page 784.
2. Problem 22.25, Page 786.
3. Problem 22.28, Page 786.
4. Consider a common mirage formed by superheated air just above a roadway. A truck driver whose eyes are 2.00 m above the road, where $n = 1.0003$, looks forward. She has the illusion of seeing a patch of water ahead on the road, where her line of sight makes an angle of 1.20° below the horizontal. Find the index of refraction of the air just above the road surface. (*Hint:* Treat this as a problem involving total internal reflection.)
5. A concave spherical mirror has a radius of curvature of 20.0 cm. Locate the images for object distances of (a) 40.0 cm, (b) 20.0 cm, and (c) 10.0 cm. In each case, state whether the image is real or virtual, and upright or inverted, and find the magnification.
6. Problem 23.33, Page 820.
7. Problem 25.25, Page 881.
8. Problem 25.44, Page 883.

9. Problem 24.40, Page 855.