

**Phy114: Electromagnetism, Waves and Radiation
for the Sports Science
Homework Problems
Set #9: Due Monday, April 21, 2008**

Note: Students are encouraged to work together and discuss the problems. However, each student must arrive at her/his own final answers. Show all your work. Simply copied homework will result in zero.

1. (10 points) Calculate the strength in diopters of a normal eye when viewing an object 30 cm away. Repeat the calculation for an object 2.0 m away.
2. (5 points) The strength of an athletic trainer 's eye while examining Jose Reyes' injured hamstring is 53.5 D. How far away is the feature being examined?
3. (10 points) Calculate how far away a person can be from the Yankee stadium and still be able to read the letters on its façade using the following information. The letters are 10 feet high and their image must be 10 times the limit of acuity to be easily read.
4. (10 points) Prof. Jung's left eye has a minimum strength of 58 D. (a) What strength lens is required to correct his far vision? (b) Without a corrective lens what is the farthest distance he can see things clearly? Assume his left eye's lens-to-retina distance is 2cm.
5. (10 points) (a) What is the accommodated strength of a farsighted man who can see objects clearly that are no closer than 75 cm? (b) What eyeglass lens will allow him to see object clearly at 25 cm distance?
6. (10 points) The lens-to-retina distance of a patient is 1.98 cm and the fully accommodated strength of her eye is 54.0 D. (a) What is the closest object (distance) she can see clearly? (b) What eyeglass lens strength will allow her to read at a normal distance of 25 cm?