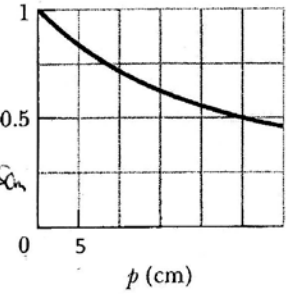
KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
PHYSICS DEPARTMENT
PHYS 201- Term 112
QUIZ #4 – CHAPTER 34

Wednesday 21 March 2012

Name: Key ID#:

1. The figure gives the lateral magnification m of an object versus the object distance p from a spherical mirror as the object is moved along the mirror's central axis through a range of values for p.
   What is the magnification of the object when the object is at 40 cm from the mirror?



$m = -\frac{i}{p}$

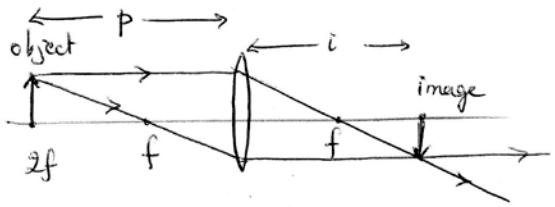
when $m = 0.5$ $p = 25\,cm \Rightarrow i = -12.5\,cm$

$\frac{1}{f} = \frac{1}{p} + \frac{1}{i} \Rightarrow \frac{1}{f} = \frac{1}{25} - \frac{1}{12.5} \Rightarrow f = -25\,cm$

$-\frac{1}{25} = \frac{1}{40} + \frac{1}{i} \Rightarrow i = -15.9\,cm$

$m = -\frac{i}{p} = \frac{15.9}{40} = \boxed{0.4}$

2. An erect object is 2f in front of a converging lens of focal length f. The image is:
A. real, inverted, magnified
B. real, erect, same size
(C.) real, inverted, same size
D. virtual, inverted, reduced
E. real, inverted, reduced



$\frac{1}{f} = \frac{1}{p} + \frac{1}{i} = \frac{1}{2f} + \frac{1}{i} \Rightarrow i = 2f$

$m = -\frac{i}{p} = -1 \Rightarrow$ same size

↑ inverted

$p > f \Rightarrow$ image is real