Homework Discussion, Week 8

Physics 1302   Dr. Andersen

Chapter 26

5.) a) The position of of the spot above the floor is, initially

$$y_i = (2.0 \ m)\tan 32°.$$

After propping up the mirror, the angle of incidence will be reduced by 5°, so the angle of reflection will also be reduced by the same amount. The angle with respect to the horizontal of the outgoing beam will thus be 10° (5° for the change in reflected angle, 5° from the propping up of the mirror.) So, the final y position will be

$$y_i = (2.0 \ m)\tan 42°.$$

21.) Just gotta draw the diagram.

22.) Solve for d_i in
$$\frac{1}{f} = \frac{1}{d_i} + \frac{1}{d_o},$$
and then solve for the magnification.
Answers: $d_i = 67 \ cm$, $m = -0.33$

33.) a) Since the mirror is convex, the image must be virtual, and thus upright. b) Since we know the height of the image and shopper, we can find the image distance from the magnification formula, and then use that plus the object distance to find the focal length and from that the radius of curvature.