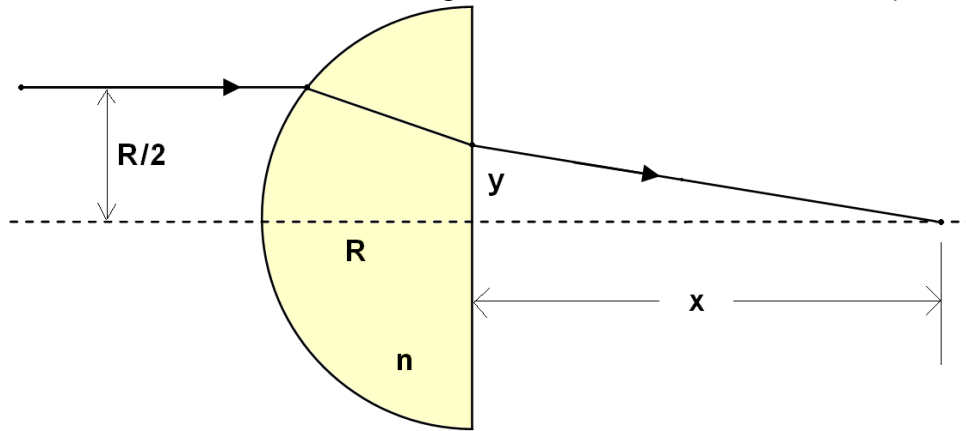


OPAC101-INTRODUCTION TO OPTICS. [Solved Problems (set4)]

[1]. A meter stick lies along the optical axis of a concave mirror of focal length 50 cm with its nearer end 70 cm from the mirror surface. How long is the image of the meter stick?

[2]. A spherical mirror has a Radius $R = 100$ cm. Locate, describe and draw the image for the object distance (a) 120 cm (b) 30 cm.

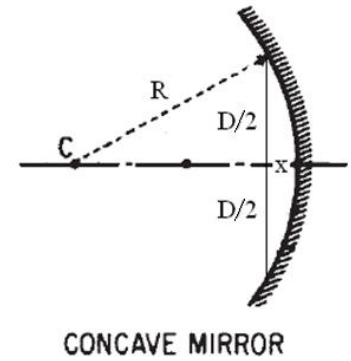
[3]. A light ray fall on a semi-sphere whose refractive index is $n = 1.48$ and radius is $R = 16$ cm as shown in figure. Determine the distance x and y .



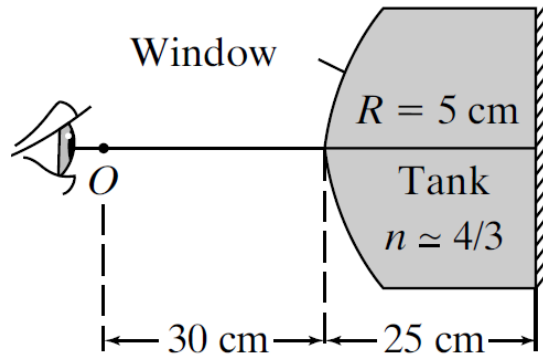
[4]. Find an expression for x in terms of D and R in Figure below.

R : Radius of curvature

x : Sag height (or sagita) for the given D .



[5]. A small object faces the convex spherical glass window of a small water tank. The radius of curvature of the window is 5 cm. The inner back side of the tank is a plane mirror, 25 cm from the window. If the object is 30 cm outside the window, determine the nature (position and size) of its final image, neglecting any refraction due to the thin glass window itself.



[6]. A concave mirror forms an image on a screen twice as large as the object. Both object and screen are then moved to produce an image on the screen that is three times the size of the object. If the screen is moved 75 cm in the process, how far is the object moved? What is the focal length of the mirror?