

Chapter 10

REFLECTION AND REFRACTION

Example- 1:

A point light source lies on the principal axis of a concave spherical mirror with a radius of curvature of 160 cm. Its image appears to be back of the mirror at a distance of 70 cm from the mirror. Determine the location of the light source.

Solution:

$$\frac{1}{u} + \frac{1}{v} = \frac{2}{R}$$

Here $v = 70$ cm.

$$R = -160 \text{ cm} \quad \frac{1}{u} = \frac{2}{R} - \frac{1}{v}$$

$$\therefore \frac{1}{u} = \frac{2}{-160 \text{ cm}} - \frac{1}{70 \text{ cm}} = -\frac{15}{560 \text{ cm}}$$

$$\therefore u = -\frac{560}{15} \text{ cm} = -37 \text{ cm}.$$

The source is at a distance of 37 cm in front of the mirror.