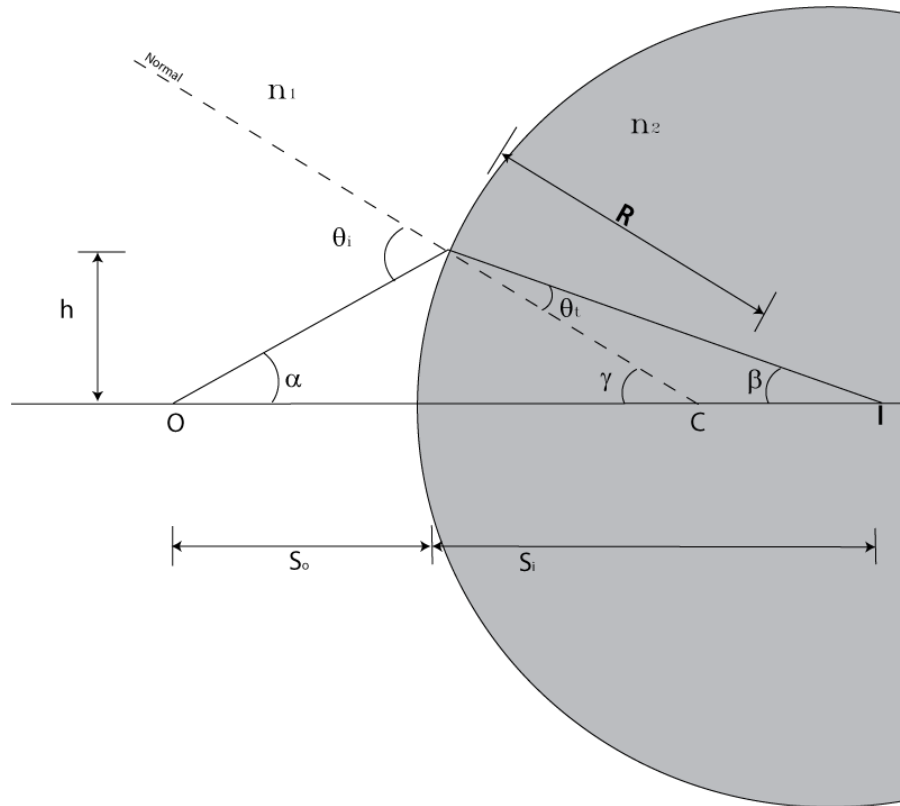


### Answer on Question#39363, Physics, Optics

In a medium of refractive index 1.6 and having a convex surface has a point object in it at a distance of 12cm from the pole. The radius of curvature is 6 cm. Locate the image as seen from air?

**Solution:**



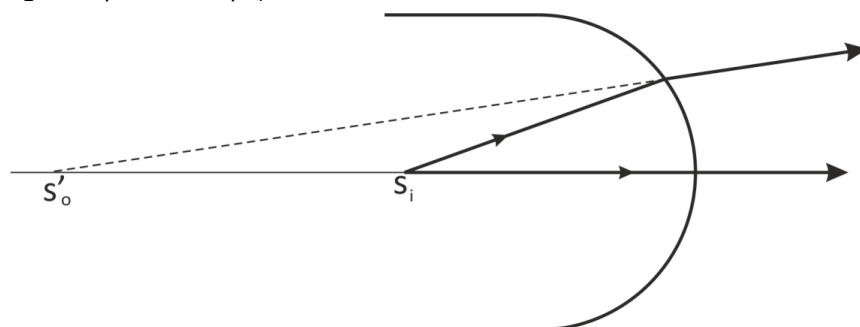
In this figure:

- C is the center of curvature of the spherical surface
- R is the radius of curvature
- O is the position of the Object
- I is the position of the Image
- $S_o$  is the distance of the object from the surface along the optical axis
- $S_i$  is the distance from the surface to the Image

For light rays going from medium 1 ( $n_1$ ) to medium 2 ( $n_2$ ):

$$\frac{n_1}{S_o} + \frac{n_2}{S_i} = \frac{n_2 - n_1}{R}$$

Given:  $n_1 = 1$ ,  $n_2 = 1.6$ ,  $R = 6$  cm,  $S_o = 12$  cm.



$$\frac{n_2}{s_i} + \frac{n_1}{s'_i} = \frac{n_2 - n_1}{R}$$

$$\frac{1.6}{12} + \frac{1}{s'_i} = \frac{0.6}{6}$$

$$\frac{1}{s_o} = \frac{0.6}{6} - \frac{1.6}{12} = -\frac{0.4}{12}$$

$$s_o = -30 \text{ cm}$$

Hence the object appears 30 cm deep from the curved side.

**Answer.** 30 cm