

Answer on Question #64048, Physics / Optics

The focal length of a convex lens is 10cm, find the position of image when the object is placed at a distance of 30cm from a convex lens.

Find: d_i - ?

Given:

$f=10$ cm

$d_o=30$ cm

Solution:

If the distances from the object to the lens and from the lens to the image are d_o and d_i respectively, for a lens of negligible thickness, in air, the distances are related by the thin lens formula:

$$\frac{1}{d_o} + \frac{1}{d_i} = \frac{1}{f} \quad (1),$$

where f is focal length of a convex lens

$$\text{Of (1)} \Rightarrow d_i = \frac{fd_o}{d_o - f} \quad (2)$$

$$\text{Of (2)} \Rightarrow d_i = 15 \text{ cm}$$

Answer:

15 cm

Answer provided by <https://www.AssignmentExpert.com>