

Answer on question #61811, Physics / Optics

Question A diverging lens of -30 cm focal length produced an image which is 1/3 the height of the object. What would be the distance of the image?

Solution Magnification is related to heights and distance to images as

$$M = \frac{h_i}{h_o} = \frac{d_i - f}{f}$$

In our case $h_i/h_o = 1/3$, $f = -30$. Hence, distance to object is

$$d_i = f \cdot \frac{h_i}{h_o} + f = -30/3 - 30 = -40 \text{ cm}$$