

Answer on Question #80645 Physics / Optics

Question. In a thin spherical fish bowl of radius 10 cm filled with water of refractive index $4/3$ there is a small fish at a distance of 4 cm from the center c as shown in figure. Where will the image of fish appears if seen from E .

Solution.

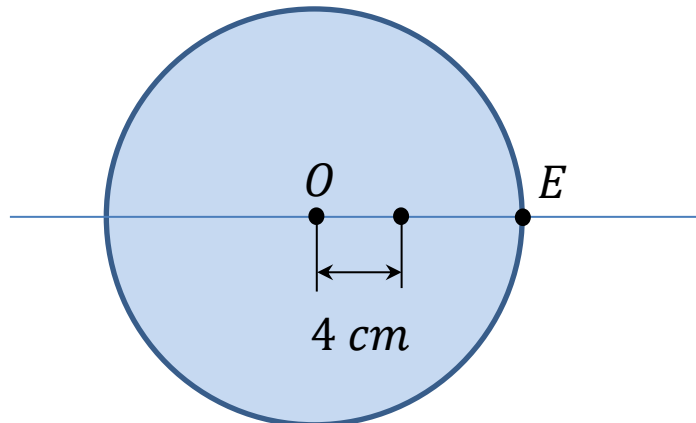
By using

$$\frac{n_2}{v} - \frac{n_1}{u} = \frac{n_2 - n_1}{R},$$

where $n_1 = \frac{4}{3}$ (water), $n_2 = 1$ (air), $u = -6\text{ cm}$.

So,

$$\frac{n_2}{v} - \frac{n_1}{u} = \frac{n_2 - n_1}{R} \rightarrow \frac{1}{v} - \frac{\frac{4}{3}}{-6} = \frac{1 - \frac{4}{3}}{-10} \rightarrow \frac{1}{v} = \frac{1 - \frac{4}{3}}{-10} - \frac{4}{18} = -5.2\text{ cm}$$



Answer. $v = 5.2\text{ cm}$ to the left of the point E .

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