* Image from the first lens serves as the object for the second lens

\[ d_{i1} = -23.4 \text{ cm} \]
\[ f_1 = 24.0 \text{ cm} \]
\[ d_{o1} = ? \]

\[ \frac{1}{d_{o1}} + \frac{1}{d_{i1}} = \frac{1}{f_1} \]

\[ \frac{1}{d_{o1}} = \frac{1}{f_1} - \frac{1}{d_{i1}} \]

\[ = \frac{1}{24.0 \text{ cm}} - \frac{1}{-23.4 \text{ cm}} \]

\[ \frac{1}{d_{o1}} = 0.0844 \text{ cm}^{-1} \]

\[ d_{o1} = 11.8 \text{ cm} \]
A converging lens \((f_1 = 24.0\, \text{cm})\) is located \(56.0\, \text{cm}\) to the left of a diverging lens \((f_2 = -28.0\, \text{cm})\). An object is placed to the left of the converging lens, and the final image produced by the two-lens combination lies \(20.7\, \text{cm}\) to the left of the diverging lens. How far is the object from the converging lens?

\[d_{o1} = \text{?}\]

\[d_{i2} = -20.7\, \text{cm}\]

\[f_2 = -28.0\, \text{cm}\]

\[d_{o2} = \text{?}\]

\[\frac{1}{d_{o2}} + \frac{1}{d_{i2}} = \frac{1}{f_2}\]

\[\frac{1}{d_{o2}} = \frac{1}{f_2} - \frac{1}{d_{i2}}\]

\[\frac{1}{d_{o2}} = \frac{1}{-28.0\, \text{cm}} - \frac{1}{-20.7\, \text{cm}} = 0.0126\, \text{cm}^{-1}\]

\[d_{o2} = 79.4\, \text{cm}\]

Object lies \(79.4\, \text{cm}\) to the left of the second lens.

\[23.4\, \text{cm}\] to the left of the first lens.