

$$\begin{aligned} \lambda &= 600 \text{ nm} = 6.0 \times 10^{-7} \text{ m} \\ d &= .40 \text{ mm} = 4.0 \times 10^{-4} \text{ m} \\ L &= 1.5 \text{ m} \end{aligned}$$

For a single slit: destructive interference occurs at $x_m = \frac{m \cdot L \cdot \lambda}{d}$

$$x_1 = \frac{(1)(1.5 \text{ m})(6.0 \times 10^{-7} \text{ m})}{(4.0 \times 10^{-4} \text{ m})}$$

$$x = .00225 \text{ m}$$

OR

$$x_1 = 2.25 \text{ mm}$$

b) The position of the 1st order dark fringe is shown above.
The width of the central maximum is the distance between the 1st order dark fringes on each side, or $2 \cdot x_1$.

$$2 \cdot x_1 = 2(2.25 \text{ mm})$$

$$W = 4.50 \text{ mm}$$

