

63. For the fifth maximum $y_5 = D \sin \theta_5 = D(5\lambda/d)$, and for the seventh minimum $y'_7 = D \sin \theta'_7 = D[(6 + 1/2)\lambda/d]$. Thus,

$$\begin{aligned}\Delta y &= y'_7 - y_5 = D \left[\frac{(6 + 1/2)\lambda}{d} \right] - D \left(\frac{5\lambda}{d} \right) = \frac{3\lambda D}{2d} \\ &= \frac{3(546 \times 10^{-9} \text{ m})(20 \times 10^{-2} \text{ m})}{2(0.10 \times 10^{-3} \text{ m})} \\ &= 1.6 \times 10^{-3} \text{ m} = 1.6 \text{ mm} .\end{aligned}$$