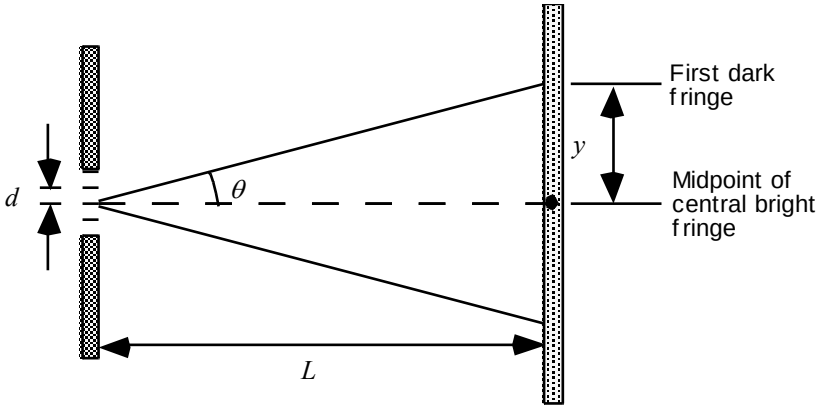
45. **SSM** ***REASONING AND SOLUTION*** The geometry of the situation is shown below.



From the geometry, we have

$$\tan\theta = \frac{y}{L} = \frac{0.60\text{ mm}}{3.0\text{ mm}} = 0.20 \qquad \text{or} \qquad \theta = 11.3°$$

Then, solving Equation 27.7 with $m = 1$ for the separation d between the slits, we have

$$d = \frac{m\lambda}{\sin\theta} = \frac{(1)\left(780\times10^{-9}\text{ m}\right)}{\sin 11.3°} = \boxed{4.0\times10^{-6}\text{ m}}$$