

Ch 3 Prob. 18

$$\lambda = 610 \text{ nm} = 610 \times 10^{-9} \text{ m}$$

1st max at  $30^\circ$

What is the slit separation?

Using the double slit equation

$$m\lambda = d \sin \theta$$

solve for  $d$

$$d = \frac{m\lambda}{\sin \theta} = \frac{(1)(610 \times 10^{-9} \text{ m})}{\sin 30^\circ}$$

$$d = 1.22 \times 10^{-6} \text{ m}$$

$$\boxed{1.22 \mu\text{m}}$$