

Ch. 3 Prob. # 22 $d = 2.00 \mu\text{m}$

from Problem 21

$$\lambda = 577 \text{ nm}$$

Find the angle of the fourth maximum.

Begin with the 2-slit formula

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

Solve for θ

$$\sin \theta = \frac{m\lambda}{d}$$

$$\theta = \sin^{-1} \left(\frac{m\lambda}{d} \right) = \sin^{-1} \left(\frac{4 \cdot (577 \times 10^{-9} \text{ m})}{2.00 \times 10^{-6} \text{ m}} \right)$$

$$= \sin^{-1} (1.154)$$

Since the arcsin can't be taken
for a value over 1.0,

There is no 4th maximum