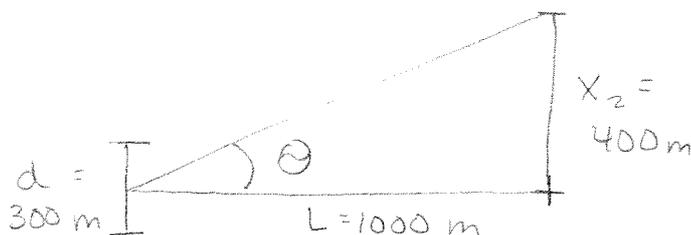


P #7

Ch 24 - pg 774

$$\begin{aligned}
 d &= 300 \text{ m} \\
 L &= 1000 \text{ m} \\
 x_2 &= 400 \text{ m} \\
 m &= 2
 \end{aligned}$$

Find θ : (Avoid small θ appx)

$$\tan \theta = \frac{x}{L} \quad \tan \theta = \frac{(400 \text{ m})}{(1000 \text{ m})}$$

$$\theta = 21.8^\circ$$

Find λ :

$$\begin{aligned}
 m \cdot \lambda &= d \cdot \sin \theta \\
 (2) \cdot (\lambda) &= (300 \text{ m}) \cdot \sin 21.8^\circ
 \end{aligned}$$

$$\lambda = 56 \text{ m}$$

$$\begin{aligned}
 \text{b) } \lambda &= 56 \text{ m} \\
 L &= 1000 \text{ m} \\
 d &= 300 \text{ m} \\
 m &= 2\frac{1}{2} \text{ (for next minimum)}
 \end{aligned}$$

Find θ : (Avoid small θ appx)

$$\begin{aligned}
 m \cdot \lambda &= d \cdot \sin \theta \\
 (2\frac{1}{2}) \cdot (56 \text{ m}) &= (300 \text{ m}) \cdot \sin \theta
 \end{aligned}$$

$$\theta = 27.7^\circ$$

Find $x_{2\frac{1}{2}}$:

$$\tan \theta = \frac{x}{L} \quad \tan 27.7^\circ = \frac{x}{1000 \text{ m}}$$

$$x_{2\frac{1}{2}} = 524 \text{ m}$$

Find Δx :

$$\begin{aligned}
 \Delta x &= x_{2\frac{1}{2}} - x_2 \\
 &= 524 \text{ m} - 400 \text{ m}
 \end{aligned}$$

$$\Delta x = 124 \text{ m}$$