



4.

$$\theta_{\text{radians}} = \frac{.00312}{6} = .00052 \text{ radians}$$

(a) $.0052 \text{ radians} \times \frac{180^\circ}{\pi \text{ radians}} = .298^\circ$

$$d \sin \theta = 1.22 \lambda$$

$$\sin \theta \approx \theta_{\text{radians}} = \frac{1.22 \lambda}{d} = \frac{1.22 (400 \times 10^{-9})}{3.6 \times 10^{-3}}$$

$$\theta_{\text{radians}} = .000136 \text{ radians}$$

$$\approx .00777 \text{ degrees}$$

(b)

$$\theta_{\text{radians}} = \frac{y}{L} = y$$

$$.000136 = \frac{y}{6}$$

$$y = .000816 \text{ m}$$

$$y = .816 \text{ mm}$$