

16. (a) We use Eq. 37-14:

$$\theta_{\text{R}} = 1.22 \frac{\lambda}{d} = \frac{(1.22)(540 \times 10^{-6} \text{ mm})}{5.0 \text{ mm}} = 1.3 \times 10^{-4} \text{ rad} .$$

(b) The linear separation is $D = L\theta_{\text{R}} = (160 \times 10^3 \text{ m})(1.3 \times 10^{-4} \text{ rad}) = 21 \text{ m}$.