

Quiz

Name

1. Suppose that a light ray passes through air and strikes a slab of crown glass at an angle of incidence $\alpha = 20^\circ$. Determine the angle of refraction.

2. The face of a diamond is struck by a beam of light coming in through the air at an angle of incidence of 60° with the face. The index of refraction of the diamond is 2.4 and that of the air is 1.0003. At what angle is the beam refracted? The formula $n_A \sin \alpha = n_B \sin \beta$ might be helpful. Draw a diagram of what is going on.

3. It is asserted in the Problems and Projects section of the text that the term

$$x = \frac{y^2}{R[1 + \sqrt{1 - (1 - k)\frac{y^2}{R^2}}]}$$

of the aspheric lens formula can be written in the simpler form $y^2 = 2Rx - (1 - k)x^2$. In the situation $k = 0$, show that this last equation represents a circle and determine its center and radius.

$$\kappa \frac{ab\pi}{T} \quad n_A \sin \alpha = n_B \sin \beta \quad n_A = 1.00000 \quad n_A = 1.00029 \quad n_A = 1.00029 \quad n_A = 1.52$$