Prob. 43-15

Incident angles is $\theta$; refracted angle is $\theta_r$; $x$ is separation between in and out rays. $b$ is path length in glass; $t$ is thickness of glass.

\[
\sin(\theta - \theta_r) = \frac{x}{b}
\]
\[
\cos(\theta_r) = \frac{t}{b}
\]

Eliminate $b$

\[
\sin(\theta - \theta_r) = \frac{x \cos(\theta_r)}{t}
\]

$x = t \sin(\theta - \theta_r) / \cos(\theta_r) = \text{approx } t (\theta - \theta_r) = t \theta (1 - 1/n)$

Use small angle approx $\cos = 1$ and Snell's law for small angles.