Calculate the maximum angle of incidence, $\theta$, for which no light emerges from the right hand face of the prism. The prism is made of glass, of $n = 1.55$.

Start from Face 2:

In order for the light not to emerge from Face 2, the incidence angle should be equal or greater than the critical angle at that point.

For total internal reflection \[
\sin \theta_c = \frac{1}{1.55} \rightarrow \theta_c = 40.18^\circ
\]

so \[\theta_2 \geq \theta_c = 40.18^\circ\]
\[ \Theta = \sin^{-1} \left( n_2 \sin \Theta_2 \right) \]
\[ = \sin^{-1} \left( 1.55 \sin 19.82^\circ \right) \Rightarrow \Theta = 31.7^\circ \]

\( \Theta = 31.7^\circ \)
max angle of incidence.

now on face 1 we have

\[ n \sin \Theta = n_2 \sin \Theta_2 \]