Reading Assignment 1

1. Fermat's principle of refraction states that light travels the path of least time. It is also known that the index of refraction of a medium is the ratio of the speed of light in a vacuum to the speed in the medium. Use the angles and measurements shown in the figure to prove Snell's Law:

$$\frac{\eta_1}{\eta_2} = \frac{\sin(\theta_2)}{\sin(\theta_1)}.$$

(Hint: derive the ratio of speed in the two media, write out the travel time between A and B and minimize it.)