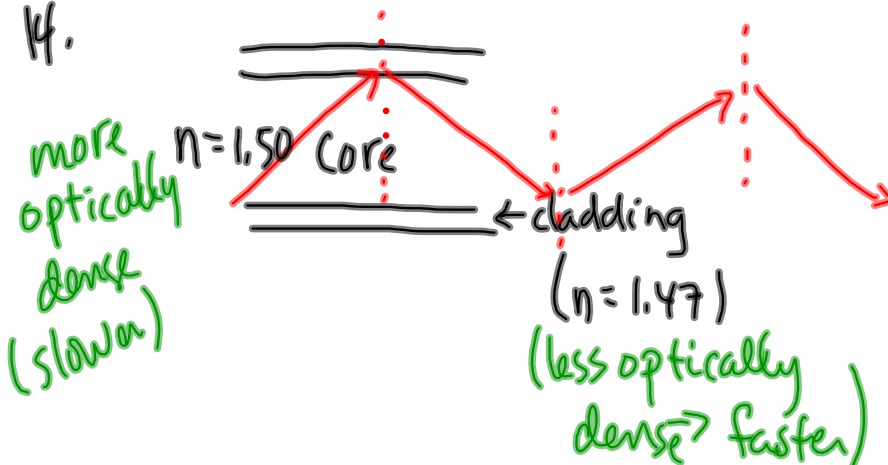


PP/410

4.

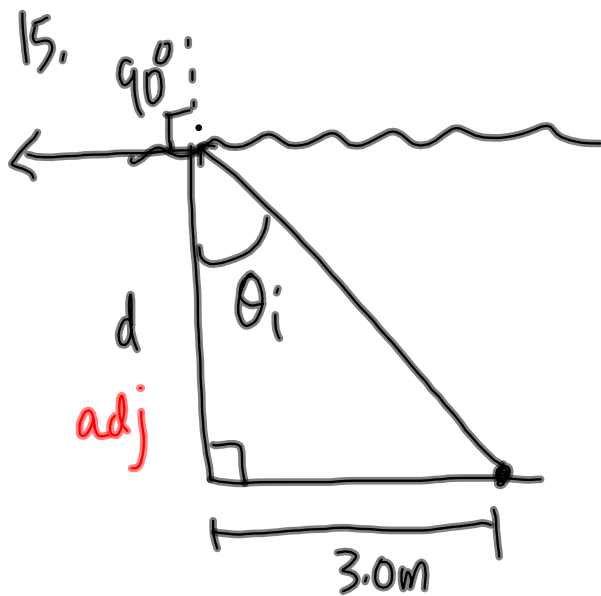


$$n_i \sin \theta_i = n_r \sin \theta_r$$

$$(1.50) \sin \theta_i = (1.47) \sin 90^\circ \quad \leftarrow \text{exactly } 90^\circ$$

$$\sin \theta_i = \frac{1.47}{1.50}$$

once $\theta_i > 78.5^\circ$
 then there is \rightarrow $\theta_i = 78.5^\circ$
 "total internal reflection"



Water \rightarrow air

$$n_i \sin \theta_i = n_r \sin \theta_r$$

$$1.33 \sin \theta_i = (1.00) \sin 90^\circ$$

$$\sin \theta_i = \frac{1.00}{1.33}$$

$$\theta_i = 48.8^\circ$$

$$\tan \theta = \frac{3.0}{d}$$