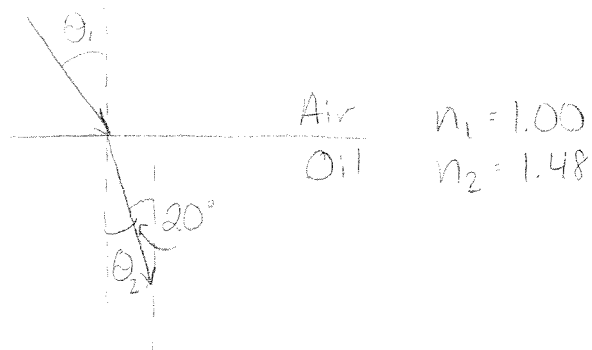


P # 21

Ch 22 - pg 708

For θ_1 :

By geometry: $\theta_2 = 20^\circ$

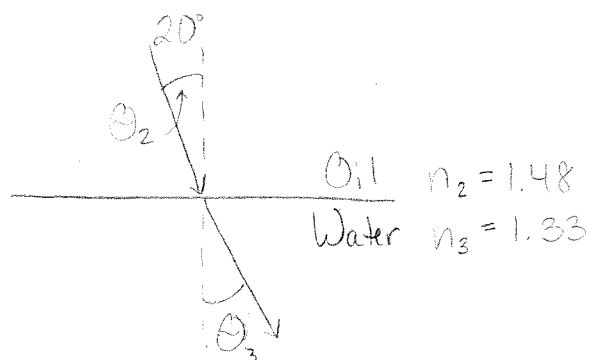


$$n_1 \cdot \sin \theta_1 = n_2 \cdot \sin \theta_2$$

$$(1.00) \cdot \sin \theta_1 = (1.48) \cdot \sin 20^\circ$$

$$\theta_1 = 30.4^\circ$$

For θ' :



$$n_2 \cdot \sin \theta_2 = n_3 \cdot \sin \theta_3$$

$$(1.48) \cdot \sin 20^\circ = (1.33) \cdot \sin \theta_3$$

$$\theta' = 22.3^\circ$$