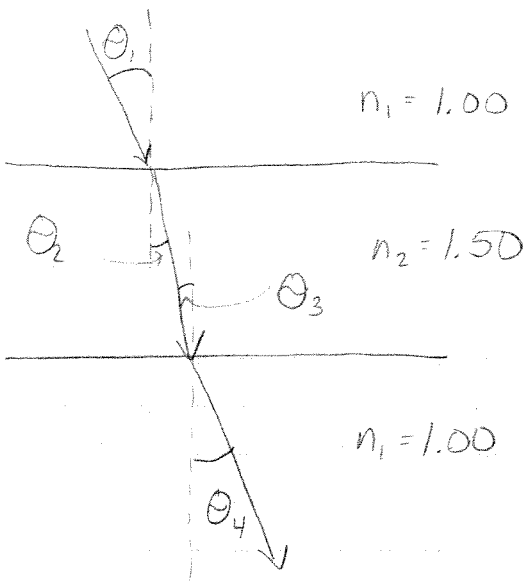
# P #18

Ch 22 - pg 708

$n_1 = 1.00$
$n_2 = 1.50$

$\theta_1 = 30°$




Find $\theta_2$:

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

$$(1.00) \cdot \sin 30° = (1.50) \cdot \sin\theta_2$$

$$\boxed{\theta_2 = 19.5°}$$

By geometry: $\theta_3 = \theta_2$

so $\boxed{\theta_3 = 19.5°}$

Find $\theta_4$:

$$n_3 \cdot \sin\theta_3 = n_4 \cdot \sin\theta_4$$

$$(1.50) \cdot \sin 19.5° = (1.00) \cdot \sin\theta_4$$

$$\boxed{\theta_4 = 30°}$$