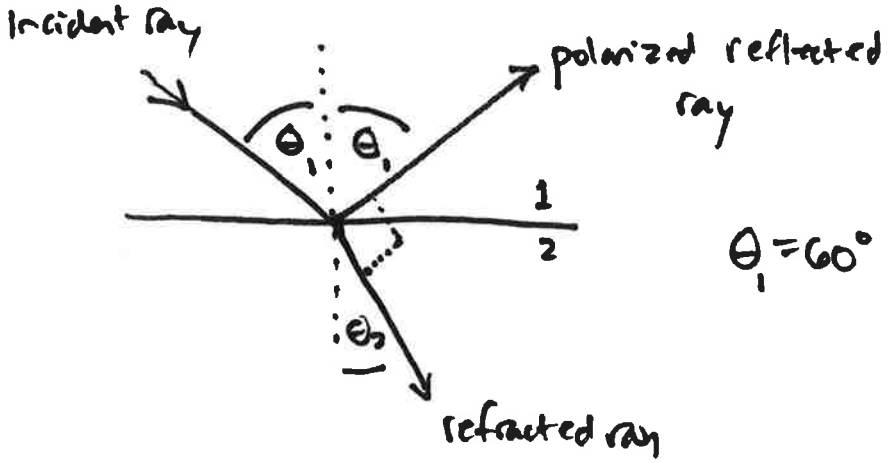
ASG vol 3 Ex 22.1

(Brewster's Angle & refractive index)



$\theta_1 = 60°$

$n_1 \sin\theta_1 = n_2 \sin\theta_2$ (Snell's law)

a) Since $n_1 = 1$, $n_2 = \dfrac{\sin\theta_1}{\sin\theta_2}$

By Brewster's law, since $\theta_1 = 60°$, $\theta_2 = 30°$

Thus $n_2 = \dfrac{\sin 60}{\sin 30} =$ **1.73**

b) the refraction angle is $\theta_2 =$ **30°**

c) the transmitted ray is polarized in the plane of incidence.

d) Since $\sin(\theta) = \cos(90-\theta)$

and since for total polarization $\theta_2 + \theta_1 = 90$,

$$n_2 = \frac{\sin(\theta_1)}{\sin(90-\theta_1)} = \frac{\sin\theta_1}{\cos\theta_1} = \tan\theta_1 \quad \checkmark$$