

Phys 110C: Problems for HW 5

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1 HW5 1: Brewster's Angle

Brewster's angle is given by: $\tan \theta_B = n_2/n_1$, for light traveling from medium 1 into medium 2.

- a) Prove that, if the angle of incidence is equal to Brewster's angle, the reflected and transmitted rays are 90° apart.
- b) Suppose that the electric field of the incident wave, \vec{E}_I , is polarized perpendicular to the plane of incidence. Starting from the boundary conditions for parallel and perpendicular components of electric fields (4.3.3) and for magnetic fields (6.3.3) find the amplitudes of the electric and magnetic fields for the reflected and refracted waves. Show that the refracted wave must vanish.

2 Problems from Griffiths

9.35, 9.36