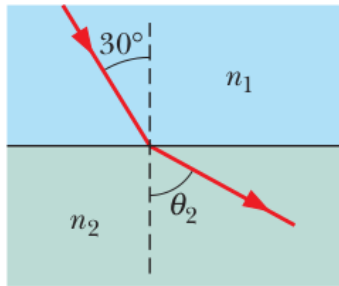


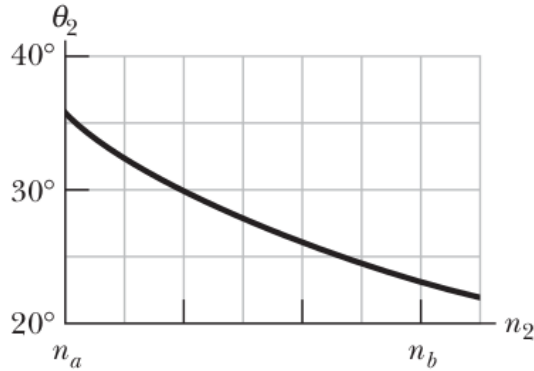
09 – Optics (Ch. 35)

$$c = 3 \cdot 10^8 \text{ m/s}; \epsilon_0 = 8.854 \cdot 10^{-12} \text{ F/m}; \mu_0 = 1.257 \cdot 10^{-6} \text{ N/A}^2$$

4) In Fig. (a) a beam of light in material 1 is incident on a boundary at an angle of 30° . The extent to which the light is bent due to refraction depends, in part, on the index of refraction n_2 of material 2. Figure (b) gives the angle of refraction θ_2 versus n_2 for a range of possible n_2 values, from $n_a = 1.30$ to $n_b = 1.90$. What is the speed of light in material 1?



(a)



(b)

7) The speed of yellow light (from a sodium lamp) in a certain liquid is measured to be 1.92×10^8 m/s. What is the index of refraction of this liquid for the light?

14) In a double-slit arrangement the slits are separated by a distance equal to 100 times the wavelength of the light passing through the slits. (a) What is the angular separation in radians between the central maximum and an adjacent maximum? (b) What is the distance between these maxima on a screen 50.0 cm from the slits?

29) Two waves of the same frequency have amplitudes 1.00 and 2.00. They interfere at a point where their phase difference is 60.0° . What is the resultant amplitude?