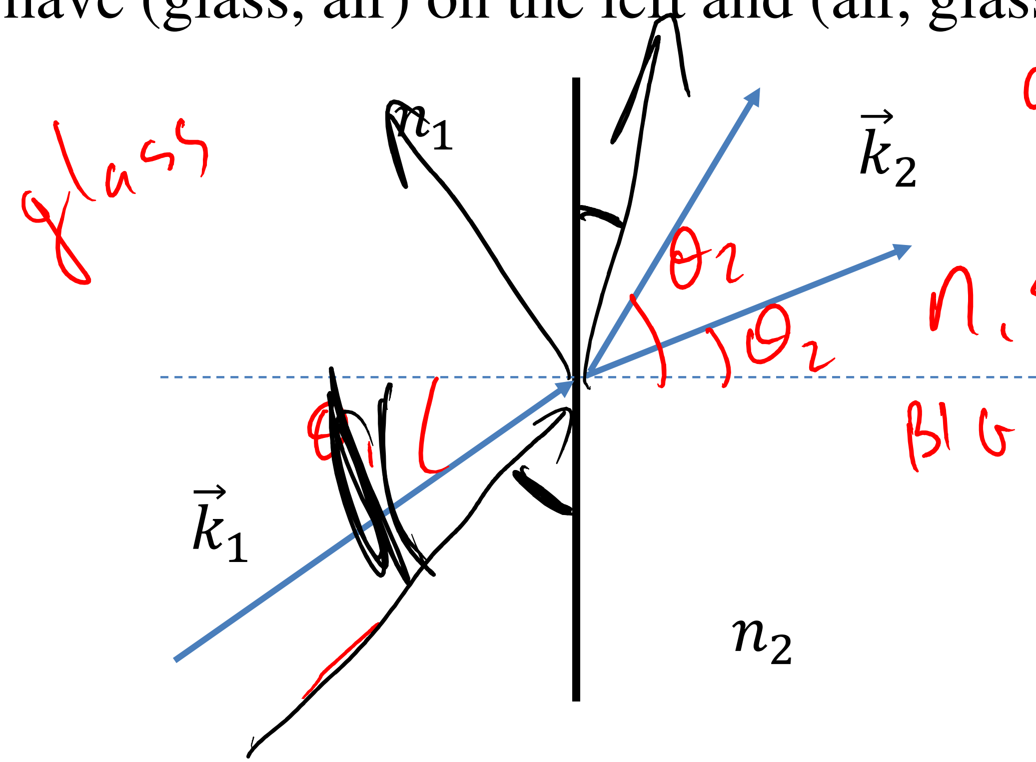
To describe plane waves moving through dielectrics instead of vacuum, what is the most relevant change you need to make to the plane-wave-in-a-vacuum situation?

A) Modify the wave equations for E and B to reflect the presence of a polarization current
B) Modify the wave equations for E and B to reflect the presence of bound charge
C) Everywhere you had an ε_0, replace it with an ε
D) Everywhere you had a μ_0, replace it with a μ

A plane wave comes in from the left and hits an interface. We have (glass, air) on the left and (air, glass) on the right.



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

BIG small Small BIG

$|\vec{k}| = \frac{2\pi}{\lambda}$

The wave path will bend

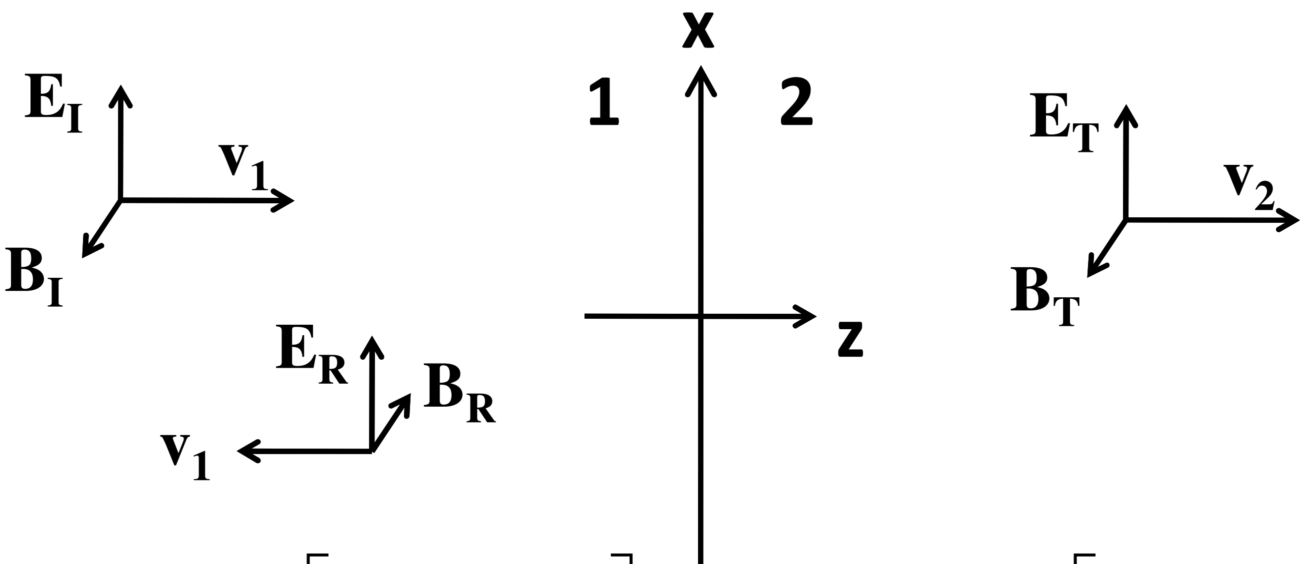
A) (towards, towards) the surface normal

B) (away from, away from) the surface normal

C) (towards, away from) the surface normal

D) (away from, towards) the surface normal

A plane wave normally incident on an interface between 2 linear (non-magnetic) dielectrics ($n_1 \neq n_2$)



$$E_I = \tilde{E}_{0I} \exp\left[i\left(k_1 z - \omega_1 t\right)\right] \qquad E_T = \tilde{E}_{0T} \exp\left[i\left(k_2 z - \omega_2 t\right)\right]$$

$$E_R = \tilde{E}_{0R} \exp\left[i\left(-k_1 z - \omega_1 t\right)\right]$$

How do k_1 and k_2 compare? How do ω_1 and ω_2 compare?

A) $k_1 = k_2$, $\omega_1 = \omega_2$

B) $k_1 \neq k_2$, $\omega_1 \neq \omega_2$

C) $k_1 = k_2$, $\omega_1 \neq \omega_2$

D) $k_1 \neq k_2$, $\omega_1 = \omega_2$

If air, glass, and plastic are all *transparent*, how come they're not necessarily *invisible*?

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