PHSX 425: HW11

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See problem 9.27
In class, we solved the problem of relfection and refraction at oblique incidence to an interface between linear media, for the case of polarization in the plane of incidence.

Question 1

Derive E_{0R} and E_{0T} for the case of polarization perpendicular to the plane of incidence. Write your answer in terms of E_{0I}, α, and β.

Question 2

Also derive the reflection and transmission coefficients. Show that they sum to unity.

Question 3

Using the values $n_1 = 1$, $n_2 = 1.5$, with $\mu_1 = \mu_2 = \mu_0$, plot E_{0R}/E_{0T} and E_{0T}/E_{0I} as a function of the incidence angle, θ_I.

Question 4

Also plot the reflection and transmission coefficients as a function of θ_I.