University of California, Berkeley
EE 236
Fall 2004

Homework Set 5
Due Friday, October 8 at 1:00 PM

1) Assume plane wave solutions to Maxwell's equations (reduced to the Helmholtz equation) on both sides of a plane boundary, (incident, reflected, and transmitted) with both materials lossless and isotropic ε_1, ε_2. Show that the angle of the reflected wave is equal to the angle of the incident wave using the boundary conditions. Derive Snell's law from the boundary condition.
2) Find a set of solutions to Maxwell's equations between two parallel conductors, which only vary with z, which is a coordinate perpendicular to the two conductive planes. Be sure the solutions meet the boundary conditions.
3) Yariv problem 5.10
4) Yariv problem 5.11

Reading: chapter 6 of Yariv