Physics 542 Test 2

List of "Derivations" that may appear on the test

- Obtain wave equation in a vacuum from Maxwell's equations
- Proof that **E** and **B** are orthogonal and form transverse plane waves
- Proof of the laws of reflection and refraction and that the incident, reflected and transmitted waves have the same frequency and are in the same plane.
- Derivation of Fresnel equations for (E_r/E_i) and (E_t/E_i) for both polarizations, leading to Brewster's law and the definition of Brewster's angle.
- TIR and evanescent wave properties
- Show that for conducting media the necessity for a complex "k" leads to attenuation.