

**Preparation Assignment – Due Nov. 20, 2000**  
**Fields and Waves I**

1. A 100 V/m plane wave moves in the +z direction in a lossless dielectric of  $\epsilon_r = 9$ . The frequency is 300 MHz. Write the time domain expression for the field vectors and find the average power.
  
2. A plane wave is traveling in the +x direction. The electric field is 100 V/m in the z direction. The wavelength is 25 cm and the velocity is  $2 \cdot 10^8$  m/s. Find the frequency and permittivity. Write time domain expressions for the electric and magnetic fields.