

-Equation sheet must be turned in Thursday 5 PM. Add one sheet of paper but you can write on both sides. Only formulas allowed. No examples, problems, etc.  
-Ask any question you have about the exam on the forum or see me.

On exam 2, I expect you to be able to

- (1) use Gauss's law given a symmetric charge distribution (both free and bound) and calculate  $E$ ,  $P$ , and bound charge densities.
- (2) apply the differential form of Gauss's law for  $E$  and  $D$ .
- (3) write an integral expression for  $V$  given  $P$
- (4) write integral expressions for the Divergence and Stokes theorems.
- (5) calculate  $E_{\text{perp}}$  and  $E_{\text{parallel}}$  across a boundary using the divergence and Stokes theorems.
- (6) calculate the dipole moment of an atom in an electric field given its polarizability,  $\alpha$  and then be able to determine  $P$ .
- (7) Understand how to derive a solution to Laplace's equation using separation of variables and apply it to a simple case in Cylindrical coordinates.