

PHY 322: Electromagnetic Fields - Fall 2004

Midterm II

November 10, 2004

Please print your name here:

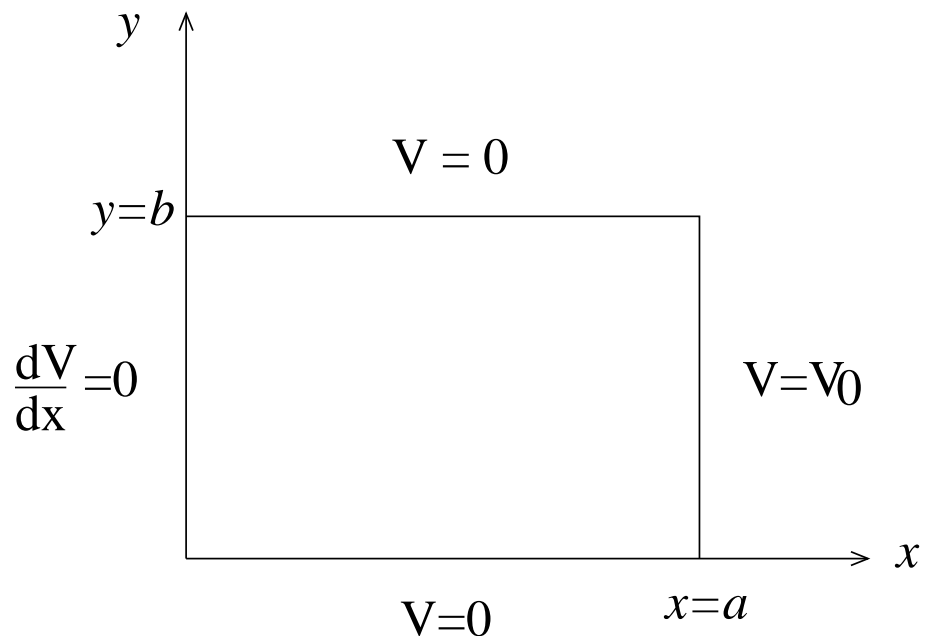
For the grader:

| | |
|-----------|--|
| Problem 1 | |
| Problem 2 | |
| Total | |

Problem 1:

(10 points)

Find the potential inside the two dimensional "box" subject to the boundary conditions given below.

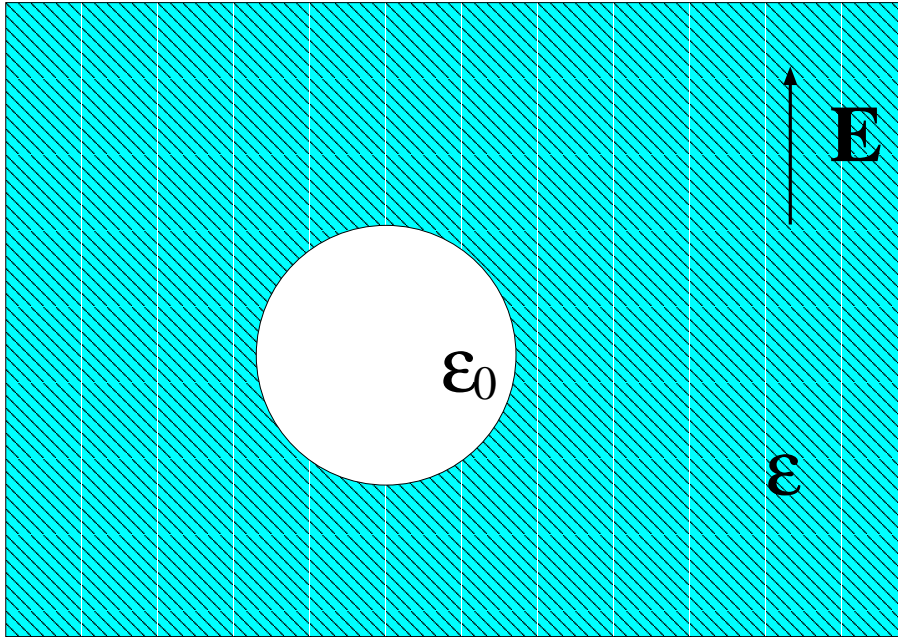


Blank space for Problem 1

Problem 2:

(15 points)

There is a spherical cavity of radius R in a uniform dielectric medium with relative dielectric constant $\kappa \equiv \epsilon/\epsilon_0$. In the dielectric far from the cavity, there is a constant electric field $\vec{\mathbf{E}} = E \hat{\mathbf{z}}$.



- (i) Find the potential inside the cavity.
- (ii) Find the electric field inside the cavity.

Blank space for Problem 2