**Homework 11**
**EE 381 Electric & Magnetic Fields (Fall 2024)**
**Friday, November 15, 2024**

1) PE6.8a- Assume that the disk is centered on the *z*-axis with the inner radius (hole) at potential 0 V and the outer radius (rim) at potential $V_0$. As part of the solution process, find the potential $V$, electric field $\bar{E}$, current density $\bar{J}$, and current $I$ between the hole and rim of the disk.

2) 6.7 As part of the solution process, find an expression for $V$ for $2 \le \rho \le 5$ m.

3) 6.18 Draw picture. Is Poisson's or Laplace's equation appropriate? Why? [Hint: Use differential form of Gauss' Law.] Also, find expressions for $V$ and electric field $\bar{E}$ for $0 \le x \le 50$ mm.

4) 6.39 Assume remaining dielectric is air.

5) 6.52 Assume $V(\phi = 0) = 0$ and $V(\phi = \pi/4) = V_0$. As part of the solution process, find expressions for $V$, $\bar{E}$, and $\bar{D}$ for $0 < \phi < \pi/4$. Hints: Use cylindrical coordinates. Remember dielectric-conductor boundary conditions.

**Due Wednesday, November 20, 2024**