

Homework 10
EE381 Electric & Magnetic Fields (Fall 2018)
Monday, November 5, 2018

- 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 \vec{E} , current density \vec{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 $2 \leq \rho \leq 5$ m.
- 3) 6.18 Is Poisson's or Laplace's equation appropriate? Why? [Hint: Use Gauss' Law.] Also, find expressions for V and electric field \vec{E} for $0 \leq x \leq 50$ mm.
- 4) 6.35
- 5) 6.50 Assume $V(\phi = 0) = 0$ and $V(\phi = \pi) = V_0$. As part of the solution process, find expressions for V , \vec{E} , and \vec{D} for $0 < \phi < \pi/4$. Hints: Use cylindrical coordinates. Remember dielectric-conductor boundary conditions.
- 6) 6.65 Draw a fully-labeled image equivalent problem geometry.

Due Friday, November 9, 2018.