Preparation Assignments
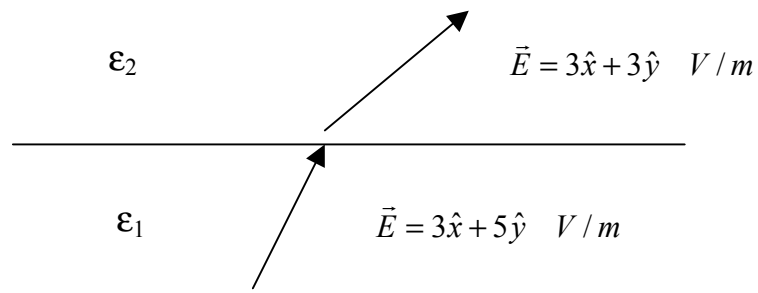
Due Wednesday, February 27

For the field lines shown in the geometry, specify the relationship between ε_{r1} and ε_{r2}. Also, indicate the range of values that are possible for both relative permittivities.

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ε_2 $\vec{E} = 3\hat{x} + 3\hat{y}$ V/m

ε_1 $\vec{E} = 3\hat{x} + 5\hat{y}$ V/m

Due Thursday, February 28

A coaxial cylinder is filled with two different dielectric materials as shown in the figure. The inner and outer conductors are shown with the dark lines and the conductivity can be considered to be infinite (perfect conductors). The radius of the inner conductor is a, the inner radius of the outer conductor is b, and the radius where the dielectric constant changes is c. What is the capacitance per unit length for this geometry? This problem should be done without consultations with the Instructors or TAs.