

**Homework Assignment #22**

(due Oct 26, 2022, at the beginning of class)

## 1. Griffiths 4.22

Hints: Choose  $\vec{E} = E_0 \hat{x}$ . Since this problem satisfies cylindrical symmetry, you can use the result of problem 3.24 (HW #17). Also, for the potential outside you can use that  $V(s \rightarrow \infty, \phi = \pi/2) = 0$  which allows you to set  $a_0 = 0$  both outside as well as inside. When you apply the boundary conditions for  $V$  and for  $\epsilon \partial V / \partial n$  convince yourself that you cannot satisfy both conditions unless  $b_k = d_k = 0$  for all  $k$  and  $a_k = c_k = 0$  for all  $k \neq 1$ .

## 2. Griffiths 4.26

Hint: Use same approach as for example in class Fr, Oct. 21.