

## Homework on chapter #24

### Problem #1

- 35.** A uniformly charged, straight filament 7.00 m in length has a total positive charge of  $2.00 \mu\text{C}$ . An uncharged cardboard cylinder 2.00 cm in length and 10.0 cm in radius surrounds the filament at its center, with the filament as the axis of the cylinder. Using reasonable approximations, find (a) the electric field at the surface of the cylinder and (b) the total electric flux through the cylinder.

### Problem #2

- 37.** A large flat horizontal sheet of charge has a charge per unit area of  $9.00 \mu\text{C}/\text{m}^2$ . Find the electric field just above the middle of the sheet.

### Problem #3

- 42.** A solid copper sphere of radius 15.0 cm carries a charge of 40.0 nC. Find the electric field (a) 12.0 cm, (b) 17.0 cm, and (c) 75.0 cm from the center of the sphere. (d) **What If?** How would your answers change if the sphere were hollow?