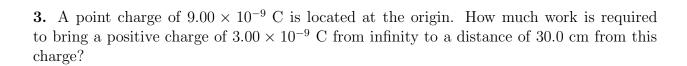
## Phys 2020 (NSCC), Spring 2008 Problem Set #2

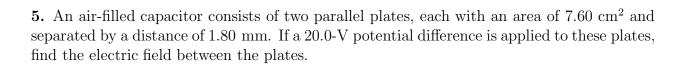
1. There are two point charges on the x axis: A  $-3.5\,\mu\mathrm{C}$  charge at x=-2.0 cm, and a  $5.0\,\mu\mathrm{C}$  charge at x=+3.0 cm.

Find the magnitude of the electric field at the origin.

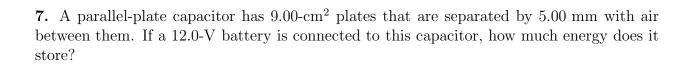
2. Find the electric potential  $1.0 \times 10^{-14}$  m from a proton. (Take the proton to be a point charge, though it really isn't!)



4. How much charge is on each plate of a 4.00-  $\mu F$  capacitor when it is connected to a 12.0-V battery?



**6.** For the capacitor described in Problem 5, find the capacitance of the capacitor and the charge on each plate if there is now some material between the plates with dielectric constant 5.0 (and a 20.0 V potential difference).



**8.** If a current of 20.0 mA exists in a metal wire, how much charge (in Coulombs) flows past a given cross section of the wire in 5.0 min?