

**PH 1120 - Electric Fields & Field Lines Lab Report**

**Remember to show all your work for full points!**

 **Name:\_\_\_\_\_\_\_\_\_\_\_\_\_; Partner:\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **Section:\_\_\_\_\_\_\_\_\_\_\_\_; Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Indicate two different configurations of point charges, relative to a given point, such that the electric field at that point would have a magnitude of **4** grid units.
2. Determine the length and angular orientation of the electric field at the indicated point due to the surrounding charges.

 2

-8

$$\vec{j}$$

$$\vec{i}$$

1. Determine the length and angular orientation of the electric field at the indicated point due to the surrounding charges.

**-4**

**8**

**-8**

1. You have three point charges in your region of interest: +5 nC, -6 nC, and +10 nC. Specify the number of lines you would associate with each charge, and specify whether the lines originate or terminate at each charge.
2. Repeat Problem 4 with the following four point charges: -5 nC, -2 nC, +3 nC, and -20 nC.
3. When drawing a field line diagram, we always begin field lines radiating out of a point charge evenly spaced and symmetric, regardless of nearby charges. Explain the reasoning behind this.
4. Explain the inconsistencies that would result if field lines were allowed to cross.
5. When drawing field lines near conductors (which contain free electrons that are free to move around inside the conductor), explain why the field inside the conductor is always zero.