Workshop 6

PHY142: Honors Introductory E&M

10-30-2013

Objective: Work and energy in electrostatics.

Three charges are situated at the corners of a square (with side lengths a), as shown on the board (ask me to draw it).

(a) Generally speaking, what is the electrostatic potential V in terms of the electric potential energy U?

(b) What would be the electrostatic potential produced by a single point charge? What about the electric potential energy? Compare them.

(c) How does the electric potential energy relate to electrostatic work, W? Are they the same or different?

(d) What are the units of V and what are the units of U?

(e) How much work does it take to bring in another charge, $+q$, from far away and place it in the fourth corner of the square?

(f) How much work does it take to assemble the whole configuration of four charges?

(g) How much work does it take to assemble the first charge?