

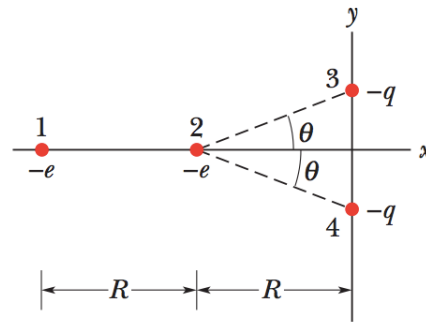
## Homework #1

Due at 5pm on Friday, January 30, 2015

Reading: Chap 21.

1. In the return stroke of a typical lightning bolt, a current of  $2.5 \times 10^4$  A exists for 20 ms. How much charge is transferred in this event?
2. Halliday, Resnick and Walker (HRW) Chapter 21, Problem 13.
3. HRW Chap 21, Problem 17. I will write this P17.

4. The diagram at right shows electrons 1 and 2 on an  $x$ -axis and charged ions 3 and 4 of identical charge  $-q$  and at identical angles  $\theta$ . Electron 2 is free to move; the other three particles are fixed in place at horizontal distances  $R$  from electron 2 and are intended to hold electron 2 in place. For physically possible values of  $q \leq 5e$ , what are the (a) smallest, (b) second smallest, and (c) third smallest values of  $\theta$  for which electron 2 is held in place?



5. HRW Chap 21, P35.