Matthew Jackson
PHYS 513
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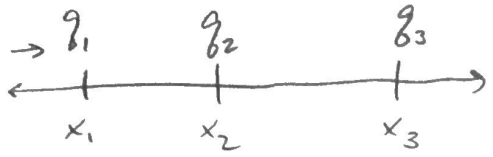
HW 3

3.2)



$$W_j = \frac{1}{4\pi\epsilon_0} \sum_i \frac{q_i q_j}{|(x_i - x_j)|}$$

1.) What is the work needed to move q_1 from ∞ to x_1?

$$W_1 = \frac{1}{4\pi\epsilon_0}\left(\frac{q_2 q_1}{|x_2 - x_1|} + \frac{q_3 q_1}{|x_3 - x_1|}\right)$$

2.) What about q_2?

$$W_2 = \frac{1}{4\pi\epsilon_0}\left(\frac{q_1 q_2}{|x_1 - x_2|} + \frac{q_3 q_2}{|x_3 - x_2|}\right)$$

3.) What about q_3?

$$W_3 = \frac{1}{4\pi\epsilon_0}\left(\frac{q_1 q_3}{|x_1 - x_3|} + \frac{q_2 q_3}{|x_2 - x_3|}\right)$$