Problems Worked In Class:

Ch 23

P. 35 P. 48 P. 15

Ch 24

P. 57 , P. 29 , P. 55 , P. 57

Ch. 25

P. 37 , For problem Ch 24 p 57 compute the potential in the region

$r < a$

$a < r < b$

$b < r < c$

$r > c$

Summary

- Computing E-fields:

① Sum up the E-fields from a bunch of Charge

Ch 23 P. 15 Ch 23 P. 35

② Use Gauss Law for ploblems with a lot of Symmetry

Ch 24 P. 57, P19

③ Compute The Potential and then differentiate

$$E_x = -\frac{\partial V}{\partial x}$$ Ch 25, P37

Ch 25, P43

V

- Given an Electric Field or Charge Configuration Find Forces or Works

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Ch 23 p 47 , , P55, P32

P32 Chp25

$m_\alpha = 6.64 \times 10^{-27} kg$

$KE_i + PE_i = KE_f + PE_f$

$$K = \frac{k_e q_\alpha q_{Au}}{r}$$

$$r = \frac{k_e q_\alpha q_{Au}}{K} = \left(8.98 \times 10^9 \frac{N_M^2}{C^2}\right) \cdot \frac{(2 \times 1.6 \times 10^{-19} C)(79 \times 10^{-19} C}{\frac{1}{2}(6.64 \times 10^{-27} kg)(2 \times}$$

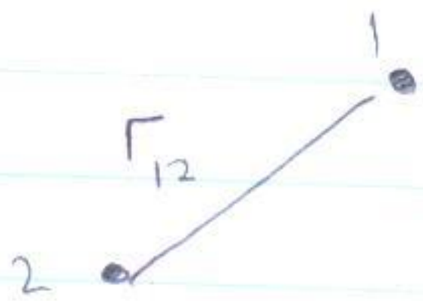
$$r = \frac{9 \times 2 \times 1.6 \times 79 \times 1.6}{0.5 \times 6.64 \times 2 \times 2} \times \frac{10^9 \times 10^{-38}}{10^{-27} \times 10^{14}}$$

$$r = 2.74 \times 10^{-14} m$$

Loose End

Potential Energy in a configuration?

Potential Energy of Two partices

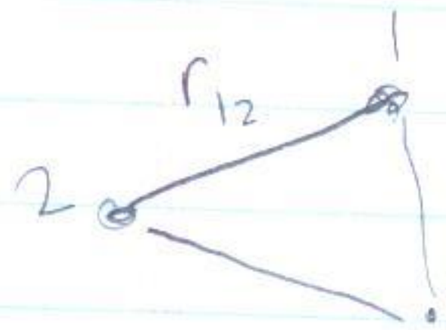


$$\Delta U = q \underbrace{\Delta V}_{V_f - V_i}$$

$$\Delta U = q_2 \left(\underbrace{\frac{k_e q_1}{r_{12}}}_{V_f} - \underbrace{\frac{V}{\infty}}_{0} \right)$$

$$\Delta U = k_e \frac{q_1 q_2}{r_{12}}$$

Potential Energy of 3 particels



$$\Delta U = q_3 \Delta V$$

$$\Delta U = q_3 \left(\frac{k_e q_1}{r_{13}} - V_\infty \right) + q_e \left(\frac{k_e q_2}{r_{23}} - \right.$$

$$\Delta U = \frac{k_e q_1 q_3}{r_{13}} + \frac{k_e q_3 q_2}{r_{23}}$$

$$U_{TOT} = k_e q_1 q_2 / r_{12} + k_e q_2 q_3 / r_{23} + k_e q_1 q_3 / r_{13}$$

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