

P #21

Ch 16 - Pg 525

$$Q = 8.00 \text{ nC} = 8.00 \times 10^{-9} \text{ C}$$

For $V = 100 \text{ V}$

$$V = \frac{k_e \cdot Q}{r}$$

$$(100 \text{ V}) = \frac{(9.0 \times 10^9 \text{ N} \cdot \text{m}^2/\text{C}^2)(8.00 \times 10^{-9} \text{ C})}{r}$$

$$r_1 = .72 \text{ m}$$

For $V = 50 \text{ V}$

$$V = \frac{k_e \cdot Q}{r}$$

$$(50 \text{ V}) = \frac{(9.0 \times 10^9 \text{ N} \cdot \text{m}^2/\text{C}^2)(8.00 \times 10^{-9} \text{ C})}{r}$$

$$r_2 = 1.44 \text{ m}$$

For $V = 25 \text{ V}$

$$V = \frac{k_e \cdot Q}{r}$$

$$(25 \text{ V}) = \frac{(9.0 \times 10^9 \text{ N} \cdot \text{m}^2/\text{C}^2)(8.00 \times 10^{-9} \text{ C})}{r}$$

$$r_3 = 2.88 \text{ m}$$