

P. 337 # 1, 2, 3;

1. $F_E = 2.5 \text{ N}$

$q_t = -5.0 \text{ C}$

a) $E = ?$

$$E = \frac{F}{q_t}$$

$$= \frac{2.5 \text{ N}}{-5.0 \text{ C}}$$

$$= 0.50 \text{ N/C}$$

b) $q_t = -0.75 \text{ C}$

$$F = E q_t$$

$$= (0.50 \text{ N/C}) (-0.75 \text{ C})$$

$$= 0.375 \text{ N}$$

$$= 0.38 \text{ N}$$

2. $r = 2.50 \text{ m}$

$q = 6.25 \times 10^{-6} \text{ C}$

$$E = \frac{kq}{r^2}$$

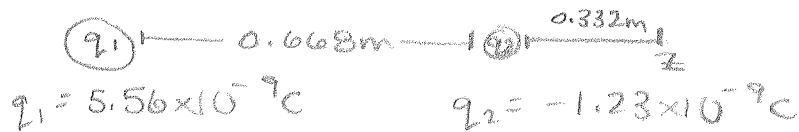
$$= \frac{(9.0 \times 10^9 \text{ Nm}^2/\text{C}^2)(6.25 \times 10^{-6} \text{ C})}{(2.50 \text{ m})^2}$$

$$9.0 \times 10^3 \text{ N/C}$$

$$E = kq$$

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3.



$$q_1 = 5.56 \times 10^{-9}\text{ C}$$

$$q_2 = -1.23 \times 10^{-9}\text{ C}$$

$$E_1 = \frac{kq_1}{r_1^2}$$

$$E_2 = \frac{kq_2}{r_2^2}$$

$$= \frac{(9.0 \times 10^9)(5.56 \times 10^{-9}\text{ C})}{(0.668\text{ m} + 0.332\text{ m})^2}$$

$$= \frac{(9.0 \times 10^9\text{ Nm}^2/\text{C}^2)(-1.23 \times 10^{-9}\text{ C})}{(0.332\text{ m})^2}$$

$$= 50.04\text{ N/C}$$

$$= -100.43\text{ N/C}$$

$$E_T = E_1 + E_2$$

$$= 50.04\text{ N/C} + (-100.43\text{ N/C})$$

$$= -50.4\text{ N/C}$$