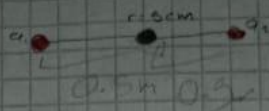


Ejercicios Campo Electrico

1. Datos
 $q_1 = 1 \times 10^{-6} \text{ C}$
 $q_2 = 2.5 \times 10^{-6} \text{ C}$
 $r = 5 \text{ cm} = 5 \times 10^{-2} \text{ m}$
 $K = 9 \times 10^9 \text{ Nm}^2/\text{C}^2$



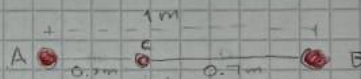
$$E = K \cdot \frac{q}{r^2}$$

$$E_1 = 9 \times 10^9 \frac{\text{Nm}^2}{\text{C}^2} \left(\frac{1 \times 10^{-6} \text{ C}}{(0.05 \text{ m})^2} \right) = 3,600,000$$

$$E_2 = 9 \times 10^9 \frac{\text{Nm}^2}{\text{C}^2} \left(\frac{2.5 \times 10^{-6} \text{ C}}{(0.10 \text{ m})^2} \right) = 9,000,000$$

$$\begin{aligned} E &= E_1 + E_2 \\ &= 3,600,000 \text{ N/C} + 9,000,000 \text{ N/C} \\ &= 12,600,000 \end{aligned}$$

2. Datos
 $r = 1 \text{ m}$
 $q_1 = 4 \times 10^{-6} \text{ C}$
 $q_2 = 1 \times 10^{-6} \text{ C}$



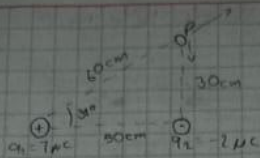
$$E = K \cdot \frac{q}{r^2}$$

$$E_1 = 9 \times 10^9 \frac{\text{Nm}^2}{\text{C}^2} \left(\frac{4 \times 10^{-6} \text{ C}}{(0.7 \text{ m})^2} \right) = 400,000 \text{ N/C}$$

$$E_2 = 9 \times 10^9 \frac{\text{Nm}^2}{\text{C}^2} \left(\frac{1 \times 10^{-6} \text{ C}}{(0.3 \text{ m})^2} \right) = 10,000,000$$

$$\begin{aligned} E &= 400,000 \text{ N/C} + 10,000,000 \text{ N/C} \\ &= 10,400,000 \end{aligned}$$

3.



$$E_{q1} = 9 \times 10^9 \frac{\text{Nm}^2}{\text{C}^2} \left(\frac{7 \times 10^{-6} \text{C}}{(0.6 \text{m})^2} \right) = 17,500 \text{ N/C}$$

$$E_{q1, x} = 17,500 \cos(30^\circ) = 15,000.42$$

$$E_{q1, y} = 17,500 \sin(30^\circ) = 9,013.16$$

$$E_{q2} = 9 \times 10^9 \frac{\text{Nm}^2}{\text{C}^2} \left(\frac{-2 \times 10^{-6} \text{C}}{(0.3 \text{m})^2} \right) = -20,000 \text{ N/C}$$

$$\begin{aligned} E &= 15,000.42 + 9,013.16 - 20,000; \\ &= 15,000.42 - 10,986.84; \\ &= \sqrt{(15)^2 + (15)^2} \\ E &= 18,593.63 \text{ N/C} \end{aligned}$$