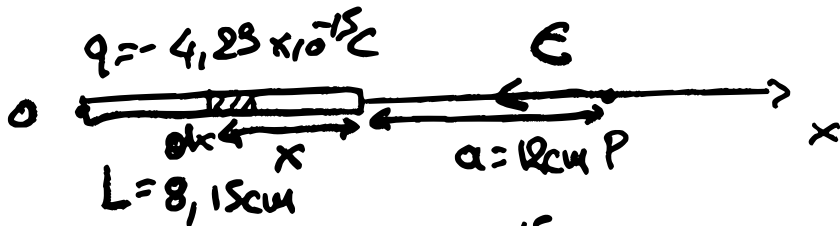


22-27 Ηφ Ηλιακή . 60151



$$a) \lambda = \frac{q}{L} = \frac{-4,23 \times 10^{-15} \text{ C}}{8,15 \times 10^{-2} \text{ m}} \Rightarrow \lambda = -5,2 \times 10^{-14} \frac{\text{C}}{\text{m}}$$

b) E στο P αφού βρούμε πρώτα
 το dE που οφείλεται στο dx

$$\frac{q}{L} = \frac{dq}{dx} \Rightarrow dq = \left(\frac{q}{L}\right) \cdot dx \Rightarrow dq = \lambda \cdot dx$$

$$dE = \frac{1}{4\pi\epsilon_0} \cdot \frac{dq}{(a+x)^2} \Rightarrow dE = \frac{\lambda \cdot dx}{4\pi\epsilon_0 \cdot (a+x)^2}$$

$$E_{ολ} = \int dE \Rightarrow E_{ολ} = \int_0^L \frac{\lambda \cdot dx}{4\pi\epsilon_0 (a+x)^2} \Rightarrow$$

$$\Rightarrow E_{ολ} = \frac{\lambda}{4\pi\epsilon_0} \left[\frac{1}{a+x} \right]_0^L \Rightarrow$$

$$\Rightarrow E_{ολ} = -\frac{\lambda}{4\pi\epsilon_0} \cdot \left[\frac{1}{a+L} - \frac{1}{a} \right]$$

$$E = 8,99 \times 10^9 \frac{Nm^2}{C^2} \cdot 5,2 \times 10^{-14} \frac{C}{m}$$

$$\cdot \left[\frac{1}{(12 \times 10^{-2} + 0,15 \times 10^{-2} m)} - \frac{1}{12 \times 10^{-2} m} \right] \Rightarrow$$

$$\Rightarrow E = 1,573 \times 10^3 \frac{N}{C}$$

r) uacwuwuwu \hat{C} u 180°

$$\delta) E = \frac{1}{4\pi\epsilon_0} \cdot \left[\frac{1}{(50m + 0,15 \times 10^{-2} m)} - \frac{1}{50m} \right] \Rightarrow$$

$$\Rightarrow E = 8,99 \times 10^9 \frac{Nm^2}{C^2} \cdot 5,2 \times 10^{-14} \frac{C}{m}$$

$$\cdot \left[\frac{1}{50m + 0,15 \times 10^{-2} m} - \frac{1}{50m} \right] \Rightarrow$$

$$\Rightarrow E = 1,52 \times 10^{-8} \frac{N}{C}$$

$$e) E = \frac{1}{4\pi\epsilon_0} \cdot \frac{q}{r^2} = 8,99 \times 10^9 \frac{Nm^2}{C^2}$$

$$\cdot \frac{4,23 \times 10^{-15} C}{50^2 m^2} \Rightarrow$$

$$\Rightarrow E = 1,52 \times 10^{-8} \frac{N}{C}$$