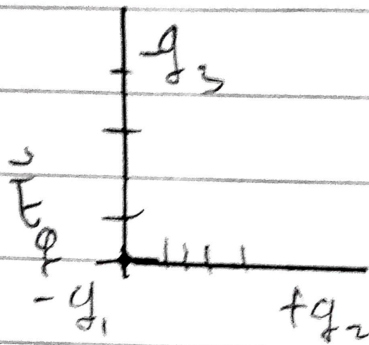
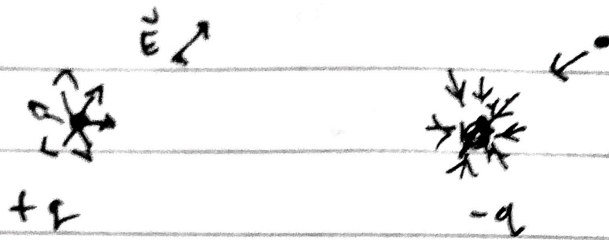


Medan Listrik



$$E_y = \frac{\sum F}{q_1}$$

$$= \frac{F_{q_3}}{q_1} + \frac{F_{q_2}}{q_1}$$

$$\vec{E} = \frac{1}{4\pi\epsilon_0}$$

$$\vec{E} = k \frac{q_3}{r^2} + k \frac{q_2}{r^2}$$

Distribusi Muatan

$$\textcircled{1} \vec{E} = \frac{1}{4\pi\epsilon_0} \frac{q}{r^2} \vec{r}$$

$$= k \frac{q}{r^2} \vec{r} \rightarrow \text{oleh muatan diskrit}$$

$$\textcircled{2} \vec{E} = \frac{1}{4\pi\epsilon_0} \int \frac{\lambda dr}{r^2} \vec{r} \rightarrow q = \lambda \cdot L \text{ Muatan}$$

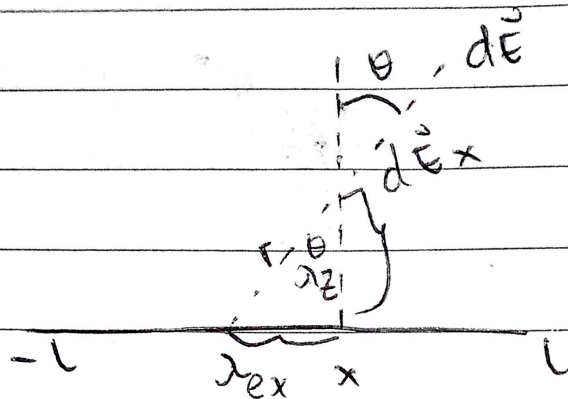
$$\textcircled{3} \vec{E} = \frac{1}{4\pi\epsilon_0} \iint \frac{\sigma da}{r^2} \vec{r}$$

kedistribusi
pada penggaris
luas permukaan

$$\textcircled{4} \vec{E} = \frac{1}{4\pi\epsilon_0} \iiint \frac{\rho d\tau}{r^2} \vec{r}$$

$$k \text{ et } \text{ha} \text{ } \lambda(z) = \frac{k}{r^2} = \frac{1}{3\pi\epsilon_0 z^2}$$

Contoh :



$$d\vec{E} = dE_y + dE_x$$

$$d\vec{E} = dE_y$$

$$dE_y = dE \cos \theta$$

$$\vec{E} = \frac{1}{4\pi\epsilon_0} \int_{-L}^L \frac{\lambda dx}{r^2} \cos \theta$$

$$= \frac{2}{2\pi\epsilon_0} \int_0^L \frac{\lambda dx}{(x^2 + z^2)} \cos \theta$$

$$\vec{E} = \frac{2\pi z}{4\pi\epsilon_0} \int_0^L \frac{dx}{(x^2 + z^2)^{3/2}}$$

$$\boxed{\int \frac{dx}{(x^2 + z^2)^{3/2}} = \frac{x}{z^2 \sqrt{x^2 + z^2}}}$$

$$E_0 = \frac{2\pi z}{\pi\epsilon_0} \left(\frac{x}{z^2 \sqrt{x^2 + z^2}} \right) \Big|_0^L$$

$$: \square \left[\frac{e}{z^2 \sqrt{1^2 + z^2}} - \frac{0}{z^2 \sqrt{0 + z^2}} \right]$$

$$= \square \left[\frac{1}{z^2 \sqrt{1^2 + z^2}} \right]$$