No Senin
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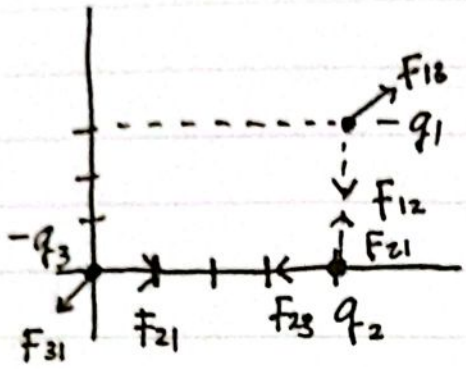
Contoh :



q_2 dgn q_3 tarik menarik
q_3 dgn q_1 tolak menolak

$$\vec{F}_{31} = \frac{1}{4\pi\varepsilon_0} \frac{q_3 q_1}{5^2} \left(\frac{-4\hat{i} - 8\hat{j}}{5}\right)$$

$$\vec{F}_{32} = \frac{1}{4\pi\varepsilon_0} \frac{q_3 q_2}{4^2} \hat{i}$$

$$\vec{F}_{12} = k \frac{q_1 . q_2}{3^2} \left(\frac{0\hat{i} + 3\hat{j}}{3}\right)$$

$$= -k \frac{q_1 . q_2}{3^2} \hat{j}$$

$$\vec{F}_{13} = k \frac{q_1 . q_3}{5^2} \left(\frac{4\hat{i} + 3\hat{j}}{5}\right)$$

$$\vec{F}_{21} = k \frac{q_2 . q_1}{3^2} \hat{j}$$

$$\vec{F}_{23} = k \frac{q_2 . q_1}{4^2} (-\hat{i})$$

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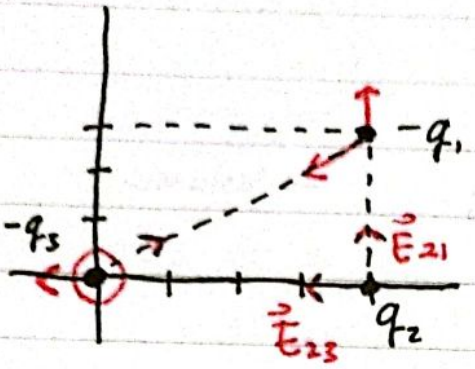


$$\vec{E}_{32} = \frac{F}{q_3} = k\,\frac{q_3 q_2 / p^2}{q_3}$$

$$= k\,\frac{q_2}{p^2}$$

$$\vec{E}_{23} = k$$

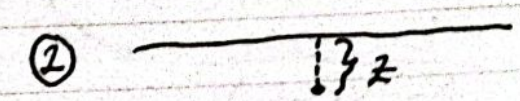
$$\vec{E}_{31} = k\,\frac{q}{5^2}\left(\frac{4\hat{i} + 3\hat{j}}{5}\right)$$

$$\vec{E}_{32} = k\,\frac{q_2}{4^2}(-\hat{i})$$

① $$E = k\,\frac{q}{r^2}\hat{r}_0$$

$$= k\sum_{i=1}^{n}\frac{q_i}{r_i^2}\hat{r}_{0i}$$

$$= k\left[\sum_{i=1}^{n}\frac{q_1}{r_1^2}\hat{r}_{01} + \frac{q_2}{r_2^2}\hat{r}_{02} + \ldots + \frac{q_n}{r_n^2}\hat{p}_{0n}\right]$$

② 

$$\vec{E} = k\int\frac{dq}{r^2}\hat{r}_0 = k\int\frac{\lambda dx}{r^2}\hat{r}_0 \rightarrow \text{medan pada kawat lurus}$$

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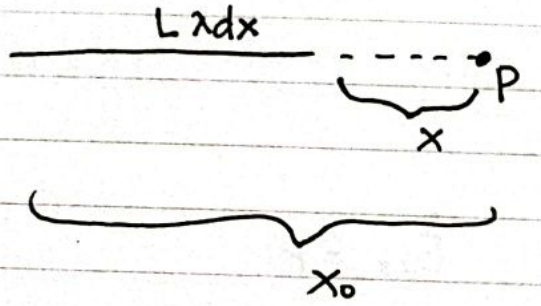
③  $\vec{E} = k \iint \frac{\sigma dq}{r^2} \hat{r}_0$ → Luasan

④  → $\vec{E} = k \iiint \frac{\rho d\tau}{r^2} \hat{r}_0$ → Volume

Muatan kontinue pada bidang / permukaan



$\vec{E}_p = ?$

$$\vec{E} = K \int_0^L \frac{\lambda dx}{(x_0 - x)^2} = K\lambda \int \frac{dx}{(x_0 - x)^2}$$

$$\int \frac{dx}{x^2} = \int_0^L x^{-2} dx$$

$$= X^{-1} \Big|_0^L$$

$$= \frac{1}{X} \Big|_0^L$$

$$\downarrow \quad Kx = \int_0^L (x_0 - x)^{-2} dx$$

$$= K\lambda \left[\frac{1}{(x_0 - x_1)} \Big|_0^L \right]$$

$$= K\lambda \left[\frac{1}{(x_0 - L)} - \frac{1}{(x_0 - 0)} \right]$$

$$= K\lambda \left[\frac{x_0 - (x_0 - L)}{x_0 (x_0 - L)} = 0 \right.$$

$$\frac{L}{x_0 (x_0 - L)}$$

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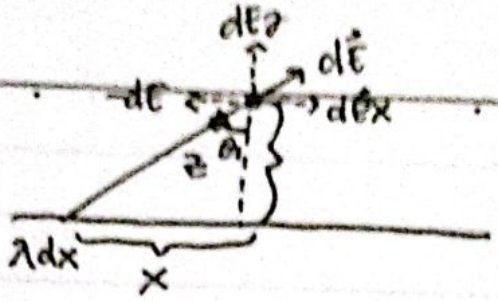


$$d\vec{E} = d\vec{E}_y + d\vec{E}_x$$
$$d\vec{E} = dE \cos\theta$$

$$\vec{E} = K \int_{-\infty}^{\infty} \frac{\lambda dx}{r^2} \cos\theta \qquad dq = \lambda dx$$

Misal : $\cos\theta = \frac{z}{r}$

$$r = \frac{z}{\cos\theta}$$

$$tg\,\theta = \frac{x}{z}$$

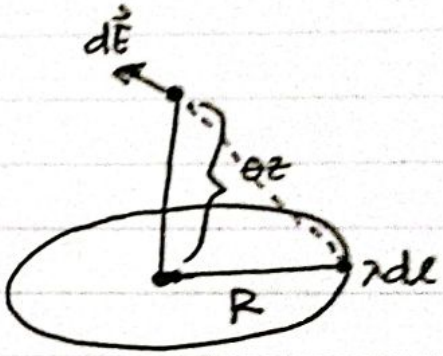
$$x = z\, tg\,\theta$$
$$dx = \frac{z}{\cos^2\theta}$$

$x = -\infty$

$\theta = -\frac{\pi}{2}$

$x = \infty$

$\theta = \frac{\pi}{2}$



$$\vec{E} = K \int_0^{2\pi R} \frac{\lambda dl}{(R^2+z^2)} \cos\theta$$

$$= K\lambda z \int_0^{2\pi R} \frac{dl}{(R^2+z^2)^{3/2}}$$

$$r = (z^2 + R^2)^{1/2}$$
$$r^2 = (z^2 + r)^{1/2} \cdot 2$$