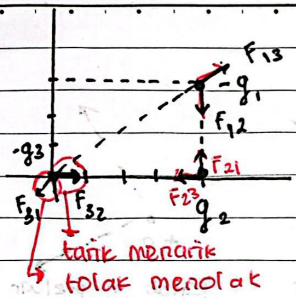
No Senin
Date 18 Maret 2024



$$\vec{F}_{31} = \frac{1}{4\pi\varepsilon_0}\frac{q_3 q_1}{5^2}\left(\frac{-4\hat{i}-3\hat{j}}{5}\right)$$

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

$$\vec{F}_{12} = -k\frac{q_1 q_2}{3^2}\left(\frac{\text{or}+\text{xj}}{3}\right)$$

$$\vec{F}_{12} = -k\frac{q_1 q_2}{3^2}\hat{j}$$

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

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

$$\vec{F}_{23} = k\frac{q_2 q_3}{4^2}(-\hat{i})$$

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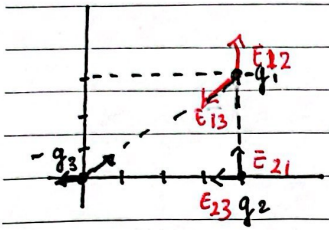
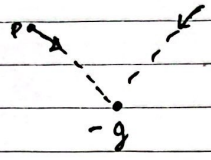
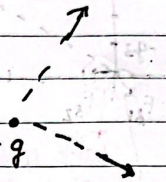
Medan





kalau negatif
MASUK



kalau + keluar

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

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

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

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

Medan q_2

$$\vec{E}_{21} = k\,\frac{q_1}{3^2}\left(\right.$$

$$\vec{E}_{23} = k\,\frac{q}{-2}\left(\right. 4\hat{i}$$

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Muatan nondiskrik pada Medan

① $E = K \frac{q}{\rho^2} \hat{e}$

$= K \sum_{i=1}^{n} \frac{q_i}{\rho_i^2} \hat{\rho}_{0i}$

$= K \left[\sum_{i=1}^{n} \frac{q_1}{\rho_1^2} \vec{\rho}_{02} + \frac{q_2}{\rho_2^2} \hat{\rho}_{02} + \dots + \frac{q_4}{\rho_4^2} \hat{\varphi}_{04} \right]$

② ——— $\vec{E} = K \int \frac{dq}{r^2} \hat{r}_0 = K \int \frac{\lambda \, dx}{r^2} \hat{r}_0$ → medan pada kawat lurus

③ ▨ $\vec{E} = K \iint \frac{\sigma dq}{r^2} \hat{r}_0$

④ ◍ → $\vec{E} = K \iiint \frac{\rho \, dT}{r^2} \hat{r}_0$ → Volume

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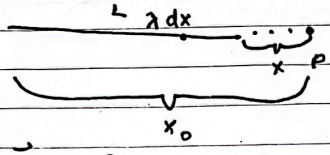

$\vec{E}_p = ?$

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

$$\int \frac{dx}{x^2} = \int_0^1 x^{-2}\, dx$$

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

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

$$= K\lambda \int (x_0 - x)^{-2}\, dx$$

$$= K\lambda (x_0 - x)^{-1} \Big|_0^L$$

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

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

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

$$= K\lambda \frac{L}{x_0(x_0 - L)}$$

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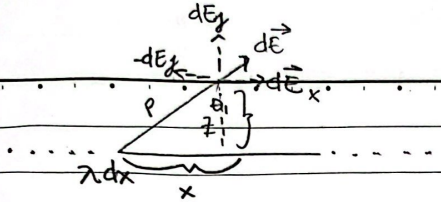
2.



$$d\vec{E} = d\vec{E}_y + d\vec{E}_x$$

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

$$dE_y = dE \cos\theta$$

$$\vec{E} = k \int \frac{\lambda (dx)}{\rho^2} \cos\theta \qquad dy = x\,dx$$

Misal :

$$\cos\theta \; \frac{z}{\rho}$$

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

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

$$x = z\, tg\theta$$

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

$$x = -\infty \qquad \theta = -\frac{\pi}{2}$$

$$x = \infty \qquad \theta = \frac{\pi}{2}$$

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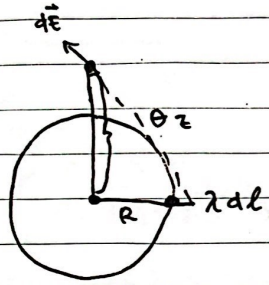
soal no 3 Hlmn 53



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

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

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

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