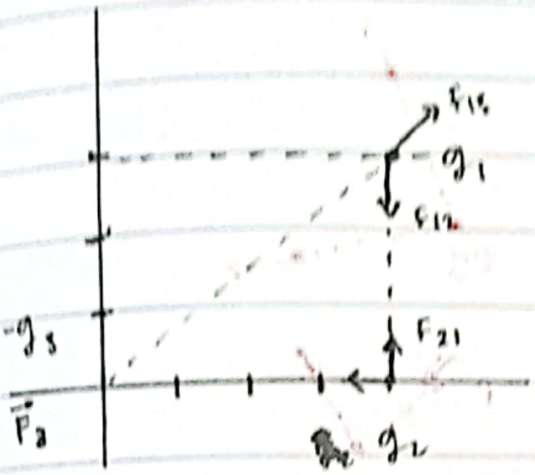
KALISMA

Rabu 18 maret 2020



mencari q_3

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

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

mencari q_1

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

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

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

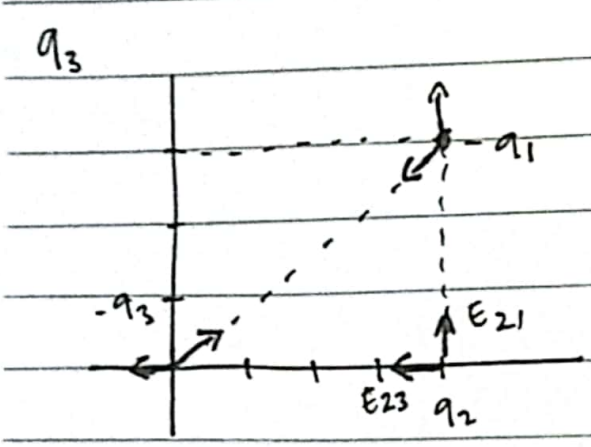
mencari q_2

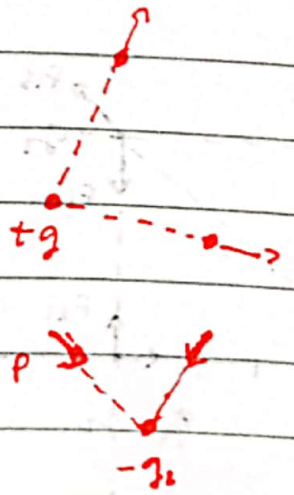
$$F_{21} = k \frac{q_2 q_1}{3^2} \hat{j}$$

$$F_{23} = k \frac{q_2 \cdot q_3}{4^2} (-\hat{j})$$

OKEY

mencari medan





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

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

$$\vec{E}_{31} = k\frac{q_1}{5^2}\left(\frac{4\hat{i}+3\hat{j}}{5}\right)$$

$$\vec{E}_{32} = k\frac{q_2}{3^2}(-\hat{j})$$

mencari q_2

$$E_{21} = k\frac{q_2}{3^2}$$

1) $E = k\frac{q}{p^2}\hat{p}$

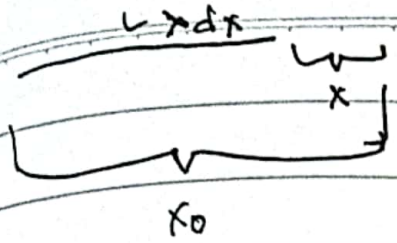
$$= k\sum_{i=1}^{n}\frac{q_i}{r_i^2}\hat{p}_{oi}$$

$$= k\left[\sum_{i=1}^{n}\frac{q_1}{r_1^2}\hat{p}_{o1} + \frac{q_2}{p_1^2}p_{o2}\,r + \ldots + \frac{q_n}{r_n^2}\hat{p}_{on}\right.$$

2) $\vec{E} = k\int\frac{dq}{r^2}\hat{p}_o = k\int\frac{\lambda\,dx}{p_x}\hat{p}_o$ medan pd kawat lurus

3) $\vec{E} = k\iint\frac{\gamma\,da}{p^2}\hat{p}_o$ - lamda

4) $\vec{E} = k\iiint\frac{\rho\,da}{p^2}p_o$ - volume



$\vec{E}_P = ?$

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

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

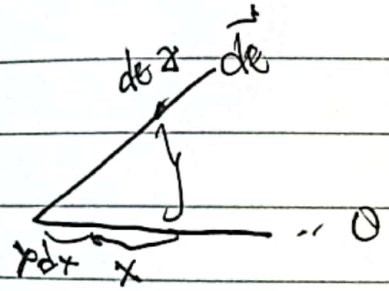
$$= -x^{-1}\Big|_0^L$$

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

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

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

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



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

$$d\vec{E} = d\vec{E}\,y$$

$$dE_y = dE\cos\theta$$

$$E = k\int \frac{\lambda dx}{P^2}\cos\theta$$

$dq = \lambda dx$

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

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

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

$$x = z\,\mathrm{Ag}\,\theta$$

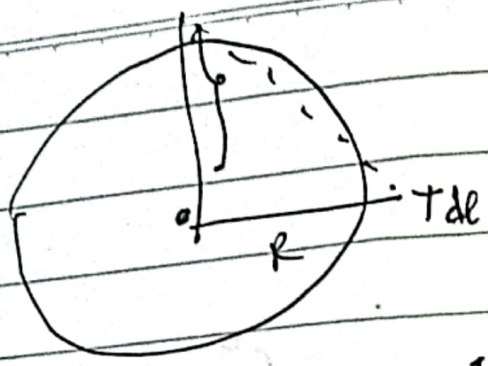
$$dx = \frac{z}{\cos^2\theta}$$

$x = -\infty$

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

$x = \infty$

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



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

$\cos \theta \rightarrow \frac{z}{\gamma}$

$\gamma = (z^2 + R^2)^{\frac{1}{2}}$

$\gamma = (z^2 + \theta)^{\frac{1}{2}}$

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