18/24
3

Pa Wadis

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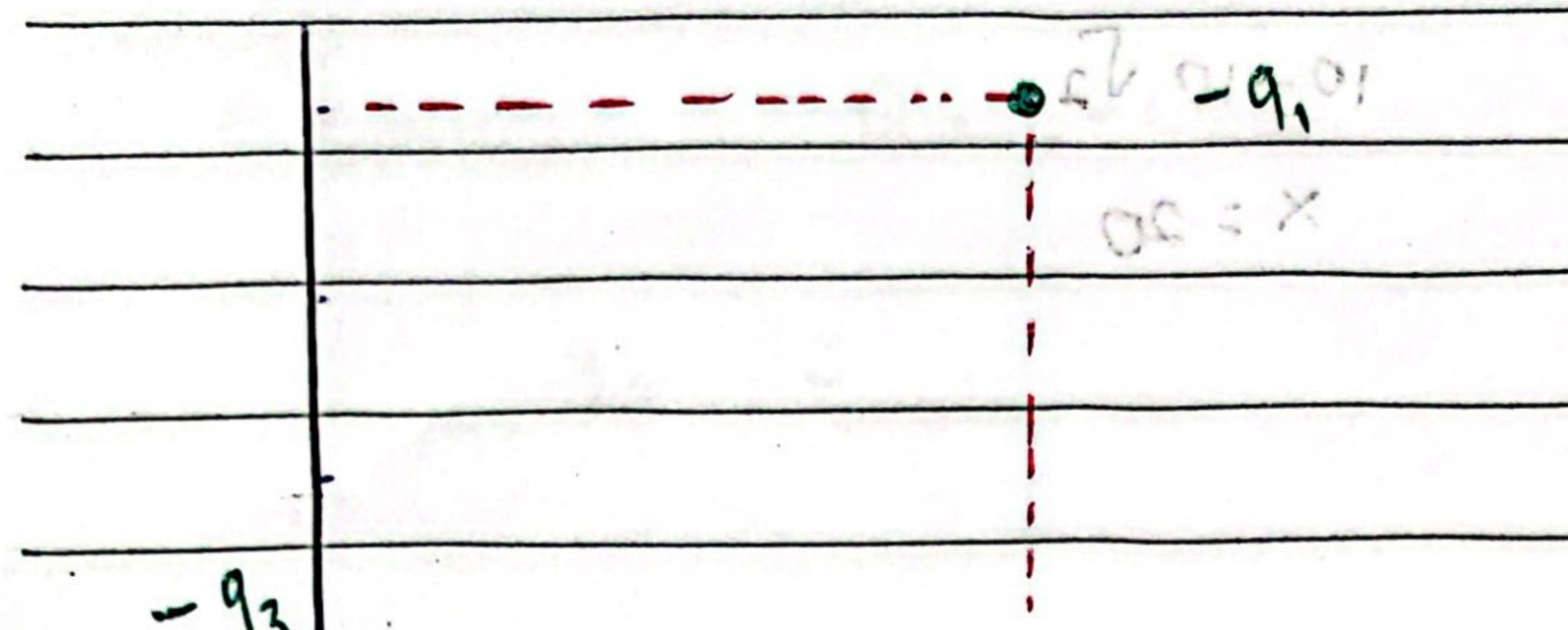
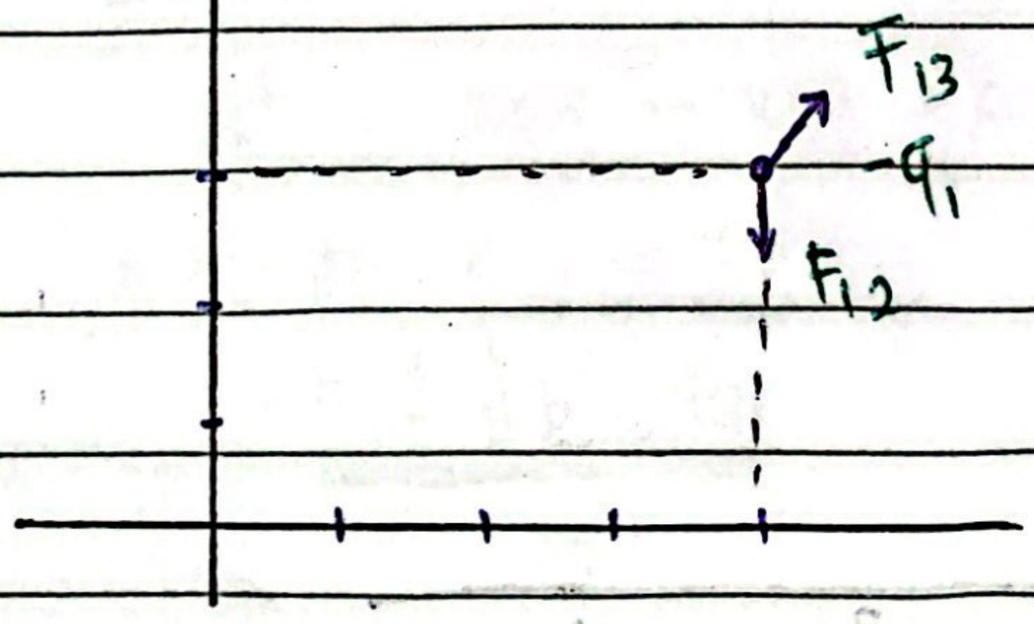


$$\vec{F}_{31} = \frac{1}{4\pi\varepsilon_0} \frac{q_3 q_1}{5^2} \left(\frac{-4\hat{i} - 3\hat{j}}{5} \right)$$

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



Gaya yg dialami q_1 yg diakibatkan q_2 q_3

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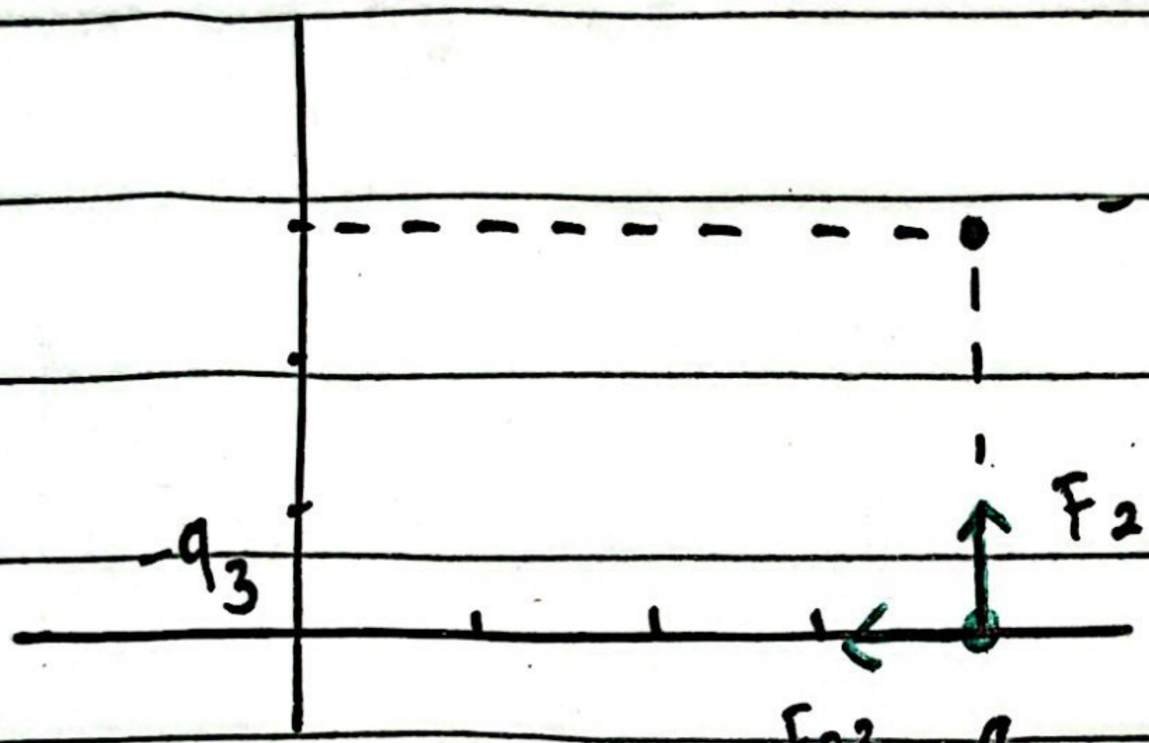
$$\vec{F}_{12} = k \frac{q_1 \cdot q_2}{3^2} \left(\frac{0\hat{i} + 3\hat{j}}{3} \right)$$

$$F_{12} = -k \frac{q_1 \cdot q_2}{3^2} \hat{j}$$

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

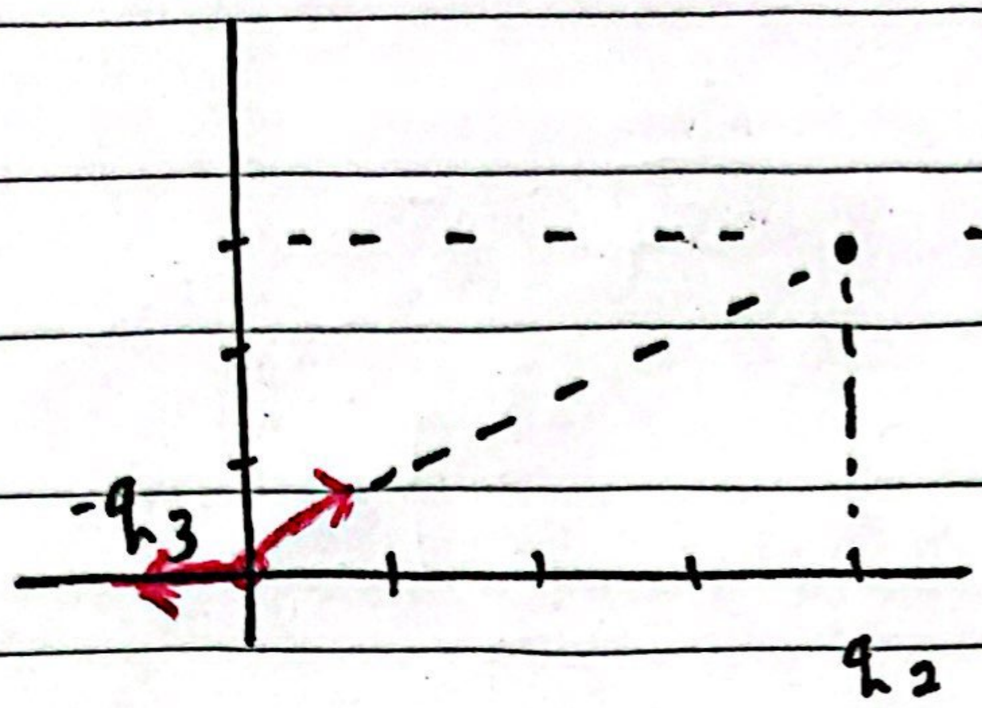
F_{13}



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

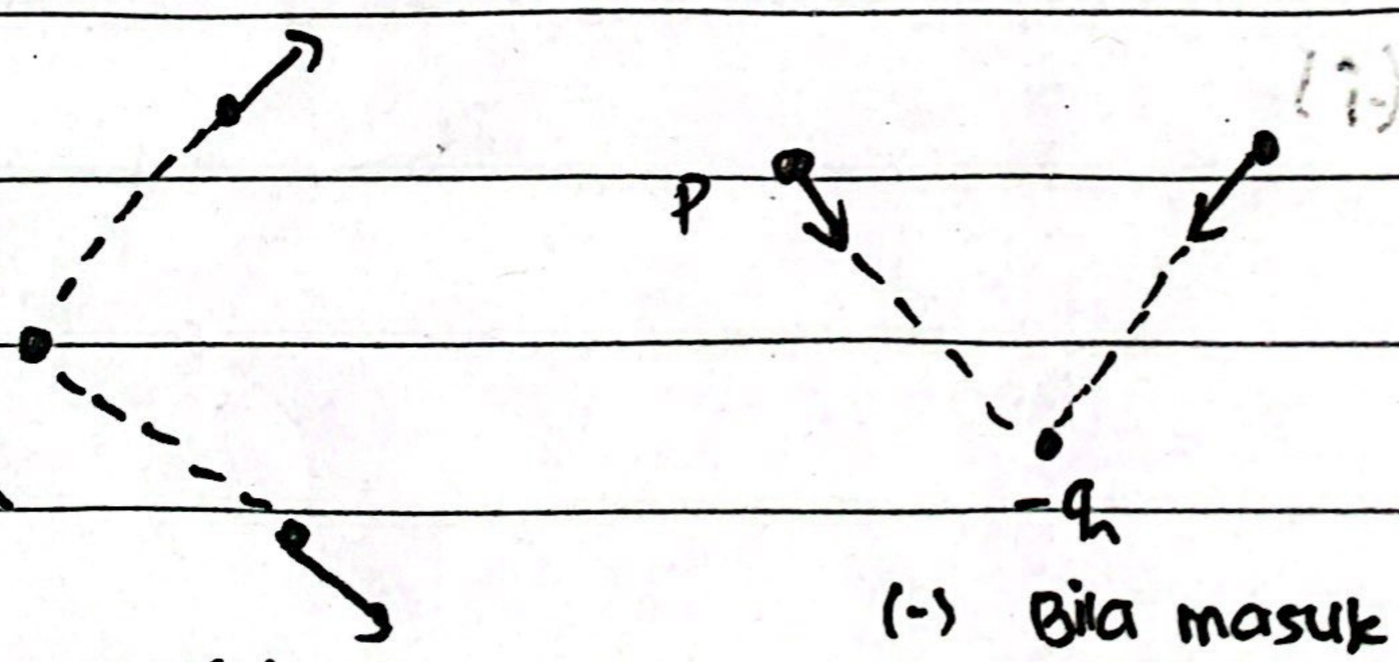
$$F_{23} = k \frac{q_2 \cdot q_3}{4^2} (-\hat{i})$$

Medan



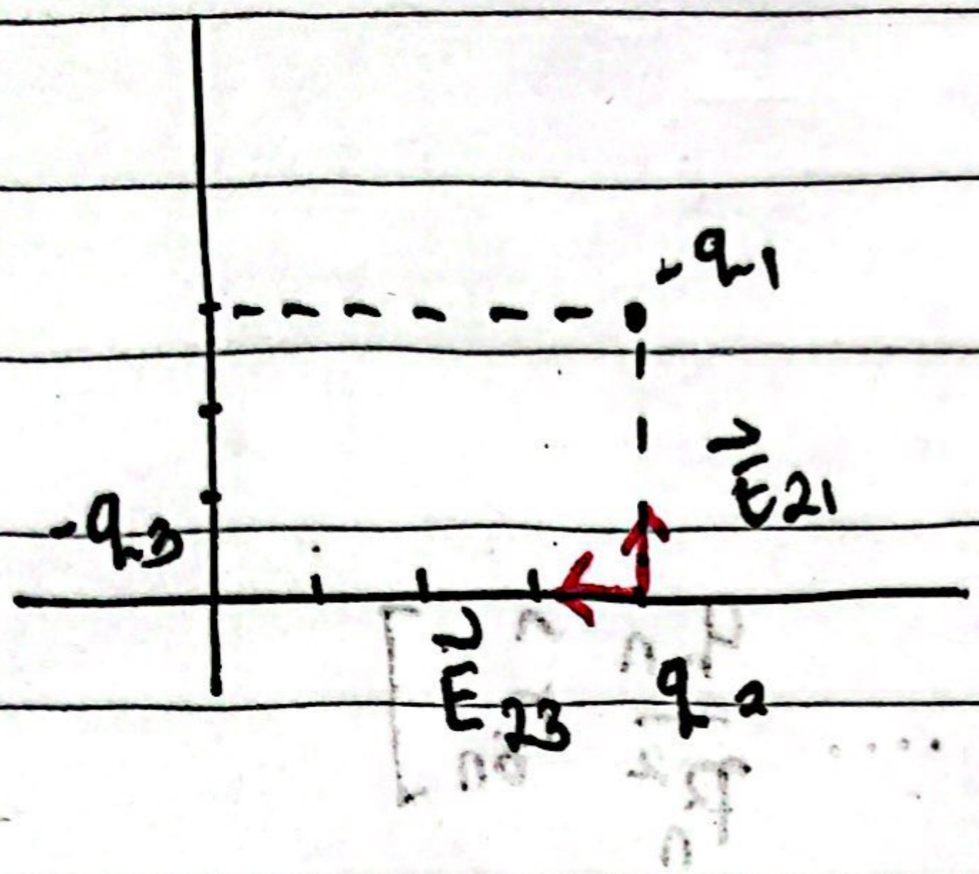
$$\vec{F}_3 \quad \vec{F}_{32} = \frac{F}{q_3} = k\,\frac{q_3\,q_2/p^2}{q_3}$$

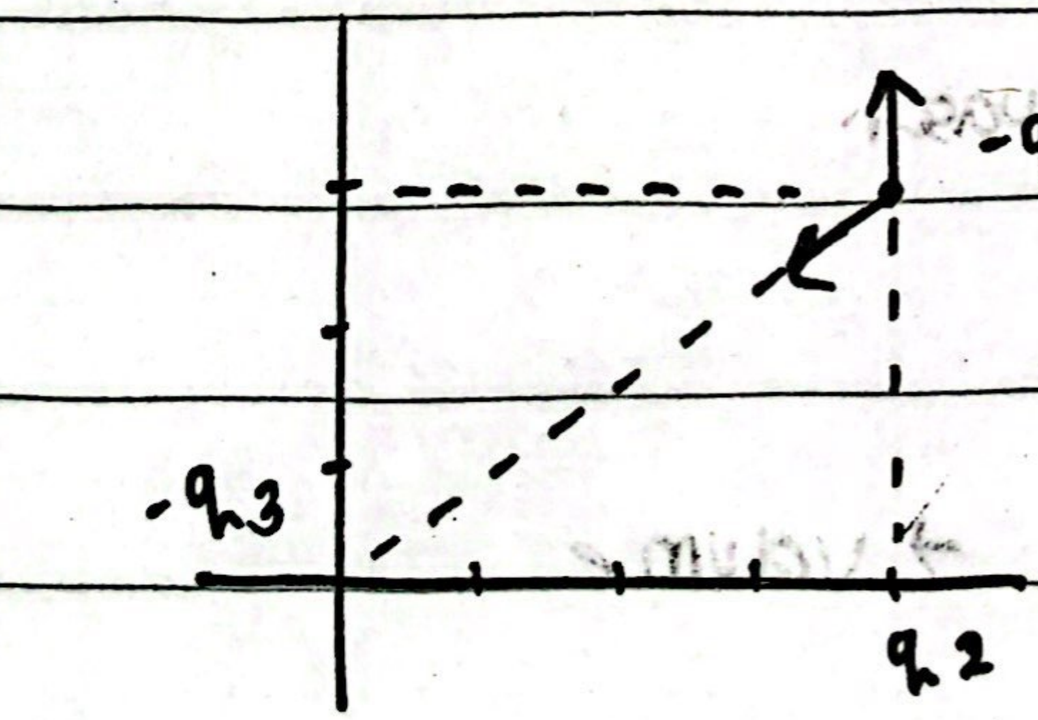
$$= k\,\frac{q_2}{p^2}$$



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

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





(1.) $E = k \frac{q}{r^2} \hat{r}_{\gamma 1}$

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

$$= k \left[\sum_{i=1}^{n} \frac{q_1}{r_1^2} \hat{r}_{\gamma 1} + \frac{q_2}{r_2^2} \hat{r}_{\gamma 2} + \dots \frac{q_n}{r_n^2} \hat{r}_{\gamma n} \right]$$

$i_1 = 1$

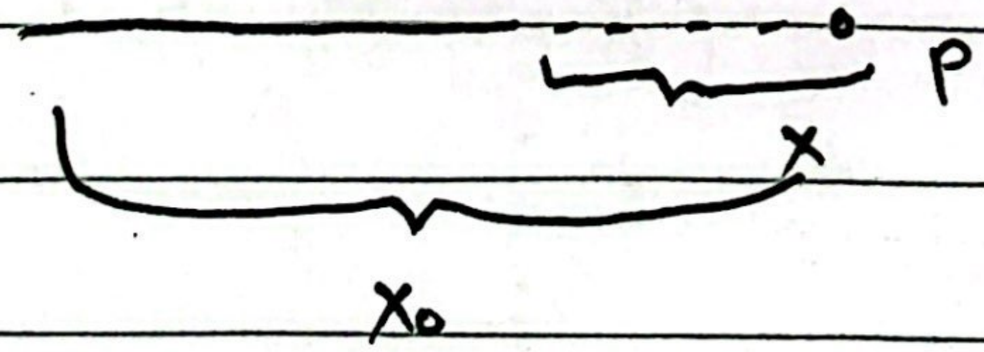
(2.)

$$\vec{E} = k \int \frac{dq}{r^2} \hat{r}_{\gamma} = k \int \frac{\lambda dx}{r^2} r_0^2 \rightarrow \text{medan pada kawat listrik}$$

(3.)  $\vec{E} = k \iint \frac{\sigma da}{r^2} \hat{r}_{\gamma}$ Luasan

(4.)  $\rightarrow \vec{E} = k \iiint \frac{\rho dv}{r^2} \hat{r}_{\gamma}$ → volume

L λdx



$\vec{E}_p = ?$

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

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

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

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

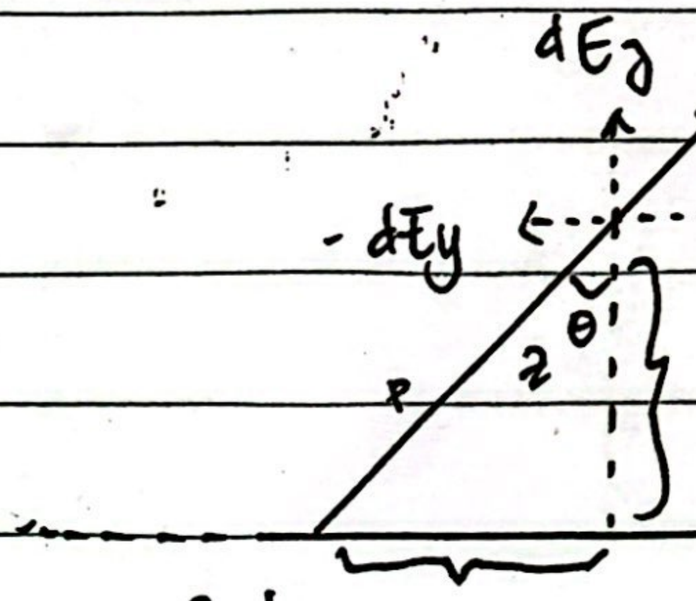
$-2+1 = -1$

$$= k\lambda \int_0^L (x_0 - x)^{-2}\, dx$$

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

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

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



$\vec{dE} = \vec{dEy} + \vec{dEx}$

$\vec{dE} = \vec{dE}\, y$

$dEy = dE \cos\theta$

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

misal : $\cos\theta = \frac{z}{r}$ | $tg\,\theta = \frac{x}{z}$ | $dx = \frac{z}{\cos^2\theta}$

$r = \frac{z}{\cos\theta}$ | $x = z\, tg\,\theta$

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

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

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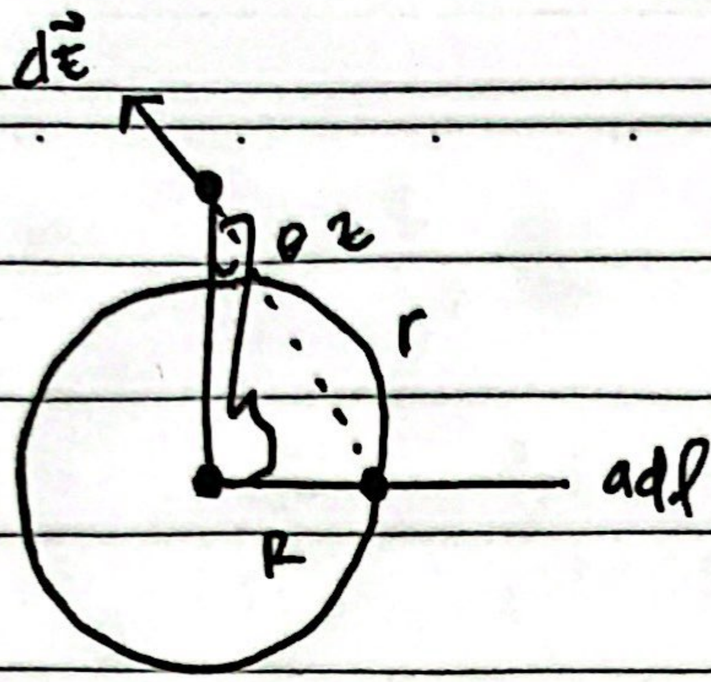

r

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

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

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

$$= k\lambda z \int_0^{\pi R} \frac{d\ell}{(R^2 + z^2)^{3/2}}$$