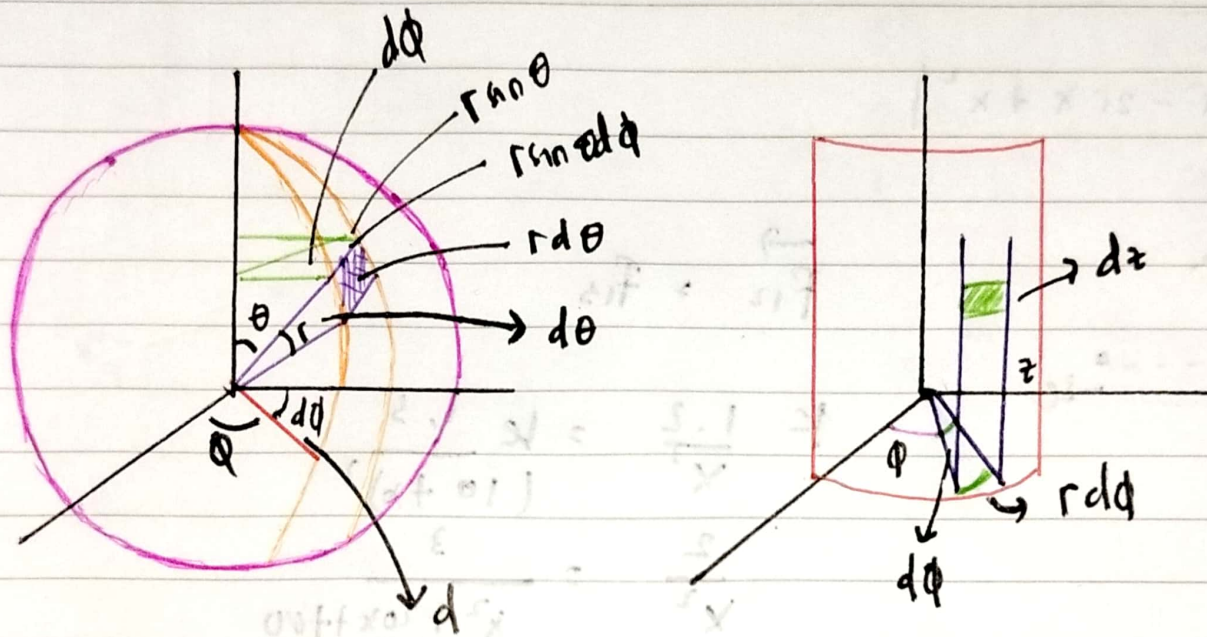


Senin, 4 Maret 2024



$$dV = dr \times d\theta \times d\phi$$

$$= r d\theta r \sin \theta d\phi$$

$$= r^2 \sin \theta d\theta d\phi$$

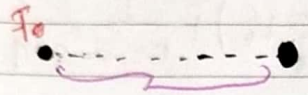
$$dV = r^2 \sin \theta d\theta d\phi dr$$

$$A (\text{luas}) = r d\theta dz$$

$$V (\text{volume}) = \int r d\theta dz dr$$

Gaya Listrik

Muatan listrik $q = \pm Ne$

F_0  F_e (gayanya sama, percepatannya berbeda)

$$\vec{F}_g = \vec{F}_e \Leftrightarrow \vec{F} = \frac{1}{4\pi} \frac{qQ}{r^2} \hat{r}$$

$$\hat{r} = \frac{\vec{r}}{|\vec{r}|}$$

$+q$  $-q$

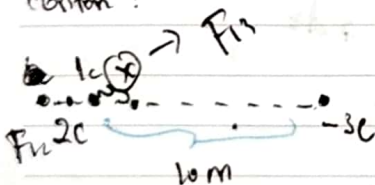
$$\vec{F}_{12} = \vec{F}_{21}$$

$$\frac{kq_1q_2}{(r-x)^2} = k \frac{q_1q_2}{(x^2)}$$

$$\frac{q}{r^2 - 2rx + x^2} = \frac{q}{x^2}$$

$$0x^2 = q(r^2 - 2rx + x^2)$$

contoh :



$$\vec{F}_{12} = \vec{F}_{13}$$

$$k \frac{1 \cdot 2}{x^2} = k \frac{1 \cdot 3}{(10+x)^2}$$

$$\frac{2}{x^2} = \frac{3}{x^2 + 20x + 100}$$

$$3x^2 = 2x^2 + 40x + 200$$

$$5x^2 - 40x + 200 = 0$$

$$x^2 + 40x + 200 = 0$$

$$(x-10)(x-60) = 0$$

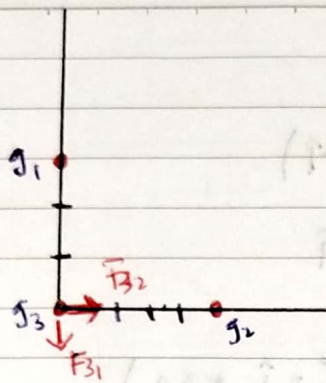
gunakan rumus ABC

Rumus ABC

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$= \frac{-40 \pm \sqrt{(-40)^2 - 4 \cdot 1 \cdot 200}}{2}$$

$$\begin{aligned} &= \frac{-40 \pm \sqrt{1600 - 800}}{2} \\ &= \frac{-40 \pm 20}{2} \\ &= -20 \end{aligned}$$



$$F_{12} = k \frac{q_1 \cdot q_2}{4^2} \frac{(3\hat{i} + 0\hat{j})}{\sqrt{3^2 + 0^2}}$$

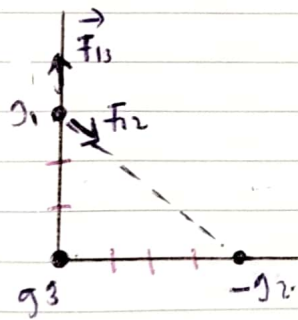
$$= k \frac{q_1 q_2}{16} \hat{i}$$

$$F_{31} = k \frac{q_3 q_1}{3^2} (-\hat{j})$$

$$= k \frac{q_3 q_1}{9} \hat{j}$$

$$|\vec{F}| = \sqrt{0^2 + 0^2}$$

$$= k \sqrt{0^2 + 0^2}$$

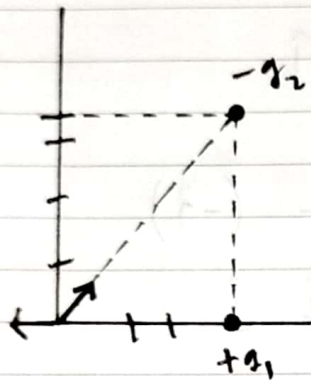


$$\vec{F}_{13} = k \frac{q_1 q_3}{3^2} \hat{j}$$

$$\vec{F}_{12} = k \frac{q_1 q_2}{5^2} \left(\frac{4\hat{i} - 3\hat{j}}{5} \right)$$

$$= 4k \frac{q_1 q_2}{125} \hat{i} - 3k \frac{q_1 q_2}{125} \hat{j}$$

Medan listrik



$$\vec{E}_1 = K \frac{q_1}{3^2} (-\hat{j})$$

$$= -K \frac{q_1}{9} \hat{j}$$

$$\vec{E}_2 = K \frac{q_2}{5^2} \left(\frac{3\hat{j} + 4\hat{i}}{5} \right)$$

$$= 3K \frac{q_2}{125} + 4K \frac{q_2}{125} \hat{j}$$

$$\vec{E}_t = K \left[\frac{3q_2}{125} - \frac{q_1}{9} \right] \hat{j} + \frac{4q_2}{125} \hat{i}$$