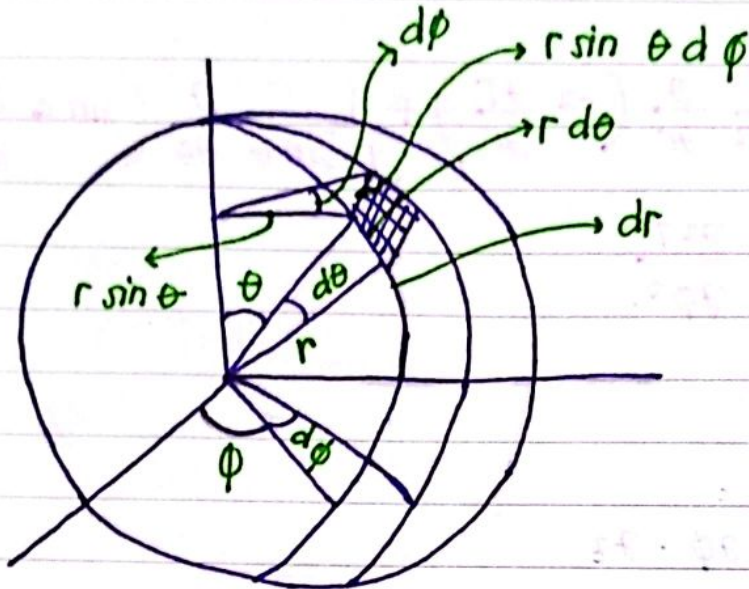




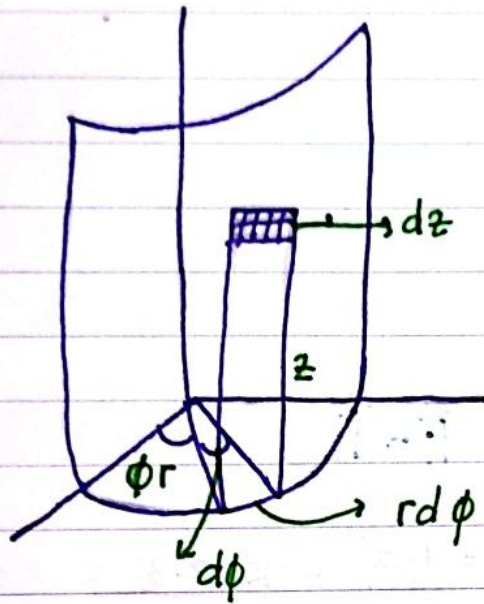
$$\begin{aligned}
 A &= \rho \times \ell \\
 &= r d\theta \cdot r \sin \theta d\phi \\
 &= r^2 \sin \theta d\theta d\phi
 \end{aligned}$$

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

$$A = \int_0^{2\pi} \int_0^{\pi} r^2 \sin \theta d\theta d\phi = 4\pi r$$

$$A = r^2 \int_0^{2\pi} d\phi \int_0^{\pi} \sin \theta d\theta = 4\pi r^2$$

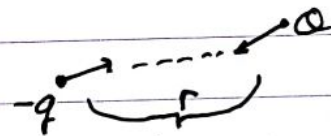
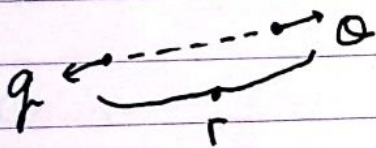
$$\begin{aligned}
 V &= \int_0^r \int_0^{2\pi} \int_0^{\pi} r^2 \sin \theta d\theta d\phi dr \\
 &= \frac{4}{3} \pi r
 \end{aligned}$$



$$A = r d\phi dz$$

$$V = r d\phi dz dr$$

* Listrik statis



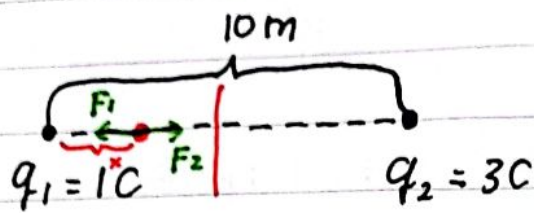
ditarik dgn gaya sama

$$\vec{F} = \frac{1}{4\pi\epsilon_0} \frac{qQ}{r^2} \hat{r}_0$$

$$\vec{F}_1 = \vec{F}_2 \rightarrow \text{Gaya } F_1 \text{ dan } F_2 \text{ sama}$$

$$K = \frac{qQ}{(r-x)^2} = K \frac{qq}{x^2}$$

Contoh



$$\vec{F}_1 = \vec{F}_2$$

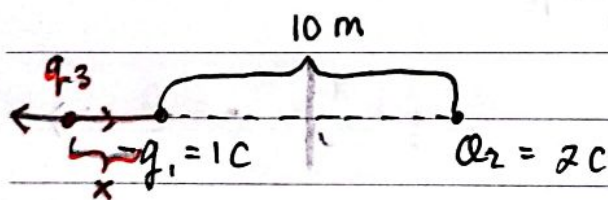
$$q_3 = -2C$$

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

$$\frac{1}{x^2} = \frac{3}{(10-x)^2}$$

lanjutan

Contoh



$$F_1 = F_2$$

$$q_3 = 1C$$

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

$$\frac{1}{x^2} = \frac{3}{(10-x)^2}$$

$$(10-x)^2 = 3x^2$$

$$100 - 20x + x^2 = 3x^2$$

$$2x^2 + 20x - 100 = 0$$

$$x^2 + 10x - 50 = 0$$

$$(x+5)(x-5) = 0$$

$$x = 5$$

Contoh 2

$$\vec{F}_1 = \vec{F}_2$$

$$k \frac{q_1 q_3}{x^2} = k \frac{q_3 q_2}{(10+x)^2}$$

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

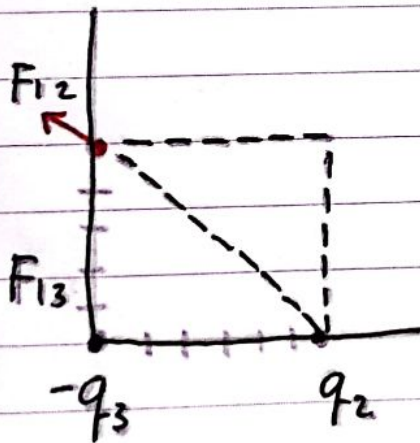
$$2x^2 = (10+x)^2$$

$$2x^2 = 100 + x^2 + 20x$$

$$2x^2 - x^2 - 20x - 100 = 0$$

$$x^2 - 20x - 100 = 0$$

Contoh



$$\hat{r}_0 = \frac{\vec{r}}{|\vec{r}|}$$

$$F_{13} = k \frac{q_1 q_3}{3^2} (-\hat{j})$$

$$F_{12} = k \frac{q_1 q_2}{5^2} \frac{(-4\hat{i} + 3\hat{j})}{5} \sqrt{3^2 + 4^2}$$

$$\frac{(0\hat{i} - 3\hat{j})}{\sqrt{0^2 + 3^2}}$$