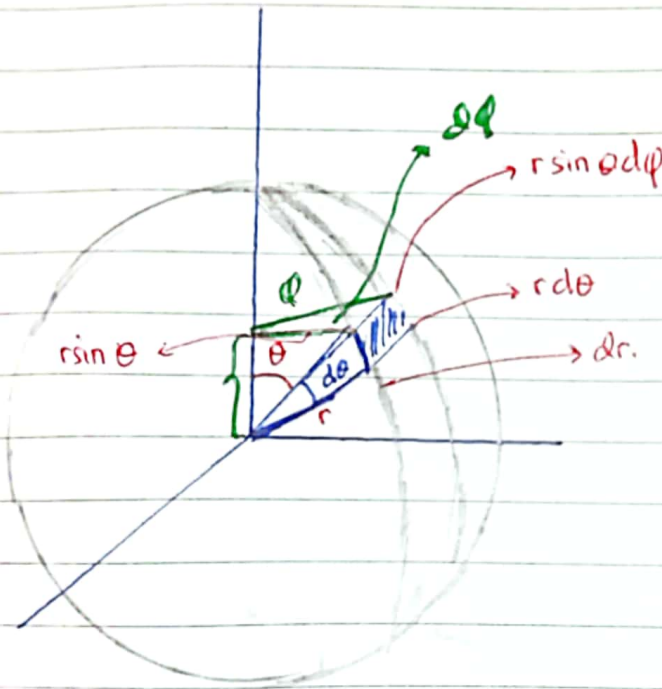


Sistem Koordinat

note:

bertepatan sin

Sebrang cos.



$$A = P \times l$$

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

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

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

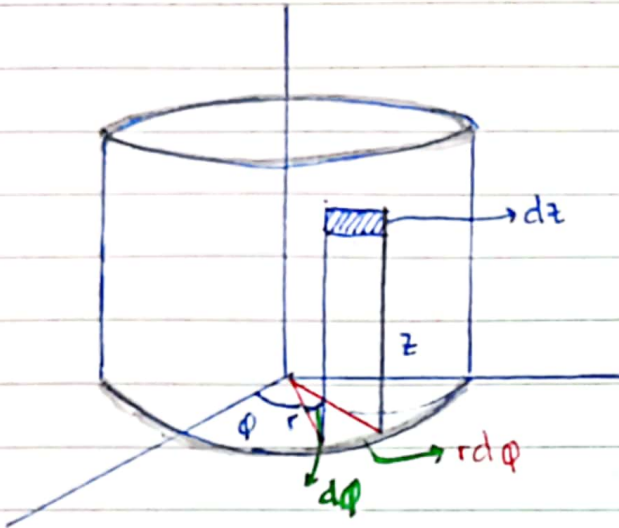
$$A = \int_0^{2\pi} \int_0^{\pi} r^2 \sin \theta d\theta d\phi$$

$$V = \int_0^r \int_0^{\pi} \int_0^{2\pi} r^2 \sin \theta d\theta d\phi dr$$

$$= \frac{4}{3} \pi r^3$$

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

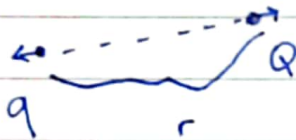
$$= 4\pi r^2$$



$$A = r d\phi dz$$

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

$$q = \pm Ne$$



$$\vec{F} = \frac{1}{4\pi\epsilon_0}$$

$$\frac{qQ}{r^2} \hat{r}_0$$

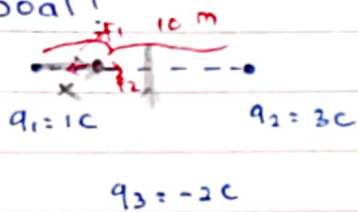


$$\vec{F}_1 = \vec{F}_2$$

$$Q > q$$

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

Soal!



note:

$$(a+b)^2$$

$$a^2 + 2ab + b^2$$

$$F_1 = F_2$$

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

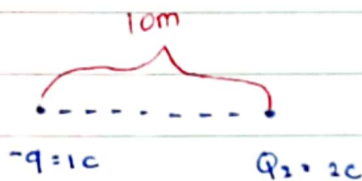
$$\cancel{k} \frac{1}{x^2} = \cancel{k} \frac{3}{(10-x)^2}$$

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

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

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

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



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

$$q_3 = 1C$$

$$x = \frac{-10 \pm \sqrt{10^2 - 4 \times 1 \times (-50)}}{2 \times 1}$$

$$= \frac{-10 \pm \sqrt{100 + 200}}{2}$$

$$= \frac{-10 \pm \sqrt{300}}{2}$$

$$= \frac{-10 \pm \sqrt{300}}{2}$$

$$= \frac{-10 \pm 10\sqrt{3}}{2}$$

Lanjutan

$$X = \frac{-10 - 10\sqrt{3}}{2}$$

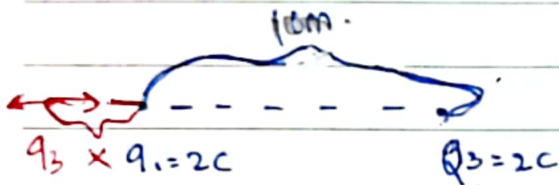
$$X = -5 + 5\sqrt{3}$$

$$X = -5 - 5\sqrt{3}$$

Jadi,

$$X_1 = -5 - 5\sqrt{3}$$

$$X_2 = -5 + 5\sqrt{3}$$



$$q_3 =$$

$$F_1 = F_2$$

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

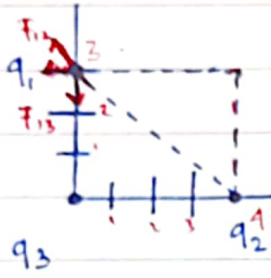
$$\frac{1}{x^2} = \frac{2}{(10+x)^2}$$

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

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

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

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



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

buk (-)

abis (+)

note: $\hat{r}_{12} = \frac{\vec{r}}{|\vec{r}|}$

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

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