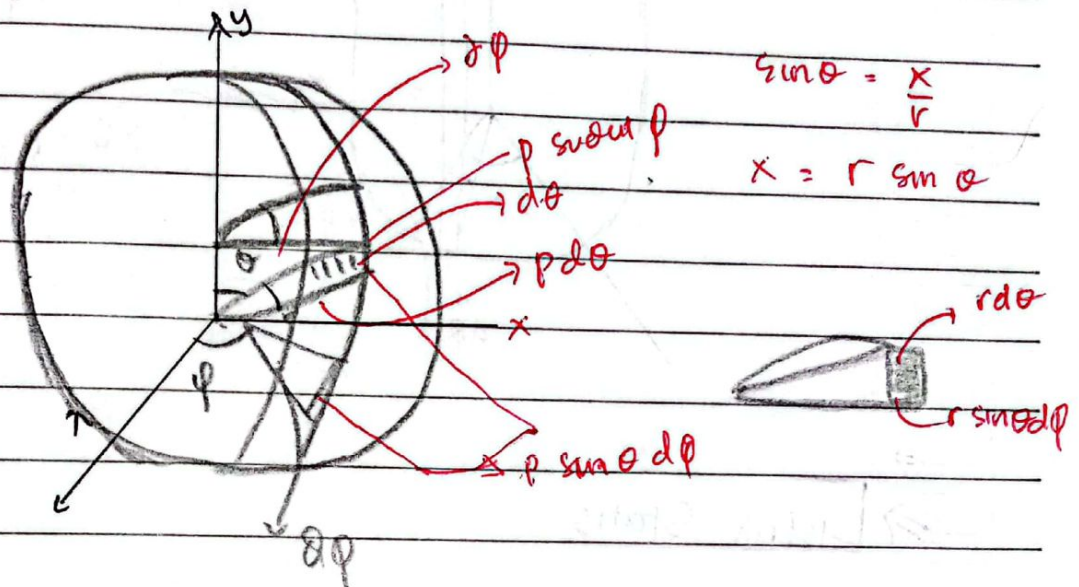


elistrikan dan Kemagnetan

Sistem Koordinat

1). Koordinat Bola



$$\sin \theta = \frac{x}{r}$$

$$x = r \sin \theta$$

$$\begin{aligned} da &= dp \times dl \\ &= r d\theta \cdot r \sin \theta d\phi \\ &= r^2 \sin \theta d\theta d\phi \end{aligned}$$

$$\begin{aligned} dv &= \delta p \times \delta l \times \delta l \\ &= r^2 \sin \theta d\theta d\phi dr \end{aligned}$$

$$\nabla T = i \frac{\partial T}{\partial x} + j \frac{\partial T}{\partial y} + k \frac{\partial T}{\partial z}$$

$$\nabla T = i$$

$$\begin{aligned} A &= \int_0^{2\pi} \int_0^\pi r^2 \sin \theta d\theta d\phi \\ &= \int_0^{2\pi} d\phi \int_0^\pi \sin \theta d\theta \end{aligned}$$

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

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

$$= 2\pi r^2 \int_0^\pi \sin \theta d\theta$$

$$= 2(\pi^2) \int_0^r r^2 dr$$

$$= 2\pi r^2 \int_0^\pi -\cos \theta d\theta$$

$$= 4\pi \left(-\frac{1}{3} r^3 \right)$$

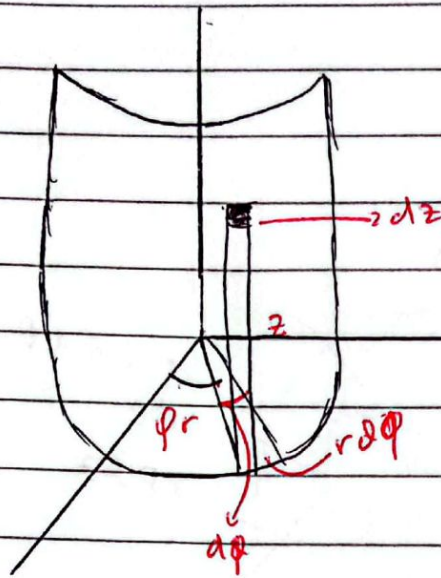
$$= 4\pi r^2$$

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

Talk less, do more.

deli

Koordinat Sylinder



$$dA = dr \times dz$$

$$= r d\phi dz$$

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

Listrik Statis

Sumbangnya listrik dalam teknologi : example : Foto copy , tv tabung,

Gaya $\Rightarrow$ dua muatan atau lebih

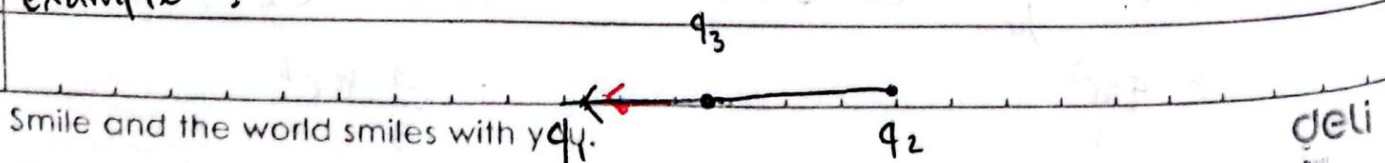
Muatan Berasal dari atom yang memiliki kekurangan elektron

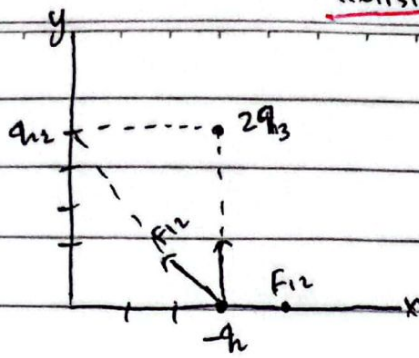
Muatan listrik bersumber dari sambaran petir.

atom yang kelebihan elektron disebut ion

Kenapa Pandahnya berjarak $\Rightarrow$ karena muatan q_2 lebih besar dari muatan q_1 sehingga menggambarkan jarak yang lebih jauh.

example :





$$F_{12} = k \frac{q_1 (2q_3)}{4^2}$$

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

$\vec{F}_A =$

$$\vec{F} = kq_1 \left[-\frac{3q_2}{125}\hat{i} + \left(\frac{2q_3}{16} + \frac{q_2}{125} \right)\hat{j} \right]$$

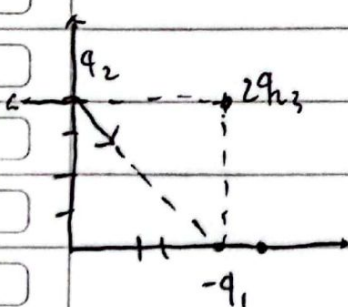
$$|\vec{F}| = kq_1 \sqrt{0^2 + \square^2}$$

⇒ tulisan Mahasiswa (Andia) (Mengerjakan di papan tulis).

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

$$\vec{F}_{12} = \frac{-3kq_1 q_2}{125}\hat{i} + \frac{4kq_1 \cdot q_2}{125}\hat{j}$$

$$\vec{F}_{total} = \frac{3kq_1 q_2}{125}\hat{i} + \left(\frac{2kq_1 q_3}{16} + \frac{4kq_1 \cdot q_2}{125} \right)\hat{j}$$



$$F_{21} = k \frac{q_2 q_1}{5^2} (3\hat{i} - 4\hat{j})$$

$$F_{21} = \frac{3kq_2 q_1}{125}\hat{i} - \frac{4kq_2 q_1}{125}\hat{j}$$

No.:

Date:

$$F_{23} = -k \frac{q_2 (2q_3)}{3^2} \hat{r}$$

$$= 2k \frac{q_2 q_3}{9} \hat{r}$$