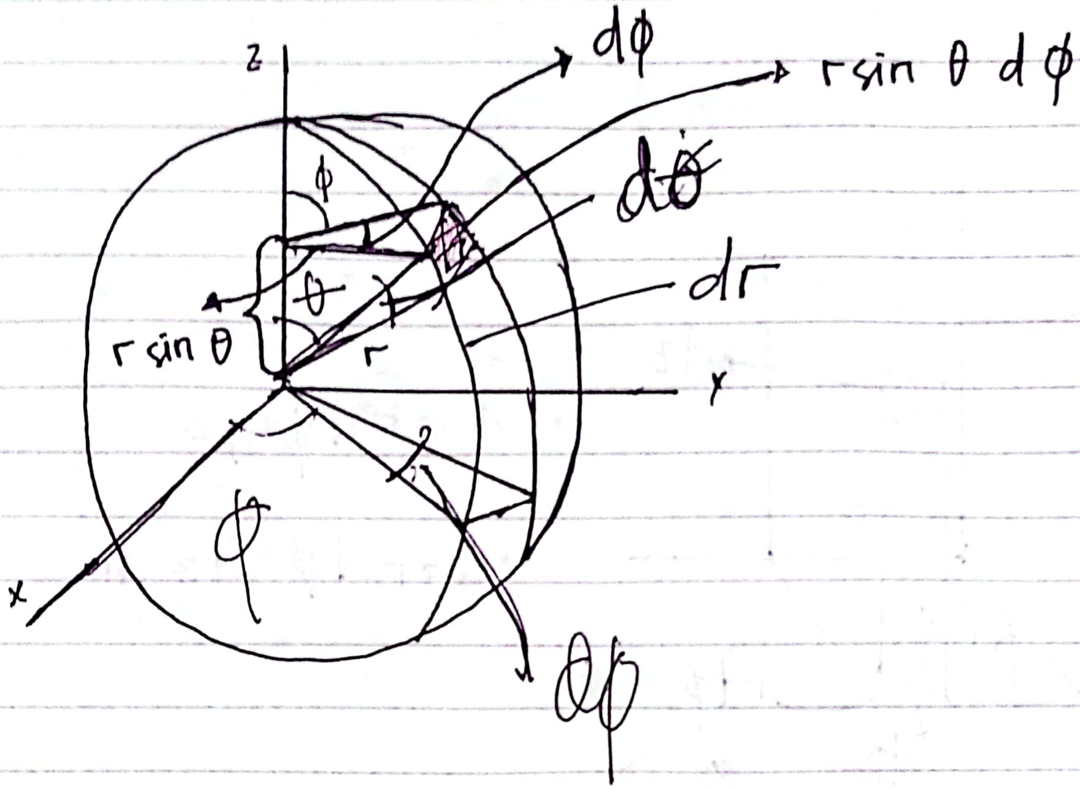
▸ Sistem Koordinat bola



$$A = p \times l$$
$$= r\,d\theta \cdot r \sin\theta \, d\phi$$
$$= r^2 \sin\theta \, d\theta \, d\phi$$

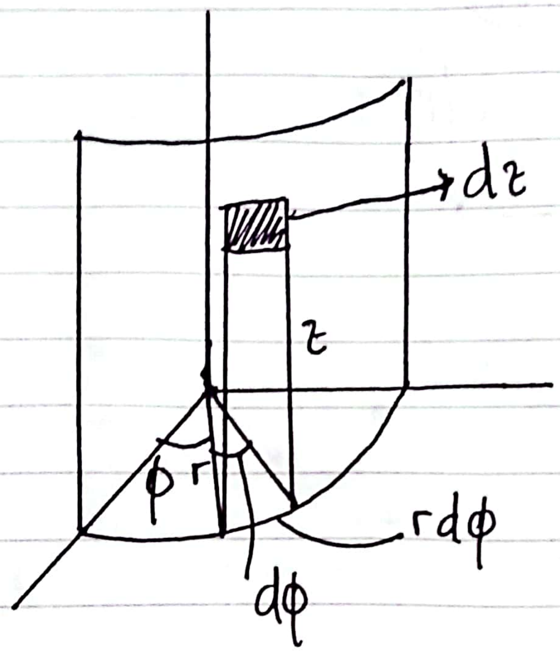
$$V = r^2 \sin\theta \, d\theta \, d\phi \, dr$$

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

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

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

$$= \frac{4}{3}\pi r^2$$



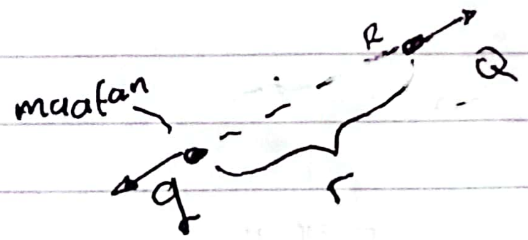
$A = r\,d\phi\,dz$

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

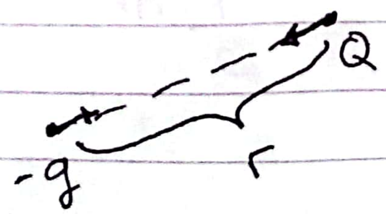
Listris Statis

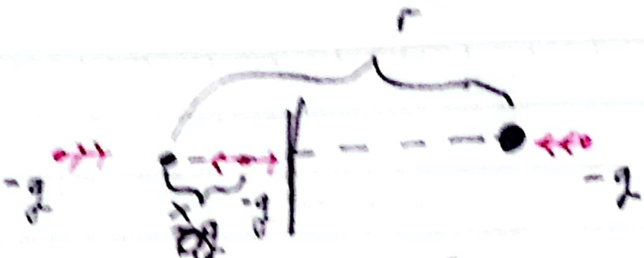
$q = \pm Ne$

elektron untuk menarik



$$\vec{F} = \frac{1}{4\pi\varepsilon_0}\,\frac{qQ}{r^2}$$



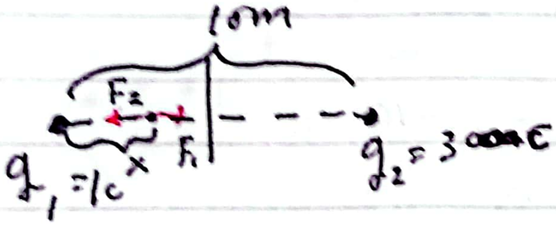


$Q > q$

$$\vec{F_1} = \vec{F_2}$$

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

Contoh :



$q_3 = -2c$

$$\vec{F_1} = \vec{F_2}$$

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

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

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

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

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

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

$$(x+15)(x-5) = 0$$

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

$$\frac{-10 \pm \sqrt{(10)^2 - 4.(-50)}}{2.1}$$

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

$$\frac{-10 + \sqrt{300}}{2} \qquad \frac{-10 - \sqrt{300}}{2}$$

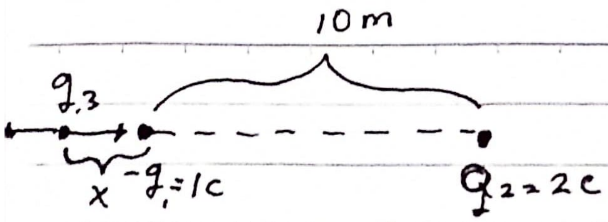
$$\frac{-10 + 10\sqrt{3}}{2} \qquad \frac{-10 - 10\sqrt{3}}{2}$$

$$-5 + 5.1.7 \qquad -5 - 5.1.7$$

$$= 3,5 \qquad = 13,5$$

No

Date



$q = 1c$

$\vec{F_1} = \vec{F_2}$

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

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

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

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

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

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

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

$$= \frac{-(-20) \pm \sqrt{(-20)^2 - 4.1(-100)}}{2.1}$$

$$= \frac{20 \pm \sqrt{400 + 400}}{2}$$

$$= \frac{20 \pm \sqrt{800}}{2}$$

$$= \frac{20 + \sqrt{800}}{2}$$

$$= 10 + 10\sqrt{2}$$

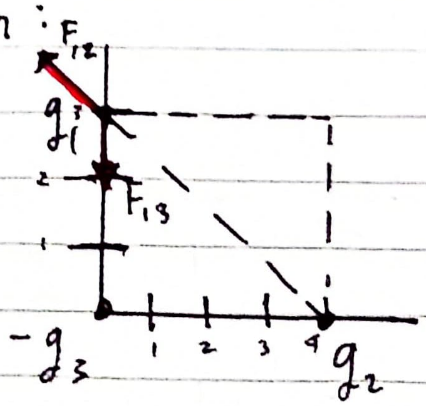
$$x = -5$$

$$= \frac{20 - \sqrt{800}}{2}$$

$$= 10 - 10\sqrt{2}$$

$$x = 20$$

Contoh :



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

K

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

Date

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

$$\sqrt{3^2+4^2}$$