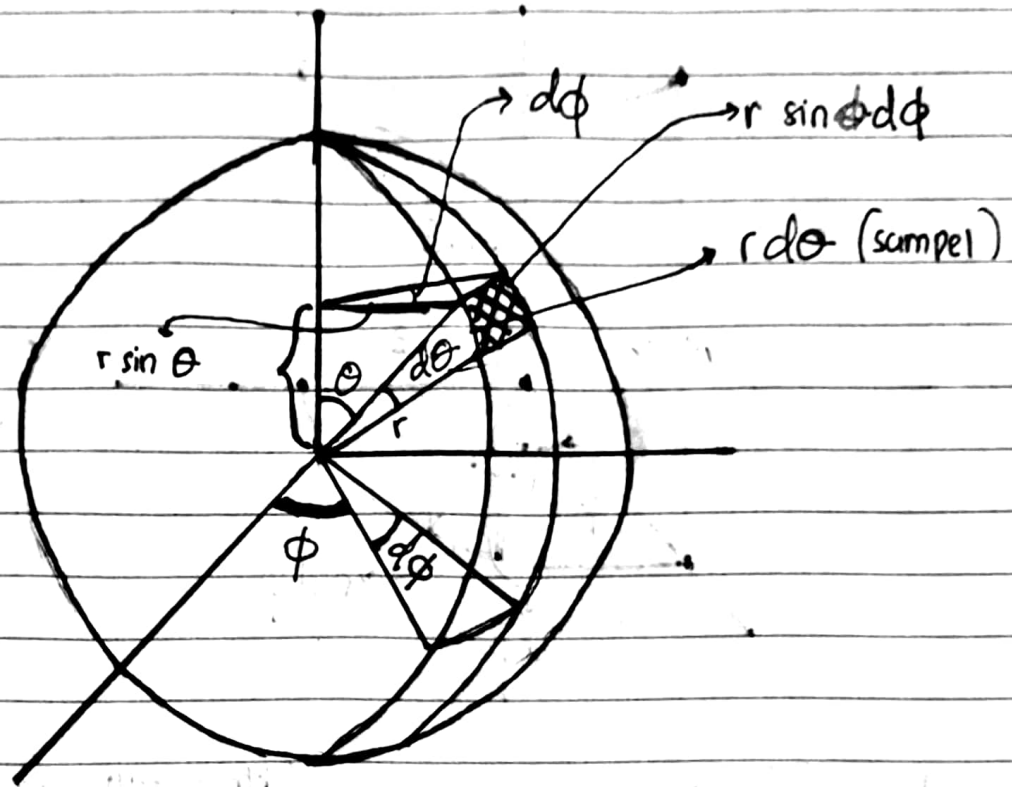


Kelistrikan dan Kemagnetan



$$A = p \times l$$

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

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

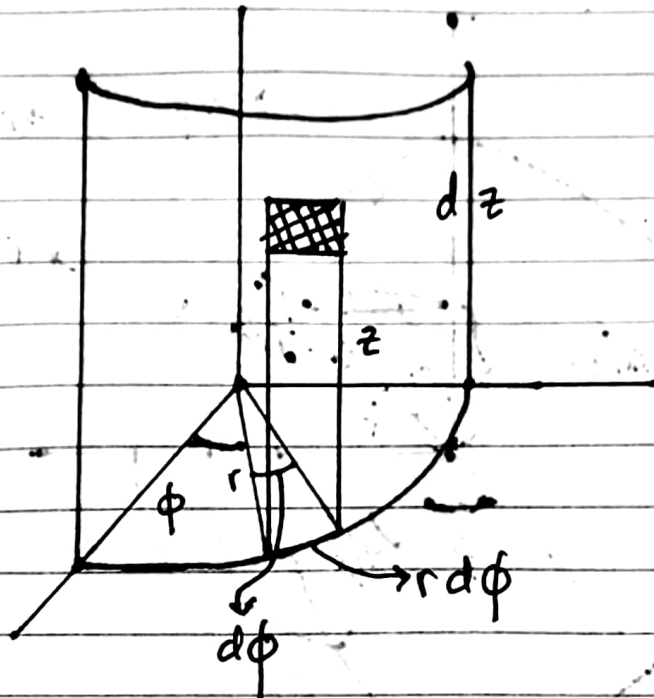
$$V = r^2 \sin \theta d\theta d\phi dr$$

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

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

$$= 4\pi r^2$$

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



$$A = r d\phi dz$$

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

$$q = \pm Ne$$

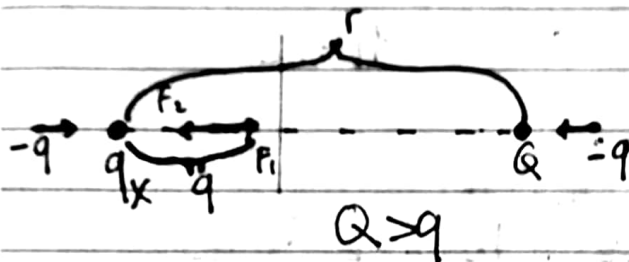
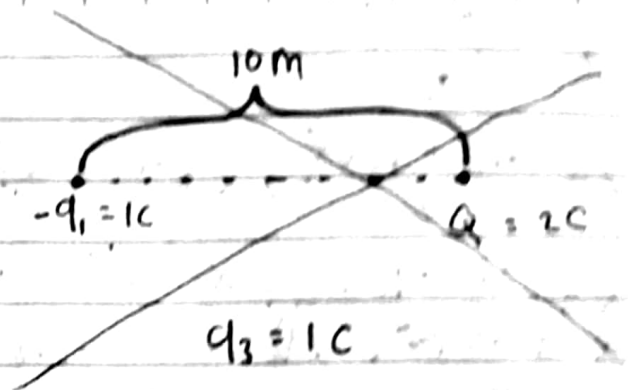
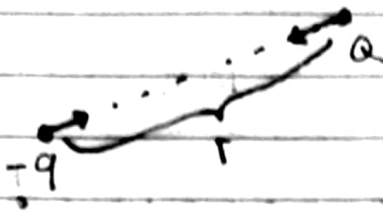
elektron statiska

contoh: printer



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

Sifat kelistrikan $\rightarrow \epsilon_0$



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

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

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

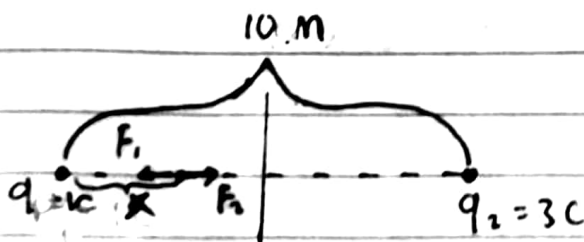
$$2x^2 + 20x - 100 = 0$$

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

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

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

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



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

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

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

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

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

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

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

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

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

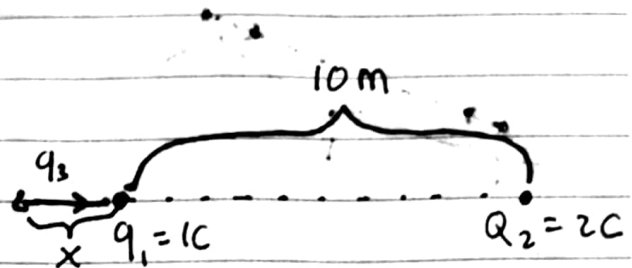
$$x = \frac{-10 + 10\sqrt{3}}{2}, x = \frac{-10 - 10\sqrt{3}}{2}$$

$$x = -5 + 5\sqrt{3}, x = -5 - 5\sqrt{3}$$

$$x = -5 + 5(1.73), x = -5 - 5(1.73)$$

$$= 3.66$$

$$= -13.6$$



$$q_3 = 1C$$

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

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

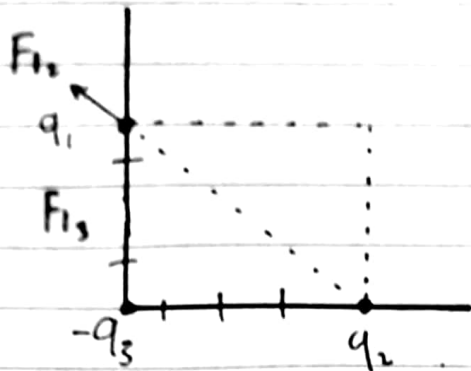
$$\frac{1}{x^2} = \frac{2}{(10+x)^2}$$

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

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

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

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



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

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

$$F_{12} = k \frac{q_1 - q_3}{3^2} (-\hat{q})$$

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