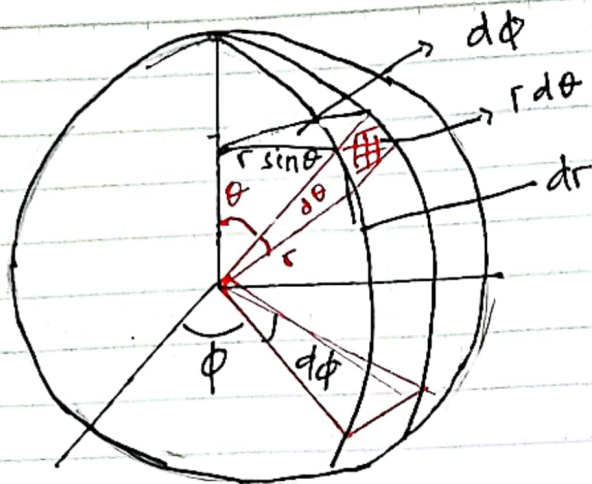




$$\begin{aligned}
 A &= P \times L \\
 &= P d\theta \cdot r \sin \theta d\phi \\
 &= r^2 \sin \theta d\theta d\phi
 \end{aligned}$$

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

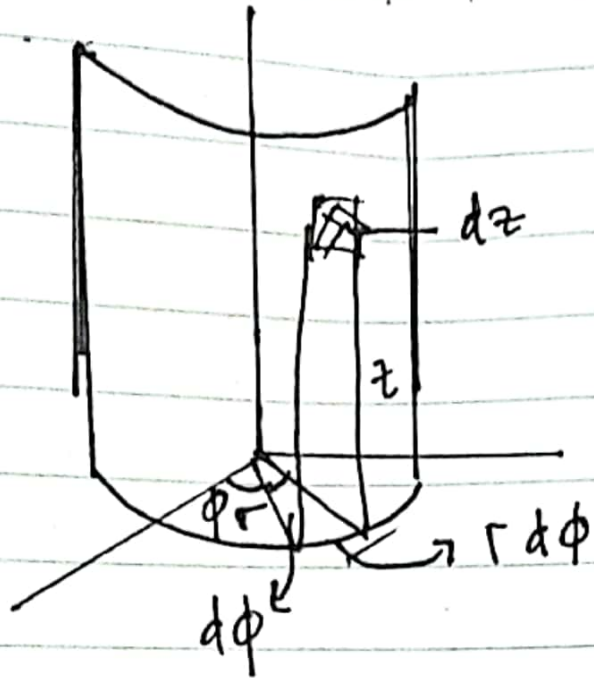
$$A = \int_0^{2\pi} \int_0^{\pi} r \sin \theta d\theta d\phi = 4\pi r$$

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

$$= 4\pi r^2$$

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

$$= \frac{1}{3} \pi r$$



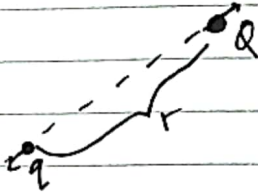
$$A = r d\phi dz$$

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

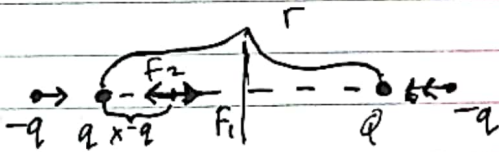
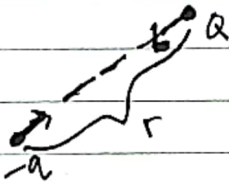
Listrik Statis

Petar $\rightarrow$ muatan yang dilempar

$$q = \pm Ne$$



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

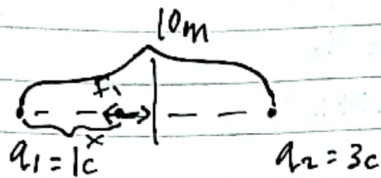


$$Q > q$$

$$F_1 = F_2$$

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

Contoh:



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

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

$$q_3 = -2C$$

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

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

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

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

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

$$(x -) (x -)$$

Formulas abc:

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

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

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

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

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

$$5.1,7 - 5$$

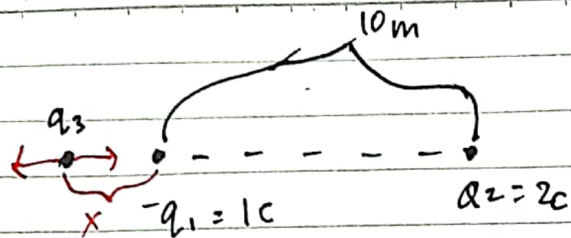
$$= \frac{-10 \pm \sqrt{300} \cdot 360}{2}$$

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

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

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

$$= 13,5$$



$$q_3 = 1e$$

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

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

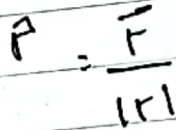
$$\frac{1}{x^2} = \frac{2}{(10+x)^2}$$

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

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

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

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



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

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