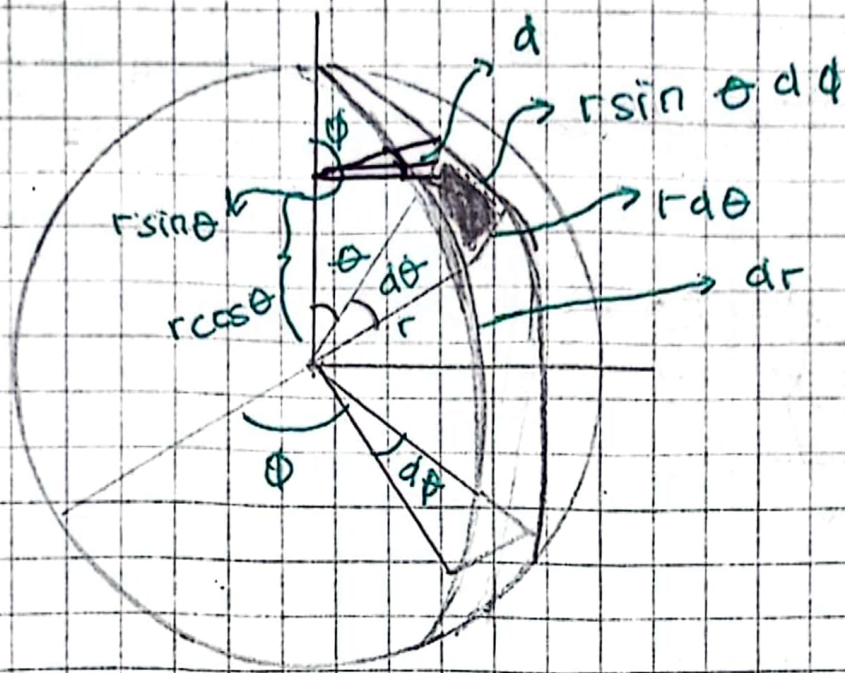




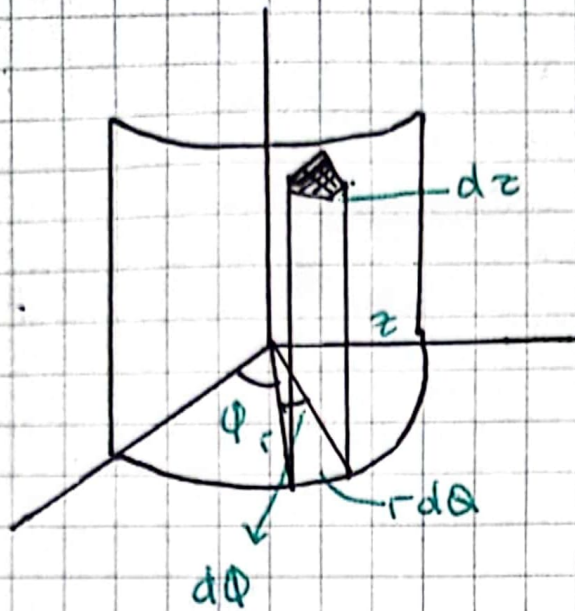
$$\phi = \sin$$

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

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

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

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



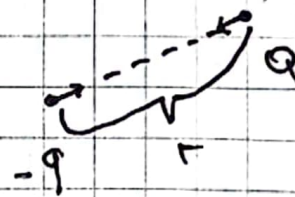
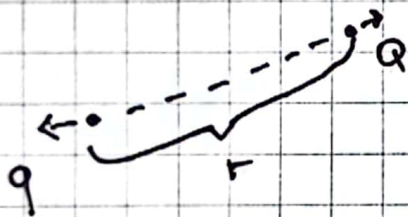
$$A = r d\phi dz$$

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

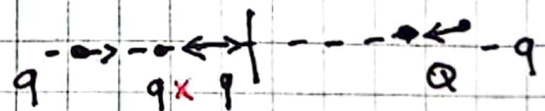
$$\frac{1}{2} + \frac{1}{2}$$

$$\frac{3+2}{6} = \frac{5}{6}$$

$$q = \pm Ne$$



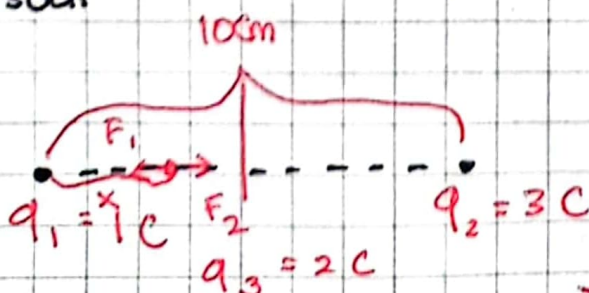
$$\vec{F} = \frac{1}{4\pi\epsilon_0} \frac{qQ}{r^2} \hat{r}$$



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

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

Ex: soal



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

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

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

Lanjutan

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

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

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

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

$$x^2 + 10x - 50 = 0 \quad (a=1, b=10, c=-50)$$

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

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

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

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

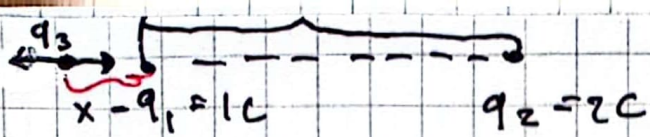
$$x = \frac{-10 \pm \sqrt{300}}{2}$$

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

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

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

$$x = -5 + 5(1,73), \quad x = -5 - 5(1,73)$$
$$= 3,66 \quad = -13,6$$



$$q_3 = 1 \text{ C}$$

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

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

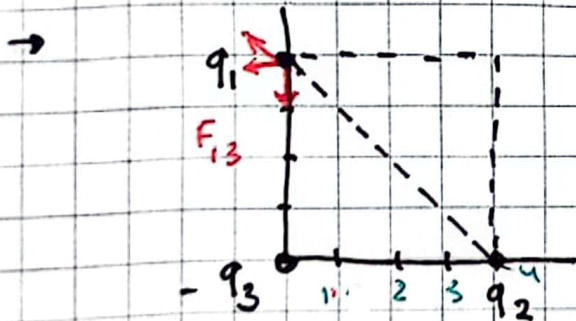
$$\frac{1}{x^2} = \frac{2}{(10+x)^2}$$

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

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

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

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



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

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

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

↓

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