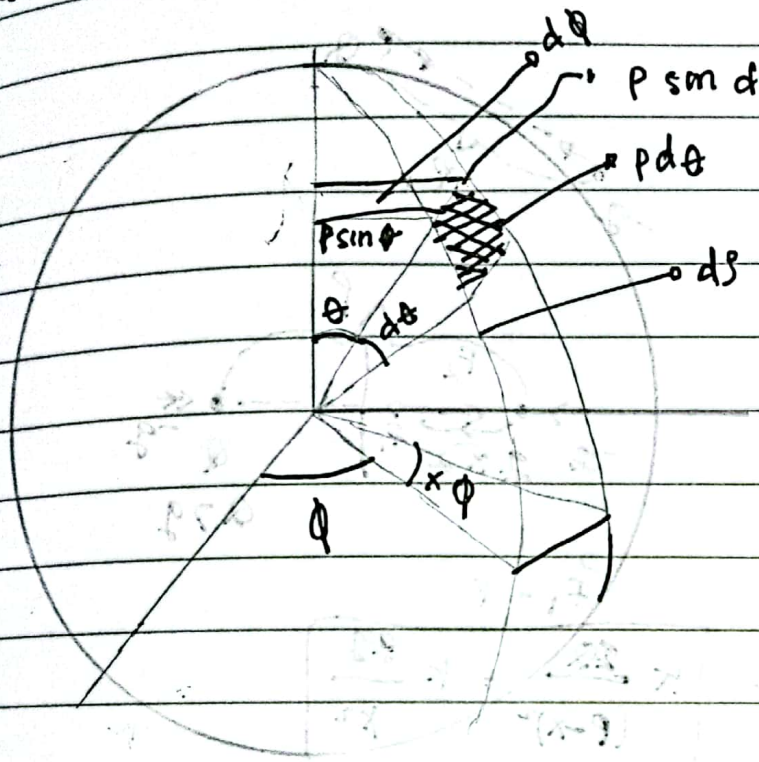
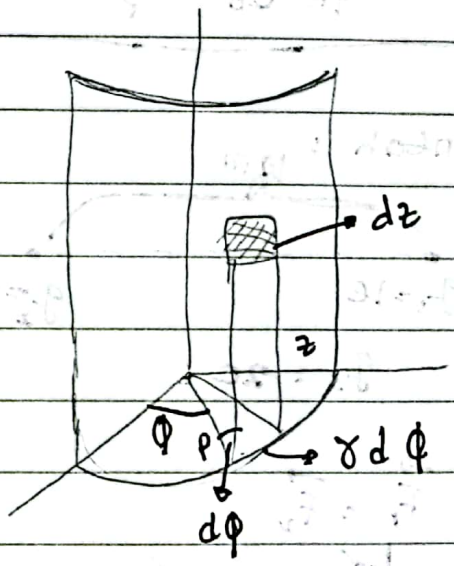
Pert - 4

Date 4 Maret 2024

Kelistrikan & Kemagnetan





$A = P \times \ell$

$= P d\theta \cdot P \sin\theta d\phi$

$= P^2 \sin\theta \, d\theta \, d\phi$

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

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

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

$= 4\pi P^2$

$V = \int_0^{P} \int_0^{2\pi} \int_0^{\pi} P^2 \sin\theta \, d\theta \, d\phi \, dp$

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

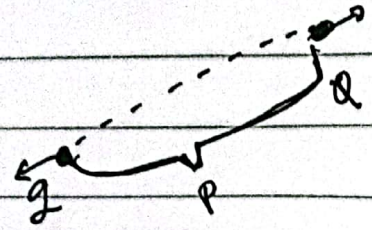
$A = P d\phi dz$

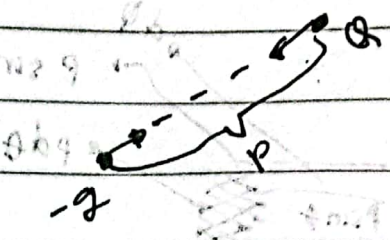
$V = P d\phi dz d\$$

$q = \pm N e$

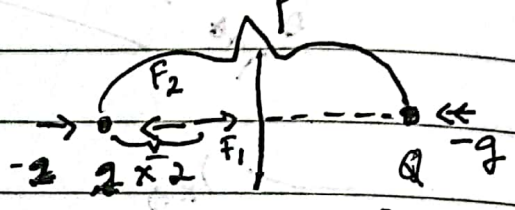
Date

Listrik Statis



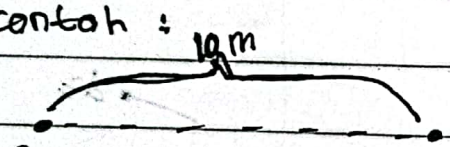


$$\vec{F} = \frac{1}{4\pi \varepsilon_0} \frac{qQ}{p^2} \hat{p}_0$$



Q > q

contoh :



$q_3 = -2e$

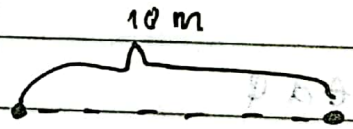
$F_1 = F_2$

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

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

$F_1 = F$

$$K \frac{2Q}{(p-x)^2} = K \frac{qq}{x^2}$$



$q_3 = 1e$

$F_1 = F_2$

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

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

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

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

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

$$x = 5$$

OKEY

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

$$\frac{-10 \pm \sqrt{(10)^2-4.1(-50)}}{2.1}$$

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

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

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

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

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

$$= 13,5$$

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

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

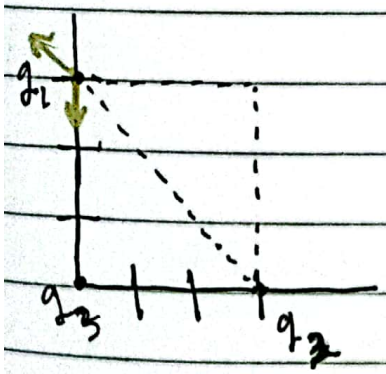
$$\frac{1}{x^2} = \frac{2}{(10+x)^2}$$

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

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

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

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



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

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

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