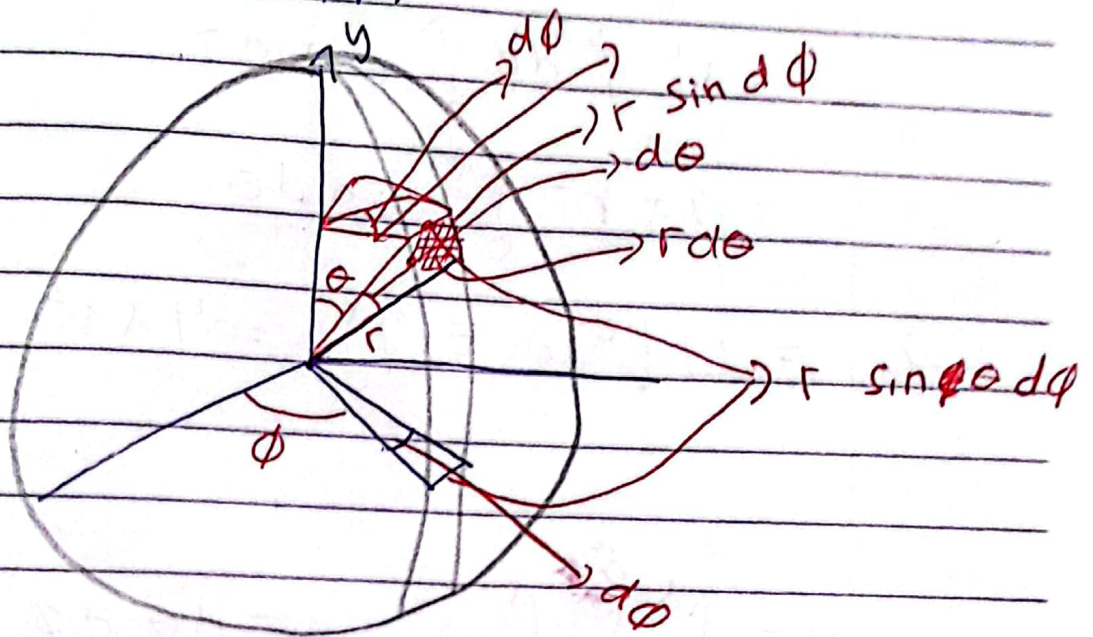


1. Koordinat bola (r, θ, ϕ)



$$dV_{\text{tas}} = d\rho^{\text{panjang}} \times dL^{\text{lebar}}$$

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

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

$$dT_{\text{tinggi}} = d\rho \cdot dL \cdot d\phi$$

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

$$\nabla T = \hat{i} \frac{\partial T}{\partial x} + \hat{j} \frac{\partial T}{\partial y} + \hat{k} \frac{\partial T}{\partial z}$$

$$= \frac{\partial T}{\partial r} \hat{r} + \frac{1}{r} \frac{\partial T}{\partial \theta} \hat{\theta} + \frac{1}{r \sin \theta} \frac{\partial T}{\partial \phi} \hat{\phi}$$

$$\nabla T =$$

$$\nabla \cdot \mathbf{x} T =$$

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

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

$$= 2\pi r^2 \int_0^\pi \sin \theta d\theta$$

$$= \square \left[-\cos \theta \right]_0^\pi = 4\pi r^2$$

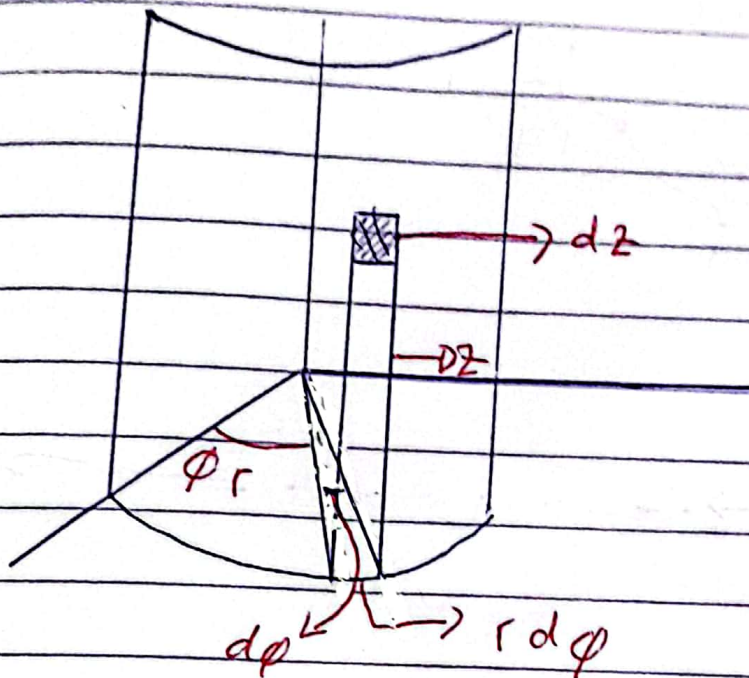
$$V = \int_0^\pi \int_0^{2\pi} \int_0^r r^2 \sin \theta d\theta d\phi dr$$

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

$$= 2(2\pi) \int_0^r r^2 dr$$

$$= 4\pi \left(\frac{1}{3} r^3 \right) = \frac{4}{3} \pi r^3$$

2. Koordinat silinder (r, ϕ, z)



$$dA = dr dz$$

$$= r d\phi dz$$

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

1. Listrik Statis

→ Gaya Coulomb

→ Usaha dan Energi

→ Medan listrik

• Diskrit

• ~~Dis~~ non diskrit

→ Coulomb

→ Gauss

→ Statis

→ Potensial

• Diskrit

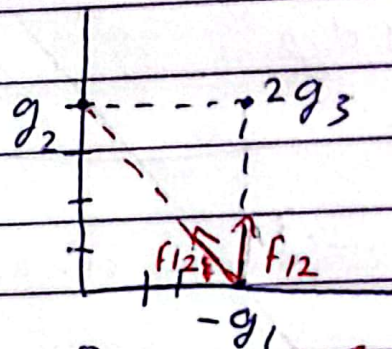
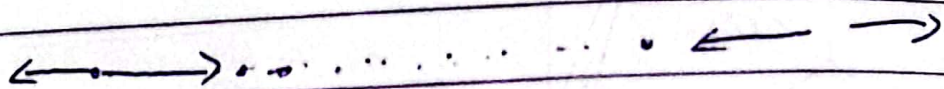
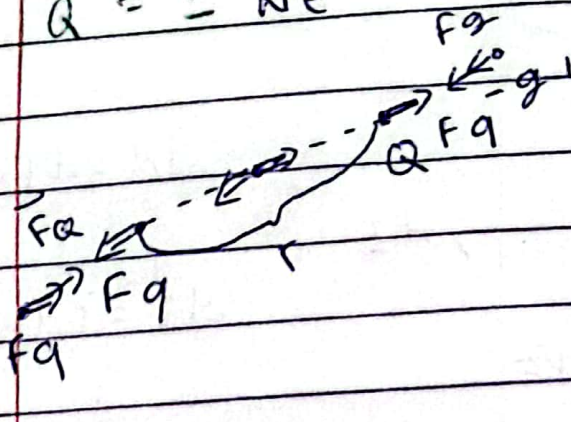
• non diskrit.

listrik Statis

No.

Date:

$$Q = \pm N\bar{e}$$



$$\sqrt{3^2 + 4^2} = 5$$

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

$$\vec{F}_{g_1} = F_{12} = k \frac{q_1 (2q_3)}{4^2} \hat{j}$$

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

$$\vec{F} = kq_1 \left[-\frac{3q_2}{125} \hat{i} + \frac{2q_3}{16} + \frac{4q_2}{125} \right] \hat{j}$$

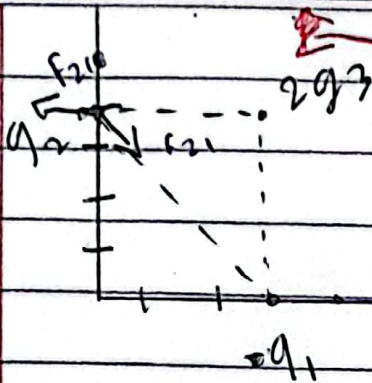
$$|\vec{F}| = kq_1 \sqrt{0^2 + 17^2}$$

$$\vec{F}_{12} = -\frac{3kq_1 q_2}{125} + \frac{4kq_1 q_2}{125} \hat{j}$$

$$F_{total} = -\frac{3kq_1 q_2}{125} + \left(\frac{2kq_1 q_3}{16} + \frac{4kq_1 q_2}{125} \right) \hat{j}$$

Gaya yang bekerja pada q_2 No.

yang menjadi sumbu x daya $2q_3$



$$F_{21} = k \frac{q_2 \cdot q_1}{5^2} (3\hat{i} + 4\hat{j})$$

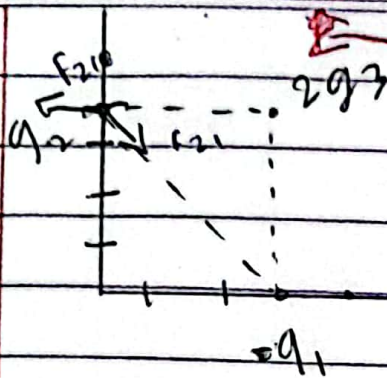
$$F_{23} = -k \frac{q_2 q_3}{9} \hat{i}$$

$$= 2k \frac{q_2 q_3}{9} \hat{i}$$

$$F_{\text{total}} = \frac{-3kq_2 \cdot q_1}{125} - \frac{2kq_2 q_3}{9} \hat{i} + \frac{4kq_1 q_2}{125} \hat{j}$$

Gaya yang bekerja pada q_2 No.

yang menjadi sumbu x nya $2q_3$



$$F_{21} = k \frac{q_2 \cdot q_1}{5^2} (3\hat{i} + 4\hat{j})$$

$$F_{23} = -k \frac{q_2 q_3}{9} \hat{i}$$

$$= 2k \frac{q_2 q_3}{9} \hat{i}$$

$$F_{\text{total}} = \left(-\frac{3kq_2 \cdot q_1}{125} - \frac{2kq_2 q_3}{9} \right) \hat{i} + \frac{4kq_1 q_2}{125} \hat{j}$$