

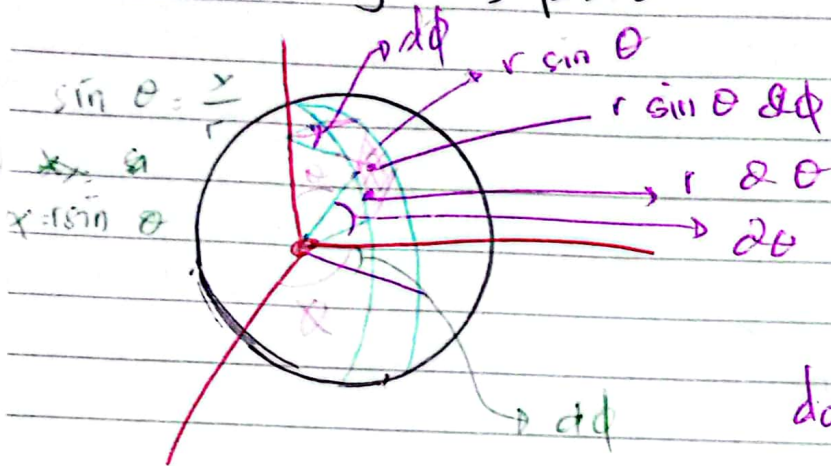
Kelistrikan & Kemagnetan

No.

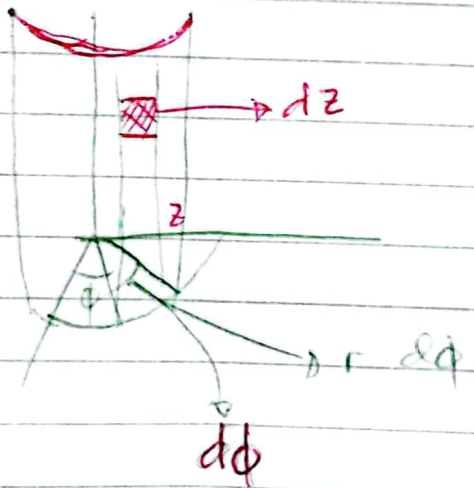
Date 04.03.24

Koordinat lingkaran

$\int$: Kajiannya mengandung partikel



$$\begin{aligned} da &= r dr \cdot d\phi \\ &= r d\theta \cdot r \sin \theta d\phi \\ &= r^2 \sin \theta d\theta d\phi \\ &= r^2 \sin \theta d\theta d\phi dr \end{aligned}$$

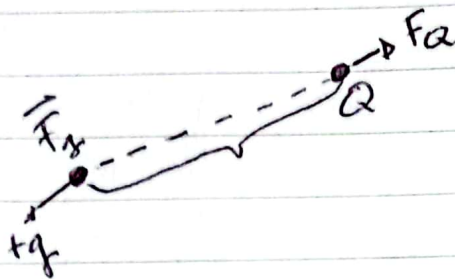


$$\begin{aligned} A &= r d\phi dz \\ V &= r d\phi dz dr \end{aligned}$$

Medan Listrik

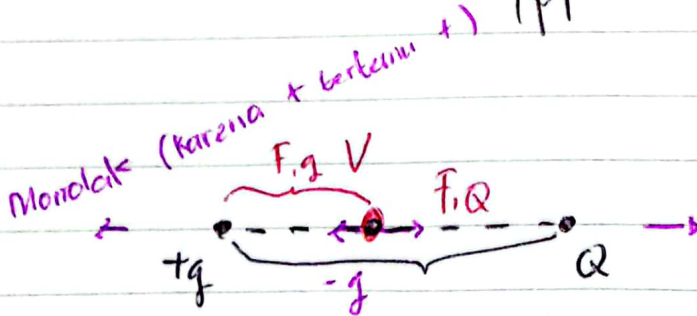
Gaya listrik

Muatan listrik : $q = \pm Ne$



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

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



$$+q (Q > q)$$

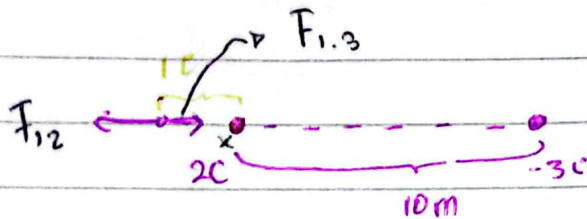
$$F_{q,Q} = F_{Q,q}$$

$$k \frac{q_1 q_2}{(r-x)^2} = k \frac{q_1 q}{(x^2)}$$

x ?

$$\frac{Q}{(r^2 - 2rx + x^2)} = \frac{q}{x^2}$$

$$Qx^2 = q(r^2 - 2rx + x^2)$$



10

$$F_{1,2} = F_{1,3}$$

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

$$\frac{2}{x^2} = \frac{3}{x^2 + 20x + 100}$$

$$3x^2 = 2x^2 + 40x + 200$$

$$3x^2 - 2x^2 - 40x - 200 = 0$$

$$x^2 - 40x - 200 = 0$$

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

$$= \frac{-(-40) \pm \sqrt{(-40)^2 - 4 \cdot 1 \cdot (-200)}}{2 \cdot 1}$$

$$= -40 + \frac{\sqrt{1600 + 800}}{2}$$

$$= -40 + \sqrt{400}$$

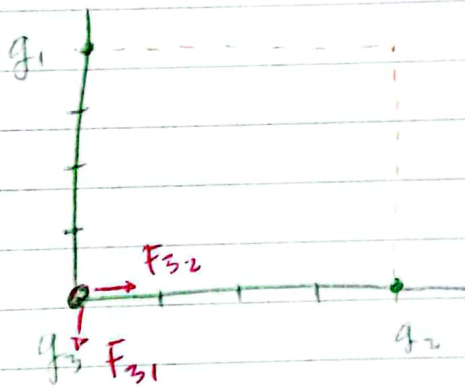
$$= -40 + 20$$

$$= -20$$

$$= -40 - 20$$

$$= -60$$

jadi, $(x - 20) (x - 60)$



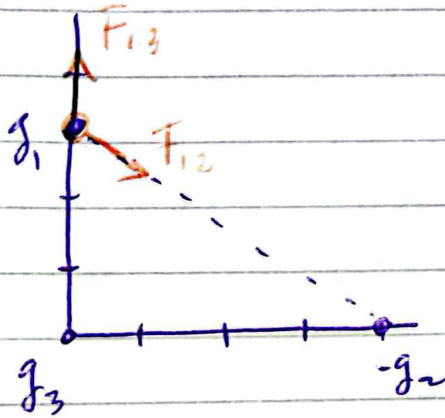
$$\vec{F}_{32} = K \frac{q_3 q_2}{4a^2} \frac{(3\hat{i} + 0\hat{j})}{\sqrt{3^2 + 0^2}}$$

$$= K \frac{q_3 q_2}{16} \hat{i}$$

$$\vec{F}_{31} = \frac{q_3 q_1}{3^2} (-\hat{j}) = -K \frac{q_3 q_1}{9} \hat{j}$$

$$\vec{F} = K q_3 \left[\frac{q_2}{16} \hat{i} - \frac{q_1}{9} \hat{j} \right]$$

$$|\vec{F}| = K g_3 \sqrt{\left(\frac{g_2}{16}\right)^2 + \left(\frac{g_1}{9}\right)^2}$$



(- mendekat)
(+ menjauh)

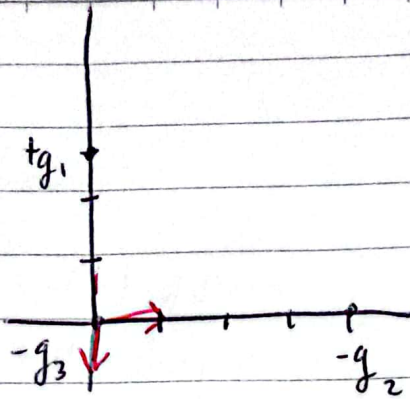
$$\vec{F}_{13} = K \frac{g_1 g_3}{3^2} \hat{j}$$

$$\vec{F}_{12} = K \frac{g_1 g_2}{5^2} \left(\frac{4\hat{i} - 3\hat{j}}{5} \right)$$

$$= \left[4K \frac{g_1 g_2}{125} \hat{i} \right] - \left[3K \frac{g_1 g_2}{125} \hat{j} \right]$$

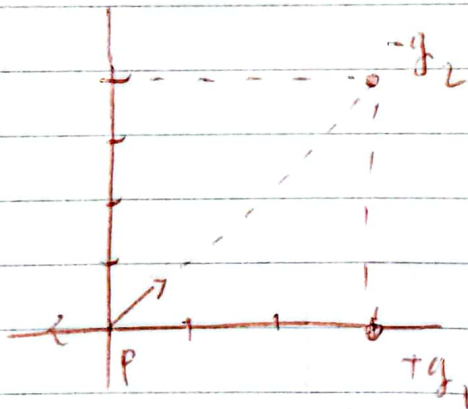
$$\vec{F} = K g_1 \left[\left(\frac{4 g_2}{125} \right) \hat{i} + \left(\frac{g_3}{9} - \frac{3 g_2}{125} \right) \hat{j} \right]$$

medan



$$\vec{E}_{q_3} = \frac{F_{3,2}}{q_3} = K \frac{q_3 q_2}{q_3 r}$$

$$F = K \frac{q_2}{r^2} \hat{r}$$



$$\vec{E}_1 = K \frac{q_1}{36} (-\hat{i})$$

$$= K \frac{q_1}{9} (\hat{i})$$

$$\vec{E}_2 = K \frac{q_2}{r^2} \left(\frac{3\hat{i} + 4\hat{j}}{5} \right)$$

$$= \boxed{3K \frac{q_2}{125} \hat{i}} + \boxed{4K \frac{q_2}{125} \hat{j}}$$

No.

Date

$$\vec{E} = k \left[\left(\frac{392}{125} - \frac{g_1}{g} \right) \hat{i} + \left(\frac{492}{125} \right) \hat{j} \right]$$