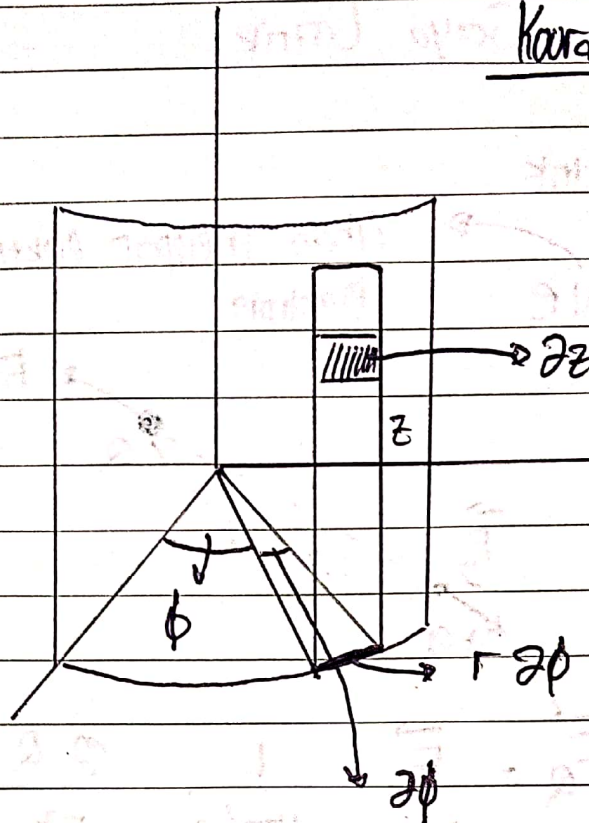


Nama : Ririn Etyra
Npm : 2213022095

No 4-03-2024
Date

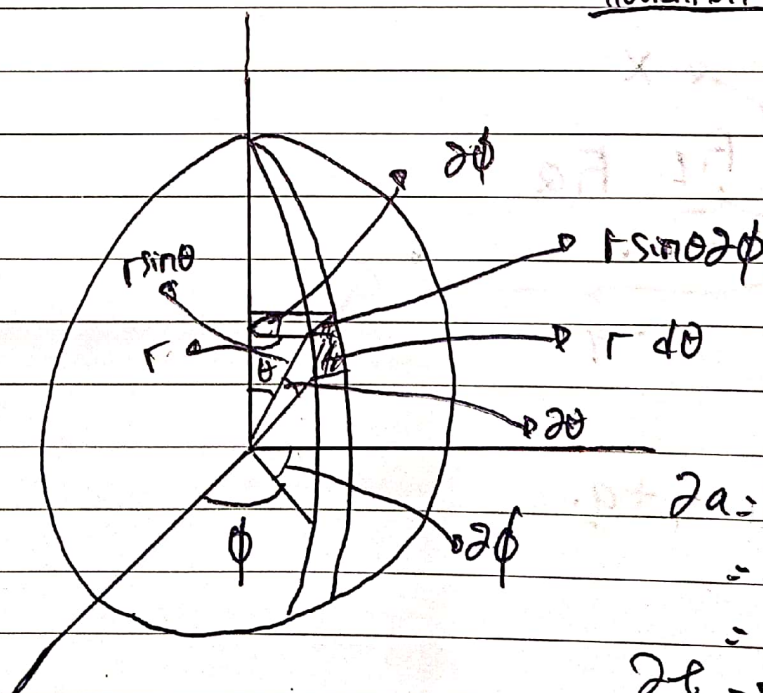
Koordinat Silinder



$$A: r \phi z$$

$$V: r \phi z \phi$$

Koordinat Bola



$$da = \phi \times z$$

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

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

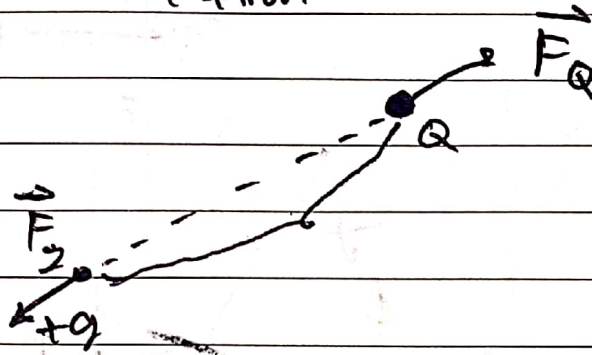
$$de = r^2 \sin \theta \phi \phi$$

Gaya Listrik

→ Muatan Listrik

$$Q = \pm Ne$$

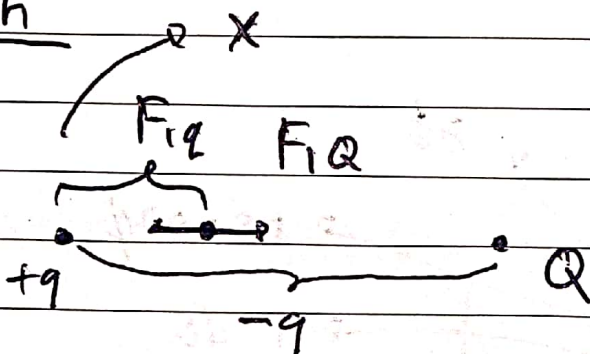
Akan melepas elektron / yg kekurangan elektron



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

Gaya yang diberikan sama, besarnya yang berbeda

Contoh



$-q, +q$

$$Q > q$$

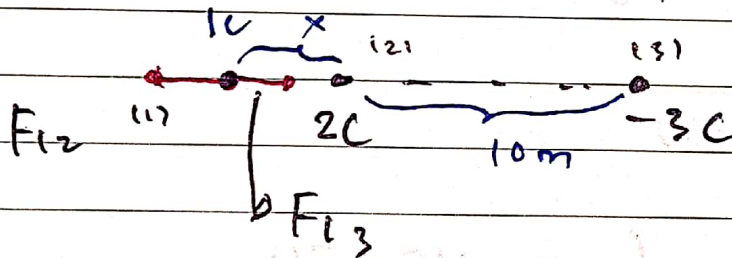
$$\vec{F}_q = F_{1Q}$$

$$K \frac{q_1 Q}{(r-x)^2} = K \frac{q_1 q}{(x^2)}$$

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

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

Soal 1c



$$\vec{F}_{12} = F_{13}$$

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

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

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

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

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

$$(x-20)(x-60)$$

Bila tidak bisa di Faktorkan menggunakan $-b \pm \sqrt{\frac{b^2 - 4ac}{2a}}$

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

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

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

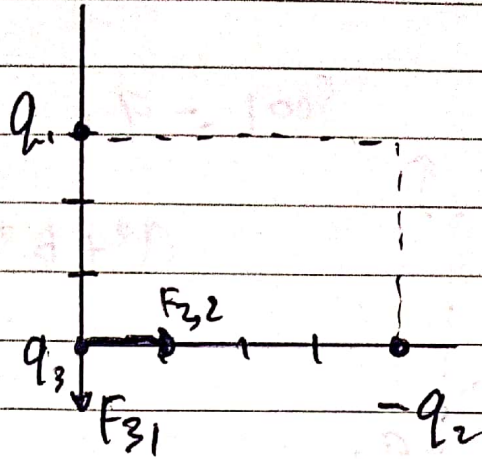
$$= -40 \pm \sqrt{1200}$$

$$= -40 + 20$$

$$= -20$$

$$\left\{ \begin{array}{l} = -40 - 20 \\ = -60 \end{array} \right.$$

Soln F_{q_3}



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

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

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

$$\vec{F} = \sqrt{k \frac{q_3 q_2}{16} + \left| -k \frac{q_3 q_1}{9} \right|}$$

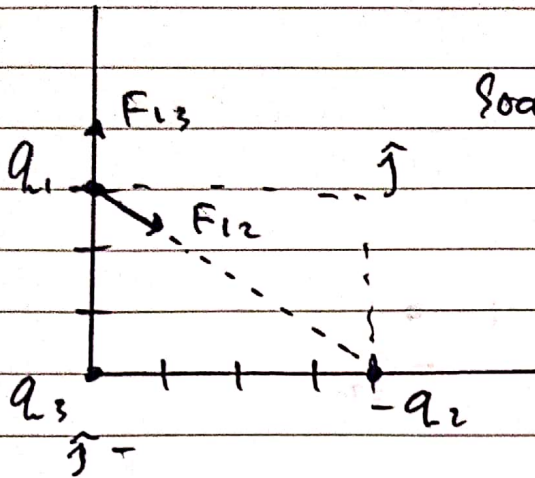
$$\vec{F} = k q_3 \left[\frac{q_2}{16} \hat{i} - \frac{q_1}{9} \hat{j} \right]$$

$$|\vec{F}| = k q_3 \sqrt{\left(\frac{q_2}{16} \right)^2 + \left(\frac{q_1}{9} \right)^2}$$

$\vec{r}$ lokasi

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Arah tidak menggambar (-)



Soal = q_1

$a^2 + b^2 =$

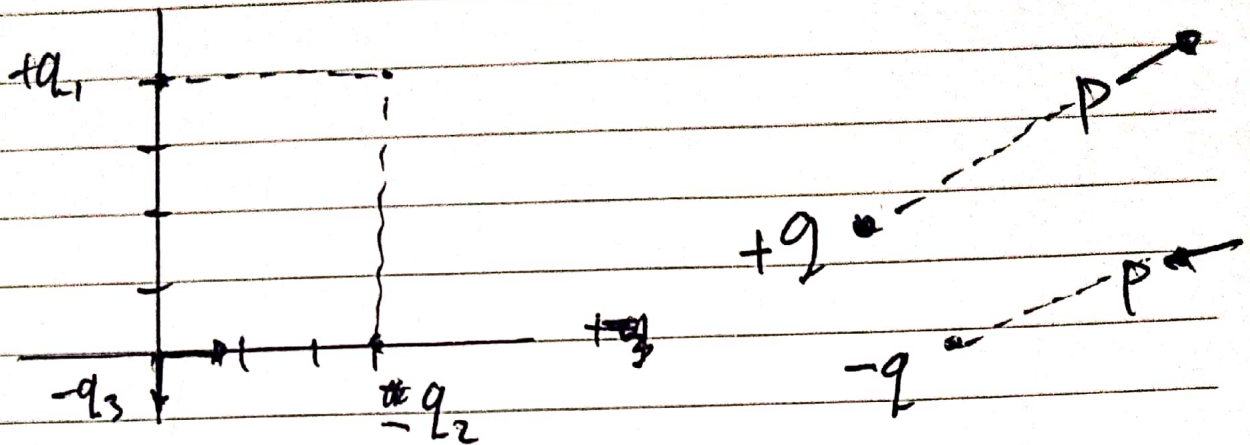
$$\vec{F}_{13} = k \frac{q_1 q_3}{3^2} \hat{j}$$

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

$$= 4k \frac{q_1 q_2}{125} \hat{i} - 3k \frac{q_1 q_2}{125} \hat{j}$$

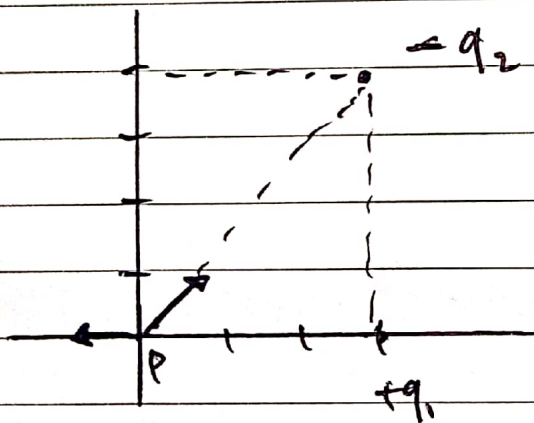
$$\vec{F} = k q_1 \left[\left(\frac{4q_2}{125} \right) \hat{i} + \left(\frac{q_3}{9} - \frac{3q_2}{125} \right) \hat{j} \right]$$

$\swarrow$ 5^2 $\searrow$ 3^2
 $5^2 + 3^2$

Medan $\rightarrow$ Terpengaruh

$$\vec{F}_{q_1} = \frac{F_{32}}{q_3} = k \frac{q_3 q_2}{r^2}$$

$$F = k \frac{q_3}{r^2} \hat{r}_0$$



$$\rightarrow \vec{F}_1 = k \frac{q_1}{3^2} (-\hat{i})$$

$$= -k \frac{q_1}{9} \hat{i}$$

$$\rightarrow \vec{F}_2 = k \frac{q_2}{5^2} \left(\frac{3\hat{i} + 4\hat{j}}{5} \right)$$

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

$$\rightarrow \vec{F} = k \left[\left(\frac{3q_2}{125} - \frac{q_1}{9} \right) \hat{i} + \frac{4q_2}{125} \hat{j} \right]$$