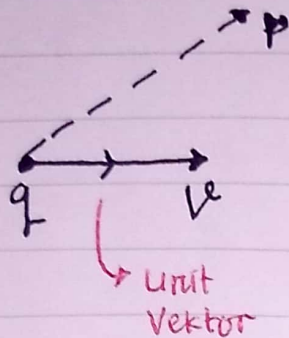


Medan Magnet

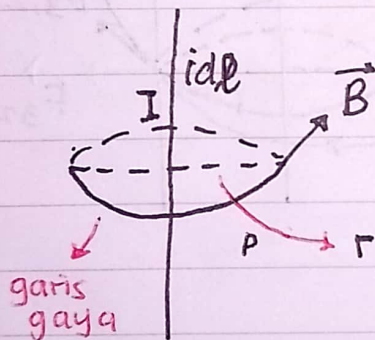
1. Medan magnet oleh muatan



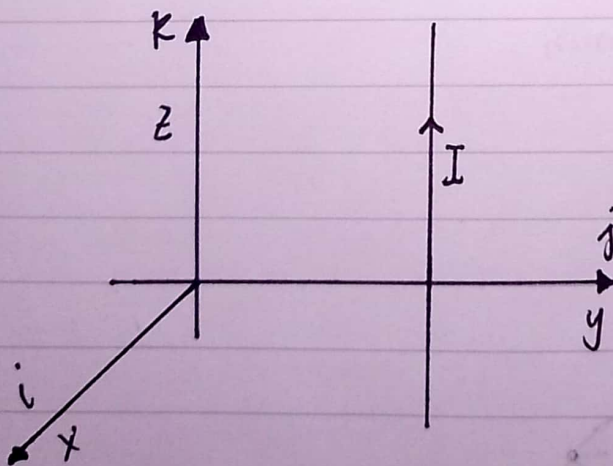
$$\vec{B} = \frac{\mu_0 q \vec{v} \times \vec{h}}{4\pi r^2}$$

$$= \frac{\mu_0 q v \sin \theta}{4\pi r^2}$$

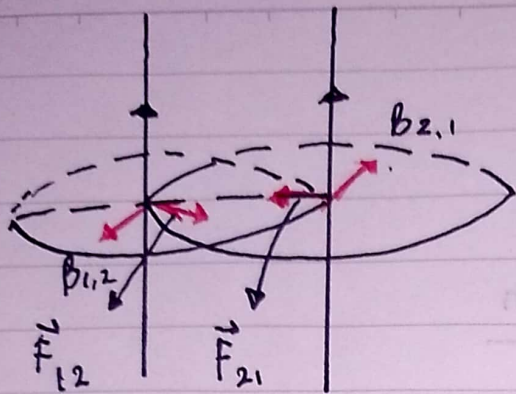
2. $\vec{B}$ oleh arus listrik



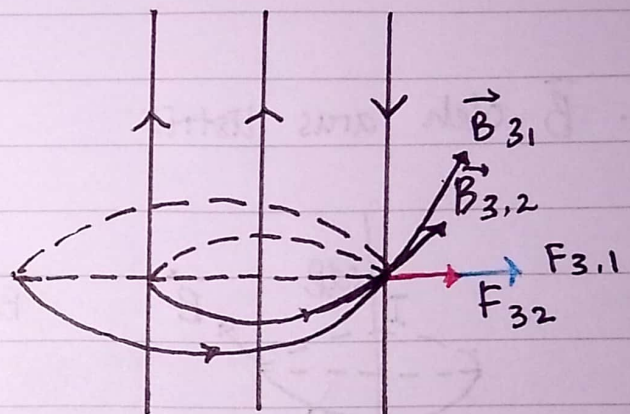
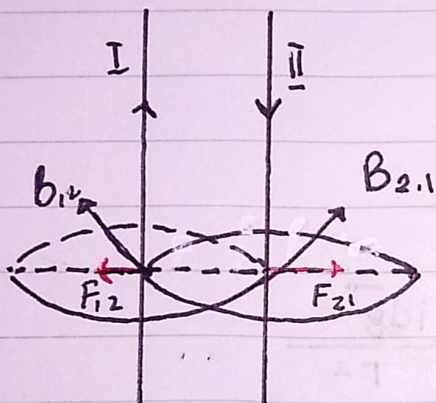
$$\vec{B} = \frac{\mu_0}{4\pi} \frac{id\vec{l} \times \vec{r}}{r^2}$$



$$\begin{aligned} \vec{B} &= \frac{\mu_0}{4\pi} \frac{idl \hat{k} \times \hat{j}}{r^2} \\ &= \frac{\mu_0}{4\pi} \frac{idl \sin \theta}{r^2} (-\hat{i}) \end{aligned}$$

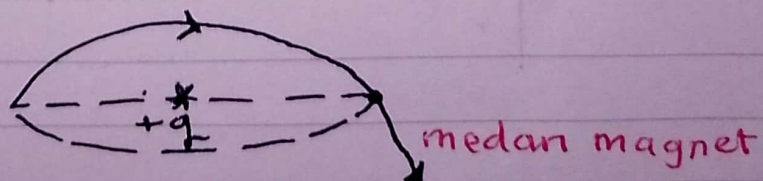
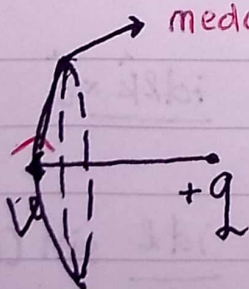


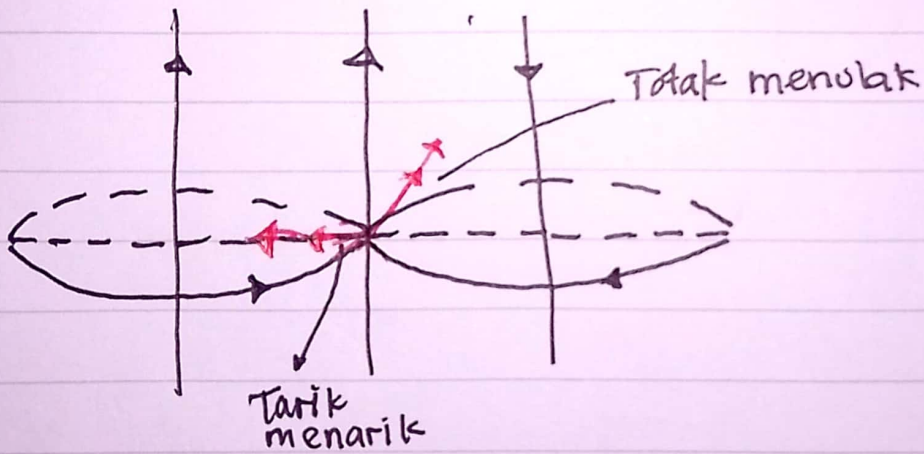
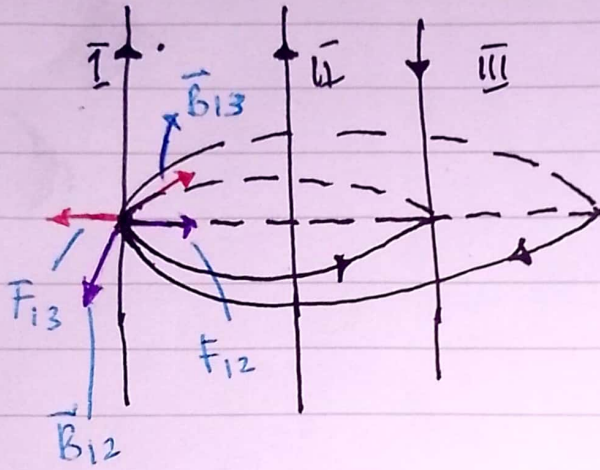
$$\vec{F} = i d\vec{l} \times \vec{B}$$



medan magnet

medan magnet menjauh

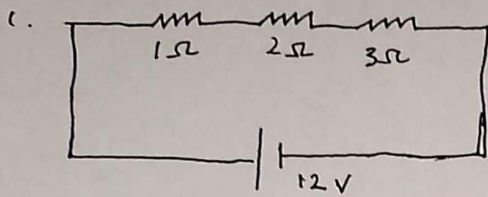




NPM : 2213022033

Kelas : A

$$25 + 15 + 10 + 5 = 55$$



- Hitung arus pada R_3

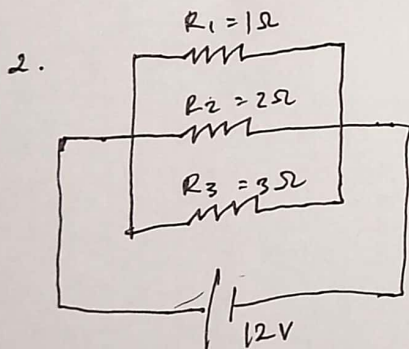
$$I_{R_3} = \frac{V}{R_{total}}$$

$$= \frac{12}{1\Omega + 2\Omega + 3\Omega} = \frac{12}{6} = 2 \text{ A}$$

- Hitung tegangan pada R_2

$$V_{R_2} = \frac{V}{R_{total}} \cdot R_2$$

$$= \frac{12}{1\Omega + 2\Omega + 3\Omega} \cdot 2\Omega = \frac{12}{6} \cdot 2 = 4 \text{ V}$$



- Hitung arus pada R_3

$$R_{total} = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}}$$

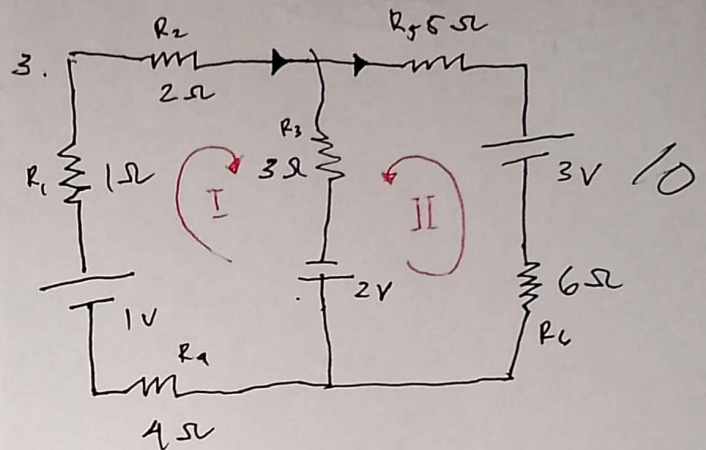
$$= \frac{1}{\frac{1}{1} + \frac{1}{2} + \frac{1}{3}} = \frac{1}{\frac{6}{6} + \frac{3}{6} + \frac{2}{6}} = \frac{1}{\frac{11}{6}} = \frac{6}{11} \approx 0,545 \Omega$$

$$I = \frac{V}{R_{total}} = \frac{12}{0,545} \approx 22 \text{ A}$$

- Hitung tegangan pada R_2

$$V = I \cdot R$$

$$= 22 \text{ A} \cdot 2\Omega = 44 \text{ V}$$



Hitung arus tiap loop (I_1, I_2, I_3)

- Loop I.

$$\sum \mathcal{E} + \sum I R = 0$$

$$-1V + \mathcal{E}_2 + I_1(R_1 + R_2 + R_4) + I_3(R_3) = 0$$

$$= -1 + 2 + (1 + 2 + 4 + 3)I_1 + (3)I_3 = 0$$

$$= -1 + 10I_1 + 3I_3 = 0$$

$$10I_1 + 3I_3 = 1$$

- Loop II

$$\sum \mathcal{E} + \sum I R = 0$$

$$-\mathcal{E}_3 + \mathcal{E}_2 + I_2(R_5 + R_6) + I_3(R_3) = 0$$

$$(-3 + 2) + I_2(5 + 6) + (3)I_3 = 0$$

$$= -1 + 11I_2 + 3I_3 = 0$$

$$11I_2 + 3I_3 = 1$$

- Loop III

