

$$R_1 = R_2 = \dots = R_4 = 1k\Omega$$

$$V_1 = 24V$$

$$V_2 = V_3 = 12V$$

$$A_1 = ?$$

$$A_2 = ?$$

$$\begin{aligned} 2k\hat{i}_1 - 1k\hat{i}_2 &= 24 + 12 = 36 \\ -1k\hat{i}_1 + 2k\hat{i}_2 &= -12 - 12 = -24 \\ +1k\hat{i}_3 &= 12 \end{aligned}$$

$$\hat{i}_1 = 16mA \quad \curvearrowright$$

$$\hat{i}_2 = -4mA \quad \curvearrowleft = +4mA \quad \curvearrowright$$

$$A_1 = 16mA + 4mA = 20mA$$

$$A_2 = 4mA$$

$$q = +3.3\mu C \quad m = 11.5\mu g$$

$$\vec{v} = (3.50\hat{i} + 7.77\hat{k}) \text{ m/s}$$

$$\vec{B} = (140\hat{i} + 218\hat{j}) \text{ T}$$

$$\Sigma \vec{F} = m\vec{a}$$

$$\vec{F}_B = m\vec{a} \quad \gamma \quad \vec{F}_B = q\vec{v} \times \vec{B}$$

$$q \vec{r} \times \vec{B} = m \vec{a}$$

$$\vec{r} \times \vec{B} = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 3.50 & 0 & 7.77 \\ 140 & 218 & 0 \end{vmatrix}$$

$$\vec{r} \times \vec{B} = -1,695.86 \hat{i} + 1,087.8 \hat{j} + 763 \hat{k}$$

$$3.3 \times 10^{-6} \left(-1,695.86 \hat{i} + 1,087.8 \hat{j} + 763 \hat{k} \right) = m \vec{a}$$

$$-0.0056 \hat{i} + 0.0036 \hat{j} + 0.0025 \hat{k} = 1.15 \times 10^{-8} \vec{a}$$

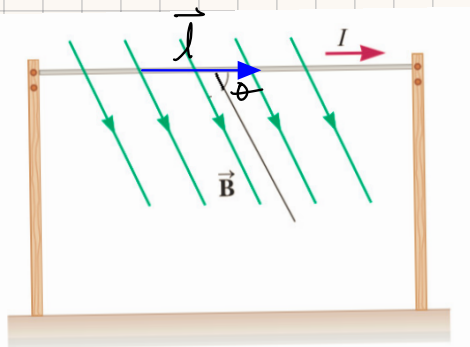
$$\vec{a} = \left(-486064.17 \hat{i} + 312151.30 \hat{j} + 218947.83 \hat{k} \right) \text{ m/s}^2$$

$$a_x = -4.86 \times 10^5 \text{ m/s}^2$$

$$a_y = +3.12 \times 10^5 \text{ m/s}^2$$

$$a_z = +2.19 \times 10^5 \text{ m/s}^2$$

$$a = \sqrt{a_x^2 + a_y^2 + a_z^2} = 6.18 \times 10^5 \text{ m/s}^2$$



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

$$F_B = i l B \sin \theta$$

$$l = 60.1 \text{ m}$$

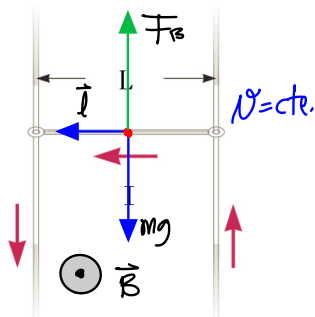
$$i = 2.72 \text{ A}$$

$$B = 58 \mu\text{T} \quad \theta = 68.2^\circ$$

$$F = (2.720)(60.1)(58 \times 10^{-6}) \sin 68.2$$

$$F = 8.4629 \text{ N}$$

$$\vec{F} = 8.46 \text{ } (-\hat{x}) \text{ N}$$



$$L = 18.6 \text{ cm}$$

$$I = 7.96 \text{ A}$$

$$M = 19.3 \text{ g}$$

$$F_B = i l \times B$$

$$\Sigma F = 0$$

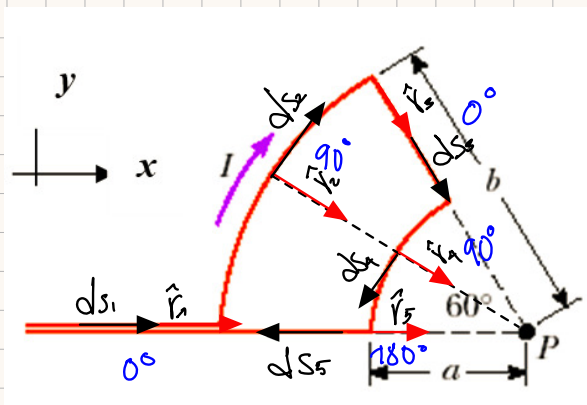
$$(7.96)(0.186)B = (0.0193)(9.8)$$

$$F_B - mg = 0$$

$$B = 0.1277 \text{ T}$$

$$i l B \sin 90^\circ = mg$$

$$B = 0.128 \text{ T}$$



$$\vec{B}_p = \vec{B}_1 + \vec{B}_2 + \vec{B}_3 + \vec{B}_4 + \vec{B}_5 = \vec{B}_2 + \vec{B}_4$$

$$\phi_B = (3t+1)(t-2) \text{ mWb}$$

$$R = 2.0 \text{ m}$$

$$\dot{\phi}_B = 3(t-2) + (3t+1)$$

$$\dot{\phi}_B = 3t - 6 + 3t + 1$$

$$\dot{\phi}_B = (6t - 5) \text{ mWb/s}$$

$$\mathcal{E}_L = -\dot{\phi}_B = -(6t - 5) \text{ mV}$$

$$|\mathcal{E}_L| = 6(5.50) - 5 = 28 \text{ mV}$$

$$l = 18.0 \text{ m} \quad \text{y} \quad d = 6.00 \text{ mm}$$

$$R = \frac{(1.7 \times 10^{-8})(18.0)}{\frac{\pi}{4} (6 \times 10^{-3})^2} = 0.0108 \Omega$$

$$28 \text{ mV} = i (0.0108 \Omega)$$

$$i = 2.5926 \text{ A}$$

$$\phi_B = \vec{B} \cdot \hat{n} A$$

Flujo Creciente y $\phi_B > 0$

i y \mathcal{E} inducidos
Son Negativos

