

teste

$$a) \quad |E_+| = \frac{kQ}{\frac{a^2}{9}} \quad |E_-| = \frac{kQ}{\frac{4a^2}{9}}$$

$$E_T = E_+ + E_- = \frac{kQ}{a^2} \left( 9 + \frac{9}{4} \right) = \frac{45}{4} \frac{kQ}{a^2}$$

$$\vec{E} = \frac{45}{4} \cdot \frac{kQ}{a^2} \hat{x}$$

$$b) \quad U = k \frac{qQ}{a} + \frac{kq(-Q)}{a} = 0$$

$$c) \quad \vec{F}_1 = F_{Qp} \quad \vec{F}_2 = F_{-qp}$$

$$|F_1| = k \frac{Qq}{a^2} \quad |F_2| = k \frac{Qq}{a^2}$$

$$\Downarrow$$

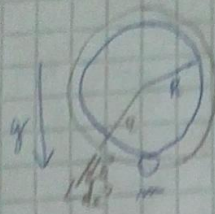
$$|\vec{F}_1| = |\vec{F}_1| \cos 60^\circ = \frac{kqQ}{a^2} \cdot \cos 60^\circ = \frac{kqQ}{2a^2}$$

$$\vec{F}_T = \frac{kQq}{a^2} \hat{x}$$

$$|\vec{F}_2| = |\vec{F}_2| \cos 60^\circ = \frac{kQq}{2a^2}$$



2-



$$\int \vec{E} \cdot d\vec{a} = \frac{Q}{\epsilon_0}$$

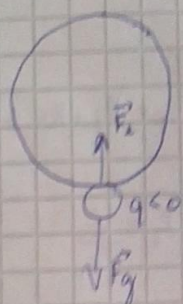
$$\oint \vec{E} \cdot d\vec{a} = \frac{Q}{\epsilon_0}$$

$$E \cdot 2\pi R L = \frac{Q}{\epsilon_0}$$

$$E = \frac{Q}{2\pi R L \epsilon_0} = \left(\frac{Q}{L}\right) \cdot \frac{1}{2\pi R \epsilon_0}$$

$$a) \rightarrow |\vec{E}| = \frac{\lambda}{2\pi R \epsilon_0}$$

b)



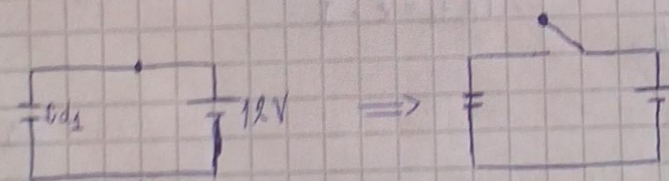
$$|\vec{F}_e| = |\vec{F}_g|$$

$$\frac{\lambda q}{2\pi \epsilon_0 R} = mg$$

$$m = \frac{\lambda q}{2\pi \epsilon_0 R g}$$

3

a)



$d_2$  é o trocador por  $d_2$

$$b) \rightarrow C_A = \frac{\epsilon_0 A}{d_1} \quad C_D = \frac{\epsilon_0 A}{d_2}$$

$$a) \rightarrow Q = C \cdot \Delta V = \frac{\epsilon_0 A}{d_1} \cdot \Delta V \quad \text{é a carga antes mas também é a carga 2}$$

$$c) \Delta V = 12V \text{ (antes)}$$

$$\Delta V \text{ depois} = \frac{Q}{C_d} = \frac{Q d_2}{\epsilon_0 A}$$

d)

$$|\vec{E}| = \frac{\Delta V}{d}$$

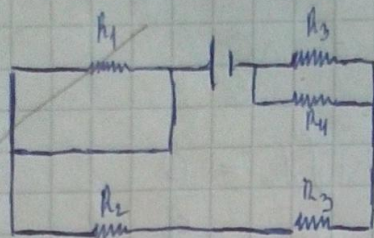
$$\text{Antes} = |\vec{E}| = \frac{12V}{d_1}$$

$$\text{Depois} = |\vec{E}| = \frac{\Delta V \text{ depois}}{d_2} = \frac{Q d_2}{\epsilon_0 A d_2} = \frac{Q}{\epsilon_0 A}$$

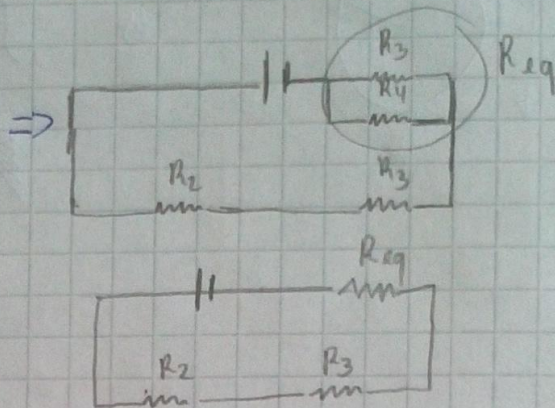


4-

a)



$$I_1 = 0$$



$$\frac{1}{R_{eq}} = \frac{1}{R_3} + \frac{1}{R_4}$$

$$R_{eq} = \frac{R_3 \cdot R_4}{R_3 + R_4}$$

$$R_{Total} = R_2 + R_3 + R_{eq} = R_2 + R_3 + \frac{R_3 R_4}{R_3 + R_4}$$

$$\mathcal{E} = R_T \cdot I \Leftrightarrow I_2 = \frac{\mathcal{E}}{R_T}$$

$$b) P = V \cdot I = R_2 I^2 = R_2 \left( \frac{\mathcal{E}}{R_T} \right)^2 \Leftrightarrow V = RI$$

$$c) P_{Fonte} = \mathcal{E} \cdot I$$

5- Feito na aula anterior