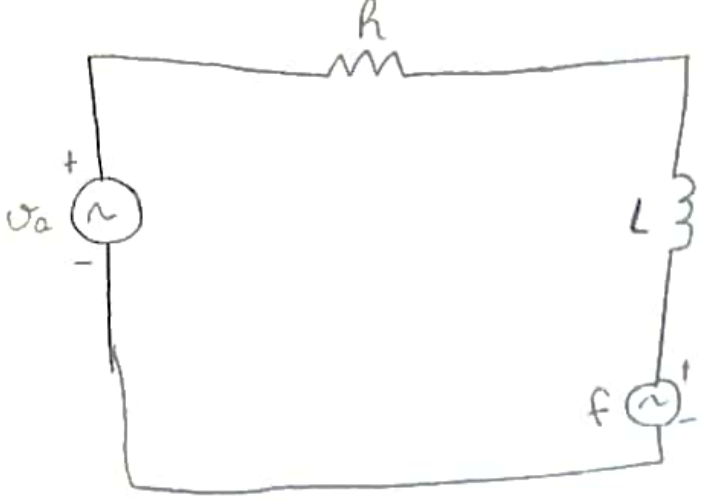
Nome: Bruno Akira Oshiro – 10771667 24/09





Lagrange

$T = \frac{m\dot{x}^2}{2}$ $\quad L = T - V$

$V = \frac{Lq^2}{2}$

$R = \frac{b\dot{x}^2}{2} + \frac{R\dot{q}^2}{2}$ $\quad f = lB\dot{x}\dot{q}$

$\frac{\partial}{\partial t}\left(\frac{\partial L}{\partial \dot{x}}\right) = m\ddot{x}$

$\frac{\partial L}{\partial x} = 0$

$\frac{\partial R}{\partial \dot{x}} = b\dot{x}$

$\Big\} \; m\ddot{x} + b\dot{x} = lB\dot{q}$

$\frac{\partial}{\partial t}\left(\frac{\partial L}{\partial \dot{q}}\right) = 0$

$\frac{\partial L}{\partial q} = -Lq$

$\frac{\partial R}{\partial \dot{q}} = R\dot{q}$

$\Big\} \; Lq + R\dot{q} = v_a - lB\dot{x}$

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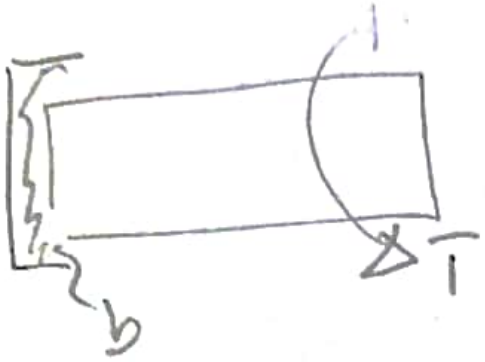
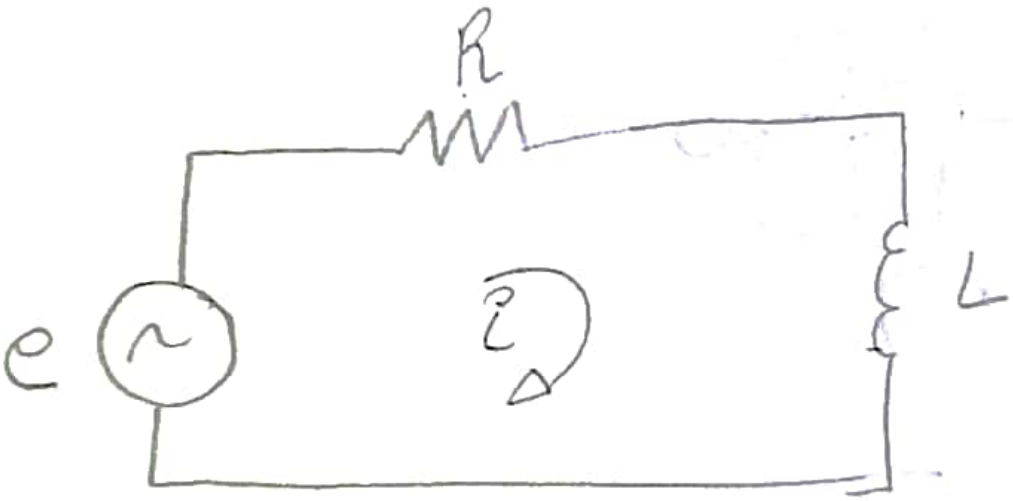
(2)




$$\dot{i}\left(R + LD\right) = e$$

$$J\ddot{\Theta} + B\dot{\Theta} = T$$

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