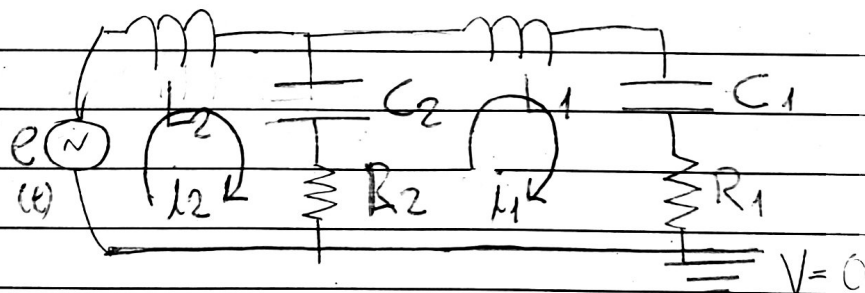
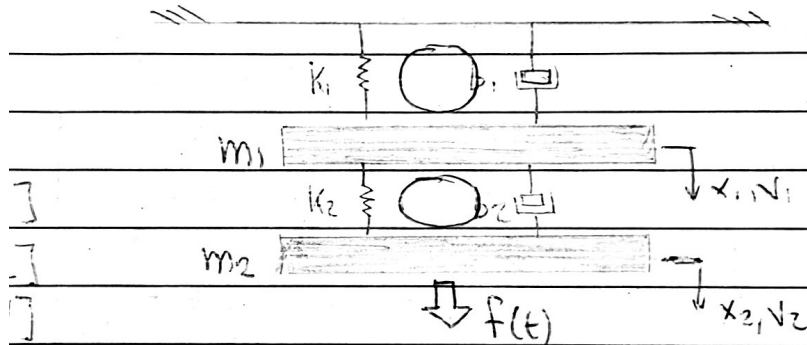


EXEMPLO 1



$$e(t) = L_2 D i_2 + (i_2 - i_1) (1/C_2 D) + (i_2 - i_1) R_2$$

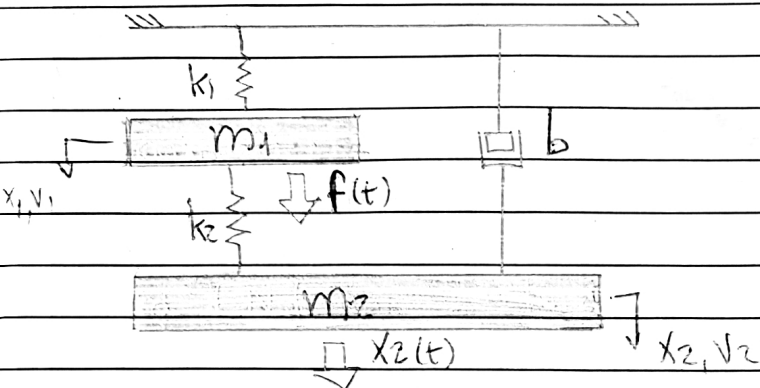
$$f(t) = m_2 D v_2 + (v_2 - v_1) k_2 / D + (v_2 - v_1) b$$

$$f(t) = m_2 \ddot{x}_2 + (\dot{x}_2 - \dot{x}_1) b + (x_2 - x_1) k$$

$$0 = (i_1 - i_2) (1/C_2 D + R_2) + L_1 D i_1 + i_1 (1/C_1 + R_1)$$

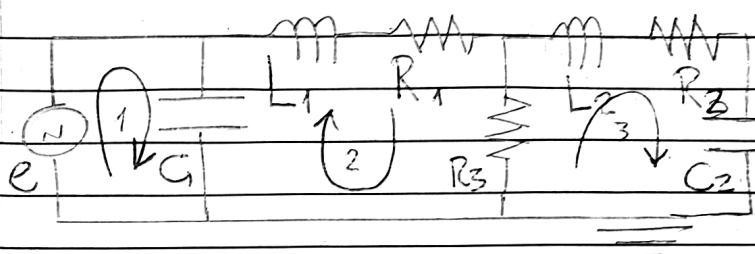
$$\therefore (m_1 \ddot{x}_1 + (b_1 + b_2) \dot{x}_1 + (k_1 + k_2) x_1 = b_2 \dot{x}_2 + b_1 \dot{x}_1 + k_2 x_2 + k_1 x_1$$

EXEMPLO 2

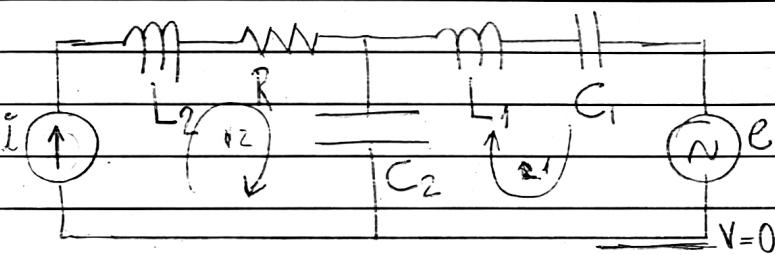


$$\vec{F} \rightarrow V \quad e \quad \vec{v} \rightarrow i$$

EXEMPLO 3 (igual o 3 da aula passada)



$$\vec{F} \rightarrow V \quad e \quad \vec{v} \rightarrow i$$



$$e(t) = (i_1 - i_2) / C_1 D$$

$$0 = (i_2 - i_1) + i_2 (L_1 D + R_1) + (i_2 - i_3) R_3$$

$$0 = (i_3 - i_2) R_3 + i_3 (L_2 D + R_2 + 1/C_2 D)$$

$$i_2 (L_2 D + R) + (i_2 - i_3) / C_2 D = V(t)$$

$$i_2 (L_1 D + 1/C_1 D) + (i_2 - i_1) / C_2 D = e(t)$$

$$(\theta_1 - \theta_2) k_1 = T(t)$$

$$(\theta_2 - \theta_1) k_1 + m_1 \ddot{\theta}_2 + b_1 \dot{\theta}_2 + (\theta_2 - \theta_3) b_3 = 0$$

$$m_1 \ddot{\theta}_2 + \dot{\theta}_2 (b_1 + b_3) + \theta_2 k_1 = \dot{\theta}_3 b_3 + \theta_1 k_1$$

$$(\dot{\theta}_3 - \dot{\theta}_1) b_3 + m_2 \ddot{\theta}_3 + b_2 \dot{\theta}_3 + \theta_2 k_2 = 0$$

$$m_2 \ddot{\theta}_3 + (b_2 + b_3) \dot{\theta}_3 + k_2 \theta_3 = \dot{\theta}_1 b_1$$

$$m_2 \ddot{x}_2 + b_2 \dot{x}_2 + k_2 (x_2 - x_1) = x_1(t)$$

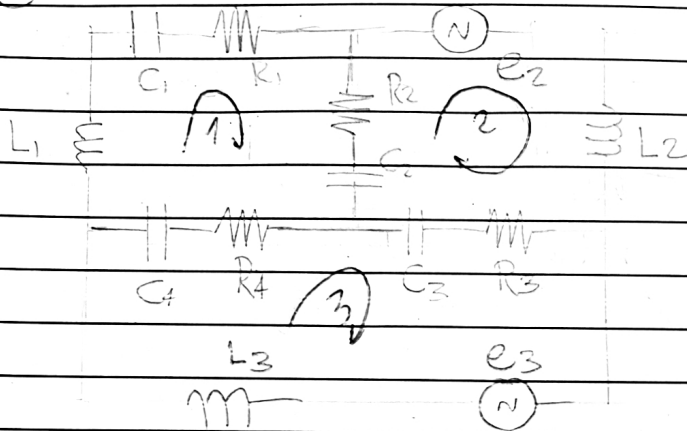
$$m_1 \ddot{x}_1 + k_1 x_1 + k_2 (x_1 - x_2) = e(t)$$

$$m_1 \ddot{x}_1 + (k_1 + k_2) x_1 = x_2 k_2 + e(t)$$

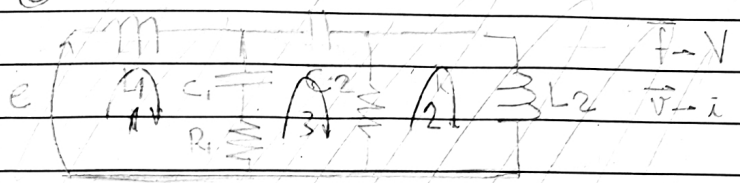
João Vinícius 10771740

Analogia Tipo 1

(3)



(6)



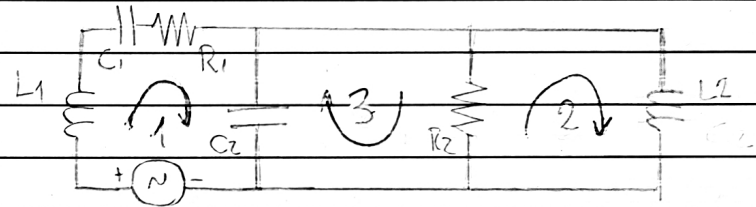
$$i_1 (L_1 D) + (i_1 - i_3) (1/C_1 D + R_1) = e(t)$$

$$(i_3 - i_1) (1/C_2 D + R_2) + i_3 / C_2 D = 0$$

$$i_2$$

$$i_1 (L_1 D + 1/C_1 D + R_1) + (i_1 - i_2) (R_2 + 1/C_2 D) + (i_1 - i_3) (R_4 + 1/C_4 D) = 0$$

$$i_2 (L_2 D) + (i_2 - i_3) (R_2 + 1/C_2 D) + (i_2 - i_1) (R_2 + 1/C_2 D) = e_2(t)$$



$$i_3 (L_3 D) + (i_3 - i_1) (1/C_4 D + R_4) + (i_3 - i_2) (1/C_2 D + R_2) = e_3(t)$$

$$i_1 (L_1 D + 1/C_1 D + R_1) + (i_1 - i_3) (1/C_2 D) = e_1(t)$$

$$(i_3 - i_1) (1/C_2 D) + (i_3 - i_2) (R_2) = 0$$

$$(i_2 - i_3) (R_2) + i_2 L_2 D = 0$$

$$m_1 \ddot{x}_1 + (b_1 + b_2 + b_4) \dot{x}_1 + (k_1 + k_2 + k_4) x_1 = b_2 \dot{x}_2 + k_2 x_2 + b_4 \dot{x}_3 + k_4 x_4$$

$$m_1 \ddot{x}_1 + b_1 \dot{x}_1 + (k_1 + R_3) x_1 = k_3 x_3$$

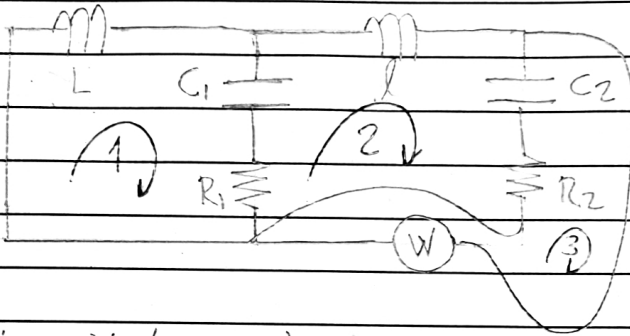
$$m_2 \ddot{x}_2 + (b_2 + b_3) \dot{x}_2 + (k_2 + k_3) x_2 = e_2(t) + b_3 \dot{x}_3 + k_3 x_3$$

$$m_2 \ddot{x}_2 + b_2 \dot{x}_2 = b_2 \dot{x}_3$$

$$m_3 \ddot{x}_3 + (b_3 + b_4) \dot{x}_3 + (k_3 + k_4) x_3 = e_3(t) + b_4 \dot{x}_2 + k_4 x_2$$

$$b_2 (\dot{x}_3 - \dot{x}_2) + k_2 (x_3 - x_1) = 0$$

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$$i_1 L D + (i_1 - i_2)(1/C_1 D + R_1) = 0$$

$$i_2 (1/D + 1/C_2 D + R_2) + (i_2 - i_1)(1/C_1 D + R_1) = 0$$

$$(i_3 - i_2)(1/C_2 D + R_2) = 0 \text{ ou } w(t)$$

a) $w(t) = x_3$

$$M \ddot{x}_1 + b_1 \dot{x}_1 + k_1 x_1 = b_1 \dot{x}_2 + k_1 x_2$$

$$m \ddot{x}_2 + b_2 \dot{x}_2 + k_2 x_2 = b_1 \dot{x}_1 + k_1 x_1 + x(t)$$

$$b_2 (\dot{w} - \dot{x}_2) + k_2 (w - x_2) = 0$$

b)

$$M \ddot{x}_1 + b_1 \dot{x}_1 + k_1 x_1 = b_1 \dot{x}_2 + k_1 x_2$$

$$m \ddot{x}_2 + b_2 \dot{x}_2 + k_2 x_2 = b_1 \dot{x}_1 + k_1 x_1 + f(t)$$

$$b_2 (\dot{x}_3 - \dot{x}_2) + k_2 (x_3 - x_2) = w(t)$$