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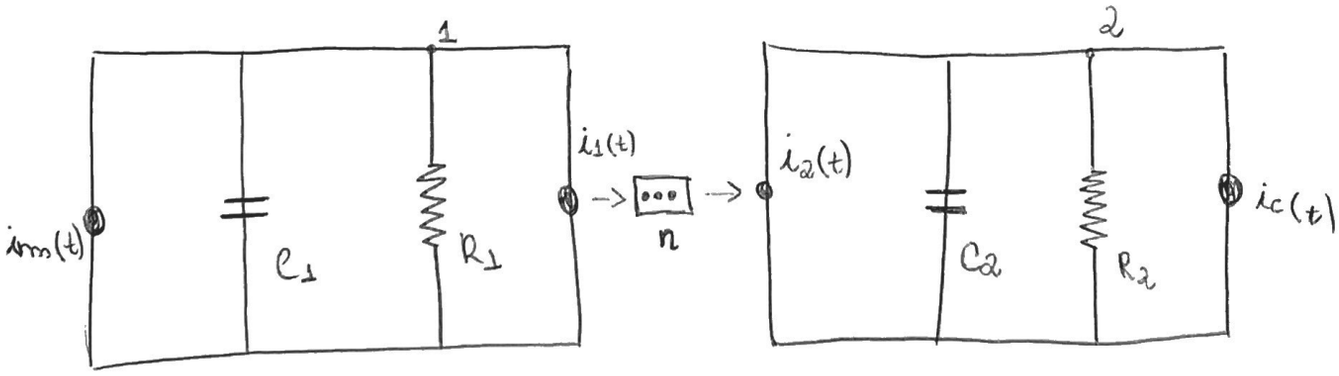
PME 3380

Atividade de Aula 15/09

① a)

Analogia Tipo 2:



Nó 1:

$$V_1 \left(C_1 D + \frac{1}{R_1} \right) = i_n - i_1$$

Nó 2:

$$V_2 \left(C_2 D + \frac{1}{R_2} \right) = i_2 - i_c$$

Transformador:

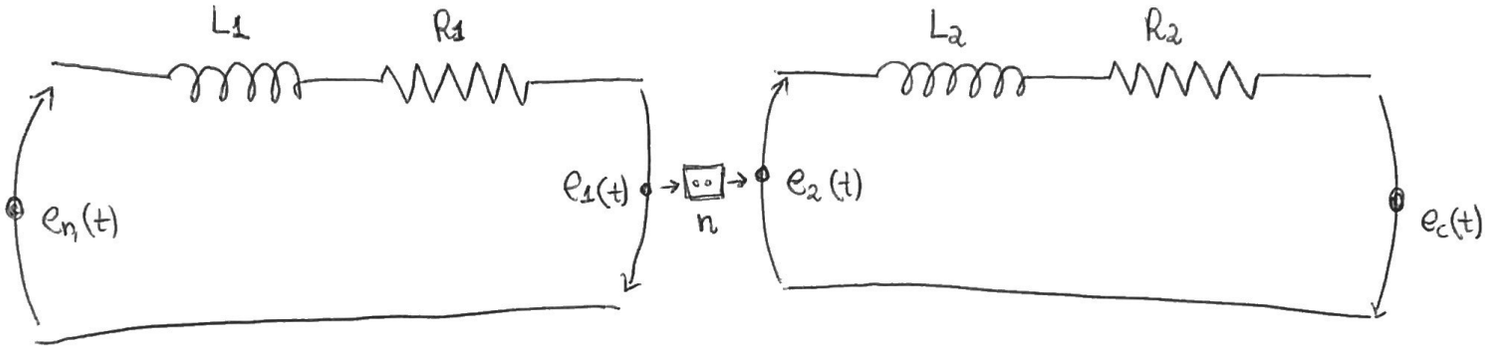
$$i_2 = n\, i_1$$

$$\dot{\theta}_2 = \dot{\theta}_1 / n$$

$$\begin{cases} J_1 \ddot{\theta}_1 + B_1 \dot{\theta}_1 = T_n - T_1 \\ J_2 \ddot{\theta}_2 + B_2 \dot{\theta}_2 = T_2 - T_c \end{cases}$$

b)

Analogia tipo 1

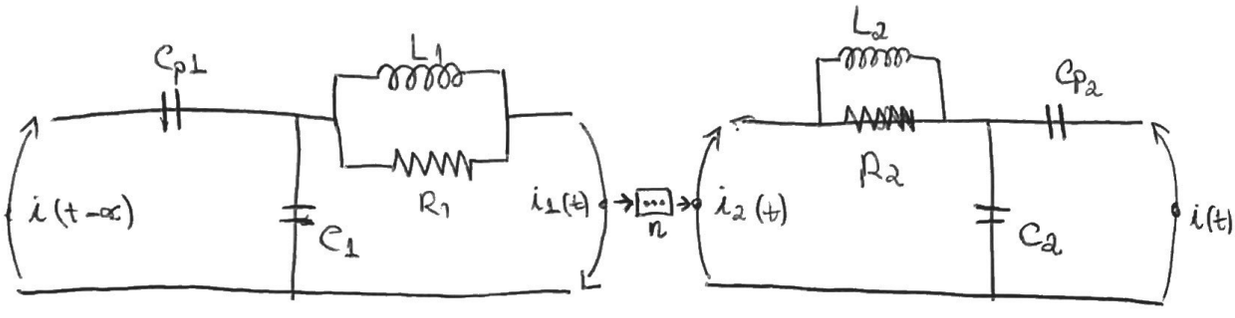


$$(L_1 D + R_1) i_1 + e_1(t) = e_n(t)$$

$$(L_2 D + R_2) i_2 + e_c(t) = e_2(t)$$

$$\begin{cases} J_1 \ddot{\theta}_1 + B_1 \dot{\theta}_1 = T_n - T_1 \\ J_2 \ddot{\theta}_2 + B_2 \dot{\theta}_2 = T_2 - T_c \end{cases} \qquad \dot{\theta}_2 = \dot{\theta}_1 / n$$

(2) Analogia tipo 2



$V_{F1} + V_G$ $\qquad$ $V_G - V_{F2}$

Lei das Malhas:

$$i_1 \left(\frac{1}{C_1 D} + \frac{1}{C_{P1} D} + L_1 D + R_1 \right) - i_2 \left(\frac{1}{C_{P1} D} \right) = V_{F1} + V_G$$

$$i_2 \left(\frac{1}{C_2 D} + \frac{1}{C_{P2} D} + L_1 D + R_1 \right) - i(t-\alpha) \left(\frac{1}{C_{P2} D} \right) = V_G - V_{F2}$$

$$\begin{cases} m_1 \ddot{x}_1 + b_1 \dot{x}_1 + (k_1 + k_{P1}) x_1 - k_{P1} \cdot z(t) = F_1 + M \cdot \ddot{x}_G \\ m_2 \ddot{x}_2 + b_2 \dot{x}_2 + (k_2 + k_{P2}) x_2 - k_{P2} \cdot z(t-\alpha) = M \ddot{x}_G - F_2 \end{cases}$$