Gabriel Pinheiro 10336595

1- $J_1 \dot{w}_1 + B_1 w_1 + T_1 = T_m$

$J_2 \dot{w}_2 + B_2 w_2 + T_C = T_2 = n T_1$

$J_2 \dot{w}_2 + B_2 w_2 + T_C = n(T_m - J_1 \dot{w}_1 - B_1 w_1)$

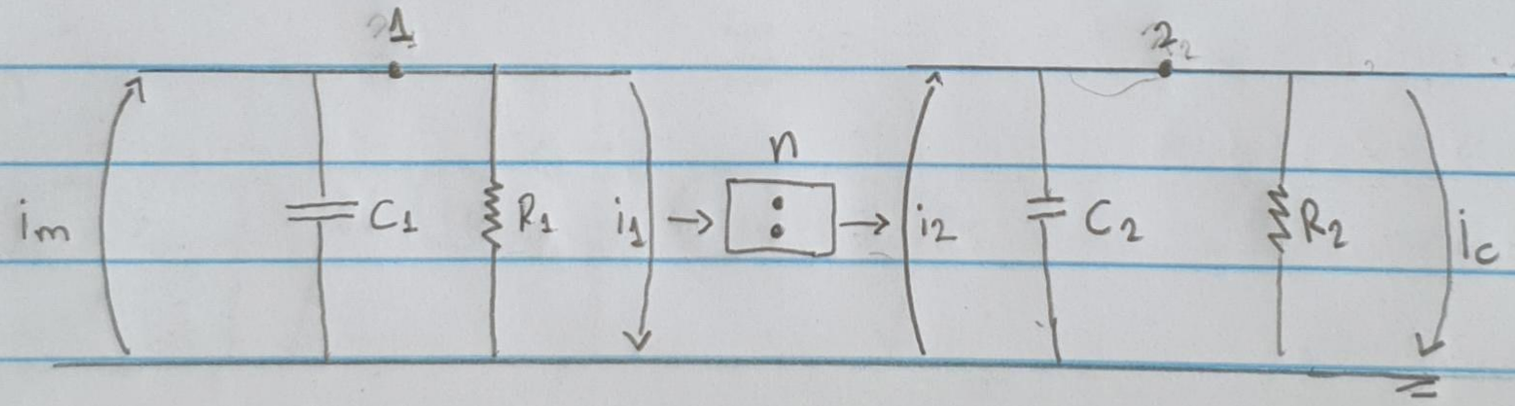
$J_2 \dot{w}_2 + B_2 w_2 + T_C = n(T_m - J_1 n \dot{w}_2 - B_1 n w_2)$

$\dot{w}_2 (J_2 + n^2 J_1) + w_2 (B_2 + n^2 B_1) + T_C = n T_m$

$\underline{J_{eq2} \dot{w}_2 + B_{eq2} w_2 + T_C = T_m \cdot n}$

2.

a)

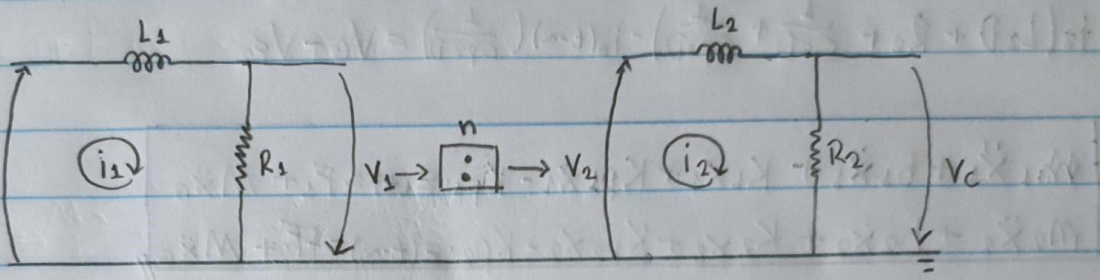


Nó 1: $(C_1 D + \frac{1}{R_1}) V_1 = i_m - i_1$

Nó 2: $(C_2 D + \frac{1}{R_2}) V_2 = i_2 - i_c$

$$J_1 \dot{w}_1 + B_1 w_1 = T_m - T_1$$
$$J_2 \dot{w}_2 + B_2 w_2 = T_2 - T_c$$

b)

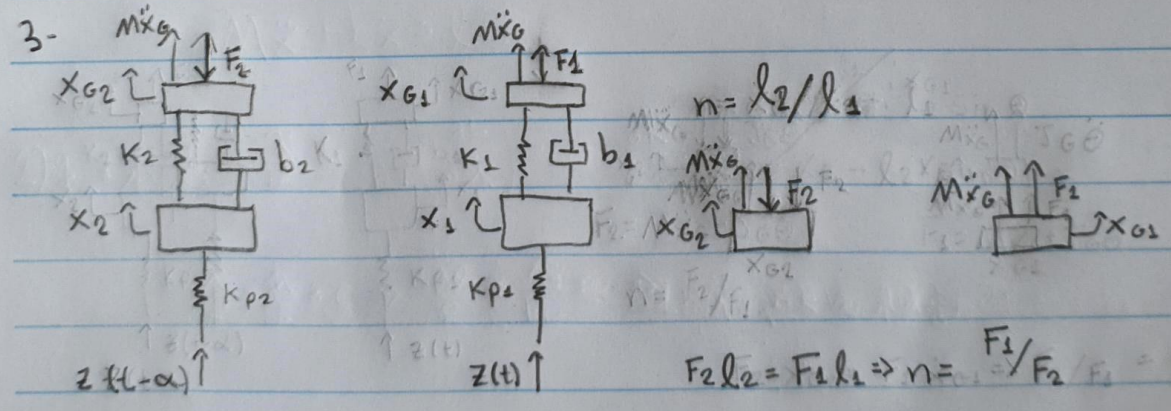


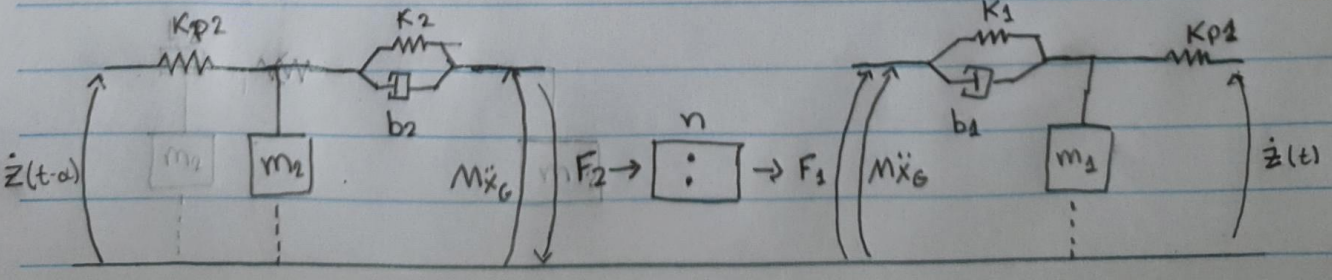
Malha 1: $L_1 D \cdot i_1 + R_1 \cdot i_1 = V_m - V_1$

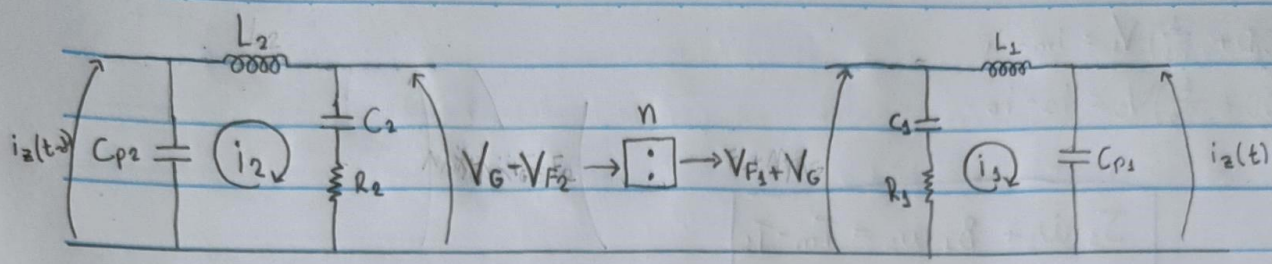
Malha 2: $L_2 D \cdot i_2 + R_2 i_2 = V_2 - V_c$

$$J_1 \dot{w}_1 + B_1 w_1 = T_m - T_1$$
$$J_2 \dot{w}_2 + B_2 w_2 = V_2 - V_c$$

3-







Malha 1: $i_1\left(L_1D + R_1 + \frac{1}{C_1D} + \frac{1}{C_{p1}D}\right) - i_z(t)\left(\frac{1}{C_{p1}D}\right) = V_{F1} + V_G$

Malha 2: $i_2\left(L_2D + R_2 + \frac{1}{C_2D} + \frac{1}{C_{p2}D}\right) - i_z(t-\alpha)\left(\frac{1}{C_{p2}D}\right) = V_G - V_{F2}$

$$m_1\ddot{x}_1 + b_1\dot{x}_1 + K_1x_1 + K_{p1}x_1 - K_{p1}\cdot z(t) = F_1 + M\ddot{x}_G$$

$$m_2\ddot{x}_2 + b_2x_2 + K_2x_2 + K_{p2}x_2 - K_{p2}\cdot z(t-\alpha) = -F_2 + M\ddot{x}_G$$