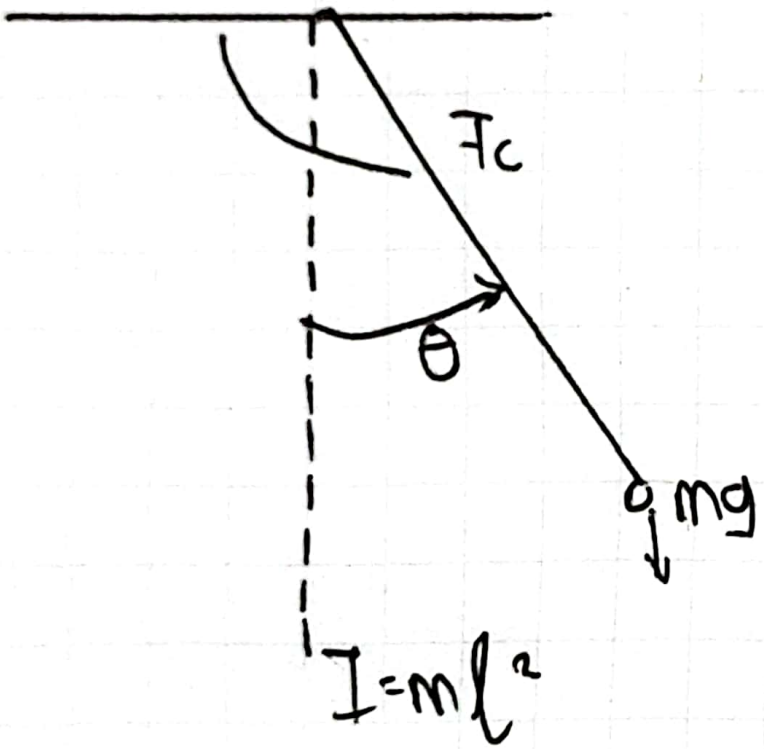
Tarea #3



$$T_c - mgl\sin\theta - J\ddot{\theta}$$

$$\ddot{\theta} + \frac{g}{l}\sin\theta = \frac{T_c}{ml^2}$$

$$\ddot{\theta} = \frac{T_c}{ml^2} - \frac{g}{l}\sin\theta$$

$$q_1 = \theta_1$$
$$\dot{q}_1 = q_2 = \theta_2$$
$$\dot{q}_2 = \ddot{q}_1 = \ddot{\theta}$$

$$\begin{bmatrix} \dot{q}_1 \\ \dot{q}_2 \end{bmatrix} = \begin{bmatrix} 0 & 1 \\ -\frac{g}{l}\sin\theta & 0 \end{bmatrix}\begin{bmatrix} q_1 \\ q_2 \end{bmatrix} + \begin{bmatrix} 0 \\ 1/ml^2 \end{bmatrix} T_c$$

$$[q_1] = [1 \;\; 0]\begin{bmatrix} q_1 \\ q_2 \end{bmatrix}$$