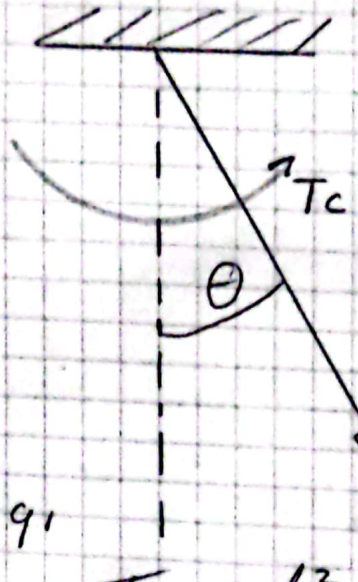
Tarea 4

Pendulo



$$I\ddot{\theta} = T_c - mgl\,\text{sen}\,\theta$$

$$\frac{T_c}{ml^2} = \ddot{\theta} + \frac{g}{l}\,\text{sen}\,\theta$$

$$\ddot{\theta} = \frac{T_c}{ml^2} - \frac{g}{l}\,\text{sen}\,\theta$$

$$q_1 = \theta$$

$$q_2 = \dot{q}_1 = \dot{\theta}$$

$$\dot{q}_2 = \ddot{q}_1 = \ddot{\theta}_1$$

$$\dot{q}_2 = \frac{T_c}{ml^2} - \frac{g}{l}\,\text{sen}\,q_1$$

$I = ml^2$

$m = 1$

$l = 1$

$g = 9{,}8$

$$\begin{vmatrix} \dot{q}_1 \\ \dot{q}_2 \end{vmatrix} = \begin{bmatrix} 0 & 1 \\ -\frac{g\,\text{sen}\,\theta}{l} & 0 \end{bmatrix} \begin{vmatrix} q_1 \\ q_2 \end{vmatrix} + \begin{vmatrix} 0 \\ \frac{1}{ml^2} \end{vmatrix} |T_c|$$

$$|q_1| = \begin{bmatrix} 1 & 0 \end{bmatrix} \begin{bmatrix} q_1 \\ q_2 \end{bmatrix}$$