

Parte c) Auxiliar Extra C1

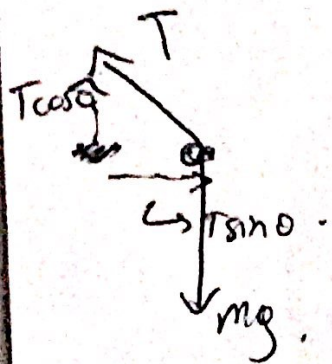
Tenemos que:

$$\ddot{z} = -gt + \frac{V_0}{2} \sin\left(\frac{V_0}{L} t\right)$$

DCL $T_z = +T \cos \theta - mg = T \cos\left(\frac{V_0}{L} t\right) - mg.$

$$\sum F_z = m \ddot{z}$$

$$\ddot{z} = -g + \frac{V_0^2}{2L} \cos\left(\frac{V_0}{L} t\right)$$



$$\Rightarrow T \cos \theta - mg = m \left(-g + \frac{V_0^2}{2L} \cos\left(\frac{V_0}{L} t\right) \right)$$

$$\Rightarrow T \cos\left(\frac{V_0}{L} t\right) = \frac{V_0^2}{2L} m \cos\left(\frac{V_0}{L} t\right)$$

$$\Rightarrow \boxed{T = \frac{V_0^2 m}{2L}}$$