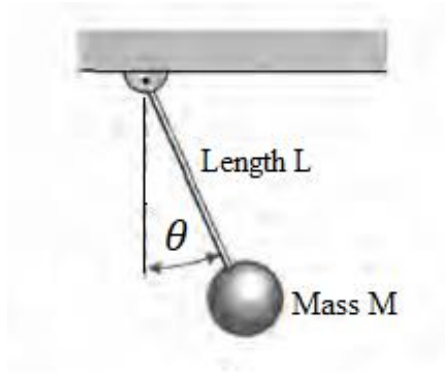


Pendulum Oscillator

Problem Statement-

Consider the pendulum oscillator shown in Figure. The torque on the mass is $T = mgL\sin\theta$ where g is the gravitational constant. The equilibrium condition for the mass is $\theta_0 = 0^\circ$. This approximation is reasonably accurate for $-\pi/4 < \theta < \pi/4$.

Create a Simulink model for Pendulum Oscillator considering the above conditions.



Equation –

$$I_0 \frac{d^2\theta}{dt^2} + mgL\theta = T_{in}$$

Where,

$$I_0 = 0.088 \text{ Kg-m}^2, L = 0.43\text{m}, g = 9.81 \text{ m/s}^2$$

Instructions for modeling-

1. While giving names to blocks, rename gains as **Gain1, Gain2, ...from top to bottom** and Integrators as **Integrator1, Integrator2... from left to right**.
2. Use **only** calculated value for the gain blocks rather than assigning it to a variable.

