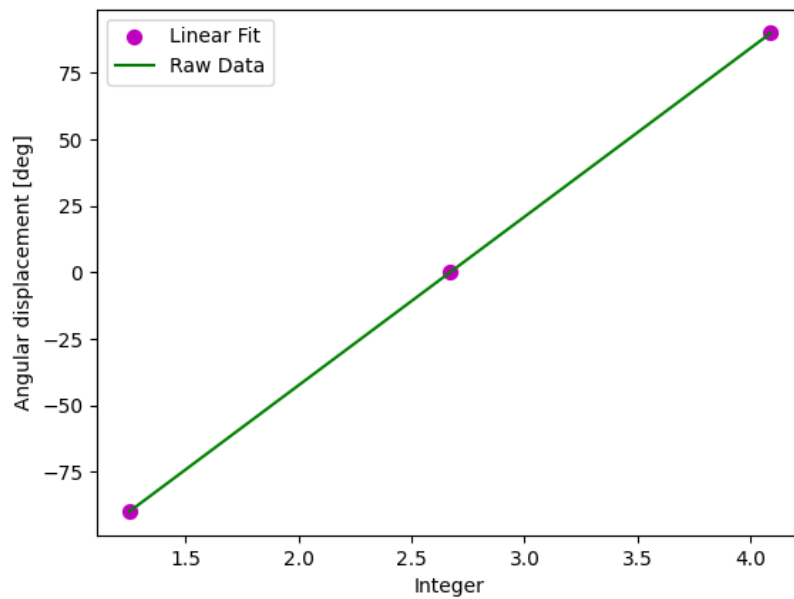


Mass Pendulum Modeling – Dyab Asdi

1)



Integer [Volts]	1.25	2.67	4.09
Angular Displacement [deg]	-90	0	90

Slope [deg/V]	63.38
Intercept [deg]	-169.23
R^2	1.0

The slope signifies that with each 1-volt change, the angular displacement increases by 63.38 degrees. The intercept indicates the angular displacement at zero voltage. An R^2 value of 1.0 indicates a perfect fit and signifies a precise linear calibration representation.

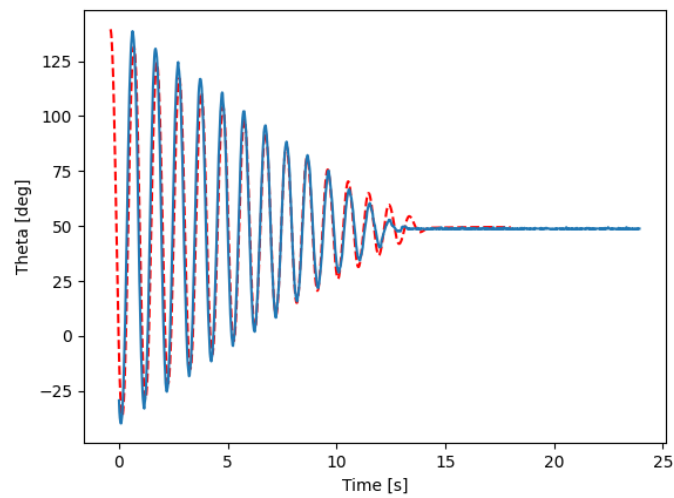
2)

a.

Coefficient Name	Value
Linear Coefficient (b0)	0.00001
Torque Coefficient (t0)	0.007

The above values for the linear coefficient and torque coefficient allowed me to match my simulation to my measured response.

b.



c.

Parameter	Value
Mass	0.157 kg
Gravity	9.81 m/s ²
Moment of Inertia	0.00675
Length to CG	0.19925

- 3) To determine the dominant form of friction, we used both t_0 and b_0 for adjustments. The torque coefficient t_0 , however, had the greatest impact on the system, and the linear coefficient b_0 had a smaller effect. We made sure to just adjust the middle of the system the best we could rather than the ends, because the ends are more prone to errors.