Between-Labs Assignment
(due by Wed/Thu Lab)

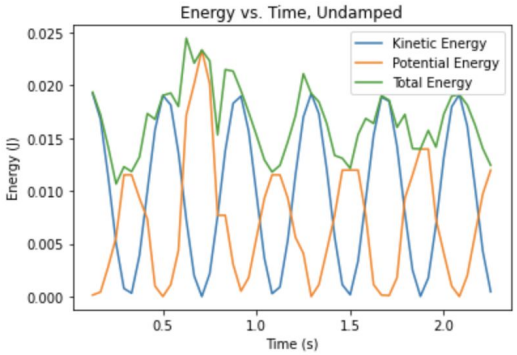
Submit the answers to questions Slide 19 on Gradescope before Wed/Thu lab.

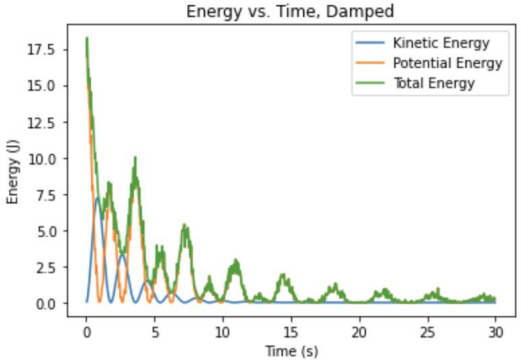
Energy plots

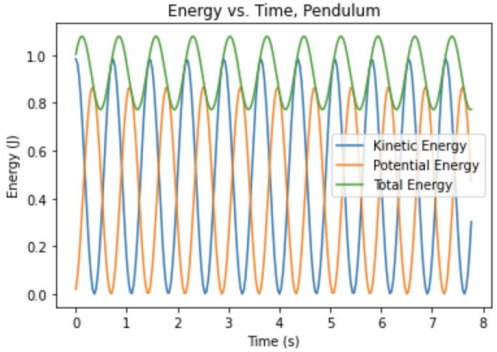
- Use the best-fit data from Lab 3A and plot the kinetic energy, potential energy and total energy (sum of KE and PE) vs time.
- What is the Q factor of the system from Lab 3A?
- Use the best-fit data from Lab 3B and plot the kinetic energy, potential energy and total energy (sum of KE and PE) vs time.
- What is the Q factor of the system in Lab 3B? Apply your best parameters to the formula below.
- Plot the KE, PE and total energy (per unit mass) for 5 oscillations of your pendulum data.

Energy plots

- The Lab 3A Q factor is infinity because the system is undamped
- The Lab 3B Q factor is 5.26







Review moment of inertia

- **Review moment of inertia :** https://openstax.org/books/university-physics-volume-1/pages/10-4-moment-of-inertia-and-rotational-kinetic-energy
- **Review torque :** https://openstax.org/books/university-physics-volume-1/pages/10-6-torque

Review Physical pendulum

- Review physical pendulums : https://openstax.org/books/university-physics-volume-1/pages/15-4-pendulums
- 2 min video demonstrating difference in time periods for simple and physical pendulums.
- 7 min video going over principles of simple and physical pendulums.

Physical pendulums

- Find some cardboard boxes to use as Physical pendulums for Lab 3D. Cut out two different shapes - one in a rectangular shape and the other in a equilateral triangle shape - like the examples shown below.