

## Homework Assignment #10

(due: Friday, November 16, 4:30 pm)

1. **Matrix Equation:** Taylor problem (11.2) (7P)

2. **Normal Frequencies and Modes** Taylor problem (11.6) (7P)

3. **Coupled Oscillators With Weak Damping:** Taylor problem (11.10)

For part (c) rewrite your equations from part (b) so that they have the form of Eq. (5.28). Then use the solution Eq. (5.37) and rewrite the solution in the form of the first line of Eq. (5.11). (7P)

4. **Double Pendulum** Taylor problem (11.15) (7P)

5. **Three Coupled Pendulums:** Taylor problem (11.22) (8P)

6. **Triatomic Molecule:** Taylor problem (11.32)

Use units such that  $m = k = 1$  and define  $\lambda = M/m$ . This means that your frequencies are in units of  $\omega_0 = \sqrt{k/m}$  but you may ignore this in your calculation. (7P)

7. **Normal Coordinates:** Taylor problem (11.35) (7P)