

**MECH 3140**  
**Homework #3**  
**(Problems should be worked by Friday, 1/30/12)**

**Problems Using Newtons Methods**

Problems 4.4, 4.8, 4.11, 4.12, 4.13, 4.15-4.17, 4.19, 4.20

When working the given problems using Newton's Methods get in the habit of answering the following questions

- a. What is the order?
- b. How many DOF?
- c. Does this system reach steady state? If so what is the steady-state value?
- d. What are the equivalent mass, damping, and spring constants?
- e. Generate the equations of motion
- f. Solve the equations of motion for  $x(t)$  or  $v(t)$  if the differential equations are 1<sup>st</sup> or 2<sup>nd</sup> order

**Problems Using Energy Methods** (once we have covered energy methods)

Problems 4.22, 4.24, 4.26 4.27, 4.28

Consider working these using Newton's Methods for comparisons