Name: _____

Section: _____

R·I·T School of Mathematical Sciences

Homework 6

MATH 211

1. A simple pendulum rotates around a point, Q. The pendulum rod is $l = 4.9$ meters long and is released from rest at $\theta(0) = \pi/6$ radians. Find the equation of angular motion of the pendulum.

2. A $\frac{1}{2}$ slug mass is attached to a spring with spring constant 2 lb/ft. The mass is initially released from rest from a point 2 feet below equilibrium position and the subsequent motion takes place in a medium that offers a damping force numerically equal to 2 times the instantaneous velocity. Find the equation of motion of the mass driven by an external force equal to $f(t) = 25\cos t$.

3. Find the charge and current as functions of time for a circuit with inductance 1H, resistance 100Ω, capacitance 0.0004F and impressed voltage 25V, if the initial current and charge are both zero.

4. A beam of length 10m is embedded at both ends. Find the deflection of the beam if a load of $w(x) = 12EIx$ is uniformly distributed along its length.