**Chem 6854: Physical Chemistry**

**Homework Assignment #2**

**Solving Homogenous, 2nd order, constant coefficient Diff. Eq.;**

**Using Diff. Eq to find solutions to classical physics problems**

35 points total

Show all work !

Due Wednesday 10 February

**Show work and answers:**

2.1 Text problems 2-1a , c and e (3 pts each) page 54 9 pts

2.2 Text problems 2-2a, b (3 pts each) page 55 6 pts

2.3. Text problem 2-5 (3 pts) page 55 4 pts

2.4 Text problem 2-6 (3 pts) page 55 4 pts

2.5 Text problem 2-7. For simplicity, use capital X= x-xo rather than the ξ (Greek `chisee’, a rotten symbol to write or type). Note also, that to find C in the general solution X= Csin((k/m)1/2t, you use the initial conditions for velocity at t=0 = vo =dX/dt at t=0.

Instead of `interpreting and discussing’ the final derived equation as stated in text provide an Excel plot of X(t) vs t for the specific case of k=5, , m=1, vo =20 from t=0 to 3π for the derived equation

X(t) = vo(m/k)1/2 sin ([k/m]1/2t) 6 pts

2.6 Problem 2.18 (the pendulum at low displacement θ where sin θ~ θ) 6 pts

(See also: Lab #2)