**% Name (first and last)**

**% CSC 2262**

**% cs2262xx**

**% Sample 6b**

**t = 0:.001:8;**

**u0 = [.7 0 .2 0 .4 0];**

**options = odeset('RelTol',1e-7,'AbsTol',1e-7);**

**[t u] = ode45('sample6bf',t,u0,options);**

**line1x = [0 8];**

**line1y = [0 0];**

**figure(6);**

**plot(t,u(:,1),'b',t,u(:,3),'r',t,u(:,5),'g',line1x,line1y,'k');**

**axis([0 8 -1 1]);**

**set(gca,'xtick',0:8);**

**set(gca,'ytick',-1:.2:1);**

**xlabel('t');**

**ylabel('x1(blue), x2(red), x3(green)');**

**title('Sample 6b, Figure 1');**

**figure(2);**

**plot(t,u(:,2),'b',t,u(:,4),'r',t,u(:,6),'g',line1x,line1y,'k');**

**axis([0 8 -3 3]);**

**set(gca,'xtick',0:8);**

**set(gca,'ytick',-3:3);**

**xlabel('t');**

**ylabel('v1(blue), v2(red), v3(green)');**

**title('Sample 6b, Figure 2');**

**% function sample6bf**

**function f = sample6bf(t,uf)**

**m1 = .8;**

**m2 = .6;**

**m3 = .5;**

**k1 = 4.3;**

**k2 = 5.1;**

**k3 = 4.6;**

**k4 = 5.4;**

**x1 = uf(1);**

**v1 = uf(2);**

**x2 = uf(3);**

**v2 = uf(4);**

**x3 = uf(5);**

**v3 = uf(6);**

**f = zeros(6,1);**

**f(1) = v1;**

**f(2) = 1/m1 \* ( -k1\*x1 + k2\*(x2-x1) );**

**f(3) = v2;**

**f(4) = 1/m2 \* ( -k2\*(x2-x1) + k3\*(x3-x2) );**

**f(5) = v3;**

**f(6) = 1/m3 \* ( -k3\*(x3-x2) - k4\*x3 );**