**% Name (first and last)**

**% CSC 2262**

**% cs2262xx**

**% Sample 6a**

**t = 0:.001:20;**

**u0 = [.5 0];**

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

**[t u] = ode45('sample6af',t,u0,options);**

**line1x = [0 20];**

**line1y = [0 0];**

**plot(t,u(:,1),'b',t,u(:,2),'r',line1x,line1y,'k');**

**axis([0 20 -5 6]);**

**set(gca,'xtick',0:2:20);**

**set(gca,'ytick',-5:6);**

**xlabel('t');**

**ylabel('x(blue), v(red)');**

**title('Sample 6a');**

**% function sample6af**

**function f = sample6af(t,uf)**

**m = 3.6;**

**c = 2.8;**

**k = 19;**

**x = uf(1);**

**v = uf(2);**

**f = zeros(2,1);**

**f(1) = v;**

**f(2) = 1/m \* ( 32\*sin(3\*t)\*cos(5\*t) - c\*v - k\*x );**