```
% 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       );
```