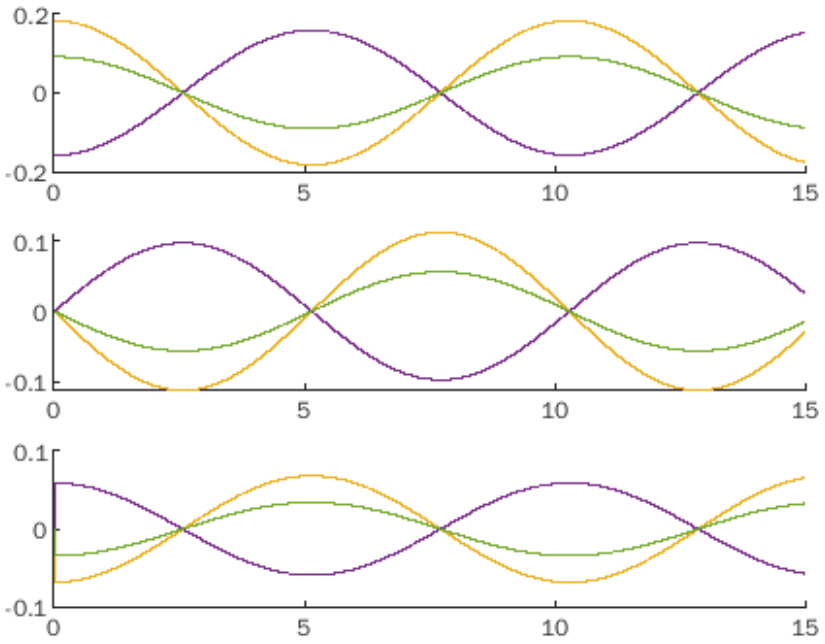
```
clear;
close all;
clc;
[m1,m2,m3,m4,m5]=deal(10);
[k1,k2,k3,k4,k5,k6]=deal(1);
%disp(m1);
K = [k1+k2 -k2 0 0 0;
    -k2, k2+k3, -k3 0 0;
    0 -k3 k3+k4 -k4 0;
    0 0 -k4, k4+k5, -k5;
    0 0 0 -k5, k4+k5];
M = [m1 0 0 0 0;
    0 m1 0 0 0;
    0 0 m2 0 0;
    0 0 0 m2 0
    0 0 0 0 m2;];
%disp(K);
mode=5;
[phi,lambda]=eig(K,M);
Wn=sqrt(diag(lambda));
%disp(phi);
%print();
fprintf('Eigne Values is \n');
disp(lambda);
fprintf('Natural Frequeniy is \n');
disp(Wn);
%M;
%M = diag(A)
n=5;
t=15; %random time
tStep=0.001; %this is a steping function
[phi,lambda]=eig(K,M);
Wn=sqrt(diag(lambda)); % Natural frequencies using eigenvalues
iterations=t/tStep; % total number of iterations
tVector=tStep.*(1:iterations); % time vector (for plotting purposes)

% Pre-allocate arrays for speed
x=zeros(iterations,n);
v=zeros(iterations,n);
a=zeros(iterations,n);
x(1,:)=phi(:,mode); % initial displacements from calss
for i=2:iterations
    for j=1:n
        a(i,j)=(-K(j,:)./M(j,j))*(x(i-1,:)');
        v(i,j)=v(i-1,j)+a(i,j)*tStep;
        x(i,j)=x(i-1,j)+v(i,j)*tStep;
    end
end

% Plot the results
for k=1:n
    subplot(3,1,1); hold on;
```

```
    plot(tVector,x(:,k))
    subplot(3,1,2); hold on;
    plot(tVector,v(:,k))
    subplot(3,1,3); hold on;
    plot(tVector,a(:,k))
end
```

```
Eigne Values is
    0.0268         0         0         0         0
         0    0.1000         0         0         0
         0         0    0.2000         0         0
         0         0         0    0.3000         0
         0         0         0         0    0.3732

Natural Frequeniy is
    0.1637
    0.3162
    0.4472
    0.5477
    0.6109
```



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