**Part1**

clear all

close all

clc

num=[1 2]

den=[1 3 -4]

sys=tf(num,den)

figure(1)

impulse(sys)

figure(2)

step(sys)

figure(3)

controlSystemDesigner('bode',sys)

figure(4)

nyquist(sys)

figure(5)

rlocus(sys)







**Part2**

clear all

close all

clc

%%%%%Q1

num=[10]

den=[1 2]

sys=tf(num,den)

figure(1)

step(sys)

%Q2

num1=[5]

den1=[2 1]

sys1=tf(num1,den1)

num2=[5]

den2=[5 1]

sys2=tf(num2,den2)

%%%Q3

figure(2)

impulse(sys,sys1,sys2)

legend('sys','sys1','sys2')

%Q4

figure(3)

hold on

step(sys)

step(sys1)

step(sys2)

legend('sys','sys1','sys2')

hold off

%Q6

figure(4)

bode(sys,sys1,sys2)

legend('sys','sys1','sys2')

figure(5)

nyquist(sys,sys1,sys2)

legend('sys','sys1','sys2')

****









**Ex1 part3**

clear all

close all

clc

k=1

w0=200

m1=0.5

m2=0.7

m3=1

m4=1.2

num=[k\*w0\*w0]

den1=[1 2\*m1\*w0 w0\*w0]

sys1=tf(num,den1)

den2=[1 2\*m2\*w0 w0\*w0]

sys2=tf(num,den2)

den3=[1 2\*m3\*w0 w0\*w0]

sys3=tf(num,den3)

den4=[1 2\*m4\*w0 w0\*w0]

sys4=tf(num,den4)

%Qb

p1=roots(den1) %%p11=pole(sys1)

p2=roots(den2)

p3=roots(den3)

p4=roots(den4)

%Qc

figure(1)

step(sys1,sys2,sys3,sys4)

legend('sys1','sys2','sys3','sys4')

%Qe

figure(2)

bode(sys1,sys2,sys3,sys4)

legend('sys1','sys2','sys3','sys4')

figure(3)

nyquist(sys1,sys2,sys3,sys4)

legend('sys1','sys2','sys3','sys4')

****



