Project Part 2: MATLAB

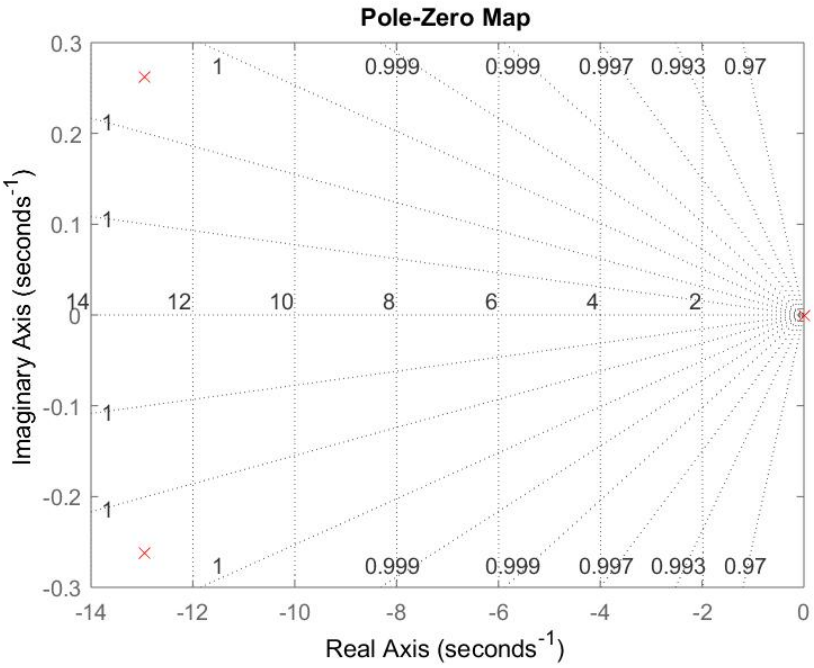


Figure : Pole-zero plot (part 2-ques 1)

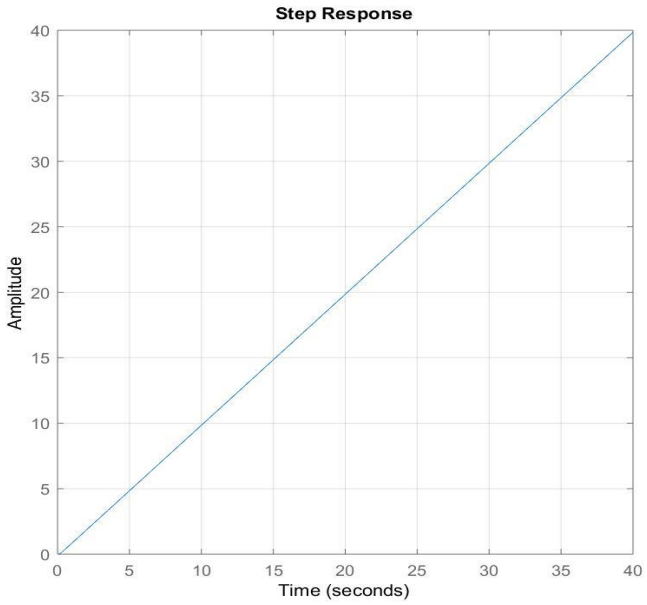


Figure : Step Response (part 2-ques 2)

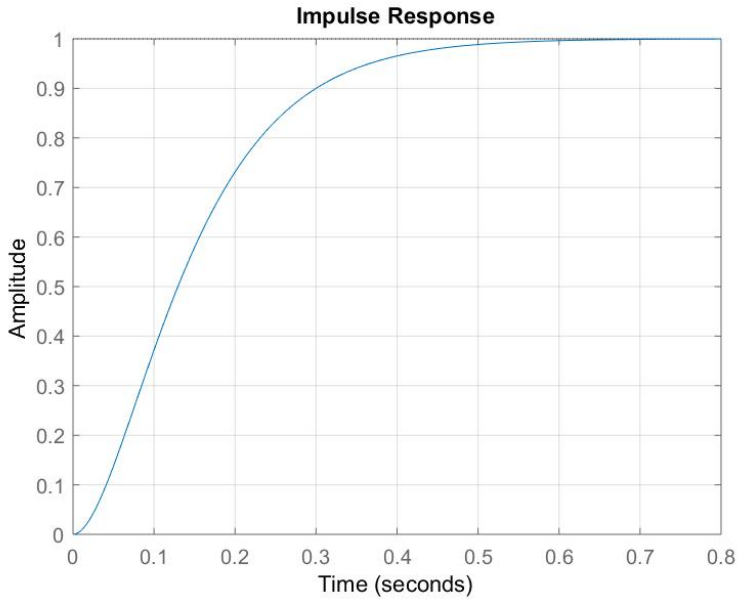
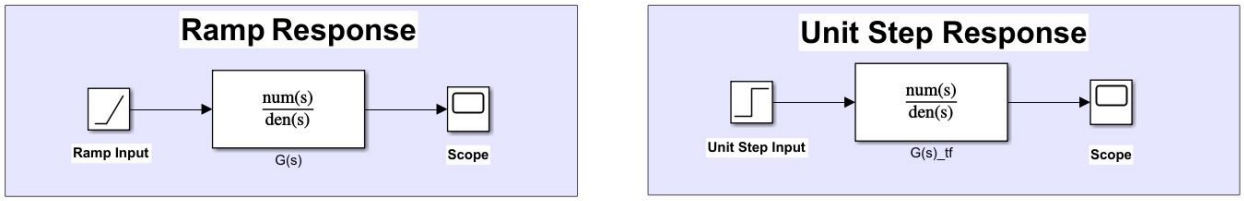
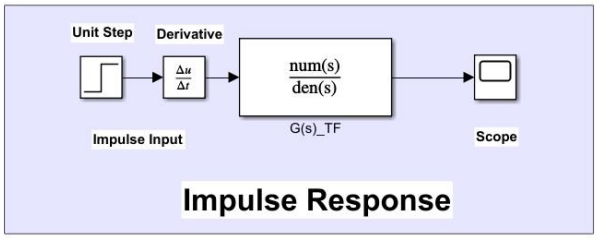


Figure : Impulse Response (part 2-ques 2)

Project Part 3:

Answer (4):





Simulink Model of the Responses

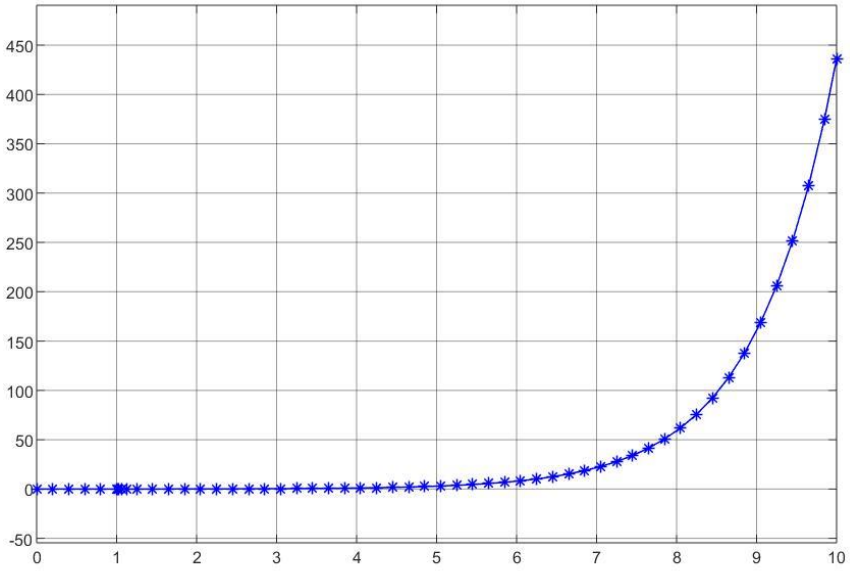


Figure 1: Impuse Response (T=1.18sec)

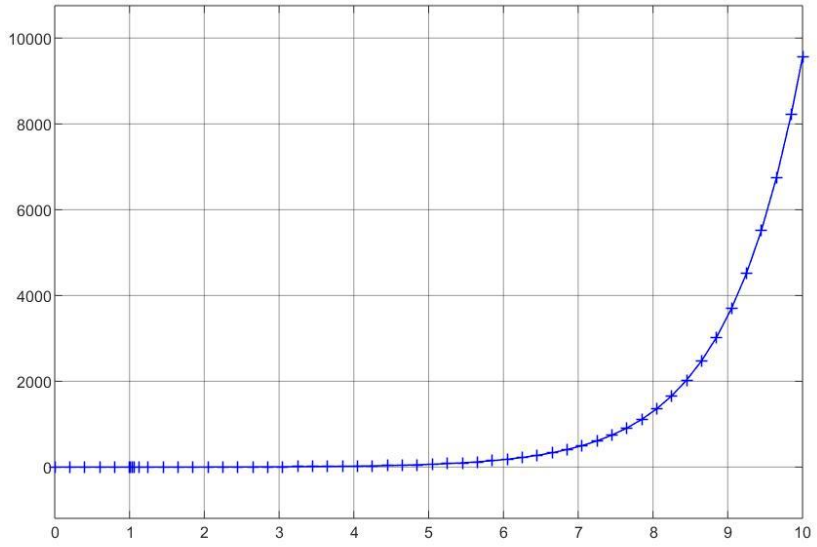


Figure 2: Step Response(T=1.18sec)

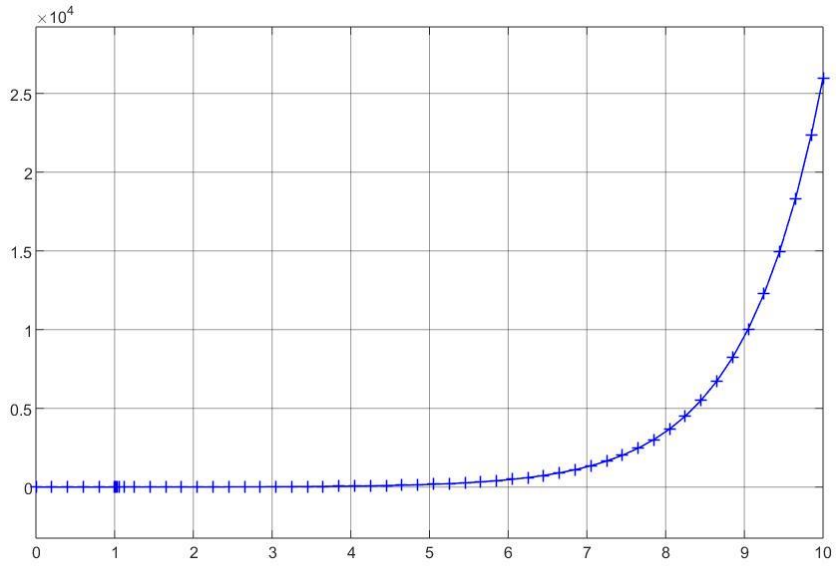
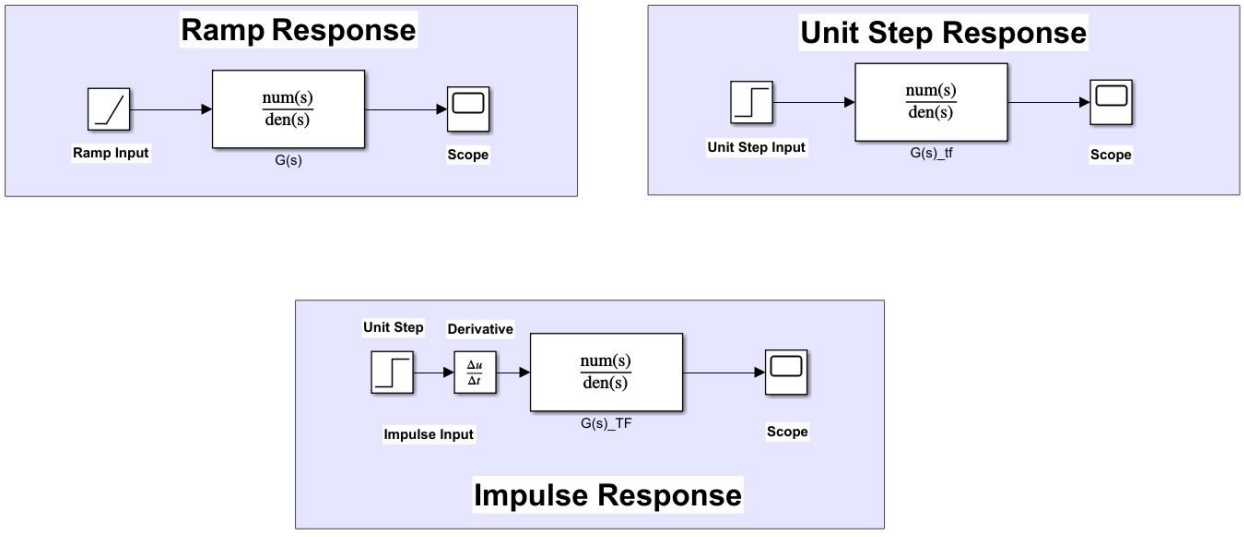


Figure 3: Ramp Response(T=1.18sec)

Answer (6):



Simulink Model of the Responses

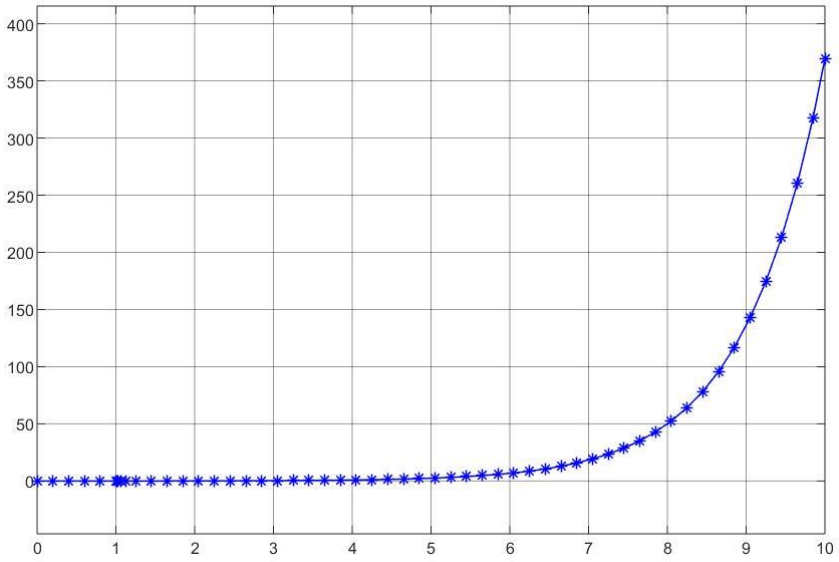


Figure 1: Impuse Response(T=1sec)

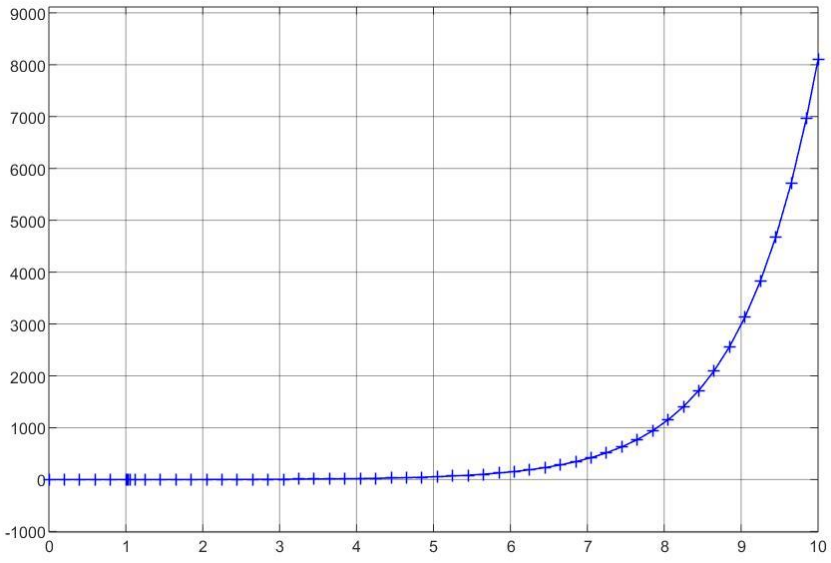


Figure 2: Step Response(T=1sec)

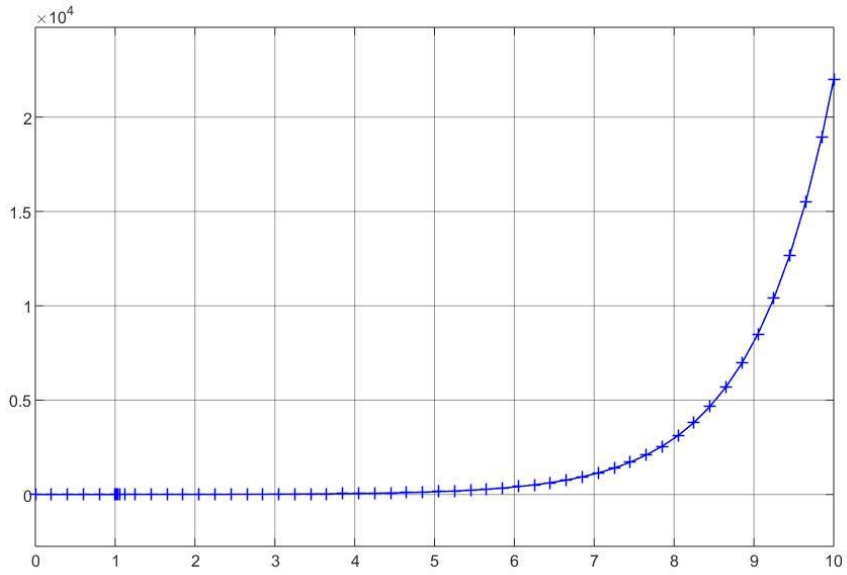


Figure 3: Ramp Response(T=1sec)

Matlab Code: (Part 3)

```
Quest 1:
clear
clc
close all

T=1;
num=[0 0 0 168.0436];
den=[1 25.921 168.0436 0]; % no repeated poles allowed
n=length(den);
Gs=tf(num,den)
[r,p,k]=residue(num,den); % Get poles & residues
for i=1:1:n-1
   pz(i)=exp(p(i)*T); % find poles in z-plane
end
[numzz,denz]=residue(r,pz,k); % substitute z-plane poles
numz=conv(numzz,[1 0]); % multiply by z
Gz=tf(numz,denz,T) % display G(z)
```

```
Part 3_ques 2
G_z= c2d(G, 1.18,'zoh')
 d=[0 1.026 0.1543 2.312*10^(-7)];
 c=[1 -1 4.345*10^(-7)  -5.204*10^(-14)];
 [z,p,k] = tf2zp(d,c)

Part 3 ques 6
G_z= c2d(G, 1,'zoh')
 d=[0 0.8458 0.1542 1.972*10^(-6)];
 c=[1 -1 4.541*10^(-6)  -5.529*10^(-12)];
 [z,p,k] = tf2zp(d,c)
```