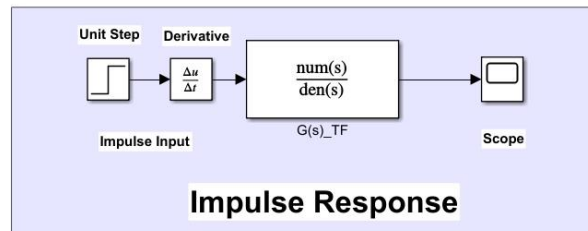
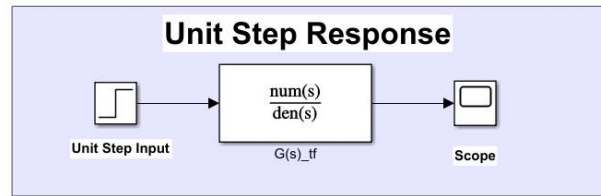
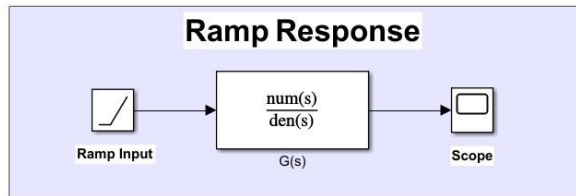


Project Part 3:

Answer (4):



Simulink Model of the Responses

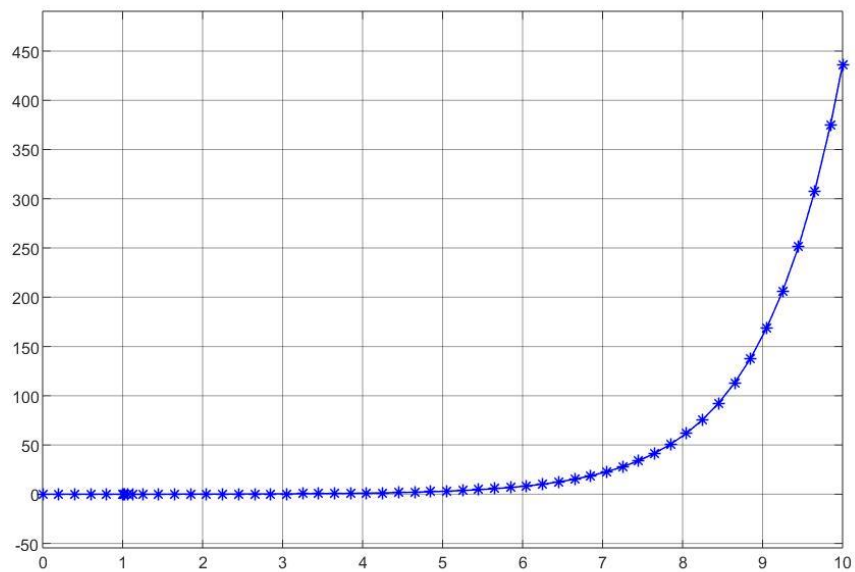


Figure 1: Impuse Response ($T=1.18\text{sec}$)

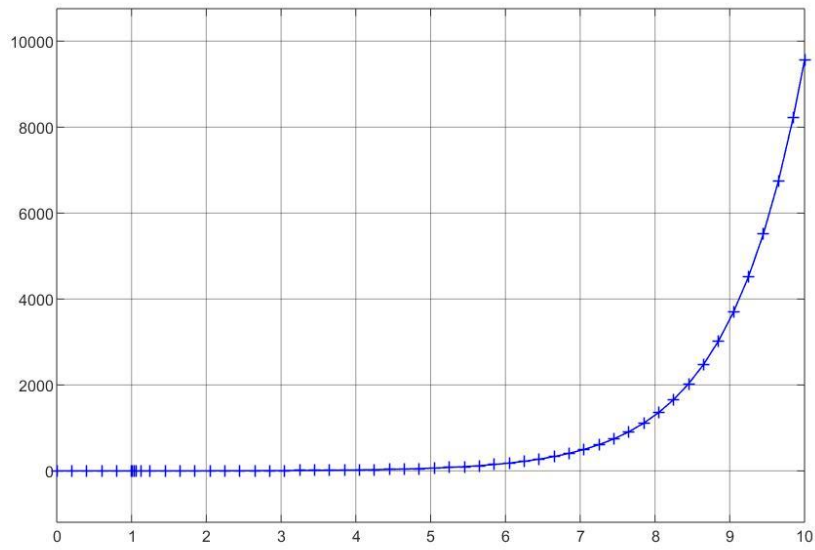


Figure 2: Step Response($T=1.18\text{sec}$)

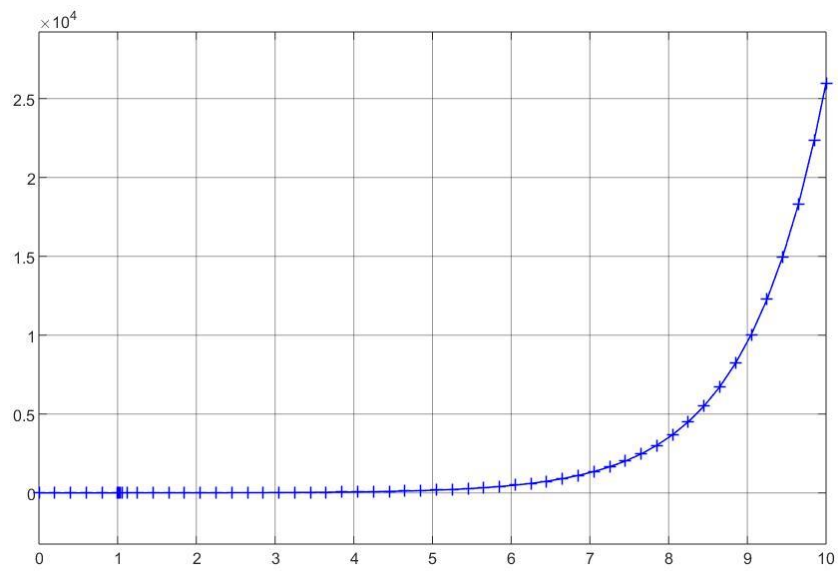
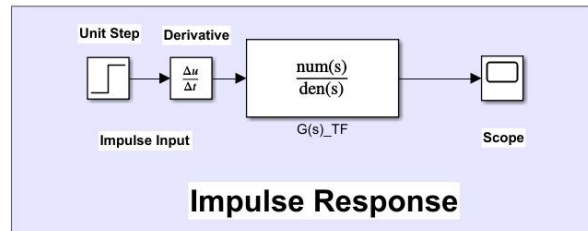
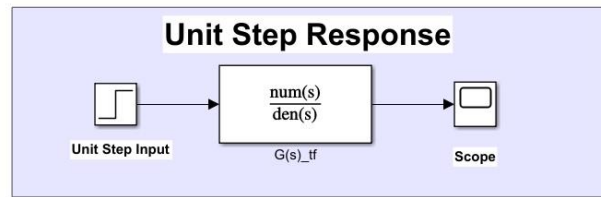
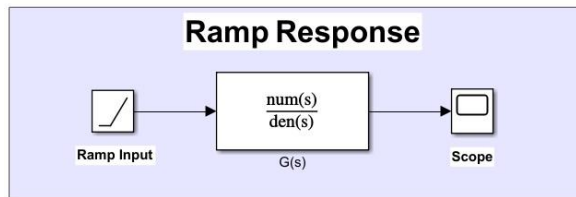


Figure 3: Ramp Response($T=1.18\text{sec}$)

Answer (6):



Simulink Model of the Responses

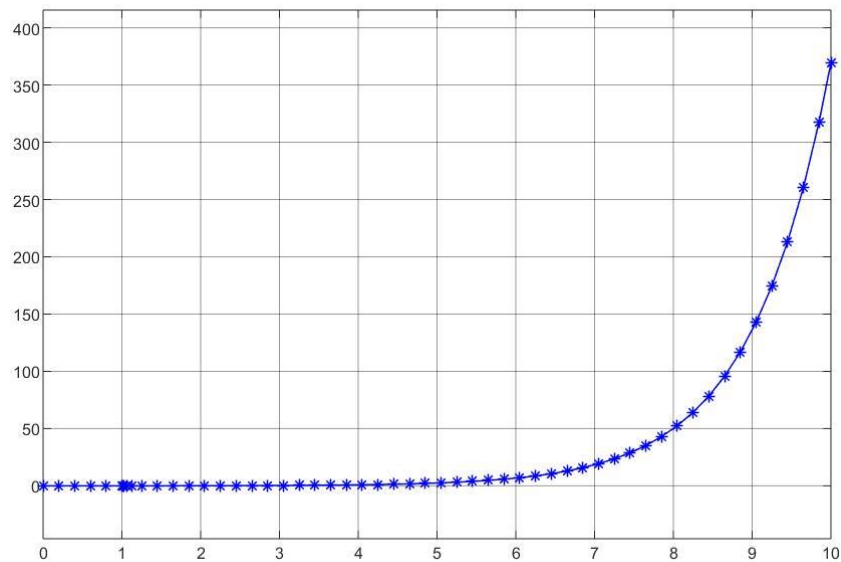


Figure 1: Impuse Response($T=1\text{sec}$)

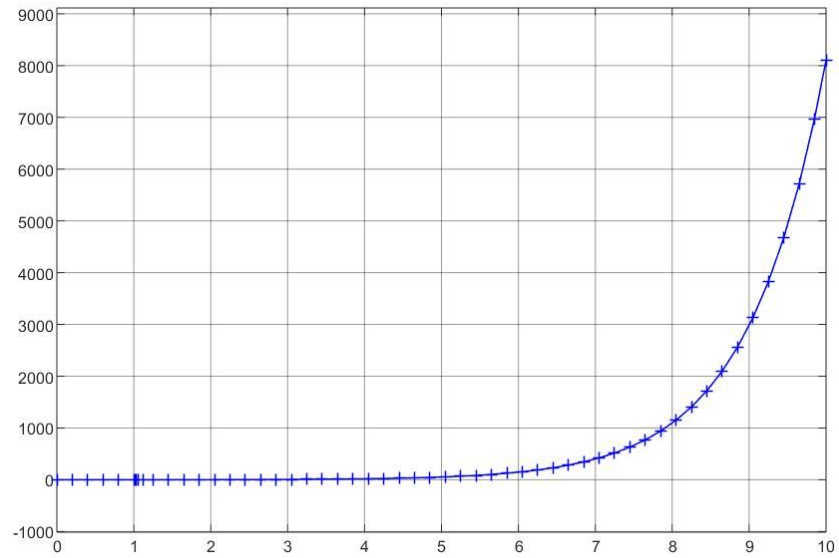


Figure 2: Step Response($T=1\text{sec}$)

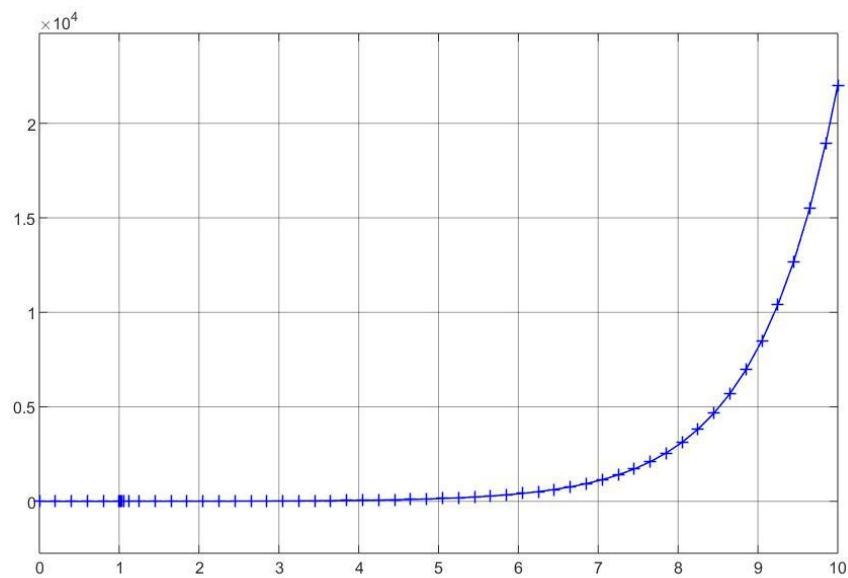


Figure 3: Ramp Response($T=1\text{sec}$)

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)

```