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```
%%clear  
clc;  
clear;  
close all;
```

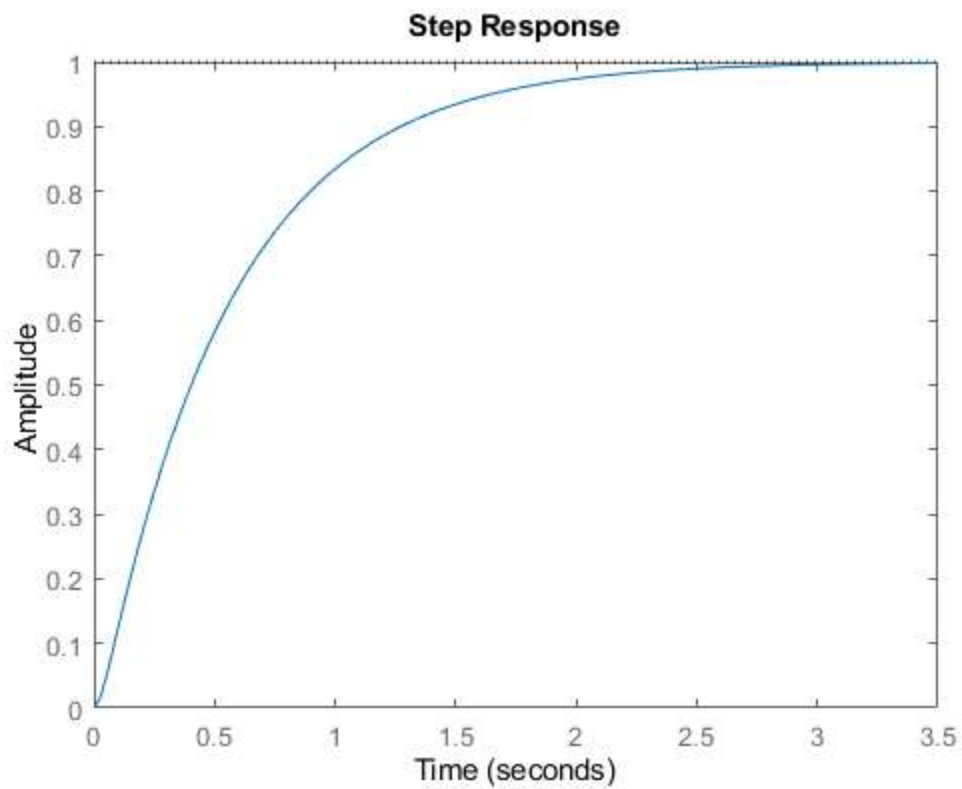
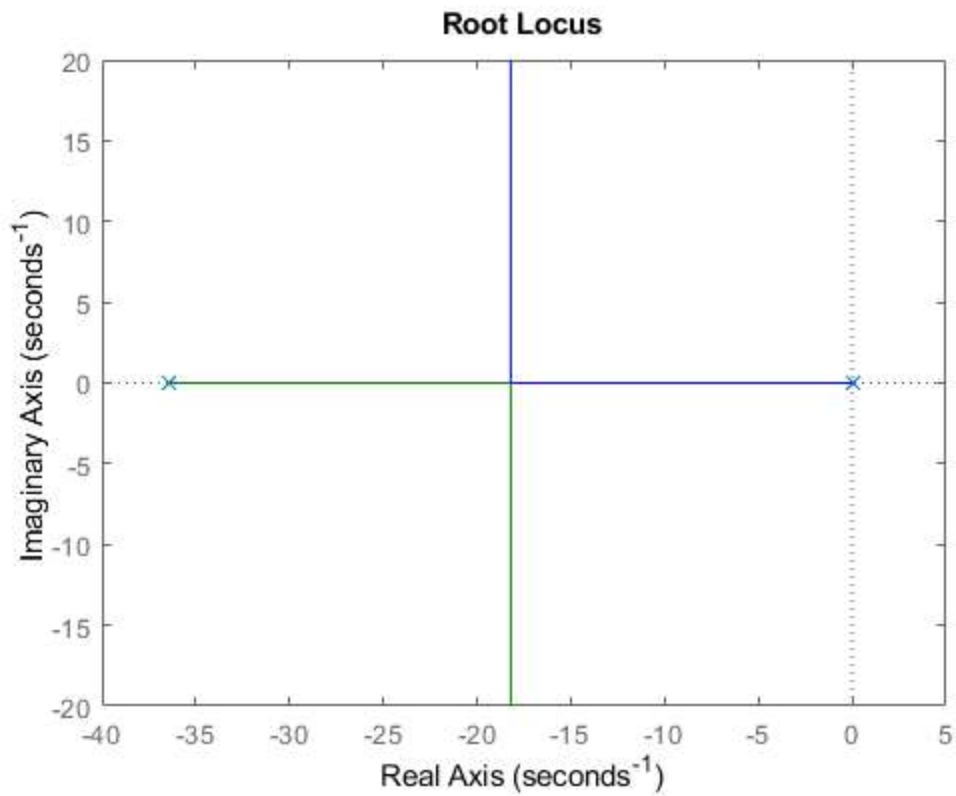
system without control

```
G = tf(64.11 , [1 36.42 0]);  
sys_1 = feedback(G,1);  
figure(1)  
rlocus(G);  
figure(2)  
step(sys_1);  
stepinfo(sys_1)
```

ans =

struct with fields:

```
    RiseTime: 1.1866  
SettlingTime: 2.1390  
SettlingMin: 0.9036  
SettlingMax: 0.9993  
    Overshoot: 0  
    Undershoot: 0  
        Peak: 0.9993  
    PeakTime: 3.9478
```



system with control

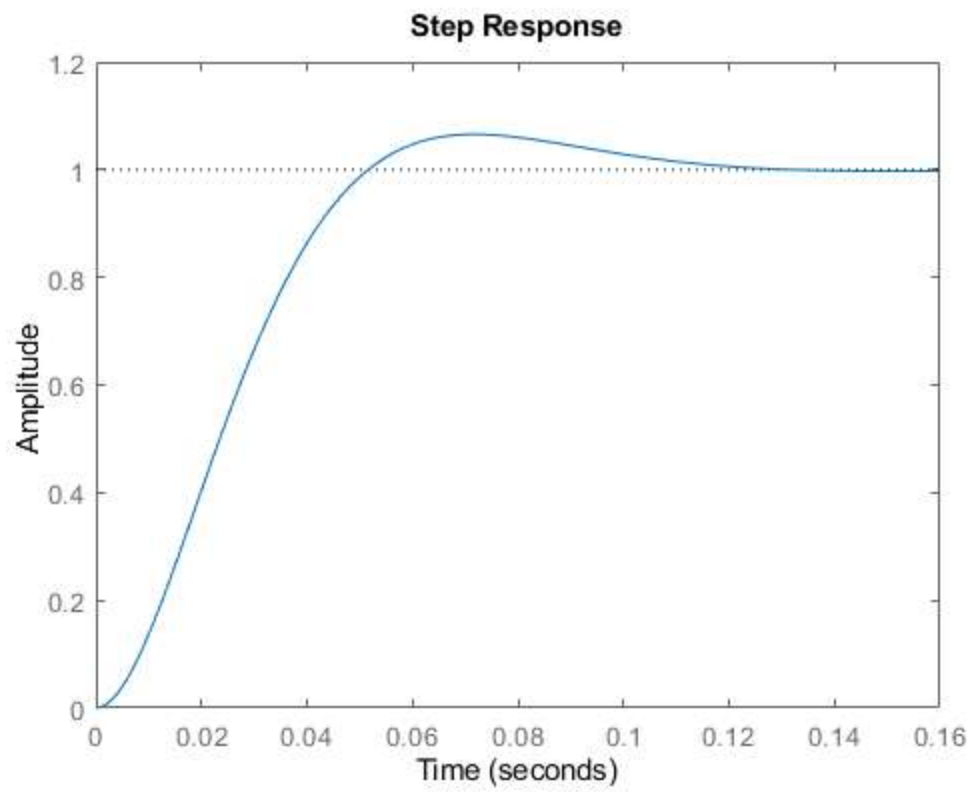
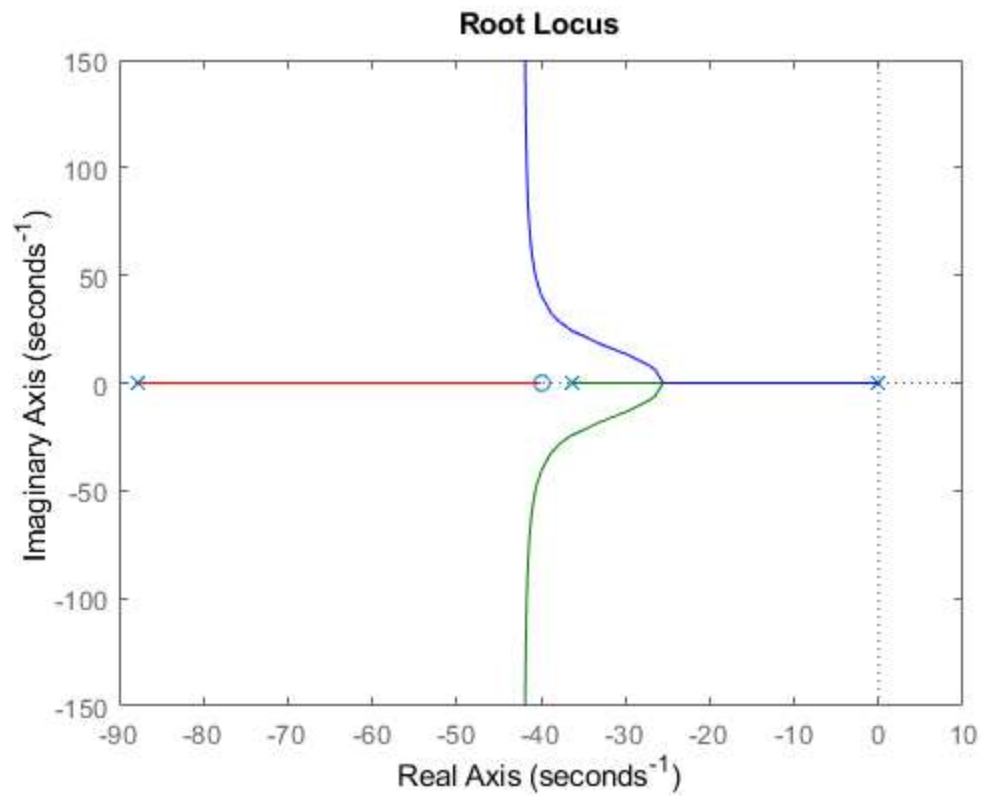
```
K = 57;
Gc = K * tf([1 40] , [1 87.6383]);
sys_2 = feedback(G*Gc,1);
```

```
figure(3)
rlocus(G*Gc);
figure(4)
step(sys_2);
stepinfo(sys_2)
```

ans =

struct with fields:

```
    RiseTime: 0.0341
SettlingTime: 0.1060
SettlingMin: 0.9019
SettlingMax: 1.0656
    Overshoot: 6.5599
Undershoot: 0
      Peak: 1.0656
    PeakTime: 0.0713
```



Q5

```
zero = tf([1 50] , [1]);
sys_3 = feedback(G*Gc*zero,1);
pole = tf([1] , [1 50]);
```

```
sys_4 = feedback(G*Gc*pole,1);  
figure(5)  
subplot(2, 1, 1);  
step(sys_3);  
title('add zero');  
subplot(2, 1, 2);  
step(sys_4);  
title('add pole');  
figure(6)  
subplot(2, 1, 1);  
rlocus(sys_3);  
title('add zero');  
subplot(2, 1, 2);  
rlocus(sys_4);  
title('add pole');
```

