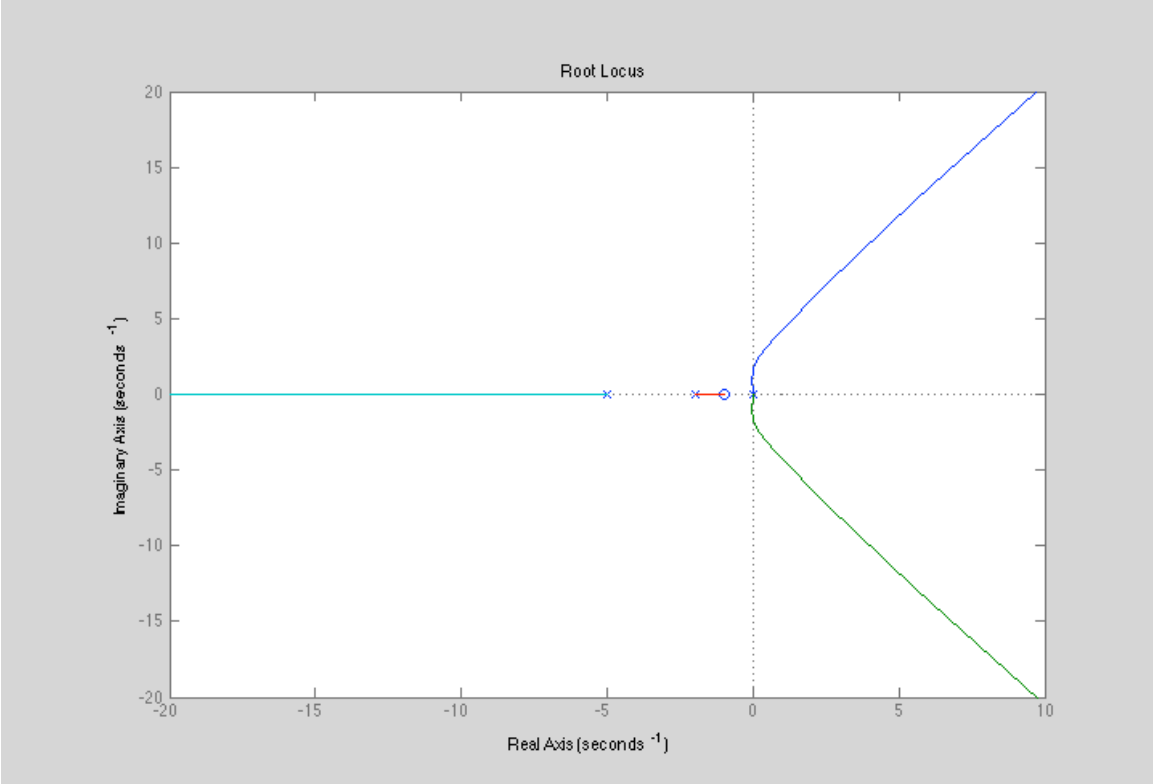
6-7)


Root Locus
Imaginary Axis (seconds -1)
Real Axis (seconds -1)
20
15
10
5
0
-5
-10
-15
-20
-20
-15
-10
-5
0
5
10

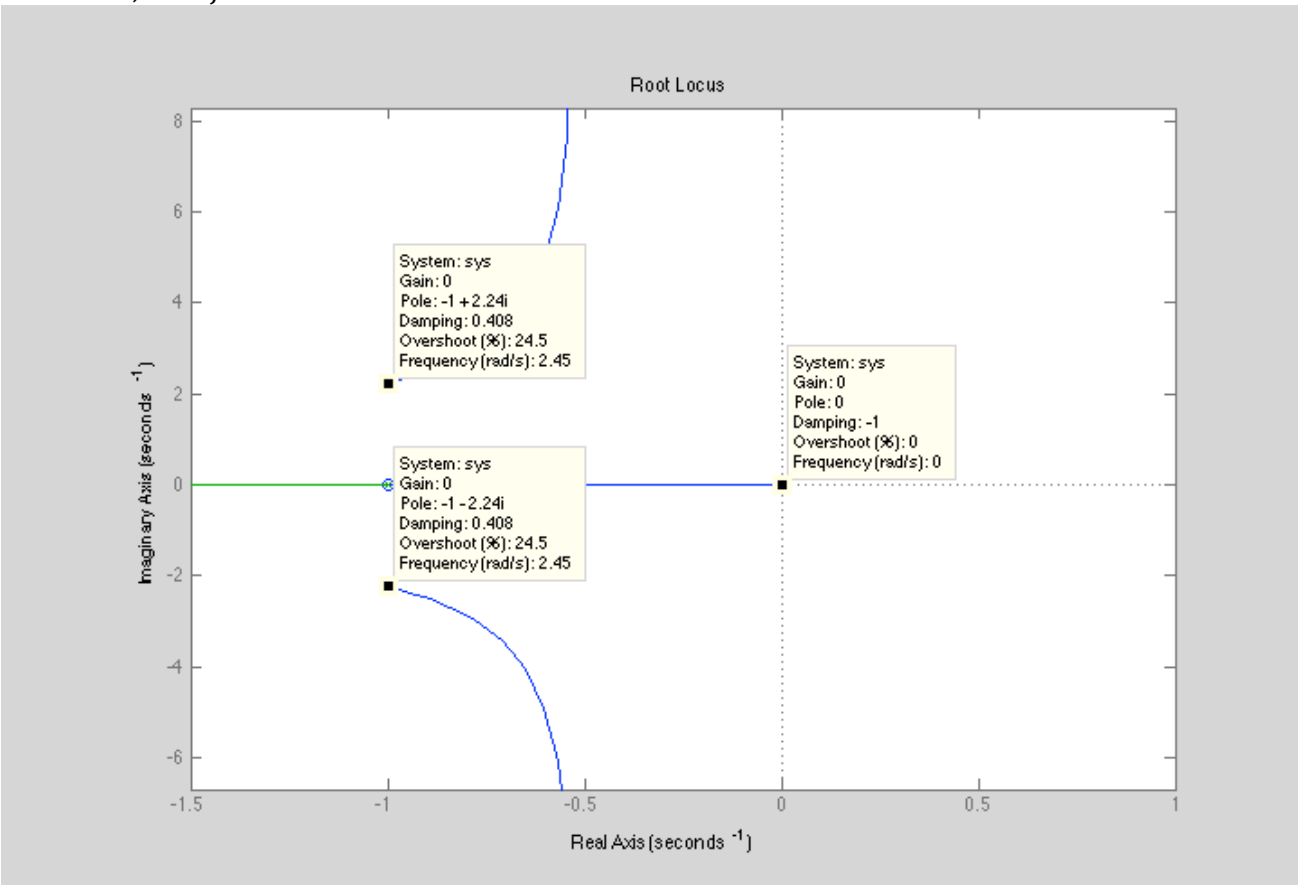
6-11)

```
%%
%#11
clc
clear

s=tf('s');

sys=(2*(s+1))/(s*(s^2+2*s+6));
H=1/(s+1);
rlocus(sys,H)
```

Poles at 0, -1+- j2.24



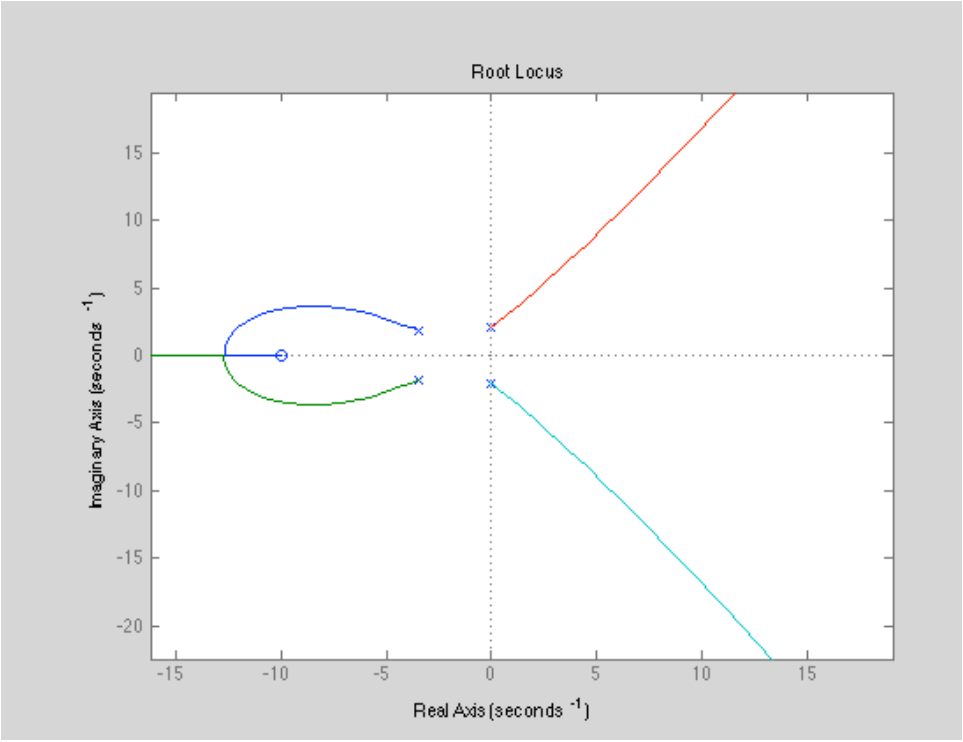
Problem 1)

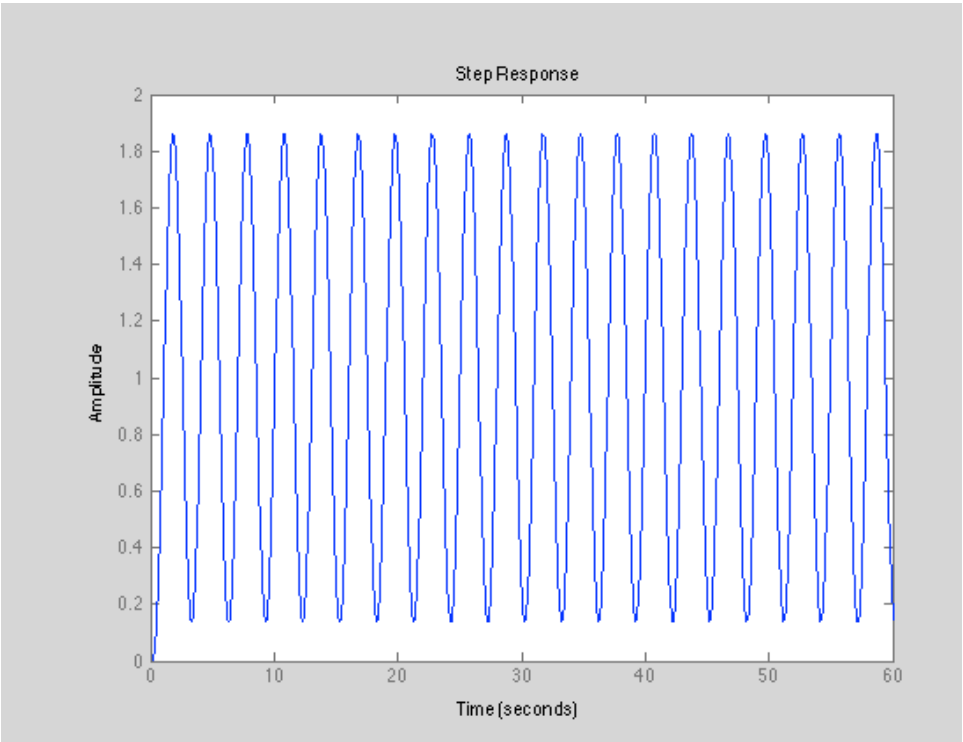
```
%%
%#b
clc
clear
k=6.8761763779;
s=tf('s');
sys=(k*(s+10))/(s^4+7*s^3+20*s^2+(24+k)*s+10*k)
rlocus(sys)
step
```

pole(sys)

ans =

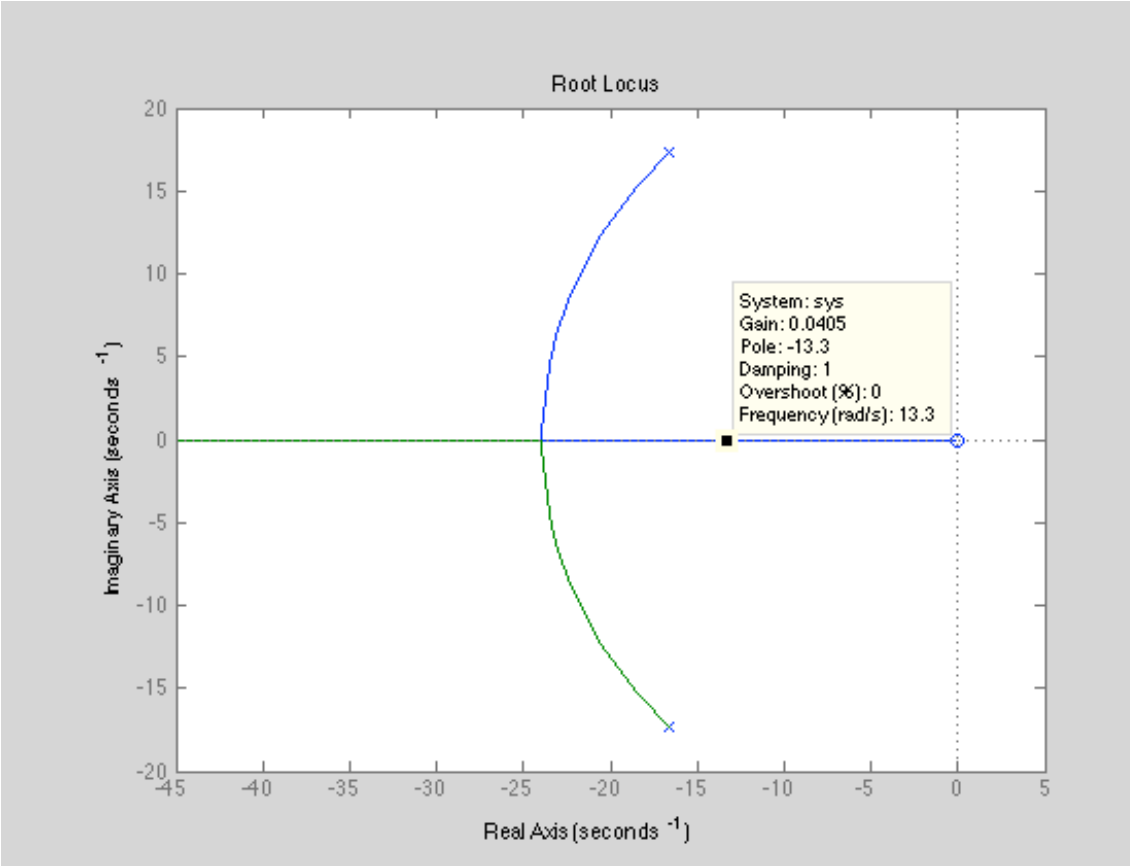
-3.5000 + 1.8273i
-3.5000 - 1.8273i
0.0000 + 2.1002i
0.0000 - 2.1002i



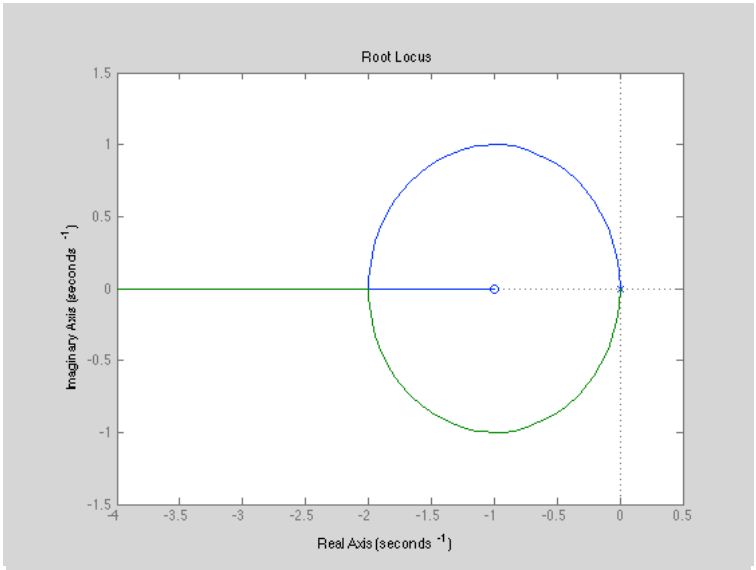


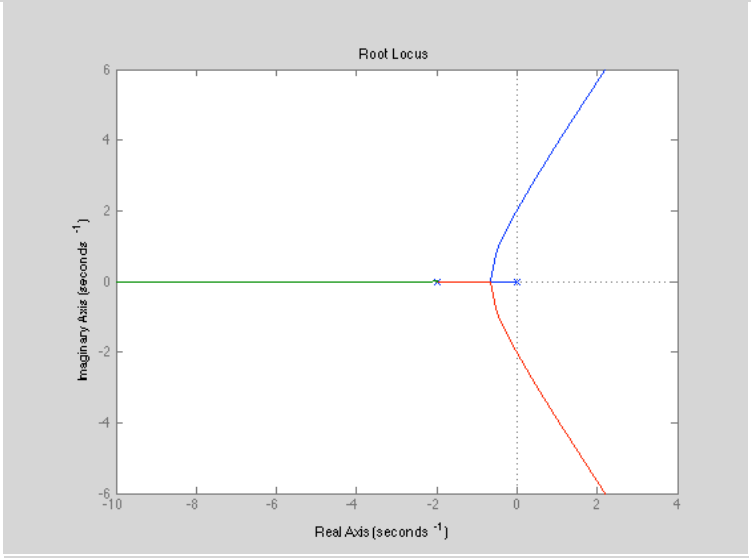
Problem 2)

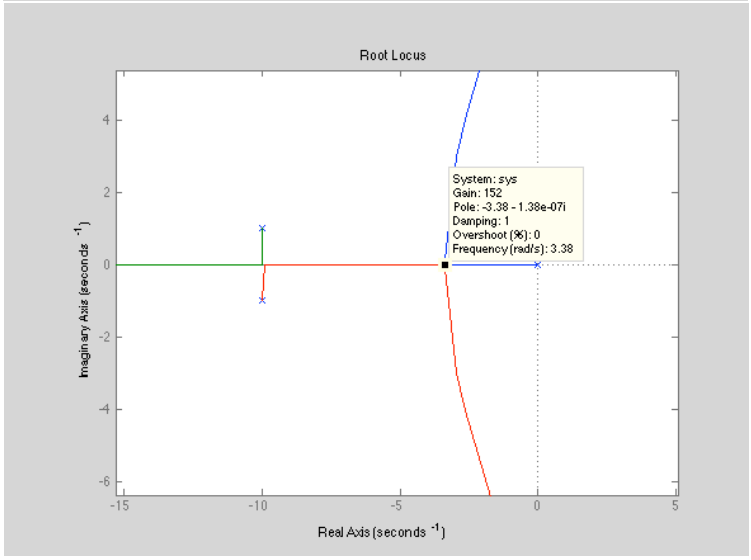
```
clc
clear
s=tf('s');
sys=((s*573))/(s^2+33.14*s+573)
rlocus(sys)
%step(sys)
pole(sys)
```



d)


Root Locus
Imaginary Axis (seconds -1)
Real Axis (seconds -1)


Root Locus
Imaginary Axis (seconds -1)
Real Axis (seconds -1)


Root Locus
System: sys
Gain: 152
Pole: -3.38 - 1.38e-07i
Damping: 1
Overshoot (%): 0
Frequency (rad/s): 3.38
Imaginary Axis (seconds -1)
Real Axis (seconds -1)