

```

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% Cherry Gregory
% U0540871
% MEEN 3210
% HW 10
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

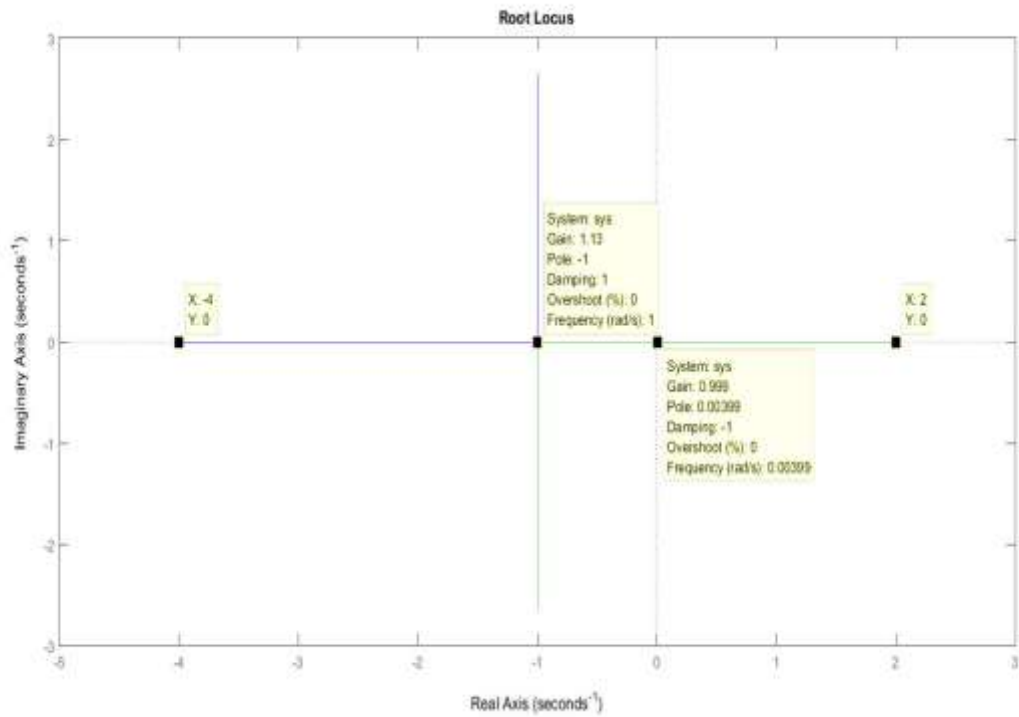
```

```
clear, clc, close all
```

```

%% Problem 1
figure(1)
num = [8]
den = conv([1 4],[1 -2])
k = 0:0.001:2;
rlocus(num, den, k)
title('HW 10, Prob 1 - Cherry Gregory')

```



```

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
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% MEEN 3210
% HW 10
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

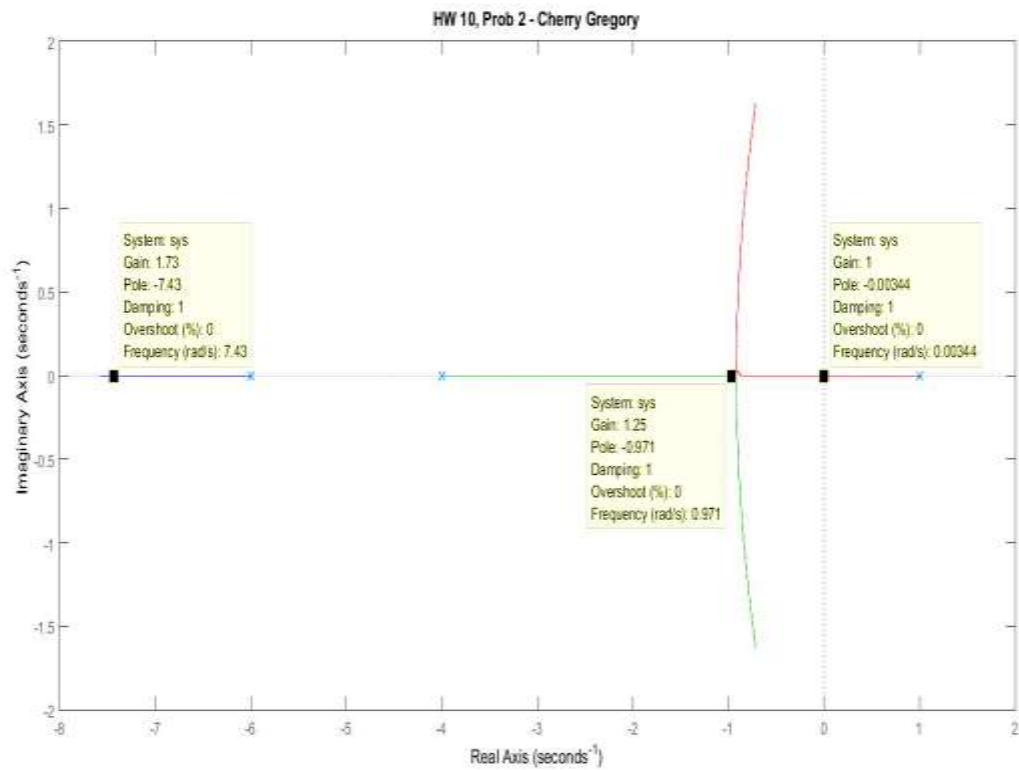
```

```
clear, clc, close all
```

```

%% Problem 2
figure(2)
num2 = [24]
den2 = conv([1 6], (conv([1 4], [1 -1])))
k = 0:0.001:2;
rlocus(num2, den2, k)
title('HW 10, Prob 2 - Cherry Gregory')

```



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%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% Cherry Gregory
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% HW 10
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

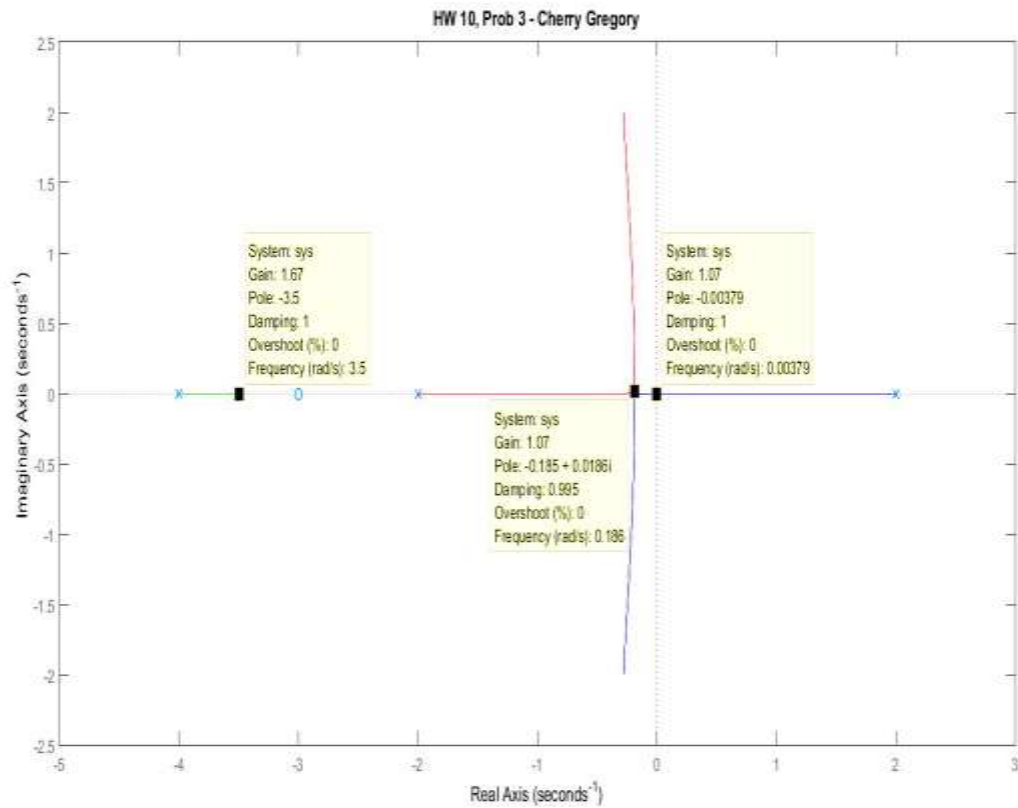
```

```
clear, clc, close all
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```

%% Problem 3
figure(3)
num3 = [5 15]
den3= conv([1 4],(conv([1 2],[1 -2])))
k = 0:0.001:2;
rlocus(num3, den3, k)
title('HW 10, Prob 3 - Cherry Gregory')

```



```

%%%%%%%%%%
% Cherry Gregory
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% MEEN 3210
% HW 10
%%%%%%%%%%

```

```
clear, clc, close all
```

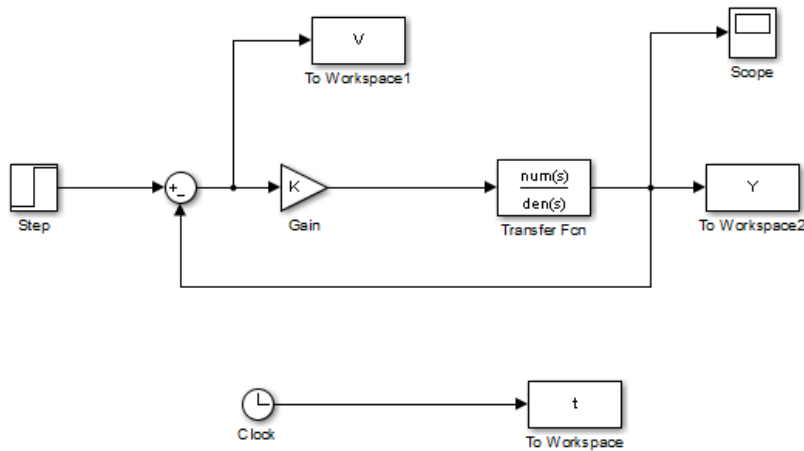
```
%% Problem 4
```

```
figure(1)
num = [8]
den = conv([1 -2],[1 4])
k = 0:.001:2;
rlocus(num,den,k)
```

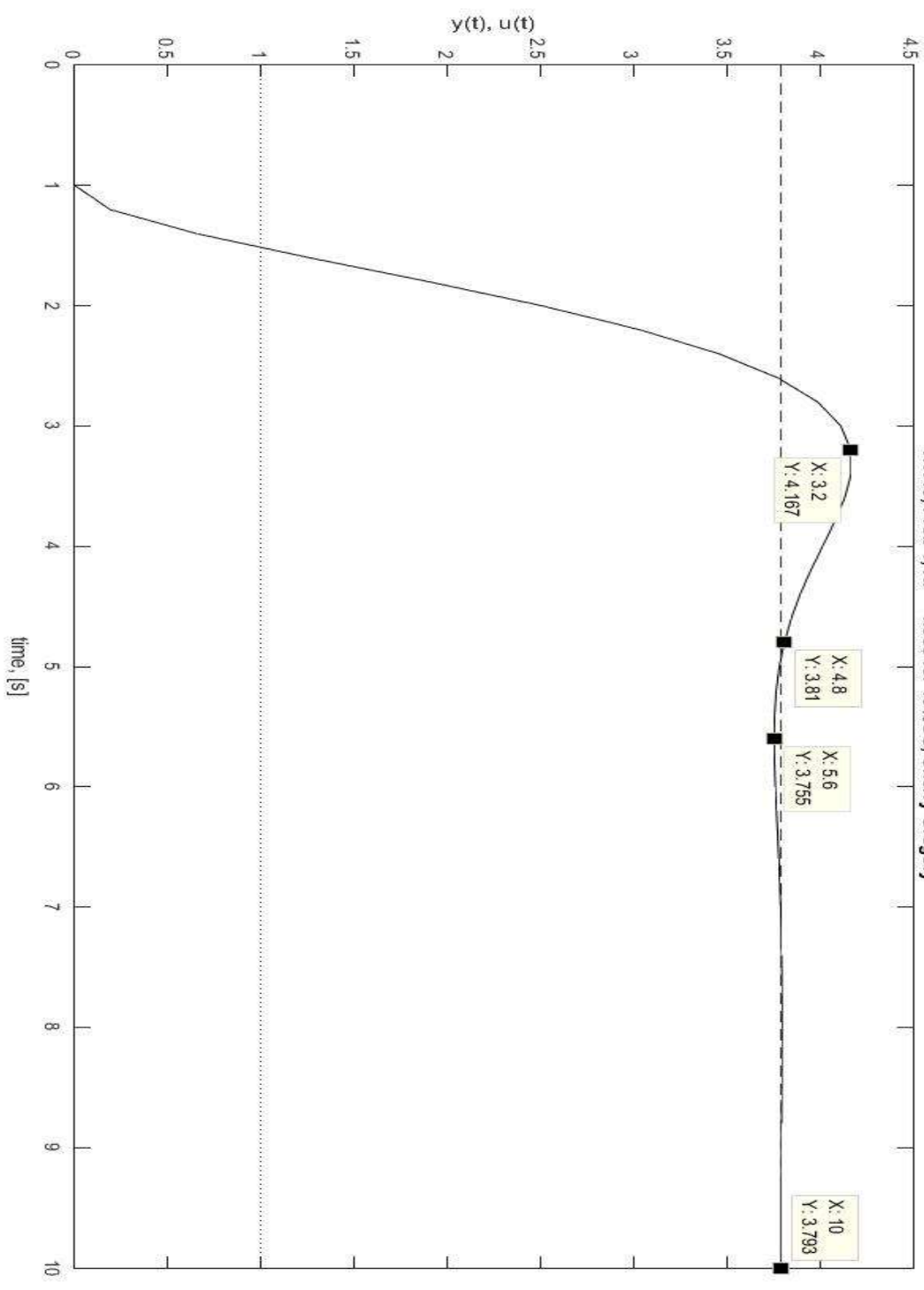
```
% Set Gain Controls
```

```
K = 1.358;
vss = 1/(1-K);
u = [1 1];
yss = u-vss;
TF = 9;
sim('HW10_Prob4')
ts = [t(1) t(length(t))];
```

```
figure(2)
plot(t,Y,'k-', ts, yss, 'k--', ts, u, 'k:')
xlabel('time, [s]')
ylabel('y(t), u(t)')
title('HW10, Prob 4, KP = 1.358 for 10%OS, Cherry Gregory')
```



HW10, Prob 4, KP = 1.358 for 10%OS, Cherry Gregory



```

%%%%%%%%%%
% Cherry Gregory
% U0540871
% MEEN 3210
% HW 10
%%%%%%%%%%

```

```
clear, clc, close all
```

```
%% Problem 5
```

```

figure(1)
num = conv([1],(conv([1 4],[1 -2])))
den = conv([1 2],[1 5])
k = 0:.001:2;
rlocus(num,den,k)
title('HW 10, Prob 5 Part (a) - Cherry Gregory')

```

```
% Set Gain Controls
```

```

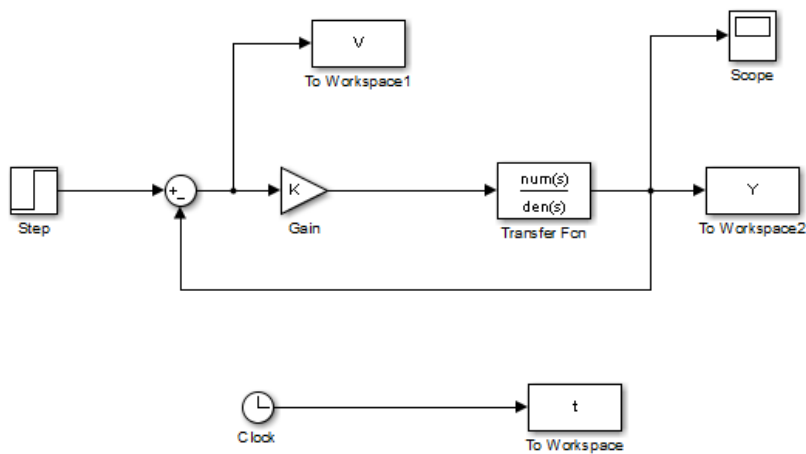
K = 0.442;
vss = 1/(1-K);
u = [1 1];
yss = u-vss;
TF = 9;
sim('HW10_Prob5')
ts = [t(1) t(length(t))];

```

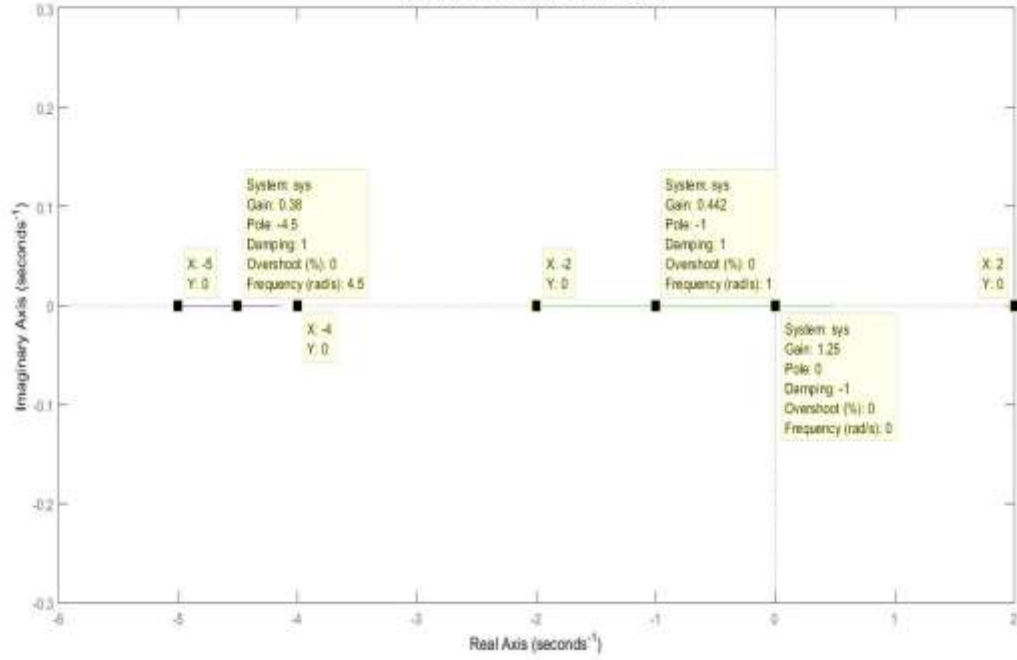
```

figure(2)
plot(t,Y,'k-', ts, yss, 'k--', ts, u, 'k:')
xlabel('time, [s]')
ylabel('y(t), u(t)')
title('HW10, Prob 5, KP = 0.442 for 10%OS, Cherry Gregory')

```



HW 10, Prob 5 Part (a) - Cherry Gregory



HW10, Prob 5, KP = 0.442 for 10%OS, Cherry Gregory

