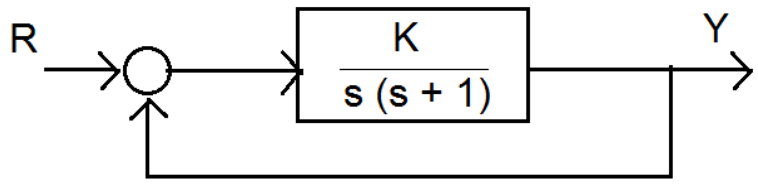
بسم الله الرحمن الرحيم

Control System Design: Assignment#1

Name: Rami Mohammed Omer, Index: 145041, Dep.: Mech. Eng.

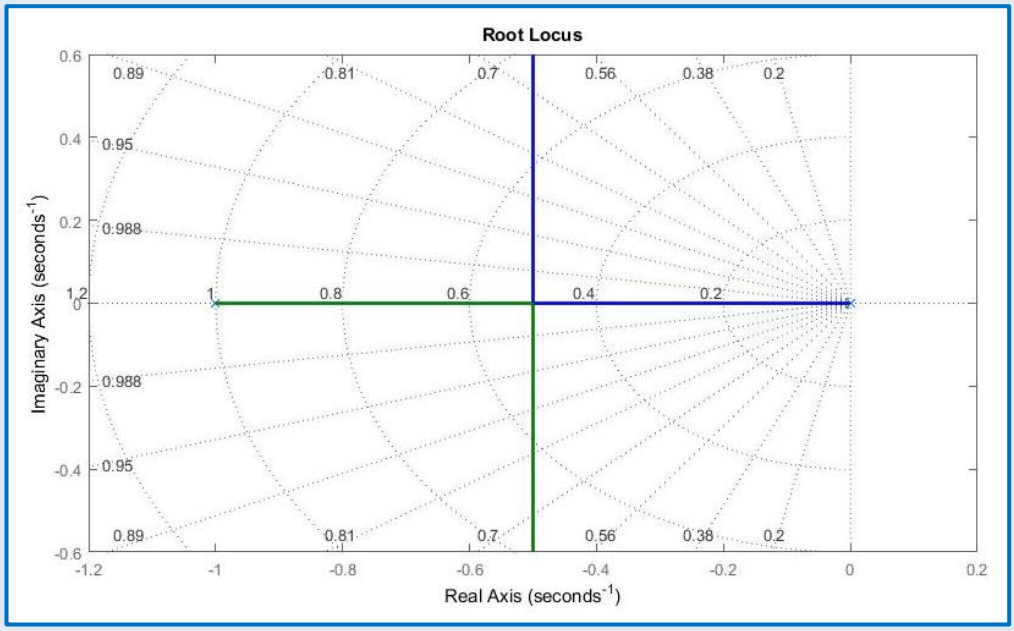


Find the range of stability for K, and then plot the response for K = [1, 1/4, 1/12].

We can determine the range analytically by using Routh-Hurwitz criterion or just simply find the Root Locus for the function:

Open loop $G(s) = \frac{K}{s(s+1)}$,

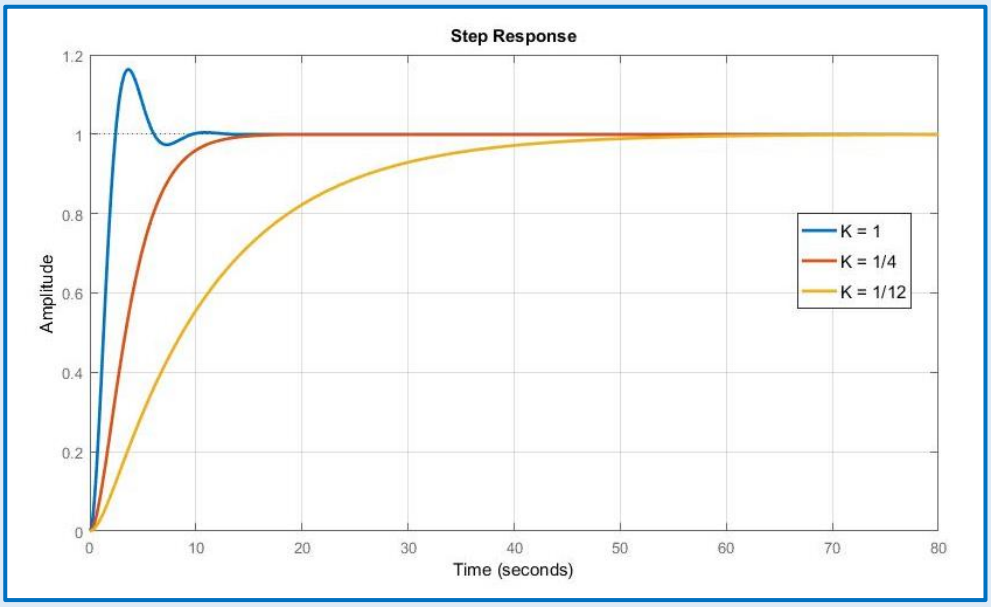
```
>> s = tf('s');
>> G = 1/(s*(s+1));
>> rlocus(G)
```



The response plot with K variation is shown bellow:

```
s = tf('s');
G = 1/(s*(s+1));

for K=[1,1/4,1/12]
        sys = feedback(K*G,1);
        step(sys); hold on;
end
```



■