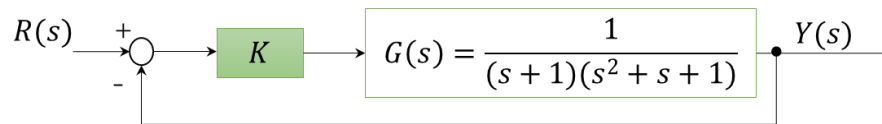


**Question 1**

Consider the above closed loop system in Figure 1.

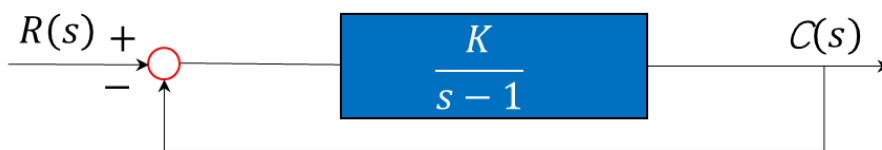


**Figure 1**

- a) Sketch the Bode plot of the transfer function  $G(s)$ . (4 Points)
- b) Sketch the Nyquist plot based on (a). (4 Points)
- c) Using Nyquist stability criterion to determine all values of the feedback gain  $K$  that stabilizes the closed-loop system. (6 Points)

**Question 2**

Consider the closed loop system in Figure 2.



**Figure 2.**

Determine the critical value of  $K$  for stability using the Nyquist stability criterion.

(6 Points)