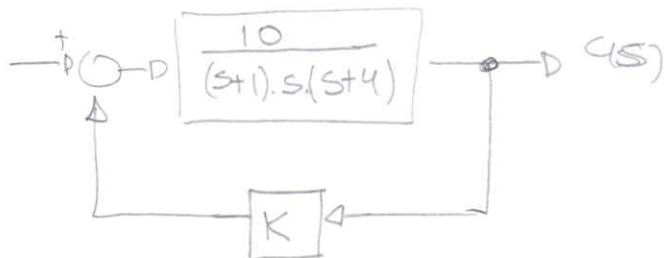
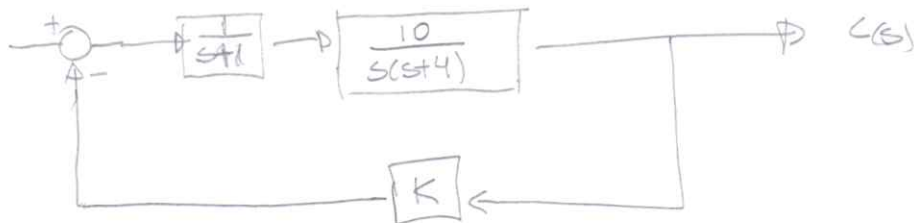


7.



$$\frac{\frac{10}{s(s+1)(s+4)}}{1 + \frac{10K}{s(s+1)(s+4)}} = \frac{\frac{10}{s(s+1)(s+4)}}{\frac{s(s+1)(s+4) + 10K}{s(s+1)(s+4)}} = \frac{10}{s(s+1)(s+4) + 10K}$$

$$\begin{aligned} s(s+1)(s+4) + 10K &= (s^2 + s)(s+4) + 10K \\ &= s^3 + 4s^2 + s^2 + 4s + 10K \\ &= s^3 + 5s^2 + 4s + 10K \end{aligned}$$

3	1	4	0
2	5	10K	0
1	b_{n-1}	0	
0	10K		

$$\frac{20 - 10K}{5} = b_{n-1}$$

$$\frac{(\frac{20-10K}{5}) \cdot 10K - 5 \cdot 0}{\frac{(20-10K)}{5}} = 10K$$

$$b_{n-1} = 10K$$

Para o sistema ser estável.

$$\left\{ \begin{array}{l} \frac{20-10K}{5} > 0 \\ 10K > 0 \end{array} \right\} \left\{ \begin{array}{l} 20-10K > 0 \quad (\div -10) \quad (\div -10) \\ \quad \quad \quad -10K > -20 \\ \quad \quad \quad K < 2 \\ K > 0 \end{array} \right.$$

$$\therefore 0 < K < 2$$