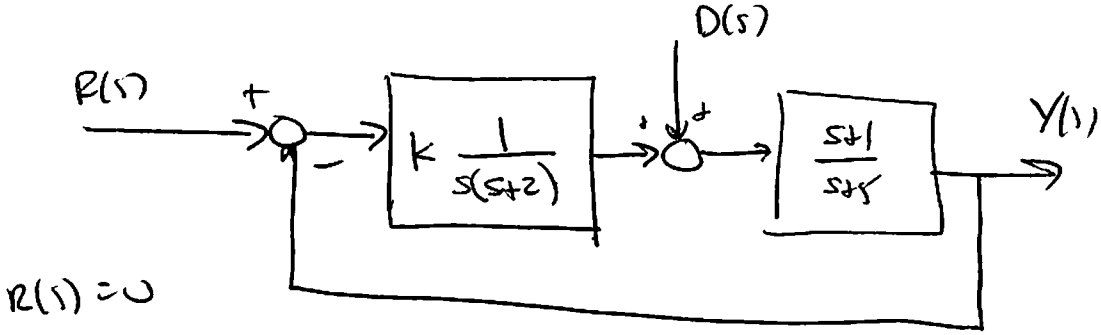

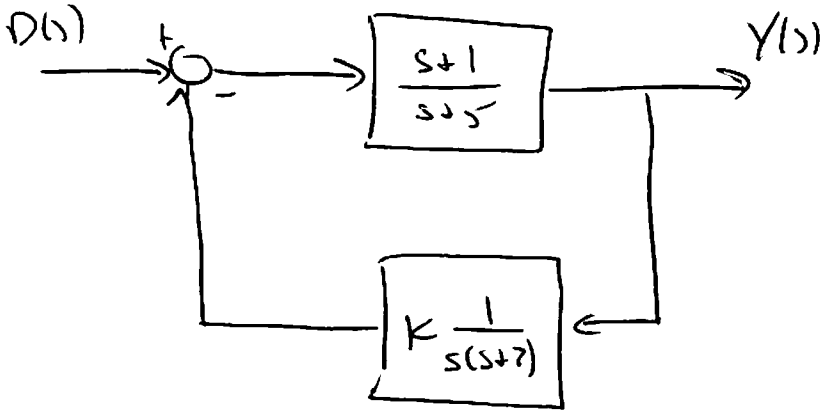

$$\frac{Y(s)}{D(s)} = \frac{\frac{s+1}{s+5}}{1 + \frac{k(s+1)}{(s+5)(s+2)s}} = \frac{(s+1)(s+2)s}{s(s+5)(s+2) + k(s+1)}$$

$$= \frac{(s+1)(s+2)s}{s^3 + 7s^2 + (10+k)s + k}$$

Stability requirement for k:

s^3 : 1 $\quad 10+k$

s^2 : 7 $\quad k$

s^1 : $10 + k - \frac{k}{7}$ $\Rightarrow$ $10 + \frac{6}{7}k > 0$ $\Rightarrow$ $k > \frac{-70}{6}$

s^0 : k $\Rightarrow$ $k > 0$

no upper limit on k