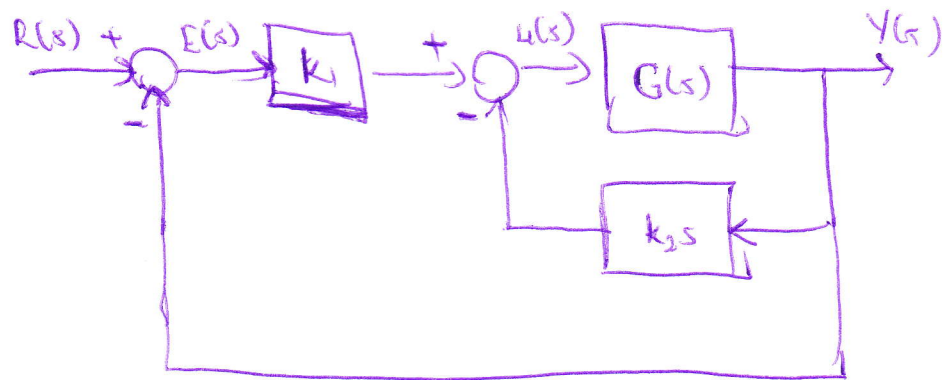


Example 2:



Consider the plant TF and its quadratic optimal CLTF as

$$G(s) = \frac{1}{s(s+2)}$$

$$T(s) = \frac{3}{s^2 + 3.2s + 3}$$

Can $T(s)$ be implemented by adjusting k_1 and k_2 ?

$$\text{CLTF: } \frac{Y(s)}{R(s)} = \frac{k_1}{s^2 + (2+k_2)s + k_1} = \frac{3}{s^2 + 3.2s + 3}$$

For $k_1=3$ and $k_2=1.2$ the configuration implements $T(s)$

(İkinci dereceden bir polinomun tüm katsayıları sıfır değil ve pozitif ise kesinlikle Hurwitz'dir.
3 koşul var sağlanarak gerekir. 1) payda-pay derece farkı $G(s), T(s)$ - sağlanıyor işte)

This arrangement is also known as a derivative of output PD controller which differentiates o/p signal instead of error and hence more ~~not~~ preferable: $u = k_1 e - k_2 \dot{y}$