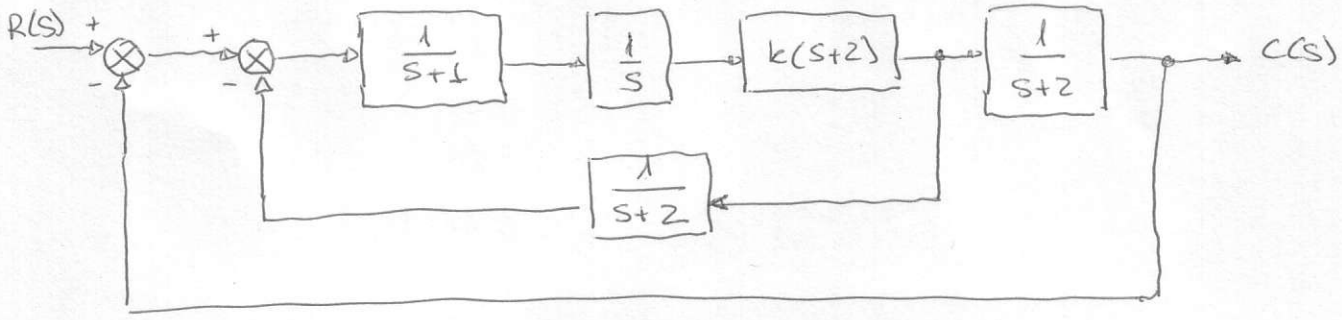
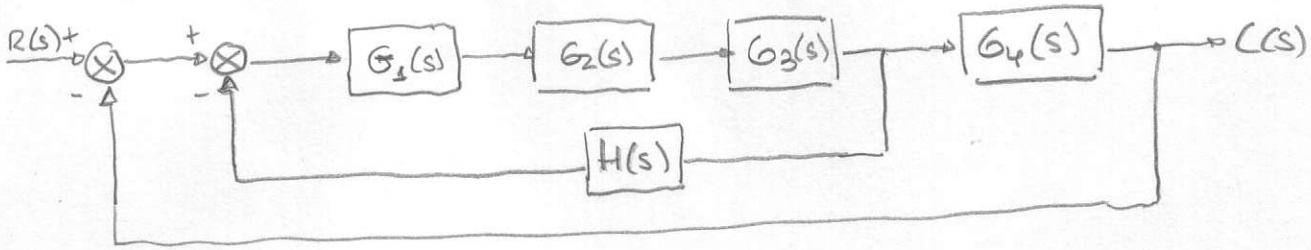
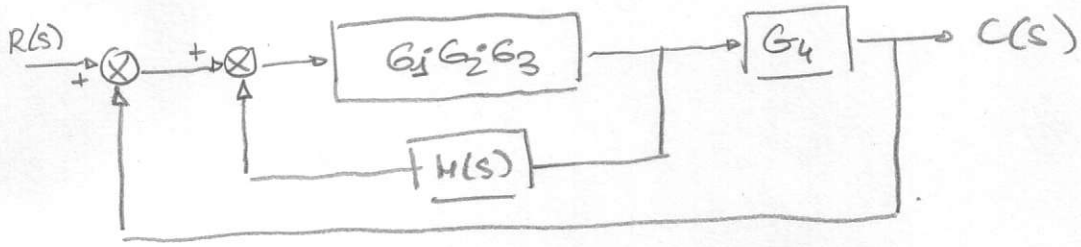
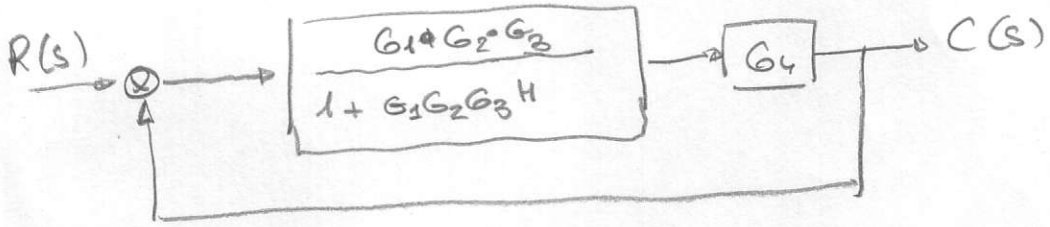
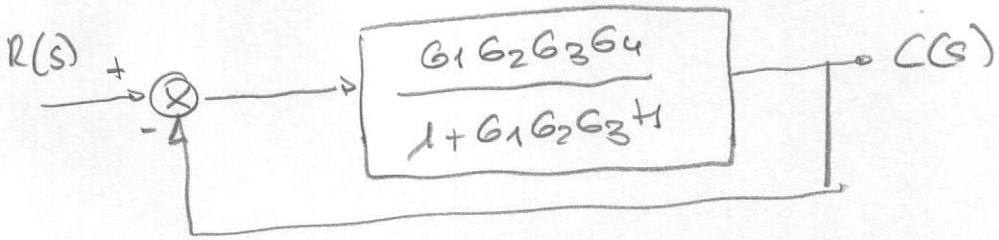
Ejercicio libro Domestiarra pag 231.

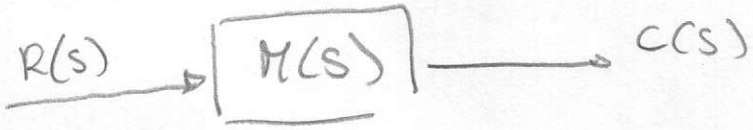












donde M(S) es ⟶

$$M(s) = \frac{\frac{G_1 G_2 G_3 G_4}{1 + G_1 G_2 G_3 H}}{1 + \frac{G_1 G_2 G_3 G_4}{1 + G_1 G_2 G_3 H}} = \frac{\frac{G_1 G_2 G_3 G_4}{(1 + G_1 G_2 G_3 H)}}{\frac{1 + G_1 G_2 G_3 H + G_1 G_2 G_3 G_4}{(1 + G_1 G_2 G_3 H)}} =$$

$$= \frac{G_1 G_2 G_3 G_4}{1 + G_1 G_2 G_3 H + G_1 G_2 G_3 G_4} \quad \text{donde} \quad \begin{cases} G_1 = \frac{1}{s+1} \\ G_2 = \frac{1}{s} \\ G_3 = k(s+2) \end{cases} \quad \begin{cases} G_4 = \frac{1}{s+2} \\ H = \frac{1}{s+2} \end{cases}.$$

sustituyendo los valores

$$M(s) = \frac{\frac{1}{s+1} \cdot \frac{1}{s} \cdot k(s+2) \cdot \frac{1}{s+2}}{1 + \frac{k(s+2)}{(s+1) \cdot s \cdot (s+2)} + \frac{k(s+2)}{(s+1) \cdot s \cdot (s+2)}} = \frac{\frac{k(s+2)}{s \cdot (s+1)(s+2)}}{\frac{s(s+1) + k + k}{s \cdot (s+1)}} =$$

$$= \frac{\frac{k}{s(s+1)}}{\frac{s \cdot (s+1) + 2k}{s(s+1)}} = \frac{k}{s(s+1) + 2k} = \boxed{\frac{k}{s^2 + s + 2k}}.$$