Višepetljasti kaskadni sustav upravljanja
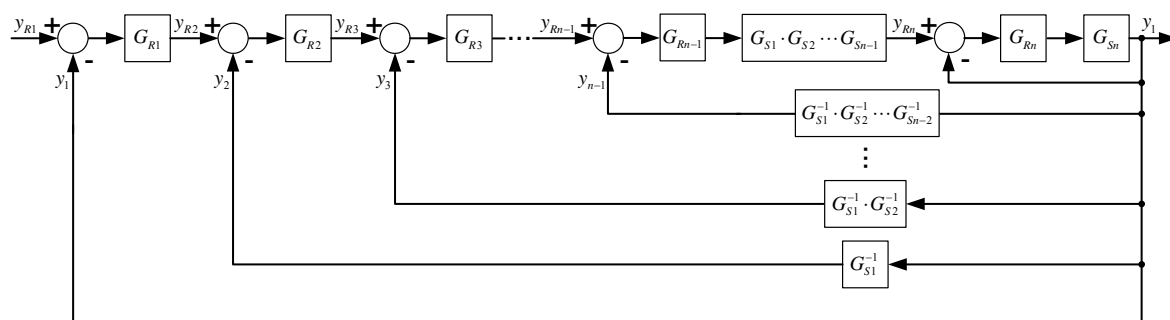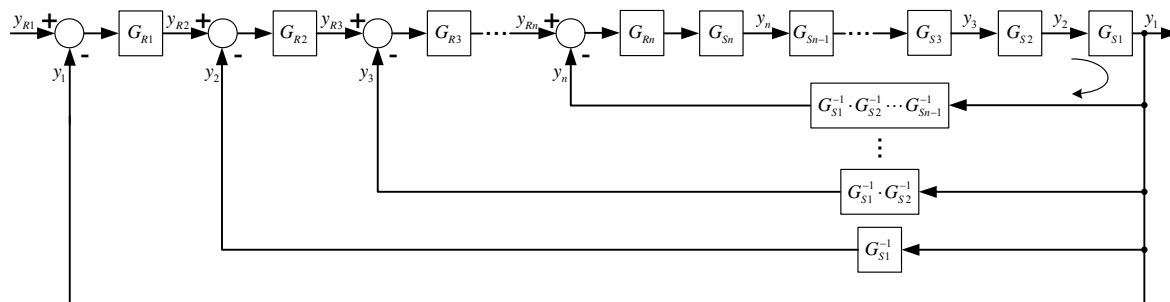
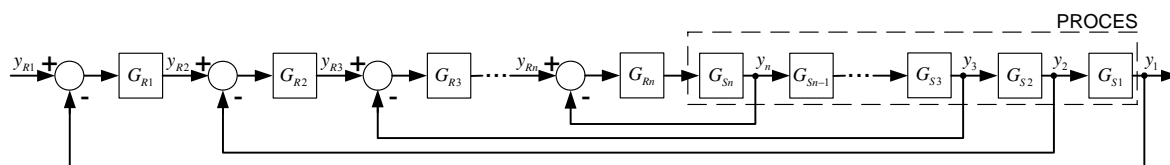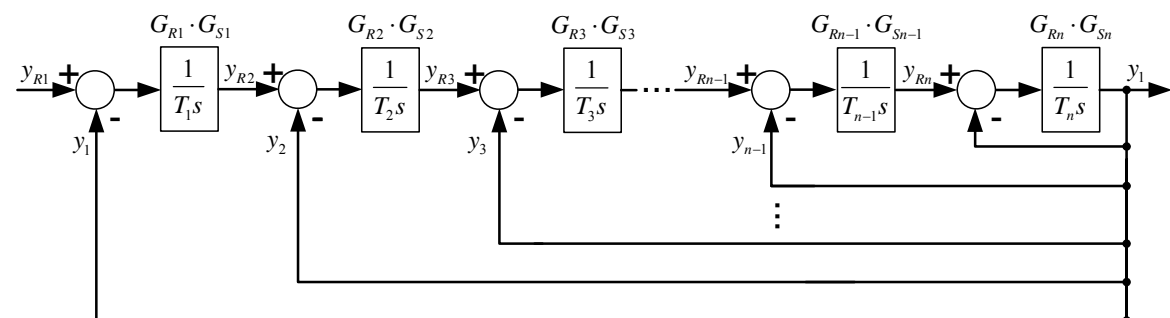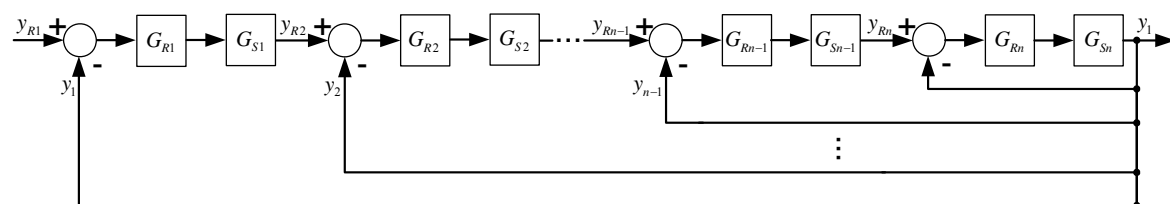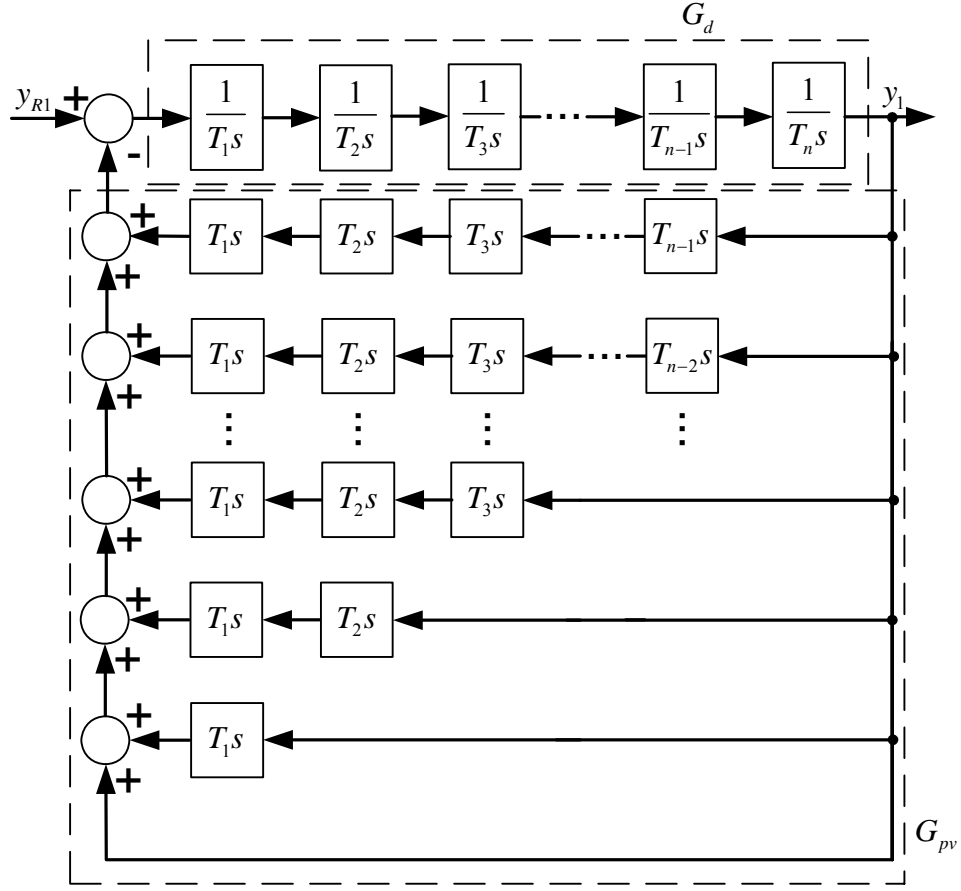Ovisno o tome da li je $G_{Si}(s)$ PT1 ili PT2 član, primjenjuje se PI ili PID regulator.

$$G_{Ri}(s) \cdot G_{Si}(s) = \frac{K_{Ri}}{T_{Ii}s} = \frac{1}{T_i s}$$

$$G_y(s) = \frac{y(s)}{y_{R1}(s)} = \frac{G_d(s)}{1 + G_d(s)G_{pv}(s)} = \frac{\dfrac{1}{T_1 T_2 T_3 ... T_n s^n}}{1 + \dfrac{1 + T_1 s + T_1 T_2 s^2 + ... + T_1 T_2 ... T_{n-1} s^{n-1}}{T_1 T_2 T_3 ... T_n s^n}}$$

$$G_y(s) = \frac{1}{1 + T_1 s + T_1 T_2 s^2 + ... + T_1 T_2 ... T_n s^n}$$