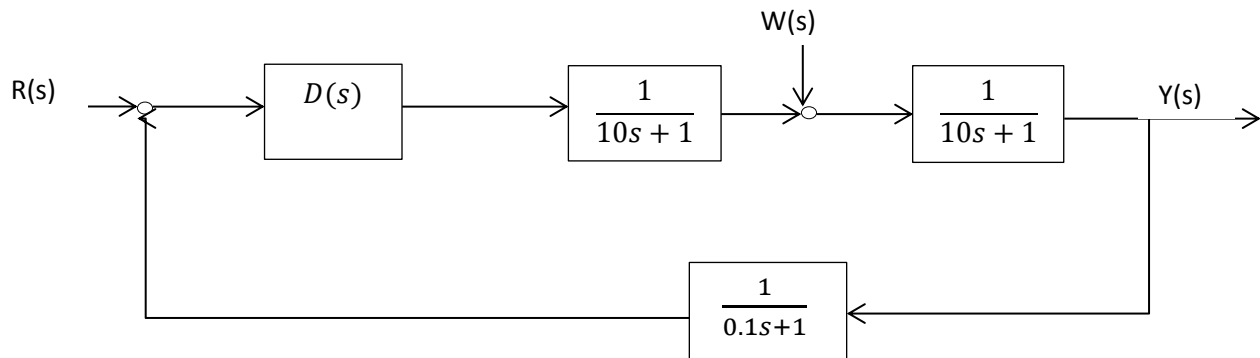


P versus PI control



We will consider two cases

a- $D(s) = K_p$

b- $D(s) = K(1 + \frac{1}{T_i s})$

- 1) Design the proportional control K_p to give a phase margin of approx. 45°
- 2) Design T_i in the PI controller so that one of the system poles in -0.1 is canceled
- 3) Design K to give a phase margin of approx. 45°
- 4) The output $Y(s)$ may be expressed as $Y(s) = T(s)R(s) + F(s)W(s)$, Find $T(s)$ and $F(s)$ for the P controller and for the PI controller
- 5) Calculate the DC-gains of $T(s)$ and $F(s)$ for the P and the PI controller and compare the results for the two methods