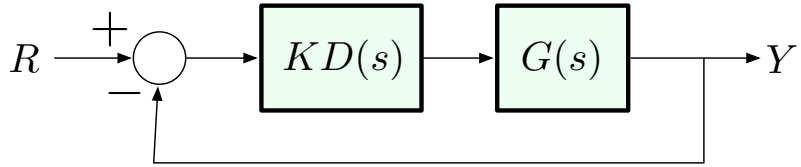
PD Control Design: Evaluation



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

Initial design: $KD(s) = \dfrac{10s+1}{20}$

What have we accomplished?

- PM $\approx 90^\circ$ at $\omega_c = 0.5$
- still need to check in Matlab and iterate if necessary

Trade-offs:

- want ω_{BW} to be large enough for fast response (larger $\omega_{\text{BW}} \longrightarrow$ larger $\omega_n \longrightarrow$ smaller t_r), but not too large to avoid noise amplification at high frequencies
- PD control increases slope $\longrightarrow$ increases $\omega_c \longrightarrow$ increases $\omega_{\text{BW}} \longrightarrow$ faster response
- usual complaint: D-gain is not physically realizable, so let's try lead compensation