Back to Our Example: $G(s) = \dfrac{1}{s^2}$

After adding lead with $K = 1/4$, what do we see?

- adding lead increases ω_c
- $\implies$ PM $< 90°$
- $\implies \omega_{\mathrm{BW}}$ may be $> \omega_c$

To be on the safe side, we choose a *new value* of K so that

$$\omega_c = \frac{\omega_{\mathrm{BW}}}{2}$$

(b/c generally $\omega_c \leq \omega_{\mathrm{BW}} \leq 2\omega_c$)

Thus, we want

$$\omega_c = 0.25 \implies K = \frac{1}{16}$$