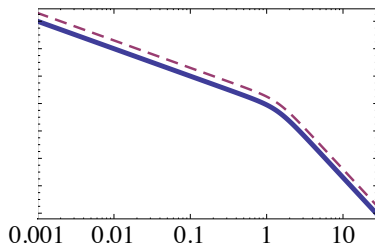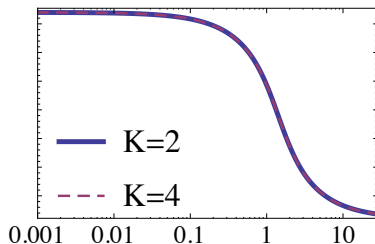# Gain Margin

Back to our example: $G(s) = \dfrac{1}{s(s^2 + 2s + 2)}, \ K = 2$ (stable)

Gain margin (GM) is the factor by which K can be multiplied before we get $M = 1$ when $\phi = 180°$

Since varying K doesn't change $\omega_{180°}$, to find GM we need to inspect M at $\omega = \omega_{180°}$