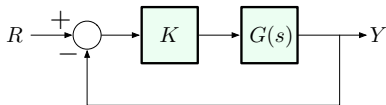# Frequency-Response Design Method: Main Idea

Two-step procedure:

1. Plot the frequency response of the *open-loop* transfer function $KG(s)$ [or, more generally, $D(s)G(s)$], at $s = j\omega$

2. See how to relate this open-loop frequency response to closed-loop behavior.

We will work with two types of plots for $KG(j\omega)$:

1. Bode plots: magnitude $|KG(j\omega)|$ and phase $\angle KG(j\omega)$ vs. frequency ω (could have seen it earlier, in ECE 342)

2. Nyquist plots: $\text{Im}\big(KG(j\omega)\big)$ vs. $\text{Re}\big(K(j\omega)\big)$ [Cartesian plot in s-plane] as ω ranges from $-\infty$ to $+\infty$