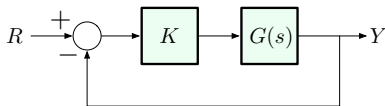## Stability from Frequency Response

Consider this unity feedback configuration:

Suppose that the *closed-loop* system, with transfer function

$$\frac{KG(s)}{1 + KG(s)},$$

is stable for a given value of K.

Question: Can we use the Bode plot to determine how far from instability we are?

Two important characteristics: gain margin (GM) and phase margin (PM).