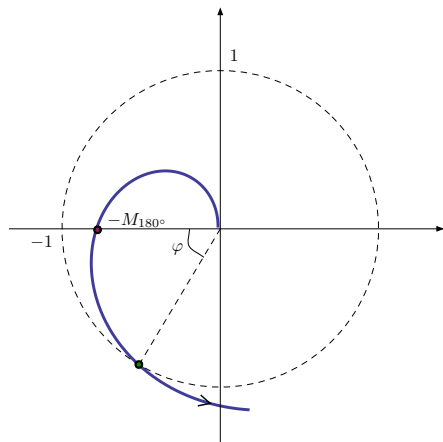


Stability Margins

How do we determine stability margins (GM & PM) from the Nyquist plot?

GM & PM are defined relative to a given K , so consider Nyquist plot of $KG(s)$ (we only draw the $\omega > 0$ portion):



How do we spot GM & PM?

- ▶ GM = $1/M_{180^\circ}$
 - if we divide K by M_{180° , then the Nyquist plot will pass through $(-1, 0)$, giving $M = 1, \phi = 180^\circ$
- ▶ PM = ϕ
 - the phase difference from 180° when $M = 1$