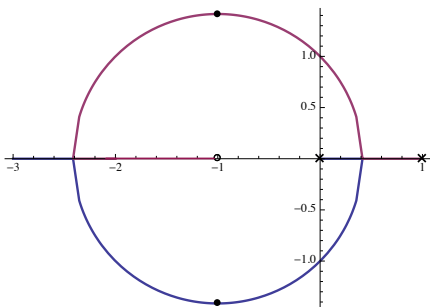# Root Locus for PI Compensation

- ▶ The system is stable for $K > 1$ (from Routh-Hurwitz)
- ▶ For very large K, we get a completely damped system, with *negative real poles*
- ▶ Perfect steady-state tracking of constant references:

$$\frac{E}{R} = \frac{1}{1 + G_c G_p}$$

$$= \frac{s(s-1)}{s(s-1) + K(s+1)}$$

DC gain$(R \rightarrow E) = 0$ (for $K > 1$)

- ▶ However: $1/s$ is not a stable element.