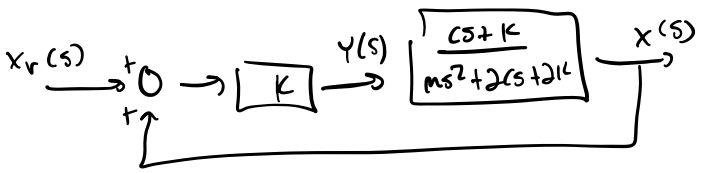


→ Root locus evaluates the closed-loop poles (i.e. roots) as the gain, K_p, is varied: $0 \leftarrow K_p \rightarrow \infty$

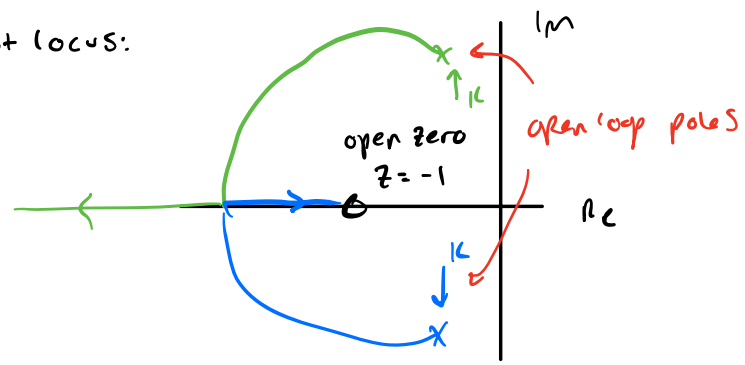
open loop:

$$G(s) = \frac{X(s)}{Y(s)} = \frac{cs+K}{ms^2+2cs+2K} = \frac{s+1}{2s^2+2s+2} \leftarrow \Delta(s)$$

closed-loop:

$$\frac{X(s)}{X_r(s)} = \frac{K_p G(s)}{1+K_p G(s)} = \frac{K_p(s+1)}{2s^2+(2+K_p)s+(2+K_p)} \leftarrow \text{closed loop poles}$$

Root locus:



- Root locus is always symmetric about real axis
- plotting poles of closed loop system changing
- at $K=0$, root locus starts at OL poles
- as $K \to \infty$, root locus approaches OL zeroes and asymptotes to ∞