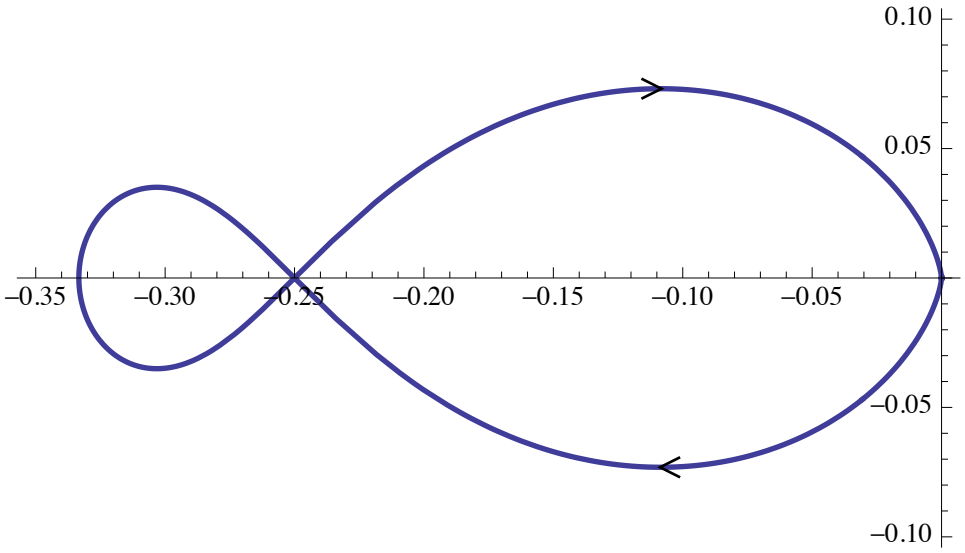
# Example 2: Applying the Nyqiust Criterion

$$G(s) = \frac{1}{(s-1)(s^2+2s+3)}$$

(1 open-loop RHP pole)

Nyquist plot:




$K \in \mathbb{R}$ is stabilizing if and only if

$$\#(\circlearrowleft \text{ of } -1/K) = -1$$

Which points $-1/K$ are encircled once $\circlearrowleft$ by this Nyquist plot?

$$\begin{aligned}\#(\circlearrowleft \text{ of } -1/K) \\ = \#(\text{RHP CL poles}) \\ - \underbrace{\#(\text{RHP OL poles})}_{=1}\end{aligned}$$

only $-1/3 < -1/K < -1/4$

$$\implies 3 < K < 4$$