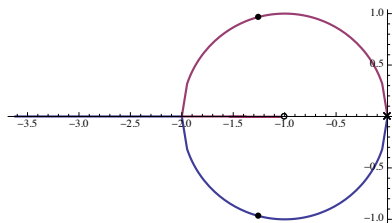


Double Integrator with PD-Control

Characteristic equation: $1 + K \cdot \frac{s + 1}{s^2} = 0$



What can we conclude from this root locus about stabilization?

- ▶ all closed-loop poles are in LHP (we already knew this from Routh, but now can visualize)
- ▶ nice damping, so can meet reasonable specs

So, the effect of D-gain was to introduce an *open-loop zero* into LHP, and this zero “pulled” the root locus into LHP, thus stabilizing the system.