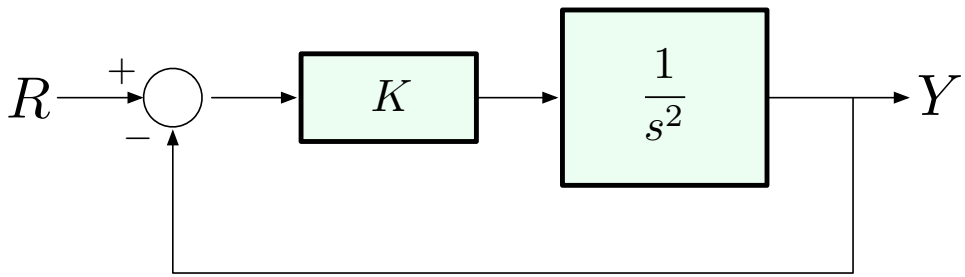
Control Design Using Root Locus

Case study: double integrator, transfer function $G(s) = \dfrac{1}{s^2}$

Control objective: ensure stability; meet time response specs.

First, let's try a simple P-gain:



Closed-loop transfer function:

$$\frac{\frac{K}{s^2}}{1+\frac{K}{s^2}} = \frac{K}{s^2+K}$$