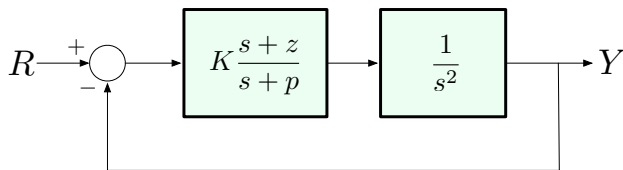


Double Integrator & Lead Compensator



To keep things simple, let's set $K_P = K_D$. Then:

$$K = K_P + pK_D = (1+p)K_D$$

$$z = \frac{pK_P}{K_P + pK_D} = \frac{pK_D}{(1+p)K_D} = \frac{p}{1+p} \xrightarrow{p \rightarrow \infty} 1$$

Since we can choose p and z directly, let's take

$$z = 1 \quad \text{and} \quad p \text{ large.}$$

We expect to get behavior similar to PD control.