

Using RL to Select Parameter Values

In Lab 5, you will need to select the value of gain K that corresponds to a desired pole on the root locus.

Here is one way of doing it:

$$L(s) = -\frac{1}{K} \quad \text{— negative real number}$$

$$\Downarrow$$

$$K = -\frac{1}{L(s)} = \frac{1}{|L(s)|}$$

$$L(s) = \frac{(s - z_1) \dots (s - z_m)}{(s - p_1) \dots (s - p_n)}$$

$$\implies K = \frac{1}{|L(s)|} = \frac{|s - p_1| \dots |s - p_n|}{|s - z_1| \dots |s - z_m|}$$