

Example

Given $\dot{x} = Ax + Bu$

$$A = \begin{pmatrix} -15 & 8 \\ -7 & 1 \end{pmatrix}, \quad B = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$$

Goal: apply state feedback to place closed-loop poles at $-10 \pm j$.

Step 1: convert to CCF — already did this

$$T = \begin{pmatrix} 1 & -1 \\ 0 & 1 \end{pmatrix} \quad \longrightarrow \quad \bar{A} = \begin{pmatrix} 0 & 1 \\ -15 & -8 \end{pmatrix}, \quad \bar{B} = \begin{pmatrix} 0 \\ 1 \end{pmatrix}$$