THE UNIVERSITY OF TEXAS AT SAN ANTONIO

EE 5143

LINEAR SYSTEMS AND CONTROL

QUIZ # 9

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Name:

The following system is given

$$\dot{x}(t) = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} x(t) + \begin{bmatrix} 1 \\ 1 \end{bmatrix} u(t).$$

Can you find a state feedback gain $u(t) = -Kx(t) = -[k_1 \ k_2]x(t)$ such that the closed loop system eigenvalues are $\lambda_{cl} = \{-1, -1\}$? Find K if that is possible.

What if the desired closed loop system eigenvalues are $\lambda_{cl} = \{-1, 1\}$? Is that doable? If yes, find K.

Your Solution:

Your Solution: