

3.5 Exercises

Problem 1 Find \mathbf{A}^{-1} , then use \mathbf{A}^{-1} to solve the system $\mathbf{A}\vec{x} = \vec{b}$.

$$\mathbf{A} = \begin{bmatrix} 7 & 9 \\ 5 & 5 \end{bmatrix}, \vec{b} = \begin{bmatrix} 3 \\ 2 \end{bmatrix}$$

Problem 2

Use the identity matrix to find the inverse of $\mathbf{A} = \begin{bmatrix} 1 & -2 & 2 \\ 3 & 0 & 1 \\ 1 & -1 & 2 \end{bmatrix}$.

Problem 3 Find a matrix \mathbf{X} (matrix FULL of unknowns!!!) such that $\mathbf{AX} = \mathbf{B}$,

$$\text{where } \mathbf{A} = \begin{bmatrix} 1 & 5 & 1 \\ 2 & 1 & -2 \\ 1 & 7 & 2 \end{bmatrix}, \text{ and } \mathbf{B} = \begin{bmatrix} 2 & 0 & 1 \\ 0 & 3 & 0 \\ 1 & 0 & 2 \end{bmatrix}.$$

Problem 4. Let \mathbf{A} be an $n \times n$ matrix with either a row or a column consisting only of zeros. Show that \mathbf{A} is not invertible.