

Linear Algebra I E2

Tutorial 2

Problem 1

Using the matrices

$$A = \begin{bmatrix} 4 & 2 \\ 5 & 7 \\ 5 & 7 \end{bmatrix}, \quad D = \begin{bmatrix} 4 & 2 & 0 \\ 0 & -3 & 2 \\ 2 & 0 & 0 \end{bmatrix}, \quad E = \begin{bmatrix} 1 & -3 & 0 \\ -4 & -4 & -3 \\ 3 & 0 & -4 \end{bmatrix}$$

compute the following.

$$(3D^T - E)A$$

Problem 2

Find matrices A , \mathbf{x} , and \mathbf{b} that express the given system of linear equations as a single matrix equation $A\mathbf{x} = \mathbf{b}$.

$$\begin{aligned} 7x_1 - 5x_2 + 5x_3 &= 8 \\ 7x_1 - x_2 + 8x_3 &= -6 \\ x_1 + 2x_2 + 4x_3 &= 0 \end{aligned}$$

Problem 3

Use the given information to find A .

$$(I + 2A)^{-1} = \begin{bmatrix} 5 & 1 \\ 19 & 6 \end{bmatrix}$$