HOMEWORK SET #11

EE 510: Linear Algebra for Engineering

Assigned: 4 November 2024
Due: No Submission

Directions: Please show all work and box answers when appropriate.

1. Introduction to Linear Algebra by Gilbert Strang (5th Edition):

   a) Problem Set 6.5: #3, #9, #22, #26.

2. Introduction to Linear Algebra by Gilbert Strang (5th Edition):

   a) Problem Set 10.3: #3, #8, #9.

3. Determine whether the following matrix is positive definite:

$$A = \begin{bmatrix} 2 & -17 & 7 \\ -17 & -4 & -1 \\ 7 & -1 & -14 \end{bmatrix} .$$

4. Find the Jordan decomposition of the following matrix:

$$A = \begin{bmatrix} 3 & 0 & 0 & 0 \\ 1 & 4 & 1 & 0 \\ 1 & 0 & 4 & 1 \\ 1 & 0 & 0 & 5 \end{bmatrix} .$$

5. Find the singular value decomposition of

$$A = \begin{bmatrix} 2 & 2 & -2 \\ 2 & 2 & -2 \\ -2 & -2 & 6 \end{bmatrix} .$$

Find the pseudo-inverse A^+ of matrix A.