

# Homework V First-Half

Due in class Monday August 06 2017

1. Compute

$$3 \begin{bmatrix} -2 & 3 & 5 \\ 1 & 7 & -1 \end{bmatrix} - 5 \begin{bmatrix} 1 & 2 & -4 \\ 0 & 3 & 2 \end{bmatrix} + \begin{bmatrix} 2 & 3 & 4 \\ -2 & 1 & -5 \end{bmatrix}$$

2. Compute

$$\begin{bmatrix} -2 & 3 & 5 \\ 1 & 2 & -1 \end{bmatrix} \begin{bmatrix} 2 & 1 \\ 1 & 5 \\ -1 & 3 \end{bmatrix} \begin{bmatrix} 3 & -1 & 5 & -2 \\ 2 & -4 & 1 & 3 \end{bmatrix}$$

3. If  $A$  is a  $n \times n$  square matrix, show that  $A + A^T$  is a symmetric matrix.
4. Use Gaussian Elimination to solve the following system of linear equations:

$$\begin{cases} 2x_2 + x_3 = -8 \\ x_1 - 2x_2 - 3x_3 = 0 \\ -x_1 + x_2 + 2x_3 = 3 \end{cases}$$

5. Use Gaussian Elimination to solve the following system of linear equations:

$$\begin{cases} x_1 + 2x_2 - x_3 + 4x_4 = 4 \\ x_2 - x_3 + x_4 = 2 \\ 2x_1 + x_2 + x_3 - x_4 = 6 \end{cases}$$