

## Assignment/Homework A6b

### **Question 03:**

Use Gaussian Elimination to find the inverse of:

$$S = \begin{pmatrix} 2 & 4 & -2 \\ 4 & 9 & -3 \\ -2 & -3 & 7 \end{pmatrix}$$

**Question 05:** Find a combination of  $x_1 w_1 + x_2 w_2 + x_3 w_3$  that gives the zero vector:

$$w_1 = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}; w_2 = \begin{bmatrix} 4 \\ 5 \\ 6 \end{bmatrix}; w_3 = \begin{bmatrix} 7 \\ 8 \\ 9 \end{bmatrix}.$$

Are these vectors linearly independent or dependent? These three vectors lie in a \_\_\_\_\_? A matrix  $W$  with  $w_1, w_2, w_3$  as columns is invertible or non-invertible?

### **Question 07:**

Show that

$$x = \begin{bmatrix} 0 & 0 & -1 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \end{bmatrix}$$

is a solution to the equation

$$x^3 + 1 = 0.$$

**Question 09:** Find the eigenvalues and eigenvectors of the matrix:

$$A = \begin{bmatrix} 1 & 0 \\ 1 & 2 \end{bmatrix}$$