1) Define a NumPy array to represent the vector *v* = [1, 5, 2].

2) Define a NumPy array to represent the vector *w* = [0, …, 8].

3) Define a NumPy array to represent the matrix

$$A = \begin{bmatrix} 2 & 5 & 6 \\ 3 & 2 & 1 \\ 4 & 9 & 3 \end{bmatrix}$$

4) Define a NumPy array to represent the matrix

$$B = \begin{bmatrix} 0 & 1 & 2 \\ 3 & 4 & 5 \\ 6 & 7 & 8 \end{bmatrix}$$

5) Extract the third element of *v*.

6) Extract the second, third, and fourth elements of *w*.

7) Extract the element in the first row and the second column of *A*.

8) Extract the second column of *B*.

9) Calculate the transpose of A.

10) Calculate determinant of A (using the function `linalg.det`)

11) Calculate the inverse of A.

12) Calculate Av.

13) Calculate the matrix product AB.

14) Caclulate $3A^2 + 2A$.

15) Solve the system of linear equations $Ax = v$ for x.