T5 - Assignment 4

1. Consider the following matrix.

$$A = \begin{bmatrix} 11 & -8 & -4 \\ -8 & -1 & -2 \\ 4 & -2 & -4 \end{bmatrix}$$

    a. Calculate the characteristic polynomial.
    b. Compute Eigenvalues of A.
    c. Compute Eigenvectors for all the eigenvalues of A.
    d. State the Cayley-Hamilton theorem and calculate the inverse of A using Cayley-Hamilton theorem.
    e. Check if A is diagonalizable. If so, calculate D and P matrices. If not, give the reason.
    f. Calculate A^{20} using the Cayley-Hamilton theorem.