DIAGONALIZATION IN THE COMPLEX — Math 21b

Diagonalize the matrix

$$L = \begin{bmatrix} 0 & 0 & 1 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \end{bmatrix} .$$

1) The characteristic polynomial is $f_A(\lambda) =$

2) The eigenvalues are:

5) The eigenvectors are

$$\begin{bmatrix} . \\ . \\ . \end{bmatrix} \begin{bmatrix} . \\ . \\ . \end{bmatrix} \begin{bmatrix} . \\ . \\ . \end{bmatrix}$$

5)If S is the matrix which contains these eigenvectors as columns, then $S^{-1}AS = D$ is diagonal. This diagonalization is called the **discrete Fourier transform**.

$$S^{-1}AS = \begin{bmatrix} . & . & . \\ . & . & . \\ . & . & . \end{bmatrix}$$