

(b)
$$x = \alpha y + \beta$$

$$(34, 14, 1) = (1)$$

$$(x_{2}, 13) = (31)$$

$$(x_{3}, 13) = (31)$$

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$$x_{3} = \alpha y_{3} + \beta + \delta_{1}$$

$$x_{4} = \alpha y_{3} + \beta + \delta_{1}$$

$$x_{5} = \alpha y_{5} + \beta + \delta_{1}$$

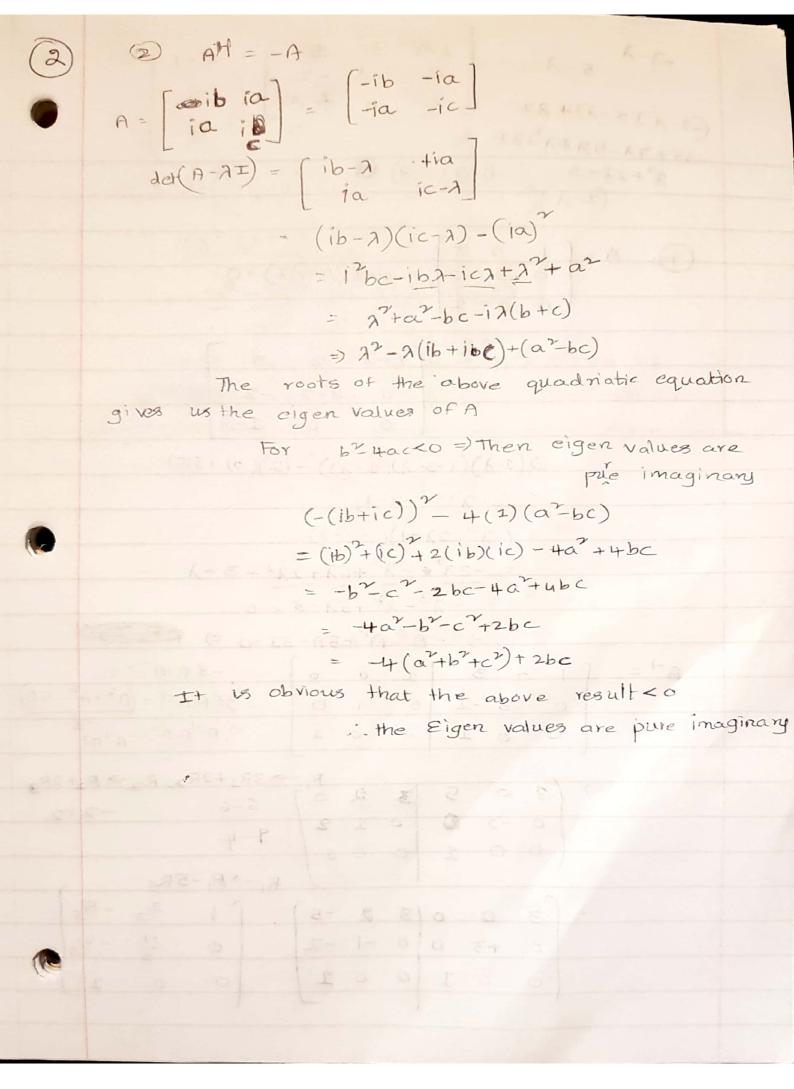
$$x_{7} = \alpha y_{7} + \beta + \delta_{1}$$

$$x_{8} = \alpha y_{7} + \beta + \delta_{1}$$

$$x_{9} = \alpha y_{7} + \beta + \delta_{1}$$

$$x_{1} = \alpha y_{1} + \beta + \delta_{2}$$

$$x_{1} = \alpha y_{1} + \beta +$$



(3) Given
$$A = \begin{bmatrix} 1 & 1+j \\ 2-2j & + \end{bmatrix}$$

$$|A-2I| = \begin{bmatrix} 1-A & 1+j \\ 2-2j & +-A \end{bmatrix} \Rightarrow \lambda^{2} = 5\lambda = 0$$

$$\lambda = 0, \lambda = 5$$
Right Eigen vectors
For $\lambda = 0$, $\begin{bmatrix} 1 & 1+j \\ 2-2j & + \end{bmatrix}$

$$= \begin{bmatrix} 2-2j & + \\ 0 & 0 \end{bmatrix}$$

$$= \begin{bmatrix} 2-2j & + \\ 0 & 0 \end{bmatrix}$$

$$= \begin{bmatrix} 2-2j & + \\ 0 & 0 \end{bmatrix}$$

$$N(A-2I)$$

$$N(A-5I) = \begin{bmatrix} -4 & 1+j \\ 2-2j & -1 \end{bmatrix}$$

$$V = \begin{bmatrix} -1-j & 1 \\ 1 & 2-2j \end{bmatrix} \Rightarrow V^{-1} \Rightarrow |V| = \begin{bmatrix} -1-j & 2-2j & -1 \\ -1-j & -1-j & 2-2j & -1 \end{bmatrix}$$

$$V = \begin{bmatrix} -1-j & 1 \\ 1 & 2-2j & -1 \end{bmatrix} = -5$$

$$V = \begin{bmatrix} -2-2j & -1 \\ -1 & -1-j & 2-2j & -1 \end{bmatrix} = -5$$

$$V = \begin{bmatrix} -5 & 2-2j & -1 \\ -1 & -1-j & 2-2j & -1 \end{bmatrix} = -5$$

$$V = \begin{bmatrix} -5 & 2-2j & -1 \\ -1 & -1-j & 2-2j & -1 \end{bmatrix} = -5$$

$$V = \begin{bmatrix} -1-j & 2-2j & -1 \\ 2-2j & -1 & 2-2j & -1 \\ 2-2j & -1 & 2-2j & -1 \end{bmatrix} = -5$$

$$V = \begin{bmatrix} -1-j & 2-2j & -1 & 2-2j \\ 2-2j & -1 & 2-2j & -1 \\ 2-2j & -1 & 2-2j & -1 \end{bmatrix} = -5$$

$$V = \begin{bmatrix} -1-j & 2-2j & -1 & 2-2j \\ 2-2j & -1 & 2-2j & 2-2j \\ 2-2j & -1 & 2-2j & 2-2j \\ 2-2j & -1 & 2-2j & 2-2j \\ 2-2j & -$$

$$= \begin{bmatrix} 0 & 0 \\ 1 & 1+j \end{bmatrix} \begin{bmatrix} -1-j & 1 \\ 1 & 2-2j \end{bmatrix}$$

$$= \begin{bmatrix} 0+0 & 0+0 \\ -1-j+1+j & 1+(2-j)(1+j) \end{bmatrix}$$

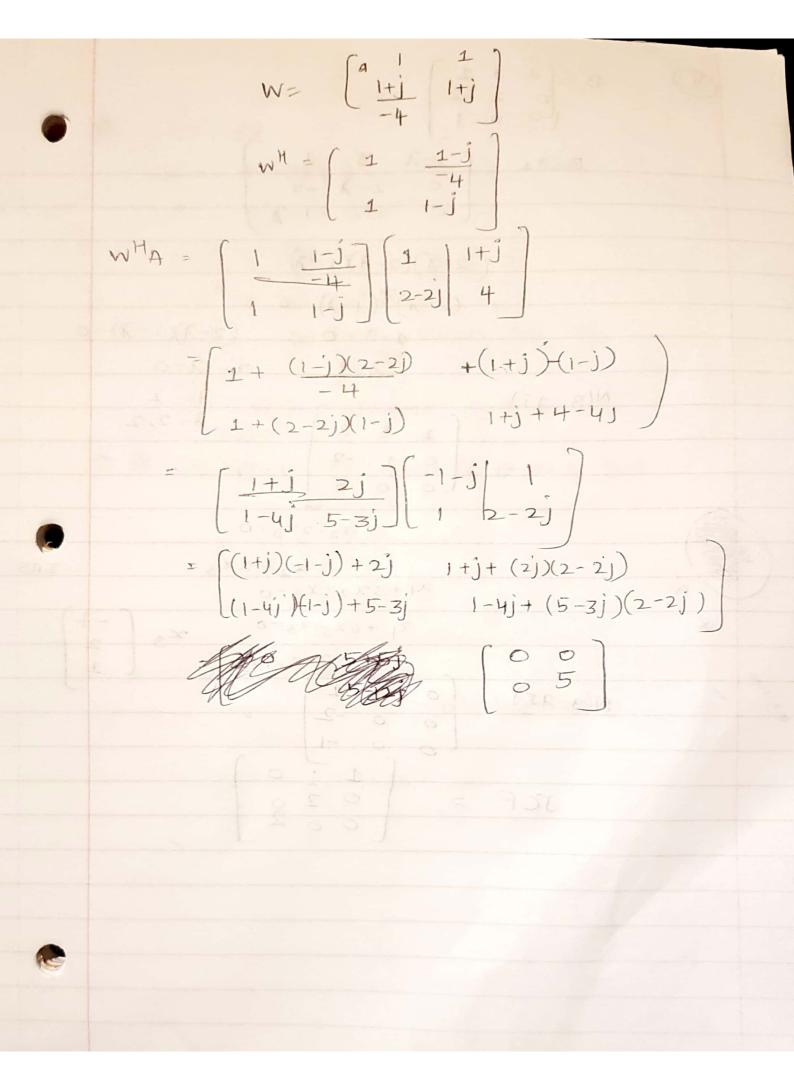
$$= \begin{bmatrix} 0 & 0 \\ 0 & 5 \end{bmatrix}$$
(*) Left Eigen Vectors:

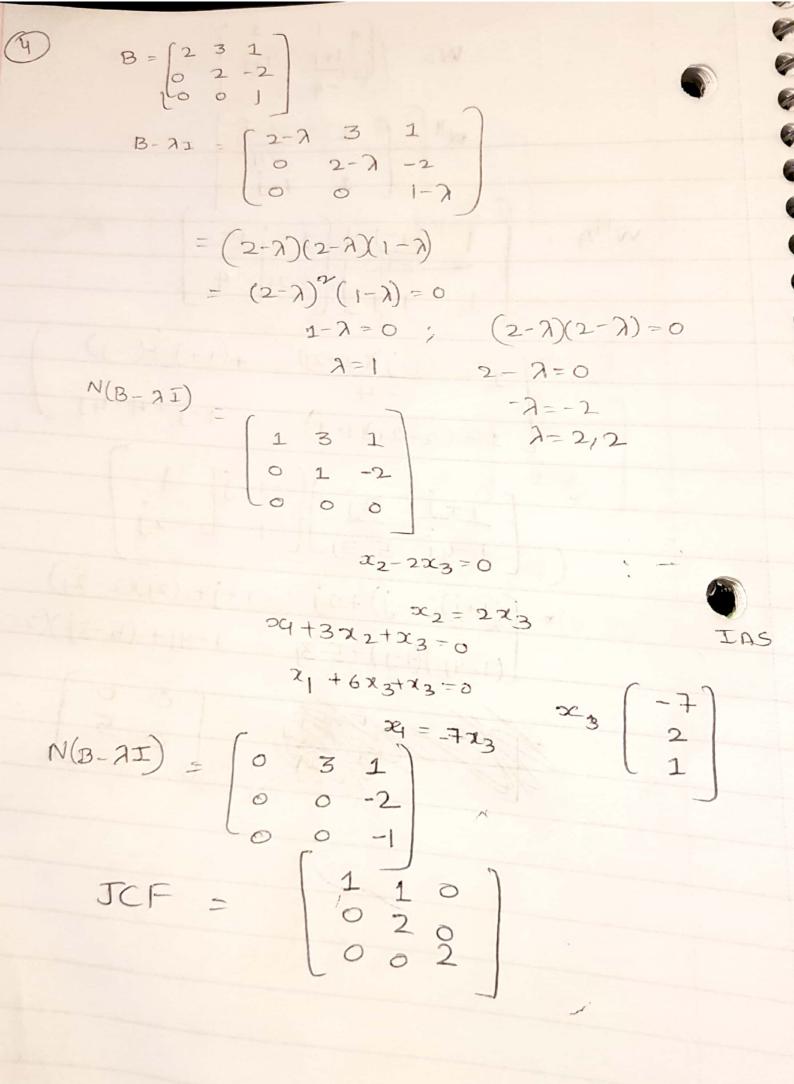
To get left Eiger

$$y^{T}(A-\lambda I) = 0$$

$$x^{T}(A-\lambda I) = 0$$

$$x^{T}$$





A = U.VH be a rank 1 matrix uand vare column vectors To prove vtu as on eigen value =) Ax=Ax Ax= (vHu)x =) u.vHz=vH.ux! . VH.u is an eigen value o is an eigen value of multiplicity (n-1) =) A = U. VH det (A= 2I) = [U-VH-2I] JCF OF A

milion Lews o ad HV II A AX= Ax. $A^{2}x = 0$ $\lambda Ax = \lambda^{2}x$ A3x = 72Ax = 73x =) A4x = 24x =) A+=0 =) 24=0 =) Eigen values are zero 7=0 .. A is nilpotent if 2=0 3) @ A upper (or) lower thangle is such that tr(A)=0 Show AREO(A) geo (AE) 5 2K=0H =) 2=0 therdia = 0 re A is nilpotent matrix