

Ramos,
Julian

Tarea 5

HOJA N°

FECHA

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

1a) Polinomio Característico

$$\chi_A(x) = \det(A - xI_d)$$

$$B = \det(A - xI_d) = \begin{bmatrix} 1-x & 0 & 0 & 0 \\ 0 & 1-x & 0 & 0 \\ 0 & 0 & 1-x & -1 \\ 0 & 0 & 1 & 1-x \end{bmatrix} \xrightarrow{R4 = R4 - \frac{1}{1-x} \cdot A3} \begin{bmatrix} 1-x & 0 & 0 & 0 \\ 0 & 1-x & 0 & 0 \\ 0 & 0 & 1-x & -1 \\ 0 & 0 & 0 & \frac{x^2-2x+2}{1-x} \end{bmatrix}$$

$$\det(A - xI_d) = B_{00} \cdot B_{11} \cdot B_{22} \cdot B_{33} = (x^2 - 2x + 2)(-x + 1)^2$$

1b)
Raíces de $\det(A - xI_d) = \{1+i, 1-i, 1\} = \text{Autovalores de } A$