

1) Tabloyu doldurun

Komplex Sayı	reel	sanal	genlik	aci Derece	aci Radyan
3+4j	3	4	5	53.1 ⁰	0.927
e ^{3+4j}					
e ^{πj}					
e ^j					
e ^π					
1-j					
-1					
-j					
			10	45	
			10		-1
2πi					

2) Ifadeleri hesaplayın

a) $\frac{1+j}{1-j}$, b) $\frac{-3+4j}{3+4j}$, c) $\frac{-3+4j}{-3-4j}$, d) $\frac{3+4j}{4+3j} - 1$, e) $\frac{(3+4i)(5-6i)}{(-3+4i)(5+6i)}$

3) Ifadeleri hesaplayın (a+bi) haline getirin.

a) Ln(-e), b) Ln(-1), c) Ln(-3+4j), d) j^j, e) (1+j)^(3+4j), f) (-i)^{0.25}

4) Kokleri bulun. a) z⁵=32, b) z⁴=-1, c) z⁵=32j, d) z⁵=3+4j,

5) Matrisin tersini bulun $\begin{bmatrix} 1 & j \\ 0 & 2j \end{bmatrix}$

6) Matrisin tersini bulun $A = \begin{bmatrix} 2 & 0 & 0 & 0 \\ 0 & 1+i & 0 & 0 \\ 0 & 0 & -i & 0 \\ 0 & 0 & 0 & i \end{bmatrix}$

7) Matrislerin ozdegerlerini ve ozvektorlerini bulun.

[q1,q2]=eig([12 -3, 8 2]), [q1,q2]=eig([1 5, -4 5]),

(a) $A = \begin{bmatrix} 12 & -3 \\ 8 & 2 \end{bmatrix}$ b) $B = \begin{bmatrix} 1 & 5 \\ -4 & 5 \end{bmatrix}$

9) X,Y,Z lineer bagimlimidir. $X = \begin{bmatrix} 1 \\ i \\ 1+i \\ 1-i \end{bmatrix}$, $Y = \begin{bmatrix} 0 \\ i \\ 1+i \\ 0 \end{bmatrix}$, $Z = \begin{bmatrix} 2 \\ 3i \\ 3+3i \\ 2-2i \end{bmatrix}$,

10) $A = \begin{bmatrix} -5 & 6 & -3 \\ 1 & 0 & 1 \\ 8 & -8 & 6 \end{bmatrix}$, Asagidaki vektorelerden hangileri ozvektor olabilir.

$$X_1 = \begin{bmatrix} 0 \\ 2 \\ 4 \end{bmatrix}, \quad X_2 = \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}, \quad X_3 = \begin{bmatrix} 2 \\ 0 \\ 2 \end{bmatrix}, \quad X_4 = \begin{bmatrix} 2 \\ 0 \\ -2 \end{bmatrix}, \quad X_5 = \begin{bmatrix} 3 \\ 3 \\ 0 \end{bmatrix}$$

11) A Linear Matrix differential equation system is described by $\begin{bmatrix} \frac{dx_1}{dt} \\ \frac{dx_2}{dt} \\ \frac{dx_3}{dt} \end{bmatrix} = [A] \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}$ and the

eigenvalues and eigenvectors of A are $\lambda_1=0$, $\lambda_2=4+2i$, $\lambda_3=4-2i$, $V_1 = \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}$, $V_2 = \begin{bmatrix} 0 \\ 1 \\ 5-i \end{bmatrix}$, $V_3 = \begin{bmatrix} 0 \\ 1 \\ 5-i \end{bmatrix}$,

Write solutions $x_1(t)$, $x_2(t)$, $x_3(t)$. Convert complex identities into sine and cosine terms and write the solutions in terms of $x_1(t)$, $x_2(t)$, $x_3(t)$. Only the form of $x_1(t)$, $x_2(t)$, $x_3(t)$ are required. Exact values of $x_1(t)$, $x_2(t)$, $x_3(t)$ are **not** asked.