ourdiu.com | Shared by Tayashuk Imam Hossain

Daffodil International University

Dept. of Electrical and Electronic Engineering (SPRING 26)

Quiz: 2

Course Code: 0541-121 Course Title: Linear Algebra and Complex Variable

Section: F Time: 30 minutes Set-1 Marks: 15

1. $T: \mathbb{R}^3 \to \mathbb{R}^3$ is given by $T(x, y, z) = (x - 2y + 4z, 2x - 4y - z, y + z)$

Check whether T is a linear mapping and find T^{-1} if it exists. 7

2. In a power distribution network, voltage readings are taken from four different transmission lines. These readings are represented as vectors:

$V_1 = (1,2,1,1), V_2 = (2,-1,2,0), V_3 = (3,1,3,1), V_4 = (1,0,1,1)$

A new voltage reading is observed at another point in the network: $V = (7,2,7,3)$. Determine whether V can be expressed as a linear combination of V_1, V_2 and V_3, V_4. 6

3. Discuss about linear independence of vectors. 2

ourdiu.com | Shared by Tayashuk Imam Hossain

Daffodil International University

Dept. of Electrical and Electronic Engineering (SPRING 26)

Quiz: 3

Course Code: 0541-121 Course Title: Linear Algebra and Complex Variable

Section: L1T2-F Time: 30 minutes SET- 2 Marks: 15

1.If matrix A $= \begin{bmatrix} -3 & 1 & -1 \\ -7 & 5 & -1 \\ -6 & 6 & -2 \end{bmatrix}$ 8

i. Find a spectrum of A.

ii.Find eigenvalues of A^T, A^3, A^{-1}, A^{-3}.

iii. Find A^{-1} by using Cayley-Hamilton Theorem.

2. Find the fifth root of $-1 - 2i$. 5

3. Express $\frac{(1+2i)^2}{(2+i)^2}$ to the form $A+ iB$. 2

ourdiu.com | Shared by Tayashuk Imam Hossain

Daffodil International University

Dept. of Electrical and Electronic Engineering (SPRING 26)

Quiz: 4/ missed quiz

Course Code: 0541-121 Course Title: Linear Algebra and Complex Variable

Time: 30 minutes Marks: 15

1.Evaluate the following $3 * 3 = 9$

i. $\oint_C \frac{e^{2z}\cos z}{\left(z-\frac{\pi}{3}\right)^3} dz$ where C is the circle $|z| = 2$

ii. $\oint_C \frac{\sin \pi z^2 + \cos \pi z^2}{(z-2)(z-1)} dz$ where C is the circle $|z\text{-}1| = 4$

iii. $\oint_C \frac{e^z}{(z-2)} dz$ where C is a) the circle $|z| = 3$, b) the circle $|z| = 1$

2. Find all the fifth root of $\frac{(2-i)^2(1+i)^2}{(3+i)^2(1-i)^2}$ and locate these points in a complex plane. 6

ourdiu.com