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[NPTEL \(https://swayam.gov.in/explorer?ncCode=NPTEL\)](https://swayam.gov.in/explorer?ncCode=NPTEL) » **Basic Linear Algebra (course)**
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Unit 7 - Week 5

Course outline

How does an NPTEL online course work?

Week 0 - Welcome to the course!

Week 1

Week 2

Week 3

Week 4

Week 5

Lecture 22 :
Linear Transformations I (unit? unit=38&lesson=43)

Lecture 23 :
Linear Transformations II (unit? unit=38&lesson=44)

Assignment 5 - Objective

The due date for submitting this assignment has passed. **Due on 2020-04-01, 23:59 IST.**
As per our records you have not submitted this assignment.

1) For every $n \in \mathbb{Z}^+$, let

$$\mathcal{P}_n = \{f(X) = a_0 + a_1X + \dots + a_nX^n : a_0, a_1, \dots, a_n \in \mathbb{R}\}.$$

Define $T : \mathcal{P}_3 \rightarrow \mathcal{P}_5$ as

$$T(f(X)) = \int_0^X \int_0^Y f(U) dU dY, \text{ for all } f(X) \in \mathcal{P}_3.$$

State whether True or False. T is a linear map.

True

False

No, the answer is incorrect.

Score: 0

Accepted Answers:

True

1 point

2) State whether True or False. \mathbb{R}^3 with the usual inner product has a unique orthonormal basis. **1 point**

True

False

No, the answer is incorrect.

Score: 0

Accepted Answers:

False

3) Let $\{u_1, u_2, u_3\}$, $\{v_1, v_2, v_3\}$ be two orthonormal bases of \mathbb{R}^3 with the usual inner product. Let $U = \begin{bmatrix} u_1 & u_2 & u_3 \end{bmatrix}$ and $V = \begin{bmatrix} v_1 & v_2 & v_3 \end{bmatrix}$. Suppose there exists a 3×3 matrix A such that $U = AV$. Then **1 point**

- Lecture 24 :
Linear Transformations III (unit? unit=38&lesson=45)
- Lecture 25 :
Orthonormal Basis, Geometry in \mathbb{R}^2 I (unit? unit=38&lesson=46)
- Lecture 26 :
Orthonormal Basis, Geometry in \mathbb{R}^2 II (unit? unit=38&lesson=47)
- Lecture 27 :
Orthonormal Basis, Geometry in \mathbb{R}^2 III (unit? unit=38&lesson=48)
- Weekly Feedback (unit? unit=38&lesson=78)
- Download Videos (unit? unit=38&lesson=87)
- Quiz :
Assignment 5 - Objective (assessment? name=93)**
- Assignment 5 - Subjective (/noc20_ma08/subjective? name=94)
- Assignment 5 - Subjective: Solutions (unit? unit=38&lesson=101)

Week 6

Week 7

Week 8

- A is a symmetric matrix.
- A is an invertible matrix.
- A is a diagonal matrix.
- A is the identity matrix.

No, the answer is incorrect.

Score: 0

Accepted Answers:

A is an invertible matrix.

