11.3.1 The Unit Basis Vectors, Again

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Week 11 due Dec 22, 2023 21:12 IST Completed

11.3.1 The Unit Basis Vectors, Again

Video

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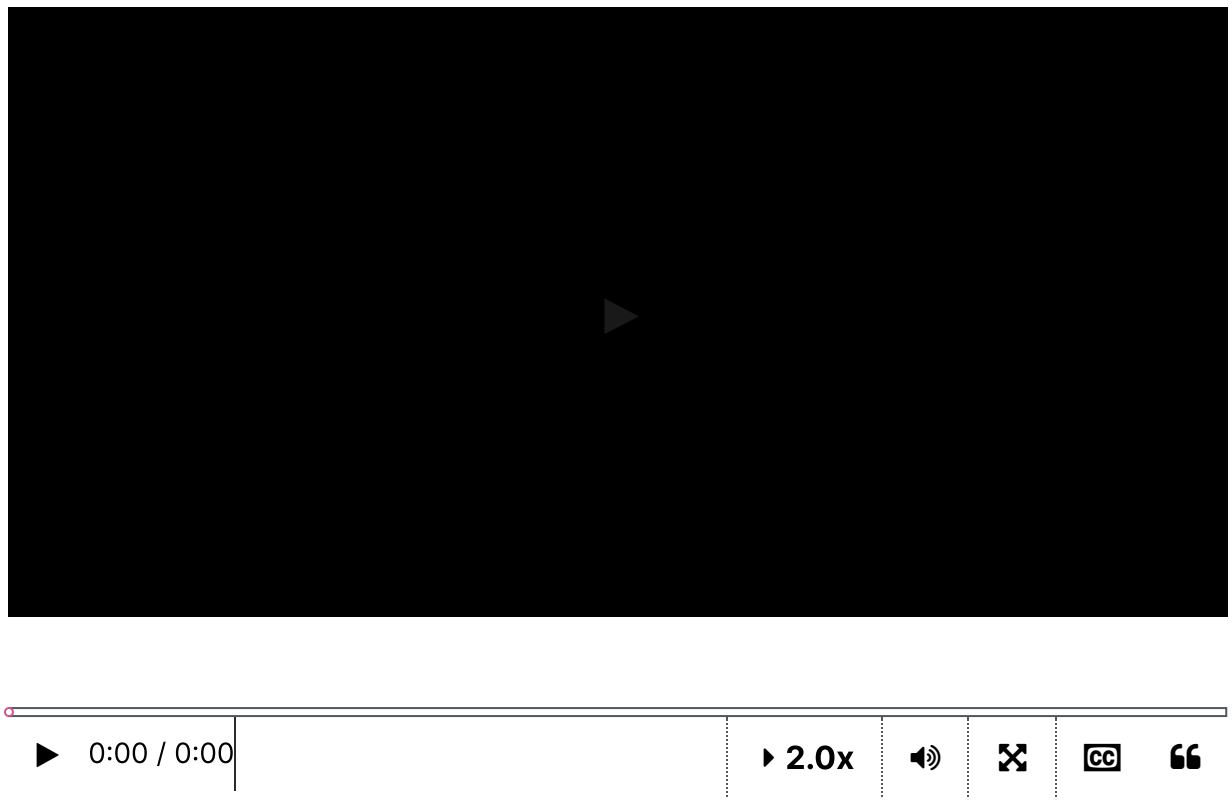

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Dr. Rovert van de Geijn: Let's start by revisiting the unit basis vectors.

Here are the unit basis vectors for R3.

Any vector in R3 can be written as a linear combination of these vectors.

They're nice.

You've seen this many, many times in other classes before.

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Reading Assignment

0 points possible (ungraded)

Read Unit 11.3.1 of the notes. [LINK]

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Calculator

Homework 11.3.1.1

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Consider the vectors

$$v_0 = \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}, \quad v_1 = \begin{pmatrix} 1 \\ 1 \\ 0 \end{pmatrix} \quad \text{and} \quad v_2 = \begin{pmatrix} 1 \\ 1 \\ 1 \end{pmatrix}$$

1. Compute

1. $v_0^T v_1 =$ 1 ✔ Answer: 1
2. $v_0^T v_2 =$ 1 ✔ Answer: 1
3. $v_1^T v_2 =$ 2 ✔ Answer: 2
4. $v_0^T v_0 =$ 1 ✔ Answer: 1
5. $v_1^T v_1 =$ 2 ✔ Answer: 2
6. $v_2^T v_2 =$ 3 ✔ Answer: 3

2. These vectors are orthonormal.

FALSE ✔ Answer: FALSE

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Calculator

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