

Ţ <u>Help</u>

sandipan_dey ~

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☆ Course / Week 1: Vectors in Linear Algebra / 1.4 Advanced Vector Operations

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1.4.2 Linear Combinations of Vectors

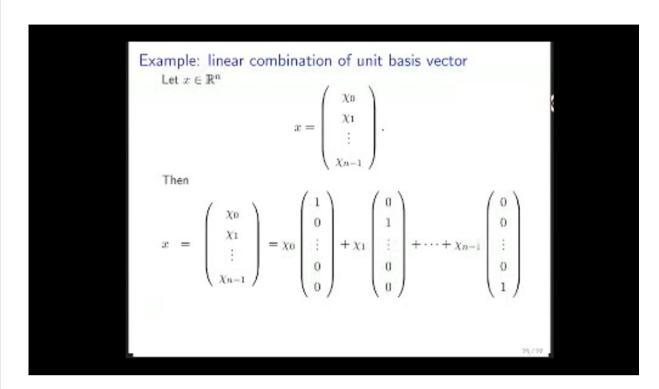
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■ Calculator

Week 1 due Oct 5, 2023 03:12 IST Completed

1.4.2 Linear Combinations of Vectors



Let's look at an example of a linear combination.

And the vectors that we're going to take a linear combination of this time

are the unit basis vectors.

If we're given some vector x of size n, we can write that as the vector of

the individual components.

But notice that you can also write that as the linear combination of the

unit basis vectors.

It's chi 0 times the first unit basis vector plus chi 1 times the second

unit basis vector and so forth.

We summarize that here.

And then we can use summation notation to write it as the sum from i equals 0

to n minus 1 of chi sub i e sub i.

And this is going to become very

5:09 / 5:45

▶ 2.0x 🖃 🔀 🚾

66

Video

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Transcripts

Reading Assignment

0 points possible (ungraded) Read Unit 1.4.2 of the notes. [LINK]



Done



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✓ Correct

Discussion

Topic: Week 1 / 1.4.2

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1 1 ...

Ignoring the cost of reading Kai_j

■ Calculator

Page 26 states that each AXPY operation can ignore the cost of reading kai, I can understand that. But there will be n AXPY operation. So I assu...

- ? Why mn memops, not 2mn for a linear combination?
 - The discussion in the notes says to ignore the cost of reading Xj when calculating the number of memops required to take a linear combination ...

✓ Answer: 8

? HW 1.4.2.1 and 1.4.2.2 -- Math does not render

These two questions are not visible because the math does not render. It renders just fine for 1.4.2.3, but not for 1.4.2.1 and 1.4.2.2. I tried empty...

Homework 1.4.2.1

4/4 points (graded)

8

0 ✓ Answer: 0

Submit

• Answers are displayed within the problem

Homework 1.4.2.2

3/3 points (graded)

$$(-3)\begin{pmatrix} 1\\0\\0\end{pmatrix} + 2\begin{pmatrix} 0\\1\\0\end{pmatrix} + 4\begin{pmatrix} 0\\0\\1\end{pmatrix} = 2$$

$$4 \qquad \qquad \checkmark \text{ Answer: } 2$$

$$4 \qquad \qquad \checkmark \text{ Answer: } 4$$

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• Answers are displayed within the problem

Homework 1.4.2.3

3/3 points (graded)

Find α , β , and γ such that

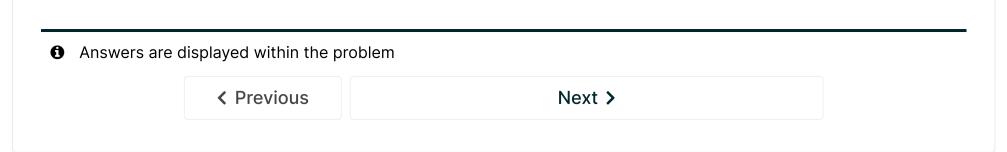
$$lpha egin{pmatrix} 1 \ 0 \ 0 \end{pmatrix} + eta egin{pmatrix} 0 \ 1 \ 0 \end{pmatrix} + \gamma egin{pmatrix} 0 \ 0 \ 1 \end{pmatrix} = egin{pmatrix} 2 \ -1 \ 3 \end{pmatrix}$$

$$\alpha = \begin{bmatrix} 2 \\ \beta = \begin{bmatrix} -1 \end{bmatrix}$$
 Answer: 2

$$\gamma = 3$$
 Answer: 3

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