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sandipan\_dey ~

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

**(** 

1.4.5 Vector Functions

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

# 1.4.5 Vector Functions





Start of transcript. Skip to the end.

Dr. Robert van de Geijn: Next week we're going to talk about a special kind of function called a linear transformation.

In order to understand what the linear transformation is, you first need to understand what a vector function is, which is what we're going

▶ 0:00 / 0:00

▶ 2.0x X CC 66

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### Reading Assignment

0 points possible (ungraded) Read Unit 1.4.5 of the notes. [LINK]



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✓ Correct

#### Discussion

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? Scaler or Constant?

We used scaler initially to scale vectors and that seemed to do justice with the word. But now in this unit we are using numbers say, to add som...

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Homework 1451

**⊞** Calculator

2

8/8 points (graded)

If 
$$f(lpha,egin{pmatrix}\chi_0\\chi_1\\chi_2\end{pmatrix})=egin{pmatrix}\chi_0+lpha\\chi_1+lpha\\chi_2+lpha\end{pmatrix}$$
 , find

• 
$$f(1, \begin{pmatrix} 6 \\ 2 \\ 3 \end{pmatrix}) = \begin{pmatrix} 7 \\ 3 \\ 4 \end{pmatrix}$$

TRUE ✓ ✓ Answer: TRUE

• 
$$f(lpha,egin{pmatrix} 0 \ 0 \ 0 \end{pmatrix}) = egin{pmatrix} lpha \ lpha \ lpha \end{pmatrix}$$

TRUE ✓ ✓ Answer: TRUE

$$oldsymbol{\cdot} f(0,egin{pmatrix} \chi_0 \ \chi_1 \ \chi_2 \end{pmatrix}) = egin{pmatrix} \chi_0 \ \chi_1 \ \chi_2 \end{pmatrix}$$

TRUE ✓ ✓ Answer: TRUE

$$oldsymbol{\cdot} f(eta,egin{pmatrix} \chi_0 \ \chi_1 \ \chi_2 \end{pmatrix}) = egin{pmatrix} eta\chi_0 \ eta\chi_1 \ eta\chi_2 \end{pmatrix}$$

FALSE 

✓ Answer: FALSE

$$ullet \ lpha f\left(eta,egin{pmatrix} \chi_0 \ \chi_1 \ \chi_2 \end{pmatrix}
ight) = egin{pmatrix} lpha \chi_0 + eta \ lpha \chi_1 + eta \ lpha \chi_2 + eta \end{pmatrix}$$

FALSE 

✓ Answer: FALSE

$$ullet f(eta, lpha egin{pmatrix} \chi_0 \ \chi_1 \ \chi_2 \end{pmatrix}) = egin{pmatrix} lpha \chi_0 + eta \ lpha \chi_1 + eta \ lpha \chi_2 + eta \end{pmatrix}$$

TRUE ✓ ✓ Answer: TRUE

$$ullet f\left(lpha,egin{pmatrix} \chi_0\ \chi_1\ \chi_2 \end{pmatrix} + egin{pmatrix} \psi_0\ \psi_1\ \psi_2 \end{pmatrix}) = egin{pmatrix} \chi_0 + \psi_0 + lpha\ \chi_1 + \psi_1 + lpha\ \chi_2 + \psi_2 + lpha \end{pmatrix}$$

TRUE ✓ Answer: TRUE

$$ullet f(lpha,egin{pmatrix} \chi_0 \ \chi_1 \ \chi_2 \end{pmatrix}) + f(lpha,egin{pmatrix} \psi_0 \ \psi_1 \ \psi_2 \end{pmatrix}) = egin{pmatrix} \chi_0 + \psi_0 + lpha \ \chi_1 + \psi_1 + lpha \ \chi_2 + \psi_2 + lpha \end{pmatrix}$$

FALSE ✓ ✓ Answer: FALSE

Press "Show Answer(s)" for correct expressions

$$f(1,egin{pmatrix} 6 \ 2 \ 3 \end{pmatrix}) = egin{pmatrix} 7 \ 3 \ 4 \end{pmatrix}$$

$$f(\alpha, \begin{pmatrix} 0 \\ 0 \end{pmatrix}) = \begin{pmatrix} \alpha \\ \alpha \end{pmatrix}$$

$$\left( \begin{array}{c} \alpha \\ 0 \end{array} \right)' \left( \begin{array}{c} \alpha \\ \alpha \end{array} \right)$$

$$f(0,egin{pmatrix} \chi_0 \ \chi_1 \ \chi_2 \end{pmatrix}) = egin{pmatrix} \chi_0 \ \chi_1 \ \chi_2 \end{pmatrix}$$

$$f(eta,egin{pmatrix} \chi_0 \ \chi_1 \ \chi_2 \end{pmatrix}) = egin{pmatrix} \chi_0 + eta \ \chi_1 + eta \ \chi_2 + eta \end{pmatrix}$$

$$lpha f(eta, egin{pmatrix} \chi_0 \ \chi_1 \ \chi_2 \end{pmatrix}) = egin{pmatrix} lpha \chi_0 + lpha eta \ lpha \chi_1 + lpha eta \ lpha \chi_2 + lpha eta \end{pmatrix}$$

$$f(eta, lpha egin{pmatrix} \chi_0 \ \chi_1 \ \chi_2 \end{pmatrix}) = egin{pmatrix} lpha \chi_0 + eta \ lpha \chi_1 + eta \ lpha \chi_2 + eta \end{pmatrix}$$

$$f(lpha,egin{pmatrix} \chi_0 \ \chi_1 \ \chi_2 \end{pmatrix} + egin{pmatrix} \psi_0 \ \psi_1 \ \psi_2 \end{pmatrix}) = egin{pmatrix} \chi_0 + \psi_0 + lpha \ \chi_1 + \psi_1 + lpha \ \chi_2 + \psi_2 + lpha \end{pmatrix}$$

$$f(lpha,egin{pmatrix} \chi_0 \ \chi_1 \ \chi_2 \end{pmatrix}) + f(lpha,egin{pmatrix} \psi_0 \ \psi_1 \ \psi_2 \end{pmatrix}) = egin{pmatrix} \chi_0 + \psi_0 + 2lpha \ \chi_1 + \psi_1 + 2lpha \ \chi_2 + \psi_2 + 2lpha \end{pmatrix}$$

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