Lecture Notes

Linear Algebra

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Chapter 1

Lecture 1: Vector

1.1 Vector & Linear Combinations

1.1.1 Linear Combination

$$cv + dw = c\begin{bmatrix}1\\1\end{bmatrix} + d\begin{bmatrix}2\\3\end{bmatrix} = \begin{bmatrix}c+2d\\c+3d\end{bmatrix}$$

1.1.2 Column Vector

$$v = \begin{bmatrix}v_1\\v_2\end{bmatrix}$$

Where v_1 is the first component of v.
Where v_2 is the second component of v.

Chapter 2

Lecture 2: Vector (cont.)

2.1 Matrices

Matrices are combinations of **Vectors**

$$u = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$$

$$v = \begin{bmatrix} 4 \\ 5 \\ 6 \end{bmatrix}$$

$$A = \begin{bmatrix} 1 & 4 \\ 2 & 5 \\ 3 & 6 \end{bmatrix}$$

A is a 3 by 2 **matrix**: $m = 3$ rows and $n = 2$ columns
Suppose A is a system which input x and output b