Math 390 Tuesday Jan 19

Vector Spaces (290 Review)

- Read 290 Learning Outcome
- linear.ups.edu/390
- Problem where $1\underset{\sim}{x} \neq \underset{\sim}{x}$ VS.M10

V = set of vectors

$+$ vector addition, $\underset{\sim}{x} + \underset{\sim}{y} \in V$

scalar multiplication $\alpha \underset{\sim}{x} \in V$

$\alpha \in \mathbb{C}$

F

field

$\mathbb{R}, \mathbb{C}, \mathbb{Q}$

2014

10 Axioms

$\underset{\sim}{x} + \underset{\sim}{y} = \underset{\sim}{y} + \underset{\sim}{x}$ commutative

Distributivity

$\alpha(\underset{\sim}{x} + \underset{\sim}{y}) = \alpha \underset{\sim}{x} + \alpha \underset{\sim}{y}$

$(\alpha + \beta)\underset{\sim}{x} = \alpha \underset{\sim}{x} + \beta \underset{\sim}{x}$

One $1\underset{\sim}{x} = \underset{\sim}{x}$

Ex $\mathbb{C}^3$ $\begin{bmatrix} 6 \\ 2 \\ 1 \end{bmatrix}$ ←

Ex P_3 $2 + x - 5x^2 + 6x^3$

Ex M_{23} $\begin{bmatrix} 1 & -6 & 2 \\ 4 & 0 & 3 \end{bmatrix}$

Section VS

Thm A vector space over F of dimension n is isomorphic to F^n. Generalizes Theorem CFDVS