Theory of Linear Algebra
Math 2R03

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Contents

Chapter 1

Vector Spaces

1.1 Complex Numbers

Definition 1.1.1: Complex Numbers, $\mathbb{C}$

- A complex number is an ordered pair (a, b) where $a, b \in \mathbb{R}$ expressed in the form $a + bi$
- Set of all complex numbers is $\mathbb{C}$, denoted by $\mathbb{C} = \{a + bi : a, b \in \mathbb{R}\}$

If $a \in \mathbb{R}$, we identify $a + 0i$. It is important to note that $\mathbb{R} \subset \mathbb{C}$

i is simply $\sqrt{-1}$, and $i^2 = -1$

Definition 1.1.2: Properties of complex arithmetic

commutativity
associativity
identities
additive inverse
multiplicative inverse
distributive property