

## VECTOR SPACE ISOMORPHISMS

## Why

In some sense,  $\mathbb{R}^n$  is the only finite-dimensional vector space. In what sense?

## Definition

An isomorphism is an invertible linear transformation between two vector spaces. Two vector spaces are isomorphic if there exists and isomorphism between them.

## Key Result

**Prop.** 1. Two finite-dimensional vector spaces are isomorphic if and only if they have the same dimension.

**Corollary 1.** Two finite-dimensional vector spaces are isomorphic if and only if they have the same dimension.

