Homework Assignment 1 — Partial Solutions

These problems are for your practice, based on Sections 1.1 and 1.2. We recommend completing all of them and we welcome you to come to Homework Hangouts to work on them with others. You are not required to hand them in. If you would like to have more questions for practice, we recommend using the problems from the back of Sections 1.1 and 1.2 of the book.

Learning Goals

A1. Use the definition of a vector space (including the axioms) to determine whether or not a given set with addition and scalar multiplication operations constitutes a vector space. (1.1)

A2. Prove basic properties of vector spaces using the definition of a vector space. (1.1)

A3. Determine whether a subset of a vector space is a subspace. (1.2)

A4. Determine whether a given operation on subspaces always produces another subspace (1.2)