

Compare the zero vector in 2-space to other vectors in 2-space. What similarities and differences can you identify? For example, the zero vector in 2-space has two components, just like every other vector in 2-space. However, the zero vector has no length or direction, unlike other vectors in 2-space, such as the one in Figure 1.1(b).

Mathematical Thinking Process

Here you see another mathematical technique: identifying similarities and differences. This is the process of comparing and contrasting two or more mathematical concepts (problems, definitions, theorems, and so on) with the objective of gaining a deeper understanding of the relationship of these two items.

This skill is useful not only in mathematics, but in many other fields as well. For example, when a group of people suddenly develop the same illness, a doctor tries to identify what those people have in common in an attempt to discover the source of the illness. Identifying similarities and differences is used frequently throughout this book.