

Introduction to *Complex numbers*

What you need to know already:

- ▶ All basic algebra of real numbers.

What you can learn here:

- ▶ The definition and basic properties of complex numbers.

You have most likely heard of imaginary and complex numbers in the past, but perhaps you have only *heard* about them. It is now time to get a detailed and proper introduction to what they are and what their main properties are.

But why now, in the context of a linear algebra course?

Complex numbers can be presented in other contexts, such as calculus, but in your program, this is the first time that you can meet them when you are ready and when you can link them to other important concepts in a way that makes sense and allows for useful connections and generalization.

And are complex numbers useful in engineering?

Complex numbers will show up repeatedly in your engineering training as well as in applications. In your future courses, you will have many opportunities to see

them in action, and in a way that makes them much more real than the popular name “*imaginary*” suggests. And they show up in mathematics as well as in other areas, such as physics, so learning about them is very useful.

So, are “imaginary” and “complex” numbers the same thing?

Not quite, although they are very much related. But the difference between the two names is one of the things you will learn in this chapter. In fact, the first thing. So, are you ready?

As ready as I will ever be!

In that case, let's start a very concrete exploration of these fantastically misnamed objects!

What questions do you have for your instructor?

