

*Introduction to
Linear systems and matrices*

What you need to know already:

- ▶ Basic definitions and properties of vectors.
- ▶ The general concept of equation.

What you can learn here:

- ▶ What this chapter will present to you.

So far we have mostly played with the definitions and basic properties of vectors, both from a geometrical and a more abstract point of view. From now on, however, vectors will not be the focus of our attention anymore; rather they will be the main tools that we shall use to explore other concepts.

More specifically, we shall look at vectors from the point of view of equations and their solutions.

So, algebra!

Exactly, but algebra of a very special and simple type.

“Linear” algebra!

Bingo!

But what does that mean? In what sense is this algebra “linear”?

That is precisely the direction in which this chapter shall take us. And, as the title suggests, in doing so we shall make the acquaintance of two important mathematical objects, namely:

- ▶ *linear systems*, a general class of problems that have many applications, and
- ▶ *matrices*, cute arrangements of numbers that shall come to our attention simply as a way of organizing coefficients and will then develop a life of their own, with properties, operations and uses beyond what most students at your level can imagine.

Will it involve fantastic tales?

No, but it will eventually lead us behind the scene of where most fantastic tales are told these days: computer animation! We'll not get there in this course, but what you will see in this chapter will be the first step in that direction. So, let us start this new journey.

What questions do you have for your instructor?

