> I'm having trouble understanding the use/application of the Bézier cubic and it scared me.

> Can you go over Bézier cubics in more detail?

Let me instead talk briefly about Bézier cubics in *less* detail than the book. Hopefully that'll help orient you, and then you should be able to get whatever details you need from the book. The equations definitely make Bézier cubics seem scary, but I think the core idea is not very difficult.

We pick four points:

$$\begin{aligned} p_0 &= (x_0, y_0) \\ p_1 &= (x_1, y_1) \\ p_2 &= (x_2, y_2) \\ p_3 &= (x_3, y_3). \end{aligned}$$

It turns out that, using these four points, we can write down a parametric equation of a curve with the following properties:

- The curve passes through the points p_0 and p_3.
- The tangent line of the curve at p_0 passes through p_1.
- The tangent line of the curve at p_3 passes through of p_2.

This curve is called the *Bézier cubic*. (The above properties don't uniquely specify a curve, but they're close!)

> For a Bézier cubic, if I add more terms into the polynomial (for example, $(x_4, y_4), (x_5, y_5)$), would the curve we get be more accurate?

I don't think "accurate" is quite the right word, but answer is roughly, "yes." Specifying more points can give you *more control* over the curve.

Notice that the 4 points that determine a Bézier cubic only give you control over where the curve passes through and what the derivatives at those points are.

In particular, you have no control over the second derivatives. For some applications, it's possible you might want to have control over the second derivatives as well. You could write down a curve that does this by adding two more points into your input.

Also, you have no control over other points the curve passes through. For some applications, you might want to specify 3 points that the curve passes through and tangent directions at each of those 3 points. In that case again, you could write down a curve that does this by adding two more points to your input.