## **Basic Properties**

The shape of a Bézier curve, parametrized by

$$p=\sum_{k=0}^n c_k b_k^n,$$

is qualitatively modeled by its control polygon c.



As illustrated by the figure,

• p(t) lies in the convex hull of  $c_0, \ldots, c_n$ ,

• 
$$p(0) = c_0, \ p(1) = c_n,$$

• 
$$p'(0) = n(c_1 - c_0), p'(1) = n(c_n - c_{n-1}).$$

The last two properties, referred to as endpoint interpolation, imply that the control polygon is tangent to the Bézier curve, which is very useful for design purposes.