

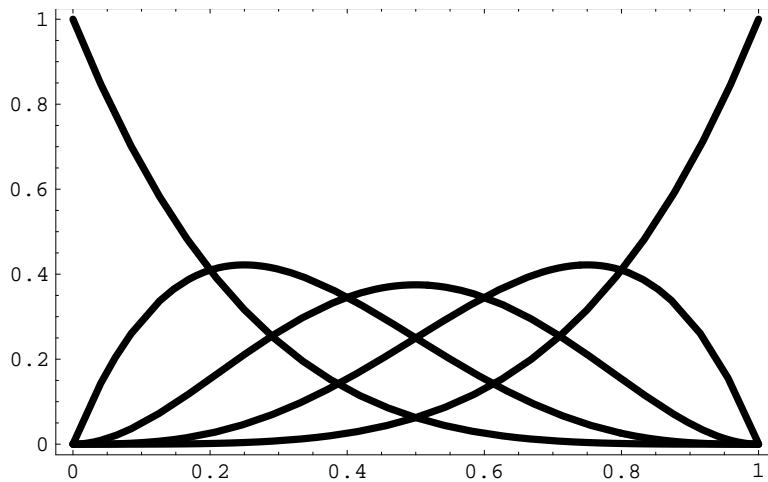
Bézier Curves (Mathematica notebook: <http://math.lbl.gov/~fomel/128A/Bezier.nb>)

Bernstein Polynomials

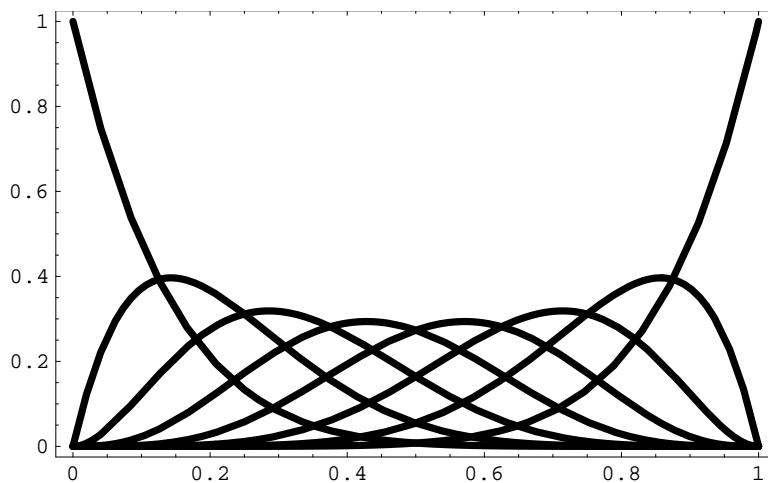
Bézier curves of order n are defined with the help of the Bernstein polynomials:

$$b_k(t) = \binom{n}{k} t^k (1-t)^{n-k}, \quad 0 \leq t \leq 1.$$

Bernstein polynomials for order 4:



Bernstein polynomials for order 7:

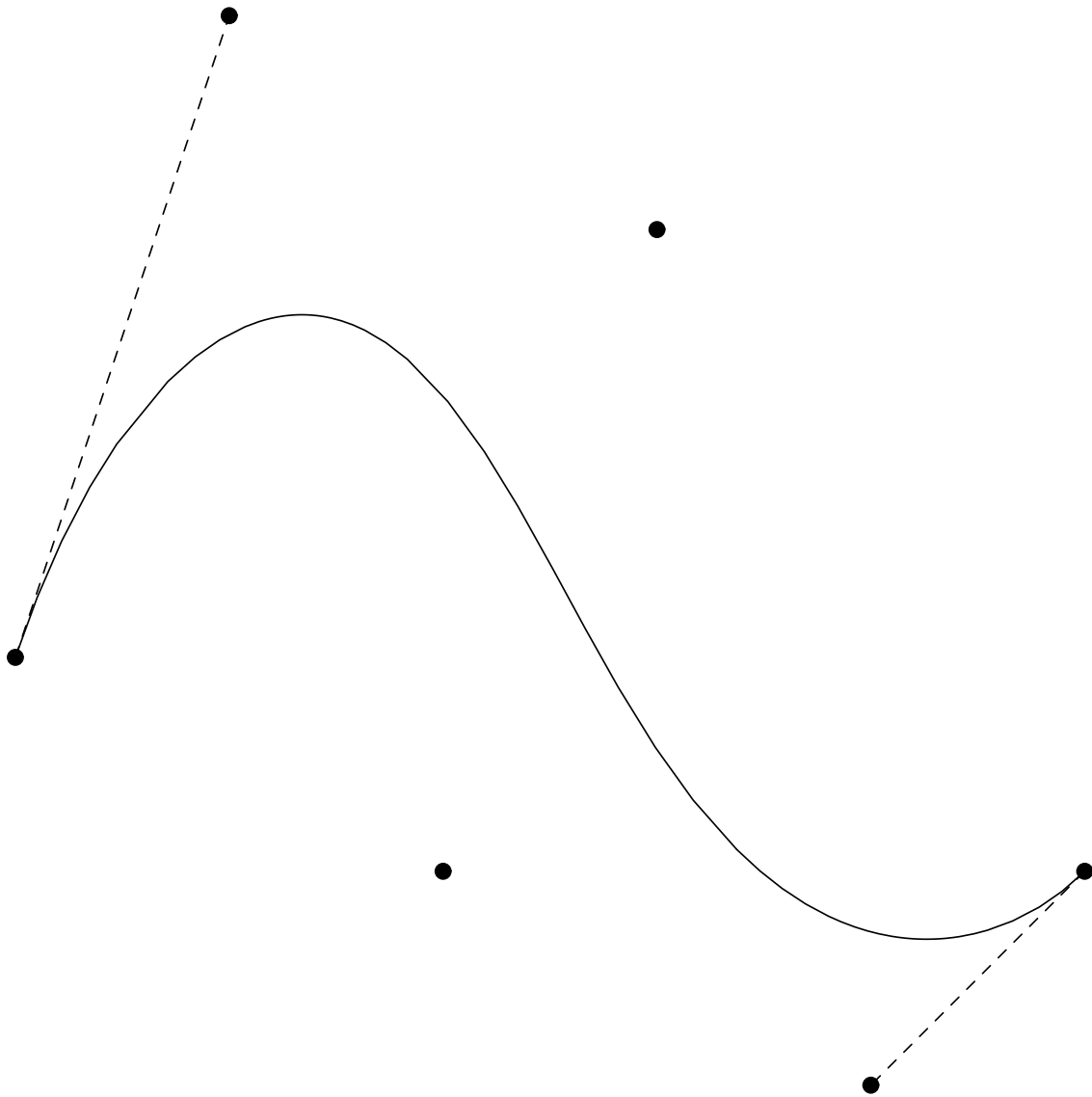


The Bernstein polynomials are non-negative and sum up to one in the interval from 0 to 1.

Bézier Curves and Control Points

The definition of Bézier Curve:

$$\mathbf{x}(t) = \sum_{k=0}^n \mathbf{x}_k \binom{n}{k} t^k (1-t)^{n-k}$$



The dashed lines connect the first control point \mathbf{x}_0 with \mathbf{x}_1 and the last point \mathbf{x}_n with \mathbf{x}_{n-1} .

More examples:

