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Understanding derivations based on Bezier curves

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Name:

Due September 16th, in lab

This worksheet is intended as a short 30 min exercise to be done in groups of 2-3 people.

Degree-2 Bezier Curve

In class, we derived the Bezier curve for cubic interpolation. For this question, derive the Bezier curve for a degree-2 polynomial.

In class, we saw that the formula for a nth-degree Bezier curve is

$$p(t) = \sum_{i=0}^{n} B_i^n(t) b_i$$

1) Derive is the polynomial for a degree-2 Bezier curve

2) How many control points does a degree-2 Bezier curve need?

3) How can we use de Casteljau's algorithm to interpolate using a degree-2 Bezier curve?

4) Show that de Casteljau's algorithm reduces to the same equation as the degree-2 Bezier Curve.