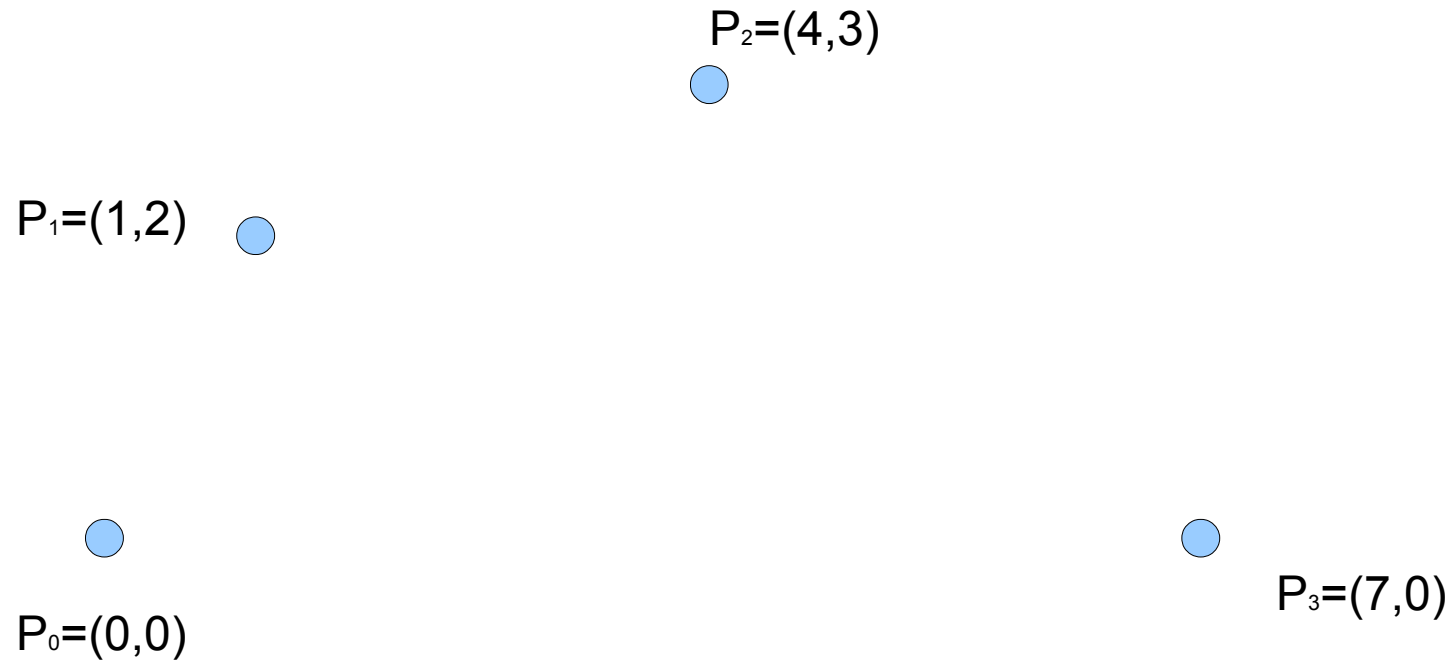
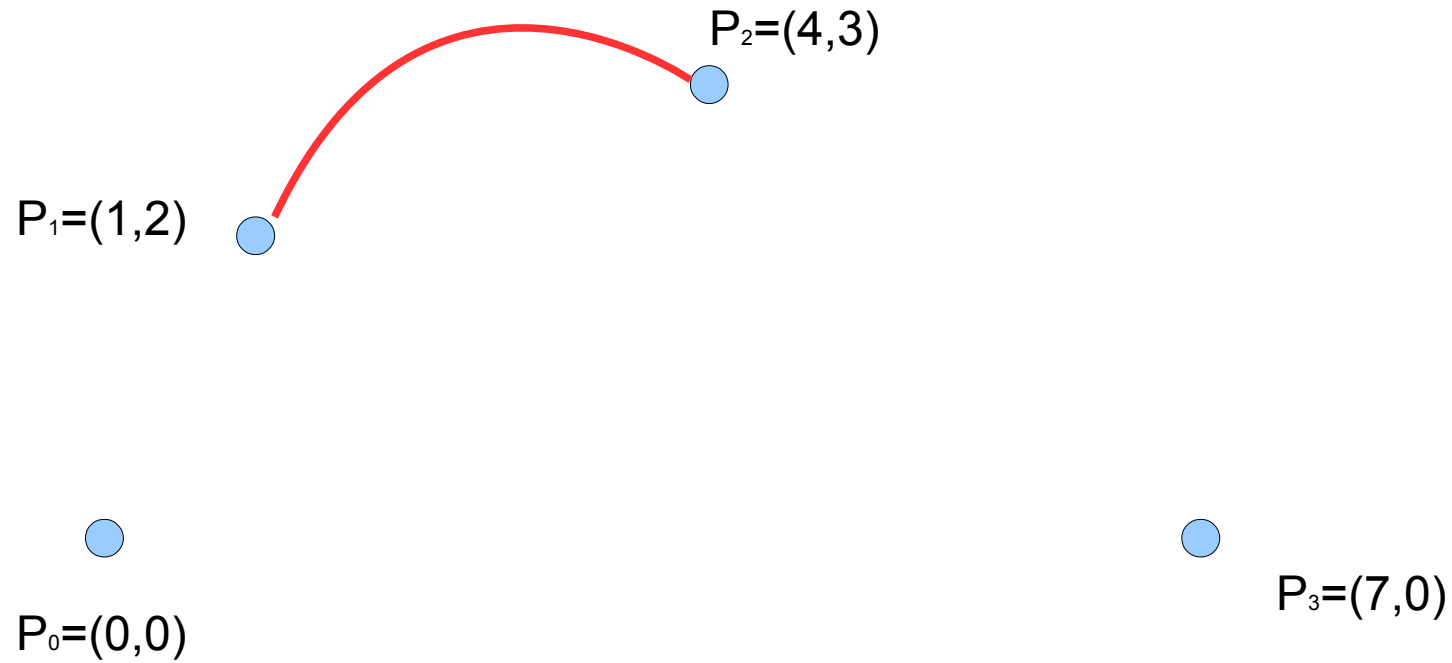


Interpolating Catmull-Rom spline



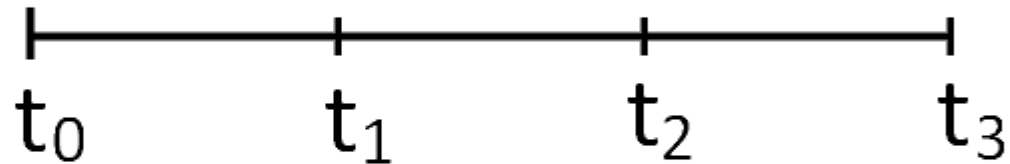
Interpolating Catmull-Rom spline



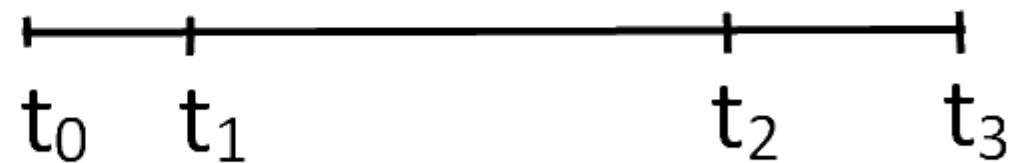
Knot parameterization for the Catmull–Rom algorithm



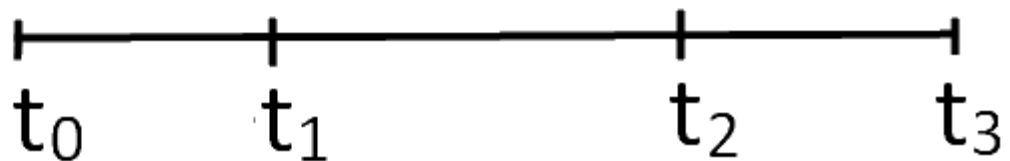
Uniform:



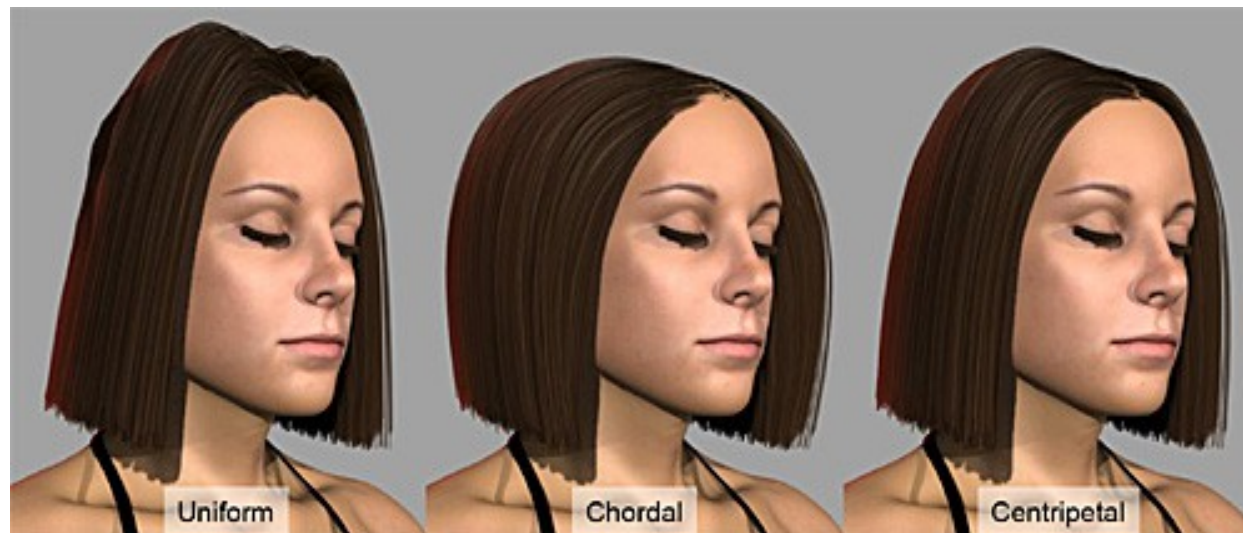
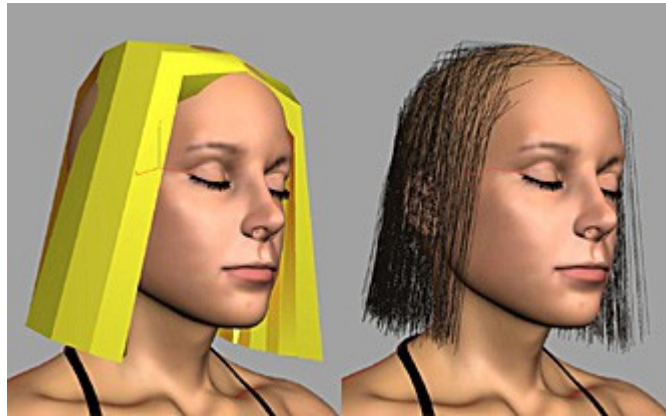
Chordal:



Centripetal:

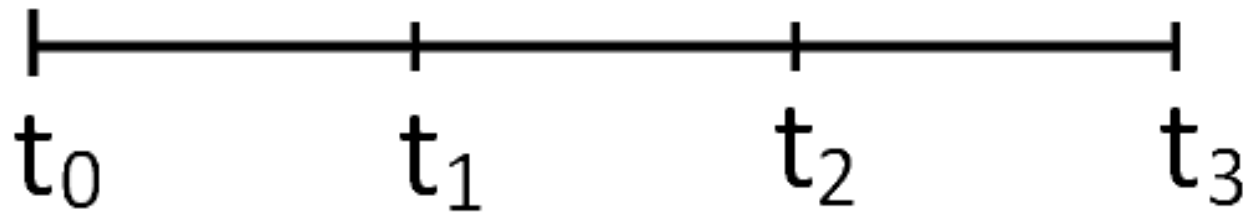


Knot parameterization for the Catmull–Rom algorithm



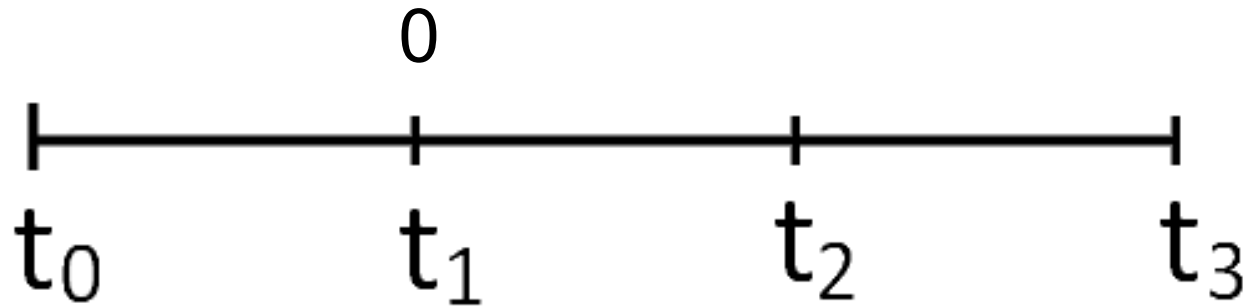
Knot parameterization for the Catmull–Rom algorithm

Uniform:



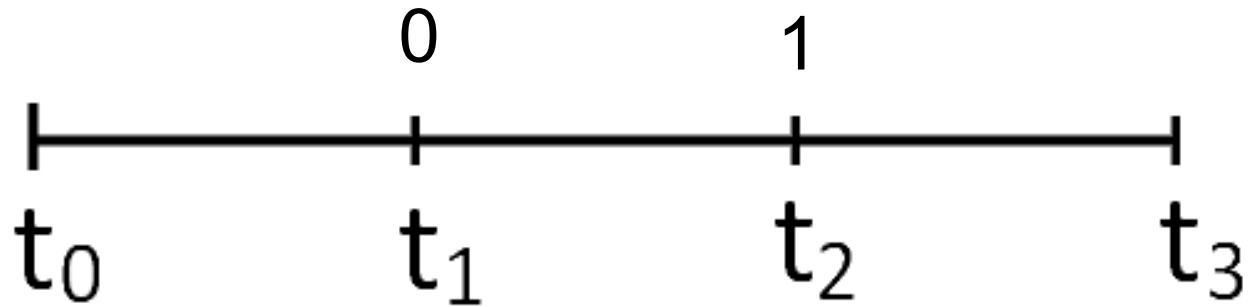
Knot parameterization for the Catmull–Rom algorithm

Uniform:



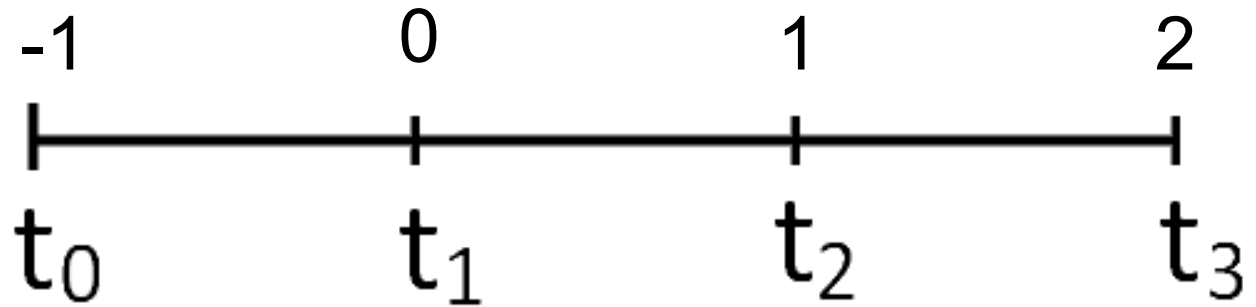
Knot parameterization for the Catmull–Rom algorithm

Uniform:



Knot parameterization for the Catmull–Rom algorithm

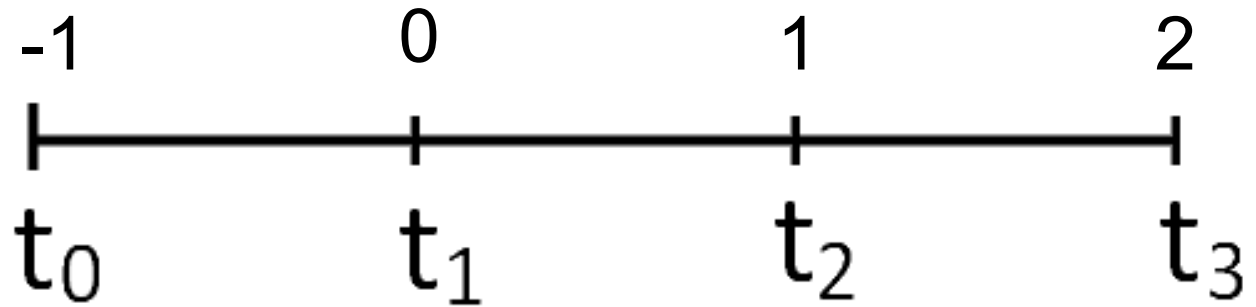
Uniform:



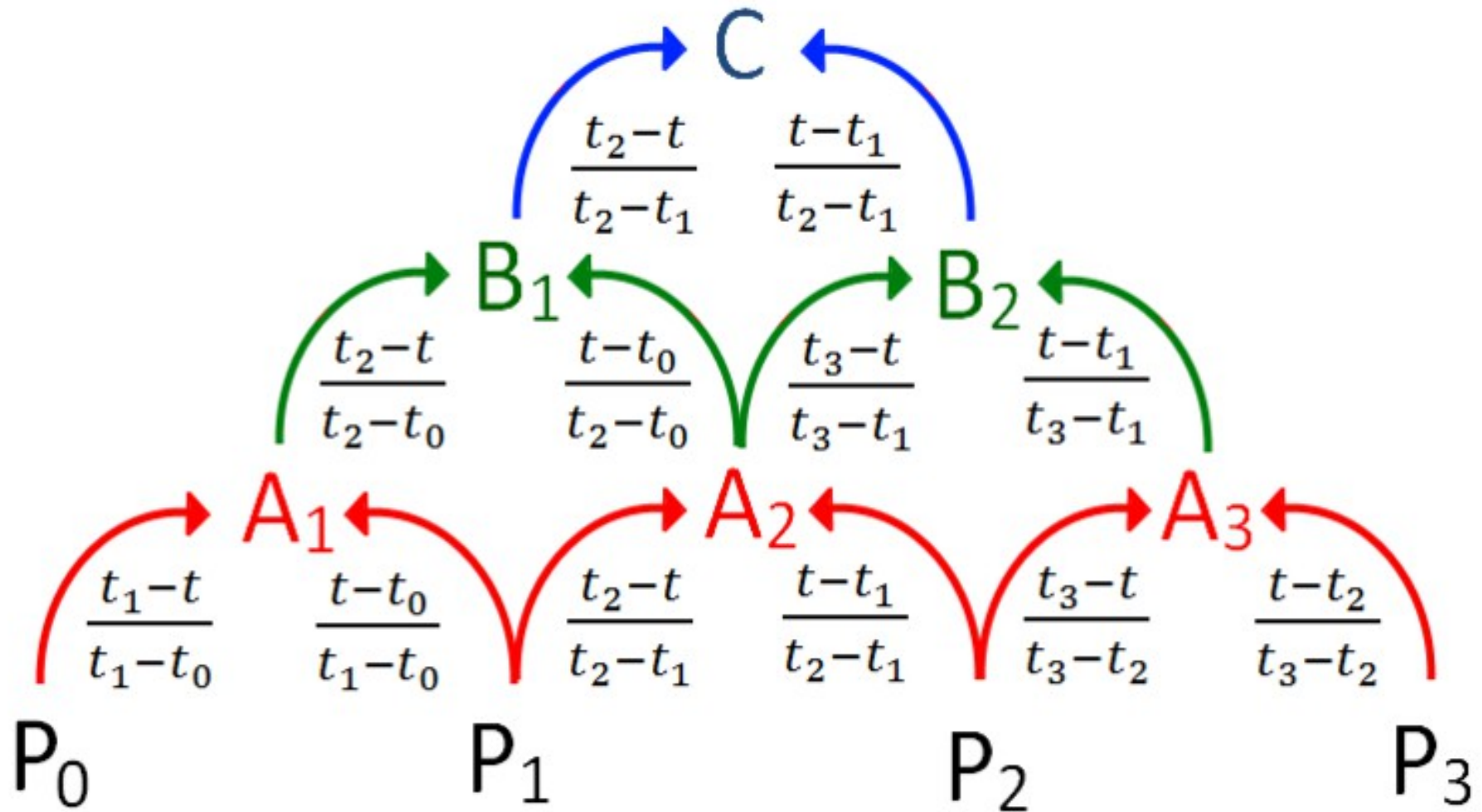
Knot parameterization for the Catmull–Rom algorithm

$$t = 0.5$$

Uniform:



Barry and Goldman's pyramidal formulation



Interpolating Catmull-Rom spline

Catmull-Rom spline can be produced by:

$$\mathbf{C} = \frac{t_2 - t}{t_2 - t_1} \mathbf{B}_1 + \frac{t - t_1}{t_2 - t_1} \mathbf{B}_2$$

where

$$\mathbf{B}_1 = \frac{t_2 - t}{t_2 - t_0} \mathbf{A}_1 + \frac{t - t_0}{t_2 - t_0} \mathbf{A}_2$$

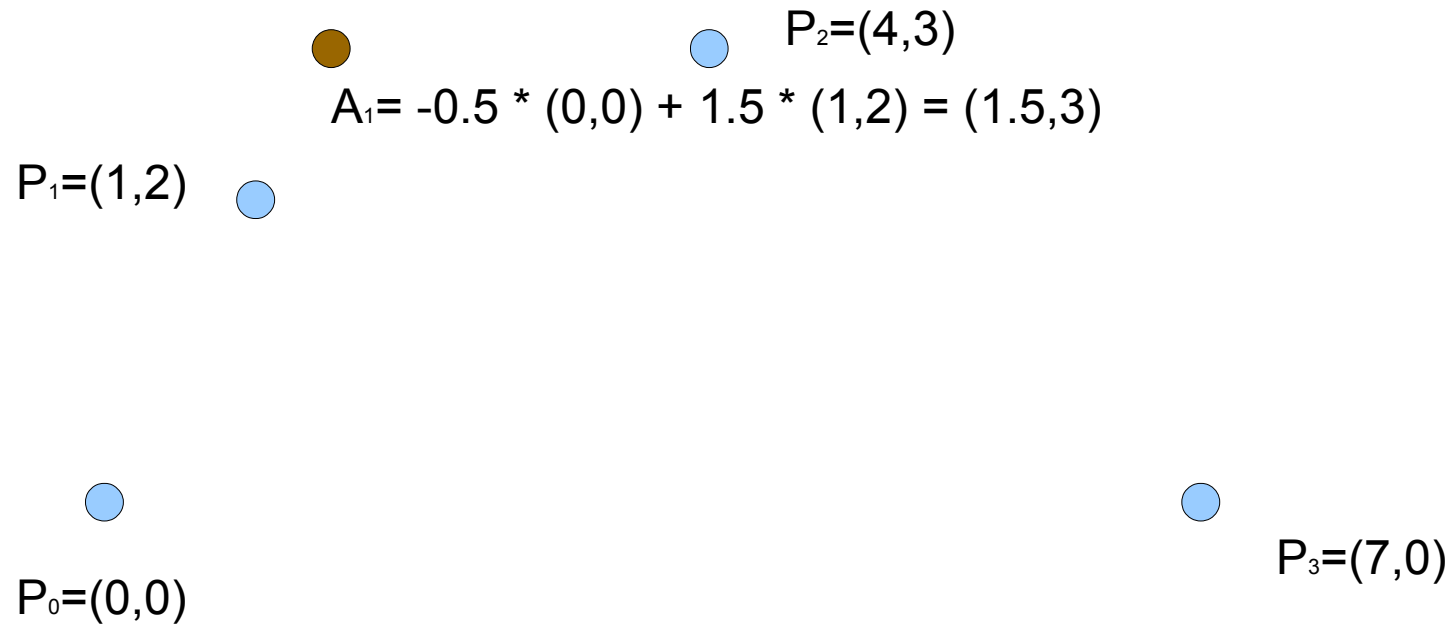
$$\mathbf{B}_2 = \frac{t_3 - t}{t_3 - t_1} \mathbf{A}_2 + \frac{t - t_1}{t_3 - t_1} \mathbf{A}_3$$

$$\mathbf{A}_1 = \frac{t_1 - t}{t_1 - t_0} \mathbf{P}_0 + \frac{t - t_0}{t_1 - t_0} \mathbf{P}_1$$

$$\mathbf{A}_2 = \frac{t_2 - t}{t_2 - t_1} \mathbf{P}_1 + \frac{t - t_1}{t_2 - t_1} \mathbf{P}_2$$

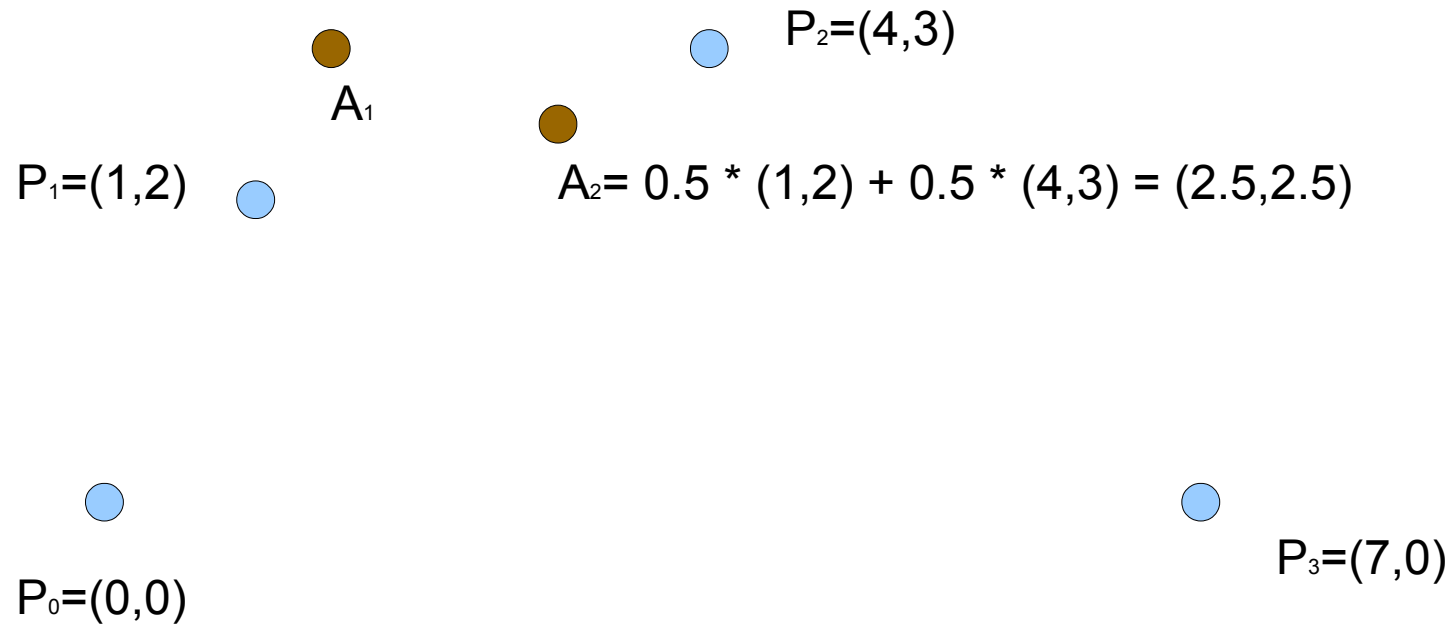
$$\mathbf{A}_3 = \frac{t_3 - t}{t_3 - t_2} \mathbf{P}_2 + \frac{t - t_2}{t_3 - t_2} \mathbf{P}_3$$

Interpolating Catmull-Rom spline



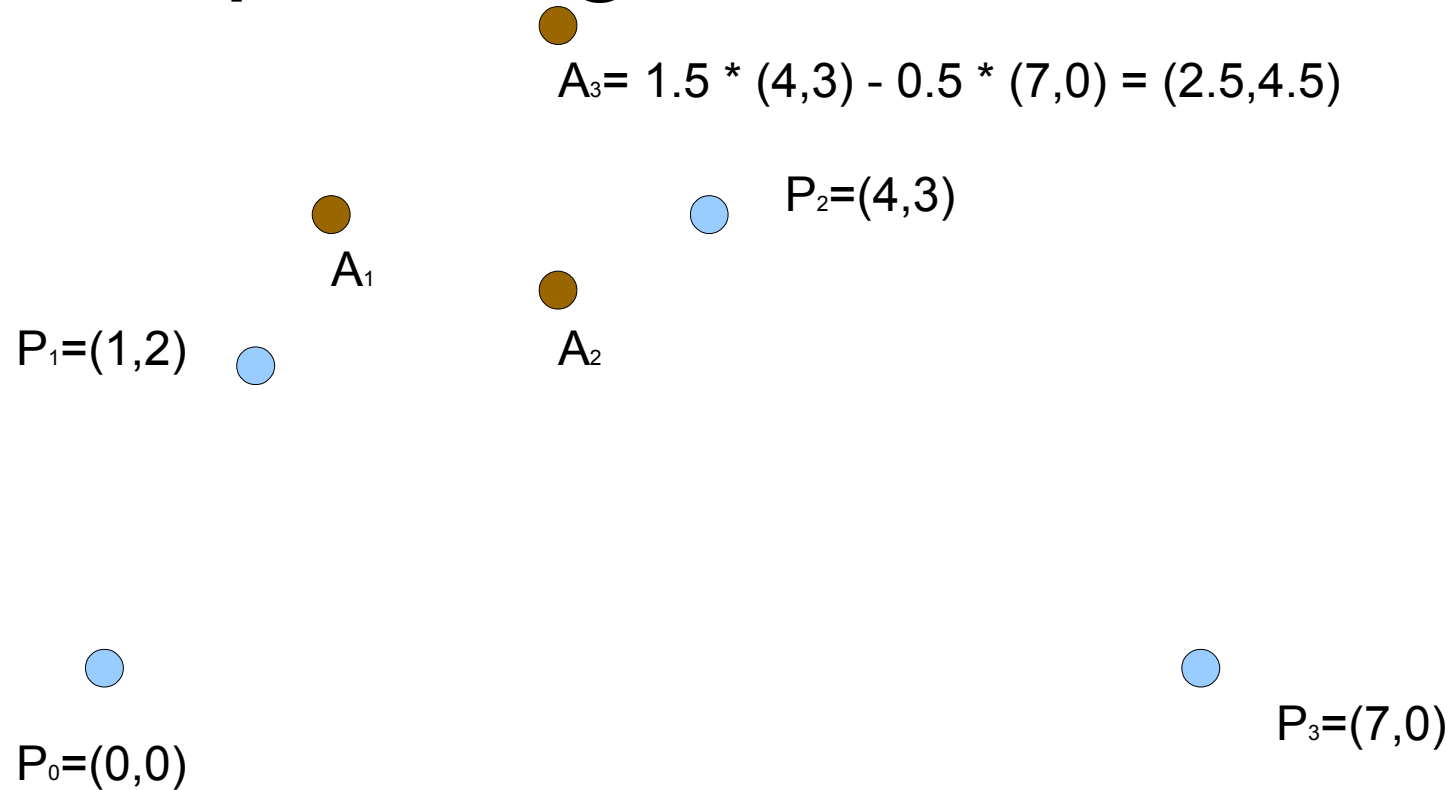
$$A_1 = \frac{t_1 - t}{t_1 - t_0} P_0 + \frac{t - t_0}{t_1 - t_0} P_1$$

Interpolating Catmull-Rom spline



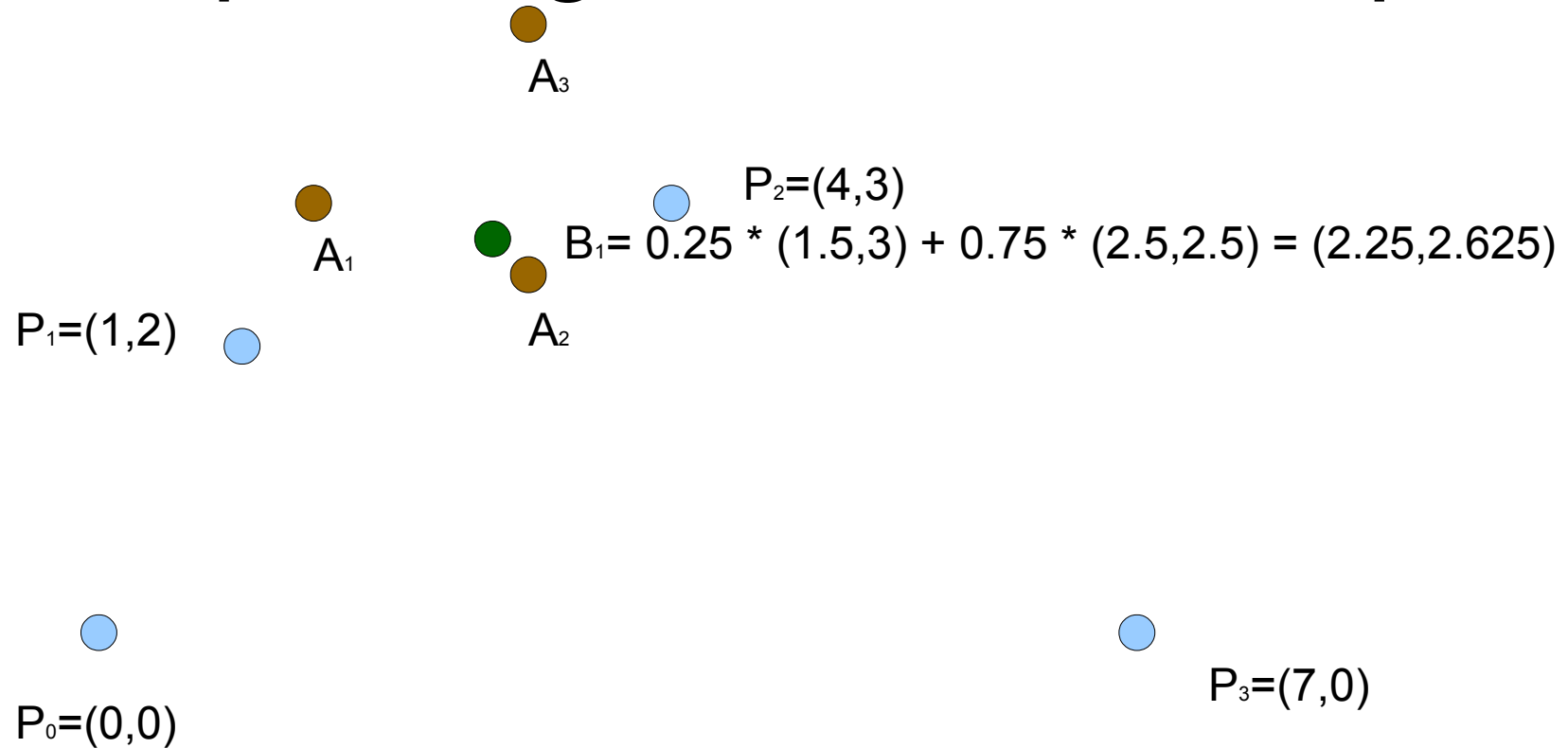
$$\mathbf{A}_2 = \frac{t_2 - t}{t_2 - t_1} \mathbf{P}_1 + \frac{t - t_1}{t_2 - t_1} \mathbf{P}_2$$

Interpolating Catmull-Rom spline



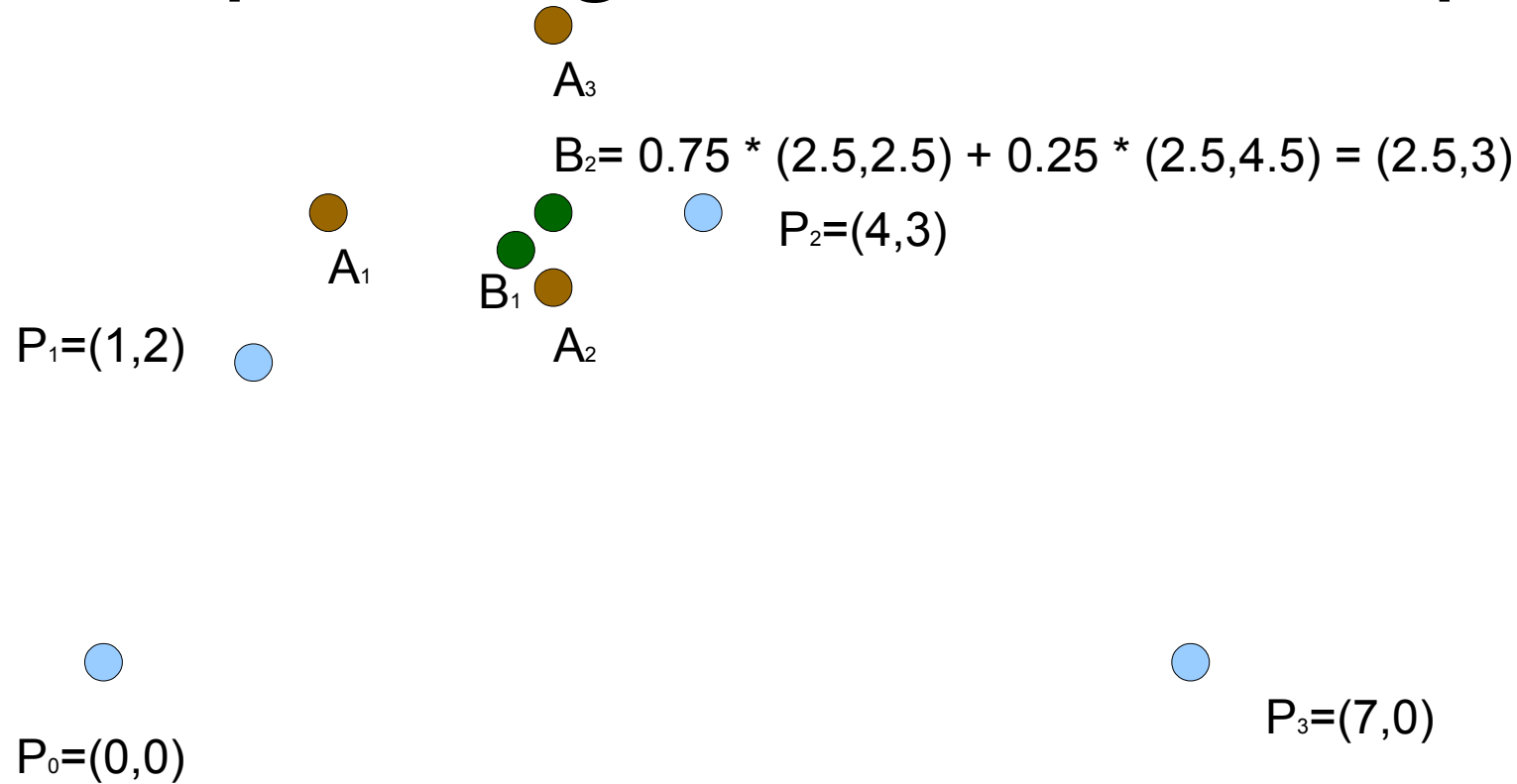
$$\mathbf{A}_3 = \frac{t_3 - t}{t_3 - t_2} \mathbf{P}_2 + \frac{t - t_2}{t_3 - t_2} \mathbf{P}_3$$

Interpolating Catmull-Rom spline



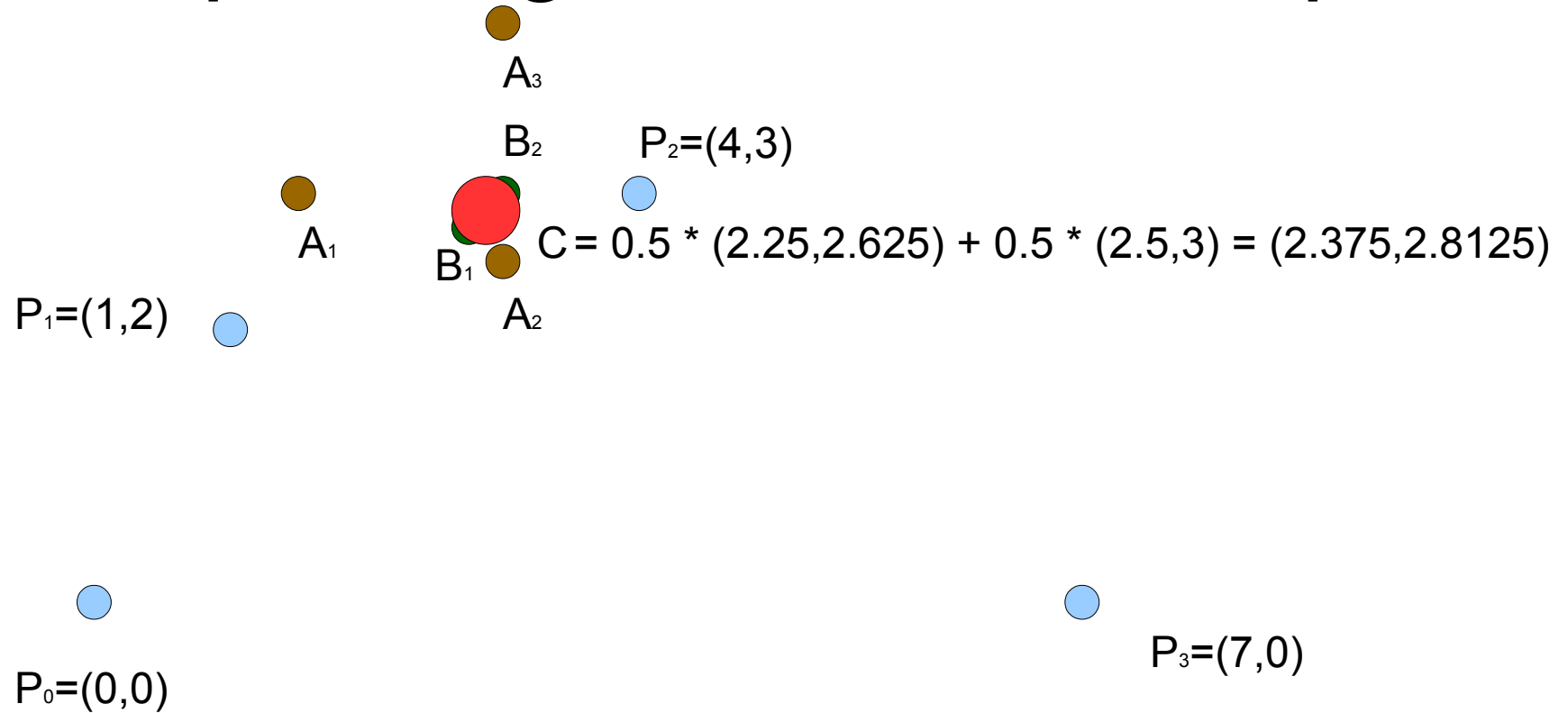
$$\mathbf{B}_1 = \frac{t_2 - t}{t_2 - t_0} \mathbf{A}_1 + \frac{t - t_0}{t_2 - t_0} \mathbf{A}_2$$

Interpolating Catmull-Rom spline



$$B_2 = \frac{t_3 - t}{t_3 - t_1} A_2 + \frac{t - t_1}{t_3 - t_1} A_3$$

Interpolating Catmull-Rom spline



$$C = \frac{t_2 - t}{t_2 - t_1} B_1 + \frac{t - t_1}{t_2 - t_1} B_2$$

Interpolating Catmull-Rom spline

