



## Assignment in Computer Graphics II

Assignment 5 –
Computer Graphics and
Multimedia Systems Group
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Assignment 1 [2 Points] Catmull-Rom Approach

Calculate according to the Catmull-Rom approach, all control points for a cubic Bezier spline through the points  $P_0$ ,  $P_1$ ,  $P_2$  whose tangents are constructed by the simple end tangent estimation. Additionally calculate the alternative tangents (with fitted parabola).

$$\mathbf{P}_0 = \begin{pmatrix} 2\\ 0 \end{pmatrix}$$
,  $\mathbf{P}_1 = \begin{pmatrix} 10\\ 2 \end{pmatrix}$ ,  $\mathbf{P}_2 = \begin{pmatrix} 20\\ 6 \end{pmatrix}$ 

Assignment 2 [2 Points] De Boor algorithm (uniform knot vector)

Given the following plotted de Boor points of a uniform, cubic B-Spline curve and the parameter  $u = 4\frac{1}{3}$ .

- 1. Which de Boor points are necessary for the evaluation of the curve at u.
- 2. Evaluate the curve geometrically and by calculation at u.



Hand in: Until 09.05.2019 12:15 o'clock in mailbox of our chair (next to room 7115).