Linnéuniversitetet
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Assignment 1 - Bézier curves

Numerical methods 1MA930 2024

Examiner: Andreas Petersson 2024-04-12

- The hand-in deadline is **23.59 on January 28**.
- You are allowed to work in groups of 1 to 4 people. Recommended group size is 2 to 3.
- Write a short but descriptive report on Tasks 5-10 below and hand in **as a single pdf-file**.
- Explain your solution and any struggle you had. Include all relevant code and figures.
- **Do not plagiarize other groups or use large language models** - this is considered cheating and may be reported.

We start with some preparatory work. You **do not** need to include this in your report:

Task 1. Get an idea about what an spline is by skimming through Section 3.4, p. 166-168.

Task 2. Learn what a Bézier curve is by reading Section 3.5 (p. 179-181).

Task 3. Read the code "bezierdraw.m" and test it in Matlab (page 181 or the course Moodle page). Make sure you understand each line by consulting the documentation in MATLAB if necessary.

Task 4. Learn how to draw Bézier curves in PDF files by reading *Reality Check 3* on pages 183 to 187.

After you have accomplished the above, do the following tasks. Your solution to these should be included in the report.

Task 5. Solve exercise 3.5: 2(c) and explain how you obtained your solution.

Task 6. Do Activity 1 in *Reality Check 3*. Save the figure from MATLAB and include it in your report.

Task 7. Do Activity 2 in *Reality Check 3*. The 21-piece Beziér curve defining the letter f can be found on the course Moodle page. Include the resulting figure in your report.

Task 8. Do Activity 3 in *Reality Check 3*. The file *sample.pdf* can be found on the course Moodle page. Include the figure in your report.

Task 9. Do Activity 4 in *Reality Check 3*. Explain what choice you made and how you implemented it.

Task 10. Do Activity 6 in *Reality Check 3*. In your report, include both your sketch (scanned/photographed as needed) as well as your final figure created using the technique above. Note: graph paper = "rutat papper".