CAGD - Homework 3

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Task 3

In this task we implement a method to check whether a real number is in an interval with full support, given a knot sequence, a degree of the spline basis and the number itself. The code can be seen in Appendix 1.
We tried our code for three different knot sequences, $k_1 = (0, 0, 1, 1)$, $k_2 = (0, 0, 0, 1, 1, 1)$ and $k_3 = (0, 0, 0, 0.3, 0.5, 0.6, 1, 1, 1)$, all with quadratic splines. For each of the scenarios, we tested our code with the real numbers $\{0.12, 0.24, 0.4, 0.53, 0.78, 0.8\}$.

- For k_1, we found that all points were in intervals **without** full support.
- For k_2, we found that all points were in intervals **with** full support.
- For k_3, we found that all points were in intervals **with** full support.

The results were as expected, as an interval has full support when using quadratic splines, if there are 3 or more knots to the left of the interval as well as to the right of the interval.

Appendix I