Becs-114.1100 Computational Science
Exercise round 6

https://mycourses.aalto.fi/course/view.php?id=4367

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Problems

- Problem 4: 2 points

Problems 1, 2 and 3 are optional (0 points), but doing them first makes 4 easier.

Problem 4: Natural cubic spline

- ▶ The evaluation of $S'(x)$ can be done easily by modifying the code written for the evaluation of $S(x)$.

- ▶ Plot the results on $S(x)$ and $S'(x)$ to different figures, as they are not on the same scale. Use, e.g., 100 evenly spaced values on the x-axis between the smallest and largest knot.

- ▶ You can use Matlab only for the b-part (and for plotting in the a-part). Check Matlab documentation on splines to find the appropriate functions.

Problem 4: Natural cubic spline

- Here is one way to load the titanium data into Python list format (use, e.g., help(map) for more details):

- import string
  data = open('titanium.dat').readlines()
  data = map(string.strip, data)
  data = map(string.split, data)
  t, y = zip(*data)
  t = map(float, t)
  y = map(float, y)