Homework 7 - GNU Parallel

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1 Roots intervals definition

The function is

$$f(x) = x \cos\left(x^3 - 5\right).$$

(1)

Of this function I had to fine all roots in the interval $[0, 5]$.

The way to choose all intervals was choosing a step size from the part of plot in which there were more roots. In the figure (1) you can see the original plot in the interval, and in the figure (2) you can see the interval with more roots (the interval $[4.6, 4.8]$ with five roots). Therefore the step size was 0.04.
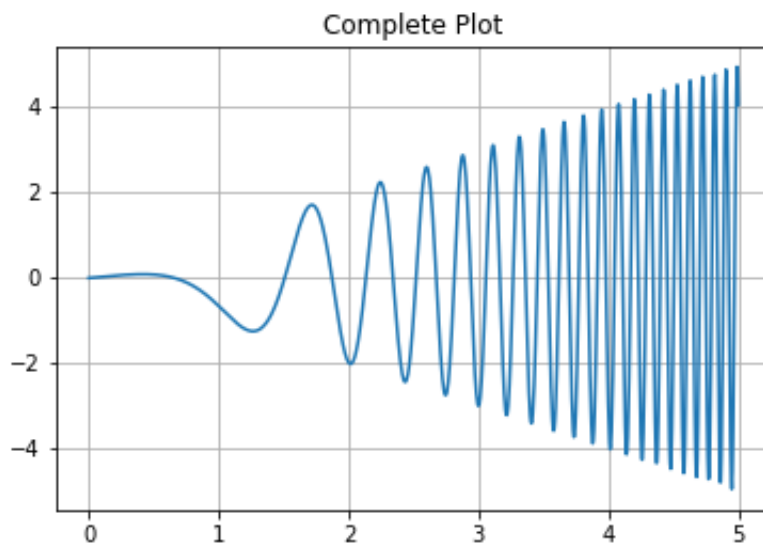

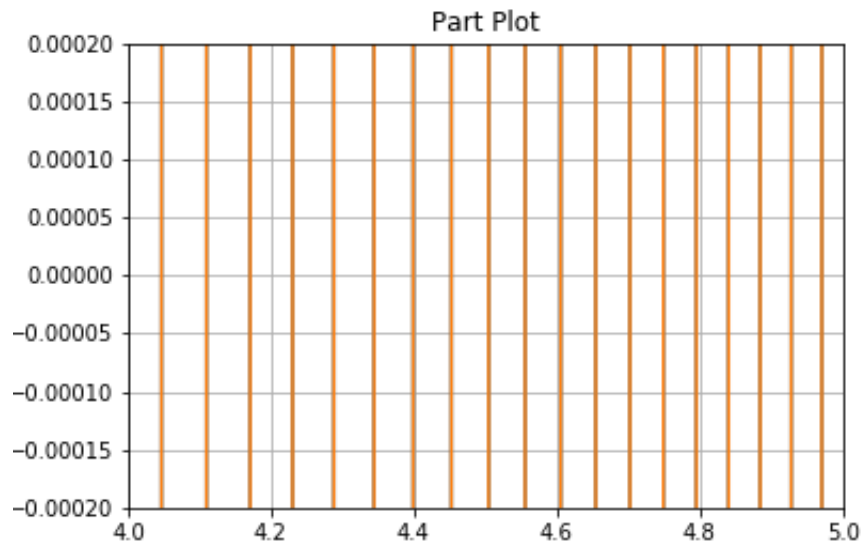
Figure 1: Complete plot from 0 to 5.

Figure 2: Roots of the function (1) from 4 to 5.

2 A serial code run in parallel

This part of the homework is composed by two c++ codes *V1.cpp* and *V2.cpp*. With the first code, you can get all roots in the interval $[0, 5]$ using GSL libraries. And with the second code, you can get some roots run in parallel using two shell codes *script2.sh* and *script2.sh* which give parameters to the main function. Thus script1 runs at the same time two different sub intervals, and script2 runs V2 code using a parallel flag of GNU Parallel and specifying how many cores will be used (two).