Assignment 5

Due: 16th March.

1 Modularity and Libraries

(*50 Points*) Based on the code *gslroot.cpp* discussed in class:

- (*5 Points*) Plot the function using *matplotlib*

$$f(x) = a \sin(\cos(v - wx)) + bx - cx^2$$

  for the parameters given in that file.

- (*40 Points*) Modify the code to also numerically compute[1]

$$\int_0^5 f(x)\, dx$$

  using GSL. Write the code as a module, i.e, where you will write a *gslroot.h*, *funcs.cpp* (this one will be compiled as an object and it is where the function is defined) and *root.cpp* (the one that has the main function). Comment the code extensively and follow the discussed good practices. Do not forget to also write explicitly the instructions to build the code (*Compiling + Linking*).

- (*5 Points*) Create a git repository[2] on *https://github.com* or *https://bitbucket.org/* and made and upload this code. **The solution of this point is simple the *URL* of your repository.**

[1] See for instance, https://www.gnu.org/software/gsl/doc/html/integration.html or https://www.gnu.org/software/gsl/manual/html_node/Numerica integration-examples.html

[2] *The following link may be a good source for more information http://rogerdudler.github.io/git-guide/. The great Linus Torvalds talks about git, his second biggest project, in his TED Talk «The mind behind Linux».*