Assignment 4:

- Write a MATLAB script and calculate $\int_{-1}^{1} \boldsymbol{tanh^2(x)dx}$ by Gauss-Chebychev quadrature (CG) by $1e^{-6}$ precision. Check the computational time. Note that we don't know how many points are needed in the quadrature schemes for a certain accuracy. Hence, we need to try different number of points and check the convergence until the desired accuracy is achieved. It causes extra CPU time and make the comparison with other method unsensible. While you found the number of required points, repeat the CG calculations this time with a known number of points and compare the CPU times.
- Use the given Romberg function and calculate the integral by $1e^{-6}$ precision. Check the computational time.
- Calculate the same integral by using the Symbolic Math Toolbox. Check the accuracy and computational time.
- Report not only the codes and your calculations results but your views on computational performance.

Hint: for computational time measurement, use tic toc MATLAB function: https://www.mathworks.com/help/matlab/matlab_prog/measure-performance-of-your-program.html