Homework 1

Implementation of the Gradient Descent Method

1. Goal: Write a program to implement the Gradient Descent method (or any other variants of the Gradient Descent method) to find minimizers of the given functions.
2. Functions
   (1) The function: $f(x) = x^4 - 3x^2 + 2$
   (2) The Rosenbrock (banana) function:
   $$f(x_1, x_2) = 100(x_2 - x_1)^2 + (1 - x_1)^2$$
3. Requirements:
   (1) You should write a program to implement the Gradient Descent method (or any other variants).
   (2) You should write a report describing all the details of your implementation, at least including
   - programming environment,
   - the setting of initial guess,
   - the detailed algorithm,
   - and results of each iteration.

   (optional) You can even visualize the surface of the given function, and the positions of solutions at each iteration.
   (3) You should put your report and your program in a folder, zip the folder, and upload it to eCourse.
4. Deadline: 23:59, April 24, 2018