➢ General Instructions:

- The submission due date of this assignment is **to be announced.**
- Write a report (*i.e. in a word document*) that illustrates your main solution steps and screenshots of your plots.
- Zip your code and the report in a file entitled [**YourName_YourID_AssignmentNumber**], submissions will be made following the instructions **to be announced**.
- This assignment should be delivered and discussed INDIVIDUALLY

➢ Requirements:

In this assignment it is required to implement a PSO algorithm to solve the following problem:

$$Max\ f(x_1, x_2) = \sin(2x_1 - 0.5\pi) + 3\cos(x_2) + 0.5x_1$$

Where $-2 \leq x_1 \leq 3$ and $-2 \leq x_2 \leq 1$

The Algorithm for PSO can be described as follows:

1. Initialize the population of 50 particles with random positions and velocities on D dimensions.
2. For each particle, evaluate the fitness based on the above function.
3. Find the maximum fitness & compare it with the best fitness found so far '*pbest*'. If it is better than '*pbest*', set '*pbest*' to the maximum fitness in the population and set *pg* to the location of the particle with the maximum fitness.
4. Update the velocities and the positions of the particles according to the set of equations described in the lecture (*where C1 = C2 = 2*)
5. Loop to step 2, until stopping criteria is met (i.e. 500 iterations).

It is required to perform several runs with different random seeds and to plot the movement of the particles where *Vmax* = [-0.1, 1].

BEST OF LUCK!