Algorithms for optimisation
Problem Set # 3
Due date: 12/02/2020

Particle swarm optimisation

Apply particle swarm optimisation on Wheeler's ridge function $f(x) = -exp(-(x_1x_2-1.5)^2-(x_2-1.5)^2)$, with $c_1= 0.25$, $c_2=2$, and $w = 0.1$. Populate the domain using a random sampling plan.

(a) Compare the results to a gradient based method (Conjugate gradient) starting from [2,2]

- Number of function evaluation
- Time to solution

(b) Change the sampling plan to grid based and latin hyper-cube and compare the results

(c) Bound the domain and use particle swarm optimisation with constraint as discussed in the class. Clearly mention the choice of the bounds (preferably on both axis).