Assignment 2 - Exercise 2

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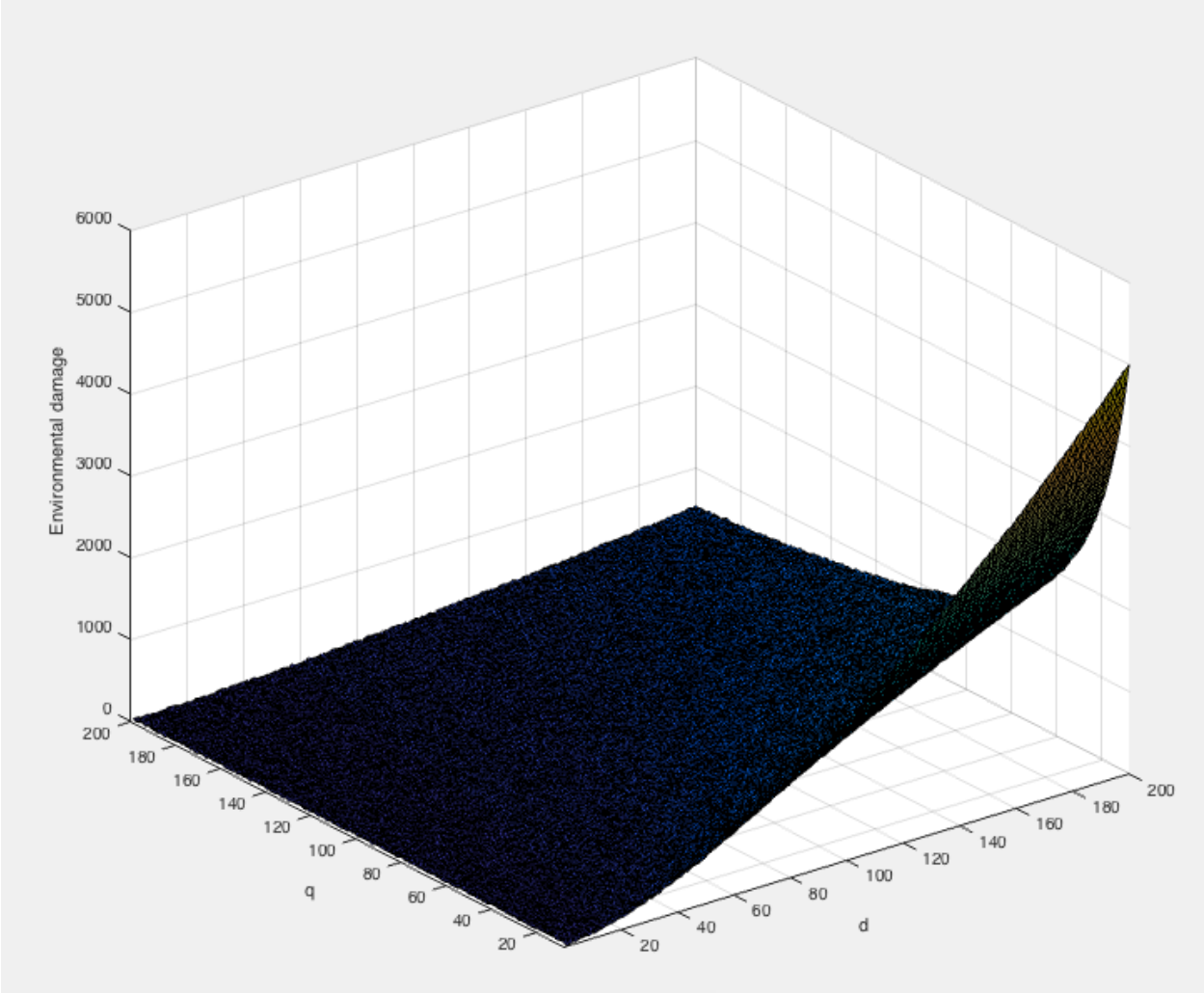
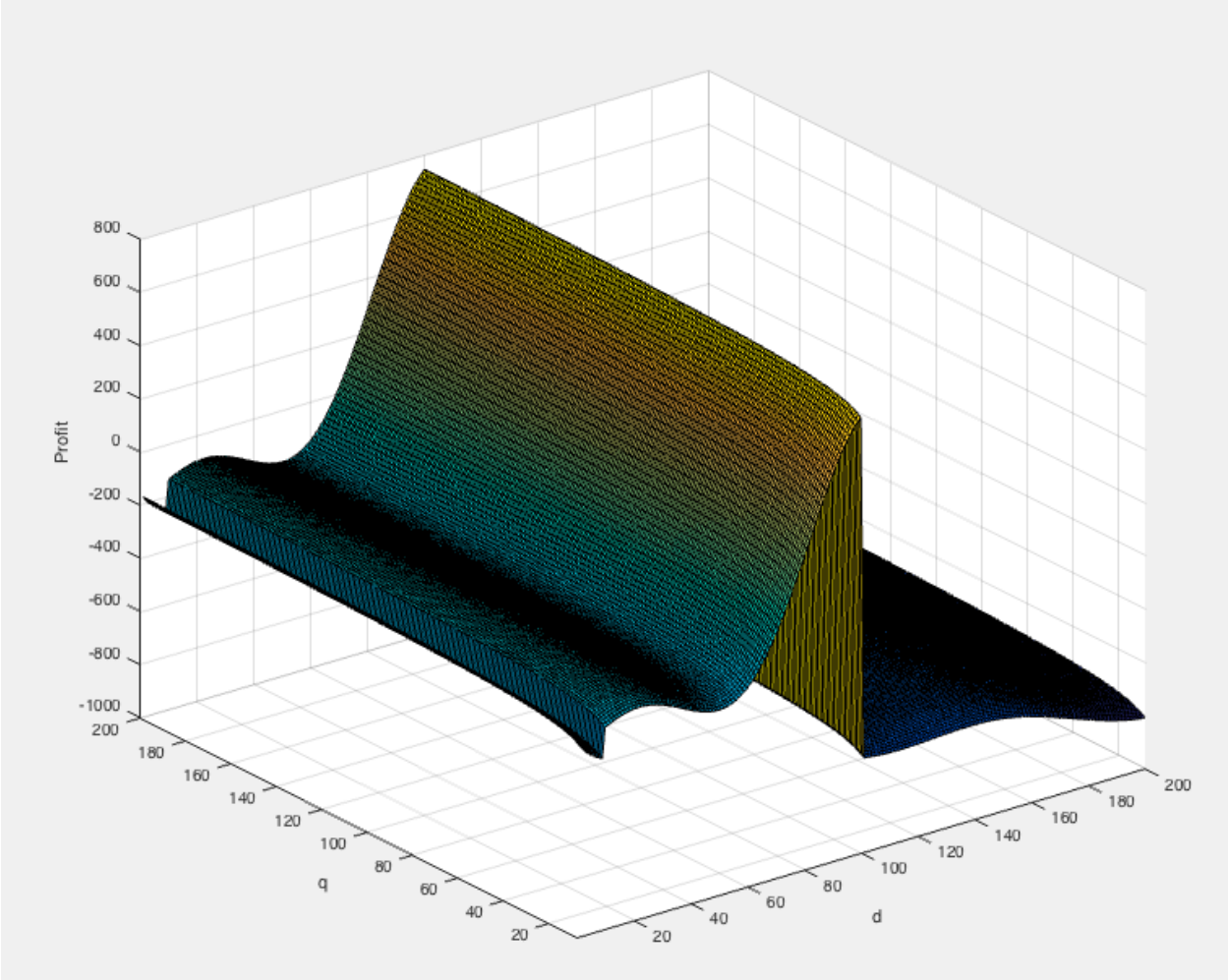
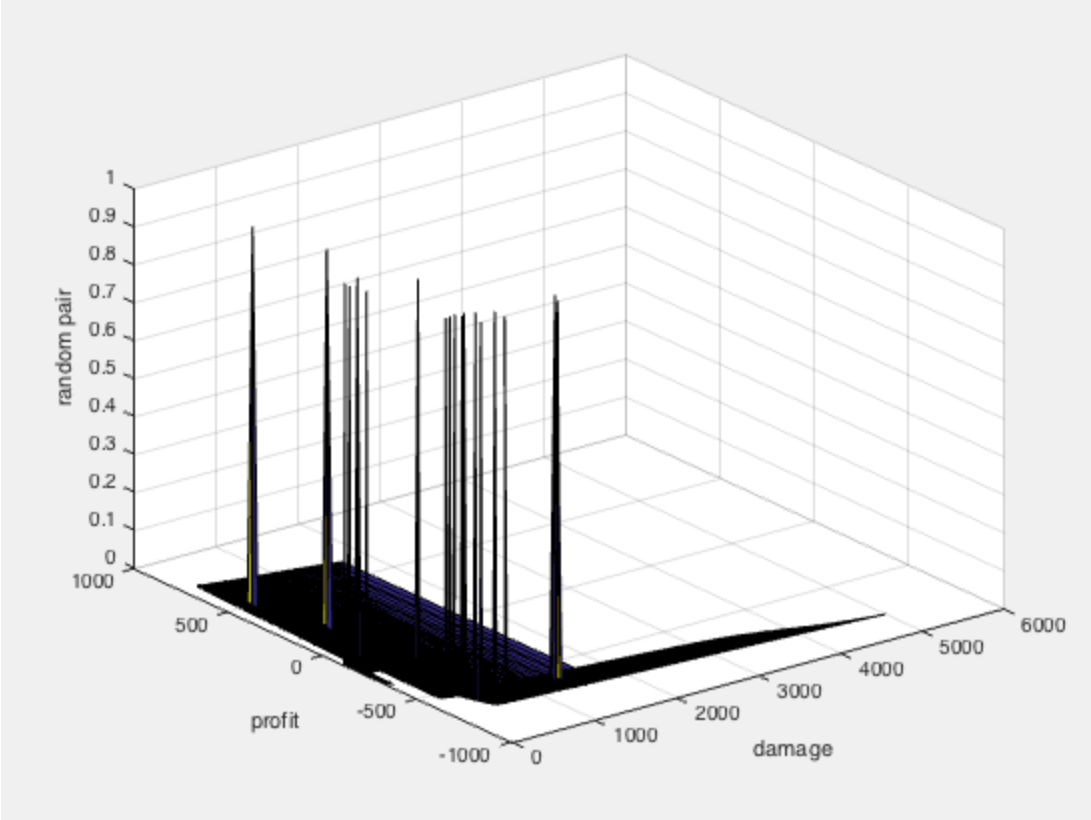
1. Make a 3D plot of both the environmental damage φ(q, d) and profit Π(q, d) for different values of q and d, applying the necessary constraints. Use commands meshgrid and surf.





2. Randomly choose a 20 solutions for the pair (q, d), and plot them in the objective function space (x axis Π(q, d), y axis φ(q, d)). Add also the corner solutions in this plot and clearly indicate them.

We had no clear understanding of what we exactly had to show. So we plotted the values of the random 20 solutions with value 1 and the others with a value of 0.



3. Solve the optimization problem using genetic algorithms. Change the Pareto fraction parameter (fraction of population on non-dominated front). Plot the obtained solutions in the objective function space (x axis Π(q, d), y axis φ(q, d). Compare these random solutions and comment on these random solutions. Note: To accomplish this point, you are required to create a Matlab function. There is no need to vectorize this function. Pay attention to the constraints.

4. Create a weighted-sum objective function, i.e. convert the objective functions to a single objective problem with a scalar objective function as follows