# 5. Exercise Sheet

Assignment 27   Methods for solving MOPs

a) Describe the basic structure of one a priori method for solving MOPs. Name its advantages and disadvantages.

b) Describe the basic structure of one a posteriori method for solving MOPs. Name its advantages and disadvantages.

Assignment 28   Ranking method

Rank all the particles in terms of the number of superior individuals by which they are dominated.
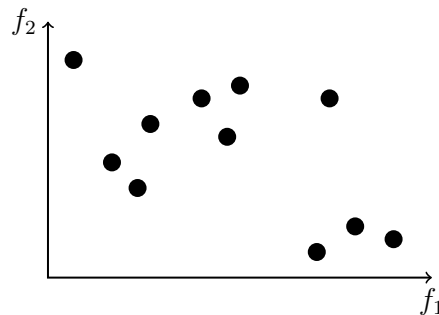

Assignment 29   NSGA-II

a) In the following set of solutions shown in the objective space (assuming minimization of both objectives), identify the different non-dominated fronts of solutions by using the concept of the NSGA-II algorithm.

b) Which solutions will be selected for the next population using crowding distance if we have a population size of 8?
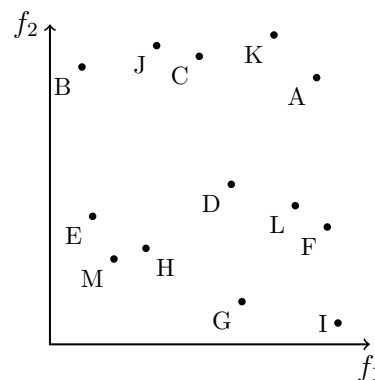
Assignment 30   **Marginal Hypervolume**

a) Which one of the following solutions has the largest marginal HV?

b) Which one of the following solutions has the smallest marginal HV?
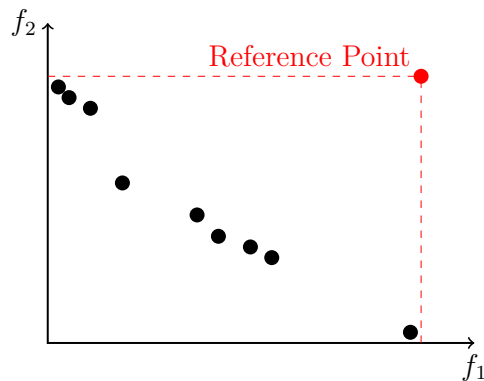
x	y
0.1	2.4
0.2	2.3
0.4	2.2
0.7	1.5
1.4	1.2
1.6	1.0
1.9	0.9
2.1	0.8
3.4	0.1
3.5	2.4

Assignment 31   **Hypervolume**

Suppose we are comparing two sets A and B with each other. For which one of the following scenarios the following inequality can be true: $HV(A) < HV(B)$?