

# Mandatory Exercise: Approximation Algorithms 1

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**1 Placement of bars** You are given a metric with  $n$  nodes. Your goal is to place a number of bars, such that no one is too far from a bar. That is you want to minimize the maximum distance anyone has to a bar. Some places are more expensive to place a bar on than others. For each node  $j$  you have a price  $p_j$  that indicates how much it costs to place a bar at node  $j$ . You have a budget for building bars of  $B$ . Give an 3-approximation algorithm for the problem.

**Note:** You may assume that you know the optimal radius  $r$ .