Efficient Algorithms and Datastructures II

Aufgabe 1 (10 Punkte)

Show that there is no $O(\log n)$ approximation algorithm for the facility location problem, where the connection costs are not required to satisfy triangle inequality, unless $P = NP$.

Aufgabe 2 (10 Punkte)

For an undirected graph $G = (V, E)$, give a set of terminals $S = \{s_1, \ldots, s_k\} \subseteq V$, a multiway cut is a set of edges whose removal disconnects the terminals from each other. The multiway cut problem asks for such a set of minimum weight. Give a factor 2 approximation algorithm for this problem.

Aufgabe 3 (10 Punkte)

Give an approximation factor preserving reduction from the vertex cover problem to the feedback vertex set problem.