1. In the absolute 1-center of a network problem

The facility can be anywhere in the plane

The facility must be placed in a vertex

The facility can be in the middle of an edge

In some optimal solution the facility is placed in a vertex

2. A new city is designed. The location of 2 fire-stations should be determined. This problem is

2-center problem, NP-hard

2-median problem, NP-hard

2-center problem, can be solved optimally

2-median problem, can be solved optimally.

3. In a covering problem

Clients' weight (demand) show how often they need a facility

The number of facilities is a given integer k

There is a facility in every node or in every adjacent node

The number of facilities is unknown in advance.

4. What's the minimal number of centers required to cover a cycle of n nodes with unit demands

ceiling (n/3)

ceiling(n/4)

ceiling (n/2)

n-1

5. When finding a local center of an edge, the plot d(x,v) has at most one extermum point

True

False

6. Assume that (a,b) has length 10, m(a)=20 and m(b)=20. The local center of (a,b) is at least:

25

20

15

30

7. Consider the metric 1-vertex center problem. Choosing an arbitrary node:

Provides a (log n)-approximation

Does not provide any constant approximation

Provides a 3-approximation

Provides a 2-approximation

8. In the analysis of 2-approximation algorithm for metric k-center. The main argument was

We can't have k+1 nodes, each pair is more than OPT apart.

In a tree there is only one path connecting two vertices

k+1 arbitrary nodes con not be covered by only k centers

By Δ-inequality, the chosen centers are at most OPT apart.

9. If a 1.5-approximation for metric k-center exists, then

Metric k-center has an optimal poly-time solution

Dominating Set has an optimal poly-time solution

The partition problem has an optimal poly-time solution

All of the above

10. If all nodes have the same weight, and all nodes have the same length, then...

some optimal k-median is also an optimal vertex k-center

some optimal vertex k-center is an optimal k-median

every optimal k-median is also an optimal vertex k-center

dist(opt 1-median, opt 1-center) may be unbounded

11. G is a graph for which some Hamiltonian cycle is also an Euler cycle

G must be a complete graph

G must be a bipartite

G must be a cycle

There are many different graphs with this property

12. "Tomorrow" in Hebrew:

Boker Tov

Shalom

Toda

Mahar