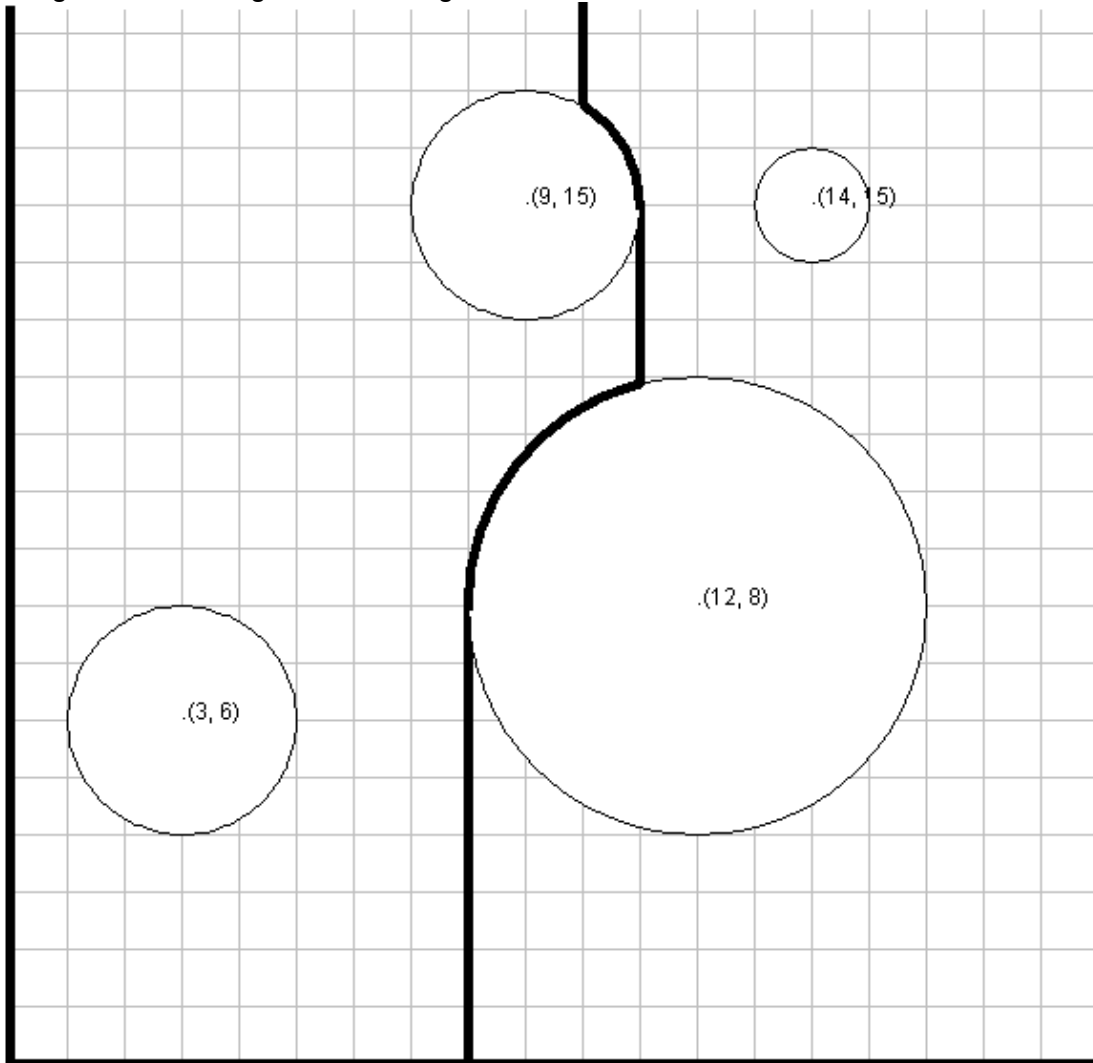


Raindrops (prob10)

There is a world filled with rods of varying thicknesses. A raindrop falls from above these rods and either falls directly to the ground (if there is no rod directly below it) or hit a rod and runs along it before falling to either the ground or another rod.



Your program will take a configuration of rods and will determine the total distance a raindrop will fall, given its starting position.

Input

The input to this program will consist of one or more test sets.

Each test set will begin with a pair of integers, *rods* and *drops*, $0 \leq rods \leq 100$ and $0 \leq drops \leq 100$. There will then be *rods* lines, each defining one rod. These lines will consist of three integers: *center-x*, *center-y*, *radius*, $0 \leq center-x, center-y \leq 1000$ and $1 \leq radius \leq 100$, where *center-x* and *center-y* represent the center of the rod and *radius* represents its radius. No rod will touch the ground and no two rods will touch each other (treat rods as solid disks so a rod will not be inside another rod) .

There will then be *drops* lines, each with a single integer representing the x position of the raindrop at the start. All drops should be assumed to start at height 1200.

The end of input is represented by a test set with *drops* = 0.

Output

For each test set, have a line with the number of the test set, starting at 1. Then, for each drop, give the total distance the drop falls before reaching the ground, rounded to 4 decimal places. Obviously, drops never fall upward. In the case a drop falls on the highest point of a rod, it will move to the left (smaller x) side of the rod.

Sample Input

```
4 1
3 6 2
9 15 2
12 8 4
14 15 1
10
0 2
17
19
3 0
```

Sample Output

```
Test set 1
1200.1975—1201.7618

Test set 2
1200.0000
1200.0000
```