

## Problem L: Laser Avoidance

### Time Limit: 5 seconds

#### Description

You start at point  $(0,0)$  and must reach point  $(p, q)$  on a flat field. Unfortunately there is a number of lasers you have to avoid. Each laser starts at a point  $(x, y)$  and shoots out an infinite one directional ray at radian angle  $\theta$  from the  $x$ -axis. Given the position of the lasers, find the shortest path you can take without getting hit by a laser.

#### Input

A number of inputs ( $<100$ ). The first row is the three integer  $n$ , the total number of lasers, and the end point  $(p, q)$ . The next  $n$  line, each has two integers  $x, y$  and a real number  $\theta$ , describing the laser as defined above as position of laser and the angle with respect to the  $x$ -axis.

Note that  $0 \leq n, p, |q|, |x|, |y| \leq 1000000, \theta \in [-\pi, \pi)$ .

#### Output

For each input, output the answer with 5 digits after decimal.

#### Sample Input

```
3 5 5
2 1 1
3 1 2
4 1 -1.5
3 5 0
5 2 1
5 2 2
5 2 -1.5
```

#### Sample Output

```
7.63441
5.00000
```