
Ivan's disqualification (1)

P69990_en

Dotzè Concurs de Programació de la UPC - Semifinal (2014-07-02)

Ivan is participating in the ACM-ICPC World Finals in Ekaterinburg. As usual, Ivan is trolling, so he is going to be disqualified. However, the guys of the organization must first reach him. Ivan is trying to escape in the spectators zone, which for simplicity we consider a circumference. Ivan is located at an angle of α degrees with respect to the center of the circumference, while the n guys are located at angles $\alpha_1, \dots, \alpha_n$. Ivan has a maximum angular speed of i degrees per second, while the n guys have all a maximum angular speed g .

How many second will it take any of the guys of the organization to reach Ivan? Suppose that Ivan tries to maximize this time, while the guys coordinate to try to minimize it. At every moment, everyone can move in any direction (left or right), but never exceeding his maximum speed. When calculating, treat everybody as a point.

Input

Input consists of several cases, each with $i, g, \alpha, n, \alpha_1, \dots, \alpha_n$. All numbers are integers. The speeds are between 1 and 1000, the angles between 0 and 359, and n between 1 and 1000.

Output

For every case, print the time of Ivan's disqualification with four digits after the decimal point. Print "never" if this will never happen.

Sample input

```
3 4 180 1 90
4 3 180 1 90
100 3 270 5 240 0 359 120 359
```

Sample output

```
90.0000
never
19.8333
```

Problem information

Author : Salvador Roura

Generation : 2024-05-02 22:16:04

© Jutge.org, 2006–2024.

<https://jutge.org>