

Problem name: Big Circle

Language: English

**Time limit:** 0.5 s  
**Memory limit:** 16 MB

### Task description

On the opening ceremony of World Cup there was a part where many kids from around the world was trying to make a big circle on the field which symbolized tolerance and multicultural friendship.

They succeed in making a perfect circle, but as they didn't practice very much, kids weren't uniformly distributed on circle. You spotted that very quickly, and you want to know what is the minimum distance between some two kids.



### Input

First line of the input contains number  $N$  representing number of kids. Each of next  $N$  lines contains two real numbers rounded on two decimal places – coordinates of the each kid.

It is guaranteed that all points will be on circle.

### Output

First and only line of output should contain one real number (rounded on two decimal places) – Euclidian distance between two nearest kids. Euclidian distance between points  $(x_1, y_1)$  and  $(x_2, y_2)$  is:  $\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$

### Example

Input:	Output:
5 1.00 4.00 -0.50 -1.60 4.00 1.00 3.12 3.12 -1.60 -0.50	1.56

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### Example explanation

Kids at points  $(-0.50, -1.60)$  and  $(-1.60, -0.50)$  are nearest and distance between them is 1.56.

### Constraints

- $2 \leq N \leq 10^5$
- All coordinates will be in interval  $[-10^6, 10^6]$
- In 20% of test cases it will hold  $N \leq 10^3$