

Minimum Diameter Circle

Given n points in a plane find the diameter of the smallest circle that encloses all the points. A point lying on the circle is also considered to be inside it

Input

First line of input contains the n (<301) the number of points in the plane , followed by n lines of input

Each line gives the coordinates of one point on the plane. Each coordinate is an integer in the range $[0,1000]$

Output

Output consists of a single real number, the diameter of the circle rounded to two decimal places.

Example

Input:

```
4
1 1
1 0
0 1
0 0
```

Output:

```
1.41
```