



Task Odašiljači

Sadly, this is the last time Sean will play James Bond.

His mission is to network n antennas that are scattered across a vast desert, which can be represented as a 2D plane. He will set the transmission radius of each antenna to be the **same** non negative real number r . The range of an antenna is defined as the set of all points whose distance to the antenna is at most r . If ranges of two antennas have a common point, those antennas can directly communicate. Also, if antennas A and B can communicate, as well as antennas B and C , then antennas A and C are also able to communicate, through antenna B .

Sean wants to network the antennas, i.e. make possible for **every two** antennas to communicate. Since M has limited his spending for this mission, and larger radii require more money, Sean will choose the **smallest possible radius** r . Help him solve this problem!



Input

The first line contains an integer n ($1 \leq n \leq 1000$), the number of antennas.

Each of the following n lines contains integers x_i and y_i ($0 \leq x_i, y_i \leq 10^9$), coordinates of the i -th antenna.

Output

Output the minimal radius.

Your answer will be considered correct if its absolute or relative error doesn't exceed 10^{-6} .

Scoring

In test cases worth 35 points it holds that $1 \leq n \leq 100$.

Examples

input

```
2
1 1
2 2
```

output

```
0.7071068
```

input

```
7
2 3
3 4
4 5
0 1
3 1
4 2
1 5
```

output

```
1.4142135
```

input

```
4
2020 20
20 2020
2020 2020
20 20
```

output

```
1000.0000000
```



Clarification of the second example:

