

Problem B

Conservation Area

Time Limit: 1 second

In the National Conservation Area, there are N observation stations. Each station is labeled from 1 to N . The location of the i^{th} station is (x_i, y_i) .

We need to build one command center to *directly* collect data from all N observation stations in the National Conservation Area. That means each station sends collected data directly to the command center.

The operating radius of the command center is the maximum distance from the command center to all observation stations.

Our task is to determine where to build the command center to minimize its operating radius.

Input

The first line contains a positive integer number N , the number of observation stations ($N \leq 200$).

Each of the following N lines contains two integers x_i and y_i , separated by a space, denoting the location of the i^{th} observation station ($|x_i|, |y_i| \leq 10^4$, for $1 \leq i \leq N$).

Output

Display the minimum operating radius of the command center. The result is rounded with six decimal places.

Sample Input

Sample Output

8	182.107840
0 0	
200 300	
200 0	
200 200	
0 200	
100 300	
300 100	
100 0	