B. Maximal Area Quadrilateral

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

Iahub has drawn a set of n points in the cartesian plane which he calls "special points". A quadrilateral is a simple polygon without self-intersections with four sides (also called edges) and four vertices (also called corners). Please note that a quadrilateral doesn't have to be convex. A special quadrilateral is one which has all four vertices in the set of special points. Given the set of special points, please calculate the maximal area of a special quadrilateral.

Input

The first line contains integer n ($4 \leq n \leq 300$). Each of the next n lines contains two integers: x_i, y_i ($-1000 \leq x_i, y_i \leq 1000$) — the cartesian coordinates of ith special point. It is guaranteed that no three points are on the same line. It is guaranteed that no two points coincide.

Output

Output a single real number — the maximal area of a special quadrilateral. The answer will be considered correct if its absolute or relative error does't exceed 10^{-9}.

Examples

input
5 0 0 0 4 4 0 4 4 2 3

output
16.000000

Note

In the test example we can choose first 4 points to be the vertices of the quadrilateral. They form a square by side 4, so the area is $4 \cdot 4 = 16$.