Drawing Quadrilaterals

A quadrilateral consists of 4 points A, B, C and D in the plane, together with the segments AB, BC, CD and DA. Points are called vertices, while segments are called sides. The quadrilateral is simple if opposite sides (i.e. sides that do not share a vertex) do not intersect. Notice that it is possible to have a simple quadrilateral that looks like a triangle, with exactly 3 collinear vertices. Demetrio has just drawn N points on the wall of his room. He planned to draw a simple quadrilateral having 4 of these points as vertices, and then paint it with blue ink. Demetrio is going to buy the ink right now, but he has not chosen the 4 points yet. Can you tell him the maximum area a simple quadrilateral drawn on his wall can have? In this way Demetrio will be sure he will not run out of blue ink before the work is done.

Input

Each test case is described using several lines. The first line contains an integer N indicating the number of points drawn on the wall ($4 \leq N \leq 1000$). Each of the next N lines describes a different point of the set using two integers X and Y ($-10^7 \leq X, Y \leq 10^7$); these values represent the coordinates of the point in the XY plane. You may assume that within each test case no two points have the same location, neither are all collinear. The end of input is indicated with a line containing a single –1.

Output

For each test case, output a single line with a single decimal number representing the maximum area of a simple quadrilateral having as vertices 4 different points of the input set. Round the result to the closest rational number with one decimal place. In case of ties, round up. Always use exactly one digit after the decimal point, even if it means finishing with a zero.

Example

Input:
```
6
-100 0
100 0
-100 50
0 55
0 -65
1 1
4
-1 0
10000 0
0 0
0 1
-1
```

Output:
```
12000.0
5000.5
```