

Largest Area

Input file: *standard input*
Output file: *standard output*
Time limit: 1 second
Memory limit: 1024 mebibytes

You are given a rectangle on the plane with vertices at integer points. Calculate the area of the largest ellipse that can fit entirely within this rectangle. Recall that a *rectangle* is a convex quadrilateral with all right angles, and an *ellipse* is a figure on the plane defined by two focal points F_1 and F_2 (not necessarily with integer coordinates; possibly $F_1 = F_2$) and a real number $d > |F_1F_2|$, consisting of points P on the plane such that $|F_1P| + |F_2P| \leq d$.

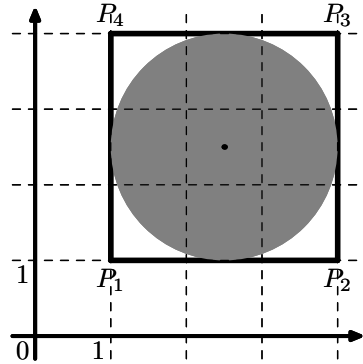
Input

The input consists of a single line containing eight integers $x_1, y_1, x_2, y_2, x_3, y_3, x_4, y_4$: the coordinates of four points ($-1000 \leq x_i, y_i \leq 1000$). The points $(x_1, y_1), (x_2, y_2), (x_3, y_3), (x_4, y_4)$ are the vertices of a rectangle with a positive area, listed in counterclockwise order.

Output

Output a single real number: the largest area of an ellipse that can be drawn inside the rectangle given in the input. The answer is considered correct if its relative or absolute error does not exceed 10^{-6} .

Examples

<i>standard input</i>	<i>standard output</i>	<i>explanation</i>
1 1 4 1 4 4 1 4	7.06858347	
0 -1 -2 13 -30 9 -28 -5	314.15926536	