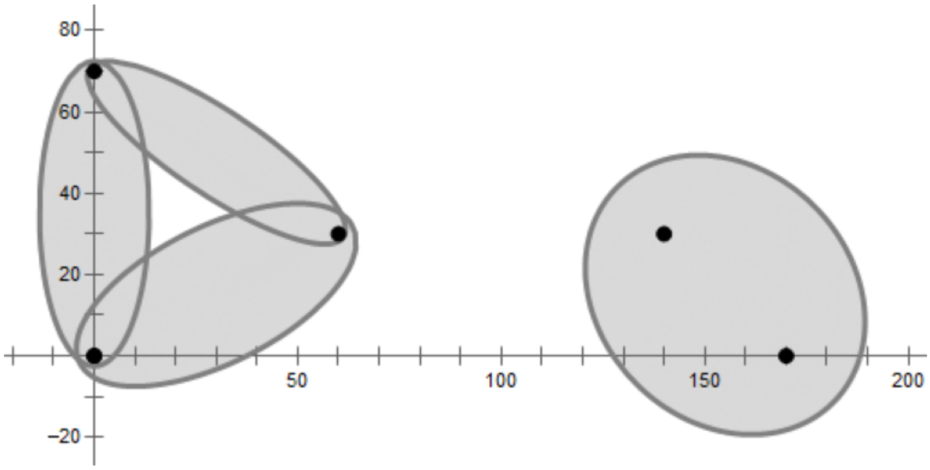
Problem A. Driverless Car II

Input file:	*standard input*
Output file:	*standard output*
Time limit:	10 seconds
Memory limit:	1024 mebibytes

A driverless car company has developed an epoch-making driverless car, and the testers of the company are testing the car on a two-dimension Cartesian plane.

The testers set n distinct transmitters to send signal to the car. When the car moves automatically on the plane, it sometimes break down due to signal attenuation. With great efforts, the testers figure out that the car works well if and only if there exists two different transmitters, the Euclidean distance between one transmitter and the car plus the the Euclidean distance between the other transmitter and the car does not exceed k.



The figure above corresponds to the first sample test case.

As the best programmer in the company, you are now asked to find the total area of positions that allow the car works well.

Input

The first line of the input contains two integers n ($2 \le n \le 2\,000$) and k ($1 \le k \le 30\,000$), indicating the number of transmitters and the constraint that allows the driverless car works well.

Each of the following n lines contains two integers x and y ($-10\,000 \le x, y \le 10\,000$), indicating a transmitter located at coordinate (x, y).

It is guaranteed that no two transmitters coincide, and for any two distinct transmitters, the absolute difference between k and the distance of these two transmitters is at least 0.01.

Output

Output a single real number, indicating the total area of positions that allow the driverless car works well.

Your answer is acceptable if its absolute or relative error does not exceed 10^{-6}. Formally speaking, suppose that your output is a and the jury's answer is b, your output is accepted if and only if $\frac{|a-b|}{\max(1,|b|)} \le 10^{-6}$.

Examples

standard input	standard output
5 75 0 0 170 0 140 30 60 30 0 70	7881.133252266554
5 40 0 0 170 0 140 30 60 30 0 100	0.000000000000
5 30000 0 0 1 2 1 5 0 2 0 1	706960618.428099330689