UVa Online Judge

12300 Smallest Regular Polygon

Given two different points A and B, your task is to find a regular polygon of n sides, passing through these two points, so that the polygon area is minimized.

Input

There will be at most 100 test cases. Each case contains 5 integers x_A, y_A, x_B, y_B, n ($0 \leq x_A, y_A, x_B, y_B \leq 100$, $3 \leq n \leq 10000$), the coordinates of A and B, and the number of sides of the regular polygon. The two points A and B are always different. The last test case is followed by a line with five zeros, which should not be processed.

Output

For each test case, print the smallest area of the regular polygon to six decimal places.

Sample Input

```
0 0 1 1 4
1 2 3 4 5
2 3 4 5 6
0 0 0 0 0
```

Sample Output

```
1.000000
5.257311
5.196152
```