D. Area of Two Circles' Intersection

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

You are given two circles. Find the area of their intersection.

Input

The first line contains three integers x_1, y_1, r_1 ($-10^9 \leq x_1, y_1 \leq 10^9$, $1 \leq r_1 \leq 10^9$) — the position of the center and the radius of the first circle.

The second line contains three integers x_2, y_2, r_2 ($-10^9 \leq x_2, y_2 \leq 10^9$, $1 \leq r_2 \leq 10^9$) — the position of the center and the radius of the second circle.

Output

Print the area of the intersection of the circles. The answer will be considered correct if the absolute or relative error doesn't exceed 10^{-6}.

Examples

input

```
0 0 4
6 0 4
```

output

```
7.25298806364175601379
```

input

```
0 0 5
11 0 5
```

output

```
0.00000000000000000000
```