

## Problem D

### Camera 360

**Time Limit: 1 second**

A stadium was built in the shape of a circle. Due to the design of the entrance, the stadium was bounded by a wall that has a horizontal cross section of a circular arc. A 360-degree security camera is located outside the stadium to observe all activities outside and even inside the stadium.



An advertising billboard accidentally obscures part of the camera's vision inside the stadium. Calculate the total length of all the sections of the stadium wall that the camera can observe.

### Input

The first line contains five real numbers  $x_0, y_0, R, u, v$  ( $0 < R \leq 10^6$ ;  $0 < v - u \leq 360$ ) where  $x_0, y_0, R$  are the coordinates of the center and radius of the stadium;  $u, v$  are measurements in degree of the starting and ending angles respectively describing the stadium wall.

The second line contains two real numbers  $x_1, y_1$  - the coordinates of the camera.

The third line contains four real numbers  $x_2, y_2, x_3, y_3$  - the coordinates of the horizontal cross section of the advertising billboard.

The input data ensures the circular arc, the camera, and the billboard do not intersect. The absolute values of all coordinates do not exceed  $10^6$ .

### Output

Print a real number representing the percentage of the total length of all the section(s) of the stadium wall that the camera can observe with respect to the length of the circular arc. The result should be printed exactly up to four decimal places.

#### Sample Input

#### Sample Output

2 1 2 120 420	49.6843
3 6	
2 4 2.5 4	

**Explanation:** the camera can observe four segments in the circular arc of the stadium. The observable segments are displayed in red.

