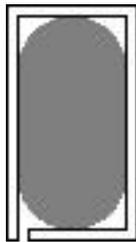


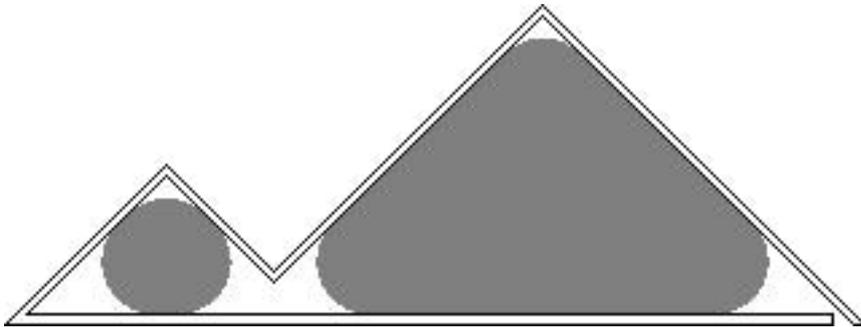
## 12314 The Cleaning Robot

You have a cleaning robot which is a perfect disc (circle with interior) of radius  $r$ . Given a polygonal obstacle, you need to place the robot in an empty space so that the area that can be cleaned is maximized. During the cleaning process, the robot cannot cross the obstacle, but touching is ok. Note that the robot must be “trapped” by the obstacle (i.e. it cannot move arbitrarily far from the obstacle), otherwise the robot may get lost forever.

The picture below shows a simple scenario. The area that can be cleaned is colored gray.



The picture below shows a more complex scenario. There are two "rooms" for you to choose. Obviously the right one is better.



**Warning:** this problem is harder than it seems. Please double-check your solution before submitting.

### Input

There will be at most 25 test cases. Each case begins with two integers  $n, r$  ( $1 \leq n \leq 100, 1 \leq r \leq 20$ ), the number of vertices of the polygon and the radius of the robot. The next  $n$  lines contain the coordinates of the polygon vertices (integers whose absolute values do not exceed 1000), given in counter-clockwise or clockwise order. The last test case is followed by a line with  $n = r = 0$ , which should not be processed.

### Output

For each test case, print the maximal total area that can be cleaned, to two decimal places. If you cannot place the robot, print ‘Impossible’ (without quotes).

**Sample Input**

```
4 4
0 0
1 0
1 1
0 1
10 5
0 0
1 0
1 21
11 21
11 1
2 1
2 0
12 0
12 22
0 22
0 0 0
```

**Sample Output**

```
Impossible
178.54
```