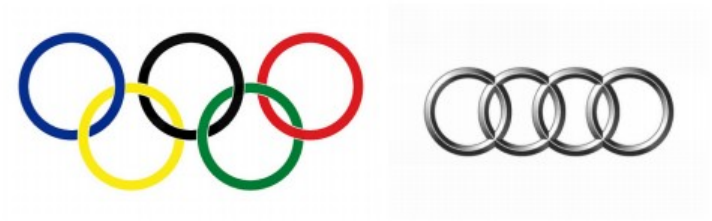
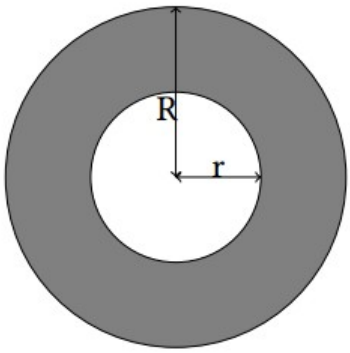
# 7066 Intersection

Matt is a big fan of logo design. Recently he falls in love with logo made up by rings. The following figures are some famous examples you may know.



A ring is a 2-D figure bounded by two circles sharing the common center. The radius for these circles are denoted by $r$ and $R$ ($r < R$). For more details, refer to the gray part in the illustration below.




Matt just designed a new logo consisting of two rings with the same size in the 2-D plane. For his interests, Matt would like to know the area of the intersection of these two rings.

## Input

The first line contains only one integer $T$ ($T \leq 10^5$), which indicates the number of test cases. For each test case, the first line contains two integers $r$, $R$ ($0 \leq r < R \leq 10$).

Each of the following two lines contains two integers $x_i$, $y_i$ ($0 \leq x_i, y_i \leq 20$) indicating the coordinates of the center of each ring.

## Output

For each test case, output a single line '`Case #`$x$`:` $y$', where $x$ is the case number (starting from 1) and $y$ is the area of intersection rounded to 6 decimal places.

## Sample Input

```
2
2 3
```

```
0 0
0 0
2 3
0 0
5 0
```

## Sample Output

```
Case #1: 15.707963
Case #2: 2.250778
```