
Rose windows**P91283_en**

Mr. Arnold Gerald Nostik is in charge of the design of the main rose window of the new cathedral in his town. The rose window is circular, $2r$ units wide. Since Mr. A. G. Nostik knows little about Virgins, Saints and Angels, he is thinking about a geometric pattern. Let n be an even integer number, at least 4. Mr. Nostik plans to pick n points, each at distance r of the center of the window, these points being the vertices of a regular polygon. (The next page shows an example with $n = 8$.) These points are to be joined with straight lines, and the resulting regions colored (with arbitrary colors) as shown in the example. Note that for $n = 8$ there are four regions. We number these regions 1, 2, 3 and 4 starting to count from the center of the rose. In general, there are $n/2$ regions.

Write a program to help Mr. Nostik to know how much glass of every color he needs in order to build a given rose window.

Input

Input begins with a number t . Follow t cases, each with a real number r , an even integer number n , and an integer number k . Assume $1 \leq r \leq 100$, $4 \leq n \leq 40$, and $1 \leq k \leq n/2$.

Output

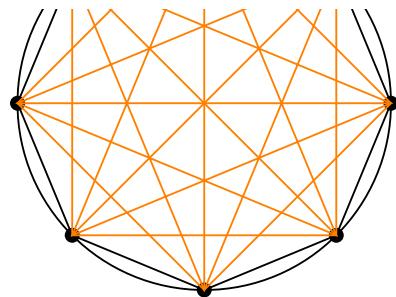
For every case, print the area of the k -th region of a rose window with n points and radius r , with four digits after the decimal point. The input cases have no precision issues.

Sample input 1

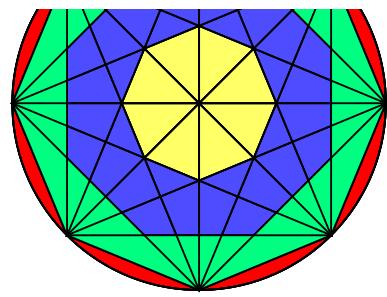
```
4
50 8 3
9.238794 8 2
10 4 1
20 4 1
```

Sample output 1

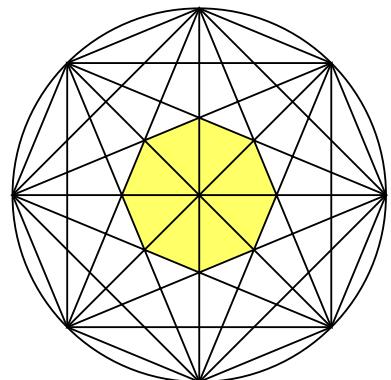
```
2928.9322
100.0000
200.0000
800.0000
```



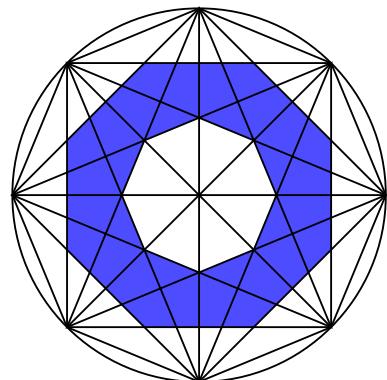
A regular octagon inside a circle



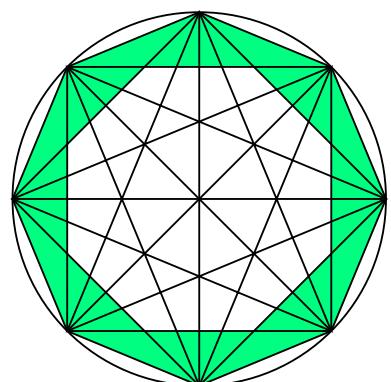
A rose window with 8 points



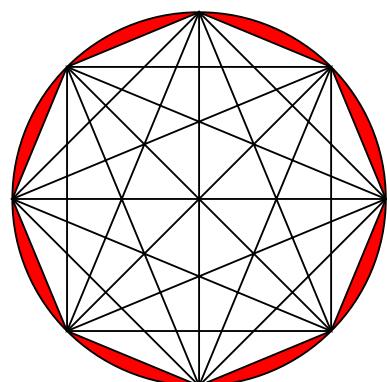
First region of the rose above



Second region of the rose above



Third region of the rose above



Fourth region of the rose above

Problem information

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