Planet Surveying (prob15)

The Problem

You've just been hired by Hubert Farnsworth to perform planetary surveys in order to optimize shipping on a planet. However, for your first task, he's given you some stats on planets and wants you to give some surveying estimates before you fly out to uncharted regions of the galaxy and perform the real surveying.

The method in which the professor wants you to survey is as follows: Start at the South pole of the planet, spiraling upwards to the North pole. When spiraling, he wants you to keep your survey ship to maintain a constant slope relative to latitude and longitude. He gives this as a ratio.

For instance, if he says use a slope of k = 2, then for every degree right of longitude the ship goes, the ship must also go up 2 degrees latitude. Also, you can assume the planets are perfect spheres.

Input

Professor Farnsworth has given you a data file describing a couple of planets he'd like for you to estimate.

The first row has a single integer N (up to 2000).

Every N lines after that have two decimal numbers.

The first is R (1 <= R <= 100), the radius of the planet in 1000's of kilometers.

The second is k (1 <= k <= 20), the slope to use.

Output

For your output, you should print a single number, an estimate of the length of the path in 1000's of kilometers, formatted to three decimal places.

Sample Input

```
2
10.0 1.0
20.0 2.0
```

Sample Output

```
38.202
66.592
```