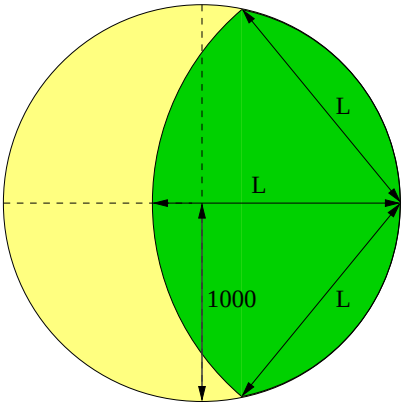
Dividing a field — P83390_en

When Jordi and Mireia married several years ago, they put their gold together to buy a circular field with a radius of 1000 meters. Jordi put J kg of gold, and Mireia put M kg. Time has passed and they divorce, so they have decided to divide the field in such a way that each one receives an area proportional to the gold invested by he or she. They will use a rope of length L meters, tie one extreme to the easternmost point, and use the other extreme to mark the limit of the fields. Since Jordi is a gentleman, he will settle for the left, worst shaped field, while Mireia will get the field to the right, painted green in the picture.



The problem you must solve is: given the amounts of gold J and M, which must be the length L of the rope?

Input

Input begins with the number of cases. Every case consists of two real numbers $J \in [1, 100]$ and $M \in [1, 100]$.

Output

For every case, print the length L of the rope with four digits after the decimal point. The input cases have no precision issues.

Sample input 1

```
2
1 20
10 6.420421
```

Sample output 1

```
1849.2414
1000.0000
```

Problem information

Author: Salvador Roura

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