

12475 Elliptic Athletics Track

In the world of fruits, in a country of litchis, there is a dictator litchi. He has a son called Gappu. He is the sports minister. He loves track and field events. He ordered to make athletics tracks on every ground in that country. He wants every track to be ellipse shaped. His reasoning for this is absurd. Like the planets revolve around the sun in an elliptic orbit, the athletes will run around the track keeping him at the center. Oh well...

Now, Engineers are making cost estimation of the tracks. For that reason, they need to know the length of the track given the lengths of the bounding rectangle. Help them. Of course, in reality, the engineers will actually show greater lengths for monetary gains.

Input

First line of input will contain an integer T , ($T \leq 50$), the number of test cases. Then there will two integers b and a expressed in some litchi units where $1 \leq b \leq a \leq 20$, b and a are the **half length** of minor and major axis. (See notes).

Output

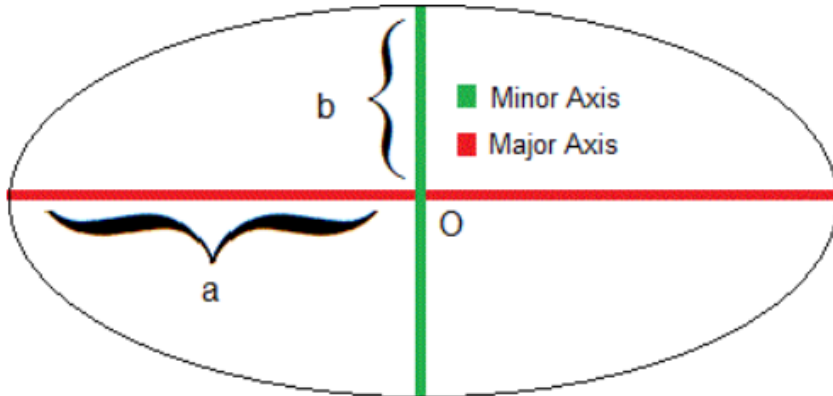
Print the length of the track to **at least** six decimal places. Look at the sample output for the output format. Your program will be considered correct if absolute or relative error is less than 10^{-5} .

Notes:

An axis parallel ellipse with center (point O in the picture, the intersection of major and minor axis) (0, 0), can be expressed by the following equation:

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

Here, a = half of the length of major axis, b = half of the length of minor axis.



PS: Don't be afraid to try your luck if your calculated value differs a little bit from the sample.

Sample Input

```
2
5 10
3 4
```

Sample Output

Case 1: 48.442241

Case 2: 22.103492