Leaf

A leaf is inscribed in a square. Given the length of a side of the square. Find the area of the leaf.

A leaf is the intersection of two quarter circles drawn from two opposite ends of a square, with the radius being equal to the length of a side of the square.

Input

In the first line there will be an integer t ($t \le 10^5$) the number of testcases. Next t lines will contain a number a ($0 \le a \le 10^6$), the side length of the square.

Output

Print the area of the Leaf. **Errors less than 10^{-6} will be ignored.**

Example

Input:
```
2
1
2
```

Output:
```
0.5707963268
2.2831853072
```