Leibniz

Problem Statement

In Calculus, the Leibniz formula for π is given by:

$$1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \frac{1}{9} - \cdots = \frac{\pi}{4}$$

or:

$$\sum_{i=0}^{\infty} \frac{(-1)^i}{2i+1} = \frac{\pi}{4}$$

You will be given an integer **n**. Your task is to print the summation of the Leibniz formula up to the **nth** term of the series correct to 15 decimal places.

Input Format

The first line contains the number of test cases (T) which is less than 100. Each additional line is a test case for a positive integer value (p) less than 10^7.

Sample Input

2
10
20

Output Format

Output T lines, with each line containing the summation up to nth term.

$$\sum_{i=0}^{n-1} \frac{(-1)^i}{2i+1}$$

Sample Output

0.760459904732351
0.772905951666960

Scoring

This is a code golf question. The goal is to write a solution with as little code as possible. A correct submission with a source code of X characters will receive the following score:

maxScore * (300 - X)/300

Any correct code longer than 300 characters will receive a score of maxScore * 0.001.
MaxScore is the maximum score attainable for the problem.
Note that whitespace is also treated as a character.