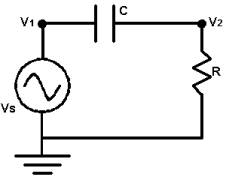
**Bode Plot**

|  |  |  |
| --- | --- | --- |
| **Time Limit:** 1000MS |  | **Memory Limit:** 10000K |
| **Total Submissions:** 13029 |  | **Accepted:** 8257 |

**Description**

Consider the AC circuit below. We will assume that the circuit is in steady-state. Thus, the voltage at nodes 1 and 2 are given by v1 = VS cost and v2 = VRcos (t +  ) where VSis the voltage of the source,  is the frequency (in radians per second), and t is time. VR is the magnitude of the voltage drop across the resistor, and  is its phase.



You are to write a program to determine VR for different values of . You will need two laws of electricity to solve this problem. The first is Ohm's Law, which states v2 = iR where i is the current in the circuit, oriented clockwise. The second is i = C d/dt (v1-v2) which relates the current to the voltage on either side of the capacitor. "d/dt"indicates the derivative with respect to t.

**Input**

The input will consist of one or more lines. The first line contains three real numbers and a non-negative integer. The real numbers are VS, R, and C, in that order. The integer, n, is the number of test cases. The following n lines of the input will have one real number per line. Each of these numbers is the angular frequency, .

**Output**

For each angular frequency in the input you are to output its corresponding VR on a single line. Each VR value output should be rounded to three digits after the decimal point.

**Sample Input**

1.0 1.0 1.0 9

0.01

0.031623

0.1

0.31623

1.0

3.1623

10.0

31.623

100.0

**Sample Output**

0.010

0.032

0.100

0.302

0.707

0.953

0.995

1.000

1.000