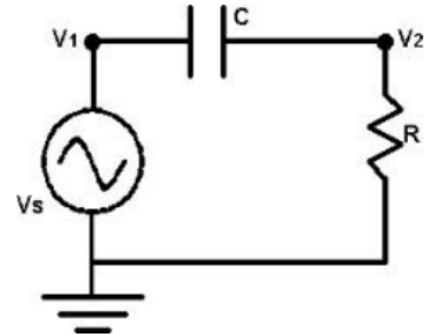


2284 Bode Plot

Consider the AC circuit on the right. We will assume that the circuit is in steady-state. Thus, the voltage at nodes 1 and 2 are given by $v_1 = V_S \cos \omega t$ and $v_2 = V_R \cos(\omega t + \theta)$ where V_S is the voltage of the source, ω is the frequency (in radians per second), and t is time. V_R is the magnitude of the voltage drop across the resistor, and θ is its phase.

You are to write a program to determine V_R for different values of ω . You will need two laws of electricity to solve this problem. The first is Ohm's Law, which states $v_2 = iR$ where i is the current in the circuit, oriented clockwise. The second is $i = C \frac{d}{dt}(v_1 - v_2)$ which relates the current to the voltage on either side of the capacitor. " $\frac{d}{dt}$ " 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 V_S , 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, ω .

Output

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

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