Carl

Professor Octastichs has invented a new programming language, Carl. An expression in Carl may be a positive or negative integer, or may be of the form **(p e1 e2)** where **p** is a real number between 0 and 1 (inclusive) and **e1** and **e2** are Carl expressions. An integer represents itself and **(p e1 e2)** represents **x + y** where **x** is the value of **e1** and **y** is the value of **e2** with probability **p**, otherwise it represents **x - y**.

Given a Carl expression, what is its expected value?

Input

Input consists of several Carl expressions, one per line, followed by a line containing ().

Output

For each expression, output its expected value to two decimal places.

Score

Score is the length of your source program.

Example

Input:
```
7
(.5 3 9)
()
```

Output:
```
7.00
3.00
```