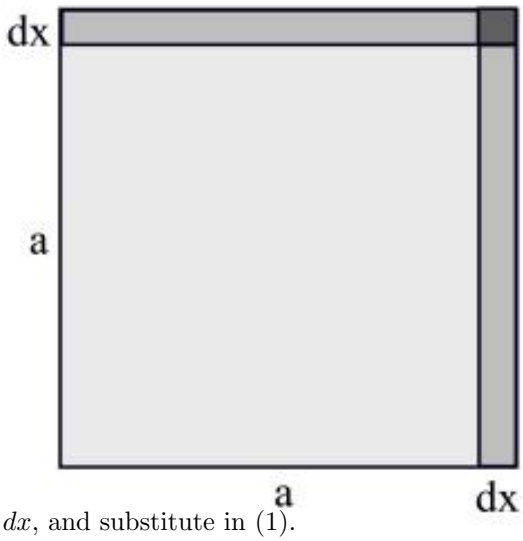
Richard P. Feynman was a musician, artist, scientist, teacher and Nobel lauriet. He contributed to the development of the atomic bomb, expanded the understanding of quantumelectrodynamics, translated Mayan hieroglyphics, and cut to the heart of the Challenger disaster. But beyond all of that, Richard Feynman was a unique and multi-faceted individual and he was famous for his unbelievable stories, unusual life style and his popular books and lectures on mathematics and physics.

Once, in Brazil, Feynman got into a kind of a competition with a native to see who could do faster simple aritmethics, Feynman or an abacus (aka an manual calculator machine)! Feynman lost in operations such as addition and multiplication but he won in cubic roots. Given the number 1729.03 he got the result of 12.002 at the end of a few seconds while his oponent got 12.0!



The analog procedure to the Square Root is:

$$\begin{aligned} \sqrt{n} &= a + dx \qquad (1) \\ \Rightarrow n &= (a+dx)^2 \\ \Rightarrow n &= a^2 + 2*a*dx + (dx)^2 \\ \Rightarrow n &= a^2 + 2*a*dx \\ \Rightarrow dx &= 1/2*(n-a^2)/a \end{aligned}$$

Considering an square of side a, with area $a*a$, if you do a small increment of dx on each side , you will get a square with area of the square with side a (Light gray) plus the area of the two small rips (Medium Gray) on top plus the area of the small square(dark gray). Since this is only an approximated method, we can ignore this small area ($(dx)^2$). Then just get value of dx, and substitute in (1).

Example

To calculate square root of 17, as Feynman has an excelent memory, he knows 'all' perfect squares (as well cubes), he knows that $4*4 = 16$ then he just use the method above and calculate $4 + 1/8$ that equals 4.125 (not very bad as square root of $17 = 4.123...$)

As Feynman is very lazy, and he doesn't like subtractions at all, he doesn't use negative dx ... (it's boring..)

Your Task is to generalize this procedure to the cubic root, and HELP FEYNMAN! (Just do it, What do you care what other people think?)

Input

The input contains a positive floating-point number per line in the inteval $[1 \ldots 1000000]$ (inclusive). The last line of the input file contains a number '0' (zero). This zero should not be processed.

Output

For each line of input print the value of the cubic root approximated by the method explained above. Print the value rounded upto four digits after the decimal point.

Sample Input

```
1729.0300
64.0000
63.9990
0
```

Sample Output

```
12.0024
4.0000
4.3703
```