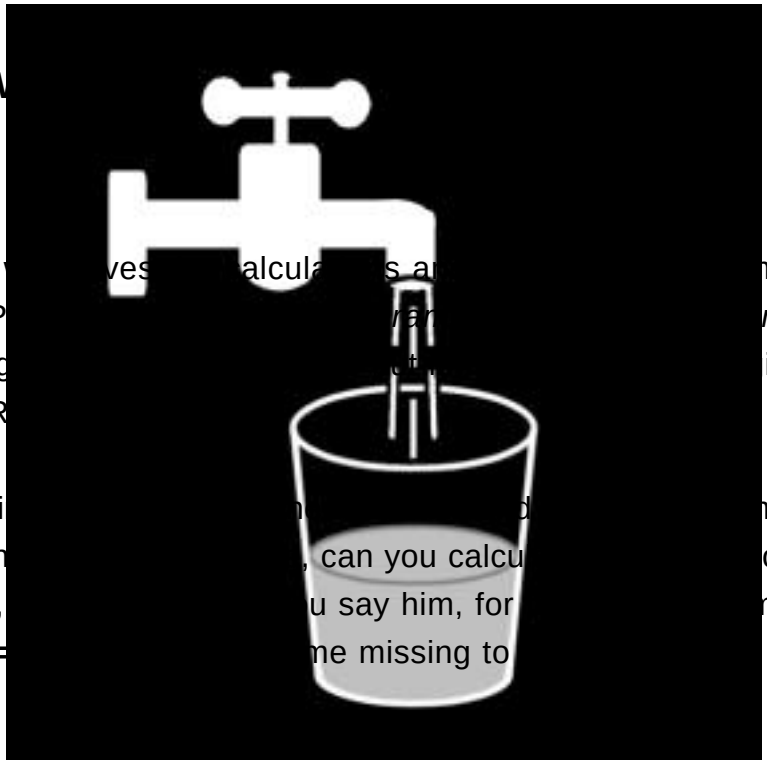
2346 - Glass with W



Description

Slash is a smart guy w ves alcula s ar ns, for this reason, the leadership of the *MP* *más López Jiménez")* proposed him creating iate competition at the University of Puerto R

Slash made the followi m and top of a glass full with whisky, and the h , can you calcu of whisky?. To make a little harder you work, u say him, for me in which the whisky reaches a height **h <=** me missing to

You can safely assume that for any height **h <= H**, the border of the glass forms a circunference. See the sample figure for more clarity, about the glass form.

Input specification

Several cases, but no more than 50. Each case is described using a single line containing four integers, **R1**, **R2**, **H** and **h (1 <= R1 <= R2 <= 200, 1 <= h <= H <= 200)**. The input ends when **R1 = R2 = H = h = 0**, this case should not be processed.

Output specification

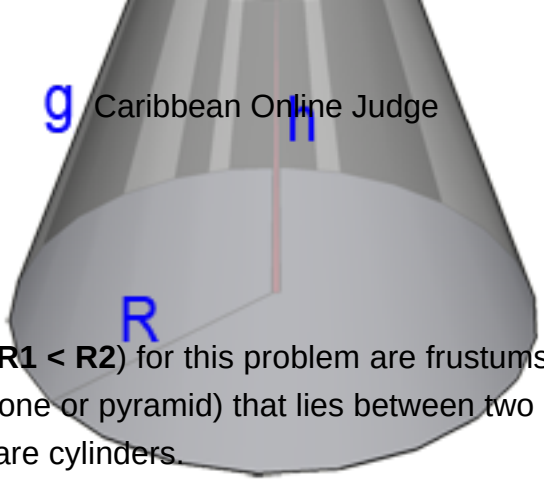
For each case you must print the missing volume of whisky to fill the glass, rounded up to four decimal places.

Sample input

```
2 6 7 3
100 200 150 100
0 0 0 0
```

Sample output

```
301.9348
5294165.3977p { margin-bottom: 0.08in; }
```



Hint(s)

Almost all vessels (glass with **R1 < R2**) for this problem are frustums. In geometry, a frustum is the portion of a solid (normally a cone or pyramid) that lies between two parallel planes cutting it. Other vessels (glass with **R1 = R2**), are cylinders.

Source	Yaniel Alfredo Velázquez Bruceta
Added by	**ymondelo20**
Addition date	2013-04-09
Time limit (ms)	3000
Test limit (ms)	1000
Memory limit (kb)	256000
Output limit (mb)	64
Size limit (bytes)	30000
Enabled languages	Bash C C# C++ Java Pascal Perl PHP Python Ruby Text