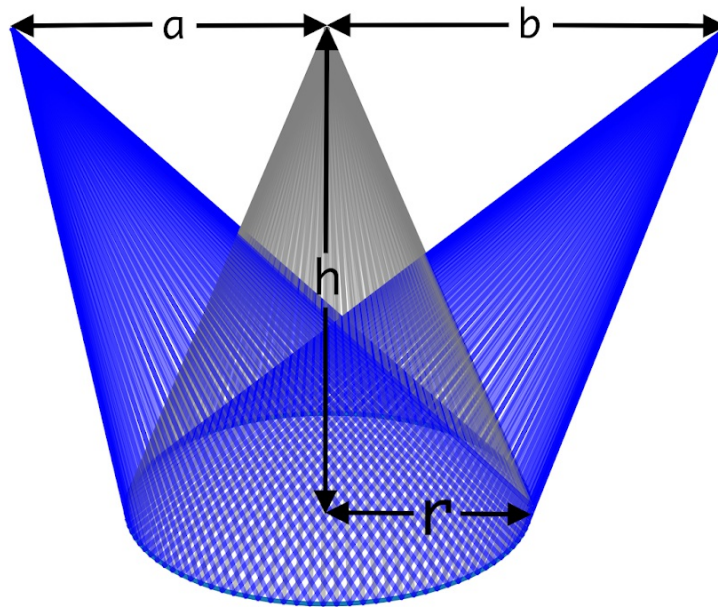


A Complex Cone

A cone with radius of base ' r ' and height ' h ', is stretched to the left and right by length ' a ' and ' b ' respectively such that height of the stretched cones equal the height of the original cone and apexes of all the three cones are colinear.



Write a program to calculate the volume of the union of the two stretched cones (colored blue in attached image).

Input

The first line of input is the number of test cases T . ($1 \leq T \leq 100$)

For each test case, there is a single line containing 4 integers ' r ', ' h ', ' a ' and ' b ' respectively. ($0 < r, h, a, b \leq 10$)

Output

Output a single line for each test case, containing the volume with 1 decimal place only. Answer should be correct to 1 decimal place without rounding off.

Example

Input

2

1 1 1 1

10 10 10 10

Output

1.4

1491.6