

$\pi e S$

Time limit: 3.14s **Memory limit:** 271M

Alice and Bob have joined a competitive πe game! Initially, there are X slices of good πe , and Y slices of bad πe . With Alice going first, they will take turns picking one of the slices of πe uniformly at random and eating it. If a player eats a good slice of πe , they gain one point, and if they eat a bad slice of πe , they lose one point. After each turn, they will bake a good/bad slice of πe to replace the type of πe that was just eaten. Then, they will bake Z additional slices of πe , each with equal probability of being either good or bad.

Alice and Bob will spend the rest of eternity competing in this πe game! Determine the limit of the expected value of Alice's points minus Bob's points after n turns, as n approaches infinity. To ensure the integrity of your solution, there will be T testcases.

Constraints

$$1 \leq T \leq 314\,159$$

$$X + Y \geq 1$$

Subtask 1 [27%]

$$0 \leq X, Y \leq 314$$

$$1 \leq Z \leq 2$$

Subtask e [31%]

$$0 \leq X, Y \leq 314$$

$$1 \leq Z \leq 271$$

Subtask π [42%]

$$0 \leq X, Y \leq 314\,159$$

$$1 \leq Z \leq 271\,828$$

Input Specification

The first line contains one integer, T , the number of testcases.

The next T lines each contain three space-separated integers, X , Y , and Z , describing each testcase. X is the initial number of good slices of πe , Y is the initial number of bad slices of πe , and Z is the number of randomly good/bad πe slices which are added after each turn. It is guaranteed that there is at least one slice of πe initially.

Output Specification

Output T lines, the i^{th} line containing one real number, the answer to the i^{th} testcase. Your answers will be considered correct if their absolute error is less than 10^{-6} .

Sample Input

```
3
1 0 2
2 4 3
5 2 4
```

Sample Output

```
0.7853981633974483
-0.20456854629336979
0.2687567584009584
```

Explanation for Sample

For the first testcase, it can be shown that the limit of the expected value approaches $\frac{\pi}{4} = 0.7853981633974483\dots$

For the second testcase, it can be shown that the limit of the expected value approaches $\frac{2}{3}\ln(2) - \frac{2}{3} = -0.20456854629336979\dots$

For the third testcase, it can be shown that the limit of the expected value approaches $\frac{3\sqrt{2}}{4}\ln(1 + \sqrt{2}) - \frac{3\sqrt{2}}{8}\pi + 1 = 0.2687567584009584\dots$