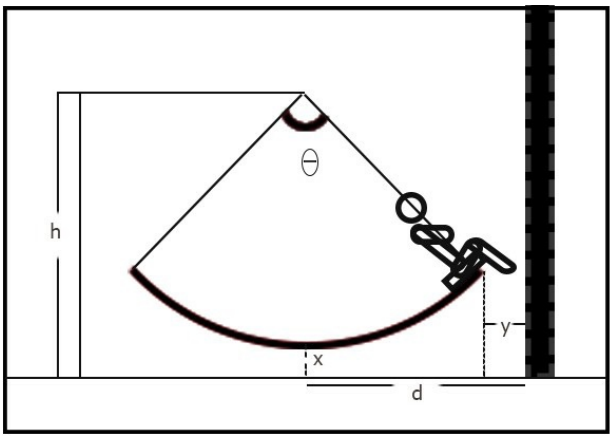
Ecstasy

Swapnil loves to ride swings at the local park, he feels ecstatic on riding one! However, the park plot is recently being used up for the construction of a public building. Swapnil had been depressed, until his mother decided to put up a swing right beside their home!



Swapnil's mom Swagata is now faced with a new problem. She has decided on the position of the swing in her yard, but height of the swing needs critical calculation.

Swagata has picked point A (directly downward from the hanging point) in her yard such that A has a perpendicular distance of d meters from the foot of their house. His feet need clearance of x meters above the ground, and y meters away from the building. Swapnil can keep balance while riding the swing if the swinging angle does not exceed theta-degrees. Your task is to calculate the maximum height h of Swapnil's swing.

Input

Input file contains multiple test cases. Each test case begins with a line containing three positive floating-point numbers- **d, x** and **y (0<x,y<d<100)** in meters. Next line of test case contains another floating point number, which is the maximum swinging angle theta in degrees **(0<theta<180)**. It is guaranteed that all test cases will have a valid answer.

Output

For each sample input, output the maximum height h of the swing in meters with exactly two digits after decimal point.

Example

Input:
30.0 2.0 3.0
60.0
56.32 1.1 2.3
65.1

Output:
56.00
101.50