

Cross the Road

Input file: **standard input**
Output file: **standard output**
Time limit: 1 second
Memory limit: 512 megabytes

You are about to cross the road, but an e-bike is speeding along it.

In the Cartesian plane, a road of width w extends infinitely in the x -direction and occupies the strip $0 \leq y \leq w$. You start from the fixed point $(0, 0)$ and want to reach any point on the upper boundary $y = w$, while avoiding an e-bike on the road.

The e-bike's body is represented by a line segment parallel to the x -axis. At time $t = 0$, its endpoints are (x_1, y_c) and (x_2, y_c) , where $x_1 < x_2$. The e-bike moves with constant horizontal velocity u , so at time t its endpoints are at $(x_1 + ut, y_c)$ and $(x_2 + ut, y_c)$.

You may move in any direction or wait, but your speed must never exceed v . Equivalently, for any two times $0 \leq t_1 \leq t_2$, the Euclidean distance between your positions at those times must be at most $v(t_2 - t_1)$. At no time may you be on the e-bike's segment except at its endpoints; touching either endpoint is allowed.

You start from $(0, 0)$ at time $t = 0$. Find the minimum time needed to reach any point on $y = w$ safely. It can be shown that an answer always exists.

Input

The first line contains an integer T ($1 \leq T \leq 2000$), the number of test cases.

Each test case consists of one line containing six integers w, x_1, x_2, y_c, u, v ($2 \leq w \leq 4 \times 10^4$, $-4 \times 10^4 \leq x_1 < x_2 \leq 4 \times 10^4$, $1 \leq y_c \leq w - 1$, $-4 \times 10^4 \leq u \leq 4 \times 10^4$, $1 \leq v \leq 4 \times 10^4$). Here, w is the width of the road, (x_1, y_c) and (x_2, y_c) are the e-bike's endpoints at time $t = 0$, u is the e-bike's horizontal velocity, and v is your maximum speed.

Output

For each test case, output one real number on a separate line: the minimum time needed to reach $y = w$ safely.

Your answer is considered correct if its absolute or relative error does not exceed 10^{-6} . More precisely, for each value a you output and the corresponding reference value b , the requirement is $\frac{|a-b|}{\max(1, |b|)} \leq 10^{-6}$.

Example

standard input	standard output
3	10.000000000
10 100 110 5 3 1	5.286299648
10 -2 2 1 1 2	10.250000000
10 -2 2 1 -1 1	

Note

The figure below shows the initial state ($t = 0$) of the second test case in the sample. The orange segment represents the e-bike, and the blue point $S = (0, 0)$ is your starting point. The arrow indicates the e-bike's direction of motion, with $u = 1$.

