



Inter University Programming Contest

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Joker

Max. Score: 100

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Problem Statement

Joker attempts to massacre Gotham City, but Batman arrives to foil his plan. During the ensuing battle, Joker tries to escape through a tunnel with a speed ' u ', he is unaware of the fact that the tunnel is circular with radius ' r ' and its entrance and exit points open at the same place from where he entered.

Batman enters the tunnel with speed ' v ' after ' t ' sec. In order to save the Gotham from Joker's devastating plans, Batman has to catch Joker as soon as possible, before he finds any other place to escape from the tunnel. Batman can enter the tunnel from either entrance or exit point.

Find the minimum time he will take to catch the Joker.

Input :

The first line contain ' p ', the number of test cases.

The first line of each test case contains radius of circular tunnel, speed of joker, speed of batman and the delay time of the batman to enter in the tunnel i.e. ' r ', ' u ', ' v ' and ' t ' respectively.

r , u , v and t are integers.

Output :

For each test case output is minimum time to catch the Joker. Answer should have exactly 6 digits after the decimal point. If Joker enters the tunnel and escape from it before Batman enters the tunnel then the outcome is '-1'.

Note :

Batman and Joker can at max cover only one round of the tunnel.

Take value of pi upto 2 decimal places.

Constraints :

$1 \leq p \leq 1100$

$1 \leq r \leq 10^8$

$1 \leq u \leq 10^9$

$1 \leq v \leq 10^9$

$1 \leq t \leq 10^3$

Sample Input ([Plaintext Link](#))

```
3
5 4 2 1
10 5 2 3
3 6 2 4
```

Sample Output ([Plaintext Link](#))

```
4.566667
6.828571
-1
```

Time Limit: 1 sec(s) for each input file.

Memory Limit: 256 MB

Source Limit: 1024 KB

Scoring: Score is assigned in case any testcase passes.

Allowed languages: C, C++, Clojure, Go, Haskell, C#, Java, JavaScript, Objective-C, Perl, PHP, Python, Ruby

[Load Code Editor](#) You can submit code after loading editor.

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User	Result	Time	Lang
Mukul Ja...		0.0	C
KRATIGYA...	20	0.2011	C
ANKUR MA...	80	0.2011	C
vibhuti ...	20	0.2013	C
Mukul Ja...		0.2013	C
NAVEEN S...		0.2011	C
Sahil Wa...		0.2012	C
Aditya A...	20	0.201	C
Akash Ba...		0.2012	C
Sourabh ...	20	0.2012	C
swapnil ...	20	0.2011	C

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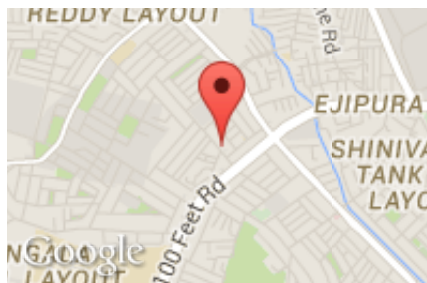
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11th Floor, #509,
6th Cross, 6th Block, Koramangala,
Bangalore, Karnataka 560095,
India.

Reach us

contact@hackerearth.com
+91-776-057-2339

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