

## Two trains

P90619\_en

Catorzè Concurs de Programació de la UPC - Semifinal (2016-09-21)

Consider two infinite horizontal train rails, so close that we can regard them to be coincident. On the first rail there is a train of length  $\ell_1$ . To its right, on the second rail and  $d$  distance units apart, there is a train of length  $\ell_2$ . This simple picture corresponds to all the cases of the sample input, with  $\ell_1 = 10$ ,  $\ell_2 = 20$  and  $d = 30$ :



The first train has velocity  $v_1$  and constant acceleration  $a_1$ . The second train has velocity  $v_2$  and constant acceleration  $a_2$ . Positive means to the right, negative means to the left. For how many time units will the trains overlap, at least partially?

### Input

Input consists of several cases, with only integer numbers, each one with  $\ell_1$ ,  $\ell_2$ ,  $d$ ,  $v_1$ ,  $a_1$ ,  $v_2$  and  $a_2$ . Assume that  $\ell_1$ ,  $\ell_2$  and  $d$  are strictly positive. No number is larger than  $10^4$  in absolute value.

### Output

For every case, print with four digits after the decimal point the amount of time that both trains will overlap. The input cases have no precision issues.

#### Sample input

```
10 20 30 10 0 20 0
10 20 30 10 0 -10 5
10 20 30 10 0 -10 1
10 20 30 10 0 -10 -10
```

#### Sample output

```
0.0000
4.0000
3.4118
0.8377
```

### Problem information

Author : Salvador Roura

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