

7198 Tall orders

You have been charged with evaluating the safety of power cables passing over train tracks. Owing to the recent purchase of the new Macho 10000 trains, the questions has been raised as to whether the trains are too tall to safely pass under existing power cable infrastructure.

The new Macho 10000 train is 4.1 m tall; the power engineers claim that the power lines have been designed for a maximum train height of 4.05 m, with a safety gap of 150 mm for thermal expansion in the cables. Fortunately the data required to test this claim is available: you have a complete database of the critical dimensions of all power line infrastructure passing over train tracks. In particular, you have the following dimensions (see Figure 1):

- The distance between the two posts supporting the power cable, d . You may safely assume that the train track is exactly halfway between the two posts.
- The height of the top of the posts above the track, p . You may safely assume that the cable is attached right at the top of the post.

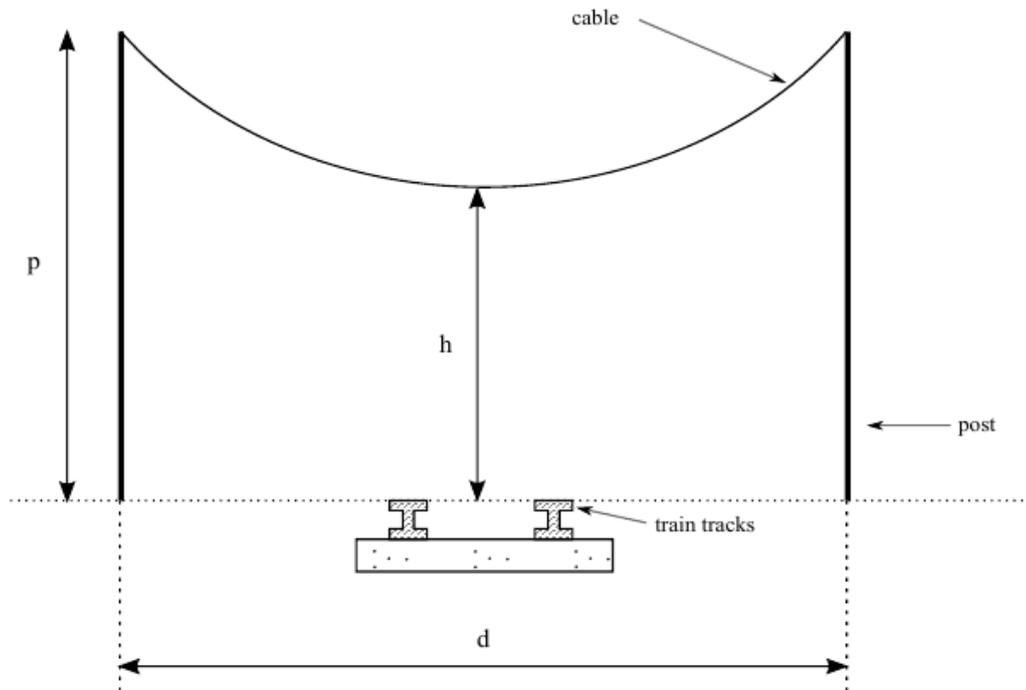


Figure 1: Power line dimensions

A cable hanging between poles is known to assume a specific shape called a *catenary*. This shape is described by the formula

$$f(s) = a \cosh\left(\frac{s}{a}\right)$$

where $-\frac{d}{2} \leq s \leq \frac{d}{2}$ denotes a position along the cable, as measured on the ground, and

$$\cosh(x) = \frac{e^x + e^{-x}}{2}$$

A given configuration (specific d and p values) can be said to be safe if the lowest point along the cable is at a height of 4.2 m above the track. By modeling the cable as an infinitely thin thread, the function $f(s)$ can be used to determine the maximum length of cable that will be safe.

Input

Your input consists of an arbitrary number of records, but no more than 100.

Each record comprises two real numbers,

p d

where $4.3 \leq p \leq 10$ denotes the height of the top of the posts above the tracks (in metres), and $6 \leq d \leq 30$ denotes the distance between the two posts, also given in metres (see Figure 1).

The end of input is indicated by a line containing only the value ‘-1’.

Output

For each input record, output

L

where L denotes the maximum length of cable that may be used while keeping the lowest point along the cable 4.2 m or more above the tracks.

The value L should be given in metres, and should be truncated (not rounded) to three places after the decimal point.

Sample Input

```
6 12
6.210381 10.184095
-1
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Sample Output

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12.692
11.175
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