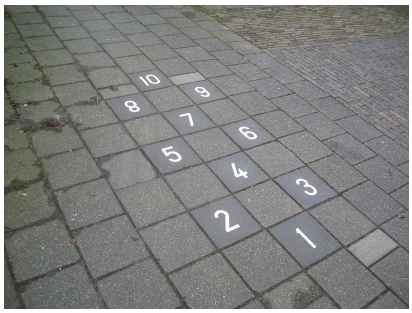
Problem D
Decelerating Jump



An athlete is participating in a new sport that is the perfect mix of hopscotch and triple jumping. For this jury sport, n squares are laid out on the ground in a line, with equal distances between them. The first phase is the approach, where an athlete sprints towards the first square, in which they start their first jump. Then, they may jump on any number of other squares, and must finally land in the last square.

The jury has given a predetermined number of points to jumping in each square, and the score of the athlete will be the sum of the scores of all the squares they jump in, including the very first and last squares.

Due to the nature of this sport, once the athlete starts jumping, they can not accelerate anymore, and the length of consecutive jumps can never increase. Naturally, it is also impossible to reverse direction.

Given the points the jury has allocated to each square, find the maximal possible score an athlete can get on this event.

Input

The input consists of:

- One line with an integer n ($2 \leq n \leq 3000$), the number of squares.
- One line with n integers $p_1, p_2, \ldots, p_n$ ($-10^9 \leq p_i \leq 10^9$), the number of points the jury awards for jumping on each of the squares.

Output

Output the maximum score that an athlete can get.

Sample Input 1

```
4
1 -1 1 1
```

Sample Output 1

```
3
```

Sample Input 2

```
4
1 1 -1 1
```

Sample Output 2

```
2
```

Sample Input 3

```
3
-1 1 -1
```

Sample Output 3

```
-1
```

Sample Input 4

```
3
-1 -1 -1
```

Sample Output 4

```
-2
```

Problem E
Eerie Shadows



You are walking along home across a bridge one night when you notice the pattern of shadows from the two large lamps at one end of the construction makes an interesting symmetrical pattern on the ground, as the lamps are equally far apart from the sides of the bridge in each direction.

The bridge has pillars running in pairs at irregular sizes and intervals, but always with an identical pillar on the opposite side. You may assume that the parts of the pillars above ground level are infinitesimally thin and that the bridge is infinitely long.

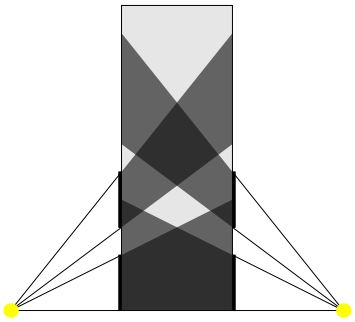


Figure E.1: A visualisation of the second sample input.

How much of the bridge ahead of you is in the shadow of at least one lamp?

Input

The input consists of:

- One line containing two integers w and l ($1 \leq w \leq 500$, $1 \leq l \leq 10000$), the distances in centimetres from the middle of the bridge to either side, and from the sides of the bridge to the lamps respectively.
- One line containing one integer n ($1 \leq n \leq 1000$), the number of pillars.
- n further lines, each containing the integers ab ($0 \leq a \leq b \leq 10000$) giving the distances in centimetres from the end of the bridge to the start and end of one pair of pillars. It holds that $b_i < a_{i+1}$ for all i).

Output

Output the total area in square centimetres that is in shadow from the pillars. Your output must be accurate to an absolute or relative error of at most 10^{-6}.

Sample Input 1

```
1 1
1
0 1
```

Sample Output 1

```
5
```

Sample Input 2

```
2 4
2
0 2
3 5
```

Sample Output 2

```
32.7
```