

Problem F

Stock Market

Adrian owns a stock that he previously purchased, and wants to sell that stock. Currently, at day 0, the price of the stock is P_0 . As a robot, Morgan can predict the future. Morgan tells Adrian that the price changes will repeat every N days.

Formally, suppose that the price change from day i to day $i + 1$ for $0 \leq i \leq N - 1$ is D_i . The price change from day i to $i + 1$ for $i \geq N$ is $D_i = D_{i \bmod N}$. The price of the stock at day i for $i > 0$ is $P_i = P_{i-1} + D_{i-1}$. It is possible for a price to be negative.

Moreover, Morgan also knows that the price is on a downward trend. That is, the sum of all D_i is negative.

The following table is the stock price of each day if $N = 6$, $P_0 = 20$, and $D_{0..5} = [4, -6, -1, 4, -9, -2]$.

Day	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	...
Price	20	24	18	17	21	12	10	14	8	7	11	2	0	4	-2	-3	1	-8	...

Adrian can only sell the stock when the price is at least X , the price when he purchased the stock, to avoid any losses. As a thrill seeker, Adrian also would like to sell his stock at the lowest price possible while still being at least X .

Help Adrian to determine the lowest price of the stock that is not lower than X , or tell him if it is impossible. Note that Adrian can sell his stock at day 0, if $P_0 \geq X$.

Input

Input begins with three integers $N P_0 X$ ($1 \leq N \leq 100\,000$; $1 \leq P_0, X \leq 10^9$) representing the number of days in a cycle, the price at day 0, and the price when Adrian purchased the stock, respectively. The next line contains N integers D_i ($-10^9 \leq D_i \leq 10^9$) representing the price changes that repeat every N days. It is guaranteed that the sum of all D_i is negative.

Output

If a price not lower than X exists, output an integer in a single line representing the lowest price of the stock that is not lower than X . Otherwise, output -1 in a single line.

Sample Input #1

```
6 20 5
4 -6 -1 4 -9 -2
```

Sample Output #1

```
7
```

Explanation for the sample input/output #1

The table in the description represents this example. The lowest price of the stock that is not lower than 5 is $P_9 = 7$.

Sample Input #2

```
6 20 1
4 -6 -1 4 -9 -2
```

Sample Output #2

```
1
```

Explanation for the sample input/output #2

The lowest price of the stock that is not lower than 1 is $P_{16} = 1$.

Sample Input #3

```
1 3 4
-1
```

Sample Output #3

```
-1
```

Explanation for the sample input/output #3

The current price, P_0 , is 3 and for any subsequent day, the price will never go up. Thus, it is impossible for the price to reach at least $X = 4$.