Maximum Rest Time

Assignment 2
Computer Programming
Due date: 10th October, 2019

Description: You have W pending assignments to do. You have H hours to complete these W assignments. Each assignment takes one hour to complete. But you have many other events to participate in, so you only have S one-hour slots free, where S>=W. You want to do your assignments in slots such that you have maximum rest time between any two assignments. Find this maximum rest time.

Input
First line contains an integer T, the number of test cases.
For each test case, youre given W and S.
This is followed by S entries, each telling you which hour is free (IN SORTED ORDER).

Output
Find the case where the MINIMUM rest time you have between ANY two assignments is MAXIMUM. Output the minimum rest time of this case.

Constraints
$1 \leq T \leq 10$
$2 \leq W \leq 10^5$
$0 \leq S[i] \leq 10^9$
$H > max(S[i])$
Sample Test Case

Input	Output
1 3 5 4 7 15 50 75	24

Explanation
If you do your assignments in slot 4,50 and 75, you'll get at least 24 hours of rest time between any two assignments. If you suppose chose 4,15 and 75, you would have gotten only 10 hours of rest time between 4 and 15.