Optimal trip P46672_en

You are planning a trip on a straight road where locations are defined by its distance to some reference point. The trip will start at x_1, it will pass through points x_2, ..., x_{n-1} in this order, and it will end at x_n, with $x_1 < x_2 < \cdots < x_{n-1} < x_n$. You will make exactly two stops, say at points x_i and x_j, with $1 < i < j < n$. You want to make the three distances $x_i - x_1$, $x_j - x_i$ and $x_n - x_j$ as similar as possible. More precisely, your goal is to minimize the difference between the maximum and the minimum of those three distances.

For instance, supose a travel defined with 4 10 23 32 42 50. Here, the optimal choice is to stop at 23 and 32, which gives the distances $23 - 4 = 19$, $32 - 23 = 9$ and $50 - 32 = 18$. In this case, the difference is $19 - 9 = 10$. It is easy to see that we cannot make the difference smaller by choosing two other stopping points.

Input

Input consists of several cases. Each case starts with n, followed by x_1, ..., x_n. You can assume $4 \leq n \leq 10^5$, and $0 \leq x_1 < x_2 < \cdots < x_{n-1} < x_n \leq 10^9$.

Output

For every case, print the minimum difference if we choose the optimal stops.

Sample input 1

```
6  4 10 23 32 42 50
4  0 200000000 700000000 1000000000
5  100000 240000 300000 500000 700000
```

Sample output 1

```
10
300000000
0
```

Problem information

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