CCC '96 S5 - Maximum Distance

Time limit: 1.0s **Memory limit:** 256M

Consider two descending sequences of integers $X[0 \ldots n-1]$ and $Y[0 \ldots n-1]$ with $X[i] \geq X[i+1]$ and $Y[i] \geq Y[i+1]$ and for all i, $0 \leq i < n-1$. The *distance* between two elements $X[i]$ and $Y[j]$ is given by

$$d(X[i], Y[j]) = \begin{cases} j - i & \text{if } j \geq i \text{ and } Y[j] \geq X[i] \\ 0 & \text{otherwise} \end{cases}$$

The distance between sequence X and sequence Y is defined by

$$d(X, Y) = \max\{d(X[i], Y[j]) \mid 0 \leq i < n, 0 \leq j < n\}$$

You may assume $0 < n \leq 100\,000$.

For example, for the sequences X and Y below, their maximum distance is reached for $i = 2$ and $j = 7$, so $d(X, Y) = d(X[2], Y[7]) = 5$.

```
          i=2
           |
           v
X     8  8  4  4  4  3  3  3  1
Y     9  9  8  8  6  5  5  4  3
                        ^
                        |
                       j=7
```

Input Specification

The first sequence is the X sequence and the second is the Y sequence. You may assume that the sequences are descending and of equal length. A pair of sequences is preceded by a number on a single line indicating the number of elements in the sequences. Numbers in a sequence are separated by a space, and each sequence is on a single line by itself. As usual, the first number in the input gives the number of test cases.

Sample Input

```
2
9
8 8 4 4 4 3 3 3 1
9 9 8 8 6 5 5 4 3
7
6 5 4 4 4 4 4
3 3 3 3 3 3 3
```

Sample Output

```
The maximum distance is 5
The maximum distance is 0
```