Problem TVSTATION1: TV station broadcasting I

Our problem is where to locate our TV station's broadcasting antenna. We know the locations of the towns we should serve. We must place the antenna at a point whose coordinates are both integers. Fortunately, we are located on the flat, flat prairie, so the only remaining issue is to locate the antenna to minimize the broadcast radius that includes all the towns.

Input

The first line gives the number of test cases. Each testcase contains two lines. The first line gives the x-coordinates of the towns, the second line gives the y-coordinates of the towns; the i-th element of x and y gives the coordinates of the i-th town. There at most 50 towns, each coordinate is an integer between -200 and 200 (inclusive).

Output

For each test case, print the minimal radius (rounded to three digits) in one line.

Sample Input 1

```
2
2 0 0 1
0 1 -1 1

3
99
```

Sample Output 1

```
1.414
0.000
```