Jaccard index P67731_en

The *Jaccard index* is a statistic used for comparing the similarity and diversity of two sets. Namely, the Jaccard index $J(A, B)$ of A and B is

$$J(A, B) = \frac{\mid A \cap B \mid}{\mid A \cup B \mid}.$$

For example, the Jaccard index of the sets $\{1, 2, 3\}$ and $\{3, 4\}$ is 0.25.

Write a program to compute the Jaccard index of pairs of sets of integers.

Input

The input consists of several cases. Each case starts describes two sets A and B. The first set A starts with its cardinality $m \geq 0$ and then follow its m integer elements in strictly increasing order. The second set B starts with its cardinality $m \geq 0$ and then follow its n integer elements in strictly increasing order. For each case, $m + n \geq 1$.

Output

For each case in the input, print the Jaccard index of its two sets in a different line with 3 digits of precision.

Hint

- Basic set theory may save you some valuable coding time.
- Use **cout**. *setf* (*ios* :: *fixed*); **cout**. *precision* (3); at the beginning of your program to print real numbers with 3 digits of precision.

Sample input

```
3   1 2 3
2   3 4

11  -9 -7 -5 -1 3 4 5 8 11 17 19
11  -8 -5 -4 1 3 6 8 9 11 12 17

0
3   1 2 3
```

Sample output

```
0.250
0.294
0.000
```

Problem information

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