Problem Statement **Suggest Edit**

You are given a matrix ‘ARR’ having dimensions ‘N*M’. Your task to find the rank of the matrix ‘ARR’.

The rank of a matrix is defined as:

```
(a) The maximum number of linearly independent column vectors in the matrix or
(b) The maximum number of linearly independent row vectors in the matrix. Both
definitions are equivalent.
```

Linear independence is defined as:

```
In the theory of vector spaces, a set of vectors is said to be linearly dependent
if there is a nontrivial linear combination of the vectors that equals the zero
vector. If no such linear combination exists, then the vectors are said to be
linearly independent.
```

Input Format:

```
The first line contains a single integer ‘T’ denoting the number of test cases.

The first line of every test case contains two space-separated integers, ‘N’ and
‘M’, denoting the number of rows and the number of columns respectively.

Then each of the next ‘N’ rows contains ‘M’ elements.
```

Output Format:

```
For each test case, return the rank of the matrix.
```

Note:

```
You do not need to print anything. It has already been taken care of. Just
implement the given function.
```

Constraints:

```
1 <= T <= 10
1 <= N , M <= 500
-10^4 <= Arr[i][j] <= 10^4

Where ‘ARR[i][j]’ denotes the matrix element at the jth column in the ith row of
‘ARR’
```

```
Time Limit: 1 sec
```

Sample Input 1:

```
2
3 3
1 0 1
-2 -3 1
3 3 0
3 3
0 1 2
1 2 1
2 7 8
```

Sample Output 1:

```
2
2
```

Explanation For Sample Input 1:

```
For the first test case:
The 1st row and 2nd row are linearly independent but the third row can be
represented as a linear combination of 1st and 2nd row as row3 = row1 - row2.
Therefore, there are 2 linearly independent rows. So the rank is 2.

For the second test case:
The 1st row and 2nd row are linearly independent but the third row can be
represented as a linear combination of 1st and 2nd row as row3 = (3*row1) +
(2*row2). Therefore, there are 2 linearly independent rows. So the rank is 2.
```

Sample Input 2:

```
2
2 3
1 2 3
2 4 6
2 4
1 2 4 4
3 4 8 0
```

Sample Output 2:

```
1
2
```

Explanation For Sample Input 2:

```
For the first test case:
The 1st row and 2nd row are linearly dependent as the second row is a scaler
multiple of row1 i.e. row2 = 2*row1. Therefore, there is 1 linearly independent
row. So the rank is 1.

For the second test case:
Since neither row is linearly dependent on the other row, the matrix has 2
linearly independent rows. So the rank is 2.
```