Linear Algebra

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The *NumPy* module also comes with a number of built-in routines for linear algebra calculations. These can be found in the sub-module *linalg*.

linalg.det

The *linalg.det* tool computes the determinant of an array.

```
print numpy.linalg.det([[1 , 2], [2, 1]])      #Output : -3.0
```

linalg.eig

The *linalg.eig* computes the eigenvalues and right eigenvectors of a square array.

```
vals, vecs = numpy.linalg.eig([[1 , 2], [2, 1]])
print vals                              #Output : [ 3. -1.]
print vecs                              #Output : [[ 0.70710678 -0.70710678]
                                        #         [ 0.70710678  0.70710678]]
```

linalg.inv

The *linalg.inv* tool computes the (multiplicative) inverse of a matrix.

```
print numpy.linalg.inv([[1 , 2], [2, 1]])      #Output : [[-0.33333333
0.66666667]
                                        #         [ 0.66666667 -0.33333333]]
```

Other routines can be found here

Task

You are given a square matrix A with dimensions NXN. Your task is to find the determinant.

Input Format

The first line contains the integer N.

The next N lines contains the N space separated elements of array A.

Output Format

Print the determinant of A.

Sample Input

Author DOSHI

Difficulty Easy

Max Score 20

Submitted By 8234

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Suggest Edits

```
2
1.1 1.1
1.1 1.1
```

Sample Output

```
0.0
```

Current Buffer (saved locally, editable) Python 3

```
1 import numpy
2 n=int(input())
3 numpy.set_printoptions(legacy='1.13')
4 print(numpy.linalg.det([list(map(eval,input().split())) for i in
  range(n)]))
5
6
7
```

Line: 3 Col: 36

Upload Code as File | Test against custom input | Run Code | Submit Code

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41/115 challenges solved.

36%

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You solved this challenge. Would you like to challenge your friends?

Next Challenge

Testcase 0 Testcase 1 Testcase 2

Input (stdin) Download

```
2
1.1 1.1
1.1 1.1
```

Expected Output Download

```
0.0
```

Compiler Message

```
Success
```