**Numerical Computation - Assignment 5**

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Q1.

Let , and decompose A into LU.

by .

by and

and

So, .

Q2.

Let , and decompose A into LU.

by . .

by . .

and

So,

Then Let , then .

. Initialize them to a matrix

by and .

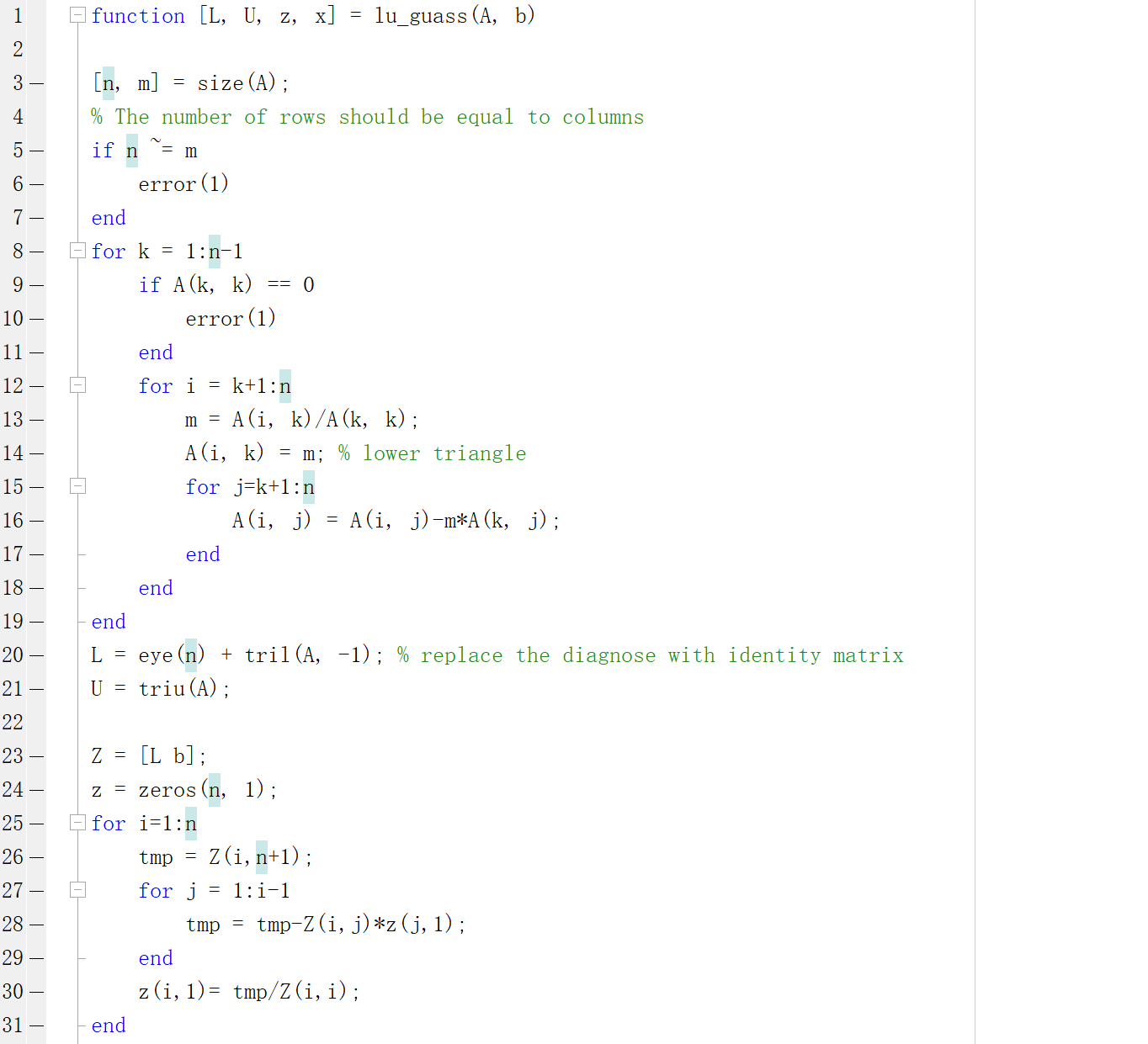
by .

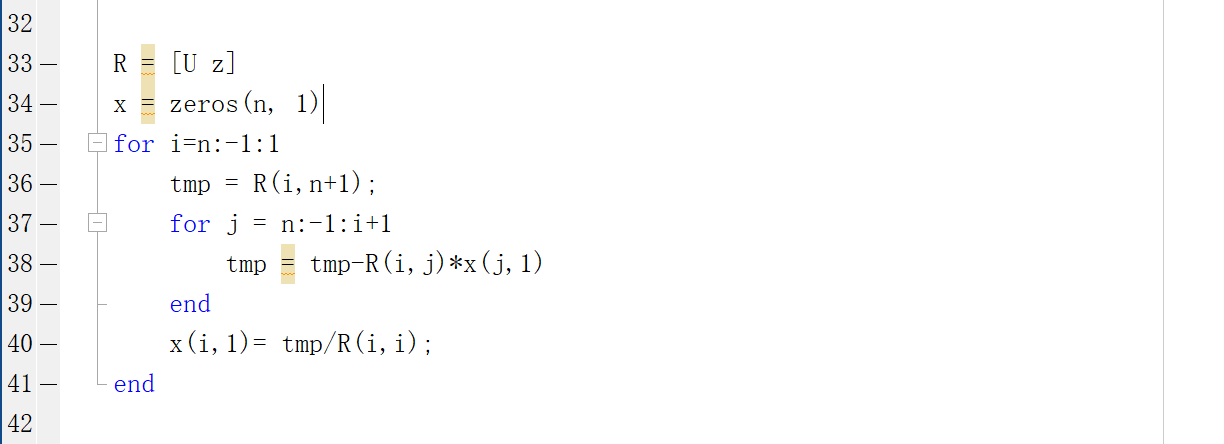
Use the back substitution:

. Initialize them to a matrix .

Use the back substitution: ,

Q3.

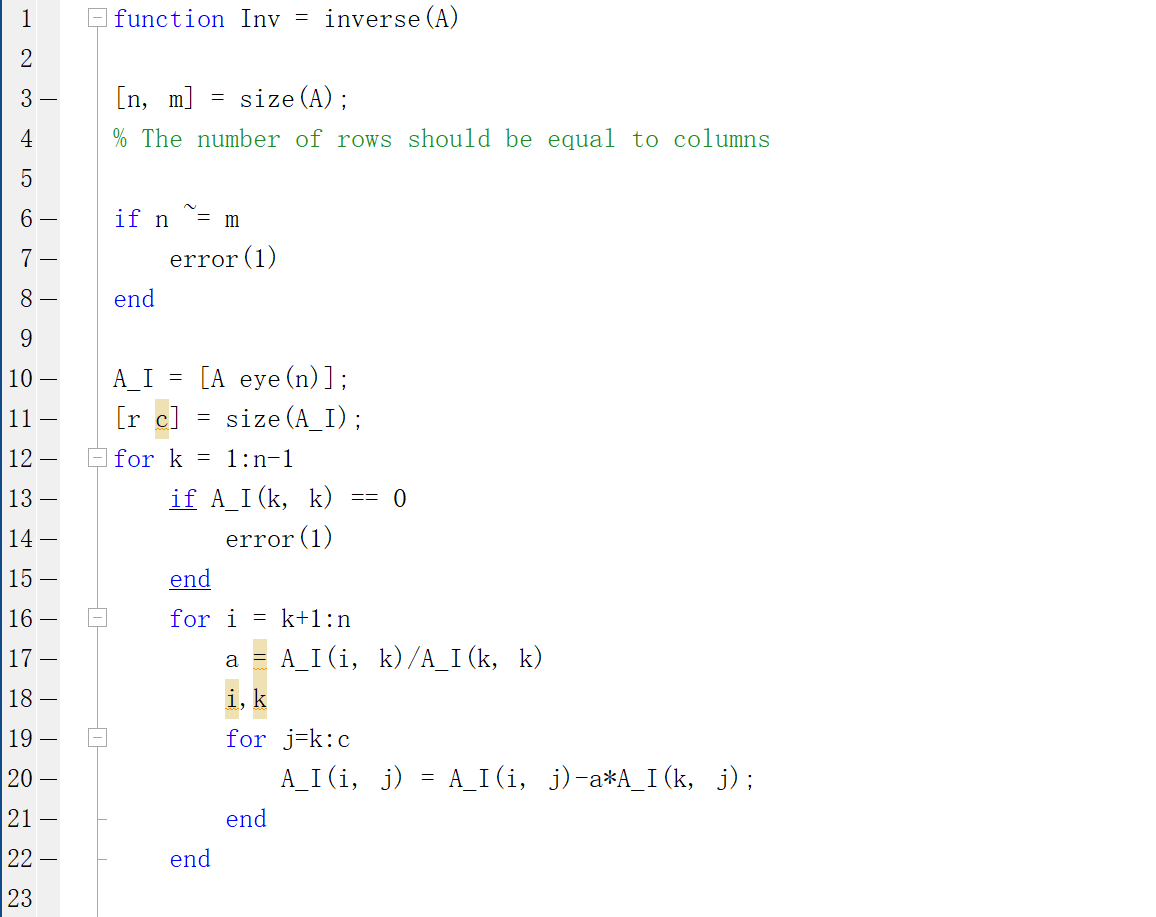


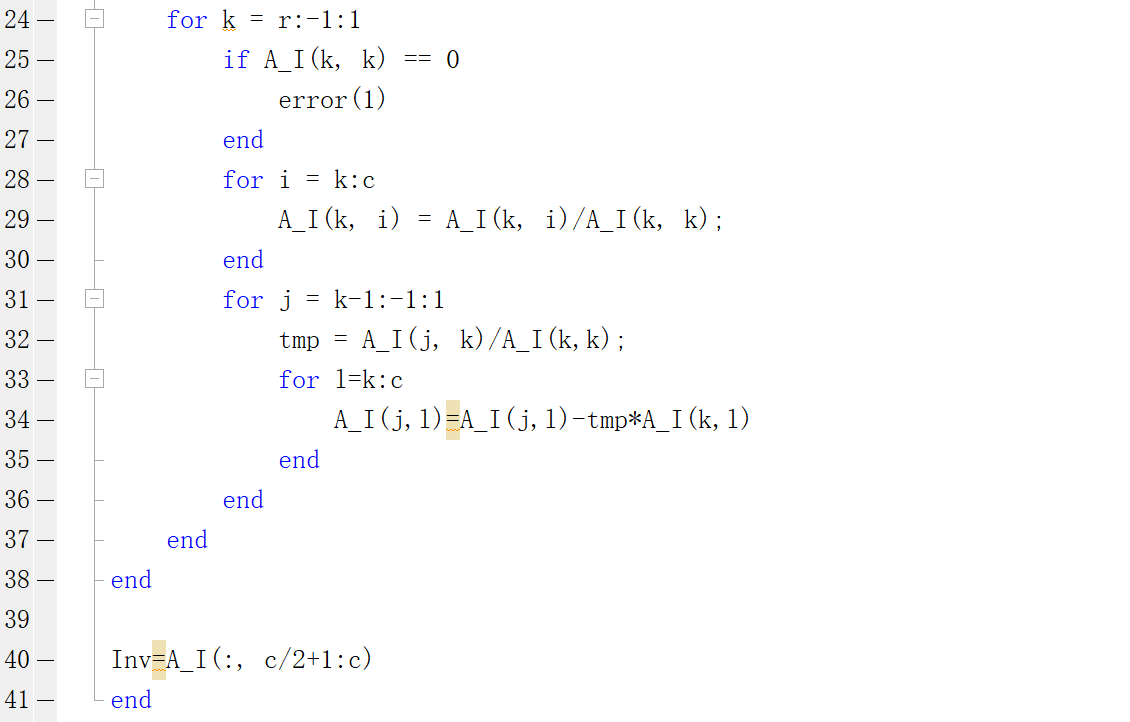


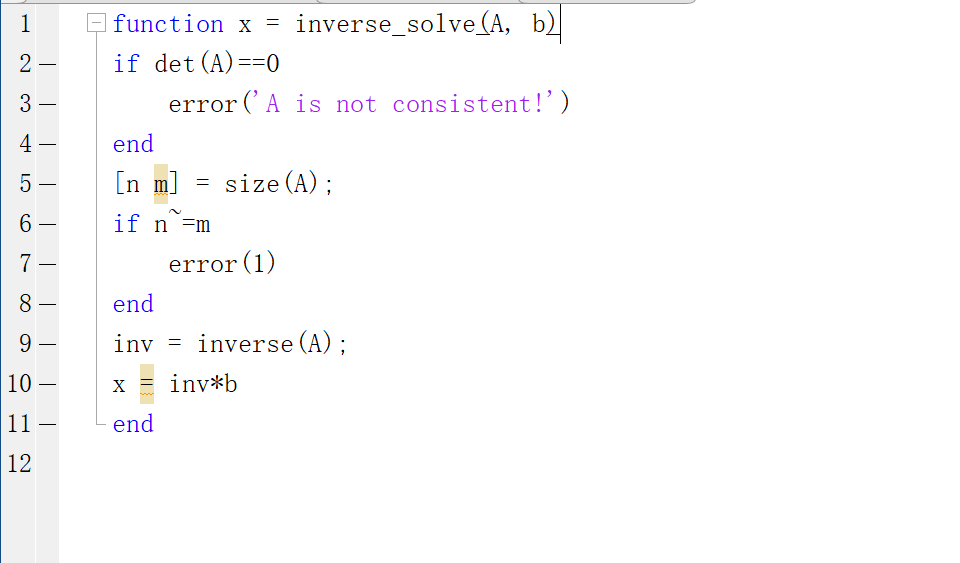
The code in the red box is modification (addition) part.



Q4.

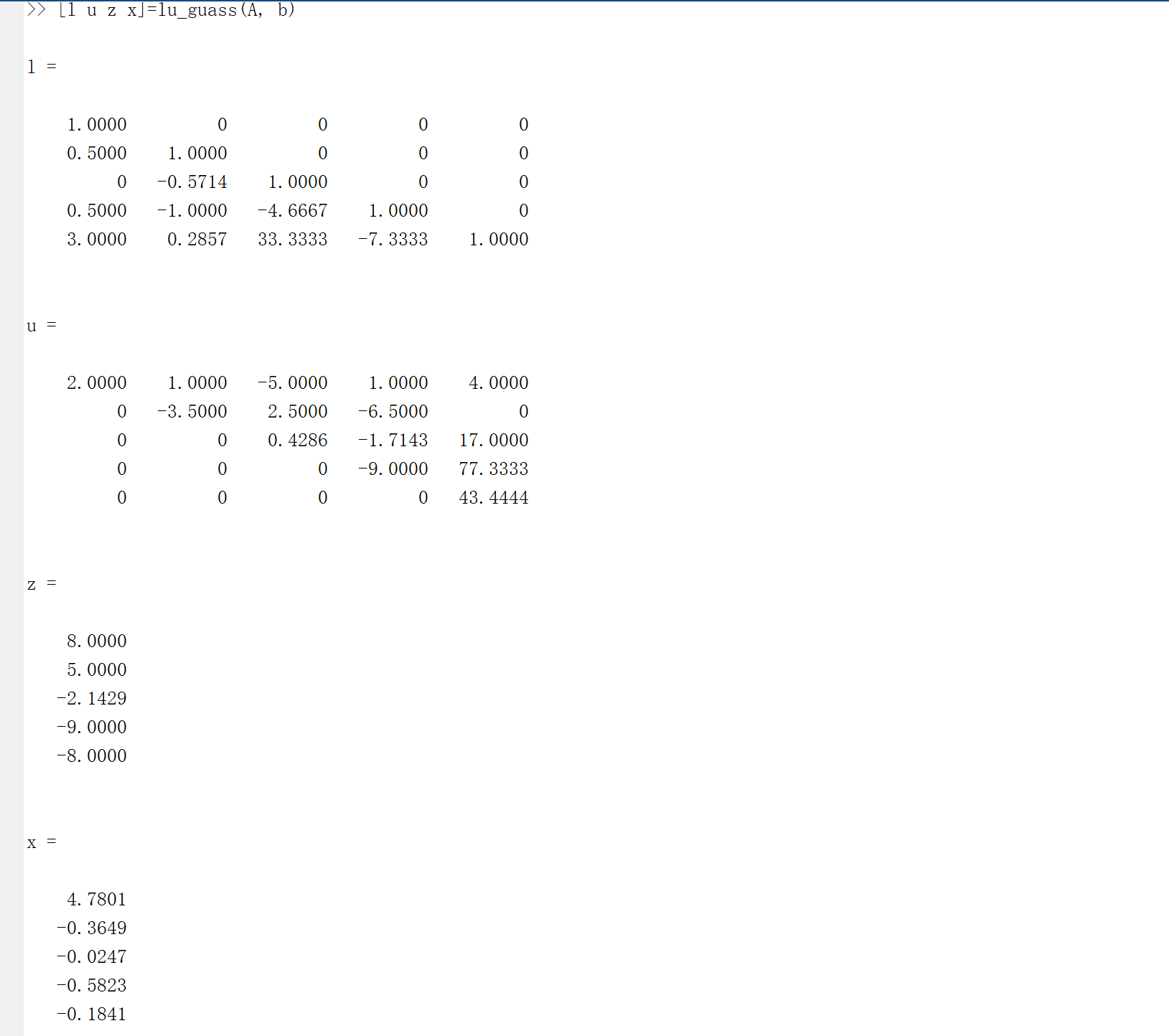




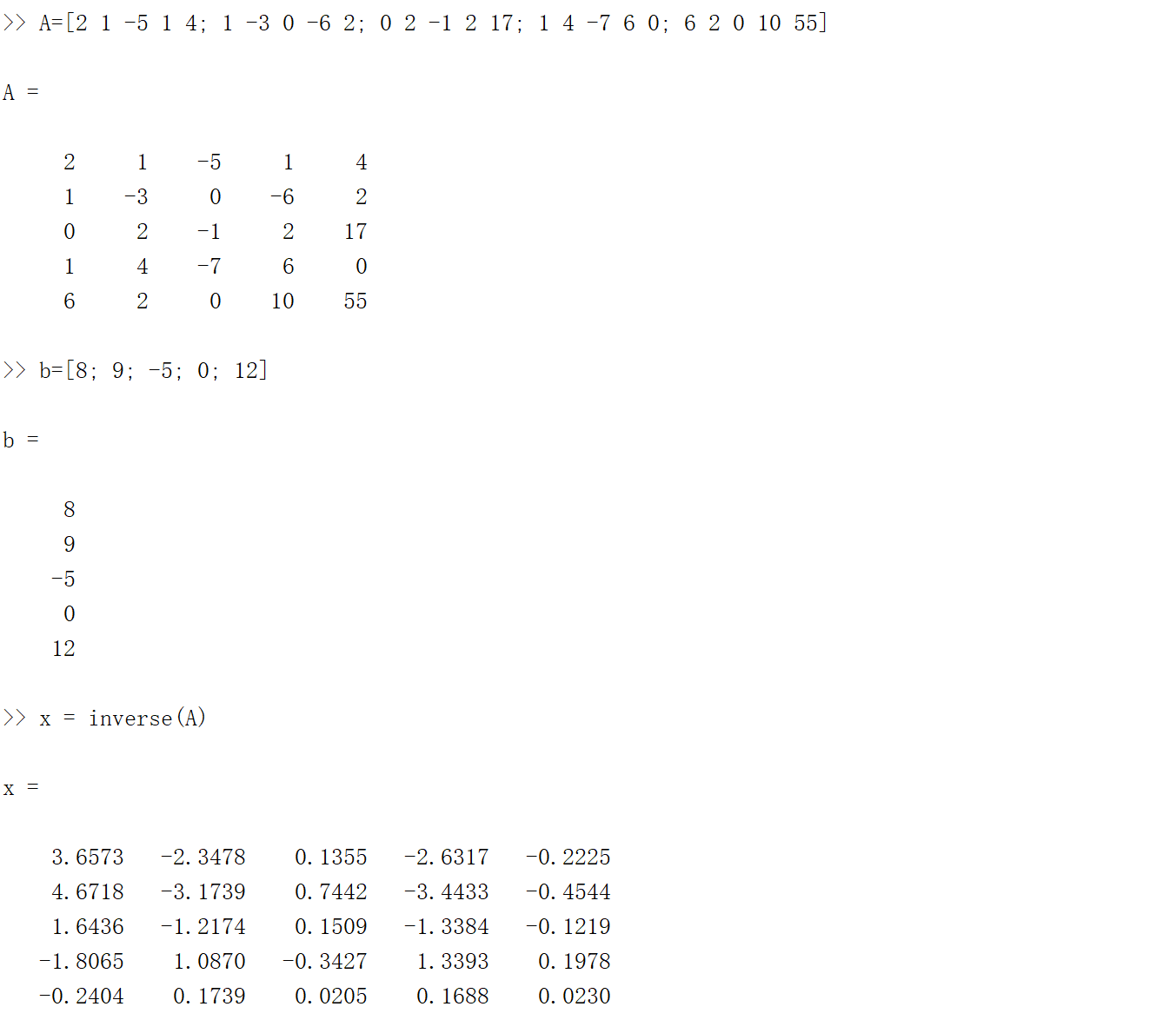


Q5.

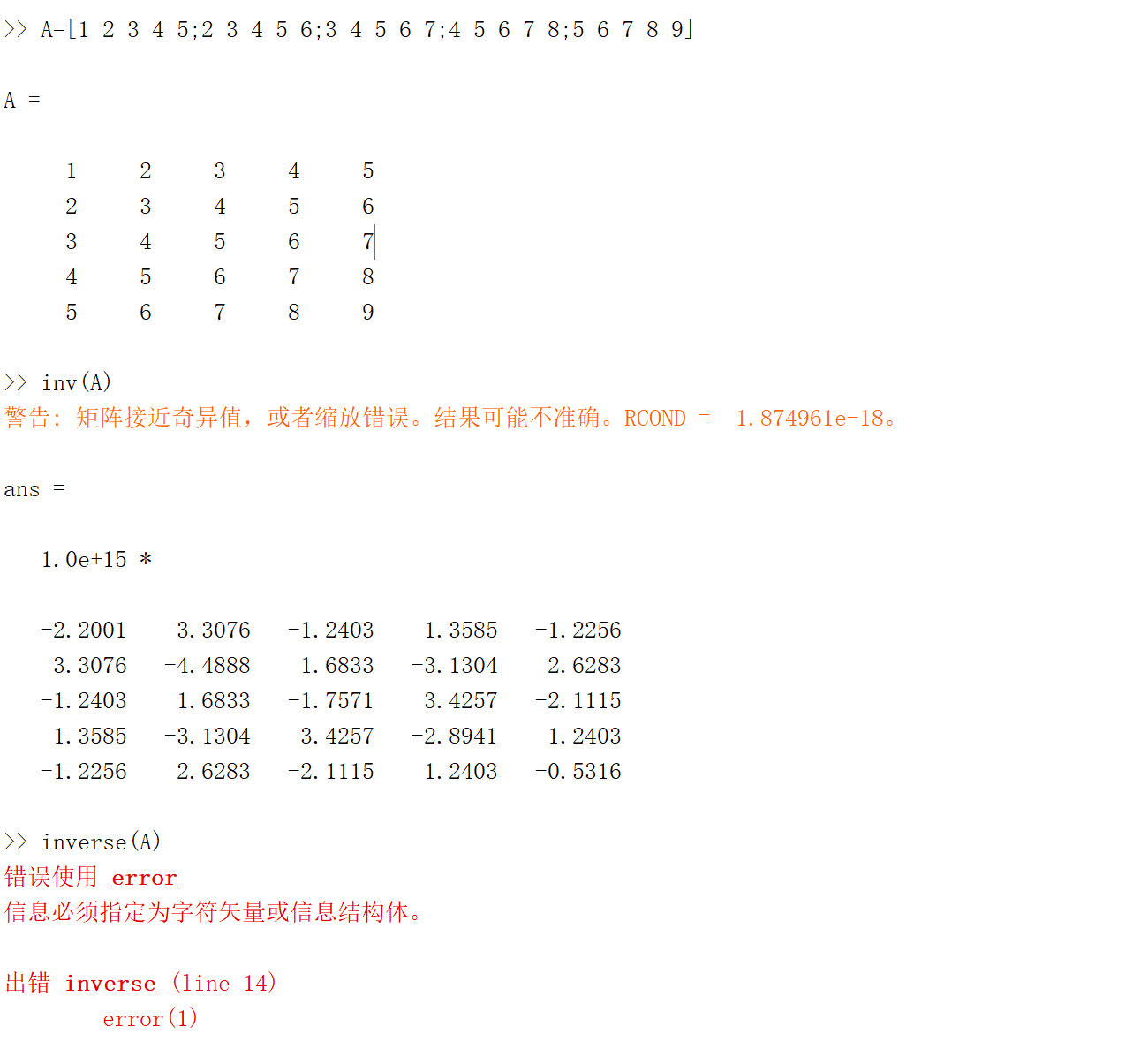
The result of the method in question 3:



The result of the method in question 4:



Q6.



The result of direct and the function in Q4 are not same. Because in the   
, we determine whether the input matrix is consistent or not. In the print screen we can see it catch this error. So, there are some differences between them.