**Numerical Computation - Assignment 4**

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**Q1.**

Initially, we can convert it to a matrix:

𝐴 =

and

]

(a).

Exchange we can get

Using the back substitution and each calculation is cropping 3 digits left. We can get:

(b).

In the first column, . So, Exchange to .

through and .

And we can get

, there no need to exchange. Then through , we can get:

.

Using the back substitution and each calculation is cropping 3 digits left. We can get:

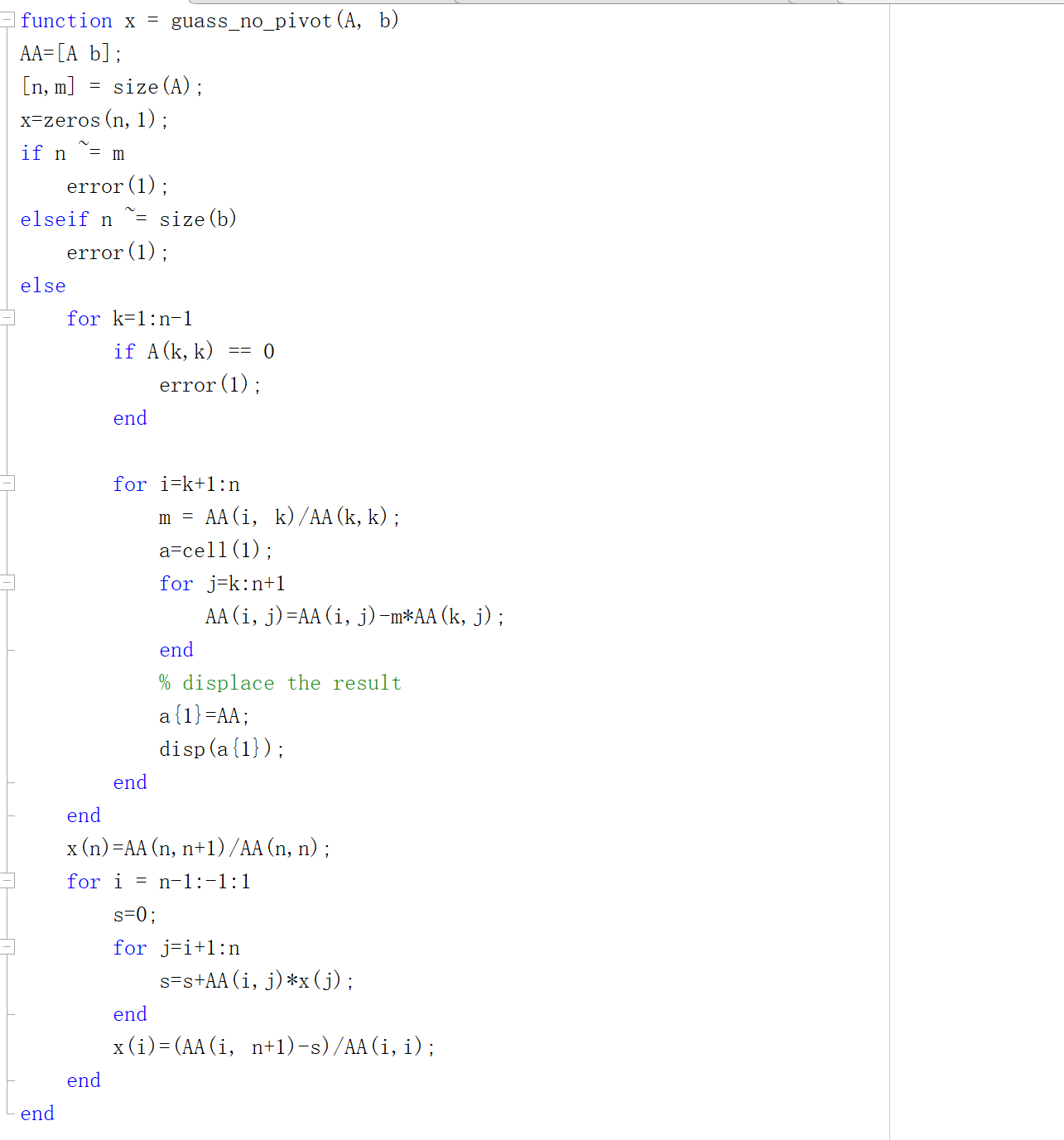
(c).

.

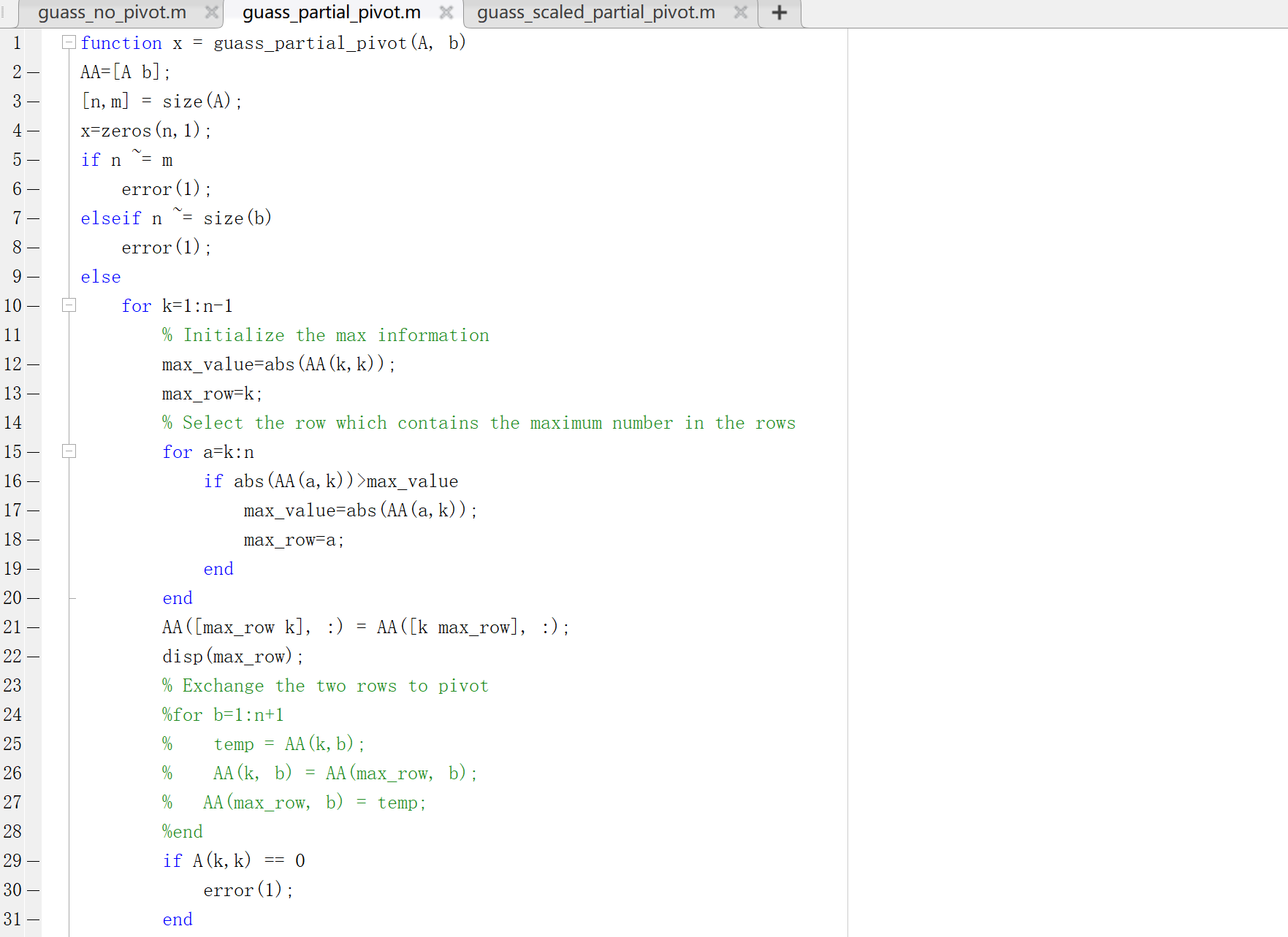
Though and , we can get .=. So, we do not need to exchange two rows. Though , we can get the final matrix: .

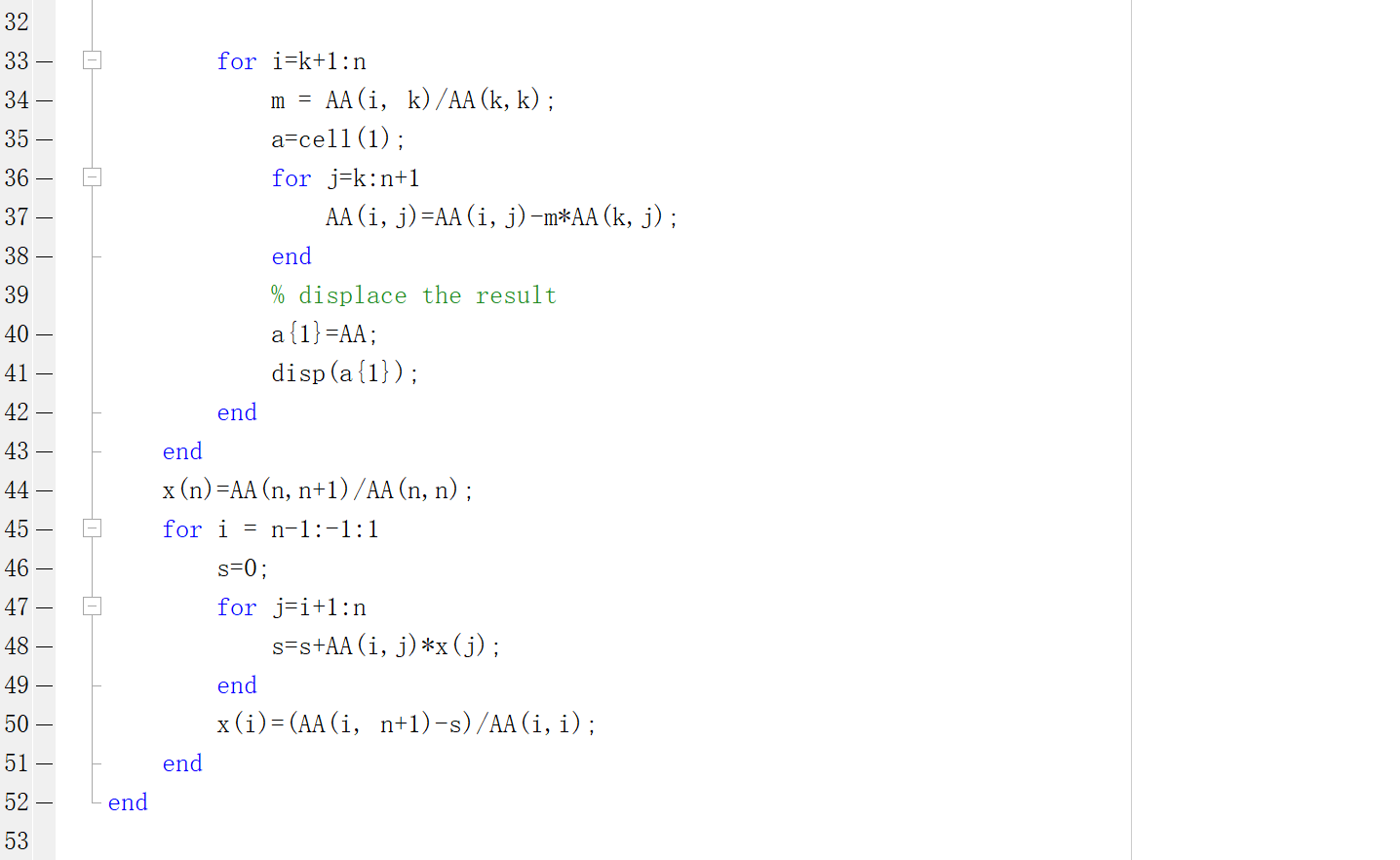
Using the back substitution and each calculation is rounding 3 digits left. We can get:

**Q2.**

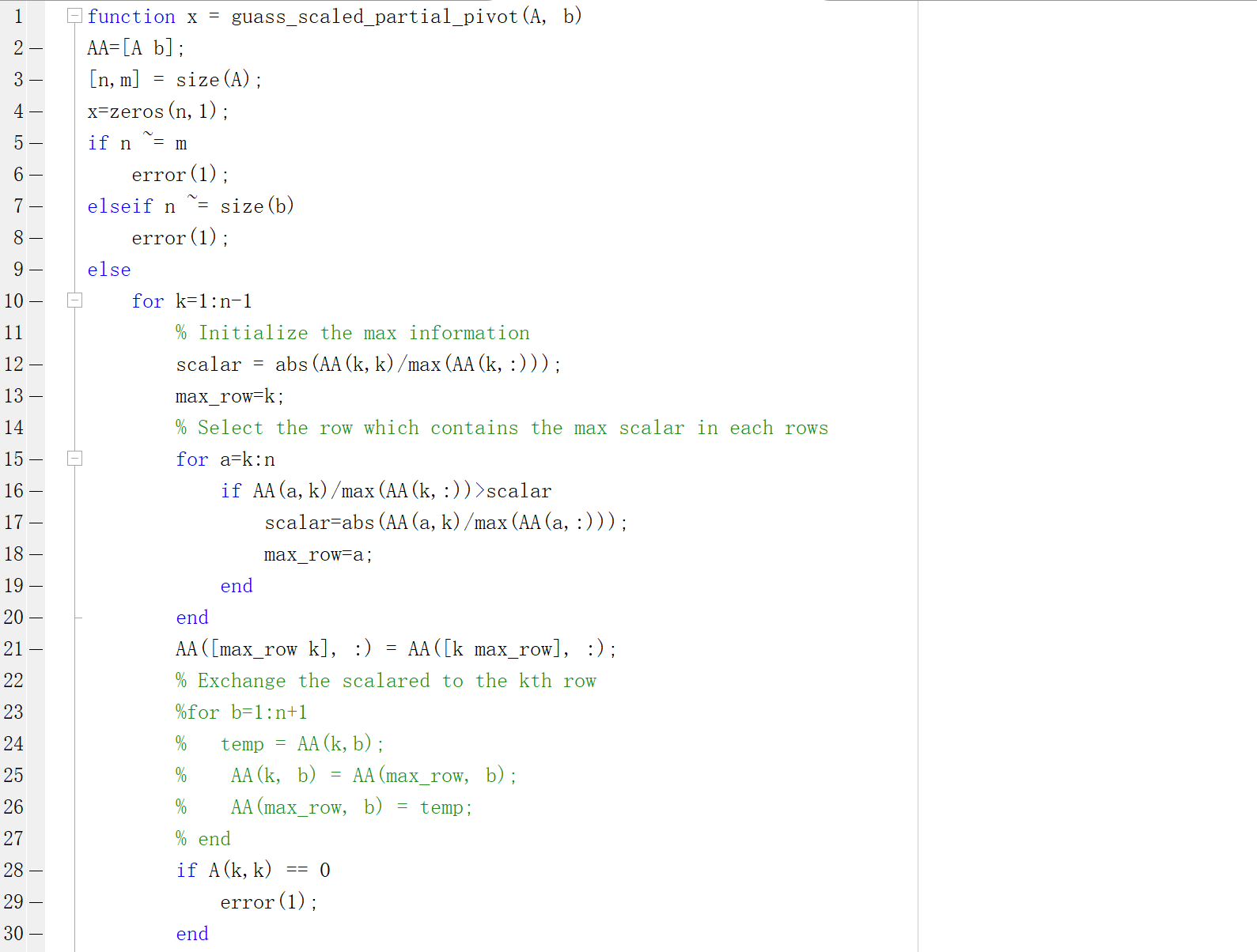


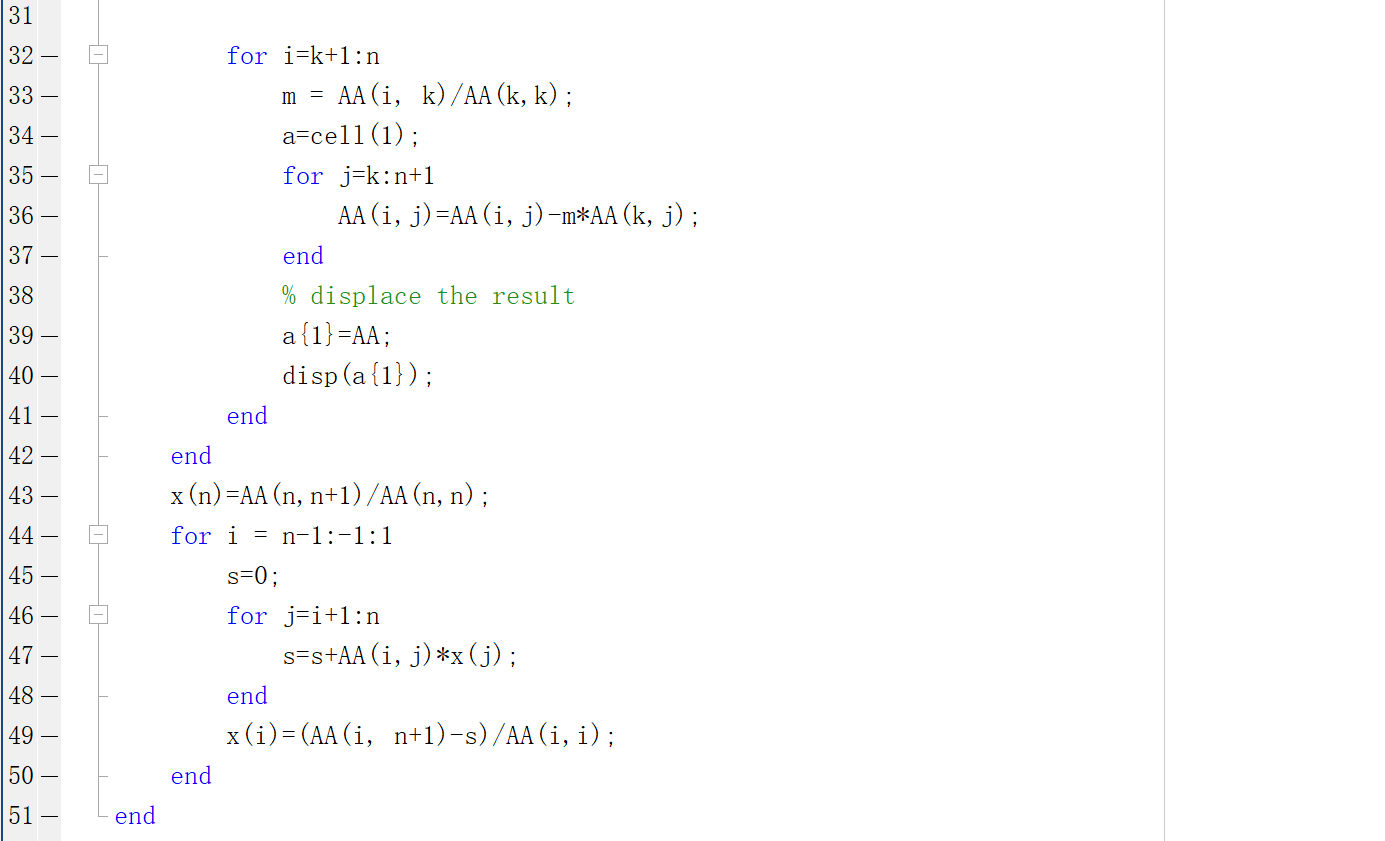
**Q3.**





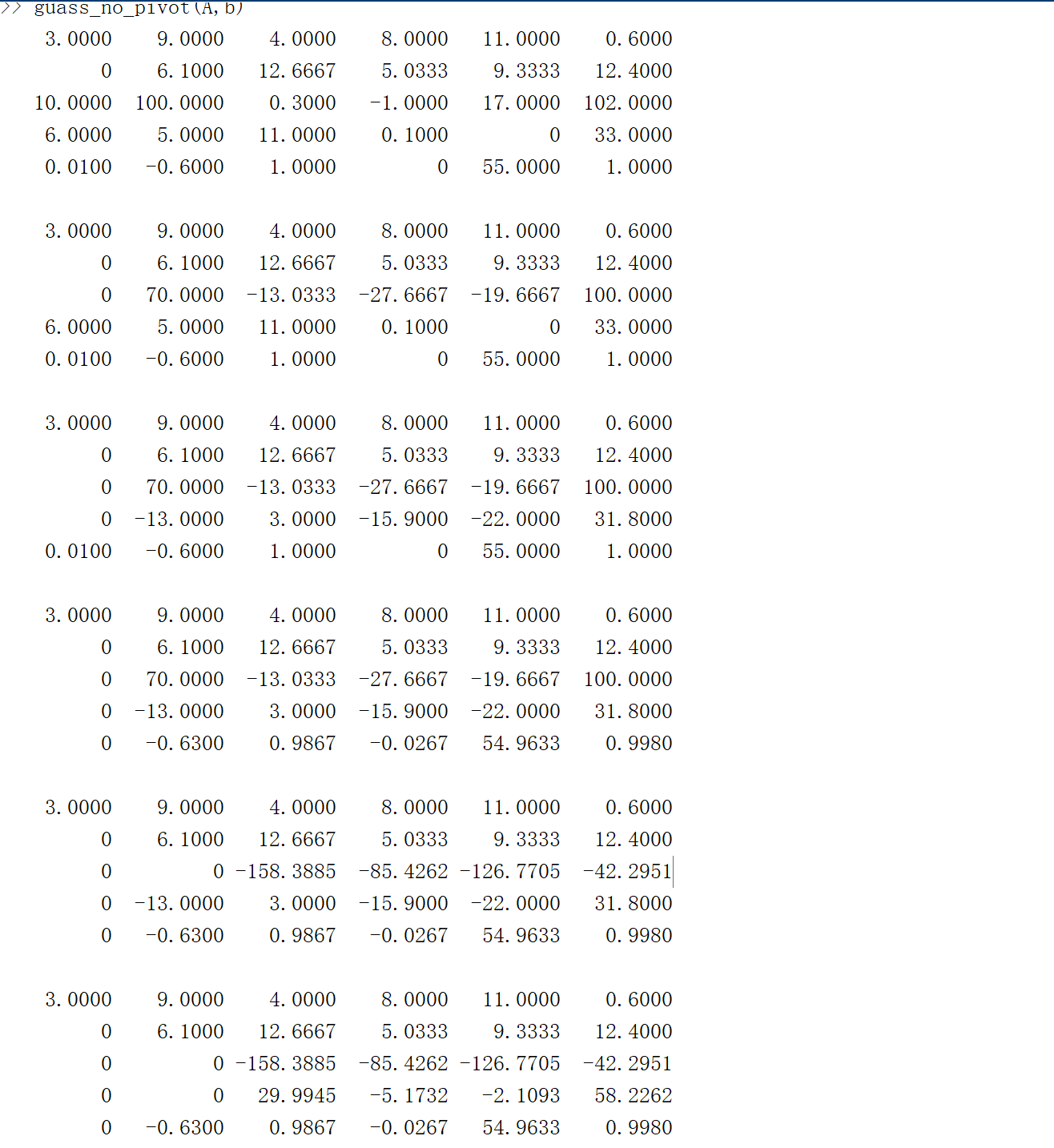
**Q4.**

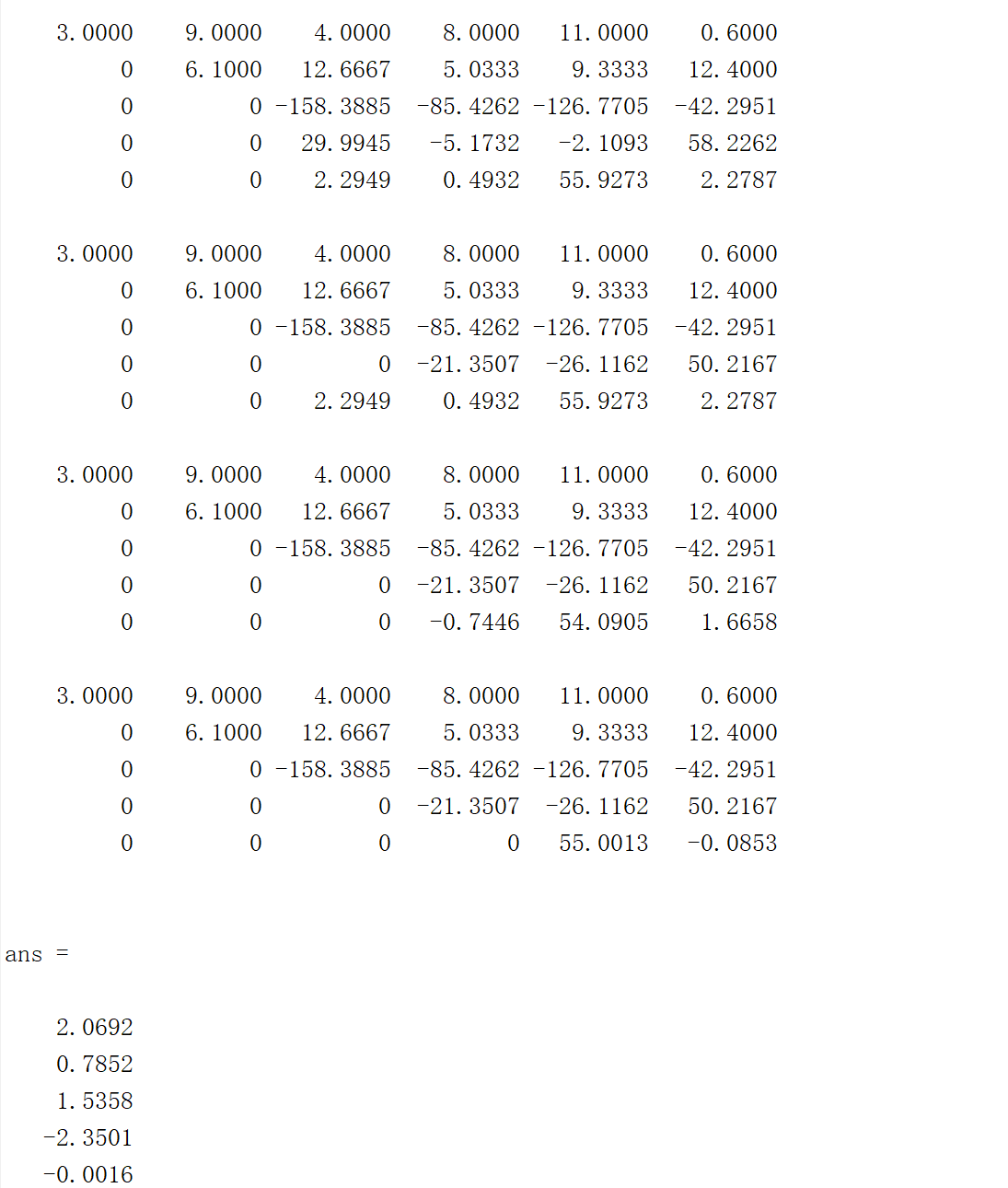


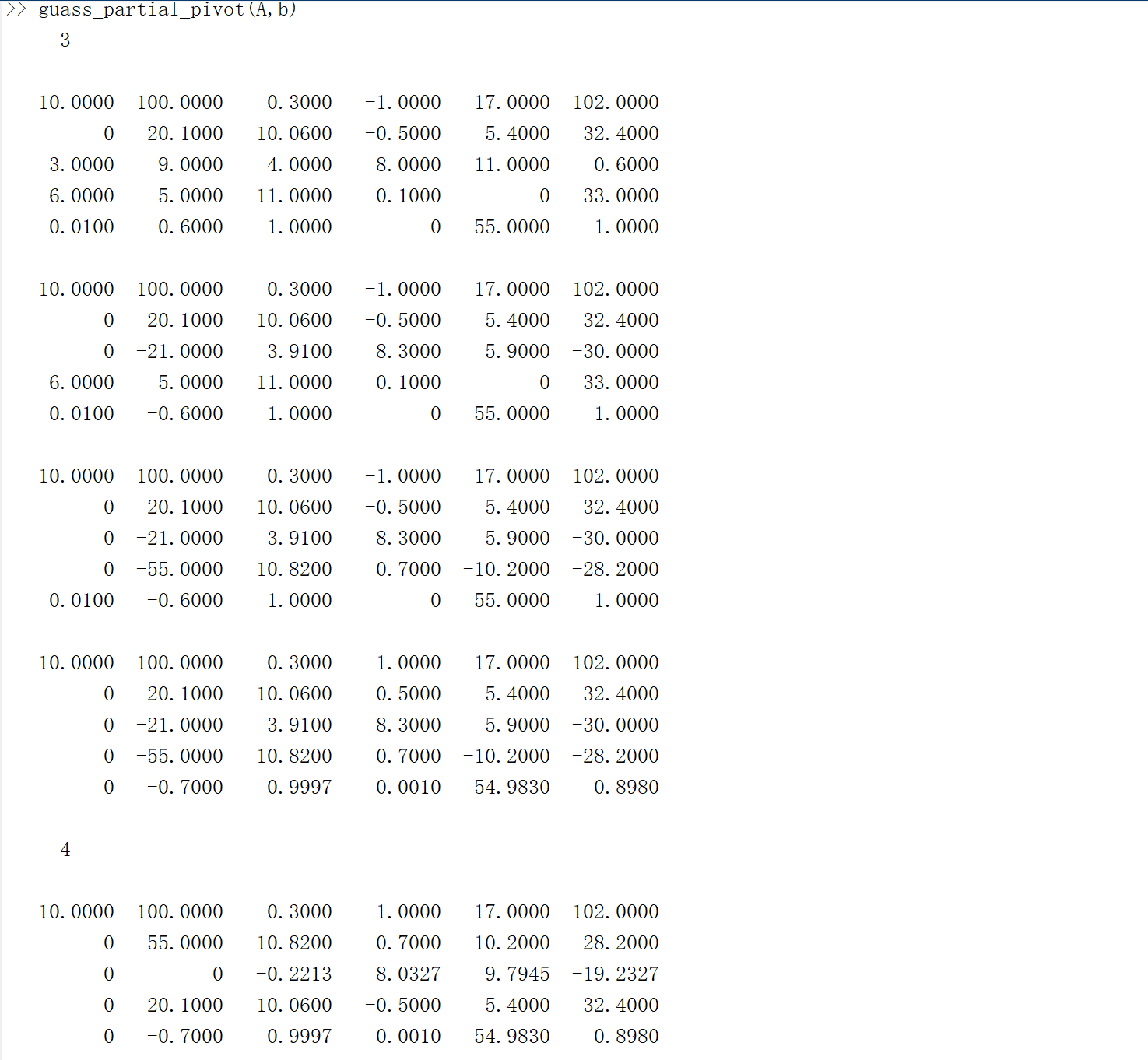


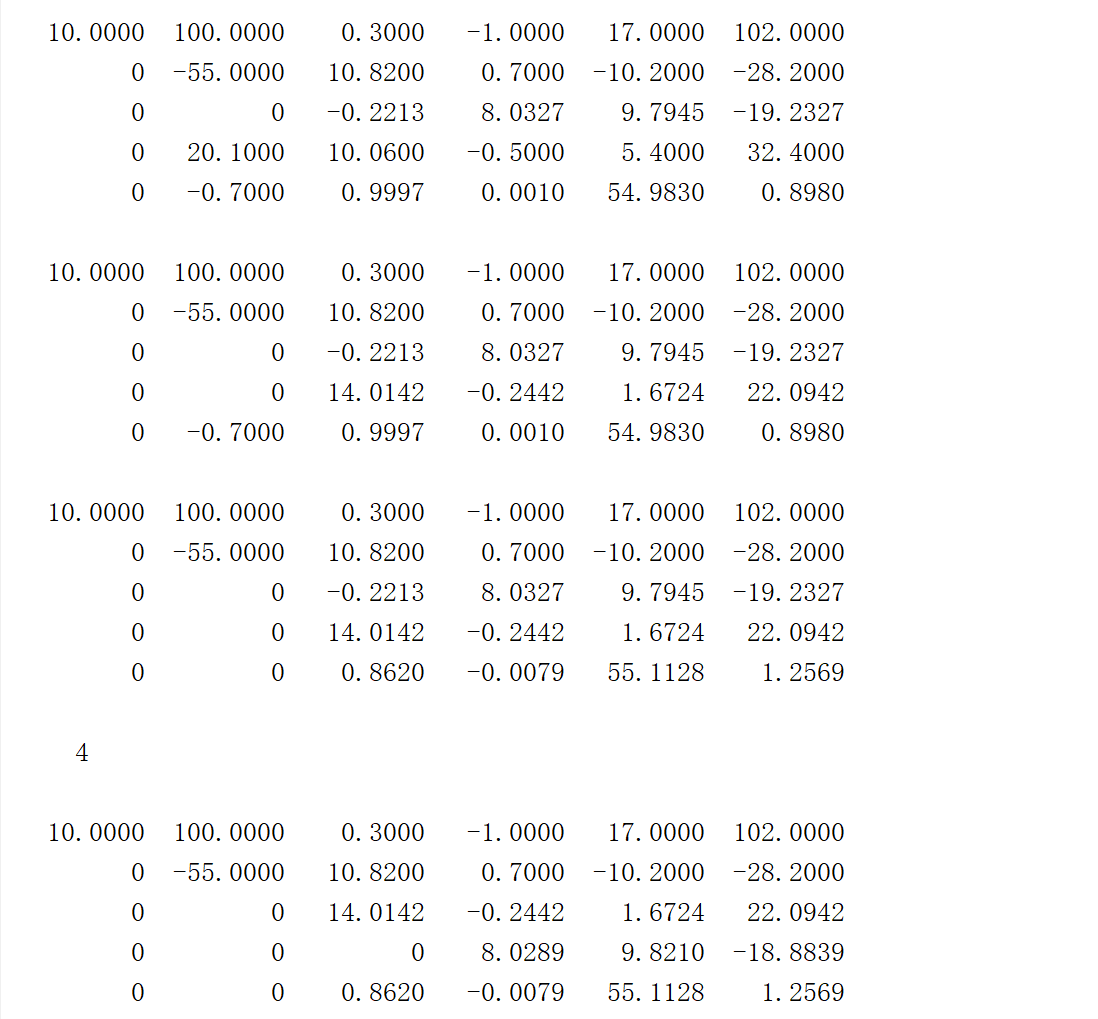
**Q5.**

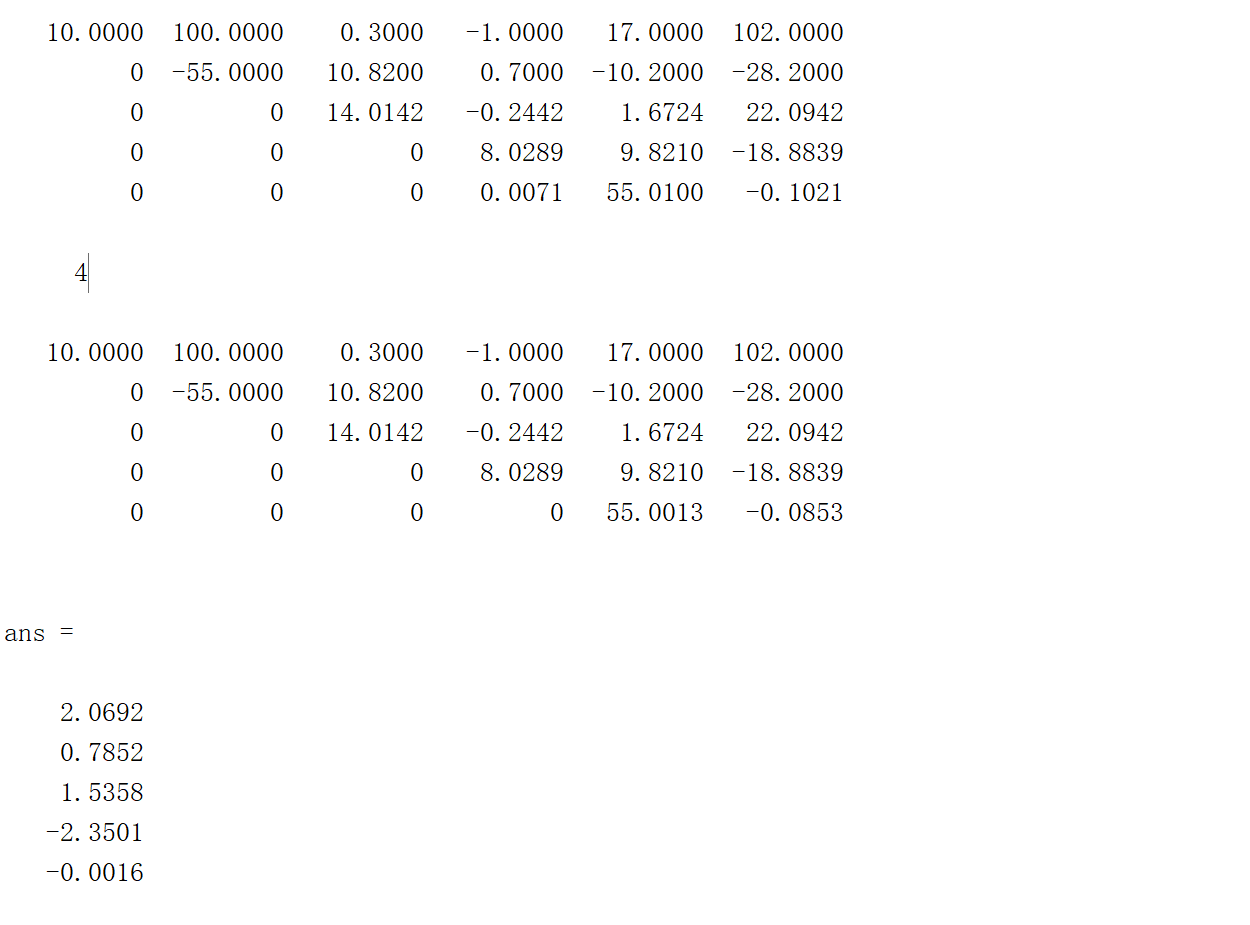
:

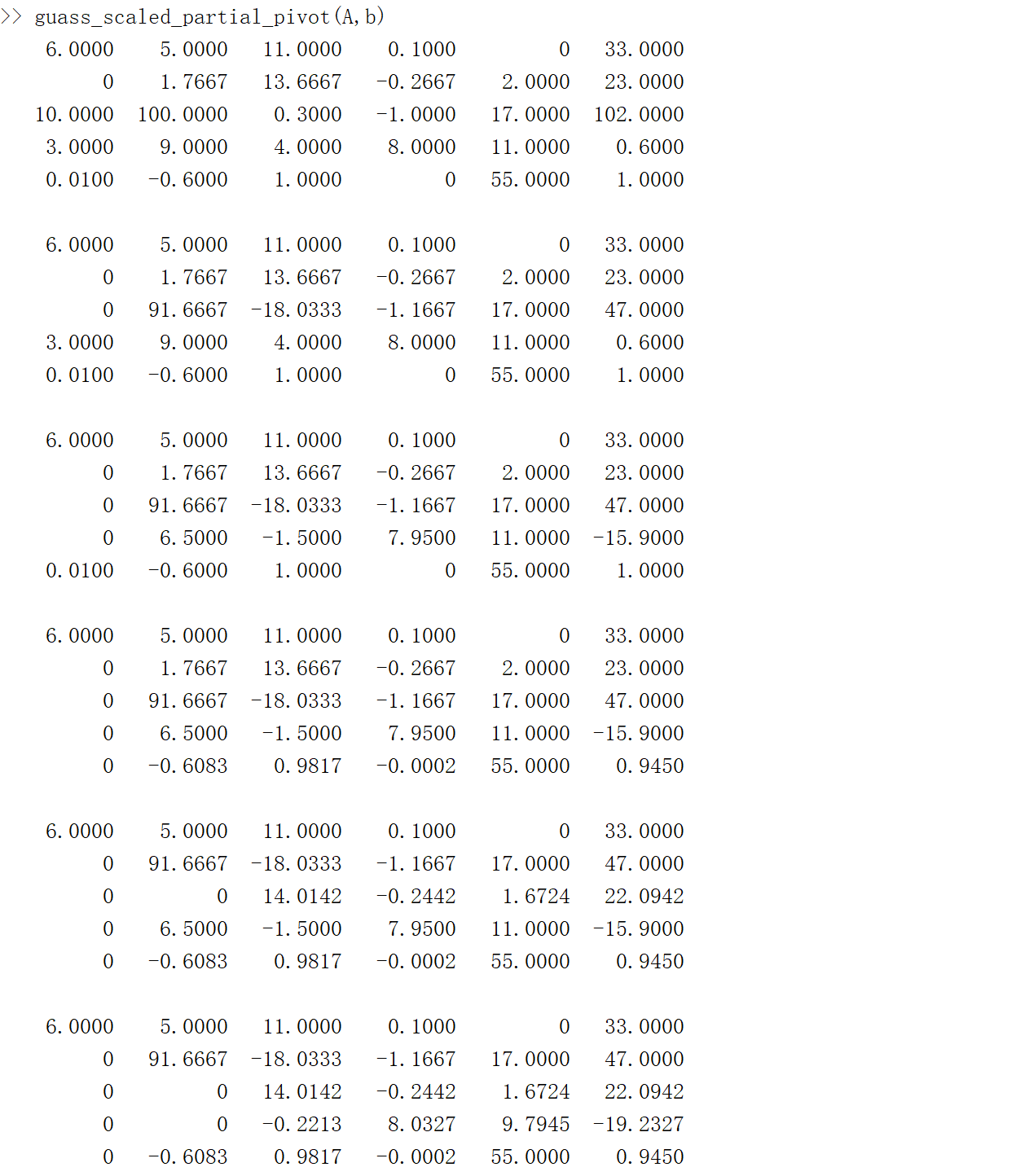


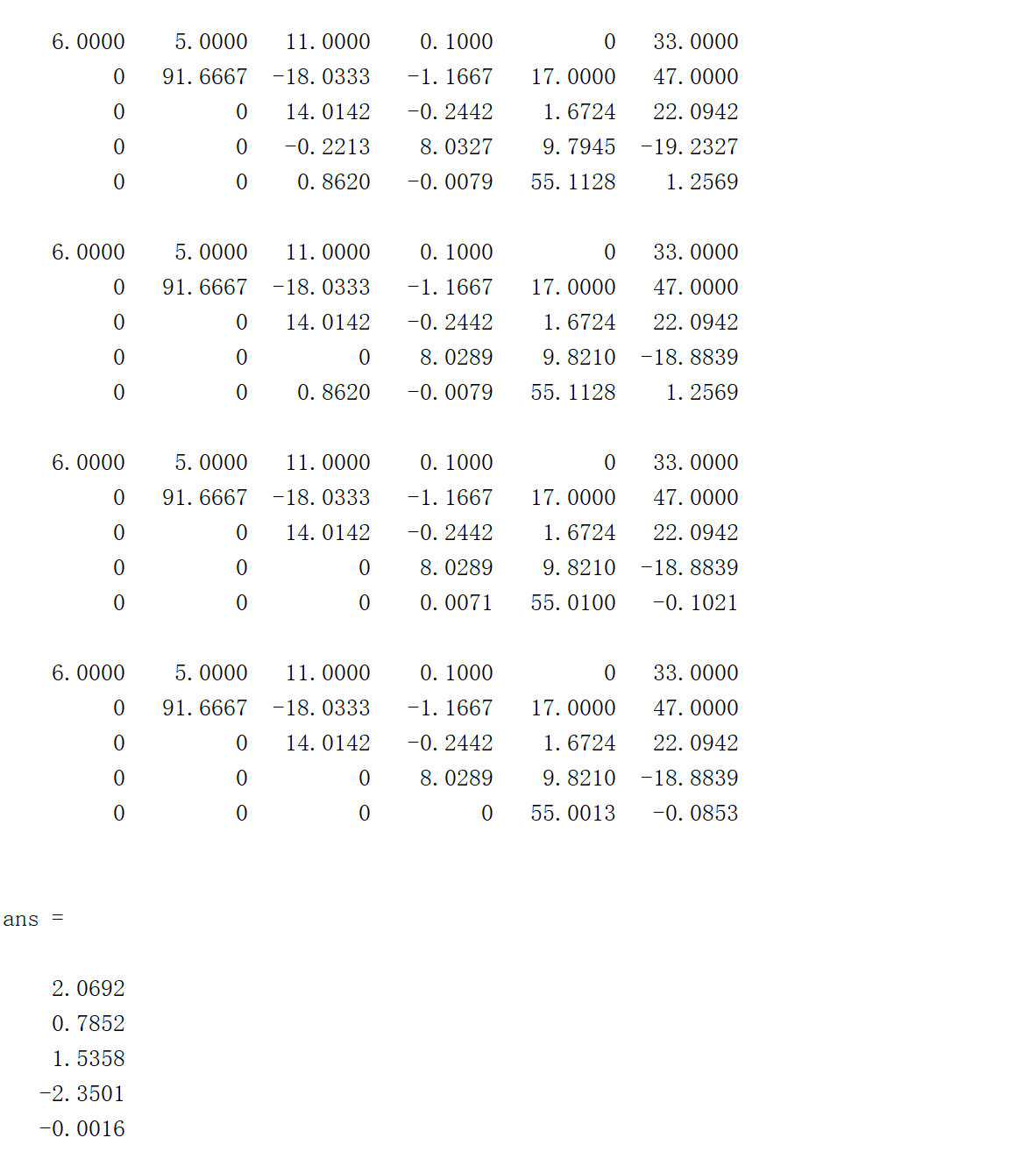




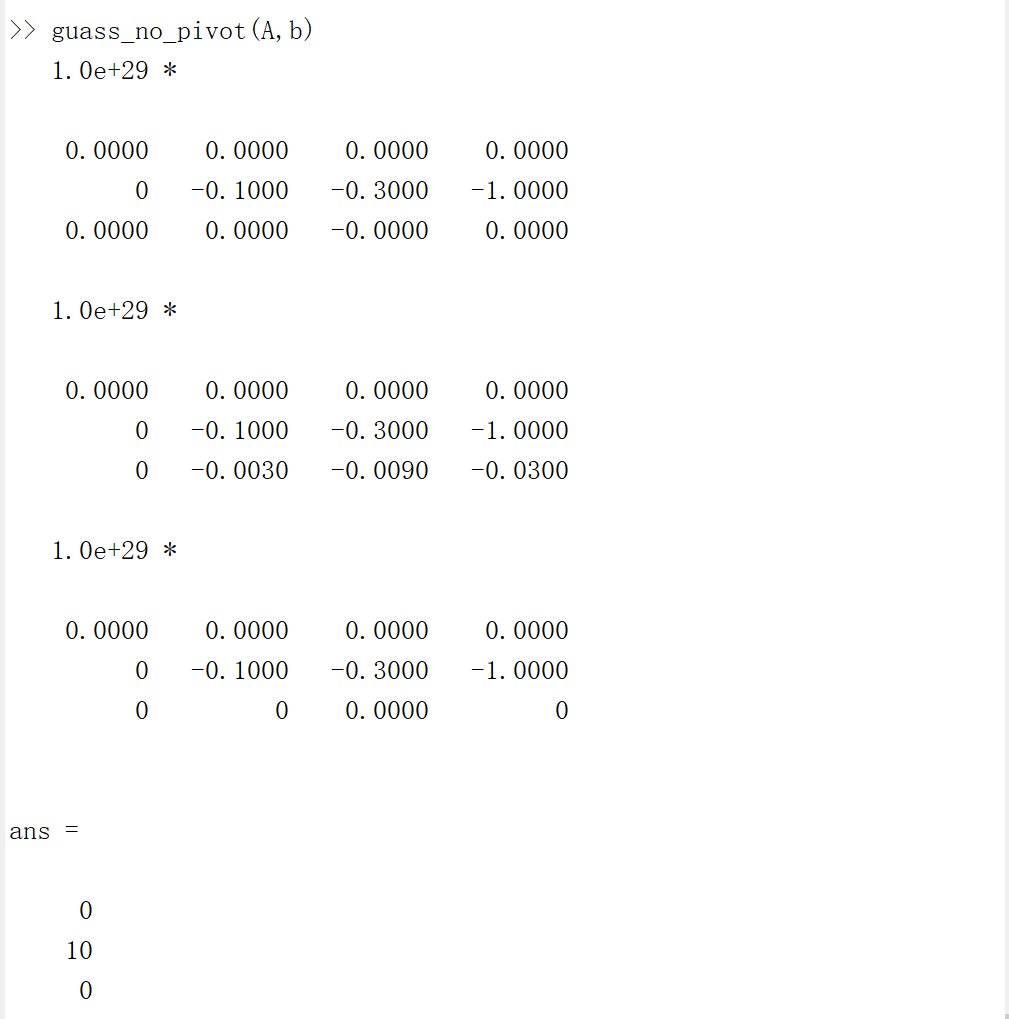


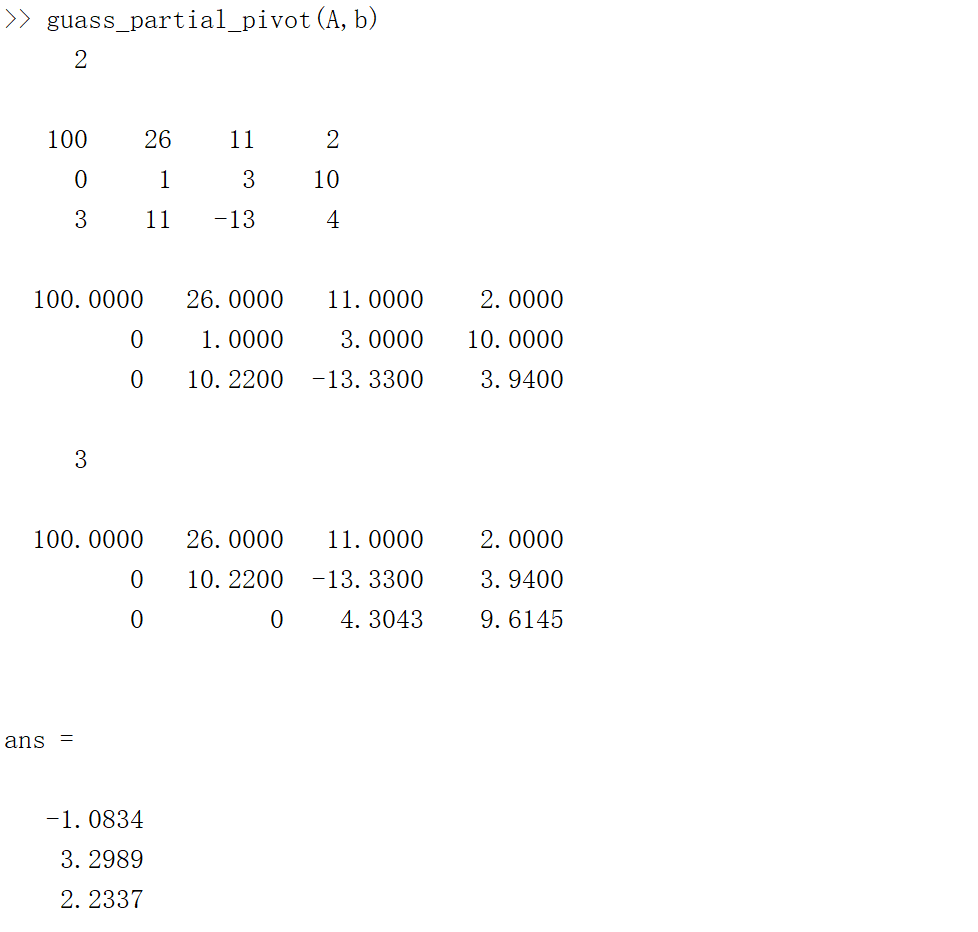






Q6.





We can find that the result of two algorithms is different. In the first row, the is very smaller, close to zero and if it does not exchange the rows with the ), is a constant. This will be beyond the accuracy of the computer. Since for each root the loss of the elimination will become larger and larger. If finding the maximum as in question 3 and swap, it will reduce the number of rounds, so they will have the different result.