1. **How many orders of magnitude separate the value of the residual and the value of the condition number?**

The order of magnitude separating the value of the residual and the value of the condition number in approximately equal to 10^16.

1. **Why is this case?**

We have taken the value to n from 2 to 21. So there are 20 iterations. But after 15 iterations i.e n=15 the matrix becomes close to singular. Means the determinant of the matrix almost becomes 1. So, such matrix are badly scaled due to which the results may be inaccurate.

1. **Can we change something in program to demonstrate the above?**

Yes. We can the value of n i.e iterations to less than 15 and greater than 2, to get an accurate result. If we go beyond 21 or 15 also the magnitude will change as the results would be inaccurate.