Numerical Analysis Homework #0

due 2020 MAR 17, 9:50 a.m.

1 Assignments

I. Exercise 0.10.

II. Exercise 0.28.

III. Exercise 0.37.

IV. Exercise 0.38.

V. Exercise 0.56.

VI. Exercise 0.62.

VII. Exercise 0.63.

VIII. Using the contents in Section 0.4, tell a story about determinants from the viewpoint of problem-driven abstraction. You get no points unless your story contains all of the following.

(1) Why do we need the concept of a determinant?

(2) What is the geometric meaning of determinant?

(3) How is the development of mathematical abstraction parallel to the geometric meaning of determinants?

(4) How is the sign of the signed volume captured?

(5) What are the partial or linearing orderings of various concepts related to determinants?

Each of the above problems weighs 6 points excecpt that the last problem weighs 8 points. In particular, the last two problems are for extra credit and you do not have to solve them. However, my graduate students who audit this class have to solve all problems.

Caution:

- To get full credit, *you must write down sufficient intermediate steps*, only giving the final answer earns you no credit!
- Please make sure that your handwriting is recognizable, otherwise you only get partial credit for the recognizable part.

2 Extra credits

Additional 5% credits will be given to you if you typeset your solutions in LaTeX. You are welcome to use the LaTeX template available on my webpage. You can also get partial extra credit for typesetting solutions of *some* problems.

Note: When turning in your homework, please send the files in a single zip/tar ball (**format**: `YourName_Homework1.zip`) to the course email `NumApproximation@163.com`.