

Guidelines for Numerical Analysis HW

You want to get good grades on your math homework. YFG¹ wants to have an easy time grading it. The obvious goal for us both is perfect, well presented homework. This document gives some answers on how to have better homework with less work for you.

1 General Advice

- Computing a single special case is not a proof. Check answers if possible.
- Be sensible about keeping significant figures. Writing 10 is too many. Two is too few.
- Apropos debugging: If you're writing a matrix-inverse routine, try it on a diagonal matrix. Debug broken code by making it work on something simple, and work up!
- **Read the whole question and answer the whole question.** If you are asked to compare results or discuss your answer, failing to do it will lose points.
- It's okay to make a plot when the problem doesn't ask for one. Looking at your output in different ways will make mysterious errors obvious!
- Never hand in broken code. Get it to work on a simple case early enough that you can get help — do the real case and writeup afterward.

2 Collaboration

Guideline: Your homework must be representative of your own work.

- It is OK to discuss the problems with other people, but write your own solutions.
- It is OK to work on development and debugging with other people, but you must do your own runs, make your own plots, etc.
- If you worked together with someone on a programming assignment, you must write down who you worked with.

3 Programs

Every programming question should yield:

- A printed listing of the program you wrote, *Not handwritten!*
- A printout of the output,
- A plot or table and some commentary if applicable.

Guideline: If you hand in a page with more than 300 numbers on it, or more than 5 or 6 printed pages for a problem, you're wasting paper.

¹Your Friendly Grader

3.1 Listings & outputs

- **Don't hand in a copy of the program for each variant of the parameters.**
- For each output listing make it clear what the parameters are for that run.
- Don't dump raw unlabelled matrices to the screen.
- Don't generate many pages of output for each run - if it's more than a page make a table. format compact helps!

Guideline: Using the program listing, the commentary, and the output, it should be easy for someone to reproduce what you did.

3.2 Plots

Hand drawn plots are never acceptable. Plots should always be *labeled*. Ask:

- Does the plot show anything?
- Do the axis limits show the part of the plot that is interesting?
- What is the point of showing this plot?

Put more than one plot on a page, and more than one function on a plot. One or two pages of plots per programming problem is about right. **Never hand in page after page of output with just one plot on each page - use subplot or hold as applicable.** Here are some other matlab commands that will help you get the plot looking good: `xlim`, `ylim`, `legend`, `xlabel`, `ylabel`.

3.3 Homework physical presentation

Homework must be **stapled once in the upper left corner** on standard sized paper. This means:

- no paper clips, no corner foldover, no snazzy plastic report covers,
- no stapling anywhere but the upper left corner,
- and leave margins! Don't write up to the corner then staple over your work.

If you can't staple your homework with one standard staple you're wasting paper. See the section on programs. YFG doesn't care if you type the HW or handwrite it. Please include a cover page and an assignment sheet. Rewriting the statement of the problem before every problem is not necessary. *Presenting the steps of your calculation as clearly as possible, and the results is necessary!*

Don't hand in a "microfiche" or an "ancient codex". If you can't read it easily YFG can't read it either.

- Do not try to get the whole homework on one sheet of paper.
- Large areas of crossouts/mass erasures are bad.
- Staple all the problems together in sequential order.
- If you handwrite, don't use weird paper or ink colors.

If a homework is completely illegible it won't be graded. The more legible something is, the easier it is to give partial credit, too- YFG shouldn't have to play "Where's Waldo?" with respect to the results.