

# CS446 Fall 2017 Homework Guidelines

August 29, 2017

## General guidelines

Below are some rules for you to keep in mind as you typeset your homework. Some come from [Knuth et al. \(1998\)](#).

## General writing

- Read and understand the course policies governing homework, which you can view at <https://relate.cs.illinois.edu/course/cs446-fa17/page/policies/>.
- Make sure you submit the names and NetIDs of everyone you collaborated with, but keep in mind that the write-up must be your own work.
- Please be concise with your solutions.
- Don't omit "that" when it helps the reader to parse the sentence.
  - Bad: Assume  $A$  is an  $n \times n$  matrix.
  - Good: Assume that  $A$  is an  $n \times n$  matrix.
- Don't use "which" when "that" sounds better.
- Do not use hyphen for the words beginning with "non". For example, write "nonlinear" and "nonstationary".

## Mathematical writing

### Symbols

- Symbols in different formulas must be separated by words.
  - Bad: Consider  $S_q$ ,  $q < p$ .
  - Good: Consider  $S_q$ , where  $q < p$ .
- Don't start a sentence with a symbol.
  - Bad:  $x^n - a$  has  $n$  distinct zeros.

- Good: The polynomial  $x^n - 1$  has  $n$  distinct zeros.
- Don't use symbols to represent logic, use words.
  - Bad:  $\exists n$  such that as  $p \rightarrow \infty$ ,  $f(n, p) \rightarrow 0$ .
  - Good: There exists  $n$  such that as  $f(n, p) \rightarrow 0$  as  $p \rightarrow \infty$ .
- Use displayed math when handling big equations. Don't put big equations in a paragraph.
  - Bad: Consider  $\sum_{i=1}^n \frac{i^2}{2}$  where  $n > 100$ .
  - Good: We now consider the following quantity

$$\sum_{i=1}^n \frac{i^2}{2},$$

where  $n > 100$ .

- Use  $\mathbb{P}$  for probability, and  $\mathbb{E}$  for expectations. Use  $\mathbb{R}$  for the set of real numbers, and similarly for rational and integers.
- Use capitalized letters for random variables, and lower case letters for their realizations.
- Use bold capital letters for random variables, for example  **$X$** . Use bold letters for vectors, for example  **$x$** . We have pre-defined some macros for you in `scribepkg.sty`; you can use these if you would like.

## Placement

- Punctuate displayed math equations if the sentence pauses, or ends.

– Bad: Since  $n > 100$ ,

$$\frac{n}{n+1} > \frac{100}{101}$$

– Good: Since  $n > 100$ ,

$$\frac{n}{n+1} > \frac{100}{101}.$$

- Only number an equation if it is referred to later.
- Match the bracket size to the size of the contents within it.

– Bad: We thus have

$$\mathbb{P}\left(\frac{1}{n} \sum_{i=1}^n X_i > t\right) < \exp(-nt^2).$$

– Good: We thus have

$$\mathbb{P}\left(\frac{1}{n} \sum_{i=1}^n X_i > t\right) < \exp(-nt^2).$$

## Citations

- If you used results from other articles, please cite it. Give the exact location in the article if necessary, such as the page number in a book.
- Check the BibTeX entry if you downloaded it from Google. In many cases, the entry is not correct.
- Put all citations into `citations.bib` and they will appear on the last page of your notes. We have provided an example citation, but please follow the correct format for adding more.

## References

KNUTH, D. E., LARRABEE, T. and ROBERTS, P. M. (1998). Mathematical writing .