

HOMWORK 3, CPSC 303, SPRING 2020

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Please note:

- (1) You must justify all answers; no credit is given for a correct answer without justification.
- (2) Proofs should be written out formally.
- (3) Homework that is difficult to read may not be graded.
- (4) You may submit homework in groups of 1-3. You must acknowledge any sources (e.g., Wikipedia, other books, other articles) you have used beyond the textbook and the article(s) on the class website.

In these exercises, “the handout” refers to the article “CPSC 303: What the Condition Number Does and Does Not Tell Us,” on the CPSC 303 homepage.

Write your solutions to the following problems concisely. Marks will be deducted if you submit 80 values—or even 40 values—of any output the MATLAB code below produces.

Note that from this point in class and on the homework, we identify

$$(v_1, \dots, v_n) \in \mathbb{R}^n$$

with the $n \times 1$ “column vector”

$$\begin{bmatrix} v_1 \\ \vdots \\ v_n \end{bmatrix}$$

- (1) Problem 1 (in the Exercise section) of the handout “What the Condition Number Does and Does Not Tell Us.”
- (2) Problem 3 of the handout.

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(3) Problem 4 of the handout.

(4) Problem 5 of the handout.

(5) Problem 7 of the handout.

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