

This is a take-home exam. The period of the exam is from Tuesday, May 5 at 9:50 am, to Friday, May 8 at 5:00 pm. Send to me by email a copy of your exam, together with this exam page, by 6:00 pm, Friday, May 8.

Solve four of the following five problems. If you choose to submit solutions to all five problems, only the four best solutions will be counted. Give complete proofs, and in particular, show all steps of your calculations. **Your proofs must be written in complete sentences and must include sufficient detail to allow evaluation of your understanding of the methods you use.** Be sure to verify all hypotheses of any theorem that you use, and also give the name of the theorem if it has one. You may ignore any hints, but you must follow all explicit instructions and show all of your reasoning.

You may write your exam longhand, or type it, or typeset it with TeX. In all cases you must print your name and the date, and sign your name below, and submit a scan or photograph of this page with your solutions.

Honor Statement: By signing below you confirm that you have obeyed the following rules for the conduct of this exam.

During the exam period, Tuesday, May 5 at 9:50 am through Friday, May 8 at 5:00 pm,

1. you have used only your own course notes and papers, and the materials on the course webpage;
2. you have not looked in any books, notes, or other printed or written materials about the subject matter of the course other than those in 1;
3. you have not consulted in any way with any other person about the problems on this exam, the material represented on this exam, or the material covered in the course;
4. you have not accessed any electronic resources or webpages other than the materials allowed above in 1 to help you solve the problems.

PRINT NAME: Trey Manusz

SIGN NAME: Trey Manusz

DATE: 5/5/20