About the exams of
MATH 2207, Linear Algebra
Semester 2, 2017
updated April 25

About the questions in this class in general (quizzes, midterm, final):

- The questions (or part-questions) are **not** in order of difficulty.
- Some questions are very short and some questions are very long.
- The questions will require you to put together ideas from different topics.
- The questions are in many parts:
  - The parts are loosely related (e.g. they may be about the same matrix).
  - There are usually both easy parts and hard parts within the same question.
  - You don't always need the answer to part a) to answer part b).
  - Sometimes part b) depends on the information given in the question of part a), but not on the answer to part a).
  - Even when part b) depends on the answer to part a): If you have the wrong answer to part a) and therefore a wrong answer to part b), you may still get full marks for part b) if I think you would've got the right answer if you had the right answer to part a).
- There will be some very hard questions, to challenge you - you are not expected to solve them completely. Sometimes these questions are marked **Explain your reasoning carefully**.
  - There will be partial credit for good ideas and attempts, so please write down any ideas you have (but try not to write mathematically incorrect statements).
  - Ideas that don't work will not gain or lose points.
  - You may lose points for mathematically incorrect statements.
- If the numbers are very big, there probably is a short, conceptual solution. If you can't think of the conceptual solution, you can try to compute "smartly".
- If you choose to calculate in a question that does not explicitly ask for a calculation (and sometimes this is the best method), please explain what you are calculating. This applies especially if you decide to row-reduce - tell me what you are looking for (e.g. "I want to know if there is a pivot in every column").
- Remember that, if a question asks for "all value(s) of a" such that some condition is true, then it is possible for the answer to be "all of $\mathbb{R}$" (i.e. the condition is true regardless of the value of a), or "the empty set" (i.e. there is no value of a that makes the condition true).

Some suggestions for how to study:

1. Review the material:
   - Make sure you know your computations (e.g. row-reduction, determinant).
   - Make sure you know the definitions, not just how to calculate them.
   - Make a list of the important definitions and theorems (e.g. pp42-43 of week 2).
   - For each key idea, go through your notes and make a big list of where it occurs in the different topics, so when that idea comes up in a question you know what tools you can use.

2. Do practice problems:
    - Close your notes and redo homework problems or in-class exercises that you had trouble with;
    - The exercises in the textbook have answers in the back;
    - You can look online for more problems - linear algebra is a popular course so there are many class webpages that may have good notes or problems.
    - If you want to check your solutions to any problems, you can always bring them to office hours.

In the exam itself:

- Please show **all the steps** in your calculations: a final answer without supporting work will not get full credit.
- Please check your answers after each step! (e.g. after solving $A\mathbf{x} = \mathbf{b}$, you should calculate the product of A and your $\mathbf{x}$ to make sure it equals $\mathbf{b}$.) Getting a wrong answer in one step might make the next step much harder. You don't need to show me your answer-checking, but I may be harsh on arithmetic error in questions where you can check your answer. If you really cannot find your mistake, at least tell me e.g. "my solution does not satisfy $A\mathbf{x} = \mathbf{b}$ so I must have made an arithmetic error".
- Please explain your proofs fully - make it clear to me that you understand and are not guessing.
- Do not write statements that are mathematically incorrect: this tells me that you don't understand, and you may lose points.

The make-up / supplementary exam is harder than the final, to take into account that you had extra time to study. So please don't study so hard that you get sick on the day of the final! Take care of yourselves, eat heathily and get enough sleep.