HOMEWORK 1 **JANUARY 9, 2026**

Instructions. Do the following exercises from the textbook (*Linear Algebra Done Right* by Sheldon Axler). This assignment will not be collected or graded.

Strategies and advice. You are encouraged to work together to solve the problems. Some of the exercises will require you to think deeply about abstract topics, and you might struggle for a while before making progress. This is normal, and you will get the most out of it by talking it through with friends. Here are some strategies you can use to approach the problems and get the most out of them:

- Come up with examples that satisfy the hypotheses of the theorem you want to prove, and show that they explicitly satisfy the conclusion of the theorem. Then, try to distill the behavior of that example into a general proof.
- Carefully write down the meanings of each piece of given information in the problem, and the meaning of the conclusion you are trying to prove. Then try to understand how those two things relate to each other.
- After you write your proof, have a friend read it and point out any part of it that doesn't follow logically. Then, you can try to patch these holes by adding more explanation or adjusting the idea of your proof. This will help you write clearer proofs, which will be important for the quizzes and final exam.

Please feel free to bring questions about homework exercises to tutorials, come to office hours to reason through the exercises, and email the instructors with any questions - we are here to help, and always happy to talk about the exercises with you!

Exercises.

Section	Exercises
1A	10, 14
1B	2, 7
1C	1, 10, 23
2A	12, 16, 18
2B	3, 5