

Work the following problems and hand in your solutions. You may work together with other people in the class, but you must each write up your solutions independently. A subset of these will be selected for grading. Write LEGIBLY on the FRONT side of the page only, and STAPLE your pages together.

NOTES. Your grade on this and every homework is based on my ability to understand and evaluate what you have written. Therefore it is **ESSENTIAL** that you **COMMUNICATE CLEARLY** in your writing. ALL problems require either a proof or an explanation of what you have done, using complete, correct English sentences (mathematical symbols are simply abbreviations for words or phrases and may be used as parts of sentences). I will read **EXACTLY** what you write and will take what you write literally. I will not fill in missing steps or guess at what you “really mean.” Any symbols that you introduce that are not standard must be explained. **YOUR EXPLANATIONS NEED NOT BE LENGTHY TO BE CLEAR**, but you must carefully and logically demonstrate the validity of your solution to each problem. The words “show,” “demonstrate,” etc. are all synonyms for “prove.” All statements that you make require proof, e.g., if I ask “is statement A true?” then it is not sufficient to answer “yes” or “no”, you must explain **WHY** the answer is yes or no.

1. Lecture notes Problem 1.1.
2. Lecture notes Problem 1.4.
3. Lecture notes Problem 1.6.