

MATH 145A - SET THEORY I, FALL 2019
ASSIGNMENT 8

Due Tuesday, October 29 before class (please submit your assignment as a PDF on Canvas). Make sure to include your full name *and the list of your collaborators* (if any) with your assignment. You may discuss problems with others, but you may *not* keep a written record of your discussions. Please refer to the syllabus for details.

As a general rule, imagine that you are writing your solution to convince somebody else in the class who is very skeptical about the particular statement. In particular, it should be completely understandable to another student: always justify your reasoning in plain English. It is not sufficient to simply state a number or formula without providing the steps and reasoning that you used to produce the answer.

- (1) Let L be an infinite linear order. Prove that either ω embeds into L or $\omega^R (= (\omega, >))$ embeds into L . *Hint: the infinite Ramsey theorem may be useful.*
- (2) Prove or disprove: if T is an \aleph_1 -tree and all the levels of T are finite, then T has a branch.
- (3) Please submit your final project proposal separately on Canvas (*see the course website for information on the final project*).