

Math 29: Homework 8

Due June 1st

For each of the following questions, provide a complete, clear solution. Remember to make it obvious which problem you are solving in each solution. Virtual submissions are due by midnight on the due date, either via Gradescope or email. Physical solutions are due in class on the due date.

1. Are there sets A and B such that $A' \leq_T B'$ but $A \not\leq_T B$? Justify your answer.
2. Prove for all n that there are sets which are Low_{n+1} but not Low_n . (Hint: Use induction and relativization.)
3. Prove for all n that there are sets which are High_{n+1} but not High_n .
4. Formalize the construction of a low simple set given in the notes and prove that it builds what we want. (Hint: Refer to the original simple set construction and Friedberg-Muchnik proof for details on how to describe restraint functions.)