

Instructions. You are allowed to collaborate with others, however you should write up solutions independently. Copying an answer from another source (e.g. the Web) or from another student may yield few or zero points. Write solutions neatly and legibly, or type your solutions in LaTeX. Be sure to number each problem, and indicate a final solution (if relevant). Answers to problems should include justification (show your work).

Acknowledgments. Problems from this homework come from published sources. The specific sources are withheld due to the nature of this assignment.

Academic Honesty. Include the following information at the top of your submission, along with your name.

- Written sources used: (Include textbook(s), complete citations for web or other written sources. Write none if no sources used)
- Help obtained: (Include names of anyone other than the instructor.)

HW6 #3 (5 pts)

Prove the following claim.

Hint: recall how we used nondeterminism to show this same property for regular languages.

Claim 1. *The collection of Turing-recognizable languages is closed under the union operation.*

Next, argue in no more than one sentence why the claim below follows immediately from the one above.

Claim 2. *The collection of decidable languages is closed under the union operation.*