PROJECT

If you do this project AND end up with an F or D in the course then I will grade it and MAY use your grade to BUMP your grade up one notch. Throughout this document “prove” means “give a construction and discuss why it works.” What you hand in must be TYPED or VERY GOOD HAND-WRITING.

DUE the DAY of the final. Absolute Deadline.
HINT: START early. Feel free to get help from me or the TA.

1. (0 points but you have to answer) What is your name? Write it clearly.

2. Let $L$, $L_1$ and $L_2$ be regular. Prove or Disprove or state that it is unknown to science. (You may use the equivalence of DFA,’s NFA’s, and Regular Expressions).
   (a) $L$ is regular.
   (b) $L_1L_2$ is regular.

3. Let $L$ be in P. Prove or Disprove or state that it is unknown to science.
   (a) $\overline{L}$ is in P.
   (b) $L^*$ is in P.

4. Let $L$, $L_1$ and $L_2$ be in NP. Prove or Disprove or state that it is unknown to science.
   (a) $\overline{L}$ is in NP.
   (b) $L_1L_2$ is in NP.

5. Let $L$, $L_1$ and $L_2$ be decidable. Prove or Disprove or state that it is unknown to science.
   (a) $\overline{L}$ is decidable.
   (b) $L_1L_2$ is decidable.

6. Let $L$, $L_1$ and $L_2$ be in c.e. Prove or Disprove or state that it is unknown to science.
   (a) $\overline{L}$ is c.e.
   (b) $L_1L_2$ is c.e.