1. Apply algorithm 3.3 (p.122) to the following regular expressions
   - \((a|aa)|b^*a^*
   - \((b(a|a^*)b)|(ba^*ab)\)

2. Apply algorithm 3.2 (p.118) to the above NFAs to obtain the corresponding DFAs.

3. Apply the DFA minimization algorithm (as discussed in the class notes) to minimize the above two DFA’s if possible.

4. Ponder and prose in a single paragraph: if minimization occurred why did it occur? are the above regular expressions “good”? are they “bad”? in what sense (if any)? what is the meaning of life? (use finite automata in your answer to this last question for extra points)

**Note.** “Apply algorithm X” means that you simulate by hand the algorithm X, you don’t do things on your own! Show your work. The goal is not to simply solve the above exercises but to understand the mechanics of systematically solving them.

**Note 2.** Last question in item 4 above (pertaining to the meaning of life) will not affect your grade for this homework. No answer is also acceptable. Disclaimer: this question is listed for entertainment purposes. Any other use is prohibited.

**Instructions.** You should hand the solutions of the above exercises with a cover page that should contain only: (i) your name, (ii) the class number “CSE 244”, (iii) the semester “Fall 2003”, (iv) the homework number “Homework #2”. The cover page must be written in a word-processor. The remaining of this homework may be written by hand.