Sipser, Section 1.2: Regular Languages, NFAs, Regular Operations

Reading: All of Chapter 1.2. (Re-read the part we already covered).

Homework Assignment 6
Due: November 9, in class

Homeworks are due at the beginning of class on the due date. Late homeworks will not be graded for credit, but I will give comments and feedback on them.

1. Let $A = \{a, ab\}, B = \{b, ba, bb\}$. Give:
   a. $A \cup B$
   b. $A \cap B$
   c. $B^*$
   d. $A \circ B$
   (You should give all elements of each set, unless it is infinite).

2. For $B$ as above, which of the following are in $B^*$?
   a. baba
   b. babbab
   c. bcde
   d. baaba
   e. bbbbabab
   f. babb
   g. abbbb
   h. $\varepsilon$

3. Do the following exercises from Sipser:
   1.6a
   1.7a, b (Hint: *Careful* with 1.7b!!)
   1.8a, b, c
   1.9 (Hint: Give a proof by construction. This is easy—think about it!)
   1.12a, b

   For 1.6–1.8, make sure you start with the *correct* automata from Exercise 1.4.
   It’s ok to ask me or someone else to just write them down if you can’t find them in Homework 4 or in your notes.

4. Optional: Do exercises 1.10 and 1.11.