All students should read §3.3–3.6.

Distribute the following questions across the members of your group. You will share your solutions (and most importantly the *method* of your solutions) during the next lecture period. Divide up the questions so that **each** question has at least two solutions from different group members.

For all of these questions, you do not need to venture farther than the **regular expression language** described in the text for answers (namely: a, λ, $a|b$, a^+, a^k, and (of course) $a*$). You don't need "look backs", named groups, or other notions from any other regex language.

For **questions 1, 2, and 4**, provide an algorithm that proves the assertion.

1. Page 110, question 18[1]
2. Page 110, question 19; **Hint:** the world does not revolve around DFAs.
3. Page 111, question 25
4. Page 111, question 26; **Warning:** In the question, $AllButLast(a^+b) = a^+$ should be interpreted as: "Applying *AllButLast* to the regular set generated by a^+b would generate a set of strings that would all be matched by the RE a^+. It **does not mean** *AllButLast* applied to the sequence of characters a, superscript $+$, and b would yield a^+ — which, of course it **would** if that is what the author meant.
5. (a) Find a reasonably good tutorial or short article on LEX (one you can read and understand); provide this to your group for their future benefit.

   (b) Page 111, question 22; **Hints:** "before the blank" and "very last character" refers to ASCII table ordering. $\mathtt{x}^{12,345}$ is a regular expression: 12,345 x characters in a row. The book doesn't mention this RE form in LEX, so it is a good thing you found a good tutorial in part a.

[1] Too bad $Not(e)$ doesn't count as an algorithm.