1. Exercise 4.12, except instead of an LP in general form, consider an optimal non-degenerate BFS of an LP in standard form.

2. Exercise 4.15 (keep in mind that the dual problem must be derived precisely according to the definition in Section 4.2 — e.g., removing a redundant constraint gives you a problem that’s equivalent to the dual, but not the actual dual problem).

3. Exercise 4.22

4. Exercise 4.26. Hint: A vector $x \geq 0$ is non-zero if and only if it satisfies $e'x > 0$, since it must have at least one positive component. This should give you an idea for a (primal) LP whose optimal objective value is connected to whether or not (a) holds.

5. Exercise 5.5 (the explanation of the components of the tableau is in a previous homework). Instead of part (c), answer the following question: what is $B^{-1}$ for the current basis? Read the problem description carefully — you should be able to answer this question based on the information provided without any calculations.