1. Problem 12, chapter 8, of text.

2. Problems 17a and 17e, chapter 8, of text.

3. Consider the following grammar over $\Sigma = \{a, b\}$:
   
   - $S \rightarrow AB$
   - $A \rightarrow AS + Sb + a$
   - $B \rightarrow BS + aA + \lambda$

   Convert the grammar to Chomsky Normal Form (please use rules $U \rightarrow a$ and $V \rightarrow b$). Show and comment (e.g. “getting rid of $\lambda$ rule”) your work.

4. Consider the following grammar over $\Sigma = \{a, b\}$:
   
   - $S \rightarrow SAS + a$
   - $A \rightarrow AS + b$

   Convert the grammar to Greibach Normal Form. Show and comment your work.