Automata and formal languages

Exercise 9

Answer the following questions and submit your report by next exercise class.

1. **For the grammar:**

$$S \rightarrow A1B$$
$$A \rightarrow 0A|\lambda$$
$$B \rightarrow 0B|1B|\lambda$$

And the strings 00101 and 1001 give:

   a. The leftmost derivation
   b. The rightmost derivation
   c. The parse tree

2. **Show that the following grammar is ambiguous:**

$$S \rightarrow AB|\ aaB$$
$$A \rightarrow a|Aa$$
$$B \rightarrow b$$

3. **Find s-grammarfor the following languages:**

   a. *L(r)* where $r=aaa^*b+b$
   b. $L=\{a^n b^n : n\geq 1\}$

4. **Is the grammar:**

$$S \rightarrow ASB|\lambda$$
$$A \rightarrow aAS|\ a$$
$$B \rightarrow SbS|A|bb$$

a. Chomsky normal form b. Griebach normal form c. Other

Why?