1. (10+5+5 points) Consider the following grammar.

\[
S \rightarrow ABab \mid BAba \\
A \rightarrow a \mid c \\
B \rightarrow b \mid c \mid \lambda
\]

(a) Draw the graph of the above grammar.
(b) Give the lookahead set for each rule.
(c) What is the lookahead length needed to deterministically parse strings from this grammar? Explain your answer.

2. (20 points) Convert 1362\textsubscript{10} to binary using two different methods. Show your work (10 points).

3. (20 points) Convert 0.3\textsubscript{10} to binary. Show the result in 4 bits of precision and 16 bits of precision for the decimal part. Show your work (10 points).

4. (20 points) Create your own example where the associative law fails due to limited precision.

5. (20 points) Create your own example where the distributive law fails due to limited precision.