Some Exercises on Syntax of Propositional Logic

1. None of the following formulas is a correct well-formed formula (as defined in the lecture notes). For each, determine what is wrong:

   (a) $((\sim A) \vee (B \Rightarrow A)$

   (b) $(A \wedge B \vee C)$

   (c) $((\sim A) \vee (B \Rightarrow \sim A))$

   (d) $(((A \vee B)(A \Rightarrow B)) \vee (A \Rightarrow A))$

2. The following formulas do not have enough parentheses to qualify as a correct well-formed formula according to our definition. Add the missing parentheses back in:

   (a) Gemig. textbook, p.34, # 1dfh, 4d

   (b) $\sim A \Rightarrow (\sim A \vee \sim (A \vee \sim B))$

3. For the following formulas, form a tree of subformulas (like we did in class, and in the notes):

   (a) $((\sim A) \Rightarrow (A \Rightarrow C))$

   (b) $((A \wedge B) \vee ((\sim A) \wedge (\sim B)))$

   (c) $(((A \vee B) \wedge (\sim B)) \Rightarrow A)$