Exercise 19: Propositional Resolution

If Paul is on vacation and it is snowing, then he goes skiing. Paul goes on a holiday to France or to Florida. You cannot go skiing in Florida. Paul is on vacation and goes on a holiday to Florida.

(a) Give a propositional formula in conjunctive normal form that reflects the sentence above.

(b) Show that the text implies that it is not snowing, by means of propositional resolution.

Hint: If $F$ is the propositional formula out of [a] and $S$ is describing the fact that it is snowing one has to show the validity of $F \rightarrow \neg S$.

Exercise 20: Propositional Resolution

Given the formula

$$ F := (A \lor \neg B \lor C) \land (A \lor B) \land (B \lor \neg C) $$

(a) Please give the respective set of clauses

(b) Please give the set of resolvants $Res^i(F)$ for each number $i \geq 0$

(c) Which is the smallest number $n$ with $Res^*(F) = Res^n(F)$?

(d) Is $F$ satisfiable? Please give an explanation.

Merry Christmas and a happy new year! :-)

3 + 7 = 10 Points

2.5 + 2.5 + 2.5 + 2.5 = 10 Points