

RYERSON UNIVERSITY
MTH 714 LAB#6
DAY: OCTOBER 9, 2008

1. We say that a formula is a *complete CNF* if it is a CNF and every disjunction contains every variable that appears in the formula, either non-negated or negated.

For example, the formula

$$(p \vee \neg q \vee r) \wedge (p \neg q \vee \neg r) \wedge (\neg p \vee \neg q \vee r)$$

is a complete CNF.

Show that every formula is equivalent to a complete CNF.

2. Exercise 4 from 4.5.
3. Exercise 5 from 4.5
4. Exercise 6 from 4.5
5. A clause is called *positive* if it contains only positive (non-negated) literals. Show that a clause set is satisfiable if it does not contain a positive clause.
[Remark: One can define negative clauses similarly and the statement of this exercise also holds if a clause set does not contain any negative clauses.]
6. A clause is called a *Horn clause* if it contains at most one positive literal. Show that the resolvent of two clashing Horn clauses is a Horn clause.