Computability and Logic

HW 1

Due: Tuesday, February 10

1. (Full Truth-Tables) Use the software (Boole) to do the following problems from the LPL book. Submit via Grade Grinder:
    a. 4.5
    b. 7.5

2. (Short Truth-Tables) Use the short truth-table method for each of the following arguments to determine whether they are valid or invalid:
    a. Propositional Logic Arguments II: Problem 11
    b. Propositional Logic Arguments II: Problem 13
    c. Propositional Logic Arguments II: Problem 18
    d. Propositional Logic Arguments II: Problem 19

In each case, clearly indicate the order in which you make your moves, what you end up with, and what that means. Do not use algebra or inference to simplify or take short-cuts: stick to the short truth-table method! If the method gets stuck before you reach an answer, indicate that and stop. It is also ok to stop early when you have reached your answer.

3. (Truth Trees) Use the truth-tree method for each of the following arguments to determine whether they are valid or invalid:
    a. Propositional Logic Arguments II: Problem 9
    b. Propositional Logic Arguments II: Problem 12
    c. Propositional Logic Arguments II: Problem 14
    d. Propositional Logic Arguments II: Problem 20

Again, in each case, clearly indicate the order in which you make your moves, what you end up with, and what that means. Do not use algebra or inference to simplify or take short-cuts: stick to the truth tree method! For this HW, you can only close a branch when you have an atomic statement and its negation in that branch (so not for any statement and its negation).