Attach lined paper showing your solutions neatly.
If your work is not organized, it will not be reviewed!

1. An inhabitant, Carl, of the island Knights and Knaves tells you "If Sue is a knave, then this road leads to the capital." However, later you learn that Carl is a knave. What does it tell you?

2.
$$A \wedge \sim B$$
$$B \vee C$$
$$C \rightarrow S$$
Prove: $\therefore S$

3. Create a truth table that proves the Resolution Argument (see handout from class).

4. (a) Write truth tables for formulas *A AND (B OR C)* and *(A AND B) OR C*
       (hint: there will be 8 rows in the table).
    (b) Are these formulas equivalent? (i.e. do they always give the same answer?)
    (c) The waiter in a restaurant tells you: "our fixed price dinner includes soup and appetizer or salad."

    Denoting
    A = your dinner will include soup
    B = your dinner will include appetizer *C* = your dinner will include salad

    What would be the correct way to write his statement using letters *A*, *B*, *C* and logical operators *AND*, *OR*?

5. Many trucks carry the message: "If you do not see my mirrors, then I do not see you". Can you rewrite it in an equivalent form without using the word "not"?

6. Either Carmelo was in the game or the Knicks won the game.
    If Carmelo was in the game and Lebron was in the game, then D-Wade was *not* in the game.
    If the Knicks won the game, then D-Wade was in the game.
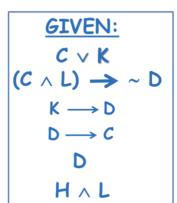   If D-Wade was in the game, then Carmelo was in the game.
    D-Wade was in the game.
    The Heat won the game and Lebron was in the game.

    Let H represent: The Heat won the game
    Let K represent: The Knicks won the game
    Let C represent: Carmelo was in the game
    Let L represent: Lebron was in the game
    Let D represent: D-Wade was in the game

    Prove: Carmelo was in the game

    PROVE:
    C

    GIVEN:
    $C \vee K$
    $(C \wedge L) \rightarrow \sim D$
    $K \longrightarrow D$
    $D \longrightarrow C$
    D
    $H \wedge L$

7. Solve the following equations:

    (a) 2x − 22 = 3(1 − x)   (b) $1 - \frac{2}{7}x = \frac{1}{7}x$ (c) 1 − 8(1 − x) = 7x − 8