You MUST use good notation and show appropriate work.

Math 102

(Section 2.2/2.3)

Name _____

1. Consider the following statements: Suppose ***s*** stands for "I will study", ***t*** stands for "I will watch TV", and ***k*** represents "I will snack".

   Use these to rewrite each statement below in symbolic form:

   a) I will not snack, but I will watch TV._____

   b) If I watch TV, then I will snack._____

   c) I will not watch TV or I will not study._____

   d) I will neither watch TV, nor study._____

   e) If I watch TV, I will snack and not study._____

2. Consider the following statements. Let ***s*** represent "There is school today", ***d*** represents "It is Saturday", and ***t*** represents "I have a test today".

   Use these to translate each of the following symbolic forms into statements.

   a) $s \wedge \sim d$

   b) $d \rightarrow \sim s$

   c) $s \rightarrow (\sim d \wedge t)$

3. For each of the statements below, write the **negation** of the statement ***in English words*** in **two** ways: (1) using the "it is not true that" method and then (2) using the **precise quantifier** language studied in class.

   (a) All professors have graduate degrees.

   (1)

   (2)

   (b) Some students study at least 5 hours the day before an exam.

   (1)

   (2)

4. For each pair of statements, create truth tables (including the basic setup of T's and F's) to determine whether the two statements are logically equivalent. Be sure you state your final conclusion for each pair: "logically equivalent" or "not logically equivalent".

a) $p \vee \sim q$ $\qquad$ $(\sim p \wedge q)$

b) $p \vee (q \wedge r)$ $\qquad$ $(p \vee q) \wedge (p \vee r)$

5. a) Explain the difference between "exclusive or" and "inclusive or".

b) Write out an example where "or" is used in the exclusive sense, and "or" is used in the inclusive sense.