BRONX COMMUNITY COLLEGE
of the City University of New York
DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

CSI30 Section D01   **Quiz 1**
Spring 2019   **Sample**

Instructions

Solve all problems and mark your answers clearly. Show all work, using additional paper if needed.

1. Consider this argument: If it snows today, the college will be closed. The college will not close today. Therefore it did not snow today.
   Write this argument using propositional letters, giving what each letter means in English. Is this argument valid? What is the rule of inference used in this argument?

2. P and Q are propositions. Write the truth table for the compound proposition $\neg(P \wedge \neg Q)$, then write the truth table for the compound proposition $\neg P \vee Q$). Are these two expressions logically equivalent?

3. Write the truth tables for $[\neg P \wedge (P \wedge Q)] \to Q$ and $(P \vee Q) \wedge (\neg P \wedge \neg Q)$. Is either proposition a tautology or contradiction?

4. If the universe is the set of integers $\mathbb{Z} = \{..., -2, -1, 0, 1, 2, ...\}$, and
   $P(m, n)$ is the statement $m > n$, what is the truth value of the statement $\forall m \exists n P(m, n)$?
   And what is the truth value of the statement $\exists m \forall n P(m, n)$? Explain your answers.