Math 316-01 Intermediate Analysis

Questions for Section 1: Logical Connectives

1. What is a statement?
2. Give an example of a statement and its negation.
3. What is the conjunction of two statements? Describe its truth table.
4. What is the disjunction of two statements? Describe its truth table.
5. What is the logical form of an implication? Describe its truth table.
6. What is the antecedent and consequent of an implication?
7. What is the logical form of an if and only if statement? Describe its truth table.
8. What does it mean for two statements to be logically equivalent?
9. What does it mean for the statement \((p \Rightarrow q) \iff (\sim p) \lor q\) to be a tautology? How do you verify this using a truth table?
10. Is the negation of \(p \Rightarrow q\) logically equivalent to \(p \land (\sim q)\)? How do you prove this?
11. Is the negation of \(p \Rightarrow q\) logically equivalent to \(p \Rightarrow (\sim q)\)? How do you prove this?

Homework for Section 1, due ??? (only the starred problems will be graded):

1, 2, 3, 4*, 5, 7, 8*, 9, 11, 14*(a, c, e, f)