Math 301 Assignment 1

These problems are due in class on Tuesday. If your homework takes up multiple pages, they must be stapled together. Your work must be legible, and any frills from notebook paper must be removed.

Book Exercises

Section 1.1: # 6, 12, 16, 18, 28, 30, 32de, 36ace, 38

Section 1.3: # 8, 16*, 18*, 22*, 32* (*For these exercises, explain what each expression is saying. You can make up a statement for each variable if you like. Also, note that #32 says they are <u>not</u> equivalent.)

Section 2.1: # 6, 10, 22 (Explain your answer), 30, 32, 34

Section 2.2: # 2, 4, 14, 52, 54

Additional Exercises (to be turned in)

1. For each of the following conditional propositions, find an equivalent disjunction. Then use DeMorgan's Law to write the negation of the conditional.

   a. If a polygon is a square, then it's a rectangle.

   b. If an animal is a mammal and it can fly, then it's a bat.

   c. If the money is missing, then Eric or Janeane took it.

2. Let A and B be subsets of a universe U of n elements. Let s_A and s_B be the binary representations of A and B. Write a short piece of pseudocode that inputs two binary strings of length n and determines whether the set represented by the first string is a subset of the set represented by the second string.

   In other words, $\text{Sub}(s_A, s_B)$ outputs "true" if $A \subseteq B$ and "false" if not.

Practice Problems (Don't turn these in. Answers are in the back of the book.)

Section 1.1: # 3, 5, 7, 9, 11abcde, 17, 27, 29, 31, 35, 37, 39, 41

Section 1.3: # 1, 7, 17, 23, 25, 27, 31

Section 2.1: # 9, 11, 21, 27, 29, 31, 33, 35, 37, 39

Section 2.2: # 1, 3, 29, 53