Homework #2, Due: 1/24
Math 181 (Discrete Structures), Spring 2024

Problem 1 is worth 4 points (2 pts each part), Problem 2 is worth 2 points (1 pt each part), and Problem 3 is worth 4 points (1 pt each part), for a total of 10 points. Remember to *show your work* and *explain your answers* on all problems!

1. Write the truth tables of the following compound propositions:
   (a) $q \wedge \neg p$
   (b) $(p \wedge q) \vee \neg q$

2. Let p, q, and r be the following propositions:

   p : You took a math class this semester.
   q : You took a computer science class this semester.
   r : You took a physics class this semester.

   Represent the following propositions symbolically in terms of p, q, and r:
   (a) "You took a math class and a physics class this semester."
   (b) "You took a math or computer science class this semester, and you did not take a physics class this semester."

3. (a) Write the converse of "If Maria is looking at the Eiffel Tower, then she is in France."
   (b) Write the contrapositive of "If Maria is looking at the Eiffel Tower, then she is in France."
   (c) Is the converse of $p \to q$ logically equivalent to $p \to q$? Explain (for instance, by giving an example, or writing a truth table).
   (d) Is the contrapositive of $p \to q$ logically equivalent to $p \to q$? Explain (for instance, by giving an example, or writing a truth table).