1. (4 points) Find the Truth Table for the statement: \((\neg P \rightarrow R) \land R \lor \neg (Q \leftrightarrow P)\)
2. (4 points) Use Table 5 on page 24 of the text to show: \[ \neg P \rightarrow (Q \rightarrow R) \equiv Q \rightarrow (P \lor R). \]
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3. (4 points) Negate the following statements:

(a) If today is Sunday, then I will mow the lawn or I will paint the kitchen.

(b) Every student has a teacher who inspires and challenges him.
4. (4 points) Use the Rules of Inference to find my keys:

   My keys are not in my car and not in my coat pocket.
   If my key are not in my car, then they are in the kitchen or the living room.
   If my keys are in the living room, then they are in my coat pocket.
   If my keys are in the kitchen, then they are next to the stove.
5. (4 points) For the sets $A = \{1, 3, 5, 7, 9\}$, $B = \{1, 2, 3, 4, 5\}$, and $C = \{5, 6, 7, 8\}$, all from the universal set $U = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\}$, find:

(a) $(A \cap B^c) \cup (C - A)$

(b) $[A - (B \cup C)] \times [(A \cup B \cup C)^c]$
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6. (4 points) Use the Table of Set Identities to show: \((B - A) \cup (C - A) = (B \cup C) - A\).