1. Circle T for True or F for False as they apply to the following statements:

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<tr>
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2. Find the truth table for the compound statement: 

\[ [(p \leftrightarrow q) \oplus r] \lor [p \land (\neg q \to r)] \]

3. Find the related forms for the statement: **For all Integers, x, if x is odd, then \( x^2 \) is odd.**

**CONVERSE:** __________________________  **NEGATION:** __________________________

4. Draw a graph for a function, \( f: \{1, 2, 3, 4\} \to \{w, x, y, z\} \), that is: (a) onto; (b) one-to-one.

5. Show that the function \( f: R \to R \) defined as \( f(x) = 7x - 3 \) is a bijection.

6. Calculate the following (assuming all strings are from the alphabet \{0, 1\}): 

   (a) \( \ell(1001001001) \)
   (b) \( d(010011000111) \)
   (c) \( H(11011101, 00110011) \)
   (d) \( ([8.1] - 5)((8.1) - 5) + 8 \)

7. (a) Let \( f = \{(0,35), (1,55), (2,15), (3,25), (4,45)\} \) and \( g = \{(15,400), (25,100), (35,200), (45,300), (55,500)\} \).

   Show that \( (g \circ f)^{-1} = f^{-1} \circ g^{-1} \).

   (b) Find the Inverse of the function of \( h = \{(1,2), (2,3), (3,4), (4,5), (5,6)\} \).

8. Use the logic of valid arguments to determine whether or not we can deduce \( t \):

\[
\begin{align*}
& s \to \neg q \\
& \neg p \to (r \lor s) \\
& \neg p \land q \\
& r \to t
\end{align*}
\]

9. Use the Properties of Sets to verify for any sets A, B, C, and D

\[
(A^c \cup B \cup C \cup D)^c = [(A - B) - C] - D.
\]