Quiz #1

Due: June 15th, 2021 by 11:59 pm (MST)

1. Consider the following four propositions:

   p : It is the weekend q : Nish has homework to do.
   r : The weather is nice s : Nish hangs out with his friends.

   (a) Convert the following English statement to logic:

   "When Nish hangs out with his friends, it is either the weekend or the weather is nice and he doesn't have homework to do."

   Acceptable answers:
   $s \rightarrow p \vee (r \wedge \neg q)$
   $s \rightarrow p \oplus (r \wedge \neg q)$
   $s \rightarrow (p \vee r) \wedge \neg q$
   $s \rightarrow (p \oplus r) \wedge \neg q$

   (b) Convert the following logical expression to conversational English: $((p \wedge \neg r) \vee (\neg p \wedge q)) \rightarrow \neg s$

   If it is the weekend but the weather is not nice nice or it is not the weekend and Nish has homework to do, then Nish does not hang out with his friends.

   (c) Create a truth table for your answer to (a).

   Example answer for $s \rightarrow p \vee (r \wedge \neg q)$:

p	q	r	s	$\neg q$	$r \wedge \neg q$	$p \vee (r \wedge \neg q)$	$s \rightarrow p \vee (r \wedge \neg q)$
T	T	T	T	F	F	T	T
T	T	T	F	F	F	T	T
T	T	F	T	F	F	T	T
T	T	F	F	F	F	T	T
T	F	T	T	T	T	T	T
T	F	T	F	T	T	T	T
T	F	F	T	T	F	T	T
T	F	F	F	T	F	T	T
F	T	T	T	F	F	F	F
F	T	T	F	F	F	F	T
F	T	F	T	F	F	F	F
F	T	F	F	F	F	F	T
F	F	T	T	T	T	T	T
F	F	T	F	T	T	T	T
F	F	F	T	T	F	F	F
F	F	F	F	T	F	F	T