

**QUIZ #1 – MATH 2200  
SPRING 2018**

1. Fill out the truth table for the compound proposition  $((p \vee q) \wedge r) \rightarrow (r \vee \neg p)$ . Make sure to show work if you want partial credit. (10 points)

$p$	$q$	$r$	$((p \vee q) \wedge r) \rightarrow (r \vee \neg p)$
<b>F</b>	<b>F</b>	<b>F</b>	<b>T</b>
<b>F</b>	<b>F</b>	<b>T</b>	<b>T</b>
<b>F</b>	<b>T</b>	<b>F</b>	<b>T</b>
<b>F</b>	<b>T</b>	<b>T</b>	<b>T</b>
<b>T</b>	<b>F</b>	<b>F</b>	<b>T</b>
<b>T</b>	<b>F</b>	<b>T</b>	<b>T</b>
<b>T</b>	<b>T</b>	<b>F</b>	<b>T</b>
<b>T</b>	<b>T</b>	<b>T</b>	<b>T</b>

2. Consider the following propositions:

$p$  : It is hot outside.

$q$  : I buy ice cream.

$r$  : It is raining.

(a) Translate the statement

I buy ice cream whenever it is both hot outside and it not is raining.

into a compound proposition using  $p, q, r$  and logical operators. (5 points)

**Solution:**  $(p \wedge \neg r) \rightarrow q$ . There are other equivalent correct formulations as well of course.

(b) Translate the compound proposition

$$q \rightarrow (\neg p \wedge r)$$

into English. (5 points)

**Solution:** If I buy ice cream, then it is both raining and not hot outside.

Of course, there are equivalent correct formulations as well.