Math 131 - Dr. Miller - Quiz #1: Statement Forms - SOLUTIONS

1. Use the variables $p = \text{Jackie likes tea}$, $q = \text{Jackie likes coffee}$, and $r = \text{Robert likes tea}$ to translate the following statements into statement form. Use $\sim$, $\land$, $\lor$, and parentheses as necessary, staying as close as possible to the ORIGINAL wording.

(a) Jackie likes tea and she likes coffee, while Robert dislikes tea.

$$p \land q \land \sim r$$

(b) It's not the case that Jackie doesn't like tea.

$$\sim (\sim p)$$

(c) Robert likes tea and either Jackie likes tea or she dislikes coffee.

$$r \land (p \lor \sim q)$$

2. Declare the variables $p = \text{Sam is a dog}$, $q = \text{Sam is a cat}$, $r = \text{Sam likes pizza}$, and $s = \text{Sam likes green eggs}$. Use these to translate the following statement forms into ordinary English sentences, staying as close as possible to the wording the forms indicate.

(a) $\sim p \land r$

Sam isn't a dog, but Sam/he/she likes pizza.

(b) $\sim (p \land r)$

It's not the case that Sam is a dog and he likes pizza (at the same time).

OR: It's not the case that Sam is a dog WHO likes pizza.

(c) $q \lor (r \land s)$

Sam isn't a cat, or else Sam likes both pizza and green eggs.