Symbolic Logic Worksheet 1 Key

1. Given   a: $y < 6$
           b: $y > 1$

Let the domain = {1, 2, 3, 4, 5, 6, 7, 8}

a) For what values of y is $a \wedge b$ true?   **y = {2, 3, 4, 5}**

b) For what values of y is $a \vee b$ true?   **y = {1, 2, 3, 4, 5, 6, 7, 8}**

2. Given   r: I am an honor student.
           s: I play football.

Write the statement represented by each of the following:

a) ~r   **I am not an honor student.**

b) $r \wedge s$ **I am an honor student and I play football.**

c) $r \wedge {\sim}s$ **I am an honor student and I do not play football.**

d) ${\sim}r \wedge s$ **I am not an honor student and I play football.**

e) $r \vee s$ **I am an honor student or I play football.**

f) $r \vee {\sim}s$ **I am an honor student or I do not play football.**

3. Create the following truth table for the statements given in problem 2.

r	s	~r	~s	$r \wedge s$	$r \wedge {\sim}s$	${\sim}r \wedge s$	$r \vee s$	$r \vee {\sim}s$
T	T	**F**	**F**	**T**	**F**	**F**	**T**	**T**
T	F	**F**	**T**	**F**	**T**	**F**	**T**	**T**
F	T	**T**	**F**	**F**	**F**	**T**	**T**	**F**
F	F	**T**	**T**	**F**	**F**	**F**	**F**	**T**