

solution

name

1. (4 pts.) Give the truth table for the following expression:  $(p \rightarrow q) \wedge (p \vee \neg q)$

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

2. (2 pts.) Consider the statement: If you study every day you will pass the course.

- a. Give the converse of this statement.

if you pass the course, you studied every day.

- b. Give the contrapositive of this statement.

If you didn't pass the course, you didn't study every day.

3. (5 pts) a. Given the two predicates,  $W(x)$  and  $J(x)$ , add quantifier(s) **as needed** to express the given statements. Assume the domain for  $W$  and  $J$  is all people.

$W(x)$ :  $x$  is a web developer

$J(x)$ :  $x$  knows Javascript

- a. Reid is a web developer.

$W(\text{Reid})$

- b. Not everyone knows Javascript.

$\neg \forall x J(x)$

- c. All web developers know Javascript.

$\forall x (W(x) \rightarrow J(x))$