

## Quiz 1

*Instructor: Sandy Irani*

1. For each statement below, indicate whether it is true or false:

- (a) If  $2 + 2 = 4$ , then January has 30 days.
- (b) If  $2 + 2 = 4$ , then January has 31 days.
- (c) If  $2 + 2 = 5$ , then January has 31 days.

2. (a) Fill in the truth table below:

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

- (b) Is it a tautology? Why or why not?
- (c) Is it a contradiction? Why or why not?

3. Consider the three propositions below:

- w: The printer is working.
- i: The printer has run out of ink.
- j: The printer has a paper jam.

Give a logical expression equivalent to the following English sentences:

- (a) If the printer has run out of ink or has a paper jam then it is not working.
- (b) The only way for the printer to not be working is for it to have run out of ink.
- (c) The printer has a paper jam, but it is still working.