

Quiz 1 - Math 374, Frank Thorne (thorne@math.sc.edu)

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(1) Write negations of the following statements:

- The processor is fast or else the printer is slow.
- Either the processor is fast and the printer is slow, or else the file is damaged.

Solutions. (Answers may vary.)

- The processor is slow and the printer is fast.
- Either the processor is slow or the printer is fast, and also the file is undamaged.

(2) Construct a truth table for the following wff. Is it a tautology or a contradiction?

$$(P \wedge Q) \leftrightarrow (Q' \vee P')$$

Solution.

P	Q	$P \wedge Q$	Q'	P'	$Q' \vee P'$	$(P \wedge Q) \leftrightarrow (Q' \vee P')$
T	T	T	F	F	F	F
T	F	F	F	T	T	F
F	T	F	T	F	T	F
F	F	F	T	T	T	F

The statement is a contradiction because it is false for all truth values of P and Q .