Solution 1

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1.1

02. Propositions: c(False) e(False)

14. a) If you have the flu, then you will miss the final examination.

b) If you do not miss the final examination you will pass the course, and you will pass the course if you do not miss the final examination.

c) If you miss the final examination, then you will not pass the course.

d) You have the flu, or you miss the final examination, or you pass the course.

e) If you have the flu then you will not pass miss the final examination, or if you miss the final examination then you will not pass the course.

f) You have the flu and you miss the final examination, or you do not miss the final examination and you pass the course.

16. a) $r \wedge \neg q$ b) $p \wedge q \wedge r$ c) $r \rightarrow q$

d) $p \wedge \neg q \wedge r$ e) $(p \wedge q) \rightarrow r$ f) $r \leftrightarrow (p \vee q)$

30. a) Converse: If I stay home, then it will snow tonight.
Contrapositive: If I do not stay hone, then it will not snow tonight.
Inverse: If it does not sonw tonight, then I will not stay home.

b) Converse: If I go to the beach, then it will be a sunny summer day.
Contrapositive: If I do not go to the beach, then it will not be a sunny summer day.
Inverse: Whenever it is not a sunny dat, I do not go to the beach.

c) Converse: If I sleep until noon, then I stayed up late.
Contrapositive: If I do not sleep until noon, then I did not stay up late.
Inverse: If I do not stay up late, then I will not sleep until noon.

32. a) $2^2 = 4$ b) $2^3 = 8$ c) $2^6 = 64$ d) $2^5 = 32$

40. The following table

p	q	r	s	p→q	(p→q)→r	((p→q)→r)→s
T	T	T	T	T	T	T
T	T	T	F	T	T	F
T	T	F	T	T	F	T
T	T	F	F	T	F	T
T	F	T	T	F	T	T
T	F	T	F	F	T	F
T	F	F	T	F	T	T
T	F	F	F	F	T	F
F	T	T	T	T	T	T
F	T	T	F	T	T	F
F	T	F	T	T	F	T
F	T	F	F	T	F	T
F	F	T	T	T	T	T
F	F	T	F	T	T	F
F	F	F	T	T	F	T
F	F	F	F	T	F	T