

Exercises 1

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1.1

- It is a true proposition.
- It is a false proposition.
- It is a true proposition.
- It is a false proposition.
- It is not a proposition.
- It is not a proposition.

1.15

- a) $p \rightarrow \neg q$ **4 rows.**
- b) $(p \vee \neg r) \wedge (q \vee \neg s)$ **16 rows.**
- c) $q \vee p \vee \neg s \vee r \vee \neg t \vee u$ **64 rows.**
- d) $(p \wedge r \wedge t) \leftrightarrow (q \wedge t)$ **16 rows.**

1.17

(a) $(p \vee q) \rightarrow (p \oplus q)$

p	q	$p \vee q$	$p \oplus q$	$(p \vee q) \rightarrow (p \oplus q)$
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p	q	r	$(p \rightarrow q)$	$(q \rightarrow r)$	$(p \rightarrow r)$	$(p \rightarrow q) \wedge (q \rightarrow r) \rightarrow (p \rightarrow r)$
F	F	F	T	T	T	T
F	F	T	T	T	T	T
F	T	F	T	F	T	T
F	T	T	T	T	T	T
T	F	F	F	T	F	T
T	F	T	F	T	T	T
T	T	F	T	F	F	T
T	T	T	T	T	T	T