

CS 275-001/002
Homework Assigned 1/11/2007, Due 1/17/2007
Assigned from the 6th edition of Rosen ☹

Page 19, #28:

Construct a truth table for each of these compound propositions:

- a. $p \rightarrow \neg p$
- b. $p \leftrightarrow \neg p$
- c. $p \oplus (p \vee q)$
- d. $(p \wedge q) \rightarrow (p \vee q)$
- e. $(q \rightarrow \neg p) \leftrightarrow (p \leftrightarrow q)$
- f. $(p \leftrightarrow q) \oplus (p \leftrightarrow \neg q)$

Page 19, #38:

Evaluate each of these expressions:

- a. $1\ 1000 \wedge (0\ 1011 \vee 1\ 1011)$
- b. $(0\ 1111 \wedge 1\ 0101) \vee 01000$
- c. $(0\ 1010 \oplus 1\ 1011) \oplus 0\ 1000$
- d. $(1\ 1011 \vee 0\ 1010) \wedge (1\ 0001 \vee 1\ 1011)$

Page 28, #4:

Use truth tables to verify the associativity laws

- a. $(p \vee q) \vee r \equiv p \vee (q \vee r)$
- b. $(p \wedge q) \wedge r \equiv p \wedge (q \wedge r)$

Page 28, #10:

Show that each of these conditional statements is a tautology by using truth tables.

- a. $[\neg p \wedge (p \vee q)] \rightarrow q$
- b. $[(p \rightarrow q) \wedge (q \rightarrow r)] \rightarrow (p \rightarrow r)$
- c. $[p \wedge (p \rightarrow q)] \rightarrow q$
- d. $[(p \vee q) \wedge (p \rightarrow r) \wedge (q \rightarrow r)] \rightarrow r$