

MATH 1090.03E

Winter 2000

Date: Jan. 11, 2000

Due: Jan. 21, 2000—**At the beginning of class**

Problem Set No. 1



NOTE. BE-operator precedences must be **as given in class**. In particular, all associativities are **right**.



- (*Warm-up*) Do the following problems from the text, Chapter 2.

2.1(h, i, j, m), 2.2(h), 2.8.

- (*More fun*) **2.10.**

- Also express the following Boolean function $f(p, q, r)$ in

(1) *Conjunctive Normal Form*, and

(2) *Disjunctive Normal Form*.

p	q	r	$f(p, q, r)$
T	T	T	F
T	T	F	F
T	F	T	T
T	F	F	F
F	T	T	F
F	T	F	T
F	F	T	T
F	F	F	F

- (*Even more fun*) We defined in class, by induction on formulas (WFF), the meaning of

(1) “ $A[p := B]$ ”, where A and B are formulas, and p a propositional variable, and also

(2) “ p occurs/does not occur in A ”.

Review the above concepts and prove by induction on formulas, that “If p does **not** occur in formula A , and if B is **any** formula, then $A[p := B]$ and A are identical strings.”