

MATH 1090.03D

Fall 2000

Date: Oct. 2, 2000

Due: Oct. 16, 2000—►In class—NO papers will be accepted after 11:45am◄



Do not forget the Term Test on October 11th, in class (CLH G), 11:30am-12:50pm.



Problem Set No. 2—On Chapter 3 of “GS”.



**NOTE.** When the book asks you to “prove valid”—or “prove the validity” of—a formula, it wants you to prove that said formula is a *tautology*.

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

Axiom (schemata) and rules of inference are **exactly those given in class**†. In particular, we have **no “Substitution Rule of Inference”** (those who attend classes will know that the preceding comment does not contradict the fact that we express “Leibniz” via the substitution *operation*).

*Please write and annotate your proofs in the equational style of the text.*



- Do the following problems from the text, Chapter 3.

3.2, 3.9, 3.14, 3.18, 3.20, 3.22, 3.25, 3.28, 3.29, 3.34, 3.39

*Hint.* Ignore the hints!

- Something I promised in Chapter 0 (that I will assign):

**Prove by induction on  $A$** , that every formula  $A$  starts with one of

- (1) Variable
- (2) Constant
- (3) A left bracket.

*Supplementary question.* In your induction, did you actually use the Induction Hypothesis?

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† You will recall that we have made a number of small changes to the text’s exposition in Chapter 3.