

## MATH 1090.03

Winter 2000

Date: March 2, 2000

Due: March 13, 2000—at the beginning of class

### Problem Set No. 5 (There will be one more problem set after this one.)

In the following problems you **are expected** to use the Deduction Theorem and the “Chapter 4 style” to your full advantage. You can, of course, always include fragments of Equational Reasoning whenever appropriate or convenient.



Remember that the **Axioms and Rules** for Predicate Calculus are those from my Tech. Report/class notes; **NOT** the ones in the text!



You should remember (and use if/when appropriate) the following fact from class:  
To prove  $\Gamma \vdash A \equiv B$  you can do so by proving **two** things:  $\Gamma \vdash A \Rightarrow B$  and  $\Gamma \vdash B \Rightarrow A$ .

► Do the following problems from the text, Chapter 9 **in the style suggested above**.

- Problems 9.1–9.3.
- Also prove that if  $A$  contains no free  $x$ , then  $\vdash A \equiv (\exists x)A$ .