

MAT 141
ASSIGNMENT 1

DUE SEPT 6, 2005

- (1) Prove Theorems I.6, I.11 in Section I 3.2. You can use Axioms 1 through 6 and Theorems I.1 through I.4.
- (2) Exercises I 3.3 #3, #4.
- (3) Prove Theorems I.22, I.23 in Section I 3.3. You can use Axioms 1 through 9 and all previous theorems.
- (4) Exercises I 3.5 #2, #3, #4
- * (5) Consider the set A consisting of all numbers of the form $a + b\sqrt{2}$, $a, b \in \mathbb{Q}$. Show that this set, with natural operations of addition and multiplication, satisfies Axioms 1 through 6. [Hint: to find an inverse of $a + b\sqrt{2}$, multiply it by $a - b\sqrt{2}$.]