ALGEBRA 1
HOMEWORK ASSIGNMENT VIII

(Turn in underlined problems.)

Read Sections 8.1-8.3, 9.1-9.4.

SECTION	**PROBLEMS**
7.1	**5, 7, 10, 14, 28**
7.2	**4, 7, 12, 13**
7.3	**2, 5, 10, 13, 26**
7.4	**8, 13, 30**
7.6	**<u>1</u>, 3**
8.1	**8, <u>10</u>**
8.2	**5, <u>6</u>, 7**
8.3	**4, 11**

ADDITIONAL PROBLEMS

Challenge Problem! (Prize = 1 foreign coin.)

Jacobson's Theorem asserts that any ring that satisfies an identity of the form $x^n = x$, for some fixed $n > 1$, is commutative. The proof uses the axiom of choice. Prove a special case of Jacobson's Theorem by showing that any ring satisfying $x^4 = x$ is commutative, but do not use the axiom of choice. Just deduce $xy = yx$ directly from $x^4 = x$ and the identities defining rings.