MATH 457 Review

by

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Note. These notes are quite rough and skip over a lot of details. Where proofs are included, usually only the general idea is given.

Definition. A *ring* R is a set with operations $+$ and $\cdot$ such that

i) $(R, +)$ is an abelian group;

ii) $(R, \cdot)$ is a semigroup;

iii) $\cdot$ distributes over $+$ on both sides:

$$a \cdot (b + c) = a \cdot b + a \cdot c \quad \text{and} \quad (a + b) \cdot c = a \cdot c + b \cdot c$$