Ring Theory

Daniel Mao

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Chapter 1

Formal Power Series

1.1 Definition

Definition (The Ring of Formal Power Series)**.** *Let R be a commutative ring. We define the **ring of formal power series** in variable X over R, denoted by $R[[X]]$, to be the ring of the set of all formal power series, equipped with some ring structure.*

Definition (Ring Structure of the Formal Power Series Ring)**.** • *Addition:*