Algebra 1
Exercise sheet 3

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Exercise 1.

1. So $\{f_n\}_n \in A[[T]]$ is a sequence of elements such that $f_n \in (T)^n$. Then we can define $f = \sum_{n=0}^{\infty} f_n$, because every coefficient will have only finitely many summands. Then we have $f - \sum_{k=0}^{n} f_k \in (T)^{n+1}$ by the definition of f. Also, if there would be $g \in A[[T]]$ which is not equal to f at the coefficient at degree m, then $g - \sum_{k=0}^{m} f_k \notin (T)^{n+1}$.

2. Suppose A is noetherian.