Assignment 11, due 21 September. Let $T : V \rightarrow V$ be a linear transformation on a finite dimensional $F$-vector space $V$. Let $I : V \rightarrow V$ be the identity linear transformation. Also, for a positive integer $m$, let $T^m$ be the composition of $T$ with itself $m$ times. Prove that $T$ is “algebraic” over $F$; that is, prove that there are $a_1, \ldots, a_n \in F$, not all 0, with $a_0 I + a_1 T + \cdots + a_n T^n = 0$. 