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Ton Boerkoel* (aboerkoel@digipen.edu), 2241 Prescott Ave SW, Seattle, WA 98126. *Advanced uses of the TI-Nspire in a Linear Algebra Course.*

In Linear Algebra we discuss vector spaces over general fields, not just the real or complex numbers. But when it comes to examples, homework problems and tests, the fields \mathbb{R} and \mathbb{C} are used almost exclusively. In this talk I will discuss a suite of programs I have written for the TI-Nspire calculator to do Linear Algebra over the finite fields \mathbb{F}_2 , \mathbb{F}_4 and \mathbb{F}_7 , the fields of 2, 4 and 7 elements. It allows us to work in vector spaces such as \mathbb{F}_4^n , $M_{n \times m}(\mathbb{F}_7)$ and the polynomial spaces $P_n(\mathbb{F}_4)$, to explore these spaces just as we do over \mathbb{R} and \mathbb{C} , using row reduction, solving systems of equations, finding determinants, inverse matrices, change of basis matrices, eigenvectors, diagonalization and LU decomposition etc. I have provided these programs to my students in my Linear Algebra classes the last five years to give them the experience to work in vector spaces beyond \mathbb{R} and \mathbb{C} , and see how they compare and differ, and to work homework problems and test problems over \mathbb{F}_2 , \mathbb{F}_4 , \mathbb{F}_7 , as well as \mathbb{R} and \mathbb{C} . (Received September 25, 2018)