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David A. Huckaby* (david.huckaby@angelo.edu), Angelo State University, Department of Mathematics, ASU Station #10900, San Angelo, TX 76909. *Two (or Three) Maple Visualizations for a Linear Algebra Course: Decomposing Vectors into Components.*

We will present two or three Maple worksheets for use in a linear algebra course. The focus will be on illustrating the decomposition of vectors into components, allowing students to more deeply understand linear transformations and matrix decompositions. We first visualize, for an $m \times n$ matrix A , the decomposition of a vector in \mathbb{R}^n into its components in the row space of A and the null space of A , and the decomposition of a vector in \mathbb{R}^m into its components in the column space and null space of A^T (thus painting an insightful portrait of A that Gilbert Strang emphasizes). Next we illustrate, for a symmetric matrix A , the product Ax after $A = PDP^T$ has been diagonalized, thus driving home what PDP^T really is. Time permitting, we will do the same with the singular value decomposition. The presenter was provided motivation, inspiration, and lots of ideas by participating in an MAA PREP workshop this past summer. (Received September 28, 2005)