

Unit 2: Least squares and determinants

Each component of a vector in $\mathbb{R}^n$ indicates a distance along one of the coordinate axes. This practice of dissecting a vector into directional components is an important one. In particular, it leads to the “least squares” method of fitting curves to collections of data. This unit also introduces matrix *eigenvalues* and *eigenvectors*. Many calculations become simpler when working with a basis of eigenvectors.

The *determinant* of a matrix is a number characterizing that matrix. This value is useful for determining whether a matrix is singular, computing its inverse, and more.