Positive Definite Matrices

1 Why

2 Definition

A matrix A is *positive definite* if all its quadratic forms are positive.

2.1 Notation

Let $A \in \mathbf{R}^{n \times n}$. A is positive definite if for every $x \in \mathbf{R}^d$,

$$x^T A x > 0.$$

We denote the set of real-valued positive definite d by d matrices by $\mathbf{S}^d_{++}$.