

## Positive Definite Matrices

## 1 Why

## 2 Definition

A matrix A is positive definite if all quadratic forms with the same vector on each side are positive.

## 2.1 Notation

Let  $A \in \mathbb{R}^{d \times d}$ . A is positive definite if for every  $x \in \mathbb{R}^d$ ,  $x^T A x > 0$ . We denote the set of real-valued positive definite d by d matrices by  $\mathbf{S}^d_{++}$ .