Why

1

Definition

The *quadratic form* of a square matrix A with a vector x is the value $x^\top Ax$.

Notation

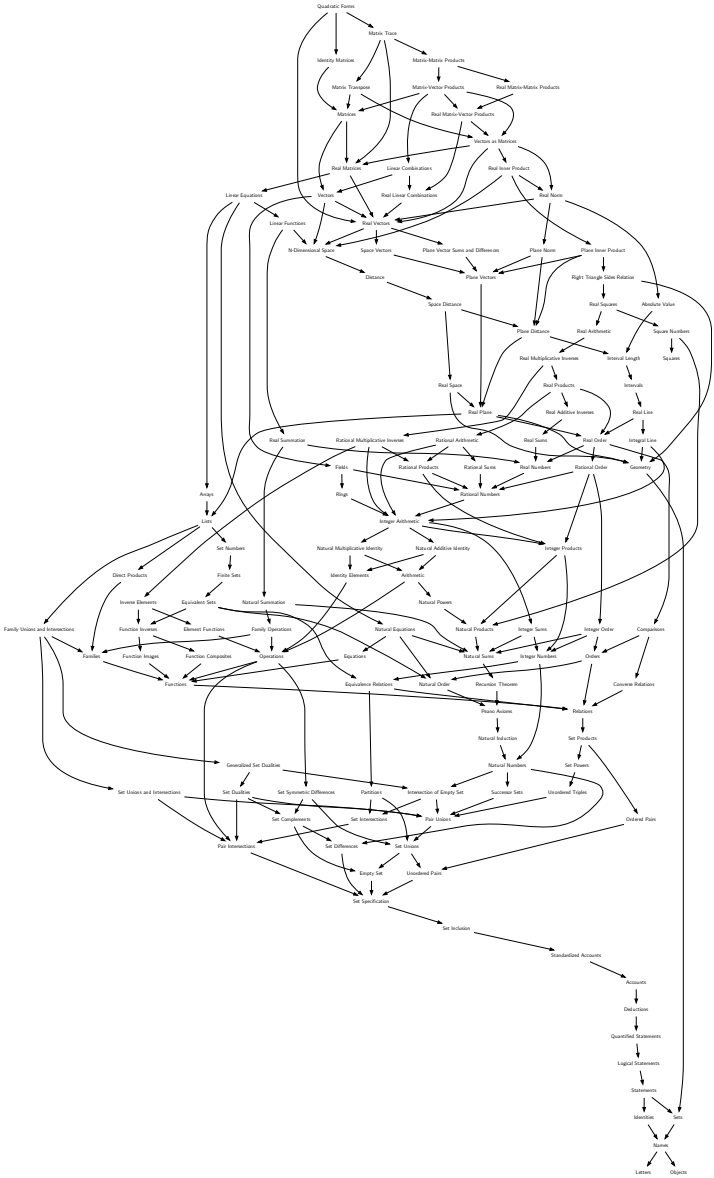
Let $\mathbf{F}$ be a field and $A \in \mathbf{F}^{m\times m}$. For a vector $x \in \mathbf{R}^d$, A quadratic for in A Let $x \in \mathbf{R}^d$. Then $x^T Ax$ is a quadratic form.

$$x^\top Ax = \sum_{i,j} A_{ij} x_i x_j$$

Under trace

Observe that $\operatorname{tr} x^\top Ax = \operatorname{tr} Axx^\top = \operatorname{tr} xx^\top A$.

[1] Future editions will include.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Matrix Trace
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Successor Sets
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