



REAL VECTORS

Why

A point in \mathbf{R}^n is also called a vector in \mathbf{R}^n , since \mathbf{R}^n with the usual operations of element-wise addition and element-wise scalar multiplication is a vector space.

Result

For $x, y \in \mathbf{R}^n$, define $x + y$ by

$$(x_1 + y_1, \dots, x_n + y_n)$$

and for $\alpha \in \mathbf{R}$, define $\alpha \cdot x$

$$(\alpha x_1, \dots, \alpha x_n).$$

Proposition 1. \mathbf{R}^n is a vector space of dimension n over \mathbf{R} with $+$ and \cdot .

For this reason, we call elements of \mathbf{R}^n (*real*) *vectors*.

