



Definition

A function $f : \mathbf{R}^n \rightarrow \mathbf{R}$ is *linear* if

1. $f(x + y) = f(x) + f(y)$ for all $x, y \in \mathbf{R}^n$ and
2. $f(\alpha x) = \alpha f(x)$ for all $x \in \mathbf{R}^n$ and $\alpha \in \mathbf{R}$.

There are simple consequences to these conditions. For example, $f(0) = 0$.

