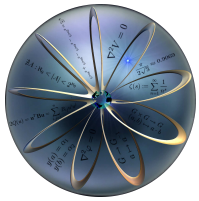

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weighted homogeneous polynomial

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Let $\mathbb{F}$ be either the real or complex numbers.

Definition. Let $p\colon \mathbb{F}^n \to \mathbb{F}$ be a polynomial in n variables and take integers $d_1, d_2, \ldots, d_n$. The polynomial p is said to be *weighted homogeneous of degree* k if for all $t > 0$ we have

$$p(t^{d_1}x_1, t^{d_2}x_2, \ldots, t^{d_n}x_n) = t^k p(x_1, x_2, \ldots, x_n).$$

The $d_1, \ldots, d_n$ are called the *weights* of the variables $x_1, \ldots, x_n$.

Note that if $d_1 = d_2 = \ldots = d_n = 1$ then this definition is the standard homogeneous polynomial.