Linear function

A function is called *linear* if it consists of a sum of multiples of the variables themselves, possibly plus a constant. For example, $f(x) = 3x - 2$, $f(x, y) = 2x + 3y - \frac{1}{2}$ and $f(x) = 4$ are all linear functions, but $f(x) = x^2 + x + 1$, $f(x) = \frac{1}{x}$ and $f(x, y) = xy$ are all non-linear.

A linear function $f(x)$ of one variable can be represented by the straight-line graph $y = f(x)$ (hence the name "linear"), and a linear function $f(x, y)$ of two variables can be represented by the two-dimensional plane $z = f(x, y)$ in three-dimensional space.

See also linear operator for a subtly different use of the term "linear".