§9

The domain of $f:\mathbb{R}^n \to \mathbb{R}$ are those $p \in \mathbb{R}^n$ for which $f(p)$ makes sense.

The graph of $f:\mathbb{R} \to \mathbb{R}$ are those $(x,y) \in \mathbb{R}^2$ such that $f(x) = y$.

The graph of $g:\mathbb{R}^2 \to \mathbb{R}$ are those (x,y,z) such that $g(x,y) = z$.

To draw the graph of $g:\mathbb{R}^2 \to \mathbb{R}$, begin by drawing the $x = \text{const.}$, $y = \text{const.}$, and $z = \text{const.}$ cross sections.

A level curve for $f:\mathbb{R}^2 \to \mathbb{R}$ is a sketch in $\mathbb{R}^2$ of the solutions of $f(x,y) = \text{const.}$

A contour map for $f:\mathbb{R}^2 \to \mathbb{R}$ are several level curves for f drawn on the same xy-axes.

A level surface for $g:\mathbb{R}^3 \to \mathbb{R}$ is a sketch in $\mathbb{R}^3$ of the solutions of $g(x,y,z) = \text{const.}$