

Simple function, inline version:, no variable declaration  $f : \mathbb{R} \rightarrow \mathbb{R}$ .  
 Simple function, inline version:, variable declaration  $f : \mathbb{R} \rightarrow \mathbb{R}, x \mapsto f(x)$ .  
 Simple function:

$$\begin{aligned} f &: \mathbb{R} \rightarrow \mathbb{R} \\ x &\mapsto f(x) \end{aligned}$$

Simple function with declaration:

$$\begin{aligned} f &: \mathbb{R} \rightarrow \mathbb{R} \\ x &\mapsto f(x) := x^2 \end{aligned}$$

Function with alternative writing:

$$\begin{aligned} \exp &: \mathbb{R} \rightarrow \mathbb{R} \\ x &\mapsto e^x \end{aligned}$$

Function with alternative writing and declaration:

$$\begin{aligned} \exp &: \mathbb{R} \rightarrow \mathbb{R} \\ x &\mapsto e^x := \lim_{n \rightarrow \infty} \left(1 + \frac{x}{n}\right)^n \\ \exp &: \mathbb{R} \rightarrow \mathbb{R} \\ x &\mapsto e^x := \lim_{n \rightarrow \infty} \left(1 + \frac{x}{n}\right)^n \end{aligned}$$

Function with different domain and codomain:

$$\begin{aligned} \text{sqrt} &: \mathbb{N} \rightarrow \mathbb{R} \\ n &\mapsto \text{sqrt}(n) \end{aligned}$$

Function with different domain and codomain, and alternative writing:

$$\begin{aligned} \text{sqrt} &: \mathbb{N} \rightarrow \mathbb{R} \\ n &\mapsto \sqrt{n} \end{aligned}$$

Function with different domain and codomain, alternative writing and declaration:

$$\begin{aligned} \text{sqrt} &: \mathbb{N} \rightarrow \mathbb{R} \\ n &\mapsto \sqrt{n} := \exp\left(\frac{1}{2} \ln n\right) \\ + &: \mathbb{R} \times \mathbb{R} \rightarrow \mathbb{R} \\ (x, y) &\mapsto x + y \\ \cdot &: \mathbb{R}^2 \times \mathbb{R}^2 \rightarrow \mathbb{R} \\ (\mathbf{x}, \mathbf{y}) &\mapsto \mathbf{x} \cdot \mathbf{y} \\ \text{abs} &: \mathbb{R}^2 \rightarrow \mathbb{R}^+ \\ \mathbf{x} &\mapsto \text{abs } \mathbf{x} \\ \text{jaja} &: \mathbb{R} \times \mathbb{R} \rightarrow \mathbb{R}^+ \\ (x, y) &\mapsto \text{jaja}(x, y) \end{aligned}$$