Simple function:
$$f : \mathbf{R} \to \mathbf{R}$$
$$x \mapsto f(x)$$

Simple function with declaration:

$$f : \mathbf{R} \to \mathbf{R}$$
$$x \mapsto f(x) := x^2$$

Function with alternative writing:

$$\exp : \mathbf{R} \to \mathbf{R}$$
$$x \mapsto e^x$$

Function with alternative writing and declaration:

$$\exp : \mathbf{R} \to \mathbf{R}$$
$$x \mapsto e^x := \lim_{n \to \infty} \left(1 + \tfrac{x}{n}\right)^n$$

Function with different domain and codomain:

$$\mathrm{sqrt} : \mathbf{N} \to \mathbf{R}$$
$$n \mapsto \mathrm{sqrt}(n)$$

Function with different domain and codomain, and alternative writing:

$$\mathrm{sqrt} : \mathbf{N} \to \mathbf{R}$$
$$n \mapsto \sqrt{n}$$

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

$$\mathrm{sqrt} : \mathbf{N} \to \mathbf{R}$$
$$n \mapsto \sqrt{n} := \exp(\tfrac{1}{2} \ln n)$$

$$f : A \to B$$
$$a \mapsto f(a)$$

$$f : A \times B \to C$$
$$(a, b) \mapsto f(a, b)$$

$$f : A \times B \to C$$
$$a, b \mapsto f(a, b)$$

$$f : A \times B \to C$$
$$(a, b) \mapsto f((a, b))$$

$$\times : A \times A \to A$$
$$(a, b) \mapsto a \times b$$

$$\times : A \times A \to A$$
$$(a, b) \mapsto \times((a, b))$$