#### Example: Functions

Let A ∶= {1, 2, 3} and B ∶= {4, 5, 6}. We can define a function f(1) ∶= 4f : A → Bf(2) ∶= 5 by explic-f(3)

itly defining the function value for each argument, e.g., , and

3}∶= 6. However, this only makes sense for sets with few elements. Usually, therefore, af f(x) ∶= x + 3 x ∈ {1, 2,f : ℝ

function is more likely to be defined by specifying a calculation or assignment rule. We could define the previous function for example as for

We can define the square of real numbers as a power of two function as follows:

A very important function is the identity map or identity function . A

5.4. constdefined as This is defined asAnother popular example of a function is the square root function (or root function) 7(3) =const 7 and c : A → Aconst7(32) = with const7. c(x) ∶= c. With A ∶= ℝ and c ∶= 7, for example,c ∈ A . with :ℝ ℝ

With this definition, for examplex

and | : ℝ → ℝ+ 49 = 7 | value function measures

6. Another important function is the absolute value function (or modulus) . This is Absolute value function

|5| = 5∥ |− 32, 4| = 32, 4x : = x : = −x, ifxx, ifx < 0|0| = 0≥ 0 from zero on the number defined as with Put simply, the absolute

the distance a number is

line.

For example, , and .

In order to illustrate function or their values, graphs can be used.