Functions

Paolo Bettelini

Contents

1 Surjectivity

A function $f : D_f \to I_f$ is said to be **surjective** if

$$\forall y \in I_f, \exists x \in D_f | f(x) = y$$

2 Injectivity

A function $f : D_f \to I_f$ is said to be **injective** if

$$\forall x_1, x_2 \in D_f, f(x_1) = f(x_2) \Rightarrow x_1 = x_2$$

3 Bijectivity

A function is said to be **bijective** iff it's both injective and surjective.

4 Continuity

A function f is continuous at a point c iff

$$\lim_{c_0 \to c^+} f(c_0) = \lim_{c_0 \to c^-} f(c_0) = f(c)$$

A function f is continuous on an interval $[a; b]$ iff it is continuous at each point $c \in [a; b]$

$$\forall c \in [a; b], \lim_{c_0 \to c^+} f(c_0) = \lim_{c_0 \to c^-} f(c_0) = f(c)$$

5 Periodic functions

A function f is periodic with a period T iff

$$f(x) = f(x + kT), \quad k \in \mathbb{Z}$$

6 Odd functions

A function f is odd iff

$$f(-x) = -f(x)$$

7 Even functions

A function f is even iff

$$f(-x) = f(x)$$