iteration

Canonical name	Iteration
Date of creation	2013-03-22 12:43:40
Last modified on	2013-03-22 12:43:40
Owner	mathwizard (128)
Last modified by	mathwizard (128)
Numerical id	9
Author	mathwizard (128)
Entry type	Definition
Classification	msc 26A18
Synonym	iterate

Let $f\colon X \to X$ be a function, X being any set. The n-th iteration of a function is the function which is obtained if f is applied n times, and is denoted by f^n. More formally we define:

$$f^0(x) = x$$

and

$$f^{n+1}(x) = f(f^n(x))$$

for nonnegative integers n. If f is invertible, then by going backwards we can define the iterate also for negative n.