

The logistic function and its inverse

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe the logistic function and its inverse.
The paper ends with "The End"

Introduction

In this paper, I describe the logistic function and its inverse.

The logistic function

The logistic function is

$$f(S, g, x_0, x) = \frac{S}{1 + e^{-g(x-x_0)}}$$

where

S is the supremum of the function

g is the logistic growth rate

x_0 is the x co-ordinate of the midpoint of the function

The inverse of the logistic function

For

$$(0 < x < S) \vee (S < x < 0)$$

the inverse of the logistic function is

$$f^{-1}(S, g, x_0, x) = x_0 + \frac{\log\left(\frac{x}{S-x}\right)}{g}$$

The End