



Barycentric interpolation at equidistant nodes[†]

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Abstract

Convergence-divergence properties of a barycentric operator are considered.

Keywords: barycentric, interpolation, modulus of continuity, direct and converse error estimate.

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§1. Introduction

Let $f(x) \in C[-1, 1]$ (= the set of continuous functions on the interval $[-1, 1]$), $-1 = x_{0n} < x_{1n} < \dots < x_{nn} = 1$ a set of nodes, and consider the linear operator

$$B_n(f, x) := \frac{\sum_{k=0}^n \frac{(-1)^k}{x - x_{kn}} f(x_{kn})}{\sum_{k=0}^n \frac{(-1)^k}{x - x_{kn}}}. \quad (1.1)$$

This is a rational function of degree at most n , interpolating the function at $n + 1$ points:

$$B_n(f, x_{kn}) = f(x_{kn}), \quad k = 0, \dots, n.$$

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