To solve a nonlinear differential equation, the authors apply the finite element method and use polynomials of the kind

$$\phi_i(x) = \prod_{k=1, k \neq i}^{r+1} \frac{(x - x_k)}{(x_i - x_k)}, \quad i = 1, \ldots, r+1, \ x \in [0, h], \ x_i = (i-1)/h$$

as basis functions. Besides, numerical results of the solution of the first boundary value problem for a second-order differential equation are given.

Reviewer: V. Makarov (Kyïv)

MSC:
- 65L10 Numerical solution of boundary value problems involving ordinary differential equations
- 65L60 Finite element, Rayleigh-Ritz, Galerkin and collocation methods for ordinary differential equations
- 34B15 Nonlinear boundary value problems for ordinary differential equations

Keywords:
- Chebyshev finite element method; numerical results; first boundary value problem

Full Text: DOI

References:
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