

Spline Functions. 2012

1. Theorem: powers and truncated cubic powers form a basis in the space of cubic splines.
2. Diagonally dominant matrix is nonsingular.
3. **Representation of Hermitian spline through its values and derivatives.**
4. Necessary and sufficient condition for Hermitian spline to be C^2 spline.
5. Existence and uniqueness of interpolationary spline with boundary conditions of the 1st type.
6. Existence and uniqueness of interpolationary spline with boundary conditions of the 3rd type.
7. **Uniform approximation of continuous function by interpolationary splines.**
8. Uniform approximation of a function from W_{∞}^1 by interpolationary splines.
9. **Local properties of interpolationary splines.**
10. Representation of divided difference as a linear combination.
11. **Difference between $g(x)$ and Lagrange polynomial. Representation of divided difference via derivative of higher order.**
12. Two representations of basic splines.
13. **Recurrence relation for basic splines.**
14. Theorem about the support of basic splines.
15. **Integral of basic spline.**
16. **Lemma: spline cannot jump through n intervals.**
17. **Basic splines form a basis in the space of splines.**
18. Basic splines are ones with minimal support.
19. **Expansion of a power function via normalized B-splines.**
20. Existence and uniqueness of interpolationary spline with 2nd boundary conditions.
21. **Schoenberg's Theorem.**
22. **Theorem about smoothing spline as a minimum point.**
23. Choice of weights for a smoothing spline.
24. Statistical procedures in spline regression model: confidence interval and confidence strip.
25. Test of structural change in spline regression model.