

Assignment 2 Interpolation

1. When do we use Lagrange's interpolation?
2. Can we use Divided Difference and Lagrange's with equally spaced data?
3. When do we use forward difference interpolation?
4. State the backward difference interpolation.
5. Explain Cubic Spline Interpolation.
6. What do you understand by extrapolation?
7. Evaluate the values of $f(0.4)$ using Lagrange's interpolation formula for the table of values given below.

x	0.3	0.5	0.6
f(x)	0.61	0.69	0.72

8. Evaluate the values of $f(2)$ using Newton's Divided Difference interpolation formula for the table of values given below.

x	-1	0	3	6	7
f(x)	3	-6	39	822	1611

9. Which interpolation method is best suited for the following data? Compute the value of $f(0.5)$ by using suitable interpolation on the following table of data.

x	0	1	2	3	4
f(x)	1	4	16	64	256

10. Which interpolation method is best suited for the following data? Compute the value of $f(7.5)$ by using suitable interpolation on the following table of data.

x	3	4	5	6	7	8
f(x)	28	65	126	217	344	513

11. Calculate Cubic Splines. Then find: $y(0.5)$

x	0	1	2
f(x)	10	20	30

Solution

7. 0.65

8. 6

9. Forward difference -0.10156

10. Backward difference 422.875

11. 15