SRM Institute of Science and Technology

Department of Mathematics

21MAB206T- Numerical Methods and Analysis

UNIT –II Tutorial Sheet-3

Part-A

1. Find the forward difference table for the following data.

x	45	50	55	60	65
y	114.84	96.16	83.32	74.48	68.48

2. Find a polynomial of degree 4 which takes the values

x	2	4	6	8	10
y	0	0	1	0	0

3. Find the divided difference for the following table:

x	4	5	7	10	11	13
y	48	100	294	900	1210	2028

4. State and prove any two properties of divided differences.

Part - B

5. From the following data, find θ *at* $x = 43, x = 84.$ (**Ans : 189.79, 286.96**)

x	40	50	60	70	80	90
θ	184	204	226	250	276	304

6. From the table given below, find sin 52° by using Newton's forward interpolation formula. (**Ans : 0.7880032**)

x	45	50	55	60
y=sinx	0.7071	0.7660	0.8192	0.8660

7. Using Newton's backward formula, find the polynomial of degree 3 passing through (3,0), (4,24), (5,60) and (6,120) . ($y = x^3 - 3x^2 + 2x$)

8. Construct a polynomial for the data by Newton's forward difference formula for the data: (**Ans:** $\frac{1}{8}(3x^2 - 22x + 48)$).

x	4	6	8	10
y	1	3	8	16