Subject Section 7 موضوع الدرس | Date التاريخ

④

X	-1	2	4
y	3	7	5

Find y at x = 0 by using Newton-divided diff. Method.

① linear

sol. $y = b_0 + b_1(x - x_0) \rightarrow y = 3 + \frac{4}{3}(x+1)$

$y(0) = 3 + \frac{4}{3} = \frac{13}{3}$

	b_0	b_1	b_2
-1	③	$\frac{4}{3}$	$\frac{-7}{15}$
2	7	-1	
4	5		

② Quadratic interpolation

$y(0) = \frac{79}{15}$

$y = b_0 + b_1(x - x_0) + b_2(x - x_0)(x - x_1)$

$= 3 + \frac{4}{3}(x+1) - \frac{7}{15}(x+1)(x-2)$

$\epsilon_a = 17.72\ \%$

②

x	-1	1	3	5
y	3	6	4	-3

Find y at x=0 by using Newton divided difference Method

sol.

① linear

$y = b_0 + b_1(x - x_0)$

$y = 3 + \frac{3}{2}(x+1) \rightarrow y(0) = \frac{9}{2}$

-1	③	$\frac{3}{2}$	$\frac{-5}{8}$
1	6	-1	$\frac{-5}{8}$
3	4	$\frac{-7}{2}$	
5	-3		

② Quadratic

$y = b_0 + b_1(x - x_0) + b_2(x - x_0)(x - x_1)$

$y = 3 + \frac{3}{2}(x+1) - \frac{5}{8}(x+1)(x-1) = \frac{41}{8}$

$\epsilon_a = 12.19\ \%$

محمد و أميرة

Sheet

* Compute F(1.5) for the data using newton-divided difference method

x	0	1	3	4
y	1	3	49	129