**********NEWTON'S FORWARD INTERPOLATION **********

PROBLEM NO:03 **DATE:09/03/2023**

ROLL NO:1120

STATEMENT OF THE PROBLEM:

Solve the following interpolation problem.Find f(x) for x=0.20+(R+1)/100 using Newton Gregory Forward interpolation formula.

x	f(x)	x	f(x)
0.20	1.5651272616	0.95	1.7819658019
0.35	1.6062738825	1.10	1.8288130283
0.50	1.6485022329	1.25	1.8768918511
0.65	1.6918407511	1.40	1.9262346485
0.80	1.7363186230	1.55	1.9768746499

in which R denotes last digit of your Roll Number.

WORKING RULE: NEWTON'S FORWARD INTERPOLATION FORMULA

If y=f(x) is known for (n+1) equally spaced arguments $x_i = x_0 + ih$ (i=0,1,2,3..,n) and $y_i$be the corresponding entries then the Newton's Forward Interpolation Formula with x_0 as the starting point and $u = \frac{x-x_0}{h}$ is

$$f(x) \approx f(x_0) + \binom{u}{1} \Delta f(x_0) + \binom{u}{2} \Delta^2 f(x_0) + \binom{u}{3} \Delta^3 f(x_0) + \dots + \binom{u}{n} \Delta^n f(x_0).$$

RESULTS:

SIGNATURE OF THE TEACHER

********** **NEWTON'S BACKWARD INTERPOLATION**********

PROBLEM NO:04 **DATE: 16/03/2023**

ROLL NO:1120

STATEMENT OF THE PROBLEM:

Solve the following interpolation problem. Find f(x) for x=1.40+(R+1)/100

Newton's Backward interpolation formula.

x	f(x)	x	f(x)
0.20	1.3831084535	0.95	1.7464470528
0.35	1.4491591166	1.10	1.8298490344
0.50	1.5183640443	1.25	1.9172338970
0.65	1.5908738693	1.40	2.0087918438
0.80	1.6668464178	1.55	2.1047221614

in which R denotes last digit of your Roll Number.

WORKING RULE: NEWTON'S BACKWARD INTERPOLATION FORMULA

If y=f(x) is known for (n+1) equally spaced arguments $x_i = x_0 + ih$ (i=0,1,2,3..,n) and y_i be the corresponding entries then the Newton's Backward Interpolation Formula with x_n as

the starting point and $u = \frac{x-x_n}{h}$ is

$$f(x) \approx f(x_n) + \binom{u}{1}\Delta f(x_{n-1}) + \binom{u+1}{2}\Delta^2 f(x_{n-2}) + \binom{u+2}{3}\Delta^3 f(x_{n-3}) + .. + \binom{u+n-1}{n}\Delta^n f(x_0).$$

RESULTS:

SIGNATURE OF THE TEACHER