WEEK 1

NEWTONS FORWARD INTERPOLATION

1. Find $y(1.4)$

x	1	2	3	4	5
y	10	26	58	112	194

2. The following supply schedule gives the quantities supplied (S) in hundreds of a product at prices (P) in rupees.

P	80	90	100	110	120
S	25	30	42	50	68

Interpolate using forward differences, the quantity of product supplied at the price of 85 rupees.

3. The current through an inductor at different instants of time is given as follows:

t(sec)	0	2	4	6	8	10
i(mA)	0	1.65	2.75	3.49	3.99	4.32

Find the current through the inductor at time 3s

NEWTONS BACKWARD INTERPOLATION

1. The table gives the distances, in nautical miles, of the visible horizon for the given heights in feet above the earth's surface as

x(Height)	100	150	200	250	300	350	400
y(dist)	10.63	13.03	15.04	16.81	18.42	19.90	21.27

Find the value of y when $x = 410$ feet.

2. The voltage across a capacitor at different instances of time is given as follows

t(sec)	0	2	4	6	8	10
Volt	0	2.203	3.192	3.657	3.857	3.927

Find vtg across the capacitor at time 7s

WEEK 2

TRAPEZOIDAL RULE:

1. $\int_0^6 \frac{1}{1+x^2}\,dx \quad n = 6$

2. $\int_{0.1}^{0.85} \log(\sin x)\,dx \quad n = 6$

3. $\int_0^2 x\cos(x^2)\,dx \quad n = 30$

LAGRANGES INTERPOLATION

1. Use legranges Interpolation formula to find f(4), given

x	0	2	3	6
$f(x)$	-4	2	14	158

2. Find the value of $f(x)$ at $x = 5$

x	1	3	4	6
$f(x)$	3	9	30	132

3. Find y at $x = 10$ given

x :	5	6	9	11
y :	12	13	14	16

WEEK 3

SIMPSONS 1/3rd RULE

1. Find $\int_0^6 \frac{1}{x^2+1}\,dx$

2. Find $\int_0^{0.6} e^{-x}\,dx$ by taking 7 ordinates

3. Find $\int_0^1 \sqrt{\sin x + \cos x}\,dx$, $n = 6$

SIMPSONS 3/8th RULE

Find

1. $y = \int_0^6 \frac{1}{1+x^2}\,dx$

2. $\int_0^{0.3} (1 - 8x^3)^{1/2}\,dx$

3. $\int_{0.1}^{1.4} (\sin x - \log x + e^x)\,dx$