

Assignment-5

1. The value of $\sin(x)$ are given below, for different value of x . Find $\sin 32^\circ$.

x [in degree]	30	35	40	45	50	55
$\sin(x)$.5000	.5736	.6428	.7071	.7660	.8192

2. The population of a town in the decennial census (a period of 10 years) was given below. Estimate the population in the year 1955 and 1985.

Year (X)	1951	1961	1971	1981	1991
Population (Y)	46	66	81	93	101

3. Given the following table:

x	0	5	10	15	20
$f(x)$	1.0	1.6	3.8	8.2	15.4

Compute $f(21)$ by Newton's Backward Formula.

4. Using Newton's divided difference formulae, find the values of $f(2)$, $f(8)$ and $f(15)$ from the following table:

x	4	5	7	10	11	13
$f(x)$	48	100	294	900	1210	2028

5. Find the distance moved by the particle in 12 seconds.

time(sec)	0	2	4	6	8	10	12
velocity(m/sec)	4	6	16	34	60	94	136

6. Evaluate the approximate value of the integral $\int_0^1 \frac{x dx}{1+x}$ using Trapezoidal rule correct up to 3-significant digits for $n = 6$.
7. Evaluate the approximate value of the integral $\int_0^{\frac{\pi}{2}} \sqrt{\sin x} dx$ using Simpson's 1/3 rule correct up to 4-significant digits for $n = 6$.
8. Calculate the approximate value of the integral $\int_0^1 (4x - 3x^2) dx$ using (i) Trapezoidal rule and (ii) Simpson's 1/3 rule correct up to 3-decimal places for $n = 10$.
9. Evaluate the approximate value of the integral $\int_{0.1}^{0.7} (e^x + 2x) dx$ correct up to 4-decimal places for $h = 0.1$ using the following methods:
- Trapezoidal rule
 - Simpson's 1/3 rule