SRM Institute of Science and Technology
Department of Mathematics
21MAB206T- Numerical Methods and Analysis
UNIT –III Tutorial Sheet-1
Part-A

1. Find $\frac{dy}{dx}$ at $x = 1$ from the following data.

x	1	2	3	4
y	1	8	27	64

Ans: $\frac{dy}{dx} = 3$

2. Find the value of $sec31^{\circ}$ from the following data

θ (in degrees)	31	32	33	34
tanθ	0.6008	0.6249	0.6494	0.6745

Ans: $\sec 31^{\circ}$ =1.1702

3. Find $f''(4)$ from the following

x	0	1	2	3	4
f(x)	1	2.718	7.381	20.086	54.508

Ans: $f''(4)$ =52.1708

Part-B

4. Find the value of $sin18$ and $sin\ 45$ from the following data

x	0	10	20	30	40
cos x	1	0.9848	0.9397	0.8660	0.7660

Ans: sin18=0.3089, sin45=0.705

5. From the given data find dy/dx ,d^2y/dx^2 at 1.1

x	1.0	1.1	1.2	1.3	1.4	1.5	1.6
y	7.989	8.403	8.781	9.129	9.451	9.750	10.031

Ans: $\left.{}^{dy}/_{dx}\right| = 4.34,\ \left.{}^{d^2y}/_{dx^2}\right| = -4.3833$

6. The population of a certain town is given below. Find the rate of growth of the population in 1941 ,1961

x	1931	1941	1951	1961	1971
Population y(in thousand)	40.62	60.80	79.95	103.56	132.65

Ans: $\left.\frac{dy}{dx}\right|_{1941} = 1.83775, \left.\frac{dy}{dx}\right|_{1961} = 2.65525$

7. Find the first and second derivatives of y w.r.to x at x=10 from the given data below

x	3	5	7	9	11
y	31	43	57	41	27

Ans: $\frac{dy}{dx} = -9; \frac{d^2y}{dx^2} = 9.1667$