Assignment#5

Numerical Differentiation

1. Determine y'(1) & y"(1) from following data:

x	0.5	1.0	1.5	2.0	2.5
y	6	3	2	1.2	0.8

2. If 'x' is in cm & 't' is in sec the find the velocity and acceleration when t = 0.1 second.

t	0	0.1	0.2	0.3	0.4	0.5	0.6
x	30.13	31.62	32.87	33.64	33.95	33.81	33.24

3. The table gives the angle in radians (ɵ) through which a rotating rod has turned for various values of time in seconds (t), Find the angular velocity & angular acceleration at t = 0.2.

t	0	0.2	0.4	0.6	0.8
ɵ	0	0.122	0.493	0.123	2.022

4. Given sin 0º = 0.000, sin 10º = 0.1736, sin 20º = 0.3420, sin 30º = 0.500, sin 40º = 0.6428,
   a. Find the value of sin 23º,
   b. Find the numerical value of cos x at x = 10,
   c. Find the numerical value of d^2y/dx^2 at x = 20º for y = sin x
5. Find the value of f'(8) from the table given below:

x	6	7	9	12
f(x)	1.556	1.690	1.908	2.158

Maxima & Minima

1. Find the maximum & minimum value of y from the following table:

x	0	1	2	3	4	5
y	0	0.25	0	0.25	16	56.25

2. Find the value of x for which f(x) is maximum, using the table:

x	9	10	11	12	13	14
f(x)	1330	1340	1320	1250	1120	930

   Also find the maximum value of f(x)?