**ASSIGNMENT NO 2**

**Q.No.1**

Consider the iteration =g() when the function g(x)=-/4 is used. The fixed point can be

found by solving the equation x=g(x).

i) Compute the two solutions ii) Write the property that the fixed-point iteration process will converge to a unique fixed point. iii) What will happen when iv) From the table given below, discuss the converging/diverging behavior of iterations for both cases.

|  |  |
| --- | --- |
| **Case 1 over interval [-3,-1]** | **Case 2 over interval [1,3]** |
| X=-2 | X=2 |
| =-2.05 | =1.6 |
| =-2.100625 | =1.96 |
| =-2.20378135 | =1.9996 |
| =-2.41794441 | =1.99999996 |
| ⸽ | ⸽ |
| ⸽ | ⸽ |
| = -∞ | = 2 |

**Q.No.2:**

Heat capacity is treated as a function of temperature in phase change temperature range (between melting and solidification). Calculation process is controlled for phase change materials by both: temperature and total latent energy. Below melting temperature T the material is fully discharged and enthalpy energy H is stored as specific heat. For a process in which the pressure is constant, the specific heat capacity equals the slope of the relationship between specific enthalpy and the temperature as follows

i) Compute Specific heat capacity at T=1300.

ii) Also compute total error bound of O () for f(x) = sin(x) over[0,10].The inherent round-off error has the bound || and step size h=0.1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| T( | 800 | 1000 | 1200 | 1400 | 1600 |
| H(Btu/Lb) | 1305 | 1460 | 1585 | 1705 | 1825 |