**Name-Surname:**

**Id & Signature:**

**MATH 317- Homework I**

Instructions: All questions are equally weighted. You may edit this file. When you finish, create a pdf file. You are free to use small pictures, screenshots (zoomed), handwriting or equation editor etc.

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| --- |
| **Question 1.** Use Excel and the bisection method to approximate to solution of  on the interval [0.2,0. 3]. |
| **Solution:** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Question 2.** The surface of many airfoils can be described with an equation of the form  Where t is the maximum thickness as a fraction of the chord length ().  Given that c=1 m and t=0.2 m, the following values for y have been measured for a particular airfoil:   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | X (m) | 0.15 | 0.35 | 0.5 | 0.7 | 0.85 | | Y(m) | 0.08909 | 0.09914 | 0.08823 | 0.06107 | 0.03421 |   Determine the constants and by using the MINVERSE function of Excel. (Write a system of five equations and five unknowns and use Excel to solve the system.) |
| **Solution:** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Question 3. Plot the voltage as a function of time and use Newton’s divided difference method to compute the voltage at t=3.145 sec from the following experimental data:   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | t(sec) | 1 | 2 | 3 | 4 | 5 | 6 | | V(Volt) | 9.4 | 7.31 | 5.15 | 3.55 | 2.81 | 2.04 | |
| Solution: |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Question 4:** The boiling temperature of water at various altitudes h is given in the following table.   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | h(ft) | -1,000 | 0 | 3,000 | 8,000 | 15,000 | 22,000 | 28,000 | | T (F) | 213.9 | 212 | 206.2 | 196.2 | 184.4 | 172.6 | 163.1 | |
| 1. Compute the straight-line equation that best fits the data.   **Solution:** |
| 1. Use Excel’s Add Trendline feature to find the straight line that best fits the given data.   **Solution** |
| (c ) Use this linear equation for calculating the boiling temperature at 5,000 ft.  **Solution** |
|  |

**THE END**

**THANK YOU!!!**