

1. `glycerin.dat` provides data values of viscosity of glycerine versus temperature. Write a function file `newcst` that returns the viscosity of glycerine as a function of temperature. The program should evaluate a cubic polynomial in a Newton Basis. You should use the `divDiffTable` in the NMM tool box to compute coefficients of your polynomial, store the values of these coefficients as a vector and then evaluate the Newton polynomial.

2. Consider the following data set between variables  $x$  and  $y$ :

x	1986	1988	1990	1992	1994	1996
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y	113.5	132.2	138.7	141.5	137.6	144.2

- (a) Creating an appropriate Vandermonde matrix using the `vander` command, find the 5-th degree polynomial interpolating the data. Find the condition number of the Vandermonde matrix. Plot it.
- (b) Using `lagrint` function in NMM toolbox, find the coefficients of the 5-th degree polynomial using Lagrange basis. See if there is any difference with (a).

3. following data set between variables  $x$  and  $y$ :

x	0.4	0.75	1.3	2
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y	4.95	10.14	15	17.6

- (a) Using `divDiffTable` construct the divided difference table.
- (b) Extract the coefficients of the Newton Polynomial