1. Following data set between variables x and y:

x	0.4	0.75	1.3	2
y	4.95	10.14	15	17.6

and

x	y
1	1
2	3
3	2
4	4

   (a) Using divDiffTable in the R-program folder construct the divided difference table for each data set and extract the coefficients of each Newton Polynomial.

   (b) Plot each Newton Polynomial in the respective range.

2. Consider the function $f : [1, 10] \to \mathbb{R}$ given by

$$f(x) = \begin{cases} -0.5x + 4 & \text{if } 1 \leq x \leq 5 \\ -0.4x & \text{if } 5 < x \leq 10 \end{cases}$$

   Consider the following set of nodes $\{(x_i, f(x_i) : 0 \leq i \leq n\}$ with the $\{x_i\}_{i=0}^n$ given by

$$(4, 5, 6), (4, 5, 6, 7), (3, 4, 5, 6, 7), (3, 4, 5, 6, 7, 8),$$

   and

$$(2, 3, 4, 5, 6, 7, 8), (1, 2, 3, 4, 5, 6, 7, 8), (1, 2, 3, 4, 5, 6, 7, 8, 9).$$

   Write a program netwiggles that will do the following. In each case

   (a) Compute the Divided difference table and compute the coefficients of the Netwon Polynomial for the respective nodes.

   (b) On one figure, plot the function, nodes and the Newton polynomial in the domain $[1, 10]$

3. H20Sat.dat in the R-program folder contains saturation data for water. We will use this data and quadratic polynomial interpolation to compute p_{sat} in the range $30 \leq T \leq 35$. Write a R-program that will compute the Newton polynomial and store it as vector and using it compute the interpolant at any given value T. $T = 32, 33$, and 34.