Exercise

Specifications

Create an R function named **`NDD`** which takes a matrix of data points.

The function should have the following parameters:

- **`mat`**, the matrix of data points.

The function return the following values:

- **`table`**,the matrix that shows the computations for the coefficients (divided differences);
- **`as`**, the list of coefficients (divided differences) that make up the interpolating polynomial;
- **`f`**, the interpolating polynomial being made as an R function.

Submission

The R file should be named as **`<surname>-week6.r`** (i.e. **`encinas-week6.r`**), and should be submitted at Google Classroom on the prescribed deadline. Demerits on late exercises will be enforced. Resubmissions are allowed, as long as the absolute deadline has not lapsed.

Word Problem

Using the code you have created, answer the following word problem below in a Google Document.

1. Gather the Newton's Divided Difference Interpolating Polynomial which explains the trend of the chirp frequency per second of a striped ground cricket, which was gathered by George W. Pierce in 1948. This is in comparison to temperature in degrees Fahrenheit. Using the results of this study, it was established that such crickets do not chirp when the temperature is less than 60℉ and greater than 100℉. Remember to sort the data according to temperature.

    a. Compare your answers to the ones you had last exercise on linear regression which uses the same data by plotting both curves in a single plot (use R to do this). Also, plot the data points.

    b. In your own words, compare polynomial regression over Newton's Divided Difference.

Chirps/Second	Temperature (℉)
20.0	88.6
16.0	71.6
19.8	93.3
18.4	84.3
17.1	80.6
15.5	75.2
14.7	69.7
15.7	71.6 → **70.6**
15.4	69.4

16.3	83.3
15.0	79.6
17.2	82.6
16.0	80.6 → **81.6**
17.0	83.5
14.4	76.3