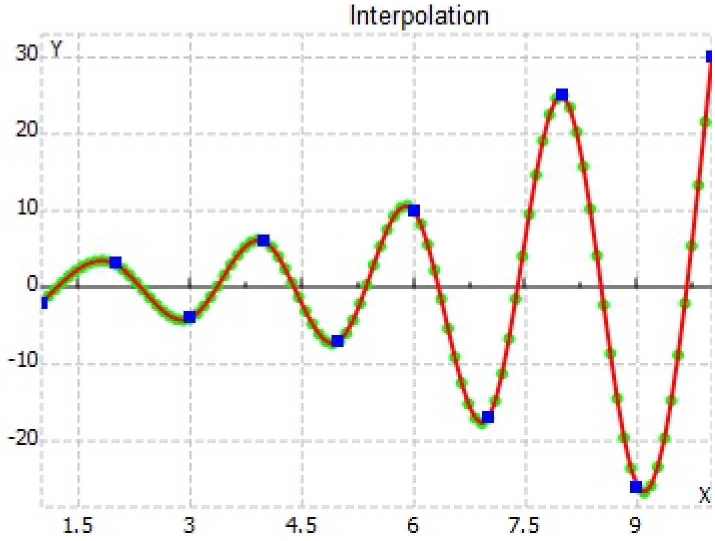
Excel export

Use the data stored in the variable **a** to generate cubic spline interpolation above the given points. Export the interpolation y value data, for the inner points are defined in the variable c, in the interpolation.xlsx excel file.

$$a := \begin{bmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 \\ -2 & 3 & -4 & 6 & -7 & 10 & -17 \end{bmatrix}$$



```
export(x , y)
{
    rez := allocate vector(size(y) , true)
    for(i := 0 , i < size(y) , i += 1)
    {
        rez[i] := cubicspline(x , y[i])
    }
    return(rez)
}
```

$$c := \begin{bmatrix} 1.5 & 2.4 & 3.6 & 4.8 & 5.9 & 9.1 & 8.46 \end{bmatrix}$$

```
d := sort(c , "a")
b := export(a , d)
```

$$b = \begin{bmatrix} -2 & 2.424 & -0.694 & 3.731 & -6.810 & 10.685 & -3.001 \end{bmatrix}$$

```
excel write("interpolation.xlsx" , "Sheet 1" , "A1" , d)
excel write("interpolation.xlsx" , "Sheet 1" , "A2" , b)
```

Excel writes functions, exporting data from both variables b and d to interpolation.xlsx file

Excel import

Use the data exported in the Excel export example to plot the graph and to interpolate it. For the insertion of data we will use the Excel import object to import the data into the variable **x**.

a := excel read("interpolation.xlsx" , "Sheet 1" , "A1:J1" , false)

b := excel read("interpolation.xlsx" , "Sheet 1" , "A2:J2" , false)

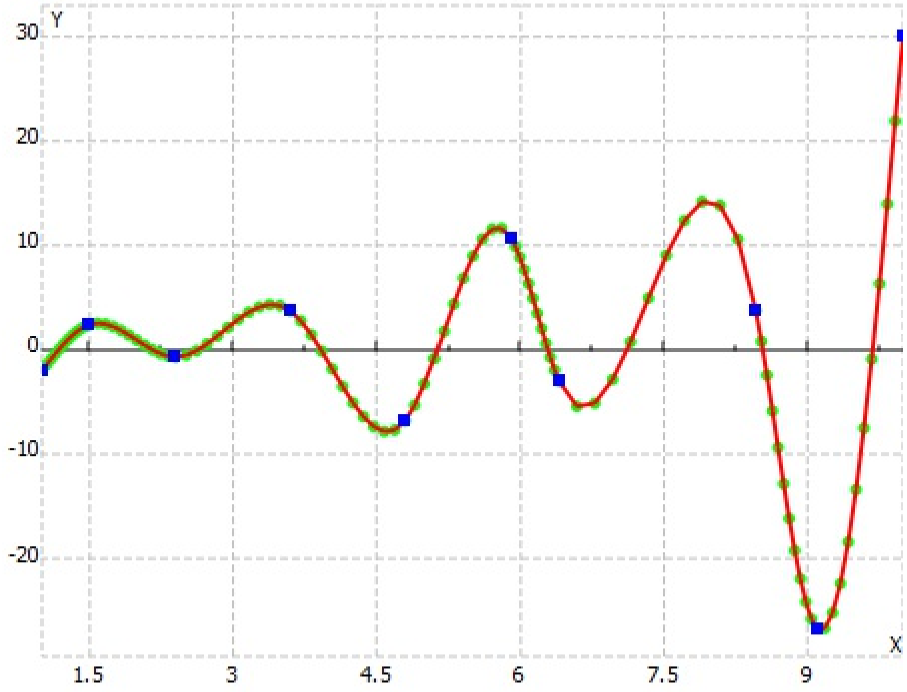
Excel read function, importing data from the file, interpolation.xlsx, to variables a and b

x := join mat cols(mat transpose(a) , mat transpose(b))

Join the two vectors and set them as matrix columns

$$x = \begin{bmatrix} 1 & -2 \\ 1.5 & 2.424 \\ 2.4 & -0.694 \\ 3.6 & 3.731 \\ 4.8 & -6.810 \\ 5.9 & 10.685 \\ 6.4 & -3.001 \\ 8.46 & 3.751 \\ 9.1 & -26.719 \\ 10 & 30 \end{bmatrix}$$

Interpolation



After we have imported the data, we then use the interpolation to tie up the nodes and reconstruct the graph.