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Assignment 7 – ENSC 180

Zhendong – Group 4

1)a)

```
M =
     0     5     0
     8     0     6
     0     0     5
```

1)b)

```
V =

  Columns 1 through 21

3     9    11    15    19    23    27    31    37    39    43    47
51    55    59    65    67    71    75    79    83

  Columns 22 through 33

87    93    95    99   103   107   111   115   121   123   127   131
```

1)c)

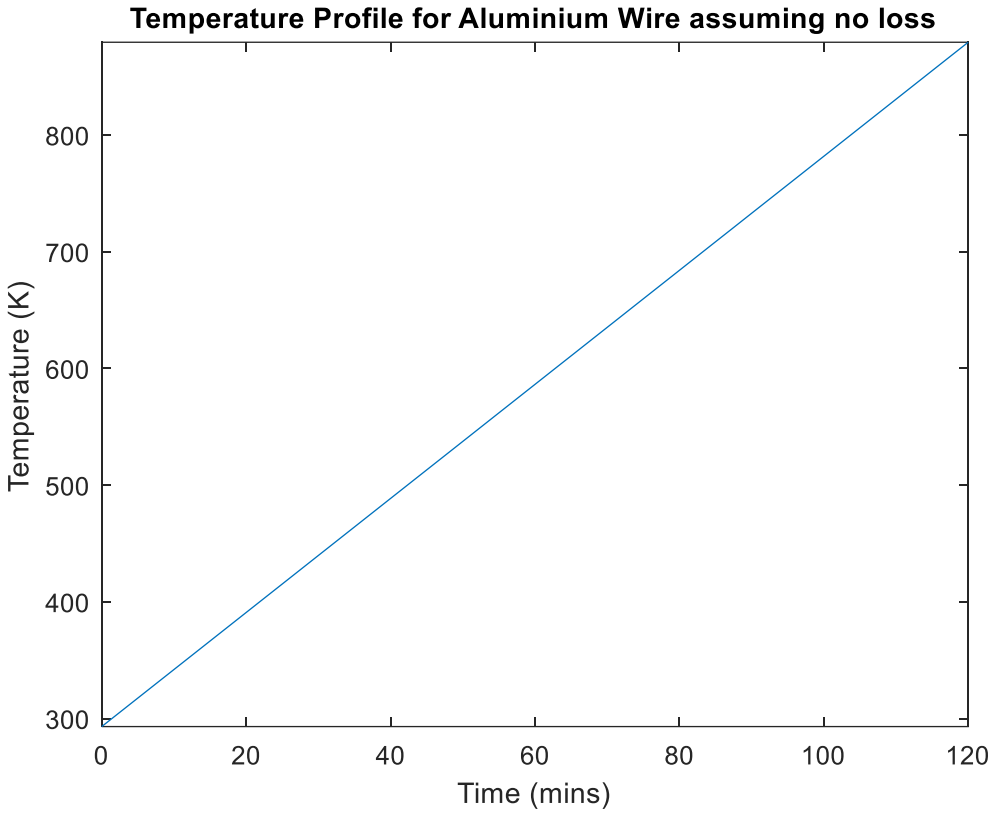
```
C =

    27    37    47    67    71    75    79    87   107   127
```

1)d)

```
Enter the two numbers at the start of vector v1 in the form [a,b]:
[1,2] (THIS IS THE INPUT)

v1 =

  Columns 1 through 21

3     4     5     6     7     8     9    10    11    12    13    14
15    16    17    18    19    20    21    22    23

  Columns 22 through 28

24    25    26    27    28    29    30


v2 =

  Columns 1 through 21

7     9    11    13    15    17    19    21    23    25    27    29
31    33   35    37    39    41    43    45    47
```

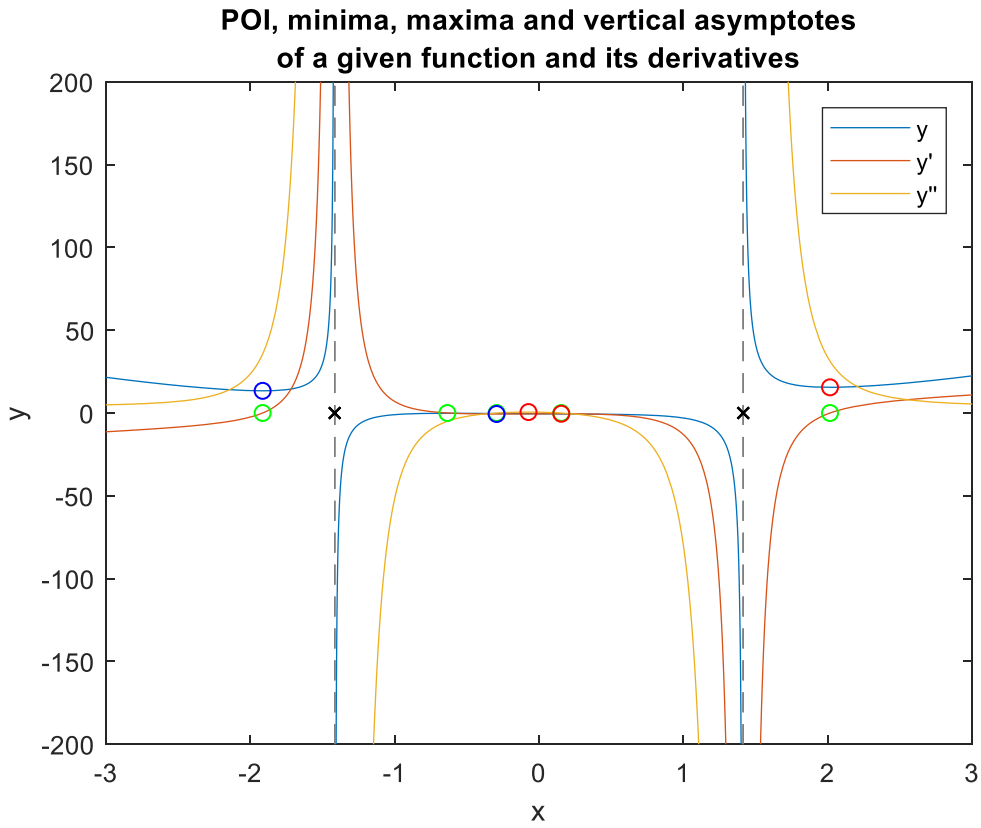
```
  Columns 22 through 29

    49    51    53    55    57    59     0     0
```

2)

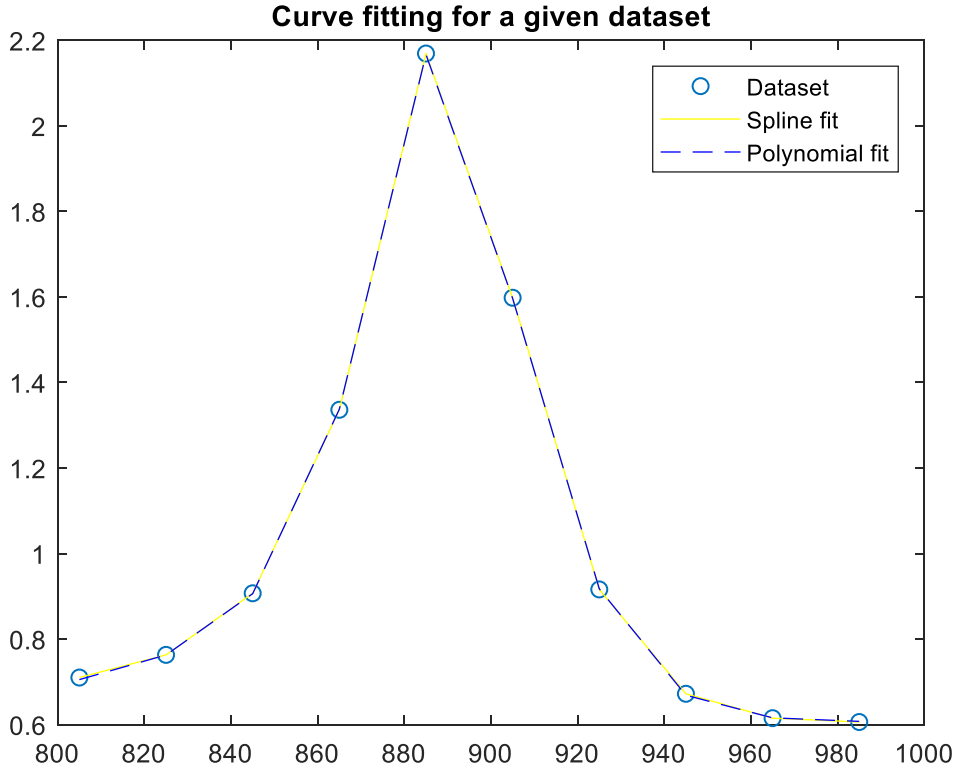



```
meltTime =

  131.0621

The wire will reach its melting point after: 131 mins
The maximum current that can flow through the wire in 2hrs is 8.778641
```

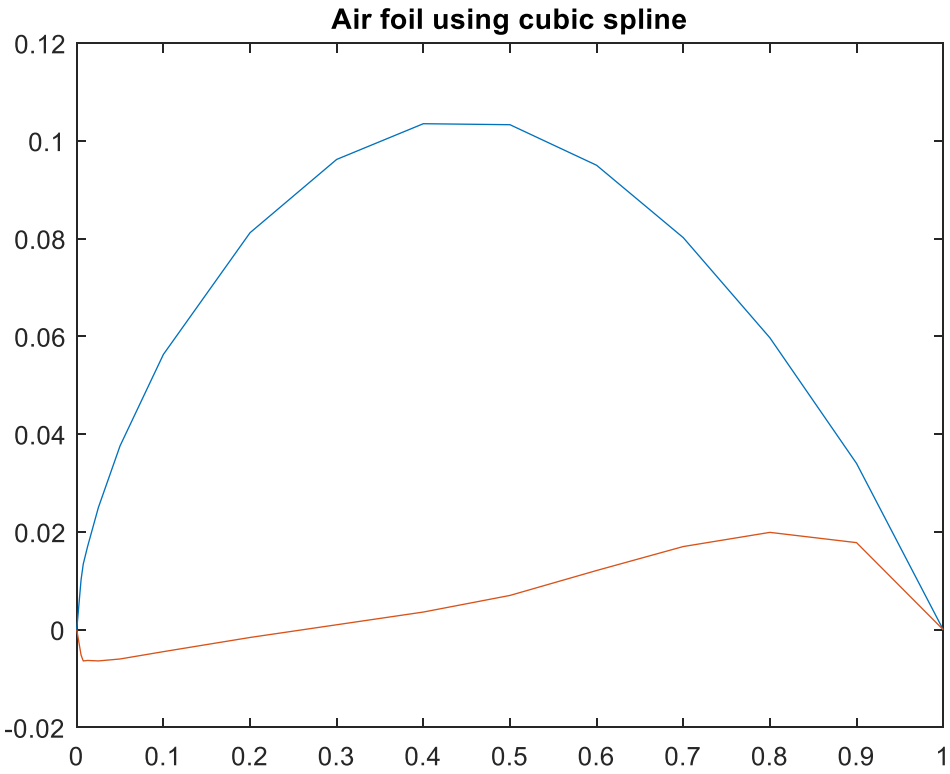
3)

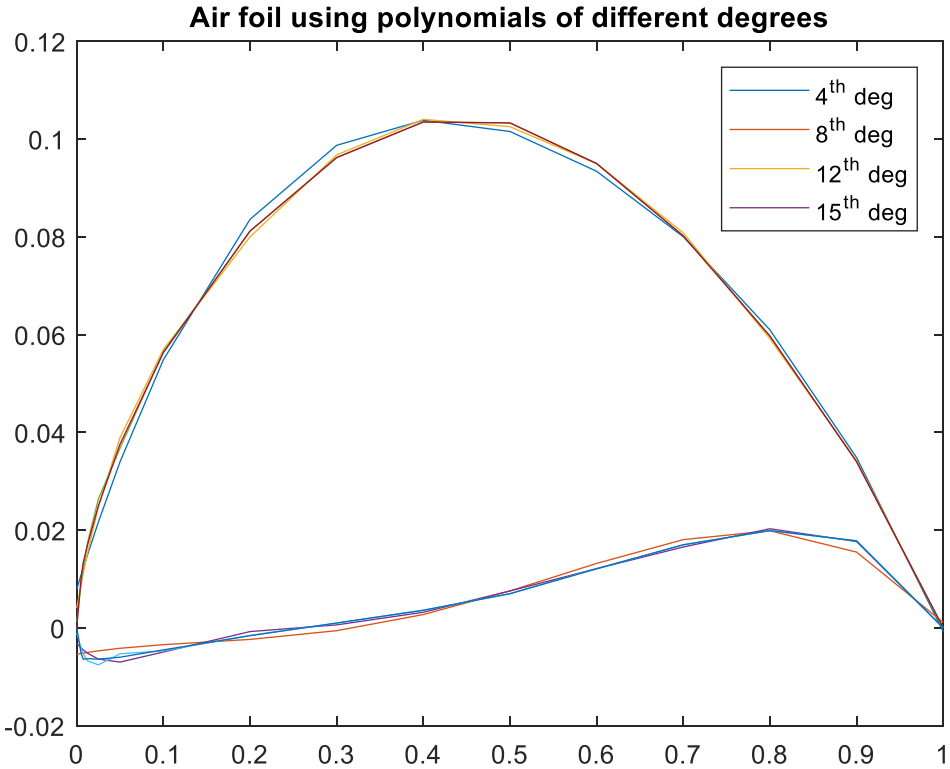


4) % The square spline fits the curve from the dataset perfectly. The polynomial comes close however, with 5.0978e-05



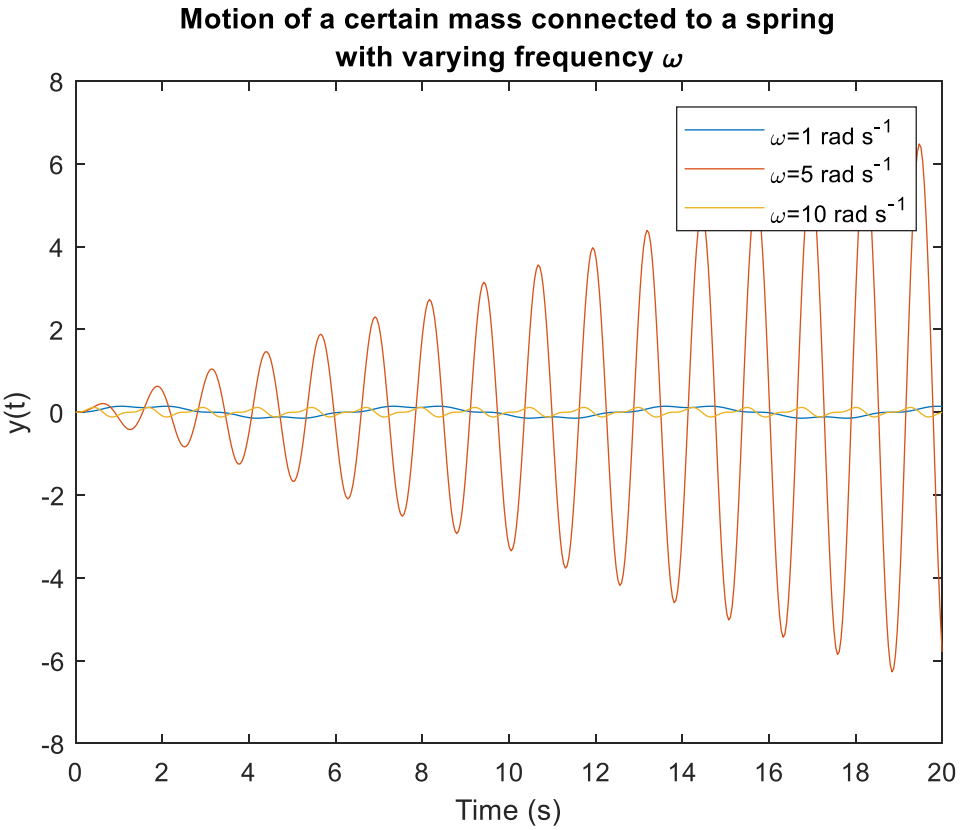
5)






```
%the 15th degree polynomial approximates the air foil best from the results
of the least square analysis
```

6)




```
%5 rad/s gives the largest amplitude of y(t)
%1 rad/s gives the smallest amplitude of y(t)
```