

University of Waterloo

ECE204 Lab Report

Simulation Assignment #4

Section: 202

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Part (1) 80%

Write a general regression m.file that can do the following:

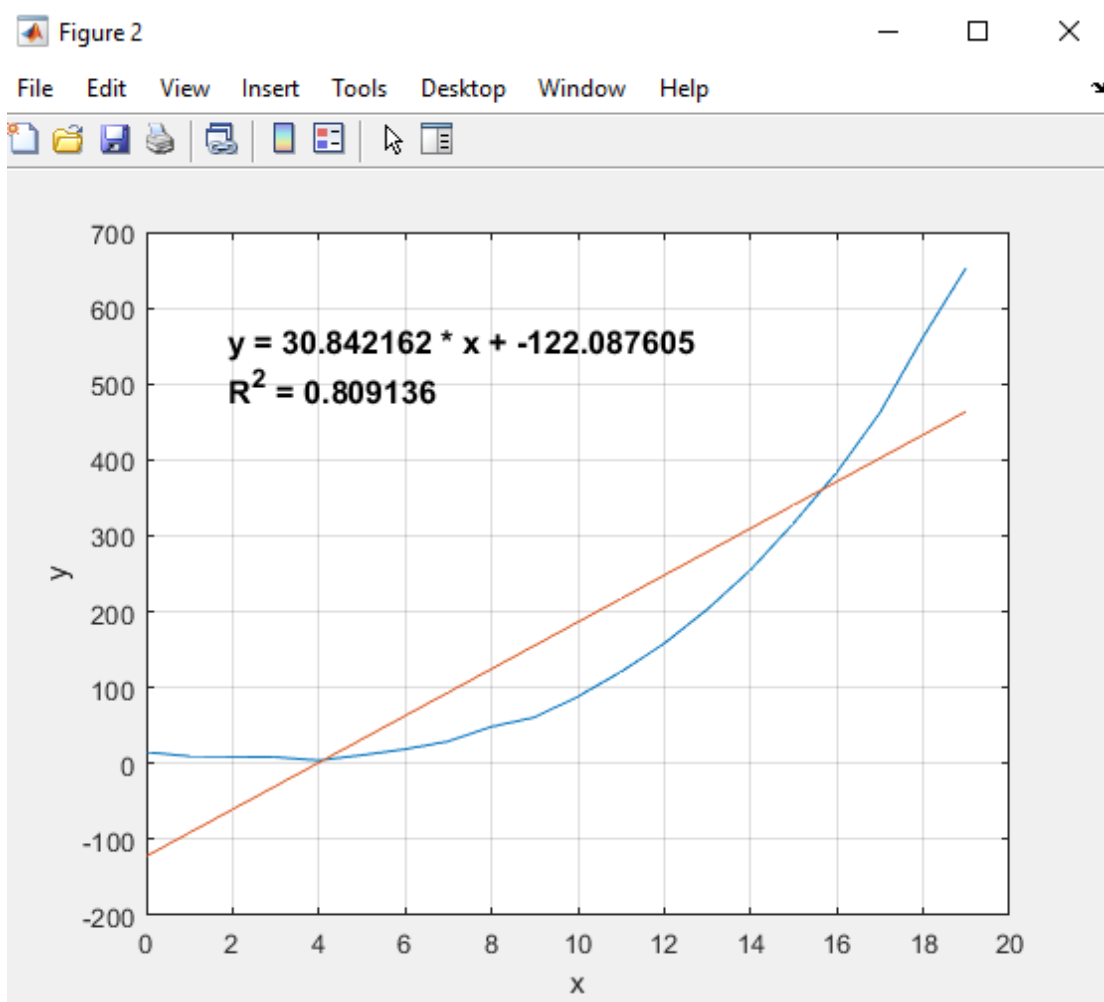
Once you run it, the following screen will appear to choose from:

Select the function to fit your data:

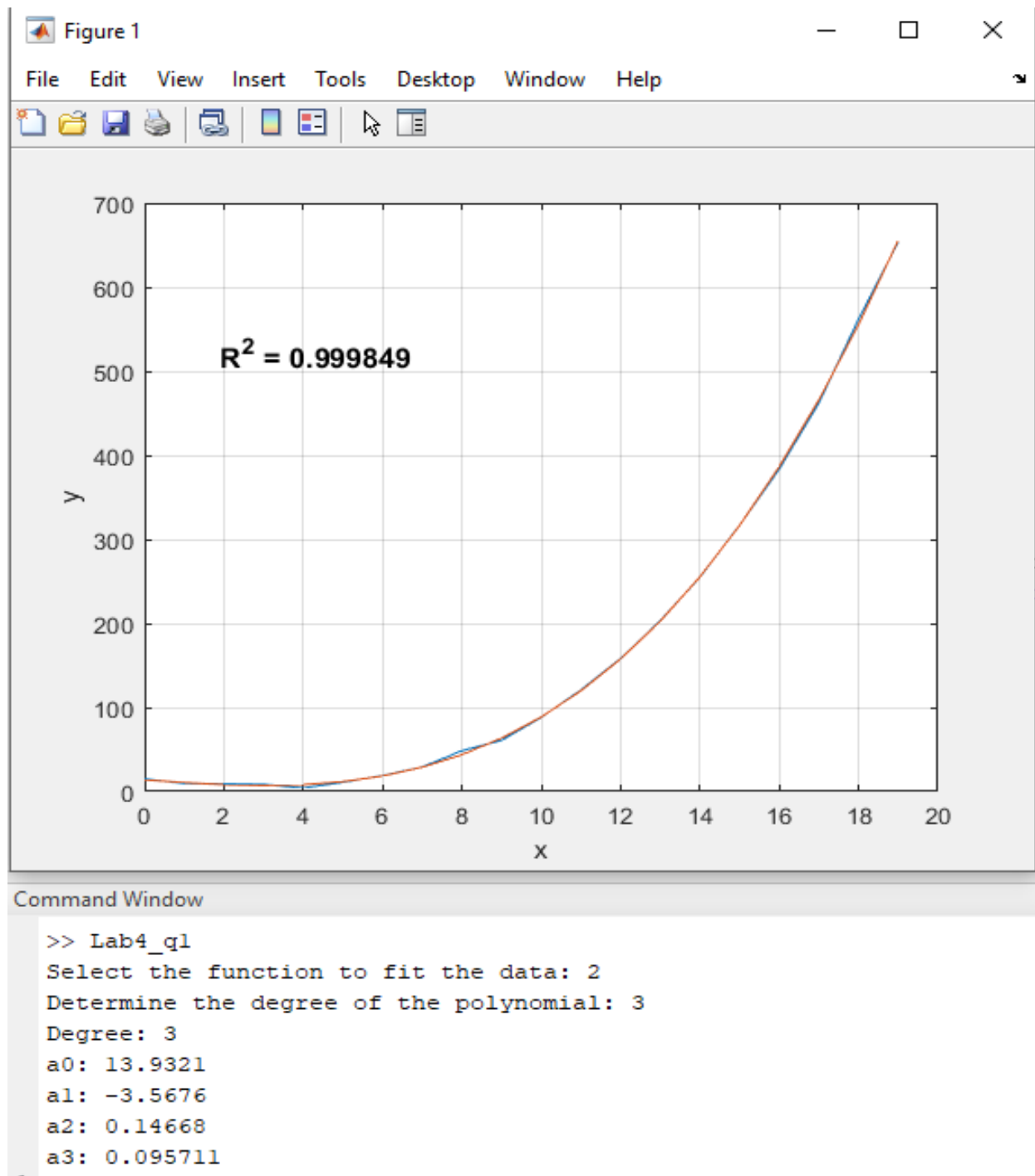
1. Linear: $y = a_0 + a_1x$
2. Polynomial: $(y = a_0 + a_1x + \dots + a_mx^m)$
3. Exponential: $(y = ae^{bx})$
4. Power: $(y = ax^b)$

Test1.txt Display:

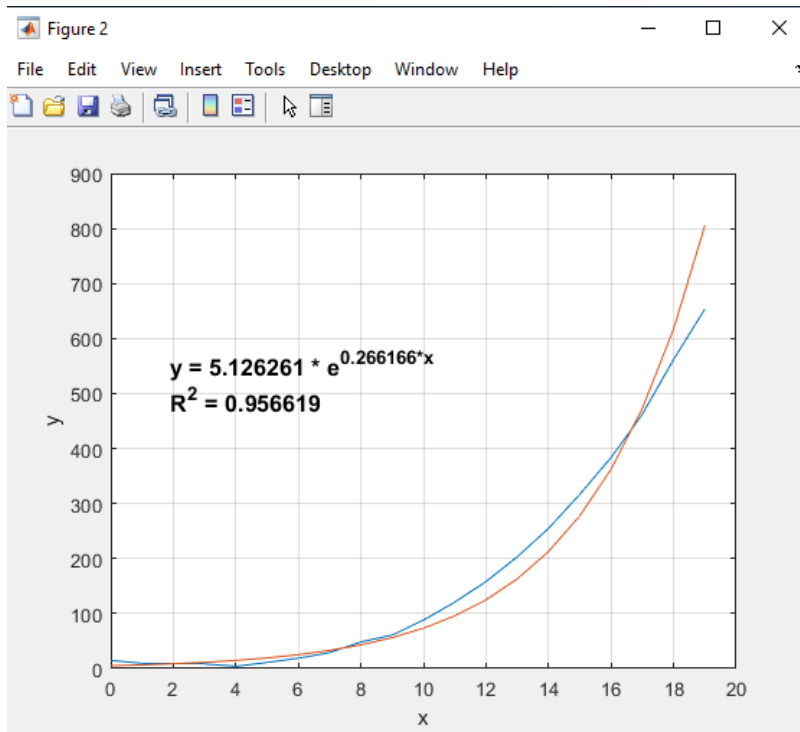
Linear:



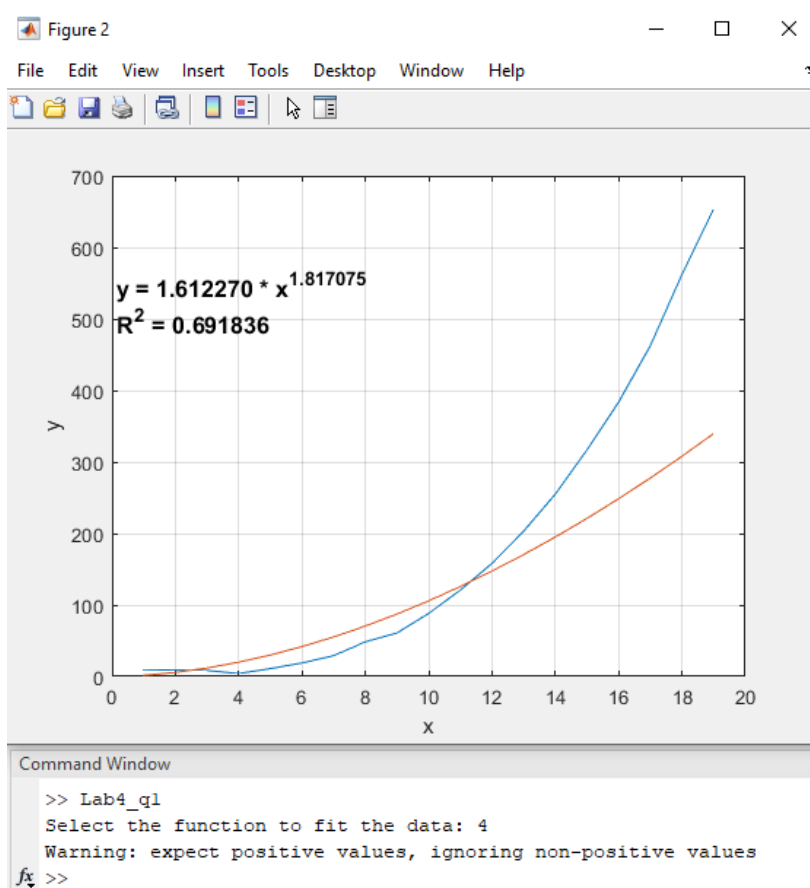
Polynomial:



Exponential:

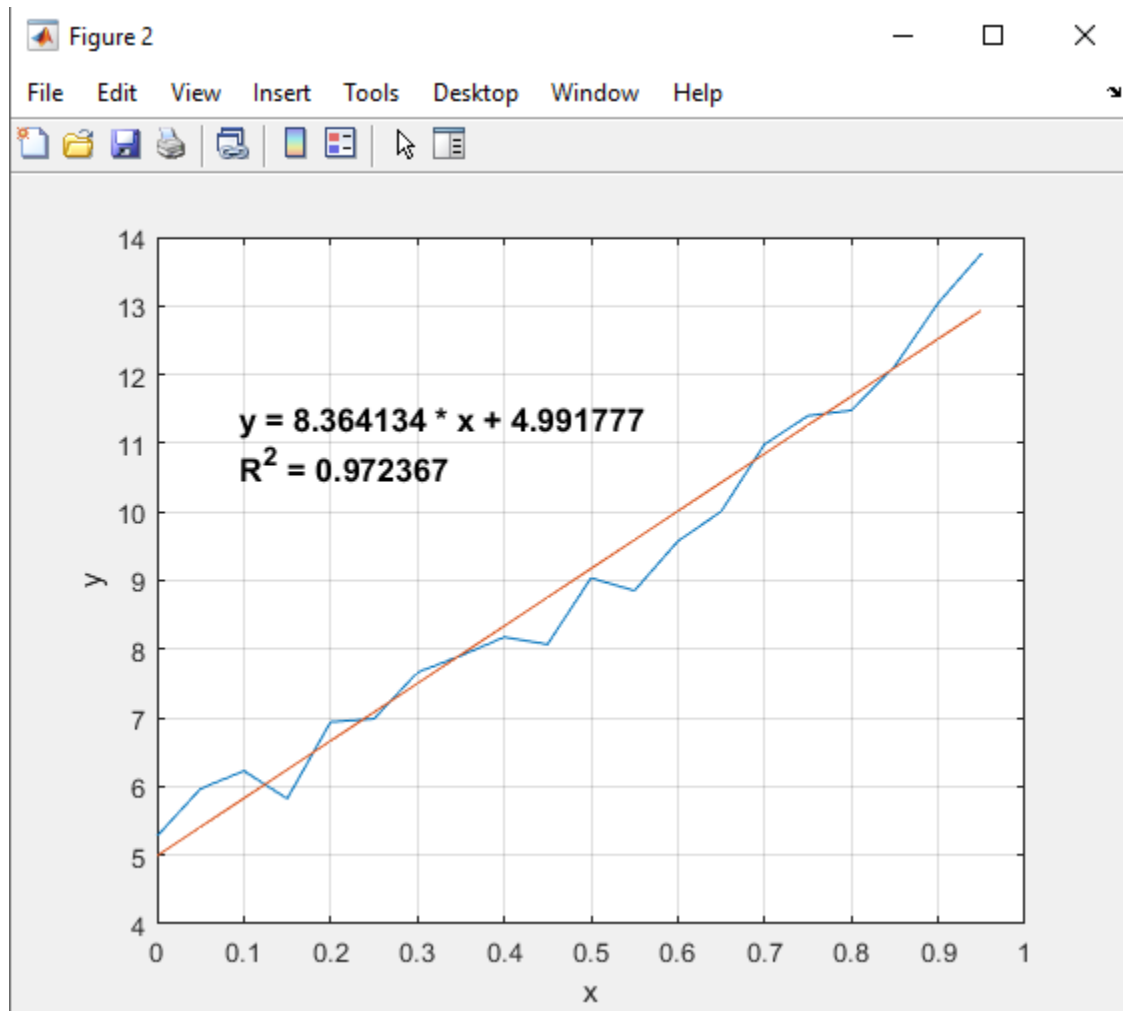


Power:

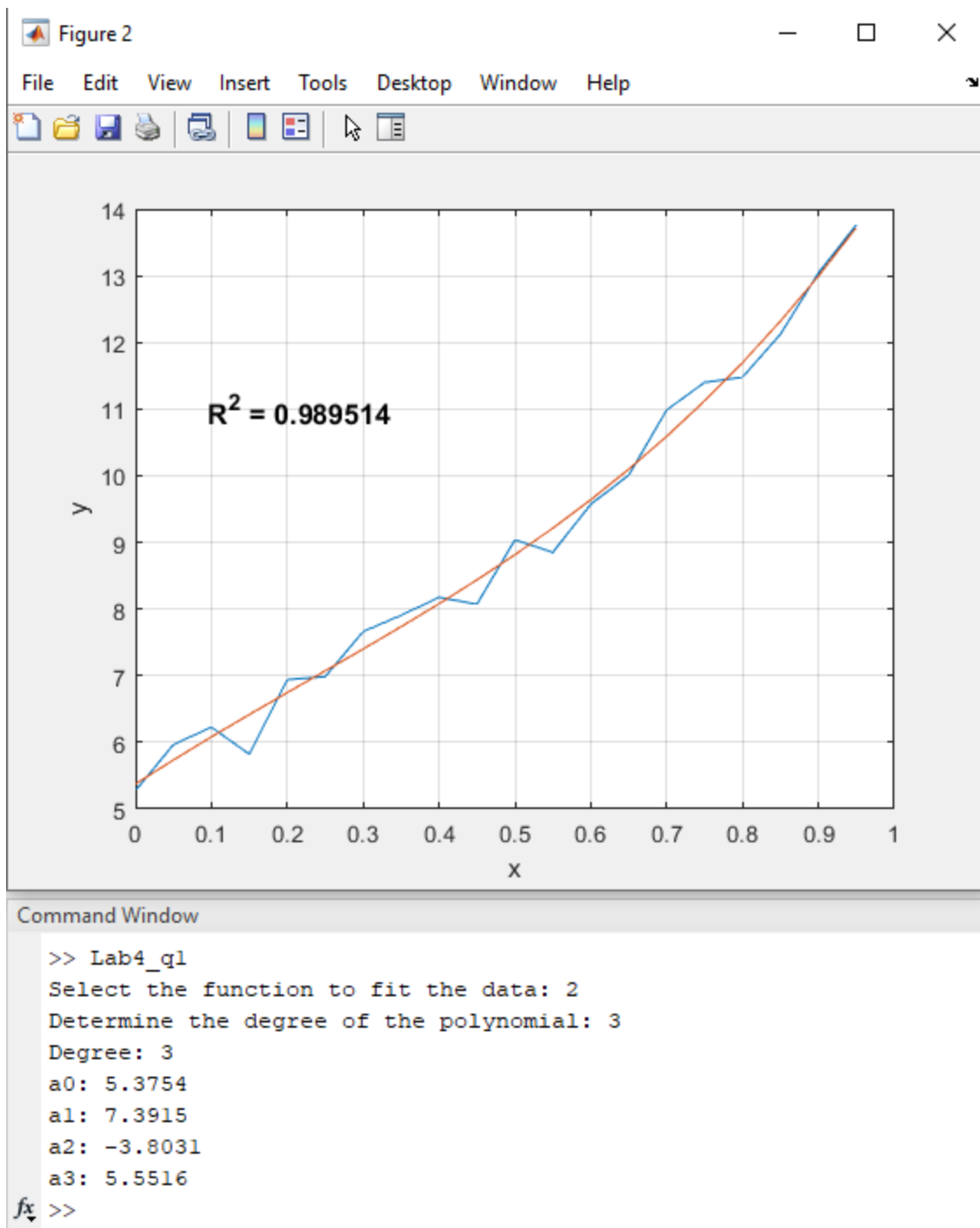


Test2.txt Display:

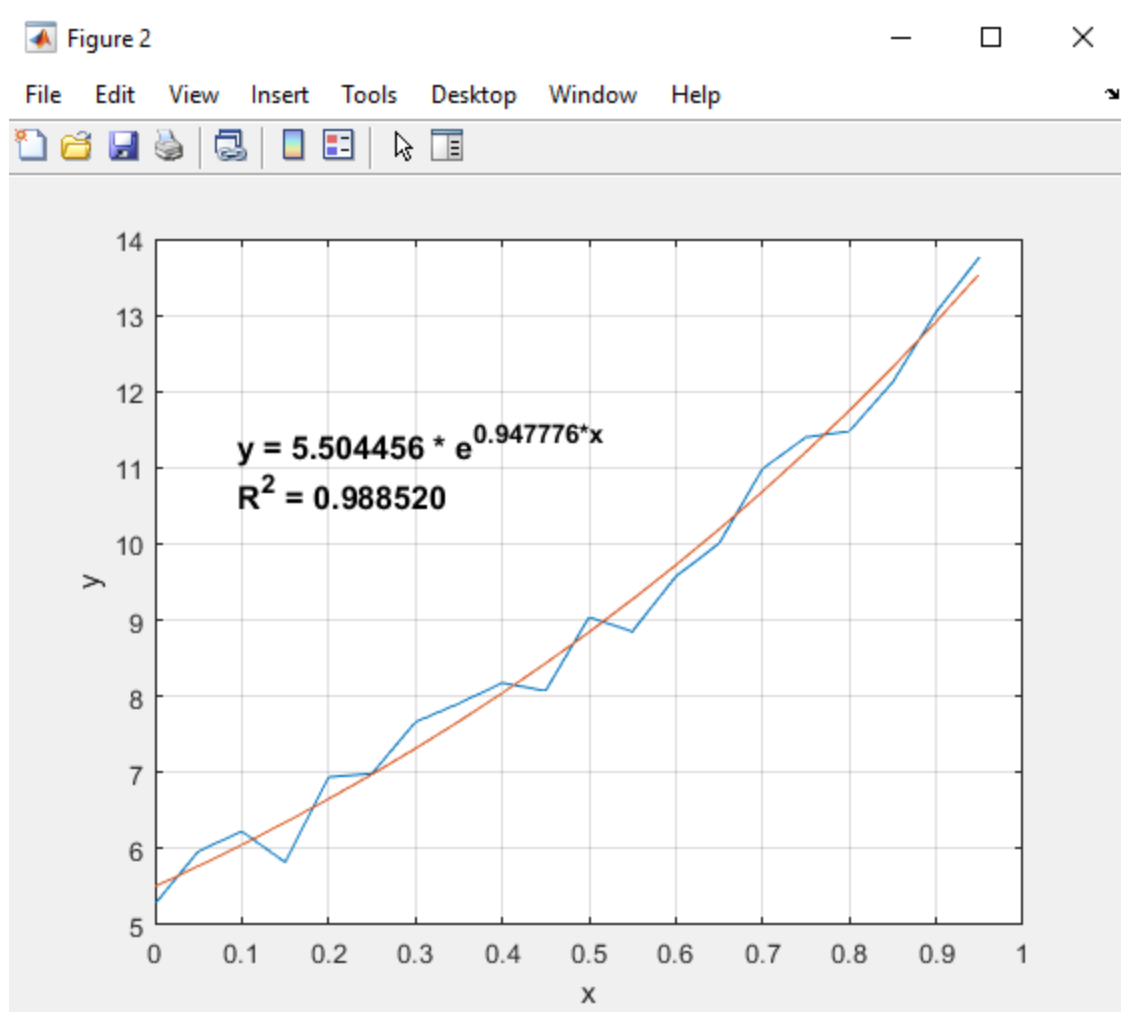
Linear:



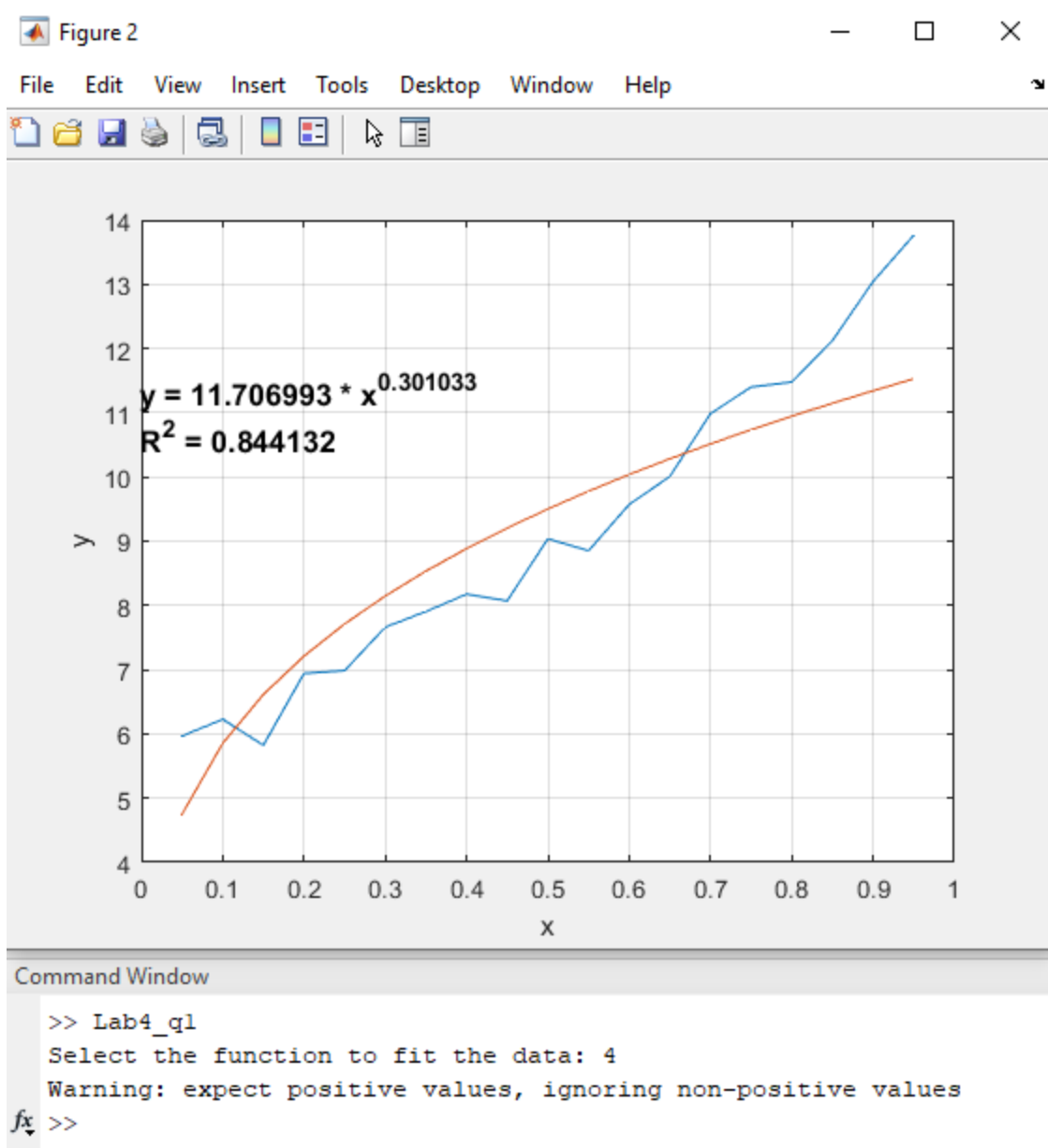
Polynomial:



Exponential:



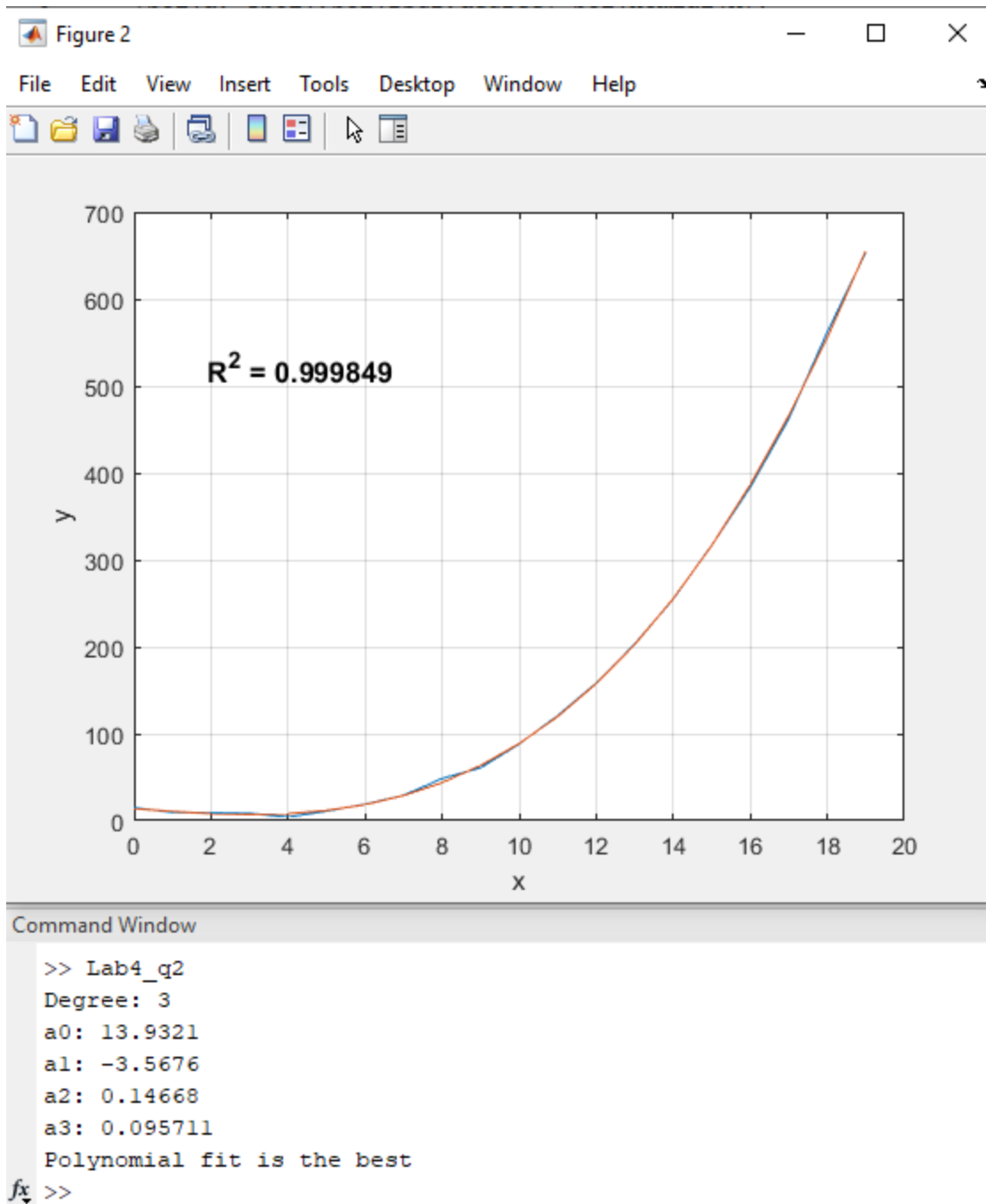
Power:



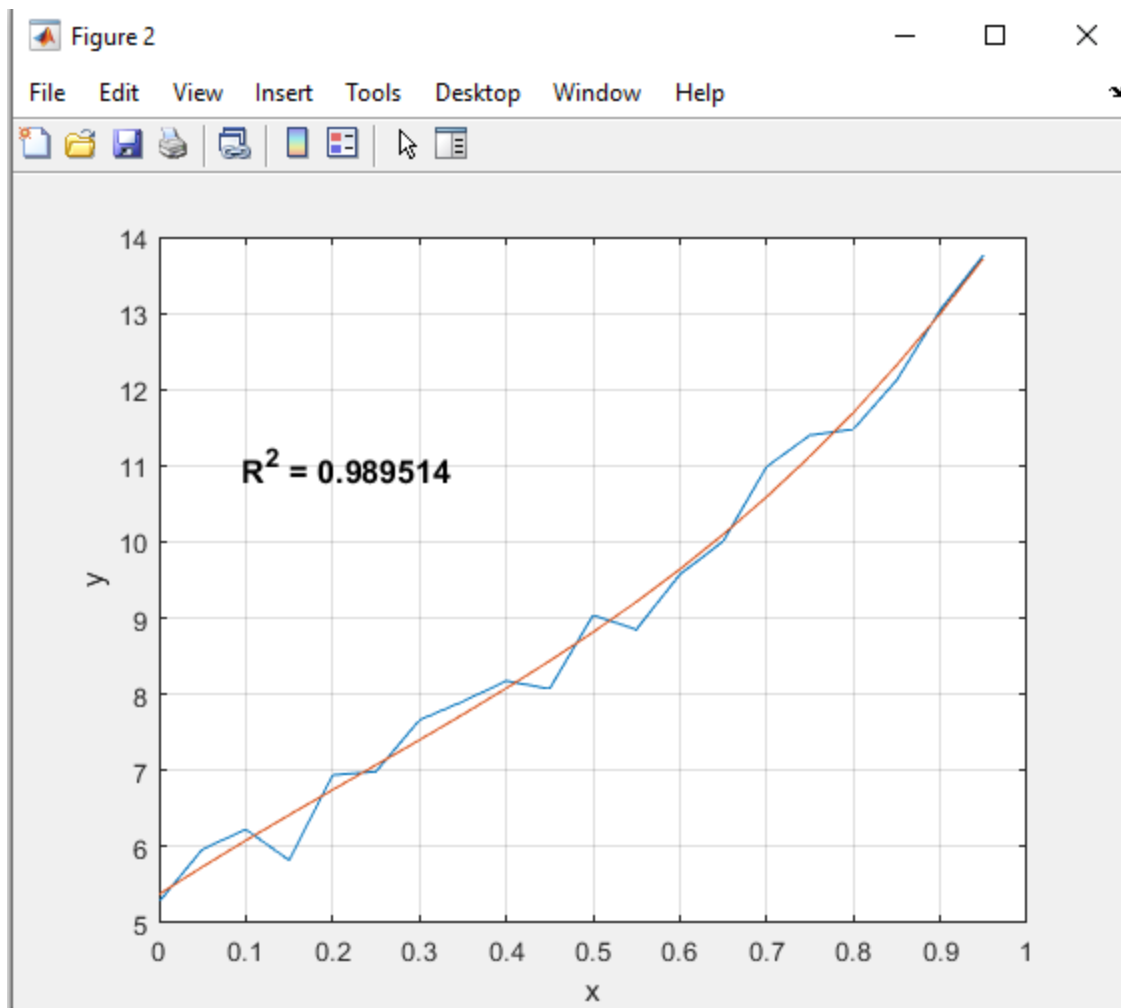
Part (2) 20%

Repeat part (1) but this time make your program sort of “smart” meaning that the new developed m.file will be able to use the proper function without selecting it. So basically, your m.file will load the file and then generate the results, as discussed in part (1) automatically.

Test1.txt



Test2.txt



Command Window

```
>> Lab4_q2
Degree: 3
a0: 5.3754
a1: 7.3915
a2: -3.8031
a3: 5.5516
Polynomial fit is the best
fx >>
```