Fitting of exponential functions

Code:

```python
import numpy as np

import matplotlib.pyplot as plt



""" The function fit_exp_fun finds the best exponential graph (in red) that best fits the given

data set rapresented by the blue dots."""


def fit_exp_fun(filename):
    parameters = np.array([]) #creates an empty array to store the used parameters


    x_data, y_data = np.loadtxt(filename, skiprows=1, unpack = True) #opens the .txt file


    log_y_data = np.log(y_data) #takes the natural log of the Y_values


    val_1, val_2 = np.polyfit(x_data, log_y_data, 1) #thanks to the finction polyfit I found
    #the parameters that best approximate the exponential growth
    y = np.exp(val_2)*np.exp(val_1*x_data) #makes a curve with those values


    parameters = np.append(parameters, val_1) #saves the parameters in a Readme.txt file

    parameters = np.append(parameters, val_2)

    np.savetxt("Readme_for_parameters.txt", parameters, header="Parameters")


    #plotting operations
    plt.plot(x_data, y_data, "o")

    plt.plot(x_data, y, color="r")

    plt.title('Fitting of exponential function', c="r")

    plt.xlabel('X-axis')

    plt.ylabel('Y-axis')

    plt.show()
```

Parameters:

Exp0:

- 1.750008304621421262e-01
- -1.386127138843185184e-05

Exp1:

- 1.636760664394383002e-01
- -1.825446379057320268e-01

Exp2:
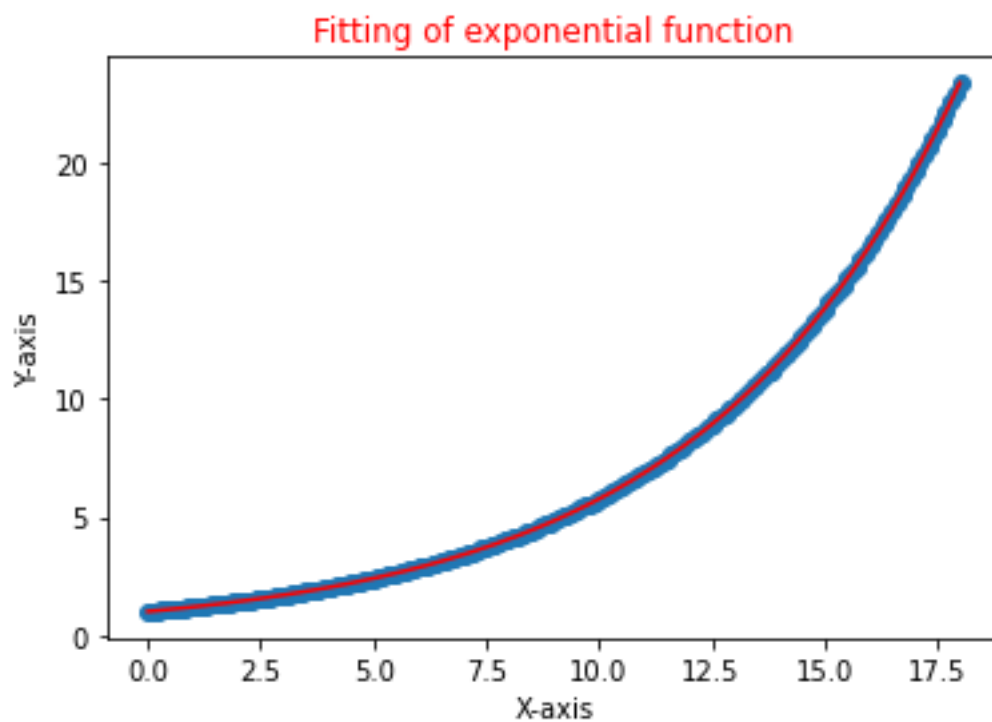
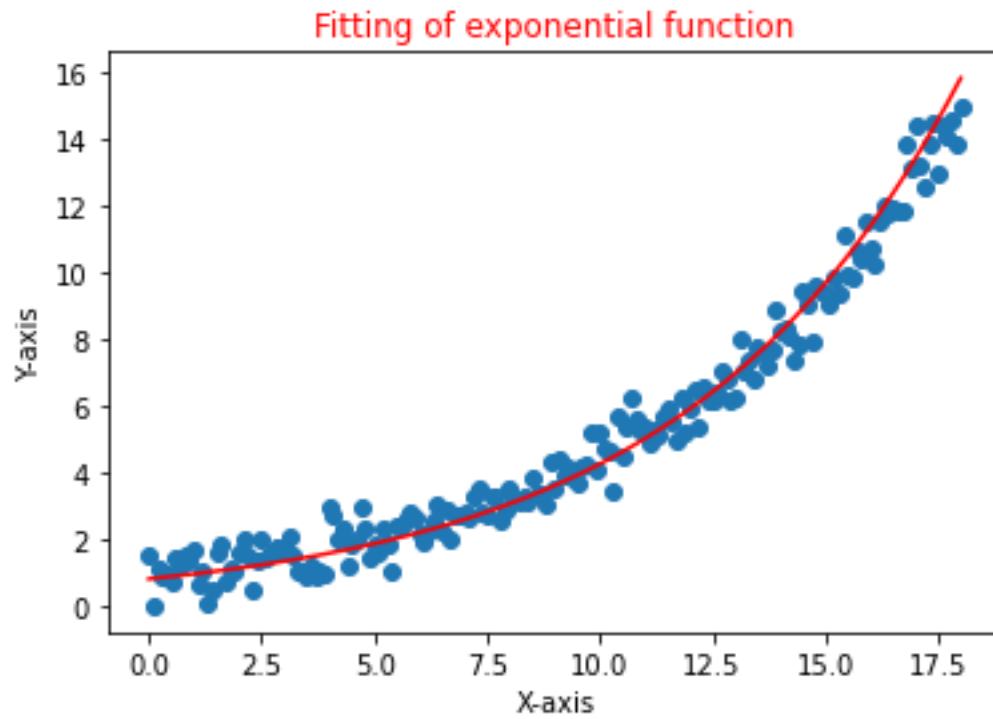- 2.100231117261043834e-01
- 5.003632471530222725e-01

Exp3:

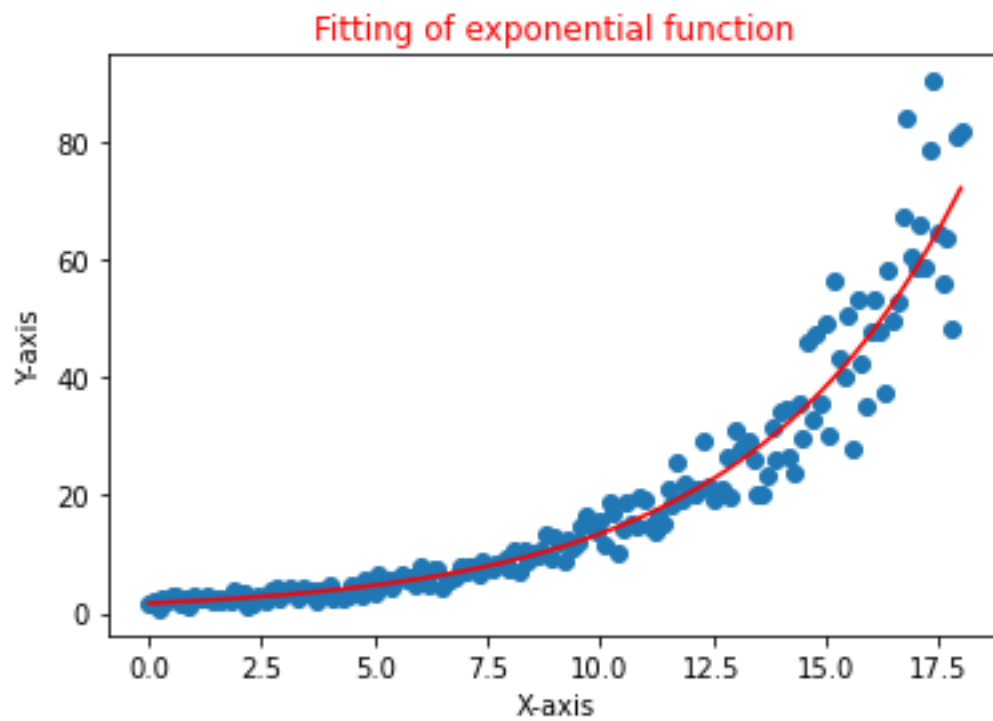- 1.115700834099102451e-01
- 2.226789261308887102e+00

Graphs:

Exp0:

Exp1:

Fitting of exponential function

Exp2:

Fitting of exponential function

Exp3:

Fitting of exponential function