1. Do exercise 5.4 on page 126 of the textbook

Exercise 5.4

5.4 The Receiver of Revenue (Internal Revenue Service) decides to change the tax table used in Section 5.5 slightly by introducing an extra tax bracket and changing the tax-rate in the third bracket, as shown in the table on the next page.

Taxable income	Tax payable
10 000 or less	10% of taxable income
etween $10 000 and $20 000	$1000 + 20% of amount by which taxable income exceeds $10 000
etween $20 000 and $40 000	$3000 + 30% of amount by which taxable income exceeds $20 000
lore than $40 000	$9000 + 50 per cent of amount by which taxable income exceeds $40 000

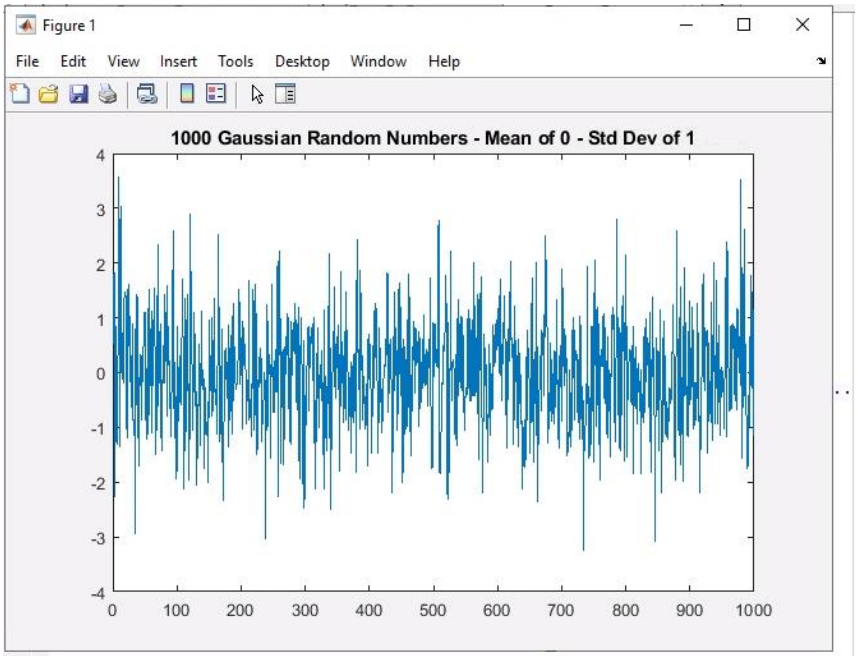
Amend the logical vector script to handle this table, and test it on the following list of incomes (dollars): 5000, 10 000, 15 000, 22 000, 30 000, 38 000 and 50 000.

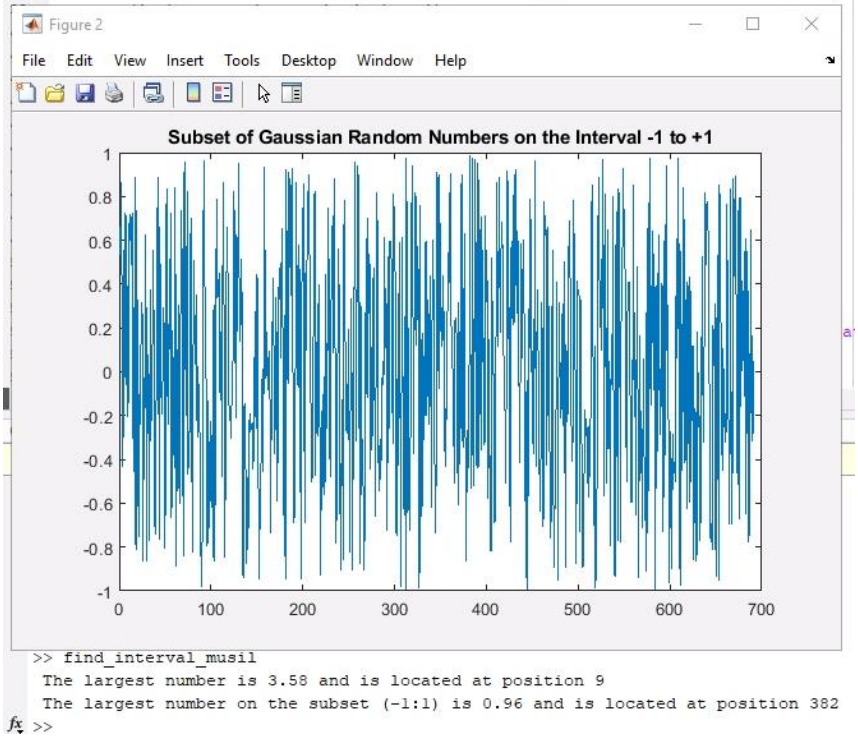
tax_computation_Musil.m

```
inc = [5000 10000 15000 22000 30000 38000 50000];

tax = 0.1*inc.*(inc <= 10000);
tax = tax + (inc > 10000 & inc <= 20000).*(0.2 * (inc - 10000) + 1000);
tax = tax + (inc > 20000).* (0.3 * (inc - 20000) + 3000);
tax = tax + (inc > 40000).* (0.5 * (inc - 40000) + 9000);


disp ( [inc' tax'])
```

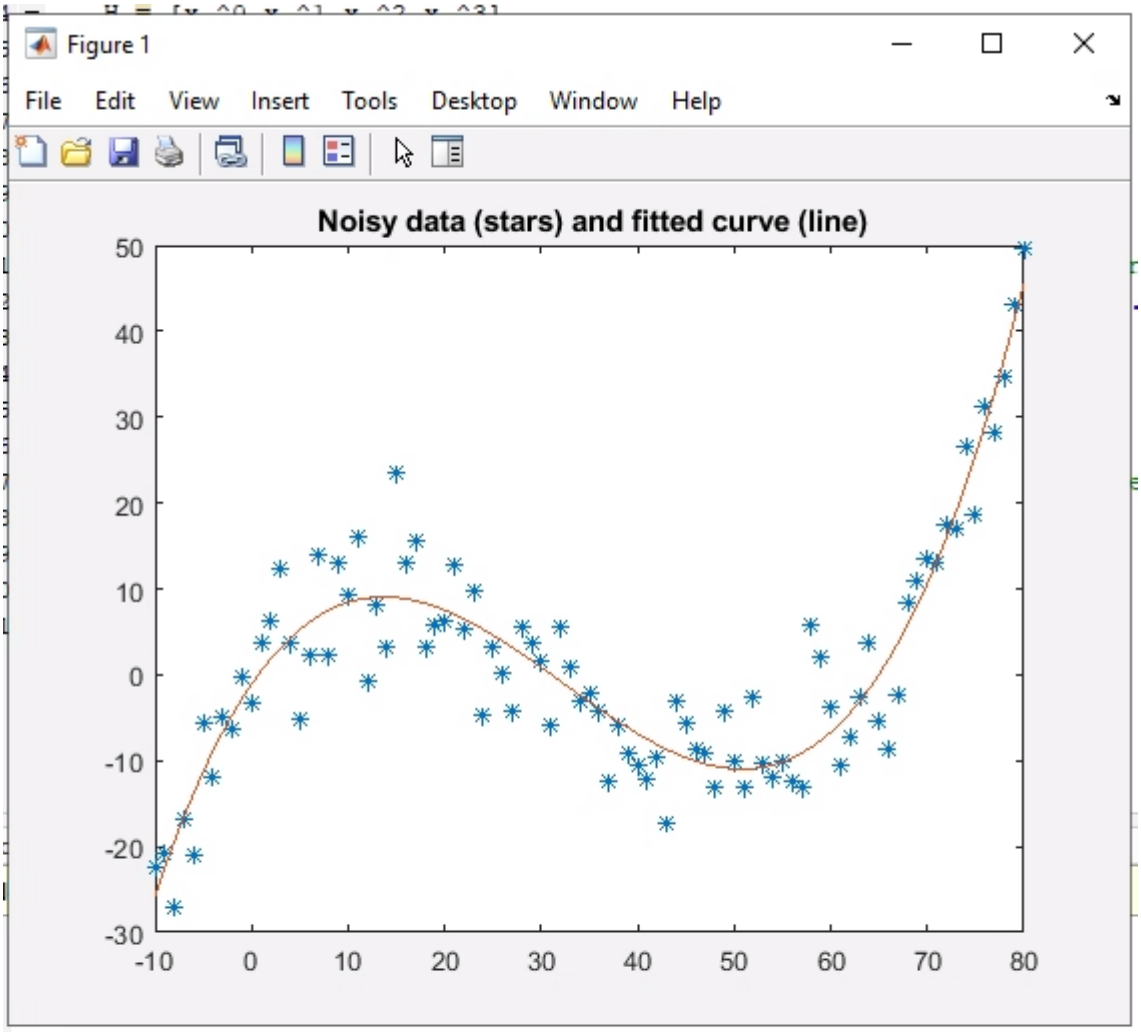
```
>> tax_computation_Musil
        5000         500
       10000        1000
       15000        2000
       22000        3600
       30000        6000
       38000        8400
       50000       26000
```

2. Starting with the structure plan specified in the file find_interval.m, create an mfile that uses logical vectors to find the portion of a set of Gaussian random numbers that fall within a certain interval. The set of Gaussian numbers are given in the MATfile interval_data.mat (MS Access). The m-file should also save and plot the portion in the interval. Finally, the m-file should also find the index and value of the maximum value in the original set of numbers and the final set of numbers.





3. Following the polynomial curve fit screencast, start with the structure plan specified in the file poly_curv_fit.m and create an m-file that will fit a 3rd order polynomial to the noisy data set provided in the MAT-file noisy_poly.mat (MS Access). The m file will output the model coefficients and will plot the fitted-curve along with the noisy input data.




```
beta_ols =

   -1.0838
    1.6309
   -0.0757
    0.0008
```