Feedback on individual project

Task 1 [5/5]

Your function works as required.

Task 2 [15/15]

Figure 1: Comparison of plot produced by the submitted `plotmydata.py` script and the submitted plot `yplot.png`. These should be identical.
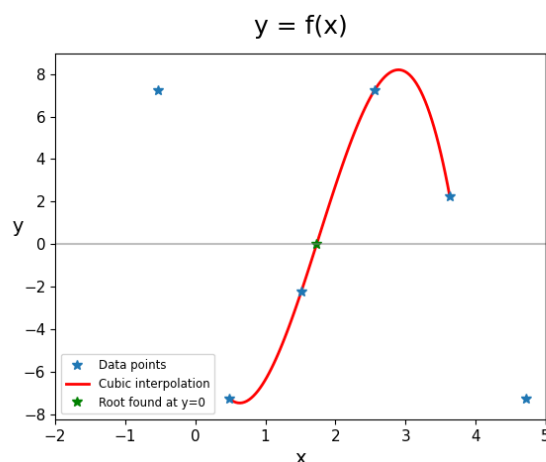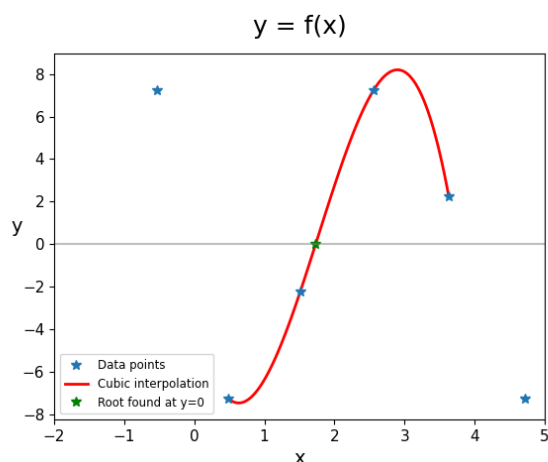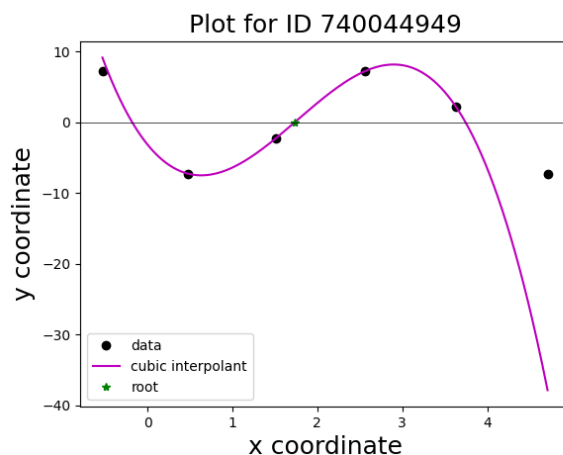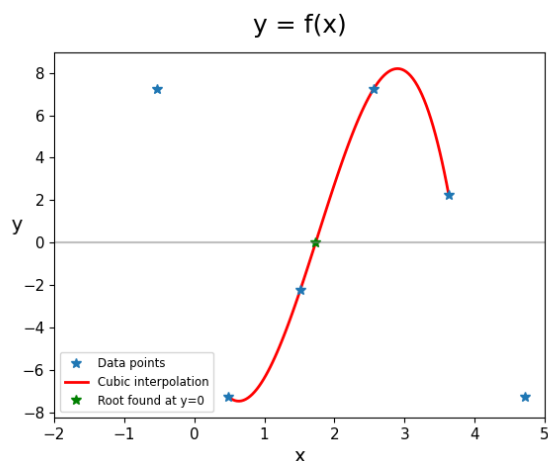

Figure 2: Comparison of submitted plot `yplot.png` to reference plot produced using my script and the student's ID. Will not be identical due to different choices of data range and plotting styles.

Your data is correctly plotted as a scatter plot. Your plot is clear and well labelled with appropriate axis labels, title and legend and you have made great use of different colours and markers. Your `plotmydata.py` script should have saved this plot, rather than using `plt.show()`

Automated tests

The output of the automated testing states:

```
========================= test session starts =========================
platform darwin — Python 3.12.3, pytest−8.3.2, pluggy−1.5.0
rootdir: /Users/JS1075/repos/courses/MTH1003/coursework/cw1
collected 3 items

tests/test_cubicfit.py ..                                      [ 66%]
tests/test_root_finding.py .                                   [100%]

========================= 3 passed in 0.51s =========================
```

This means that your code has passed both the cubic interpolation tests and root finding test.

Task 3 [35/35]

Your `cubicfit` function has the correct input and output arguments and you have implemented the Lagrange polynomial interpolation formula correctly. I can see that you are very comfortable with coding in python and have excellent knowledge of python structures beyond that taught in the course (e.g. classes, type checking, list comprehension and unpacking). You might like to look in to the `functools.reduce` function to replace your `mul`. However, take care that you don't overcomplicate tasks and make your code too general and complex for others to follow and understand!

Task 4 [35/45]

Your `findroot` function takes in the required arguments and returns the value of the root. However, the method is not correctly implemented because you are only looking at the value of `fstar`. Recall that $f(x_*) < 0$ does not, in general, mean that x_* is to the left of the root. Instead, you need to check whether `fstar` and `fl` are the same sign or not... see lecture notes.

Your code is well structured and commented and you have managed to write functions that fit the requirements of the brief while also using your own advanced python knowledge to write more general code - well done!

Total [90%]