Homework 4

Note: You may collaborate on the assignment. If you do collaborate on the assignment, list your collaborators. All duplicate assignments without collaborators listed will be flagged for plagiarism. Additionally, presenting others work – including a Chegg expert answer – as your own work *is* a violation of the academic dishonesty policy.

This homework assignment is designed to prepare you for the in class quiz.

1 Test Driven Development - Finish the Calculator

In class, we started to create a `Calculator` class using test driven development. We made an `add` and a `subtract` method. We are going to add more functionality to this class now, following a test-driven development approach. Specifically, add the following methods: `multiply` (return the multiplication of two numbers), `divide` (return the division of two numbers), `square_root` (return the square root of a number), and `pow` (raise a number to a given power).

(a) For each iteration, in a PDF, create the following:

- Put the test you wrote.
- Put the new version of the method.

2 Test Driven Development - Greatest Common Denominator

Now, lets look to add some more interesting methods to this `Calculator` class. Perform test driven development to create a greatest common denominator method, `GCD`, that returns the greatest common denominator between two given numbers. You should have at least 5 iterations. The outline for the GCD is given to you as follows:

```
1. If one of the numbers is 0, return the other number.
2. If the numbers are the same, return the number.
3. Otherwise, subtract the larger number from the smaller number and look for the GCD
   between this new number and the smaller number.
```

(a) For each iteration, in a PDF, create the following:

- Put the test you wrote.
- Put the new version of the method.

3 Test Driven Development - Least Common Multiplier

We are going to add one more method to our calculator class, `LCM` to return the least common multiple between two given numbers. You should have at least 3 iterations. The outline for the LCM is given to you as follows:

```
1. Find the largest of the 2 numbers.
2. Increment the larger number by itself till smaller number perfectly divides the
   resultant.
```

(a) For each iteration, in a PDF, create the following:

- Put the test you wrote.
- Put the new version of the method.