1 Problem 3

1.1 Why did Fibonacci fail the testThrowsIllegalArgumentException test? What did you have to do to fix it?

Answer: The testThrowsIllegalArgumentException failed because when n was 0, it would instantly throw the exception, even though 0 is valid since it is a non-negative. To fix it, I changed the if statement from `if (n <= 0)` to `if (n < 0)`.

1.2 Why did Fibonacci fail the testBaseCase test? What (if anything) did you have to doto fix it?

Answer: The fibonacci failed the testBaseCase because of the same issue in the testThrowsIllegalArgumentException, where the 0 is being thrown instead of outputting 0. The test passed after I fixed the first error.

1.3 Why did Fibonacci fail the testInductiveCase test? What (if anything) did you have to do to fix it?

Answer: The Fibonacci failed the testInductiveCase test because when n was 2, because it was returning itself, when it should've went to the else statement. It also didn't work because in the else statement it was getFibTerm(n+1)-getFibTerm(n-2), and fibonnaci is supposed to be the the sum of the previous two numbers. To fix the errors, I edited the else if statment to change it to n ¡ 2, and also fixed the else statement so that it was getFibTerm(n-1)+getFibTerm(n-2).

1.4 Why did Fibonacci fail the testLargeN test? What (if anything) did you have to do to fix it?

Answer: The fibonacci fail the testLargeN test because it was taking too long to compute the number. To fix it I had to make it faster by using a list to store the previous numbers, and then adding the previous two numbers to get the next number. The number was also too large, so I had to change the ints to longs.

1.5 What was causing Fibonacci to be so slow on testLargeN test? What did you do to make Fibonacci faster while still preserving the recursive nature of your implementation?

Answer: The reason why the fibonacci was so slow was because it was calling itself multiple times, and it was also calling the same numbers multiple times. To make it faster, I used a list to store the previous numbers, and then adding the previous two numbers to get the next number. In the list I also added the first two numbers, 0 and 1, so that it would be able to add the previous two numbers. I also changed the ints to longs because the number was too large.