

5321 Homework 4  
Fall 2019

Question Weighting:

Question 1-5 - 20 percent each

**Submittal items, for each problem**

**Submit the following in the PDF file**

1. Test case table snapshot (this is the .xlsx file)
2. JUnit pass indicator (green bar expanded so we can see values where possible)
3. JaCoCo statement green source line annotations (not JaCoCo summary)
4. Make sure to include the time stamp on your screen shots.

**Include in ZIP file**

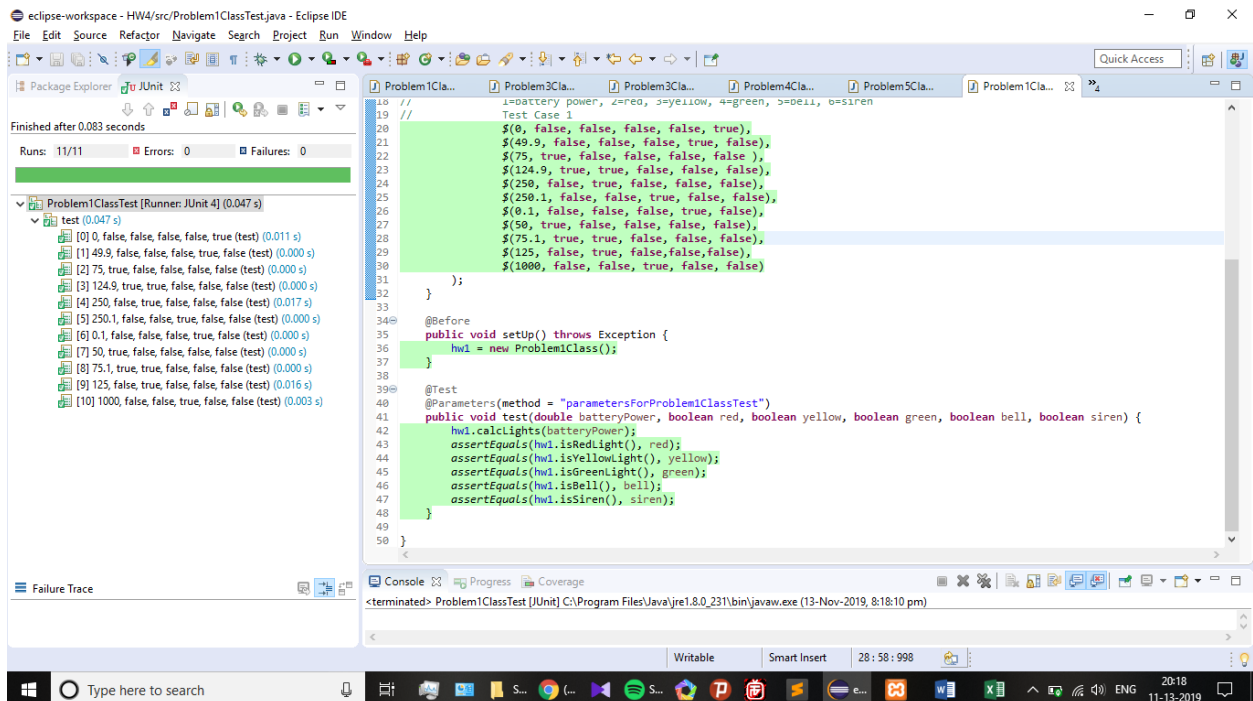
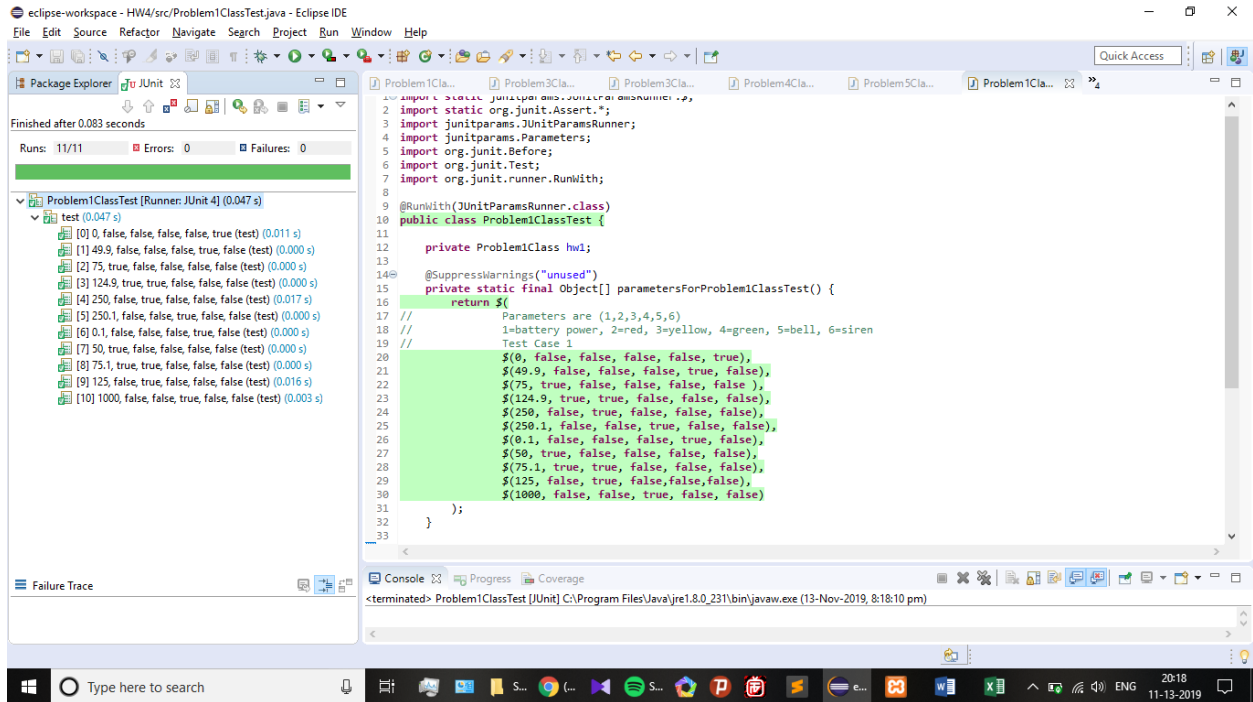
1. Your homework solution as a pdf or Word (previous item)
2. JUnit test files (make sure problem number is referenced in the file name)
3. csv files used (make sure problem number is referenced in the file name)

**Each Java file is attached in the Blackboard zip file. Please use these files. Please do NOT modify the code - if you have to modify the code there is something wrong with your test.**

Problem 1

Use the code from Blackboard and the test cases we developed from Homework 3. Implement this using the **JUnitParamsRunner**. Use the posted class test cases from Homework 3.

## Screenshots:



## Test Case Table:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	1	0	FALSE	FALSE	FALSE	FALSE	TRUE	15-16-32													
2	2	49.9	FALSE	FALSE	FALSE	TRUE	FALSE	15-18-19-32													
3	3	75	TRUE	FALSE	FALSE	FALSE	FALSE	15-18-21-22-32													
4	4	124.9	TRUE	TRUE	FALSE	FALSE	FALSE	15-18-21-24-25-32													
5	5	250	FALSE	TRUE	FALSE	FALSE	FALSE	15-18-21-24-27-28-32													
6	6	250.1	FALSE	FALSE	TRUE	FALSE	FALSE	15-18-21-22-25-30-32													
7	7	0.1	FALSE	FALSE	FALSE	TRUE	FALSE	-													
8	8	50	TRUE	FALSE	FALSE	FALSE	FALSE	-													
9	9	75.1	TRUE	TRUE	FALSE	FALSE	FALSE	-													
10	10	125	FALSE	TRUE	FALSE	FALSE	FALSE	-													
11	11	1000	FALSE	FALSE	TRUE	FALSE	FALSE	-													
12																					
13																					
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18																					
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22																					
23																					

## Problem 2

Use the code from Blackboard and the test cases we developed from Homework 3. Implement this as a **Parameterized.class** test. Use the posted class test cases from Homework 3. For the expected value of TotalPremium use a comparison threshold of **0.01** for assertEquals.

## Screenshots:

eclipse-workspace - HW4/src/Problem2ClassTest.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

Package Explorer JUnit

Finished after 0.04 seconds

Runs: 18/18 Errors: 0 Failures: 0

Problem2ClassTest [Runner: JUnit 4] (0.003 s)

- > [0] (0.001 s)
- > [1] (0.000 s)
- > [2] (0.000 s)
- > [3] (0.000 s)
- > [4] (0.000 s)
- > [5] (0.000 s)
- > [6] (0.000 s)
- > [7] (0.000 s)
- > [8] (0.000 s)
- > [9] (0.000 s)
- > [10] (0.000 s)
- > [11] (0.000 s)
- > [12] (0.000 s)
- > [13] (0.000 s)
- > [14] (0.000 s)
- > [15] (0.000 s)
- > [16] (0.000 s)
- > [17] (0.002 s)

Failure Trace

```
19 public void setUp() throws Exception {
20     hw2 = new Problem2Class();
21 }
22
23 @Parameters
24 public static Collection<Object[]> data() {
25     // Parameters are: (1,2,3,4,5,6,7,8)
26     // 1=premium, 2=policyHolder, 3=yearsMember, 4=multiPolicies, 5=safetyRating, 6=taxRate, 7=primeStatus, 8=totalPremium
27     return Arrays.asList(new Object[][] {
28         // Test case 1
29         { 5.000.01d, true, 5, true, 500, 0.0825d, true, 4330.01d },
30         // Test case 2
31         { 2.000.00d, true, 6, false, 500, 0.0825d, true, 1840.25d },
32         // Test case 3
33         { 1250.01d, true, 6, false, 500, 0.0825d, true, 1217.82d },
34         // Test case 4
35         { 350.00d, true, 6, false, 500, 0.0825d, true, 359.93d },
36         // Test case 5
37         { 349.99d, true, 6, false, 500, 0.0825d, true, 378.86d },
38         // Test case 6
39         { 349.99d, false, 6, false, 501, 0.0825d, true, 378.86d },
40         // Test case 7
41         { 349.99d, false, 5, true, 501, 0.0825d, true, 378.86d },
42         // Test case 8
43         { 349.99d, false, 5, false, 501, 0.0825d, false, 378.86d },
44         // Test case 9
45         { 349.99d, false, 5, true, 500, 0.0825d, false, 378.86d },
46         // Test case 10
47         { 1250.00d, true, 6, false, 500, 0.0825d, true, 1285.47d },
48         // Test case 11
49         { 1999.99d, true, 6, false, 500, 0.0825d, true, 1948.49d },
50         // Test case 12
51         { 5000.00d, true, 6, false, 500, 0.0825d, true, 5600.63d }
52     });
53 }
```

Console Progress Coverage

Problem2ClassTest (13 Nov 2019 9:47:13 PM)

Element	Coverage	Covered Instructions	Missed Instructions	Total Instructions
> HW4	50.5 %	950	933	1,883

Type here to search

eclipse-workspace - HW4/src/Problem2ClassTest.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

Package Explorer JUnit

Finished after 0.045 seconds

Runs: 18/18 Errors: 0 Failures: 0

Problem2ClassTest [Runner: JUnit 4] (0.005 s)

- > [0] (0.000 s)
- > [1] (0.000 s)
- > [2] (0.000 s)
- > [3] (0.000 s)
- > [4] (0.000 s)
- > [5] (0.000 s)
- > [6] (0.000 s)
- > [7] (0.000 s)
- > [8] (0.000 s)
- > [9] (0.000 s)
- > [10] (0.000 s)
- > [11] (0.000 s)
- > [12] (0.000 s)
- > [13] (0.000 s)
- > [14] (0.002 s)
- > [15] (0.001 s)
- > [16] (0.001 s)
- > [17] (0.001 s)

Failure Trace

```
54 { 0.000, false, 0, false, 501, 0.0825d, true, 0.000 };
55 // Test case 14
56 { 10000.00d, false, 6, false, 501, 0.0825d, true, 8660.00d };
57 // Test case 15
58 { 349.99d, false, 5, true, 1, 0.0825d, false, 378.86d };
59 // Test case 16
60 { 349.99d, false, 5, true, 999, 0.0825d, true, 378.86d };
61 // Test case 17
62 { 349.99d, false, 0, true, 500, 0.0825d, false, 378.86d };
63 // Test case 18
64 { 349.99d, false, 50, true, 500, 0.0825d, true, 378.86d };
65 });
66 }
67
68 public Problem2ClassTest(double premium, boolean policyHolder, int yearsMember, boolean multiPolicies,
69 int safetyRating, double taxRate, boolean primeStatus, double totalPremium) {
70     this.premium = premium;
71     this.policyHolder = policyHolder;
72     this.yearsMember = yearsMember;
73     this.multiPolicies = multiPolicies;
74     this.safetyRating = safetyRating;
75     this.taxRate = taxRate;
76     this.primeStatus = primeStatus;
77     this.totalPremium = totalPremium;
78 }
79
80 @Test
81 public void test() {
82     hw2.determineInsPremium(premium, policyHolder, yearsMember, multiPolicies, safetyRating, taxRate);
83     assertEquals(hw2.isPrimeStatus(), primeStatus);
84     assertEquals(hw2.getTotalPremium(), totalPremium, 0.01);
85 }
```

Console Progress Coverage

<terminated> Problem2ClassTest [JUnit] C:\Program Files\Java\jre1.8.0\_231\bin\javaw.exe (13-Nov-2019, 8:20:00 pm)

Type here to search

## Test Case Table:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	1	5000.01	TRUE		5	TRUE	500	8.25%	TRUE	4,330.01	12-13-26-7	TFTF									
2	2	2000	TRUE		6	FALSE	500	8.25%	TRUE	1,840.25	12-15-16-7	FFTF									
3	3	1250.01	TRUE		6	FALSE	500	8.25%	TRUE	1,217.82	12-15-18-19-26-27-36										
4	4	350	TRUE		6	FALSE	500	8.25%	TRUE	359.93	12-15-18-21-22-26-27-36										
5	5	349.99	TRUE		6	FALSE	500	8.25%	TRUE	378.86	12-15-18-21-24-26-27-36										
6	6	349.99	FALSE		6	FALSE	501	8.25%	TRUE	378.86	12-15-18-7	FFTF									
7	7	349.99	FALSE		5	TRUE	501	8.25%	TRUE	378.86	12-15-18-7	FFTF									
8	8	349.99	FALSE		5	FALSE	501	8.25%	FALSE	378.86	12-15-18-21-24-26-29-32-36										
9	9	349.99	FALSE		5	TRUE	500	8.25%	FALSE	378.86	12-15-18-7	FFTF									
10	10	1250	FALSE		6	FALSE	501	8.25%	TRUE	1,285.47	-										
11	11	1999.99	FALSE		6	FALSE	501	8.25%	TRUE	1,948.49	-										
12	12	5000	FALSE		6	FALSE	501	8.25%	TRUE	4,600.63	-										
13	13	0	FALSE		6	FALSE	501	8.25%	TRUE		0	Extreme range premium									
14	14	10000	FALSE		6	FALSE	501	8.25%	TRUE	8,660.00	0	Extreme range premium									
15	15	349.99	FALSE		5	TRUE	1	8.25%	FALSE	378.86	Extreme range safety rating										
16	16	349.99	FALSE		5	TRUE	999	8.25%	TRUE	378.86	Extreme range safety rating										
17	17	349.99	FALSE		0	TRUE	500	8.25%	FALSE	378.86	Extreme range years member										
18	18	349.99	FALSE		50	TRUE	500	8.25%	TRUE	378.86	Extreme range years member										
19																					
20																					
21																					
22																					
23																					

## Problem 3

Use the code from Blackboard and the test cases we developed from Homework 3. Implement this using the **FileParameters** (read the values from a file). Use the posted class test cases from Homework 3.

## Screenshots:

```
1 import static org.junit.Assert.assertEquals;
2 import org.junit.Before;
3 import org.junit.Test;
4 import junitparams.FileParameters;
5 import junitparams.JUnit4Runner;
6 import org.junit.runner.RunWith;
7
8 @RunWith(JUnit4Runner.class)
9 public class Problem3ClassTest {
10     private Problem3Class hw3;
11
12     @Before
13     public void setUp() throws Exception {
14         hw3 = new Problem3Class();
15     }
16
17     @Test
18     @FileParameters("src/Problem3TestCaseTable.csv")
19     public void test(int testCase, double distance, boolean cruiseRequested, double speed) {
20         hw3.setWarnings(cruiseRequested, distance, speed);
21         assertEquals(hw3.isRedLight(), red);
22         assertEquals(hw3.isYellowLight(), yellow);
23         assertEquals(hw3.isGreenLight(), green);
24         assertEquals(hw3.isWarning(), warning);
25         assertEquals(hw3.isCruiseEngaged(), cruiseEngaged);
26     }
27
28 }
29
30 }
```

## Test Case Table:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	1	200	TRUE	40.1	FALSE	FALSE	TRUE	FALSE	FALSE	TRUE	9-10-22-23-24-25-26-27										
2	2	100.1	TRUE	40.1	FALSE	TRUE	FALSE	FALSE	FALSE	TRUE	9-12-13-22-23-24-25-26-27										
3	3	75	TRUE	40.1	TRUE	FALSE	FALSE	TRUE	FALSE	TRUE	9-12-16-17-22-23-24-25-26-27										
4	4	74.9	TRUE	40.1	TRUE	FALSE	FALSE	FALSE	TRUE	TRUE	9-12-16-19-22-23-24-25-26-27										
5	5	50	FALSE	40.1	TRUE	FALSE	FALSE	FALSE	TRUE	FALSE	9-12-16-15 FTTF										
6	6	49.9	TRUE	40.1	TRUE	FALSE	FALSE	FALSE	TRUE	FALSE	9-12-16-15 TFFT										
7	7	50	TRUE	40	TRUE	FALSE	FALSE	FALSE	TRUE	FALSE	9-12-16-15 TTFT										
8	8	50	TRUE	65.1	TRUE	FALSE	FALSE	FALSE	TRUE	FALSE	9-12-16-15 TTTF										
9	9	50	TRUE	40.1	TRUE	FALSE	FALSE	FALSE	TRUE	TRUE	-	TTTT									
10	10	50	TRUE	65	TRUE	FALSE	FALSE	FALSE	TRUE	TRUE	tests other TT BV										
11	11	100	TRUE	40.1	TRUE	FALSE	FALSE	TRUE	FALSE	TRUE	tests missing BV from bPath										
12	12	200.1	TRUE	40.1	FALSE	FALSE	TRUE	FALSE	FALSE	TRUE	tests missing BV from bPath										
13	13	0	TRUE	65	TRUE	FALSE	FALSE	FALSE	TRUE	FALSE	Extreme range distance										
14	14	1000	TRUE	65	FALSE	FALSE	TRUE	FALSE	FALSE	TRUE	Extreme range distance										
15	15	50	TRUE	0	TRUE	FALSE	FALSE	FALSE	TRUE	FALSE	Extreme range speed										
16	16	50	TRUE	100	TRUE	FALSE	FALSE	FALSE	TRUE	FALSE	Extreme range speed										
17																					
18																					
19																					
20																					
21																					
22																					
23																					

## Problem 4

Use the code from Blackboard and the test cases we developed from Homework 3. Implement this using the **FileParameters** (read the values from a file). Use the posted class test cases from Homework.

## Screenshots:



Problem4TestCaseTable.csv - Excel

File Home Insert Page Layout Formulas Data Review View Tell me what you want to do... Sign in Share

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B I U Font Merge & Center General % 0.00

AutoSum Fill Sort & Find & Filter Select Clear

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	1	TRUE	500.1	4999.9	engageRe	7-8-9-10-11-19	stmt 11 TTT													
2	2	FALSE	500.1	4999.9	disengage	07-18-2019														
3	3	TRUE	150	2499.9	deployPoi	7-8-13-14-15-16-1	stmt 16 TTT													
4	4	TRUE	500.1	2499.9	orbit	7-8-9-19	stmt 11 TTF													
5	5	TRUE	149.9	2499.9	orbit	7-8-13-19	stmt 16 FTT													
6	6	TRUE	500.1	5000	orbit	7-8-9-10-19	stmt 11 TTF													
7	7	TRUE	150	1000	orbit	7-8-13-14-19	stmt 16 TTF													
8	8	TRUE	150	2500	orbit	7-8-13-14-15-19	stmt 16 TTF													
9	9	TRUE	500	4999.9	orbit	-	stmt 11 FTT													
10	10	TRUE	500.1	2500	engageRe	-														
11	11	TRUE	150	1000.1	deployPoi	-														
12	12	TRUE	200	10000	orbit	extreme range altitude														
13	13	TRUE	200	0	orbit	extreme range altitude														
14	14	TRUE	1000	5000.1	orbit	extreme range speed														
15	15	TRUE	0	5000.1	orbit	extreme range speed														
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Problem4TestCaseTable

Ready

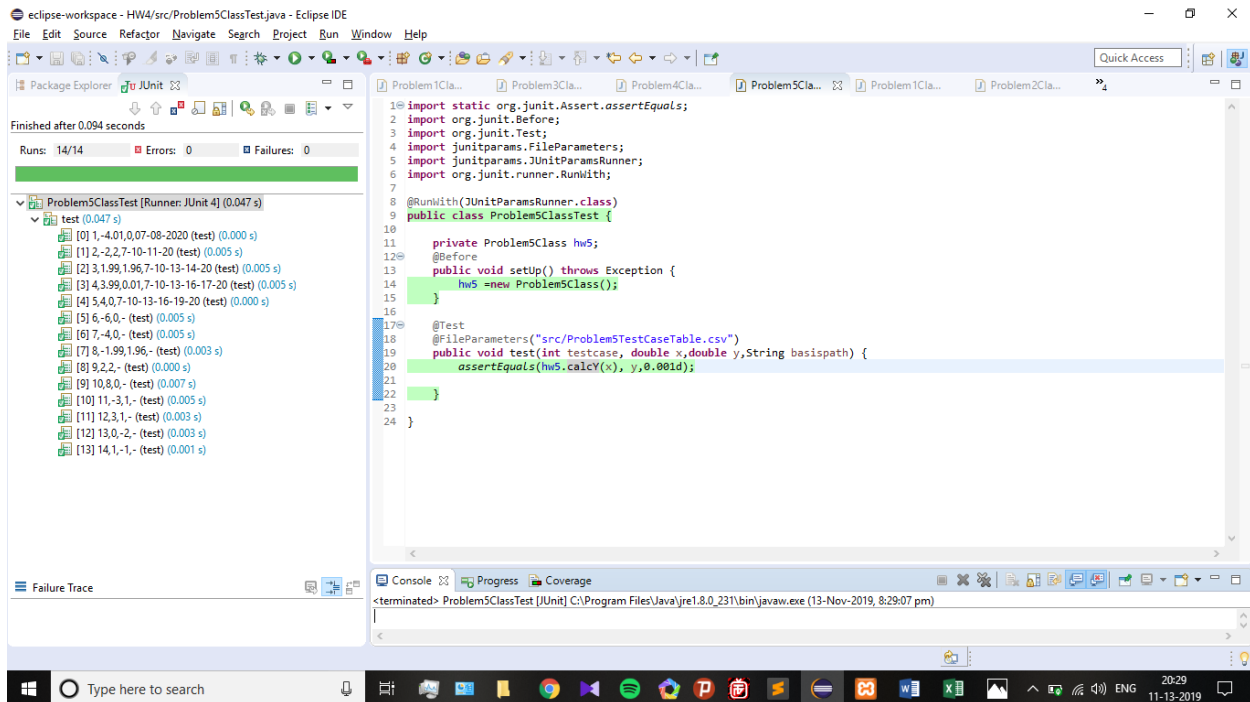
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## Problem 5

Use the code from Blackboard and the test cases we developed from Homework 3. Implement this using the **FileParameters** (read the values from a file). Use the posted class test cases from Homework 3. For the expected value of  $y$  use a comparison threshold of **0.001** for assertEquals.

### Screenshots:





### Test Case Table:

Problem5TestCaseTable.csv - Excel

File Home Insert Page Layout Formulas Data Review View Tell me what you want to do... Sign in Share

Clipboard Font Alignment Number Styles Cells Editing

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	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	1	-4.01	0	07-08-2020																
2	2	-2	2	7-10-11-20																
3	3	1.99	1.96	7-10-13-14-20																
4	4	3.99	0.01	7-10-13-16-17-20																
5	5	4	0	7-10-13-16-19-20																
6	6	-6	0	-																
7	7	-4	0	-																
8	8	-1.99	1.96	-																
9	9	2	2	-																
10	10	8	0	-																
11	11	-3	1	-																
12	12	3	1	-																
13	13	0	-2	-																
14	14	1	-1	-																
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Problem5TestCaseTable

Ready

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