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Assignment 1
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Assignment 1

- Problem 1:
    - For this problem the student simply created a matrix which spanned from 1-100 and was required to make a second matrix which held the even elements from the array. Personally I created the 100 element array(x), then I took the modulo from each element(dividing by 2) and essentially created a second matrix which simply had a 1 if the element was even and a zero if not. I then created a third array(y) which helps x(even matrix) essentially filtering out the odd values.
- Problem 2:
    - This problem required us to use two embedded loops in order to obtain a result from different conditions(changes in time and frequency). I personally created the 2d array and used the first row and first column for labeling allowing for the arrays to be more organized and easy to read as seen below:

	1	2	3	4
1	0	10	15	20
2	0	2.9850	2.9850	2.9850
3	0.1000	2.9850	-2.9850	2.9850
4	0.2000	2.9850	2.9850	2.9850
5	0.3000	2.9850	-2.9850	2.9850
6	0.4000	2.9850	2.9850	2.9850

*The figure above(figure 1) is the result from using two embedded for loops in order to display the expected results

- Problem 3:
    - For this problem we are using a for loop in order to find the largest value of T while the other conditions are met, I personally used a for loop to iterate through the three different values of omega, but in order to find the actual value of T I used a while loop which would end when T no longer

met the conditions. Once the conditions are not met the I go down one increment to compensate for the breach of the condition.

	1	2
1	35	2.1500
2	40	2.1500
3	45	2.1500

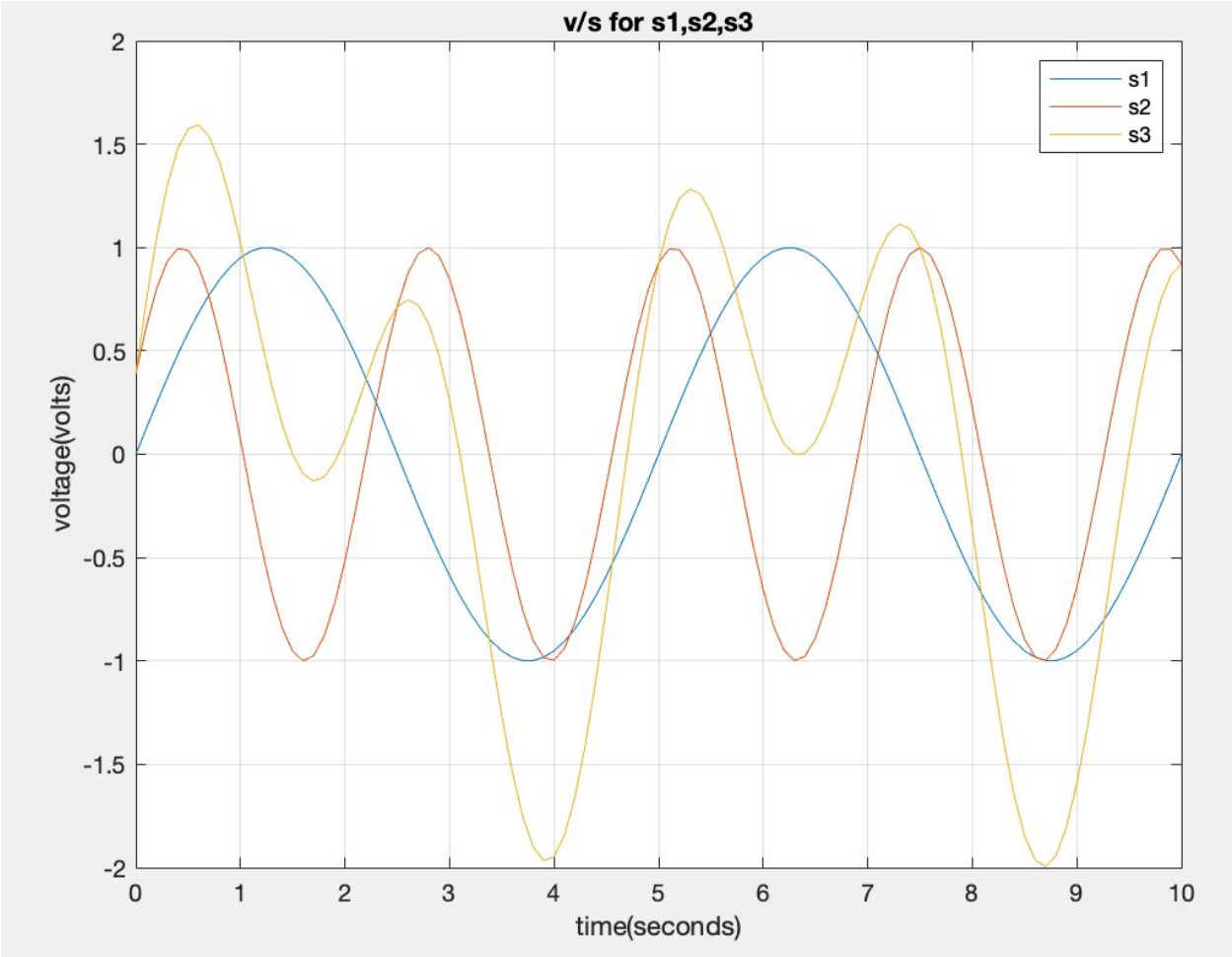
*above is the results for problem 3(figure 2)

- Problem 4:
    - For this problem we are required to create an even spaced set of 15 indexes from 0-1 and ran the calculation in a loop. After I used max(), min(), and mean() in order to get the average and maximum/minimum elements from the matrix. In order to create the list of values which are greater than 4 I had to iterate through the matrix and divide the absolute value of each of the elements by 4 and if the remainder was higher than 1 I would add them to a new matrix. The max is 5.5319, min is -6.8464, average is .7356 and figure 3 below is the matrix of the index of each element whos value is higher than 4 as well as figure 4 which is the calculated values.

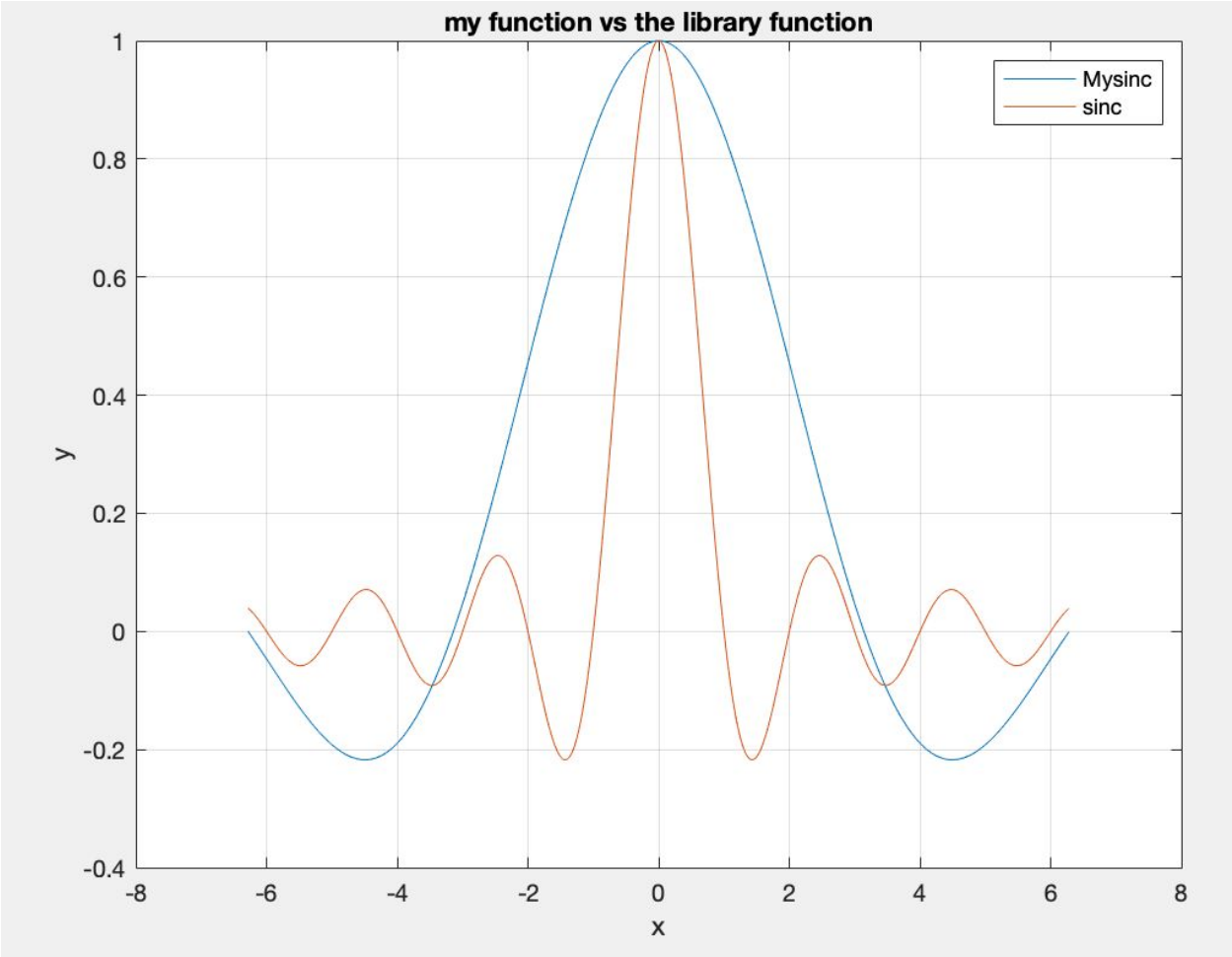
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	3.9203	5.1313	4.7842	2.6643	-0.6985	-4.1874	-6.5343	-6.8464	-4.9870	-1.6384	1.9833	4.6323	5.5319	4.6485	2.6294
2															
3															

	1	2	3	4	5	6	7	8	9	10
1	2	3	6	7	8	9	12	13	14	
2										
3										

- Problem 5:
    - For this problem we simply plotted the functions here is the graph below(figure 5):



- Problem 6:
    - For this problem I simply made a function which would be two if conditions which met the requirements for sin and called that function and plotted the values. Below are the results(figure 6):


my function vs the library function
Mysinc
sinc
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
y
-8
-6
-4
-2
0
2
4
6
8
x