# Introduction

For this lab we were asked to solve 2 problems; 1) Given Trigonometric functions, create a randomized number from -pi to pi and find 2 functions that are equivalent, 2) Given a set S find the partition of the set and use subsets. To solve these problems, we were asked to use randomized algorithms for the first problem and backtracking for the second.

# Problem 1 Proposed Solution

The first problem we created an array with all the given trig functions that would be used. Next, we called a method to keep our code clean, which takes that array as input. In the method we use the same method that was given to us in class, which already set up to compare to functions. The next thing we had to do was just create 3 random numbers, 1 for the number between -pi to pi, and the next 2 gives us a number between 0 and the size of the list. Once we get those numbers we compare the 2 random numbers that select a function to make sure we are not checking the same function, and if we are not, we evaluate those functions and compare them if they are the same, if they are we return and print out the 2 functions that are the same.

# Problem 1 Experimental Results

I created a counter to see if the running time for my method would increase. When the counter checked for 10 or less answers, the running time remained .00 and it also printed. The time started increasing as the amount of answers we were looking for increased. There was a problem when we tried comparing sec, but a solution to that problem was posted in the slack that required us to import.

# Problem 1 Running Time

# Problem 2 Proposed Solution

For problem 2 we used 2 methods, the first method adds up all the elements in the list and we check if that number is even, if that number is not even, we return because we cannot continue. Next, we initialize method 2 which was given in class, the only thing new about this method is that every time we use “last” we updated that to “last-1.”

# Problem 2 Experimental Results

For problem 2 we increased the size of the set to help us get a running time greater than what we had. The issue faced with problem 2 was that we only had 1 subset being returned. The subset method returned True and 1 subset but would return correct results if the solution was right.

# Problem 2 Running Time

# Conclusion

We applied skills that we learned in class and finally got to see those skills in action. Another thing we did was got to use the code that was given in class and it showed us how that is useful.

I certify that this project is entirely my own work. I wrote, debugged, and tested the code being presented, performed the experiments, and wrote the report. I also certify that I did not share my code or report or provided inappropriate assistance to any student in the class. C.L