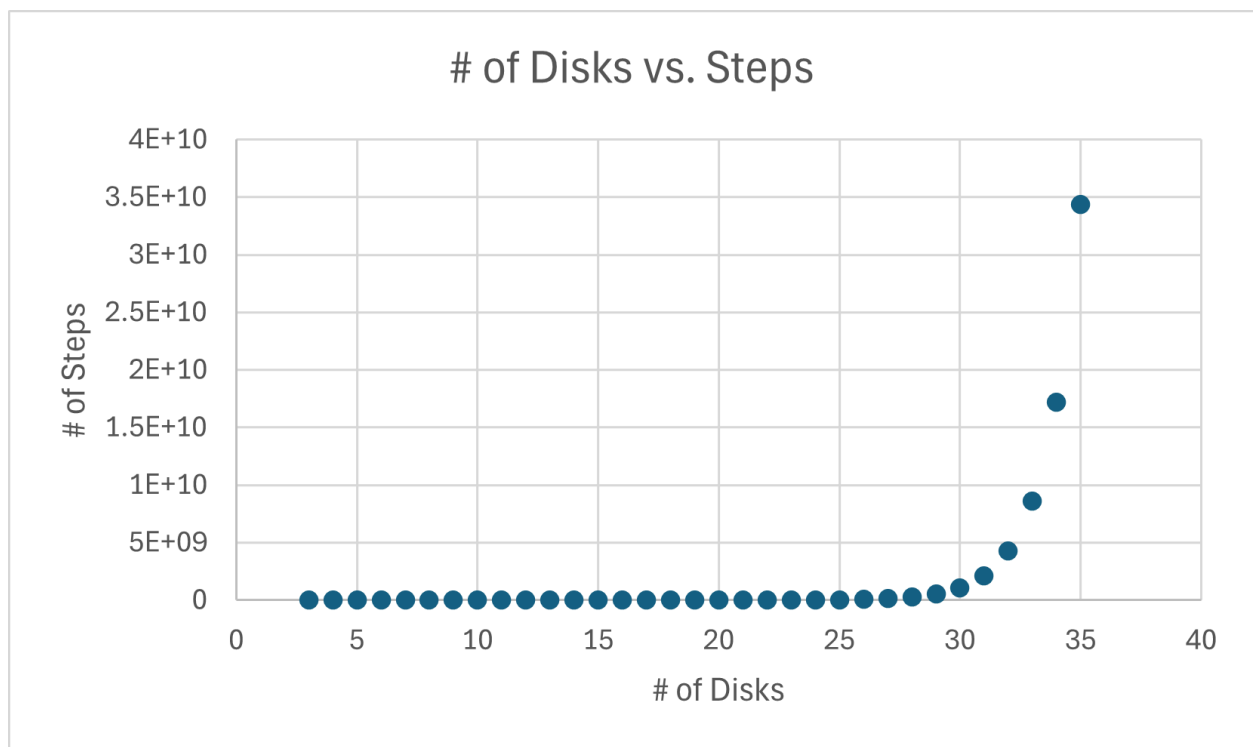
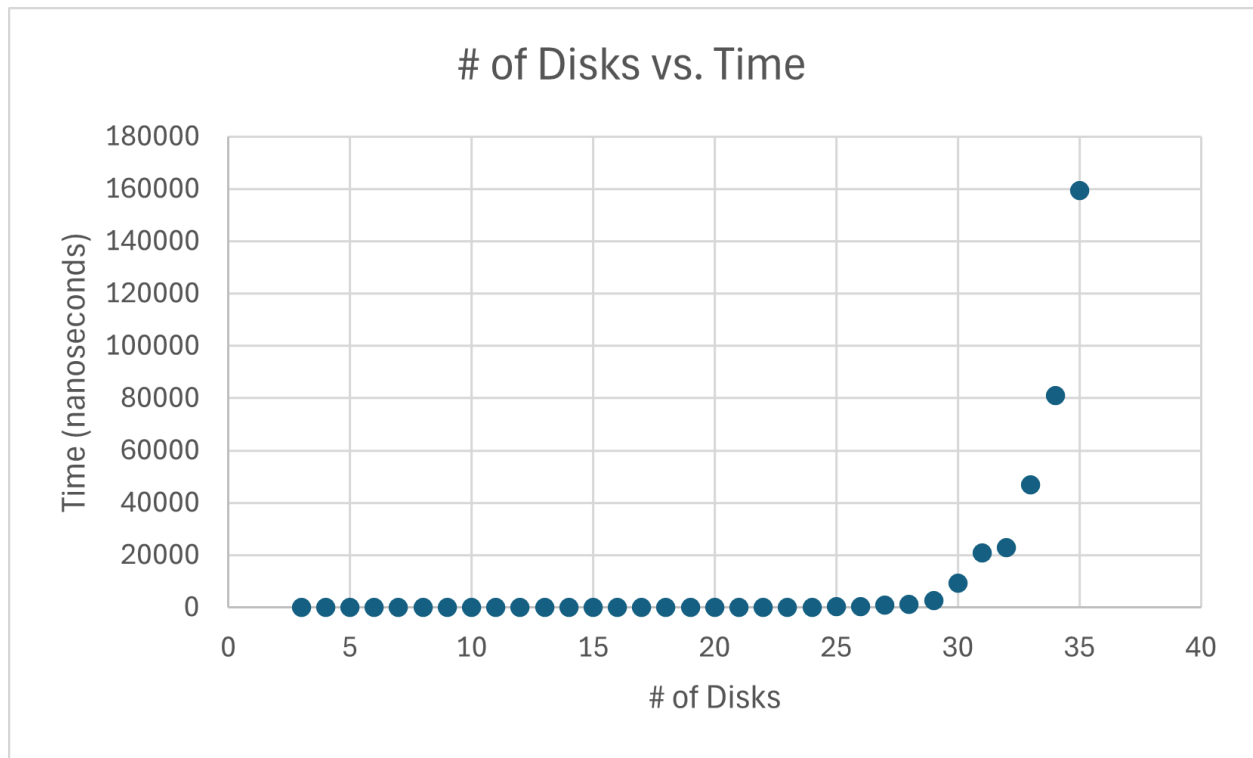
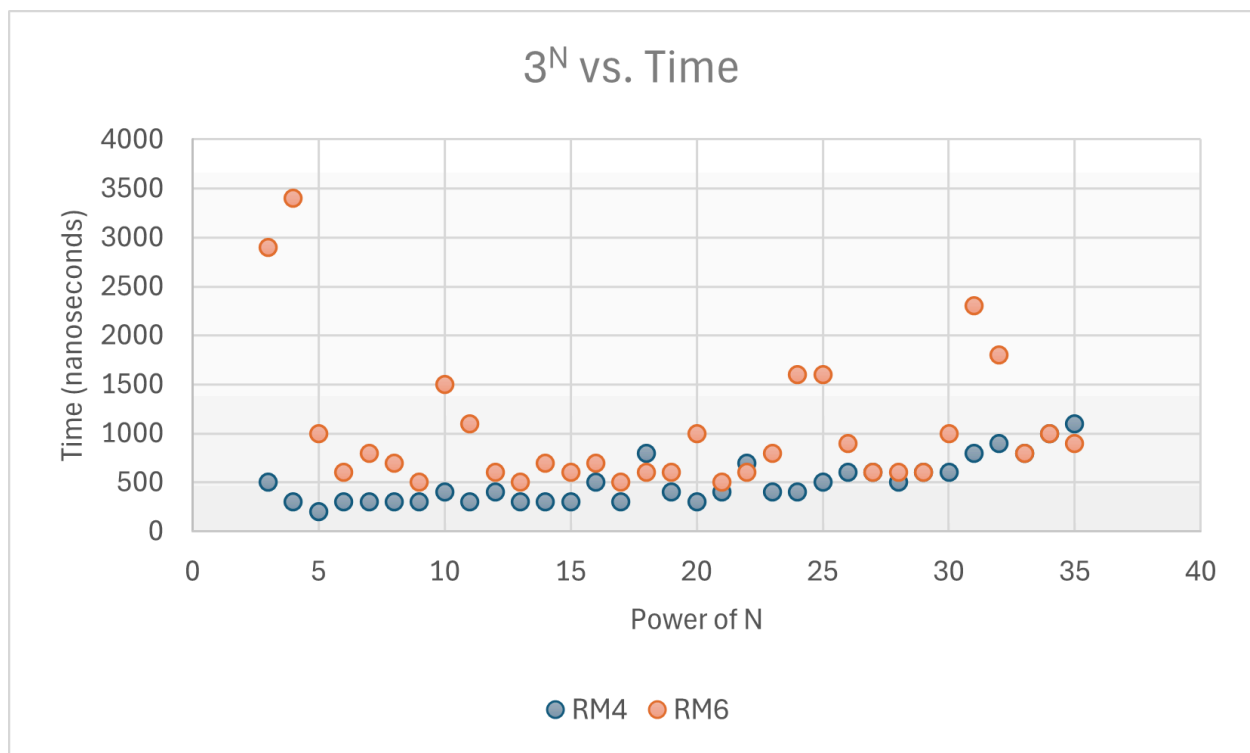


Tower of Hanoi



The largest number of disks for the Tower of Hanoi to be reasonably solved is around 30 disks. Looking at both graphs, past 30 disks the graphs start growing exponentially, meaning that it will take a greater amount of steps and time to complete. The legend is not accurate, if the monks are moving 1 disk per second, 35 disks is already 10 centuries and will roughly double per disk. As the Earth has about 1 billion years left, changing those years into second, then using the equation to solve the tower in the minimal amount of moves will bring the end of the world around 54 disks.

Power of 3



The results are unexpected because the RM4 algorithm performed faster and more linearly than the RM6 algorithm. Thinking that the RM6 would be more efficient, because the function is able to reduce the number of multiplications required to run and switch with the property of exponents. I had to look up why there were spikes in the RM6 function, and found out some causes are from system factors like caching or context switching.

Subset Sum

Iteration	Brute Force (Exact)	Greedy (approx.)	Approximation Factor	Nanosec BF	Nanosec Greedy
1	991	975	98.39	500	100
2	995	956	96.08	1000	400
3	1000	987	98.70	500	400
4	998	968	96.99	800	500
5	999	923	92.39	500	200
6	999	997	99.80	1100	500
7	994	994	100.00	500	200
8	1000	943	94.30	700	400
9	997	922	92.48	600	200
10	998	975	97.70	800	500
Average	997.1	964	96.68248745	700	340

The approximation algorithm did pretty well, it was able to get within 10% of the exact algorithm, with one iteration matching. On average there was a 96.7% accuracy between the exact algorithm and the approximation algorithm. The approximation algorithm was quicker than the exact algorithm, on average the time for the approximation algorithm to finish is about half of the exact algorithm. The approximation algorithm is worth using, since it was able to get very close to the exact algorithm, but only if the quickest route is needed. But not the best if accuracy is needed, though during these iterations were close to each other, it mainly depends on the numbers given.