Practical 3 – Recursion

Warm up Questions

1. A recursive algorithm must have a base case and must change its state and work towards the base case by calling itself recursively.
2. Recursion is theoretically powerful and often used in algorithms that could benefit from recursive methods.
3. True
4. True
5. True
6. True
7. True
8. The base case for this recursive method is an argument with any value which is greater than zero.
9. The base case is missing entirely, or the problem needs more than one base case but not all the base cases are covered. The recursive step doesn't reduce to a smaller subproblem, so the recursion doesn't converge.
10. Bottum-up

Exercises

1. In Github
2. When I enter a large number, the iterative function works way faster. When I enter anything over 100,000 the iterative returns a negative and the recursive throws a stack overflow error.
3. Recursive = $O(2^n)$
   Iterative = O(n)