COSC 2123/1285 Algorithms and Analysis
Tutorial
Maths and Algorithm Analysis

Questions

1 Simplify the following summation:

$$\sum_{j=2}^{n+1} 10j$$

2 Consider the following recurrence relation. Simplify it to an expression of n variable only, i.e., no recurrence terms in your final expression.

$$C(n) = C(n-1) + 2,\ C(3) = 1$$

3 Consider the following mystery function:

Algorithm 1 RecurMystery($A[0 \dots n-1]$)

Input: an array A of size n
Output: T

```
1: if n == 1 then
2:     return 1
3: end if
4: T_1 = RecurMystery(A[0 ... n-2])
5: T = T_1 + T_1
6: return T
```

a) What is this function computing?

b) What is the basic operation in this recursive algorithm?

c) Write the recurrence relation for the number of basic operations executed by this algorithm, including the base/termination case.

d) Simplify the recurrence relation.

