**Exercise 3.49: Prove that**

Proof: Consider the notation symbol denoted as the summation notation for the expression

Thus, the sum of all exists from to and mathematically to be described as:

Replace the parameter as in the summation notation, consequently, this describes that the sum of also exists from to

Algebraically, the square of the binomial in the form always generate a trinomial form of ; similarly, we can simplify the expression as

Since each term of are in terms of additions and subtractions being added to another next term of . Notice that whenever we change which one is being added or subtracted first, the overall summation remains the same and equivalent, therefore, this long thread of summation satisfies the law of associativity, therefore we can regroup into their common polynomial degree:

The new expression in the right-hand of equation implies that each grouped terms also satisfies the summation notations definitions:

1. defines the sum of all ’s from to thus
2. Since is the common factor in the expression then which implies the sum of all ’s indeed made existence from to ;
3. Finally, the expression defines the sum of all , from unto times, making it

Recall can be rewritten as

**Exercise 3.51: Two variables and and assume their values as follows:**

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Calculate the following:

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Exercise 3.90: Find the geometric mean of the sets and

Consider the Geometric Mean of set A to be defined as ; since there are total of 5 distinct elements within the set (the element 3 has been duplicated). Let :

Apply natural logarithm for :

Apply the inverse of natural logarithm – exponential – for and simplify:

Consider the Geometric Mean of set B to be defined as  ; since there are 5 elements within the set. Let

Apply the natural logarithm then its natural exponential for the