Lecture 6 - Summation Recap

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Abstract

This short review will serve as a quick refresher on the rules of summation.

1 Formulae Review

The following five rules are fairly well known rules of summation. We'll add a couple more later on in the term.

Given that *a, b*, and *c* are constants, with respect to *i*, and *f(i)* and *g(i)* are functions of *i*, such as *i* or i^2 or $f(i) = c$.

1. $\sum_{i=a}^{b} c \cdot f(i) = c \cdot \sum_{i=a}^{b} f(i)$
2. $\sum_{i=a}^{b} (f(i) + g(i)) = \sum_{i=a}^{b} f(i) + \sum_{i=a}^{b} g(i)$
3. $\sum_{i=a}^{b} 1 = (b - a + 1)$

   Corollary: $\sum_{i=a}^{b} c = \sum_{i=a}^{b} c = c \cdot (b - a + 1)$
4. $\sum_{i=1}^{n} i = \frac{n(n+1)}{2}$
5. $\sum_{i=a}^{b} f(i) = \sum_{i=1}^{b} f(i) - \sum_{i=1}^{a-1} f(i)$