

Summation Formulas

$$\sum_{i=1}^n c = cn$$

$$\sum_{i=1}^n i = \frac{n(n+1)}{2}$$

$$\sum_{i=1}^n i^2 = \frac{n(n+1)(2n+1)}{6}$$

$$\sum_{i=1}^n i^3 = \frac{n^2(n+1)^2}{4}$$

$(n+1)(2n+1) = 2n^2 + 3n + 1$
 You're welcome

Summation Properties

$$\sum_{i=1}^n (a_i \pm b_i) = \sum_{i=1}^n a_i \pm \sum_{i=1}^n b_i$$

$$\sum_{i=1}^n k a_i = k \sum_{i=1}^n a_i \quad \leftarrow k \text{ is a number}$$

Area under a curve

The area under the graph of the function $f(x)$, where x is on the interval $[a,b]$ is

$$\lim_{n \rightarrow \infty} \sum_{i=1}^n f\left(a + \frac{(b-a)i}{n}\right) \cdot \left(\frac{b-a}{n}\right)$$