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

$$\sum_{i=1}^{n} i^2 = \frac{n(n+1)(2n+1)}{6} = \frac{2n^3 + \text{lower degree}}{6}$$

$$\sum_{i=1}^{n} i^3 = \left[\frac{n(n+1)}{2}\right]^2 = \frac{n^4 + \text{lower degree}}{4}$$