### 9.1.3 *Important results on the sum of special sequences*

(i) Sum of the first $n$ natural numbers:

$$\sum n = 1 + 2 + 3 + \ldots + n = \frac{n(n+1)}{2}$$

(ii) Sum of the squares of first $n$ natural numbers.

$$\sum n^2 = 1^2 + 2^2 + 3^2 + \ldots + n^2 = \frac{n(n+1)(2n+1)}{6}$$

(iii) Sum of cubes of first $n$ natural numbers:

$$\sum n^3 = 1^3 + 2^3 + 3^3 + \ldots + n^3 = \left[\frac{n(n+1)}{2}\right]^2$$