Special Series

Special Series is a series which is special in some way. It could be arithmetic or geometric.

Some of the special series are:

1. Sum of first n natural numbers: 1 + 2 + 3 + 4 + ... + n
2. Sum of squares of first n natural numbers: 12+ 22+ 32+ 42+ .... +n2
3. Sum of cubes of first n natural numbers: 13+ 23+ 33+ 43 + ... + n3

Some standard results:

1. **Sum of first n natural numbers**

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

2. **Sum of first n odd natural numbers**

$$\sum_{r=1}^{n} (2r - 1) = n^2$$

3. **Sum of first n even natural numbers**

$$\sum_{r=1}^{n} 2r = n\,(n+1)$$