

11.3 Some Finite Series

Number of terms in the series: n

$$\mathbf{1193.} \quad 1 + 2 + 3 + \dots + n = \frac{n(n+1)}{2}$$

$$\mathbf{1194.} \quad 2 + 4 + 6 + \dots + 2n = n(n+1)$$

$$\mathbf{1195.} \quad 1 + 3 + 5 + \dots + (2n-1) = n^2$$

$$\mathbf{1196.} \quad k + (k+1) + (k+2) + \dots + (k+n-1) = \frac{n(2k+n-1)}{2}$$

$$\mathbf{1197.} \quad 1^2 + 2^2 + 3^2 + \dots + n^2 = \frac{n(n+1)(2n+1)}{6}$$

$$\mathbf{1198.} \quad 1^3 + 2^3 + 3^3 + \dots + n^3 = \left[\frac{n(n+1)}{2} \right]^2$$

$$\mathbf{1199.} \quad 1^2 + 3^2 + 5^2 + \dots + (2n-1)^2 = \frac{n(4n^2-1)}{3}$$

$$\mathbf{1200.} \quad 1^3 + 3^3 + 5^3 + \dots + (2n-1)^3 = n^2(2n^2-1)$$

$$\mathbf{1201.} \quad 1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \dots + \frac{1}{2^n} + \dots = 2$$

$$\mathbf{1202.} \quad \frac{1}{1 \cdot 2} + \frac{1}{2 \cdot 3} + \frac{1}{3 \cdot 4} + \dots + \frac{1}{n(n+1)} + \dots = 1$$

$$\mathbf{1203.} \quad 1 + \frac{1}{1!} + \frac{1}{2!} + \frac{1}{3!} + \dots + \frac{1}{(n-1)!} + \dots = e$$