Finite series

- $\sum_{n=1}^{N} n = \frac{N(N+1)}{2}$
- $\sum_{n=1}^{N} n^2 = \frac{N(N+1)(2N+1)}{6}$
- $\sum_{n=1}^{N} n^3 = \frac{N^2(N+1)^2}{4}$
- $\sum_{n=0}^{N} x^n = \frac{x^{N+1}-1}{x-1}$
- $\sum_{n=0}^{N} \frac{N!}{n!(N-n)!} x^n y^{N-n} = (x+y)^N$
- $\sum_{n=0}^{N} e^{j(\Theta + n\phi)} = \frac{\sin[(N+1)\phi/2]}{\sin(\phi/2)} e^{j[\Theta + (N\phi/2)]}$
- $\sum_{n=0}^{N} \binom{N}{n} = \sum_{n=0}^{N} \frac{N!}{n!(N-n)!} = 2^N$

Infinite series

- $e^x = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \cdots = \sum_{n=0}^{\infty} \frac{x^n}{n!}$

Error Function

- $erf(x) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{x} e^{-y^2/2} dy$
- $erfc(x) = \frac{1}{\sqrt{2\pi}} \int_{x}^{\infty} e^{-y^2/2} dy$
- $erfc(x) \simeq \frac{1}{x\sqrt{2\pi}} \left(1 - \frac{1}{x^2}\right) e^{-x^2/2}$
- $erf(x) + erfc(x) = 1$