Rules / Theorem

① For constant c

$$\sum_{k=1}^{n} c = cn$$

② $$\sum_{k=1}^{n}(a_k + b_k) = \sum_{k=1}^{n} a_k + \sum_{k=1}^{n} b_k$$

③ $$\sum_{k=1}^{n} c a_k = c \sum_{k=1}^{n} a_k \quad \text{(for constant } c\text{)}$$

④ $$\sum_{k=1}^{n} k = \frac{n(n+1)}{2}$$

⑤ $$\sum_{k=1}^{n} k^2 = \frac{n(n+1)(2n+1)}{6}$$

⑥ $$\sum_{k=1}^{n} k^3 = \frac{n^2(n+1)^2}{4}$$