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

2. $$\sum_{k=1}^{n}(a_k-b_k)=(a_1-b_1)+(a_2-b_2)+\dots+(a_n-b_n)$$

$$\sum_{k=1}^{n}a_k-\sum_{k=1}^{n}b_k=(a_1+a_2+\dots+a_n)-(b_1+b_2+\dots+b_n)$$

즉, $\sum_{k=1}^{n}(a_k-b_k)=\sum_{k=1}^{n}a_k-\sum_{k=1}^{n}b_k$

3. $$\sum_{k=1}^{n}ca_k=c\sum_{k=1}^{n}a_k(\text{단}, c\text{는 상수})$$

4. 마지막이에요! 이번엔 **일반항에 상수가 있다면** 어떻게 될까요?

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

ex)

$$\sum_{k=1}^{n}(2k + 3^{k-1} - 3n)$$

← 등비수열의 합

$$= 2\sum_{k=1}^{n} k + \sum_{k=1}^{n} 3^{k-1} - \sum_{k=1}^{n} 3n$$

$$= 2\frac{n(n+1)}{2} + \frac{1(3^n - 1)}{3-1} - 3n^2$$

$$= -2n^2 + n + \frac{3^n - 1}{2}$$

시그마 기본 공식

(1) $\displaystyle\sum_{k=1}^{n} k = \frac{n(n+1)}{2}$:자연수 합의 공식

(2) $\displaystyle\sum_{k=1}^{n} k^2 = \frac{n(n+1)(2n+1)}{6}$:제곱 수 합의 공식

(3) $\displaystyle\sum_{k=1}^{n} k^3 = \left(\frac{n(n+1)}{2}\right)^2 = \frac{1}{4}n^2(n+1)^2$:세제곱 수

(4) $\displaystyle\sum_{k=1}^{n} k^4 = \frac{n(n+1)(2n+1)(3n^2+3n-1)}{30}$

(5) $\displaystyle\sum_{k=1}^{n} k^5 = \frac{n^2(n+1)^2(2n^2+2n-1)}{12}$

(6) $\displaystyle\sum_{k=1}^{n} a_k = a_1 + a_2 + a_3 + a_4 + \cdots\cdots + a_n$