

5.3. Notasi Jumlah dan Sigma

Sifat-sifat Σ

$$1) \sum_{i=1}^n ca_i = c \sum_{i=1}^n a_i$$

$$2) \sum_{i=1}^n a_i + b_i = \sum_{i=1}^n a_i + \sum_{i=1}^n b_i$$

$$3) \sum_{i=1}^n a_i - b_i = \sum_{i=1}^n a_i - \sum_{i=1}^n b_i$$

Bukti :

$$\begin{aligned} 1) \sum_{i=1}^n ca_i &= ca_1 + ca_2 + \dots + ca_n \\ &= \underline{\hspace{10em}} \\ &= \underline{\hspace{10em}} \end{aligned}$$

Buktikan 2) dan 3) !

Rumus Jumlah Khusus

$$\sum_{i=1}^n i = 1 + 2 + \dots + n = \frac{n(n+1)}{2}$$

$$\sum_{i=1}^n i^2 = 1^2 + 2^2 + \dots + n^2 = \frac{n(n+1)(2n+1)}{6}$$

$$\sum_{i=1}^n i^3 = 1^3 + 2^3 + \dots + n^3 = \left[\frac{n(n+1)}{2} \right]^2$$

$$\sum_{i=1}^n i^4 = 1^4 + 2^4 + \dots + n^4 = \frac{n(n+1)(6n^3 + 9n^2 + n - 1)}{30}$$

Contoh 1.

$$1. \sum_{i=1}^7 i = \underline{\hspace{10em}}$$

$$2. \sum_{i=1}^7 i^2 = \underline{\hspace{4cm}}$$

$$3. \sum_{i=1}^7 i^4 = \underline{\hspace{4cm}}$$

$$4. \sum_{i=1}^7 2i(i-5) = \underline{\hspace{4cm}}$$

Carilah rumus untuk

$$\sum_{i=1}^n (i-1)(4i-3) = \underline{\hspace{4cm}}$$

$\underline{\hspace{4cm}}$
 $\underline{\hspace{4cm}}$
 $\underline{\hspace{4cm}}$

Latihan Soal p. 326 No. 3, 5, 4, 6, 17, 18, 19, 27, 28, 30