Induksi matematika part-3 Date:

1. Hasil dari notasi sigma $\sum_{i=2}^{7} 2i-5$ adalah

$$\sum_{i=2}^{7} 2i-5 = (2.2-5)+(2.3-5)+(2.4-5)+(2.5-5)+(2.6-5)+(2.7-5)$$
$$= -1+1+3+5+7+9$$
$$= 24$$

2. Hasil dari notasi sigma $\sum_{k=1}^{5} 3k^2-k+9$

$$\sum_{k=1}^{5} 3k^2-k+9 = (3.1^2-1+9)+(3.2^2-2+9)+(3.3^2-3+9)+(3.4^2-4+9)+(3.5^2-5+9)$$
$$= (3-10)+(12-11)+(27-12)+(48-13)+(75-14)$$
$$= -7+1+15+35+61$$
$$= 105$$

3. Diketahui persamaan $\sum_{k=1}^{12}(n^2+n+2-4k) = -144$.

Nilai n yang memenuhi adalah ....

$$\sum_{k=1}^{12}(n^2+n+2) - \sum_{k=1}^{12} 4k = -144$$
$$= 12(n^2+n+2) - (4.1+4.2+4.3+\cdots+4.12)$$

$= 12(n^2 + n + 2) - 4(1 + 2 + 3 + 4 + 5 + 6 + \cdots + 12)$

$= 12(n^2 + n + 2 - 4 \cdot \frac{(1+12) \cdot 12}{2} = -144$

$= 12(n^2 + n + 2 - 26) = -144$

$n^2 + n + 2 - 26 = \frac{-144}{12}$

$n^2 + n - 24 + 12 = 0$

$n^2 + n - 12 = 0$,

$n_1 = -4$

$n_2 = 3$

4 Nilai dari $\sum_{x=3}^{50} 6x - 16$ adalah .

$= \sum_{x=3}^{50} 6x - 16 = \sum_{x=3-2}^{50-2} (6(x+2) - 16)$

$= \sum_{x=1}^{48} (6x - 4)$

$= 6 \sum_{x=1}^{48} x - \sum_{x=1}^{18} 4$

$= 6 \cdot \frac{48 \cdot 49}{2} - 4 \cdot 48$

$= 7056 - 192$

$= 6864$

Date:

5 $\sum_{i=1}^{13} i^2 = 819$ dan $\sum_{i=1}^{13} 2i = 182$, nilai $\sum_{i=4}^{16} (2i-7)^2$

$\sum_{i=1}^{10} i^2 = 819$

$\rightarrow 1^2 + 2^2 + 3^2 + 4^2 + 5^2 + 6^2 + 7^2 + 8^2 + 9^2 + 10^2 + 11^2 + 12^2$
$= 13^2$

$\rightarrow 1 + 4 + 9 + 16 + 25 + 36 + 49 + 64 + 81 + 100 + 121 +$
$144 + 169 = 819.$

$\rightarrow 2.1 + 2.2 + 2.3 + 2.4 + 2.5 + 2.6 + 2.7 + 2.8 + 2.9 +$
$2.10 + 2.11 + 2.12 + 2.13 = 182.$
$= 2 + 4 + 6 + 8 + 10 + 12 + 14 + 16 + 18 + 20 + 22 +$
$24 + 26 = 182$

$\sum_{i=4}^{16} (2i-7)^2$ adalah =

$= (2.4-7)^2 + (2.5-7)^2 + (2.6-7)^2 + (2.7-7)^2 +$
$(2.8-7)^2 + (2.9-7)^2 + (2.10-7)^2 + (2.11-7)^2 +$
$(2.12-7)^2 + (2.13-7)^2 + (2.14-7)^2 + (2.15-7)^2$
$+ (2.16-7)^2 + (2.17-7)^2 + (2.18-7)^2 + (2.19-7)^2$

$= 1^2 + 3^2 + 5^2 + 7^2 + 9^2 + 11^2 + 13^2 + 15^2 + 17^2 +$
$19^2 + 21^2 + 23^2 + 25^2 + 27^2 + 29^2 + 31^2$

$= 819 - (2.1)^2 + (2.2)^2 + (2.3)^2 + (2.4)^2$
$= 819 - 4 + 16 + 36 + 64$
$= 699$