نام و نام خانوادگی ...طراح: ریاضی‌ها...... پاسخنامه تشریحی تکلیف شماره ..۱۷.. کلاس ..دهم......

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$\{1\}, \{2,3,4\}, \{5,6,7,8,9\}$

$1^2 \;\; 2^2 \;\; 3^2$: (شماره دسته)^2 ← عدد آخر دسته

تعداد: $1 \;\; 3 \;\; 5$ ← تعداد در هر دسته $= 2n-1$

در دسته نهم ← عدد آخر $= 9^2 = 81$

تعداد $= 2\times 9 - 1 = 17$ ← عدد اول $= 81 - 16 = 65$

واسطه حسابی $= \dfrac{\text{عدد آخر} + \text{عدد اول}}{\text{تعداد}+1}$ ، واسطه درج شده $= \dfrac{65+81}{2(1+4)}$ ، $= \dfrac{146}{2} = 73$

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$\{1,2,3\}, \{4,5,\dots,11,12\}, \{13,\dots,39\}, \{40,\dots,120\}, \{121,\dots,363\}$

تعداد $= \dfrac{363-121}{1} + 1 = 243$

مج. $= \dfrac{(121+363)}{2} \times 243 = 58806$

میانگین $= \dfrac{58806}{243} = 242$

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$\begin{cases} 2k \to n = 3k \longrightarrow n = 0, 3, 6, 9, 12, \dots \\ -2k + 4 \to n = 3k+1 \longrightarrow n = 1, 4, 7, 10, 13, \dots \\ \left[\frac{n}{k+2}\right] + a \to n = 3k+2 \longrightarrow n = 2, 5, 8, 11, 14, \dots \end{cases}$

$a_0 = 1,\; a_1 = 4,\; a_2 = 1+a,\; a_3 = 2$
$a_4 = 2,\; a_5 = 1+a,\; a_6 = 3,\; a_7 = 0$
$a_8 = 2+a,\; a_9 = 8,\; a_{10} = -2$

مج. $= 4+1+a+2+2+1+a+4+0+2+a+8+1 = 19 \to 3a = -6 \to a = -2$

$a_2 + a_5 + a_8 + \dots + a_{29} = 10a + (1+1+2+\dots+2) = 10a + 18 = -2$

$a+1 \quad a+1 \quad a+1$ ، 28 ، -20

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$t_n = an^2 + bn + C \Rightarrow a = \frac{1}{70}(-t_5) \Rightarrow \frac{1}{70} \times -14 = -\frac{1}{5} = a$

$t_5 = -\frac{1}{5}(5)^2 + 5\times b + C = 14 \longrightarrow -5 + 5b + C = 14 \to 5b + C = 19$
$t_7 = -\frac{1}{5}(7)^2 + 7\times b + C = 1712 \longrightarrow -918 + 7b + C = 1712 \to 7b + C = 27$
$\to b = 4 \rightsquigarrow C = -1$

$t_n = -\frac{1}{5}n^2 + 4n - 1 \to t_{15} = -\frac{1}{5}(15)^2 + 4\times 15 - 1 = -45 + 60 - 1 = 14 = t_5$

$t_1 = -\frac{1}{5}(1)^2 + 4\times 1 - 1 = \frac{14}{5}$ ، $\dfrac{t_5}{t_1} = \dfrac{14}{\frac{14}{5}} = 5$

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$a_4 = a + 3d,\; a_8 = a + 7d$ ($+4d$) ، $b_2 = b + d',\; b_7 = b + 6d'$ ($+5d'$)

$4d = 5d' \Rightarrow 4 = \dfrac{5d'}{d}$

$b_{15} = b_{10} + 5d'$ ، $\dfrac{b_{15}}{d} = \dfrac{b_{10} + 5d'}{d} = \dfrac{5d'}{d} = 4$

$6(a_2)^2 = 5a_3a + 3a_2a \Rightarrow 6(a+d)^2 = 5(a+2d)(a) + 3(a+d)(a)$ $\Rightarrow 6a^2 + 6d^2 + 12ad = 5a^2 + 10ad + 3a^2 + 3ad \Rightarrow 6a^2 + 6d^2 + 12ad = 8a^2 + 13ad \Rightarrow 2a^2 + ad - 6d^2 = 0$ $\Delta = d^2 - 4(2)(-6d^2) = d^2 + 48d^2 = 49d^2$, $a = \frac{d \pm \sqrt{49d^2}}{4}$ → $a = -2d$, $a = \frac{3}{2}d$ $\frac{a_4}{d} = \frac{a+3d}{d}$ → $\frac{-2d+3d}{d} = 1$ یا $\frac{\frac{3}{2}d + 3d}{d} = 4/5$	۶
$a, b, c \Rightarrow b-d, b, b+d$ $b, \frac{a}{2}, \frac{c}{4} \Rightarrow b, \frac{b-d}{2}, \frac{b+d}{4} \Rightarrow (\frac{b-d}{2})^2 = b \cdot \frac{b+d}{4} \Rightarrow \frac{b^2+d^2-2bd}{4} - \frac{b^2+bd}{4} = 0$ $\Rightarrow \frac{d^2}{4} - \frac{3bd}{4} = 0 \rightarrow d^2 = 3bd$ → $d = 0$ ✗ , $d = 3b \Rightarrow b / -\frac{2b}{2} / \frac{4b}{4} \Rightarrow b, -b, b$ ($\times -1$, $\times -1$) $q = -1 \rightarrow 2 \times (-1) = -2$	۷
$a, b, c \Rightarrow \frac{a}{q}, a, aq \rightarrow \frac{2a}{q} = \frac{3a + aq}{2} \Rightarrow 4 = 3q + q^2 \rightarrow q^2 + 3q - 4 = 0$ $3b, 2a, c \Rightarrow 3a, \frac{2a}{q}, aq$ $\Delta = b^2 - 4ac \Rightarrow 9 + 16 = 25 \rightarrow x = \frac{-b \pm \sqrt{25}}{2a}$ → $\frac{2}{2} = 1$, $-\frac{8}{2} = -4$ جمله اول $= \frac{a}{q} \Rightarrow \frac{a_9}{a_6} = \frac{aq^7}{aq^4} = q^3$ → $q = 1 \rightarrow q^3 = 1$, $q = -4 \rightarrow q^3 = -64$	۸
$\frac{aq^5}{(aq)^3} + \frac{aq}{a^2} = 2 \Rightarrow \frac{aq^5}{a^3q^3} + \frac{aq}{a^2} = 2 \Rightarrow \frac{q^2 + aq}{a^2} = 2 \Rightarrow 2a^2 = q^2 + aq \Rightarrow q^2 + aq - 2a^2 = 0$ $\Rightarrow \Delta = b^2 - 4ac \Rightarrow a^2 + 8a^2 = 9a^2 \Rightarrow q = \frac{-a \pm \sqrt{9a^2}}{2}$ → $q = -2a$, $q = a$ $\frac{a^2}{a_2} = \frac{a^2}{aq}$ → $q = -2a$: $\frac{a^2}{-2a^2} = -\frac{1}{2}$ یا $q = a$: $\frac{a^2}{a^2} = 1$	۹
$a_3 = \sqrt{a_6} = (aq^2 = \sqrt{aq^5})^2 \Rightarrow a^2q^4 = aq^5 \rightarrow aq = 1 \rightarrow a = \frac{1}{q}$ * $a_5 = 27 \rightarrow aq^4 = a \cdot q \cdot q^3 = 27 \rightarrow q^3 = 27 \rightarrow q = 3$ ** *, ** $\longrightarrow a = \frac{1}{3} \rightarrow \frac{1}{2} - \frac{1}{3} = \frac{1}{6}$	۱۰