نام و نام خانوادگی ......[illegible]...... پاسخنامه تشریحی تکلیف شماره ..۱۷.. کلاس ......دهم تجربی A......

۲۰

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$b = \frac{a+c}{2}$

$\{1\}, \{2,3,4\}, \{5,6,7,8,9\}, \{10,11,12,13,14,15,16\}$

(۱) (۲) (۳) (۴)

$a_n = 2n-1 \rightarrow$ تعداد اعضا (۲) ✓ $\Rightarrow$ وسط $= \frac{81+65}{2} = 73$ ✓

آخری ← $n^2 \rightarrow 9^2 = 81$

اولی $= 1, 2, 5, 10$ (-1, $+1$, $+3$, $+5$; $+2$, $+2$, $+2$)

$a=1$, $c=2$; $n^2+bn+2 = a_n$; $a_1 = 1+b+2 = 1 \rightarrow b=-2$; اولی $a_9 = 81-(2\times 9)+2 = 65$ اولی

۲

$(1,2,3), (4,5,6,7,8,9,10,11,12), (13, \dots, 39), (27, \dots, 81)$

اولی $: n, 3n+1, 9n+4$

آخری $: 3n, 9n+3, 27n+12$

میانگین $= 2n, 6n+2, 18n+8, \dots, 54n+26$

$n=1 \rightarrow 2, 8, 26, 80$ ← میانگین در دسته‌ها

$2\times 3^{n-1} + 3^{n-1} - 1$

میانگین در دسته ۵ $= 2\times 3^4 + 3^4 - 1 = 242$ ✓ (۲) ✓

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$a_n = \begin{cases} 2^k & : n=3k \rightarrow n=3,6,9,\dots \rightarrow k=1,2,3 \\ -2k+4 & : n=3k+1 \quad n=1,4,7,\dots \rightarrow k=0,1,2,3 \\ \left[\frac{n}{k+2}\right]+a & : n=3k+2 \quad n=2,5,8,\dots \rightarrow k=0,1,2,3,\dots \end{cases}$

$a_2+a_5+\dots a_{29} = 1+a+1+a+16+8a = 10a+18 = 18-20 \rightarrow -20 \rightarrow -2$ ✓ (۲) ✓

$a_1 = 4$, $a_2 = 1+a$, $a_4 = 2$, $a_7 = 0$

$n=6 \rightarrow k=2 \rightarrow n_6 = 4 \rightarrow 4+2d = 8$

$n=9 \rightarrow k=3 \rightarrow n_9 = 8 \quad 3d = 4$

$a_0+a_1+\dots+a_9 = 19$

$2a+3a = 19 \rightarrow a = -2$

با بدست آوردن تک تک

-45, 90

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$a_5 = 14$, $a_7 = 17.2$

$\frac{1}{2/5}x - 14 = -1/5$

$\frac{a_{15}}{a_1} = \frac{(-1/5\times 15^2)+(4\times 15)-1}{-1/5+4-1} = \frac{14}{2.8} = 5$ ✓ (۲) ✓

$an^2+bn+c = a_n$

$a = -1/5$

$(49\times -1/5) + (7\times b) + c = 17.2 \rightarrow 7b+c = 27$

$(25\times -1/5) + 5\times b + c = 14 \rightarrow -5+5b+c = 14$

$5b+c = 19$

$\rightarrow 2b = 8$

$b=4$, $a=-1/5$, $c=-1$

۵

$a_4 = b_2 \rightarrow a_4+4d = b_2+5d' \rightarrow 4d = 5d' \rightarrow d = \frac{5}{4}d'$

$a_8 = b_7 \rightarrow b_2+4d = b_7 \rightarrow b_7 - b_2 = 4d$

$b_{10} = 0$

(۲) ✓

$\frac{b_{15}}{d} = \frac{b_{10}+5d'}{d} = \frac{0+5d'}{\frac{5}{4}d'} = 5\times\frac{4}{5} = 4$ ✓

$9a_2^2 = 5a_3a + 3a_2a$

$\frac{a_4}{d} \to \frac{a_1+3d}{d} = \frac{d}{d} = 1$ ✓

$9a_2^2 - 3a_2a = 5a_3a$ → ② ✓

$3a_2(3a_2 - a) = 5a_3a$ → a_1+3d

$3a_1+3d(3a_1+3d-a_1) = (5a_1+10d)a_1 \to 3a_2 = 5a_1 \to 3d = 3a_1$

$\frac{3a_1}{\frac{3}{2}a_1} = \frac{9}{2}$ ✓ $\quad a_1+3d=0 \to a_1 = -3d$

$d = \frac{2}{3}a_1$

$3a_1^2 + 9a_1d + 3a_1d + 9d^2 = 5a_1^2 + 10a_1d \to 3a_1^2 + 12d^2 + a_1d = 0$

$\frac{4}{9}a_1 + a_1 \times \frac{2}{3}a_1 \to 3a_1^2 + \frac{2}{3}a_1^2 + \frac{12}{9}a_1 = 0$ ۶

$c, b, a \to 2b = a+c \to b = c+d \;/\; a = c+2d$

$\underbrace{c}_{d}, \underbrace{b}_{d}, a$ ② ✓

$\frac{c}{4}, \frac{a}{2}, b \to \frac{a^2}{4} = \frac{cb}{4} \to b = \frac{a}{2} \times q \;/\; \frac{a}{2} = \frac{c}{4} \times q, \; b = \frac{c}{4} \times q^2 = \frac{a}{2} \times q$ ۷

$\underbrace{\frac{c}{4}}_{q}, \underbrace{\frac{a}{2}}_{q}, b$

$\underbrace{c+d}_{b} = \frac{c}{4}q^2, \; c+2d = \frac{c}{2}q \;/\; 2d = \frac{cq}{2} - c$

$\frac{\frac{cq}{2} - c}{\frac{cq^2}{4} - c} = 2 \to q+2 = 1 \to q = -1$

$q \times 2 = 2 \times -1 = -2$ ✓

$\underbrace{c, b, a}_{q\ q}$ | $\underbrace{c, 2a, 2b}_{d\ d} \to b^2 = ac$

$4a = 2b + c \to a = cq^2$

$2b = c+2d \to 2cq = c+2d \to 2d = c(2q-1)$

$2cq^2 = c+d \to d = c(2q^2-1)$

$\frac{aq}{aa} = \frac{aq^3}{a} = q^3 = (-\frac{1}{4})^3 = -\frac{1}{64} = -64^{-1} = -2^{-6}$ ✓ ② ✓ ۸

$2 = \frac{c(2q-1)}{c(2q^2-1)}$

$4q^2 - 2 = 2q - 1$

$4q^2 - 2q - 1 = 0$

$\Delta = b^2 - 4ac = 20 \to \frac{2 \pm \sqrt{20}}{8} = \frac{1}{2}, -\frac{1}{4}$ ✓

$q = -\frac{1}{4}$

$\frac{a_4}{(a_2)^3} + \frac{a_2}{(a_3)^2} = 2$

$\frac{a_1q^3}{a_1^3q^3} + \frac{a_1q}{a_1^2a_1} = \frac{q^2}{a_1^2} + \frac{q}{a_1} = 2 \to \frac{q}{a_1}\left(\frac{q}{a_1}+1\right) = 2$

$\frac{a_1^2}{a_2} = 2 \;\; \frac{q \times a_1}{a_1 q} = \frac{a_1}{q}$

$\frac{q^2}{a_1^2} + \frac{q}{a_1} - 2 = 0$ ۹

$\frac{q}{a_1} = 1$

$\frac{q}{a_1} = -2$

$(\frac{q}{a_1}+2)(\frac{q}{a_1}-1) = 0$

$-\frac{1}{2}$ ② ✓ 1

$a_3 = \sqrt{a_4} \to a_3^2 = a_4 \to a_3^2 = a_4 q$

$a_3 = 27 \to a_1q^4 = 27$

$a_2q^2 = 27 \quad a_1 \times 3 = 27$

$a_2 = \frac{27}{3} = \frac{1}{3} \to \frac{1}{2} - \frac{1}{3} = \frac{3-2}{6} = \frac{1}{6}$ ۱۰

$\sqrt{a_4}\, q^2 = 27$

$q^2 = \frac{27}{\sqrt{a_4}} \quad \frac{a_3}{q} = q^3 = 27 \to q = 3$