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

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

(۱) (۲) (۳) (۴)

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

$a_n = 2n-1 \rightarrow$ تعداد اعضا

$n^2 \rightarrow 9^2 = 81$ آخری

$\Rightarrow$ وسطی $= \frac{81+45}{2} = 63$ ✓

اول: ۱، ۲، ۵، ۱۰ ... $a=1$, $c=2$, $n^2+bn+2=a_n$

$a_1 = 1+b+2 = 1 \rightarrow b=-2$

a_9 اول $= 81 - (18) + 2 = 45$ اول

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$(1,2,3), (4,5,6,7,8,9), (10,11,12), (13, \dots, 24), (25, \dots, 81)$

۳ ۶ ۹ ۱۴ ۴۵

اول $= n, 3n+1, 9n+4$

آخری $= 3n, 9n+3, 27n+12$

میانگین $= 2n, 6n+2, 18n+8, \dots 45n+29$

میانگین $\leftarrow n=1 \rightarrow 2, 8, 26, 80, \dots$

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

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

۳

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

$a_2 + a_3 + \dots a_{29} =$

$1 + a + 1 + a + 14 + 10a =$

$10a + 16 = 18 - 20$

$\downarrow -2$

(-2) ✓

$a_1 = 4$

$a_2 = 1+a$

$a_4 = 2$

$a_7 = 0$

$n=4 \rightarrow k=2 \rightarrow n_4 = 4 \rightarrow 4+3d = 8$

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

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

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

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$a_5 = 14$

$a_7 = 12/4$

$\frac{1}{10} \times -4 = -\frac{1}{5}$

$\frac{a_{15}}{a_1} = \frac{-\frac{1}{5}(15^2) + (4 \times 15) - 1}{-\frac{1}{5} + 4 - 1} = \frac{14}{2/8} = 5$ ✓

$an^2 + bn + c = a_n$

$a = -\frac{1}{5}$

$-\frac{1}{5}(4)^2 + 4b + c = 12/4 \rightarrow 4b + c = 16$

$-\frac{1}{5}(5)^2 + 5b + c = 14 \rightarrow -5 + 5b + c = 14$

$5b + c = 19$

$\rightarrow 3b = 8$

$b = 4$

$a = -\frac{1}{5}$

$c = -1$

۵

$a_4 = b_2 \rightarrow a_1 + 3d = b_2 + 5d' \rightarrow 3d = 5d' \rightarrow d = \frac{5}{3}d'$

$a_{10} = b_7 \rightarrow b_2 + 5d = b_7 \rightarrow b_7 - b_2 = 5d$

$b_{10} = 0$

$\frac{b_{15}}{d} = \frac{b_{10} + 5d'}{d} = \frac{0 + d}{\frac{5}{3}d} = \frac{3}{5} \times \frac{4}{3} = 4$ ✓

$6a_2^2 = 5a_3a + 3a_2a$

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

$6a_2^2 - 3a_2a = 5a_3a$

$3a_2(2a_2 - a) = 5a_3a$ $\to a_1+2d$

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

$3a_1+2d(\cancel{2a_1+2d-a_1}) = (5a_1+10d)a_1 \to 3a_2 = 5a_1 \to 3d = 2a_1$

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

$3a_1^2 + \cancel{9a_1d} + \cancel{2a_1d} + 9d^2 = 5a_1^2 + \cancel{10a_1d} \to 2a_1^2 + 4d^2 + a_1d = 0$

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

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

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

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

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

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

$q \times 2 = 2 \times -1 = -2$ ✓

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

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c, b, a $\quad c, 2a, 2b \to b^2 = ac$

$\underbrace{c}_{q}, \underbrace{b}_{q}, a$ $\quad \underbrace{c}_{d}, \underbrace{2a}_{d}, 2b$ $\quad 4a = 2b + c$

$\to a = cq^2$ $\quad 2b = c+2d$

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

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

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

$\frac{a_9}{a_4} = \frac{a_1q^8}{a_1q^3} = q^5 = (-\frac{1}{4})^5 = -\frac{1}{4^5} = -4^{-5} = -2^{-10}$ ✓

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

$\Delta = b^2 - 4ac = 25 \to \frac{2 \pm \sqrt{25}}{8} = \frac{1}{2}, -\frac{1}{4}$ ✓

$q = -\frac{1}{2}$ $\quad 4q^2 - 2q - 1 = 0$

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

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

$\frac{a_1^2}{a_2} = 2 \quad \frac{a_1q}{a_1q} = \frac{a_1}{q}$

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

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

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

$-\frac{1}{2}$ $\quad 1$

$a_3 = \sqrt{a_4} \to a_3^2 = a_4 \to \cancel{a_3^2} = a_1q$

$a_5 = 27 \to a_1q^4 = 27$

$a_1q^2 = 27$ $\quad a_1 \times 9 = 27$

$\sqrt{a_4}\, q^2 = 27$ $\quad a_1 = \frac{27}{9} = 3$

$q^2 = \frac{27}{\sqrt{a_4}} = \frac{27}{a_2}q$ $\quad q^3 = 27 \to q = 3$

$\frac{1}{2} - \frac{1}{3} = \frac{3-2}{6} = \frac{1}{6}$