نام و نام خانوادگی امیر محمودی .... پاسخنامه تشریحی تکلیف شماره ۱۷ کلاس بیرونی B

$\{1\}, \{2,3,4\}, \{5, \ldots, 9\}, \ldots$ $(n-1)^2+1 \quad n^2$ $\{8^2+1, \ldots, 9^2\}$ $\rightarrow \{65, \ldots, 81\}$ $\frac{81+65}{2} = 73$	۱
$\{1,2,3\}, \{4, \ldots 12\}, \{13, \ldots, 39\}, \{40, \ldots, 120\}, \{121, \ldots, 363\}$ ① ② ③ ④ ⑤ $\frac{363+121}{2} = 242$	۲
$a_3, a_6, a_9 \xrightarrow{2^K} 2, 4, 8$ ($K=1$, $K=2$, $K=3$) $a_1, a_4, a_7 \xrightarrow{-2K+4} 4, 2, 0$ $a_2, a_5, a_8 \xrightarrow{\left[\frac{n}{K+2}\right]+a} -1, -1, 0$ $1+2+4+8+4+2+0+1+1+4+3a = 19$ $= 3a + 25 = 19 \rightarrow a=-2$ $\frac{n}{K+2} - 2 \rightarrow \frac{3K+2}{K+2} - 2$ $= 2 + \frac{K-2}{K+2} - 2 = K \rightarrow 2$ $\frac{2}{2+2} = \frac{1}{2}$	۳
$a_5 = 14 \quad a_7 = 17/2$ $a_n = an^2 + bn + c$ $a = \frac{1}{70} \times -14 = \frac{-1}{5} \Rightarrow a_n = \frac{-n^2}{5} + bn + c$ $a_5 = \frac{-25}{5} + b5 + c$ $a_7 = \frac{-49}{5} + 7b + c$ $418 \; \frac{+24}{5} - 2b = -3/2$ $+2b = 8 \rightarrow b = 4 \rightarrow c = -1$ $\Rightarrow a_n = \frac{-n^2}{5} + 4n - 1 \Rightarrow a_{15} = \frac{-225}{5} + 60 - 1 = 14$ $a_1 = \frac{-1}{5} + 4 - 1 = \frac{14}{5} \rightarrow 14 \div \frac{14}{5} = 5$	۴
$4d = b_7 - b_2 \quad b_n = an + b$ $b_7 - b_2 = 7n + b - 2n - b = 5n \rightarrow 5n = 4d \Rightarrow d = \frac{5n}{4}$ $b_{10} = 0 \rightarrow 10n + b = 0 \rightarrow b = -10n$ $d = \frac{b_{15}}{b_1} \rightarrow b_1 = \frac{b_{15}}{d} = \frac{15x - 10x}{\frac{5x}{4}} = 4$	۵

$$9(a+d)^2 = 5(a+2d)a + 5(a+d)a$$
$$9a^2 + 18ad + 9d^2 = 5a^2 + 10ad + 5a^2 + 5ad$$
$$-2a^2 - ad + 9d^2 = 0 \rightarrow a^2 - ad - 12d^2 = 0$$
$$(a-4d)(a+3d) = 0 \nearrow a = -3d \quad \searrow a = 12d$$

$$\frac{a_4}{d} \rightarrow \frac{12d-3d}{d} = 9 \quad \rightarrow \frac{12d+4d}{d} = 16$$

$$2b = a+c \qquad \frac{a^2}{4} = \frac{bc}{4} \rightarrow a^2 = bc \Rightarrow a^2 = \frac{a+c}{2} \times c$$
$$b = \frac{a+c}{2} \Rightarrow 2a^2 - ac - c^2 = 0$$
$$\rightarrow a^2 - ac - 2c^2 = 0$$
$$(a-2c)(a+c) = 0 \Rightarrow a \nearrow c \quad \searrow \frac{-c}{2}$$

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$a_n \rightarrow b, \frac{-c}{4}, \frac{c}{4} \Rightarrow q = -1$
$\Rightarrow 2q = -2$

$$4a = 2b + c \qquad b^2 = ac$$
$$a = \frac{2b+c}{4} \qquad b^2 = \frac{2b+c}{4} \times c \rightarrow 4b^2 - 2bc - c^2 = 0$$
$$(2b-2c)(2b+\frac{c}{2}) = 0 \Rightarrow b \nearrow c \quad \searrow \frac{-c}{4}$$

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$$q = \frac{b}{a} = \frac{c}{b} = \frac{c}{\frac{1}{4}c} = -4 \rightarrow \frac{a_9}{a_4} = q^5 = -64$$

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$$\frac{a^{2k}q^{2k}}{a^{2k}q^{k}} + \frac{aq}{a^2} = 2 \rightarrow \frac{aq+q^2}{a^2} = 2 \rightarrow 2a^2 - aq - q^2 = 0$$
$$\rightarrow a^2 - aq - 2a^2 = 0$$
$$\frac{a^2}{2q} = \frac{a}{q} = \rightarrow \frac{a}{q} = 1 \qquad (a-2q)(a+q) = 0 \Rightarrow a \nearrow 2q \quad \searrow -q$$
$$\searrow \frac{-\frac{q}{2}}{q} = \frac{-1}{2}$$

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$$a_8 = 27 \Rightarrow a_2 \times a_4 = a_3^2 \rightarrow 27 = \sqrt{a_3^3} \rightarrow a_3 = 9$$
$$a_4 = \sqrt{a^3}$$

$$q = \frac{a_5}{a_3} = \frac{27}{9} = 3$$

$$a_3 = a_1 q^2 = a_1 \times 27 = 9 \rightarrow a_1 = \frac{1}{3} \qquad \frac{1}{2} - \frac{1}{3} = \frac{1}{6}$$

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