نام و نام خانوادگی ...... مهدی یمین زاده ...... پاسخنامه تشریحی تکلیف شماره ..۱۷.. کلاس دهم ریاضی ......

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

$(1)\ 1^2, \quad (2)\ 2^2, \ (2-1)^2+1, \quad (3)\ 3^2, \ (3-1)^2+1$

آخرین عدد دسته n ام $= n^2$

اولین عدد دسته n ام $= (n-1)^2+1$

دسته نهم: آخر: $9^2 = 81$ ؛ اول: $(9-1)^2+1 = 65$

واسطه حسابی: $\frac{65+81}{2} = 73$

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$\{1,2,3\}, \{4,5,\ldots,12\}, \{13,\ldots,39\}, \{40,\ldots,120\}, \{121,\ldots,363\}$ (۵)

$S_n = \frac{n}{2}(2a+(n-1)d)$, $a=121$, $d=1$

$n = 363-121+1 = 243$

$= \frac{243}{2}(242+242) = 243 \times 242 = S_{242}$

میانگین $= \frac{\text{جمع}}{\text{تعداد} = n} = \frac{243 \times 242}{243} = 242$

۳

$n=3k \rightarrow 3,6,9 \rightarrow a_3, a_6, a_9 : 2, 4, 8$

$n=3k+1 \rightarrow 1,4,7,10 \rightarrow a_1, a_4, a_7, a_{10} : 4, 2, 0, -2$

$n=3k+2 \rightarrow 2,5,8 \rightarrow a_2, a_5, a_8 : 1+a, 1+a, 2+a$

$S_{10} = 4+(1+a)+2+2+(1+a)+4+0+(2+a)+8+(-2) = 19 \rightarrow 3a=-6 \rightarrow a=-2$

$a = 2, 5, \ldots, 29 \rightarrow 10a$

$+\left(\frac{1+1}{2}+2+\ldots\right) = -20+18 = -2$

$29 - \left[\frac{n}{3k+2}\right] = \left[\frac{29}{11}\right] = 2$

۴

$t_n = an^2+bn+c = -\frac{1}{5}n^2+bn+c$

$t_5 = -\frac{1}{5}\times 5^2+5b+c = -5+5b+c = 14$

$= 5b+c = 19 \rightarrow 2b = 8$

$7b+c = 27 \quad b=4$

$5\times 4+c = 19 \quad c=-1$

$a = \frac{1}{70}\times(a_7 - a_5) = \frac{1}{70}\times(\ldots - 14) = -\frac{1}{5}$

$t_n = -\frac{1}{5}n^2+4n-1$

$t_7 = -\frac{1}{5}\times 7^2+7b+c = -\frac{49}{5}+7b+c = 17.2 = \frac{86}{5}$

$\rightarrow 7b+c = \frac{86+49}{5} = \frac{135}{5} = 27$

$\frac{t_{10}}{t_1} = \frac{-\frac{1}{5}\times 10^2+4\times 10-1}{-\frac{1}{5}\times 1+4\times 1-1} = \frac{14}{\frac{14}{5}} = 5$

۵

$a_8 - a_4 = b_7 - b_2 = 4d = 5d' \rightarrow \frac{5d'}{d} = 4$

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

۶

$6a_2^2 = 5a_4 a + 3a_2 a \to 6(a+d)^2 = 5(a+3d)a + 3(a+d)a$

$\to 6a^2 + 6d^2 + 12ad = 5a^2 + 15ad + 3a^2 + 3ad$

$6d^2 = 2a^2 + ad$

$\to 2a^2 + ad - 6d^2 = 0 \to a = \frac{-d \pm \sqrt{49d^2}}{4} = \frac{-d \pm 7d}{4}$

$d^2 + 4(2 \times 6d^2) = 49d^2$

$\frac{-8d}{4} = -2d$ ، $\frac{6d}{4} = \frac{3}{2}d$

$\frac{a_4}{d} = \frac{a+3d}{d} =$

① $\frac{-2d+3d}{d} = \boxed{1}$

② $\frac{\frac{3}{2}d + 3d}{d} = \boxed{4/5}$

۷

$a = x - d$

$b = x$

$c = x + d$

$b \times \frac{c}{4} = \left(\frac{a}{2}\right)^2 \to \frac{x(x+d)}{4} = \frac{(x-d)^2}{4}$

$\to x^2 + xd = x^2 + d^2 - 2xd$

$d^2 - 3xd = 0 \to d(d - 3x) = 0$ → $d = 0$ × چون متمایز ، → $d = 3x$

$b, \frac{a}{2}, \frac{c}{4} \to x, \frac{x-3x}{2}, \frac{x+3x}{4} \to x, -x, x$

$(-1) \times 2 = \boxed{-2}$

۸

$a = \frac{x}{q}$ جمله اول

$b = x$ جمله دوم

$c = xq$ جمله سوم

$3b + c = 4a$

$3x$ یا $xq = \frac{4x}{q}$

$3xq + xq^2 = 4x$

$3xq + xq^2 - 4x = 0$

$q^2 + 3q - 4 = 0$

$(q+4)(q-1) = 0$

$q = -4$ یا $q = 1$

$\frac{a_9}{a_6} = q^3 = \boxed{1}$ یا $\boxed{-64}$

۹

$\frac{aq^5}{a^3q^3} + \frac{aq}{a^2} = 2 \quad \frac{q^2}{a^2} + \frac{q}{a} = 2 \to \frac{q^2 + aq}{a^2} = 2$

$\to q^2 + aq = 2a^2$

$2a^2 - q^2 - aq = 0$

$\Delta = q^2 - 4 \times (-q^2)(2)$

$\Delta = 9q^2$

$a = \frac{q \pm \sqrt{9q^2}}{4}$ → $a = q$ ، $a = \frac{-q}{2}$ → $q = -2a$

$\frac{a^2}{a_2} = \frac{a^2}{aq} = \frac{a}{q}$ → $\frac{a}{a} = \boxed{1}$ ، $\frac{a}{-2a} = \boxed{-\frac{1}{2}}$

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$a_3 = \sqrt{a_4}$

$\to aq^2 = \sqrt{aq^3}$

$\downarrow$

$a^2q^4 = aq^3 \to aq = 1 \to a = \frac{1}{q} = \frac{1}{3}$

$a_5 = 27$

$aq^4 = 27$

$aq \times q^3 = 27$

$q = 3$

$\frac{1}{3} \cdot \frac{1}{3} = \boxed{\frac{1}{9}}$