نام و نام خانوادگی ......محمد باغبانی...... پاسخنامه تشریحی تکلیف شماره ...۱۵... کلاس ......دهم ریاضی......

۱۹,۵

۱ (۲)

$a + aq + aq^2 = 21 \longrightarrow aq\left(\frac{1}{q} + 1 + q\right)$

$a \times aq \times aq^2 = 64 \longrightarrow aq = 4$

$\frac{a}{q}, \; a, \; aq$

$aq\left(\frac{q^2 + q + 1}{q}\right) = 21$

$\frac{4}{q} + 4q = 17$

$4\left(\frac{1}{q} + q\right) = 17$

$\left(q + \frac{1}{q}\right) = 4\frac{1}{4} \to q = 4 \in W, \quad \boxed{q = \frac{1}{4}} \notin W$

۲ (۲)

$\frac{x^2 - 2}{2x} = \frac{2x}{x^2 + 4} \longrightarrow 0 = (x^2 - 4)(x^2 + 2) \longrightarrow x = \pm 2 \xrightarrow{q > 0} \begin{cases} x^2 + 4 > 0 \\ 2x > 0 \longrightarrow x > 0 \\ x^2 - 2 > 0 \end{cases}$

(زیر x^2+2: همواره +)

$\longrightarrow x = 2 \xrightarrow{\text{جملات}} 8, 4, 2, \dots \longrightarrow q = \frac{1}{2}$

$S_7 = 8\left(\frac{1 - (\frac{1}{2})^7}{1 - \frac{1}{2}}\right) = 16 \times \left(1 - (\tfrac{1}{2})^7\right) = 2^4 - 2^{-3} = \boxed{15\frac{7}{8}}$

۳ (۲)

$a_1 + a_1q^1 + a_1q^2 + a_1q^3 + a_1q^4 = a_1(1 + q^1 + q^2 + q^3 + q^4)$

$a_1 \times \frac{121}{81} = 243 \times \frac{121}{81} = \boxed{363}$

۴ (۲)

$\frac{64 + 1}{2} = 32,5$

$a_1 a_7 = a_4^2 \to a_4 = \pm 8$ ($a_1a_7 = 64$)

$a_4 = +8 \longrightarrow \boxed{40,5} \longleftarrow 32,5 + 8$

$a_4 = -8 \longrightarrow \boxed{24,5} \longleftarrow 32,5 - 8$

۵ (۲)

$-\frac{99}{4}, -\frac{98}{4}, \dots \longrightarrow \frac{11}{4} - \frac{97}{4} \xrightarrow{a_{101}} \frac{101}{4} - \frac{97}{4} = \frac{4}{4} = 1$

$2^7 \times q^7 = 1 \longrightarrow q^7 = 2^{-7} \longrightarrow q = \boxed{2^{-1}}$

۶	$\frac{a+8d}{a+6d} = \frac{a+6d}{a+2d} \rightarrow a^2 + 36d^2 + 12ad = a^2 + 16d^2 + 10ad$ $2ad = -20d^2$ $a = -10d$ $\boxed{-\frac{a}{10} = d}$ ✓ پاسخ دیگر این دسته که جملات همه برابرند: $\boxed{d=0}$ ✓	(۲)
۷	$\frac{a+7d}{a+3d} = \frac{a+3d}{a+d} \rightarrow a^2 + 9d^2 + 6ad = a^2 + 8ad + 7d^2 \rightarrow 2d^2 = 2ad \rightarrow a = d = \frac{1}{4}$ $q = \frac{a_8}{a_4} = \frac{a_4}{a_2} = \frac{1}{0.5} = 2 \rightarrow t_n : 2^{-2}, 2^{-1}, 2^0, 2^1, 2^2, \dots$ $\rightarrow t_n = 2^{n-3} \rightarrow t_{10} = 2^{10-3} = 2^7 = \boxed{128}$ ✓	(۲)
۸	$a_n : 3aq, 2aq^2, aq^3 \rightarrow 4aq^2 = aq(3+q^2)$ $\rightarrow 4q = 3+q^2 \rightarrow q^2 - 4q + 3 = 0 \rightarrow (q-1)(q-3) = 0$ $\rightarrow q = \boxed{3}$ یا 1 ✗ دنباله ثابت $\rightarrow \boxed{q = 3}$ ✓	(۲)
۹	$a_n = \frac{9-n}{4} \rightarrow \begin{cases} a_4 = \frac{5}{4} \\ a_8 = \frac{1}{4} \\ a_{13} = -1 \end{cases} \rightarrow \frac{-1+x}{\frac{1}{4}+x} = \frac{\frac{1}{4}+x}{\frac{5}{4}+x}$ $\rightarrow \frac{1}{16} + x^2 + \frac{x}{2} = x^2 + \frac{x}{4} - \frac{5}{4} \rightarrow \frac{x}{4} = \frac{-21}{16} \rightarrow x = \frac{-21}{4}$ $q = \frac{-\frac{4}{4} - \frac{21}{4}}{\frac{1}{4} - \frac{21}{4}} = \frac{\frac{1}{4} - \frac{21}{4}}{\frac{5}{4} - \frac{21}{4}} = \frac{5}{4} \rightarrow \boxed{q = \frac{5}{4}}$ ✓	(۲)
۱۰	$= a, aq^2, aq^6$ $a, a+d, a+9d$ $\xrightarrow{a_1 a_7 = a_4^2} a \times (a+9d) = (a+d)^2$ $\rightarrow a^2 + 9ad = a^2 + d^2 + 2ad \rightarrow 7ad = d^2 \rightarrow d = 7a$ $3a + 10d = 73a = 73 \rightarrow a = 1$ $\rightarrow d = 7a = 7 \times 1 = \boxed{7}$ ✓ حالت دوم (دنباله ثابت): $q = 1 \rightarrow d = 0$	(۱/۵)