نام و نام خانوادگی ......محمد ...... پاسخنامه تشریحی تکلیف شماره ..۱۵.. کلاس ....دهم(...).....

۱

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

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

$\frac{a}{q}, \overset{4}{a}, aq$

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

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

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

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

۲

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

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

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

۳

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

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

۴

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

$a_1 \cancel{a_7} = a_4^2 \to a_4 = \pm 8$

$a_4 = +8 \to \boxed{40/5} \to 32/5 + 8$

$a_4 = -8 \to \boxed{24/5} \to 32/5 - 8$

۵

$-\frac{96}{4}, -\frac{95}{4}, \dots \longrightarrow \frac{n}{4} - \frac{97}{4} \xrightarrow{a_{101}} \frac{101}{4} - \frac{97}{4} = \frac{4}{4} = 1$

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

$$\frac{a+8d}{a+4d} = \frac{a+4d}{a+2d} \to a^2 + 16d^2 + 12ad = a^2 + 16d^2 + 10ad$$

$$2ad = -20d^2$$

$$a = -10d$$

$$\boxed{-\frac{a}{10} = d}$$ 6

پاسخ دیگر این قسمت که علامت هم دارند:

$$\boxed{d=0}$$

$$\frac{a+7d}{a+3d} = \frac{a+3d}{a+d} \to a^2 + 9d^2 + 6ad = a^2 + 8ad + 7a^2 \to 2a^2 = 2ad$$

$$\to a = d = \frac{1}{4}$$

$$q = \frac{a_8}{a_4} = \frac{a_4}{a_2} = \frac{1}{0.5} = 2 \to t_n: 2^{-2}, 2^{-1}, 1, 2, 2^2, \dots$$ 7

$$\to t_n = 2^{n-3} \to t_{10} = 2^{10-3} = 2^7 = \boxed{128}$$

$$a_n: 3aq, 2aq^2, aq^3 \to 4aq^2 = aq(3+q^2)$$

$$\to 4q = 3+q^2 \to q^2 - 4q + 3 = 0 \to (q-1)(q-3) = 0$$

$$\to q = \begin{cases} \boxed{3} \\ 1 \times \end{cases} \to \boxed{q = 3}$$ 8

دنباله ثابت است

$$a_n = \frac{9-n}{4} \to \begin{cases} a_4 = \frac{5}{4} \\ a_8 = \frac{1}{4} \\ a_{13} = -1 \end{cases} \to \frac{-1+x}{\frac{1}{4}+x} = \frac{\frac{1}{4}+x}{\frac{5}{4}+x}$$

$$\to \frac{1}{16} + x^2 + \frac{x}{2} = x^2 + \frac{x}{4} - \frac{5}{4} \to \frac{x}{4} = \frac{-21}{16} \to x = \frac{-21}{4}$$ 9

$$q = \frac{-\frac{4}{4} - \frac{21}{4}}{\frac{1}{4} - \frac{21}{4}} = \frac{\frac{1}{4} - \frac{21}{4}}{\frac{5}{4} - \frac{21}{4}} = \frac{5}{4} \to \boxed{q = \frac{5}{4}}$$

$$= a, aq^2, aq^6 \xrightarrow{a_1 a_7 = a_4^2} a \times (a+9d) = (a+d)^2$$

$$a, a+d, a+9d$$

$$\to a^2 + 9ad = a^2 + d^2 + 2ad \to 7ad = d^2 \to d = 7a$$

$$3a + 10d = 73a = 73$$ 10

$$\to a = 1$$

$$\to d = 7a = 7 \times 1 = \boxed{7}$$