نام و نام خانوادگی ...[نام دانش‌آموز]... پاسخنامه تشریحی تکلیف شماره ۱۴ کلاس ...۴۲۱۴۲۲...

الف) $q=2 \to a_1q^{n-1} = \frac{1}{2}\times 2^9 = \frac{1}{2}\times 512 = 256$ ب) $\frac{a_{16}}{a_{12}} \to q^{16-12} = q^4 \to 2^4 = 16$ ج) $a_4 = \frac{1}{2}\times 2^3 = 4$ $a_{10} = 256$ واسطه‌ها $\to 8, 16, 32, 64, 128$ د) $\frac{1}{2}\times 2^{n-1} = 128 \to 256 = 2^{n-1} \to n = 9$	۱
$a_5 = 12$ $a_8 = 96$ $\frac{a_8}{a_5} \to q^3 = 8$ ، $q = 2$ $\frac{96}{12}$ $12 = a_1 \times 16$ $\frac{3}{4} = \frac{12}{16} = a_1$ $a_{10} = a_1q^9 = \frac{3}{4} \times 2^9 = 384$	۲
الف) $a_1 = \frac{a_3}{q^2}$ $a_2 = \frac{a_3}{q}$ $\frac{a_3}{q^2} \times \frac{a_3}{q} \times a_3q \times a_3q^2 \times a_3 = a_3^5 = 243$ $a_3 = 3$ $a_4 = a_3q$ $a_5 = a_3q^2$ ب) $a_1 \times a_5 = \frac{a_3}{q^2} \times a_3q^2 = a_3^2 = 9$	۳
$(4\sqrt{2})^2 = 2^b \times 2^a$ واسطه حسابی $= \frac{a+b}{2} = \frac{5}{2}$ $16 \times 2 = 2^{a+b}$ $2^5 = 2^{a+b}$ $a+b = 5$	۴
$a_3 = 1 - x$ $a_7 = x$ $a_{11} = x+1$ $x^2 = (x+1)(1-x) = x - x^2 + 1 - x = -x^2 + 1 \to 2x^2 = 1$ $x = \pm\frac{1}{\sqrt{2}} = \pm\frac{\sqrt{2}}{2}$	۵

$a_1 + a_3 = a_1 + aq^2 = 18 \rightarrow a(1+q^2) = 18$

$a_2 + a_4 = aq + aq^3 = 12 \rightarrow a(q+q^3) = 12$

$\frac{a(1+q^2)}{a(q+q^3)} = \frac{18}{12} = \frac{3}{2}$

$\rightarrow 2q^2 - 5q + 2 = 0 \Longrightarrow (q-2)(aq^2+bq+c) = 0 \quad aq^3+bq^2+cq-2aq^2-2bq-2c = 0$

$c-1=0 \; b=2 \; , a=2 \rightarrow (q-2)(2q^2+2q-1) = 0 \Rightarrow q = \frac{-2 \pm \sqrt{4+8}}{4} \rightarrow \begin{cases} \frac{1}{2} \\ -1 \end{cases}$

$\rightarrow 1 + 2 + 4 = 18 \rightarrow a_n = 1, 2, 4$ (2)

$\frac{a}{q} \times a \times aq = 27$

$a^3 = 27$

$a = 3$

$q = 3$

b a c

1 3 9

$1 + 3 + 9 = 13$

الس) $a_1\left(\frac{q^n - 1}{q-1}\right) = 2\left(\frac{2^{10} - 1}{2-1}\right) = 2046$

ب) $\sqrt{(a_1 \cdot a_n)^n} = (2 \times 2 \times 2^9)^5 = (4 \times 2^9)^5$

$a, aq, aq^2, aq^3, \ldots$

$b_1 = a_2 - a_1 = aq - a = a(q-1)$

$b_2 = a_3 - a_2 = aq^2 - aq = aq(q-1)$

$b_3 = a_4 - a_3 = aq^3 - aq^2 = aq^2(q-1)$

$b_n = a_{n+1} - a_n = aq^n - aq^{n-1} = aq^{n-1}(q-1)$

$\frac{b_2}{b_1} = \frac{aq(q-1)}{a(q-1)} = q$

$\frac{b_3}{b_2} = \frac{aq^2(q-1)}{aq(q-1)} = q$

$\frac{b_n}{b_{n-1}} = q$

$b_1 = a(q-1)$

$\frac{b_{i+1}}{b_i} = q$

الس) $\frac{n}{2}(a+d) \quad \frac{n}{2}(2a+(n-1)d)$

$a + a+d + a+2d + \cdots + a+(n-1)d$

$1+2+3+\cdots+n$

$\frac{n(n+1)}{2}$

$na + (d+2d+3d+\cdots+(n-1)d)$

$na + (1+2+\cdots+(n-1))d \rightarrow \frac{2na + (n-1)d}{2}d$

$\frac{n}{2}(2a+(n-1)d)$

$S = a + aq + aq^2 + aq^3 + \cdots + aq^{n-1}$

$qS = aq + aq^2 + \cdots + aq^{n-1} + aq^n$

$S - qS = a - aq^n$

$S(1-q) = a(1-q^n)$

$S = \frac{a(1-q^n)}{1-q}$