نام و نام خانوادگی ......تینا حیات داودی...... پاسخنامه تشریحی تکلیف شماره ...۱۲... کلاس ...دهم تجربی پنجشنبه...

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$a_n = \frac{1}{2}, 1, 2, \dots \quad (q=2) \qquad t_n = \frac{1}{2}\times 2^{n-1} = aq^{n-1}$

الف) $t_{10} = \frac{1}{2}\times 2^{9} = 2^{8} = \boxed{256}$

ب) $\frac{a_{17}}{a_{13}} = \frac{aq^{16}}{aq^{12}} = q^{4} = \boxed{2^{4}=16}$

ج) $b^2 = ac$ واسطه هندسی t_{10} و t_4 $= t_7 = \frac{1}{2}\times 2^{6} = 2^{5} = \boxed{32}$

د) $aq^{n-1} = 128 \qquad \frac{1}{2}\times 2^{n-1} = 2^{7} \qquad 2^{n-1} = 2^{8} \qquad n = 9 \Rightarrow$ $\boxed{\text{۹امین جمله}}$

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$\times q^{3} \begin{pmatrix} t_5 = 12 \\ t_8 = 96 \end{pmatrix} \times 8 \qquad q^{3} = 8 \qquad q = 2$

$\times q^{2} \begin{pmatrix} t_8 = 96 \\ t_{10} = ? \end{pmatrix} \times 4 = \boxed{384}$

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الف) $a_1\times \underbrace{a_2\times \underbrace{a_3\times a_4}_{(a_3)^2}}_{(a_3)^2}\times a_5 = 243 \qquad a_5\times a_1 = a_2\times a_4 = (a_3)^2$

$(a_3)^5 = 243 \qquad \boxed{a_3 = 3}$

ب) $a_1\times a_5 = (a_3)^2 = \boxed{9}$

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$2^b, 4\sqrt{2}, 2^a$ دنباله هندسی $\Rightarrow b^2 = ac \qquad (4\sqrt{2})^2 = 2^b\times 2^a \qquad \underbrace{32}_{2^5} = 2^{b+a} \qquad b+a = 5$

واسطه حسابی بین a و b $\Rightarrow \frac{a+b}{2} = \frac{5}{2} = \boxed{2.5}$

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$\begin{matrix} q^4 \\ q^4 \end{matrix} \begin{cases} t_3 = 1-x \\ t_7 = x \\ t_{11} = x+1 \end{cases} \qquad b^2 = ac$

$(t_7)^2 = t_3\times t_{11} \Rightarrow x^2 = (1-x)(x+1)$

$x^2 = 1-x^2 \qquad 2x^2 = 1 \qquad x^2 = \frac{1}{2}$

$\Rightarrow x = \pm\frac{1}{\sqrt{2}} = \boxed{\pm\frac{\sqrt{2}}{2}}$

$t_1+t_4=28 \qquad a+aq^3=28$

$t_2+t_3=12 \qquad aq+aq^2=12$

$\Rightarrow \dfrac{\cancel{a}(1+q^3)}{\cancel{a}q(1+q)}=\dfrac{28}{12}=\dfrac{7}{3}$

$\Rightarrow \dfrac{\cancel{(1+q)}(1+q^2-q)}{q\cancel{(1+q)}}=\dfrac{7}{3} \qquad 1+q^2-q=\dfrac{7}{3}q \qquad q^2-\dfrac{10}{3}q+1=0 \qquad q=\dfrac{\frac{10}{3}\pm\sqrt{\frac{100}{9}-4}}{2}$ ۶

$\frac{8}{3}$

$a(1+q^3)=28 \Rightarrow a=1$

$q=\dfrac{18}{6}=3 \qquad q=\dfrac{2}{6}=\dfrac{1}{3} \qquad t_4=aq^3=1\times 3^3=\boxed{27}$

$\{1,3,9,27\}$

$\{27,9,3,1\}$

$a_1+a_2+a_3=13$

$\underbrace{a_1 a_2 a_3}_{(a_2)^2}=27 \qquad a_1a_3=a_2a_2$

$(a_2)^3=27 \qquad a_2=3$

$\dfrac{x}{q},\ \underset{3}{x},\ xq \Rightarrow \dfrac{3\cancel{x}+\cancel{x}q+\cancel{x}q^2}{q}=13$

$3(1+q+q^2)=13q$

$1+q+q^2=\dfrac{13}{3}q \Rightarrow q^2-\dfrac{10}{3}q+1=0 \qquad q=\dfrac{\frac{10}{3}\pm\sqrt{\frac{100}{9}-4}}{2}$ ۷

$\frac{8}{3}$

$q=\dfrac{18}{6}=3 \quad q=\dfrac{1}{3} \Rightarrow \boxed{\begin{matrix}\{9,3,1\\ \{1,3,9\end{matrix}}$

$a_n=2,6,18,\ldots$ ($\times 3$, $\times 3$)

الف) $S_{10}=a_1\left(\dfrac{q^n-1}{q-1}\right)=\cancel{2}\left(\dfrac{3^{10}-1}{\cancel{3-1}}\right)=\boxed{3^{10}-1=59048}$

ب) $(\text{اول}\times\text{آخر})^{\frac{n}{2}}=(2\times 2\times 3^9)^5=\boxed{2^{10}\times 3^{45}}$ ۸

$t_{10}=aq^9=2\times 3^9$

$a,\ aq,\ aq^2,\ aq^3,\ \ldots$ ($\times q$)

$a'_n=a(1-q),\ aq(1-q),\ aq^2(1-q),\ \ldots$ ($\times q$)

$a-aq=a(1-q)$

$aq-aq^2=aq(1-q)$ ۹

$aq^2-aq^3=aq^2(1-q)$

$q'=\dfrac{\cancel{a}q\cancel{(1-q)}}{\cancel{a}\cancel{(1-q)}}=q$

الف) $S_n=\dfrac{n}{2}(2a+(n-1)d)$

$a_1,\ a_2,\ a_3,\ \ldots,\ a_{n-2},\ a_{n-1},\ a_n$

$a_1+a_n=a_2+a_{n-1}=a_3+a_{n-2}$

$\Rightarrow S_n=\dfrac{n}{2}(a_1+a_n) \Rightarrow S_n=\dfrac{n}{2}(a_1+a_1+(n-1)d) \Rightarrow S_n=\dfrac{n}{2}(2a+(n-1)d)$ ۱۰

ب) $S_n=a+\cancel{aq}+\cancel{aq^2}+\cancel{aq^3}+\ldots$

$q\times S_n=\cancel{aq}+\cancel{aq^2}+\cancel{aq^3}+aq^4+\ldots$

$\Rightarrow (q\times S_n)-S_n=aq^n-a$

$S_n(q-1)=aq^n-a$

$S_n=a\left(\dfrac{q^n-1}{q-1}\right)$