نام و نام خانوادگی ......دیبا اسلامی...... پاسخنامه تشریحی تکلیف شماره ..۱۵.. کلاس ....دهم تجربی A.........

۱

$S_3 = 21 \to \frac{a_1(q^3-1)}{q-1} = 21 \to \frac{a_1(q-1)(q^2+q+1)}{\cancel{(q-1)}} = 21 = a_1q^2 + 4 + a_1$

$a_1a_2a_3 = 64$

$a_1^3q^3 = 64$

$(a_1q)^3 = 64$

$a_1q = 4 = a_2 \to a_1 = \frac{4}{q}$

$17 = \frac{4}{q}(q^2+1) \to 4q + \frac{4}{q} = 17$

$\frac{4q^2+4}{q} = 17$ $\quad \Delta = 225 \quad 15$

$17q = 4q^2+4$ $\quad \frac{17\pm\sqrt{225}}{8}$

$4q^2-17q+4=0$

$q = \cancel{4}$ یا $\frac{1}{4} \to q = \frac{1}{4}$

۲

$x^2+4 \,,\, 2x \,,\, x^2-2 \to 8 \,,\, -4 \,,\, 2$

$-\frac{1}{2} \quad -\frac{1}{2} = q$

$4x^2 = x^4 - 2x^2 + 4x^2 - 8$

$2x^2$

$x^4 - 2x^2 - 8 = 0$

$4 - 4(-8) = 36 = \Delta$

۳۲

$x = \frac{2\pm6}{2} = -2$ یا $\cancel{4}$

$S_7 = \frac{\cancel{8}\left((-\frac{1}{2})^7-1\right)}{-\frac{1}{2}-1} = \frac{-1}{\cancel{128}} - \frac{128}{128} = \frac{-129}{\cancel{128}}$

$16 \qquad -\frac{3}{2}$

$\frac{-\cancel{129}}{\cancel{128}} \times -\frac{\cancel{2}}{\cancel{3}} = \frac{43}{8}$

۳

$1+q+q^2+q^3+q^4 = \frac{121}{81}$ $\qquad 1 + \frac{a_2}{243} + \frac{a_3}{243} + \frac{a_4}{243} + \frac{a_5}{243} = \frac{121}{81}$

$a_1 = 243 \to a_2 = 243q \quad a_3 = 243q^2$ $\qquad \frac{a_2+a_3+a_4+a_5}{243} = \frac{40}{81} = \frac{120}{243}$

$q = \frac{a_2}{243}$ $\qquad a_2+a_3+a_4+a_5 = 120$

$S_5 = 120 + 243 = \boxed{363}$ $\qquad a_1 = 243$

۴

$1 \,,\, -2 \,,\, +4 \,,\, -8 \,,\, 16 \,,\, -32 \,,\, 64$

$d = \frac{63}{\cancel{k+1}\,6} = 10.5$ $\qquad q^6 = 64 \to q = \pm 2$ $\qquad 1 \,,\, 2 \,,\, 4 \,,\, 8 \,,\, 16 \,,\, 32 \,,\, 64$

B

$1 \,,\, 11.5 \,,\, 22 \,,\, 32.5 \,,\, 43 \,,\, 53.5 \,,\, 64$

A

$A + B = 32.5 + 8 = 40.5$

$A + B = 32.5 - 8 = 24.5$

۵

$-24 \,,\, -\frac{95}{4} \,,\, \dots$ $\qquad a_{101} = \cancel{-24} + (\cancel{100}\times\frac{1}{4}) \to a_{101} = 1$

$-24 \qquad 25$

$-\frac{96}{4} \,,\, -\frac{95}{4} \,,\, \dots$

$+\frac{1}{4} = d$

$128 \,,\, a_2 \,,\, \dots$ $\qquad a_8 = a_1q^7$

q

$a_8 = 128 \times q^7 = 1 \to (2q)^7 = 1 \to q = \frac{1}{2}$

۶

a_3 , a_7 , a_9 ; b_1 , b_2 , b_3 $\Big\}$ $\begin{matrix} a_3 \\ a_3+4d \\ a_3+6d \end{matrix}$ $\Big\} \Rightarrow (a_7)^2 = a_3 a_9$

$(a_3+4d)^2 = a_3(a_3+6d) \to \cancel{a_3^2}+16d^2+8a_3d = \cancel{a_3^2}+6a_3d$

$16d^2+2a_3d=0$

$2(a_1+2d)(d)$

$16d^2+2a_1d+4d^2=0$

$18d^2+2a_1d=0 \quad d(18d+2a_1)=0$

$9d=-a_1 \to \boxed{a_1=-9d}$

$18d=-2a_1$

$a_3 = \cancel{a_1+2d} = \cancel{-9d}+2d = -7d$

$d = 6d \to d = 0$

$\boxed{a_3=-7d}$ $+4d$

$-7d+4d = \boxed{-3d=a_7}$ $+2d$

$-7d+6d = \boxed{-d=a_9}$

۷

a_2 , a_4 , a_8 ; b_1 , b_2 , b_3 $\Big\}$ $\begin{matrix} a_1+d=2d \\ a_1+3d=4d \\ a_1+7d=8d \end{matrix}$ $\Big\} \Rightarrow (a_1+3d)^2=(a_1+d)(a_1+7d)$

$\cancel{a_1^2}+9d^2+6a_1d = \cancel{a_1^2}+\cancel{7a_1d}+a_1d+\cancel{7d^2}$

$8a_1d$

$2d^2-2a_1d=0$

$2d(d-a_1)=0$

$\neq 0 \quad a_1=d$

$\frac{1}{4}\times\frac{1}{4}$, $\frac{1}{16}$, $\frac{1}{64}$

$a_{10}=a_1q^9$

$a_{10}=a_1a_1^9 = a_{10}=a_1^{10} \to a_{10}=\left(\frac{1}{4}\right)^{10}$

۸

$3a_2 \quad 2a_3 \quad a_4$

$4a_3=3a_2+a_4$

$4(a_1q^2)=3(a_1q)+a_1q^3$

$4\cancel{a_1}\cancel{q}^2=\cancel{a_1}\cancel{q}(3+q^2)$

q

$\Delta=16-12=4$

$4q=3+q^2 \to q^2+3-4q=0 \to q=\frac{4\pm2}{2}=1 , 3=q$

۹

$2 , \frac{7}{4} , \dots$; $-\frac{1}{4}$; $-\frac{1}{4}$

$a_n=2+(n-1)\left(-\frac{1}{4}\right)$

$a_4=2+3\times-\frac{1}{4}=\frac{8}{4}-\frac{3}{4}=\frac{5}{4}$

$a_8=2+7\times-\frac{1}{4}=\frac{8}{4}-\frac{7}{4}=\frac{1}{4}$

$a_{13}=2+\cancel{12}\times-\frac{1}{4}=-1$

$\frac{1}{4}-\frac{21}{4}=\frac{-20}{4}$; $\frac{5}{4}-\frac{21}{4}=\frac{-16}{4}$; $-1-\frac{21}{4}=\frac{-25}{4}$

$\frac{5}{4}+x , \frac{1}{4}+x , -1+x$

$\frac{-16}{4}=-4 , -5 , \frac{-25}{4} \to \boxed{q=\frac{5}{4}}$

$\times\frac{5}{4}$

$x=-\frac{21}{4}$

$-4x=21$

$(\frac{1}{4}+x)^2=(\frac{5}{4}+x)(x-1)$

$\frac{1}{16}+\cancel{x^2}+\frac{x}{2}=\frac{5}{4}x-\frac{5}{4}+\cancel{x^2}-x \to \frac{1}{16}+\frac{x}{2}=\frac{1}{4}x-\frac{5}{4} \to \frac{1+20}{16}=\frac{1}{4}x-\frac{x}{2} \to \frac{21}{16}=\frac{-4x}{16}$

۱۰

$a_1+a_4+a_7=73 \to b_1=a_1$

$a_4 = a_1q^3$; $a_7 = a_1q^6$

$b_2=a_4 \to a_1q^3=b_2$

$b_{10}=a_7 \to a_1q^6=b_{10}$

$a_1q^3=a_1+d$

$a_1(q^3-1)=d \quad \boxed{7=d}$

$8a_1=a_1+d$

$7a_1=d \to \boxed{7b_1=d}$

$a_1q^6=a_1+9d$

$\cancel{a_1}(q^6-1)=9d$

$\cancel{a_1}(q^3-1)=d$

$\frac{(\cancel{q^3-1})(q^3+1)}{(\cancel{q^3-1})}=9$

$q^3=8 \to q=2$

$a_1\underbrace{(1+q^3+q^6)}_{1+8+64=73}=73$

$a_1=\boxed{1=b_1}$

$\boxed{b_2=8}$

$b_3=$