ایلیا خاکسار - دهم B

$a-d,\ a,\ a+d \qquad a+(a+d)=21(a-d) \Rightarrow 3a=21 \quad a=7$

$a\times(a+d)=64\times(a-d) \Rightarrow a(a^2-d^2)=64$

$7d^2=64-343 \quad 7d^2=-279 \quad d:$ نیست $\qquad 3a+3d=21 \Rightarrow a+d=7 \quad a(a+d)(a+2d)=64$ 1

$a\times7\times(a+2d)=64 \quad a+d=7$ جایگذاری $\qquad d=7-a \Rightarrow a\times7\times(a+2(7-a))=64 \quad a\times7\times(14-a)=64$

$98a-7a^2=64 \quad 7a^2-98a+64=0 \qquad q+4+4q=21{,}4 \quad q=\frac{17\pm\sqrt{289-64}}{8}=\frac{17\pm15}{8}$

$\Rightarrow \boxed{q=4}$

$(2x)^2=(x^2+4)(x^2-2) \quad 4x^2=x^4-2x^2+4x^2-8 \Rightarrow 4x^2=x^4+2x^2-8$

$x^4-2x^2-8=0 \quad y=x^2 \quad y^2-2y-8=0 \quad y=4$ یا $y=-2 \quad x=\pm2,\ x^2=4$ 2

$y=x^2\geq0 \Rightarrow x=2 \qquad a_1=4+4=8 \quad a_2=4 \quad a_3=2 \quad q=\frac{1}{2}$

$a_1=8 \quad a_2=-4 \quad a_3=2 \quad q=-\frac{1}{2} \quad \times\ x=-2 \qquad S_7=a_1\times\frac{1-q^7}{1-q}=8\times\frac{1-(\frac{1}{2})^7}{1-\frac{1}{2}}=\boxed{\frac{127}{8}}$

$\frac{1-q^5}{1-q}=\frac{121}{81} \quad 81(1-q^5)=121(1-q) \quad 81-81q^5=121-121q \quad -81q^5+121q-40=0$

$81q^5-121q+40=0 \qquad 1+\frac{1}{3}+\frac{1}{9}+\frac{1}{27}+\frac{1}{81} \Rightarrow -a_1=243 \quad -a_2=243\times\frac{1}{3}=81 \Rightarrow -a_3=81\times\frac{1}{3}=27$

$\Rightarrow 27\times\frac{1}{3}=9 \quad -a_5=9\times\frac{1}{3}=3 \qquad S_5=a_1\frac{1-q^5}{1-q}=243\times\frac{1-\frac{1}{243}}{\frac{2}{3}}=\boxed{363}$

$a_1=1 \quad a_7=a_1+6d \quad 6d=63 \quad a_7=64 \quad A=a_4=a_1+3d=1+3\times\frac{21}{2}=1+\frac{63}{2}=32{,}5$ A

$a_7=1\times q^6 \quad q^6=64 \quad B=a_4=a_1\times q^3=1\times2^3=8=B$ 4

$32{,}5+8=\boxed{40{,}5}=A+B$

$a_1=-24 \quad a_2=-\frac{95}{4} \quad d=a_2-a_1=0{,}25 \quad a_{101}=a_1+100d=-24+100(0{,}25)=1$

$a_{101}=c_8$ 5

$c_8=1 \quad c_1=128 \quad c_8=b_1r^7=128r^7=1 \quad r=(2^{-7})^{\frac{1}{7}}=2^{-1}=\boxed{\frac{1}{2}}$

$a_n = a_1 + (n-1)d$ $(a_7)^2 = a_3 \times a_9$ $a_3 = a_1 + 2d$ $a_7 = a_1 + 6d$

$a_9 = a_1 + 8d$ $(a_1+6d)^2 = (a_1+2d)(a_1+8d)$ $a_1^2 + 12a_1d + 36d^2$ چپ

$a_1^2 + 10a_1d + 16d^2$: راست $a_1^2+12a_1d+36d^2 = a_1^2+10a_1d+16d^2$ ۶

$\Rightarrow 2a_1d + 20d^2 = 0 \Rightarrow 2d(a_1+10d)=0$

$a_1+10d=0 \Rightarrow \boxed{d = \frac{-a_1}{10} \text{ یا } d=0}$

$a_n = a_1+(n-1)d$ $a_2 = a_1+d$ $a_4 = a_1+3d$ $a_8 = a_1+7d$ $(a_4)^2 = a_2\times a_8$

$(a_1+3d)^2 = (a_1+d)(a_1+7d)$ $a_1^2+8a_1d+7d^2$ راست $a_1^2+6a_1d+9d^2$ چپ

$a_1^2+6a_1d+9d^2 \Rightarrow -2a_1d+2d^2=0$ $d\neq 0$ $d=a_1$ $a_n=a_1+(n-1)d = a_1+(n-1)$ ۷

$a_n = na_1$ $a_2=2a_1$ $a_4=4a_1$ $b_1=\frac{1}{4}$, $b_2=a_2=2a_1$, $b_3=a_4=4a_1$ $\frac{b_2}{b_1}=\frac{b_3}{b_2}=r$ قدرنسبت

$r=\frac{b_2}{b_1}=\frac{2a_1}{\frac{1}{4}}=8a_1$ $a_8=b_4$ $a_1=\frac{1}{4}$ $r=8a_1=2$ $b_n=b_1\times r^{n-1}$

$b_{10}=\frac{1}{4}\times 2^9=\frac{1}{4}\times 512=128$ $\boxed{b_{10}=128}$

$b_1, b_2=b_1r, b_3=b_1r^2$ $3b_2, 2b_3, b_4 \Rightarrow 2\times(2b_3)=3b_2+b_4$

$2\times(2b_1r^2)=3b_1r+b_1r^3$ $4r^2=3r+r^3$ $r^3-4r^2+3r=0 \Rightarrow r(r^2-4r+3)=0$ ۸

$\Rightarrow \boxed{r=0 \text{ یا } r=3}$

$d=a_2-a_1=\frac{7}{4}-2=-\frac{1}{4}$ $a_n=2+(n-1)\times(-\frac{1}{4})=2-\frac{n-1}{4}$ $a_4=2-\frac{3}{4}=\frac{5}{4}$

$a_8=2-\frac{7}{4}=\frac{1}{4}$ $a_{13}=2-\frac{12}{4}=-1$ $\frac{a_2}{a_1}=\frac{a_3}{a_2}=r$ $a_1=a_4+p=\frac{5}{4}p$

$(\frac{1}{4}+p)^2=(\frac{5}{4}+p)\times r \Rightarrow T_1=a_{13}+(-\frac{21}{4})=\boxed{-1}-\frac{21}{4}=-\frac{25}{4}$ ۹

$t_2=a_8+-\frac{21}{4}=\frac{1}{4} \Rightarrow \frac{-21}{4}=-\frac{20}{4}=\boxed{-5}$ $t_3=a_4+(-\frac{21}{4})=\frac{5}{4}-\frac{21}{4}=-\frac{16}{4}=\boxed{-4}$

$\frac{t_2}{T_1}=\frac{-5\times 4}{-25}=\frac{20}{25}=\boxed{\frac{4}{5}}$ جواب آخر

$(a+d)^2=(a+9d)a \Rightarrow a^2+d^2+2ad=a^2+9ad \Rightarrow d^2=7ad \Rightarrow d=7a$

$a+a+d+a+9d=73 \Rightarrow 3a+10d=73 \Rightarrow 73a=73 \Rightarrow \boxed{a=1}, \boxed{d=7}$ ۱۰