نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ۱۵ کلاس .....

۱

$\frac{x}{q}, x, xq \longrightarrow S = \frac{x^2 + xq + xq^2}{q} = 21 \Rightarrow x^2 + xq + xq^2 = 21q$

$\hookrightarrow$ ضرب $= x^3 = 64 \Rightarrow x = 4$

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

$q = \frac{17 \pm \sqrt{289 - 64}}{8}$

$q = \frac{1}{4}$ ← $q \notin W$

۲

$x^2+4, 4x, x^2-2 \Rightarrow b^2 = ac$

$16 = 4(x^2-2)$

$4x^2 = (x^2+4)(x^2-2)$

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

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

$x^2 = \frac{2 \pm \sqrt{4+32}}{2}$

$x^2 = 4 \quad x = 2$

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

$S_7 = 8\left(\frac{(\frac{1}{2})^7 - 1}{\frac{1}{2} - 1}\right) = 8 \times \frac{\frac{1}{128} - 1}{-\frac{1}{2}} = 8 \times \frac{-\frac{127}{128}}{-\frac{1}{2}} = 8 \times \frac{127}{128} \times 2 = \frac{127}{8} = 15/875$

۳

$1 + q + q^2 + q^3 + q^4 = \frac{121}{11}$

$\Rightarrow a + aq + aq^2 + aq^3 + aq^4 = a \times \frac{121}{11}$

$a = 243$

$S_5 = 243 \times \frac{121}{11} = 3993$

۴

$1, -, -, \underline{A}, -, -, 64 \rightarrow$ حسابی $\quad d = \frac{64 - 1}{6} = 10/5$

$1, -, -, \underline{B}, -, -, 64 \rightarrow$ هندسی $\quad q^6 = \frac{64}{1} = 64 \quad q = \pm 2$

$A = 1 + 3 \times 10/5 = 32/5$

$B = 1 \times (\pm 2)^3 = \pm 8$

$A + B = 32/5 + 8 = 40/5$ $\quad A + B = 32/5 - 8 = 24/5$

۵

$\frac{-96}{4} \leftarrow -24, \frac{-96}{4}, \ldots \longrightarrow$ حسابی $\quad -24 + 100d = 128 \times q^2 \quad d = \frac{1}{4}$

$128, a_2, \ldots \longrightarrow$ هندسی $\quad -24 + \frac{100}{4} = 128 \times q^2 \quad 128 \times q^2 = 1$

$q = ?$ $\quad q^2 = \frac{1}{128}$

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

$a+2d,\ a+6d,\ a+8d \rightarrow$ هندسی

$b^2=ac \quad (a+6d)^2=(a+8d)(a+2d)$ ۶

$\cancel{a^2}+36d^2+12ad=\cancel{a^2}+10ad+16d^2 \quad 20d^2+2ad=0$

$d(20d+2a)=0$

$d=0$

$d=\frac{-a}{10} \quad 20d+2a=0 \quad 20d=-2a$

$\boxed{d\begin{cases}0\\ \frac{-a}{10}\end{cases}}$

$a+d,\ a+3d,\ a+7d \rightarrow$ هندسی

$b^2=ac \quad (a+3d)^2=(a+d)(a+7d)$ ۷

$\cancel{a^2}+9d^2+6ad=\cancel{a^2}+8ad+7d^2 \quad \cancel{2}d^{\cancel{2}}=\cancel{2}a\cancel{d}$

$d=a$

$2d=\frac{1}{4} \quad d=\frac{1}{8} \quad a=\frac{1}{4}-\frac{1}{8}=\frac{1}{8} \quad t_{10}=\frac{1}{4}\times 2^9=\boxed{128}$

$\frac{1}{4},\ \frac{1}{2},\ 1,\ \ldots \quad q=2$

$3(aq),\ 2(aq^2),\ aq^3 \rightarrow$ حسابی

$q=? \quad 2b=a+c \quad 4aq^2=aq^3+3aq$

$4q=q^2+3 \quad q^2-4q+3=0 \quad q=\frac{4\pm\sqrt{16-12}}{2}$ ۸

$\boxed{q=3} \quad \boxed{q=1}$

$\frac{8}{3} \leftarrow 2,\ \frac{7}{3},\ \ldots \rightarrow$ حسابی $\quad a=2 \quad d=\frac{-1}{3} \qquad -3,\ -5,\ \frac{-25}{3}$

$q=\frac{-5}{-3}=\boxed{\frac{5}{3}}$

$t_3+x,\ t_8+x,\ t_{13}+x \rightarrow$ هندسی $\quad b^2=ac$

$\underbrace{2+2(\frac{-1}{3})}_{\frac{4}{3}}+x,\ \underbrace{2+7(\frac{-1}{3})}_{\frac{1}{3}}+x,\ \underbrace{2+12(\frac{-1}{3})}_{-2}+x$ ۹

$q=?$

$(\frac{1}{4}+x)^2=(\frac{5}{4}+x)(1+x) \quad \frac{1}{16}+\cancel{x^2}+\frac{x}{4}=\frac{-5}{4}+\frac{x}{4}+\cancel{x^2} \Rightarrow 1+8x=-20+4x$

$4x=-21$

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

$a,\ aq^3,\ aq^6 \rightarrow S=73 \qquad a_1,\ a_4,\ a_7$

$t_1 \quad t_2 \quad t_{10}$

$d=?$

$d=aq^3-a=\frac{aq^6-aq^3}{8} \qquad 8aq^3-8a=aq^6-aq^3$ ۱۰

$8q^3-8=q^6-q^3$

$a,\ 8a,\ 64a \rightarrow S=73 \qquad q^6-9q^3+8=0 \qquad q^3=\frac{9\pm\sqrt{81-32}}{2}$ (7)

$73a=73 \quad a=1$

$\boxed{d=8-1=7} \qquad \boxed{d=0} \qquad q^3=8 \quad q=2$

$a,\ a,\ a \qquad q^3=1 \quad q=1$