نام و نام خانوادگی ....طراوت کریمی......... پاسخنامه تشریحی تکلیف شماره ۱۵... کلاس ....دهم جبر B......

**۱**

$\frac{a_2}{q} \times a_2 \times a_2 q = 64 \to a_2^3 = 64 \to a_2 = 4$

$17q = 4 + 4q^2 \to 4q^2 - 17q + 4 = 0 \to q = \frac{-b \pm \sqrt{\Delta}}{2a} \to \frac{17 \pm \sqrt{289-64}}{8}$

$\frac{32}{8} = 4$ ✗

$\frac{2}{8} = \boxed{\frac{1}{4}}$ ✓

**۲**

$x^2+4 \,,\, 2x \,,\, x^2-2 \to (x^2-2)(x^2+4) = (2x)^2$

$x^4 + 2x^2 - 8 = 4x^2 \to \underbrace{x^4 - 2x^2 - 8}_{(x^2-4)(x^2+2)} = 0$

$x^2 = 4 \to x = \pm 2$

$x^2 = -2$ ✗

$a_7 = a_1\left(\frac{1-q^7}{1-q}\right) \to 8\left(\frac{\frac{127}{128}}{\frac{1}{2}}\right) = \frac{127}{8}$

**۳**

$a_1 + a_1 q + a_1 q^2 + a_1 q^3 + a_1 q^4 \to \frac{a_1}{243}(\underbrace{1+q+q^2+q^3+q^4}_{\frac{121}{81}}) = 243 \times \frac{121}{81}$

$\to = \boxed{363}$

**۴**

حسابی: $\frac{64-1}{6} = \frac{63}{6} = 10.5 = d$ $\quad a_4 : a_1 + 3d \to 1 + 3(10.5) = 32.5$

هندسی: $ab = c^2 \to 64 = a_4^2$

$a_4 = 8 = B$

$a_4 = -8 = B$

$A+B = 8 + 32.5 = 40.5$ / $A+B = -8 + 32.5 = 24.5$

**۵**

$\underset{+\frac{1}{4}}{-24 \,,\, -\frac{95}{4}} \,,\, \ldots \to a_n = \frac{1}{4}n - \frac{97}{4} \to a_{101} = \frac{101-97}{4} = 1$

$a_8 = a_1 q^7 \to 128(q^7) = 1 \to q^7 = \frac{1}{128} \to q = \sqrt[7]{\frac{1}{128}} = \frac{1}{2}$

| | |
|---|---|
| $a_1+2d\,,\ a_1+6d\,,\ a_1+8d \longrightarrow (a_1+8d)(a_1+2d)=(a_1+6d)^2$<br>$a_1^2+10a_1d+16d^2=a_1^2+36d^2+12a_1d$<br>$-20d^2=2a_1d \longrightarrow a_1=-10d \qquad 2a_1d+20d^2=0 \qquad \underbrace{2d(a_1+10d)=0}$<br>$d=0 \longrightarrow$ دنباله‌ی حسابی ثابت $\to \underset{\text{قدرنسبت هندسی}}{q=1}$ / $q=\frac{1}{2} \to d=-\frac{a_1}{10}$ | ۶ |
| $a_1+d\,,\ a_1+3d\,,\ a_1+7d \longrightarrow (a_1+d)(a_1+7d)=(a_1+3d)^2$<br>$a_1^2+7d^2+8a_1d=a_1^2+9d^2+6a_1d \qquad 2a_1d=2d^2$<br>$\hookrightarrow a_1=d$<br>$2d\,,\ 4d\,,\ 8d\,,\ \ldots \qquad a_n=a_1(q)^{n-1} \longrightarrow a_{10}=\cancel{\frac{1}{4}}(2)^9=2^7=128$ | ۷ |
| $3a_1q\,,\ 2a_1q^2\,,\ a_1q^3 \longrightarrow 2a_1q^2-3a_1q=a_1q^3-2a_1q^2$<br>$a_1q(2q-3)=a_1q^2(q-2) \longrightarrow 2q-3=q^2-2q \longrightarrow \boxed{q^2-4q+3=0}$<br>$q=\frac{-b\pm\sqrt{\Delta}}{2a} \to \frac{4\pm\sqrt{16-12}}{2}$ $\to \frac{4-2}{2}=1$ ✗ ; $\to \frac{4+2}{2}=\frac{6}{2}=\boxed{3}$<br>$\Delta=b^2-4ac$ | ۸ |
| $2\,,\ \frac{7}{4}\,,\ \ldots \longrightarrow a_n=\frac{1}{4}n+\frac{9}{4}$ $\to a_4=\frac{5}{4}$ ; $\to a_8=\frac{1}{4}$ ; $\to a_{12}=-1$ $\qquad -\frac{14}{4}\,,\ -\frac{20}{4}\,,\ -\frac{25}{4}$<br>$\frac{5}{4}+x\,,\ \frac{1}{4}+x\,,\ -1+x$ $\hookrightarrow (x-1)(x+\frac{5}{4})=(x+\frac{1}{4})^2$<br>$x^2+\frac{1}{4}x-\frac{5}{4}=x^2+\frac{1}{16}+\frac{x}{2} \to \frac{x}{4}-\frac{x}{2}=\frac{1}{16}+\frac{5}{4} \to -\frac{x}{4}=+\frac{21}{16} \to \boxed{x=-\frac{21}{4}}$ | ۹ |
| $a_1\,,\ a_1r^3\,,\ a_1r^6 \qquad d=ar^3-a \longrightarrow a(r^3-1) \qquad a_1(1+r^3+r^6)=73$<br>$ar^6=a+9d \longrightarrow a+9a(r^3-1) \qquad r^6=1+9(r^3-1) \to \underbrace{r^6-9r^3+8=0}_{(r^3-1)(r^3-8)=0}$<br>$r^3 \to =1 \to r=1 \qquad d=a(r^3-1) \to a(0)=0$ ✗<br>$r^3 \to =8 \to r=2 \qquad a_1(1+8+64)=73a_1 \to a_1=1$<br>$d=1\times(8-1)=\boxed{7}$ | ۱۰ |