نام و نام خانوادگی امیر بهراد مومنی ...... پاسخنامه تشریحی تکلیف شماره ۱۵ کلاس دهم ب A

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$\frac{a}{q}+a+aq=21 \qquad \underbrace{\frac{a}{\cancel{q}}\times a\times a\cancel{q}=64}_{a^3=64\to a=\boxed{4}}$

$\frac{4}{q}+\frac{4q}{q}+\frac{4q^2}{q}=\frac{4+4q+4q^2}{q}=21\longrightarrow 21q=4+4q+4q^2$

$4q^2-17q+4=0\longrightarrow q^2-17q+16=0\longrightarrow (q-16)(q-1)=0 \begin{cases} q=\frac{16}{4}\ \times \\ \boxed{q=\frac{1}{4}\ \checkmark} \end{cases}$

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$x^2+4,\ 2x,\ x^2-2\longrightarrow 4x^2=(x^2+4)(x^2-2)\longrightarrow 4x^2=x^4+2x^2-8$

$x^4-2x^2-8=0\longrightarrow (x^2+2)(x^2-4)=0\longrightarrow \begin{cases} x^2=-2\ \text{غ ق ق}\ \times \\ x^2=4\longrightarrow x=\pm 2 \end{cases}$

$x=2 \xrightarrow{\text{دنباله}} 8,4,2,\dots\longrightarrow \boxed{q=\frac{1}{2}\ \checkmark}$

$x=-2\longrightarrow 8,-4,2$ نزولی نیست $\longrightarrow$ غ ق ق $\times$

$S_7=a_1\left(\frac{q^n-1}{q-1}\right)=8\left(\frac{(\frac{1}{2})^7-1}{\frac{1}{2}-1}\right)=\frac{\frac{-127}{128}\times 8}{\frac{-1}{2}}=\frac{127}{8}$

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مجموع $=a+aq+aq^2+aq^3+aq^4$

$\underbrace{a}_{243}\underbrace{(1+q+q^2+q^3+q^4)}_{\frac{121}{81}}=\cancel{243}^{3}\ \frac{121}{\cancel{81}}=\boxed{363}$

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$d=\frac{b-a}{n+1}=\frac{64-1}{5+1}=\frac{63}{6}=\frac{21}{2}=10.5 \xrightarrow{\text{دنباله}} 1,\ 11.5,\ 22,\ 32.5,\ 43,\ 53.5,\ 64$

$A=32.5$

$q^{n+1}=\frac{b}{a}=\frac{64}{1}\Rightarrow q^{n+1}=64\to q^6=64\longrightarrow q=\pm 2\longrightarrow 1,2,4,\underset{B_1}{8},16,32,64$

$q=-2\longrightarrow 1,-2,4,\underset{B_2}{-8},16,-32,64$

$A+B_1=32.5+8=\boxed{40.5}$ و $A+B_2=\boxed{24.5}$

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$-24,\ -\frac{95}{4},\ \dots\longrightarrow a_n=-0.25n-24.25\longrightarrow a_{101}=1$

$aq^7=1\longrightarrow 128\times q^7=1\longrightarrow \boxed{q=\frac{1}{2}}$

a_3 , a_7 , a_9

$$a+2d, a+6d, a+8d \longrightarrow (a+6d)^2 = (a+8d)(a+2d)$$

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

$$20d^2 = -2ad \longrightarrow d = \frac{-a}{10}$$ ۶

a_2 , a_4 , a_8

$$a+d , a+3d \quad a+7d \longrightarrow (a+3d)^2 = (a+d)(a+7d) \to \cancel{a^2} + 9d^2 + 6ad = \cancel{a^2} + 7d^2 + 8ad$$

$$\to \boxed{d=a} \xrightarrow{\text{جملات}} \begin{cases} a_2 = 2a \\ a_4 = 4a \\ a_8 = 8a \end{cases}$$ ۷

هندسی: a_1

هندسی: $\frac{1}{4} , 2a = 2 \times \frac{1}{4} = \frac{1}{2} \quad , \quad \overset{a_4}{1} \quad , \quad \overset{a_8}{2} \to \boxed{q=2}$

$$a_{10} = aq^9 = \frac{1}{4} \times 2^9 = 2^7 = \boxed{128} \longrightarrow \text{جواب}$$

$a+2d = aq$

$a+4d = aq^2$

$a+8d = aq^3$

$$3aq , 2(aq^2) , aq^3$$

$$2aq^2 = \frac{3aq + aq^3}{2} \to 4\cancel{aq^2} = \cancel{aq}(3+q^2)$$

$$4q = 3 + q^2 \to 4q - 3 - q^2$$

$$q^2 - 4q + 3 = 0 \to (q-1)(q-3) = 0 \begin{cases} q = 1 ✗ \\ \boxed{q = 3 ✓} \end{cases}$$ ۸

حسابی: $2 , \frac{7}{4} , \ldots \longrightarrow d = -\frac{1}{4}$

a_4 , a_8 , a_{12}

$$\Rightarrow a_4 = \frac{5}{4} , a_8 = \frac{1}{4} , a_{12} = -1$$

$\frac{5}{4} + x , \frac{1}{4} + x , -1 + x$:هندسی $\longrightarrow (\frac{1}{4} + x)^2 = (\frac{5}{4} + x)(-1 + x) \Longrightarrow x = \frac{-21}{4}$ ۹

$\frac{5}{4} - \frac{21}{4} , \frac{1}{4} - \frac{21}{4} , -1 - \frac{21}{4}$

$= \frac{-16}{4} , \frac{-20}{4} , \frac{-25}{4} \longrightarrow \boxed{q = \frac{5}{4}}$

$$\begin{cases} -(a+b = aq^3) \\ a + 9d = aq^4 \end{cases} \longrightarrow aq^3 - a = d \to a(q^3 - 1) = d \to q^3 - 1 = \frac{d}{a}$$

$-a - b = -aq^3 \longrightarrow 8d = aq^4 - aq^3 \longrightarrow q = 2 \to a(1 + q^3 + q^4) = 73$ ۱۰

$a + 9d = aq^4$

$$8d = aq^3 \underbrace{(q^3 - 1)}_{\frac{d}{a}} \qquad a(1 + 8 + 64) = 73 \to a = 1$$

$$a + d = aq^3$$

$$1 + d = 8 \to d = \boxed{7}$$