$\frac{x}{q}\cdot x\cdot xq=64 \quad x^3=64 \quad x=4$

$(\frac{4}{q}+4+4q=21)\cdot q \Rightarrow 4+4q+4q^2=21q \Rightarrow 4q^2-17q+4=0$

$q^2-17q+16=0 \quad (q-16)(q-1)$, q $\left[\begin{array}{l} \frac{16}{4}=4 \ \times \ \text{غ.ق} \\ \frac{1}{4} \rightarrow \text{ق.ق} \end{array}\right.$ ①

$b^2=a\cdot c \Rightarrow 4x^2=(x^2-2)(x^2+4) \Rightarrow 4x^2=x^4+2x^2-8 \Rightarrow$

$x^4-2x^2-8=0 \Rightarrow (x^2-4)(x^2+2) \Rightarrow x^2=4 \quad x^2=-2 \times$ ②

$x^2=4 \quad x=\pm 2$ دو جواب

$c - \ +2: 2,4,8$

$-2: 2,-4,8 \times$ غ ق ق

$8,4,2,\ldots \quad q=\frac{1}{2}$

$S_7=\frac{8(1-\frac{1}{128})}{\frac{1}{2}} \Rightarrow \frac{8\times\frac{127}{128}}{\frac{1}{2}}=\frac{127}{8}$

$1+q+q^2+q^3+q^4=\frac{121}{81}$ $\quad S_5=a+aq+aq^2+aq^3+aq^4 \Rightarrow$ ③

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

$1 \ (A) \ ,64 \Rightarrow 2A=65 \quad A=32/5$

$1 \ (B) \ ,64 \quad B^2=64\times 1 \quad B^2=64 \quad B=\pm 8$ ④

① $\Rightarrow 32/5-8=24/5$

② $\Rightarrow 32/5+8=40/5$

$\underbrace{-24, -\frac{95}{4}}_{+\frac{1}{4}}, \ldots \quad d=-\frac{95}{4}+\frac{96}{4}=+\frac{1}{4} \quad a_{101}=-24+(100)\frac{1}{4}=+1$ ⑤

$128, a_2, \ldots \quad a_8=128\times q^7 \Rightarrow 1=128\times q^7 \quad q^7=\frac{1}{128} \quad q=\frac{1}{2}$

$a_1+2d,\ a_1+6d,\ a_1+8d \Rightarrow (a_1+6d)^2 = (a_1+2d)(a_1+8d) \Rightarrow$

$a^2 + 36d^2 + 12da = a^2 + 10d + 16d^2$ $\qquad 20d^2 + 2da = 0 \qquad 20d^2 = -2da$

$\underbrace{}_{20d^2} \quad \underbrace{}_{2da}$

$a = -10d$

چون نسبت یک — مخالف صفر است $d=0$ قبول نیست $\qquad d = -\frac{a}{10}$ (۶)

$a+d,\ \underbrace{a+3d}_{q},\ a+7d$ $\qquad a^2+9d^2+6da = a^2+8da+7d^2 \Rightarrow 2d^2 = 2da$ $\qquad d = a$

$2a,\ 4a,\ 8a \quad (\times 2,\ \times 2) \Rightarrow a = \frac{1}{4}$ $\qquad a_{10} = \frac{1}{4}\times(2)^9 = 2^{-2}\times 2^9 = 128$ (۷)

$3aq,\ 4aq^2,\ aq^3$ $\qquad 4aq^2 = 3aq + aq^3 \Rightarrow 4aq^2 - 3aq - aq^3 = 0$ $\quad$ ۸ ✗ ۱

$aq(4q - 3 - q^2) = 0 \qquad -\underbrace{aq}_{\text{مخالف صفره}}(q^2 - 4q + 3) = 0 \qquad (q-1)(q-3),\quad q = 1,\ 3$ (۸)

چون نسبت غیر یک است $\qquad$ تنها جواب

$2,\ \frac{7}{4},\ \dots \quad d = -\frac{1}{4}$ $\qquad -\frac{1}{4}n + \frac{9}{4} = a_n$ $\qquad a_4 = -\frac{1}{4}\times 4 + \frac{9}{4} = \frac{5}{4}$ (۹)

$a_8 = -\frac{1}{4}\times 8 + \frac{9}{4} = \frac{1}{4}$

$a_{13} = -\frac{1}{4}\times 13 + \frac{9}{4} = -\frac{4}{4} = -1$

$\frac{5}{4}+d,\ \frac{1}{4}+d,\ -1+d \Rightarrow \frac{1}{16} + d^2 + \frac{1}{2}d = d^2 + \frac{1}{4}d - \frac{5}{4}$

$\frac{21}{16} = -\frac{1}{4}d \quad d = -\frac{21}{4} \Rightarrow -4,\ -5,\ -\frac{25}{4} \qquad \frac{5}{4} = q$

$\underbrace{a}_{a_1} + \underbrace{aq^3}_{a_4 = a+3d} + \underbrace{aq^6}_{a_{10} = a+9d} = 73$ $\qquad d = aq^3 - a = a(q^3-1)$

$a_{10} = aq^6 \Rightarrow a_1 + 9(a(q^3-1)) = aq^6 = a_1 + 9aq^3 - 9a$ (۱۰)

$\Rightarrow aq^6 - 9aq^3 + 8a = 0 \qquad a(q^6 - 9q^3 + 8) = 0 \quad (q^3 = 8,\ q^3 = 1)\quad q^3 = 8, 1$

$q = 1 \Rightarrow 3a = 73 \quad a = \frac{73}{3} \qquad d = 0 \qquad\qquad q = 2, 1$

$q = 2 \Rightarrow \underbrace{a + 8a + 64a}_{73a} = 73 \qquad 73a = 73 \quad (a = 1) \qquad d = \frac{8-1}{2-1} = 7$