اسم ۹

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

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

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

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

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

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

دنباله

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

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

$2 \rightarrow 2, 4, 8$

$-2 \rightarrow -6, -4, 8 \; \times$

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

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

$31, A, 64 \Rightarrow 2A = 95 \qquad A = 47.5$

$1, B, 64 \qquad B^2 = 64 \times 1 \qquad B^2 = 64 \qquad B = \pm 8$

$(1) \Rightarrow 47.5 - 8 = 39.5$

$(2) \Rightarrow 47.5 + 8 = 55.5$

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

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

$a_1+2d,\ a_1+4d,\ a_1+8d \Rightarrow (a_1+4d)^2 = (a_1+2d)(a_1+8d) \Rightarrow$

$a^2+8ad+16d^2 = a^2+10ad+16d^2$ $\quad 20d^2+2da=0 \quad 20d^2=-2da$

$a=-10d$

$d=-\frac{a}{10}$

چون گفته یک ... ناصفر d≠0 قبول نیست

$a+d,\ a+2d,\ a+7d$ $\quad a^2+4d^2+4da = a^2+8da+7d^2 \quad 3d^2=3da$

$d=a$

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

$3aq,\ 2aq^2,\ aq^3$ $\quad 4aq^2 = 3aq + aq^3 \Rightarrow 4aq^2-3aq-aq^3=0$

$aq(4q-3-q^2)=0 \quad -aq(q^2-4q+3)=0 \quad q=1 \text{ یا } q=3$

غیر صفر

چون گفته غیرثابت

تنها جواب

$2,\ \frac{7}{4},\ \dots$ $\quad d=-\frac{1}{4}$ $\quad -\frac{1}{4}n+\frac{9}{4}=a_n$

$a_4 = -\frac{1}{4}\times 4+\frac{9}{4} = \frac{5}{4}$

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

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

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

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

$a+aq^3+aq^6=73$ $\quad d=aq^3-a=a(q^3-1)$

$a,\ a+d,\ a+9d$ ($a_1,\ a_2,\ a_{10}$)

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

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

$q=2,1$

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

$q=2 \Rightarrow a+8a+64a=73 \quad 73a=73 \quad a=1 \quad d=\frac{8-1}{2-1}=7$