باران قاسمی

تکلیف شماره ۱۵

Subject: Year: Month: Day:

۱- $a_1+a_2+a_3=21 \quad \frac{a}{q}+a+aq=21 \quad \frac{a}{q}\times a\times aq=64 \quad a=4$

$\frac{4}{q}+4+4q=21 \quad q=\frac{1}{2}$

۲- $a_1=4+4=8 \quad a_2=4 \quad a_3=2 \quad q=\frac{1}{2}$

$4a^2=(a^2-2)(a^2+2) \Rightarrow a^4-2a^2-8=0 \Rightarrow (a^2-4)(a^2+2)=0$ → $a=2$ ✓ ; $a=-2$ ✗

$8\left(\frac{1-(\frac{1}{2})^7}{1-\frac{1}{2}}\right)=\frac{127}{8}$

۳- $1+q+q^2+q^3+q^4=\frac{121}{81} \quad a_1=243 \quad S_5=a_1+a_1q+a_1q^2+a_1q^3+a_1q^4=a_1(1+q+q^2+q^3+q^4)=363$

۴- $a=1, a_7=64 \quad a_7=a_1+6d \quad d=10.5 \quad a_5=1+4(10.5)=43.5$

$a_1=1 \quad a_7=64 \quad q^6=64 \quad q=\pm 2$

$A+B=32.5+8=40.5 \quad A+B=32.5-8=24.5$

۵- $d=\frac{-90}{4}-(-24)=\frac{1}{4} \quad a_8=1=aq^7 \Rightarrow \frac{aq^7}{a}=\frac{1}{128} \Rightarrow q=\frac{1}{2}$

$a_{10}=a_1+10d=1$

$-24 \quad 25$

۶- $a_4, a_7, a_{11} \rightarrow a_1+3d, a_1+6d, a_1+10d \Rightarrow (a_1+6d)^2=(a_1+3d)(a_1+10d) \Rightarrow 9d^2+12a_1d=0$

$d(10d+12a_1)=0$ → $d=0$; $10d+12a_1=0 \rightarrow d=\frac{-6}{5}a_1$

۷- $a_3, a_4, a_8 \rightarrow a_1+2d, a_1+3d, a_1+7d \quad a_{10}=aq^9=\frac{1}{4}\times 2^9=128$

$(a_1+3d)^2=(a_1+2d)(a_1+7d) \Rightarrow 9d^2-14da_1=0$ → $d=a_1$; $d\neq 0$ ✗

۸- $3a_2, 2a_3, a_4 \rightarrow 3aq, 2aq^2, aq^3 \quad 4a_1^2q^2-12a_1^2q=a_1^2q^3-8a_1^2q^2 \rightarrow a_1^2q(12q-36)=a_1^2q(q^2-8q)$

$12q-36=q^2-8q \Rightarrow q^2-20q+36=0$

$(q-18)(q-2)=0$ → $q=2$; $q=18$ ✗

Pasha

Year: Month: Day:

Subject:

-9

$2, \frac{2}{5}, \dots \rightarrow d = -\frac{1}{5}$ $\quad a_5 = 2 + \frac{-2}{5} = \frac{8}{5}$, $a_{11} = 2 + \frac{-6}{5} = \frac{4}{5}$

$a_{15} = 2 + \frac{-14}{5} = -1$ $\quad a_5 + k, a_{11} + k, a_{15} + k \rightarrow \frac{8}{5} + k, \frac{4}{5} + k, -1 + k \Rightarrow (\frac{4}{5} + k)^2 = (\frac{8}{5} + k)(k - 1)$

$\frac{1}{10} + k^2 + \frac{k}{5} = k^2 - \frac{8}{5} + \frac{k}{5} \Rightarrow k = \frac{-21}{5}$ $\quad -\frac{4}{5}, -\frac{8}{5}, \frac{-24}{5} \Rightarrow q = \frac{8}{5}$

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a_1, a_5, a_{10} $\quad a_1 + a_5 + a_{10} = 12$ $\quad a_1 = t_1, a_5 = t_2, a_{10} = t_3$

$a_5 - a_1 = \frac{a_{10} - a_5}{5} \rightarrow a_1(q^4 - 1) = \frac{a_1 q^5 (q^5 - 1)}{5} \Rightarrow q = 1$ $\quad 3a = 12 \Rightarrow a = \frac{12}{3}$

$d = aq^2 - a \Rightarrow \frac{12}{3} - \frac{12}{3} = 0$