1) $a_1+a_3+a_5=21$ 19,25

$\frac{a\cdot a}{q}\cdot aq=64$

$\frac{a_1}{q}+a_1+aq=21$

$a^3=64$

$a=4$

$q=\frac{17\pm\sqrt{225}}{8}=\frac{17\pm15}{8}$

$\Delta=b^2-4ac=289-64=225$

$\frac{4}{q}+4+4q=21 \xrightarrow{\times q} 4+4q+4q^2=21q \Rightarrow 4q^2-17q+4=0$

2

4

$\boxed{q=\frac{1}{4}}$ جواب $\frac{17-15}{8}=\frac{1}{4}$

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2) $a_1=4+4=8$ $a_2=\pm4$ $a_3=2$ $q=\frac{1}{2}$

$4a^2=(a^2-4)(a^2+4)$

$4a^2=a^4+4a^2-2a-8$

$0=a^4-2a^2-8$

$(a^2-4)(a^2+2)=0$

$a^2=\pm2$; $-2\times$; $+2\checkmark$

$S_7=8\left(\frac{1-\frac{1}{2^7}}{1-\frac{1}{2}}\right)=\frac{127}{8}$

2

$\frac{\frac{127}{128}}{\frac{1}{2}}\Rightarrow\frac{2\times127}{128}\times8=\frac{127}{8}$

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3) $1+q+q^2+q^3+q^4=\frac{121}{81}$

2

$a_1=243$

$S_5=a_1+a_1q+aq^2+aq^3+aq^4=a_1(1+q+q^2+q^3+q^4)=\frac{243\times121}{81}=363$

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4) $a=1$, $a_7=64\to a_7=a_1+6d=64$ $1+6d=64$ $d=\frac{63}{6}=\frac{21}{2}$

$10{,}5$

$a_4=1+3(10{,}5)=32{,}5$ | $a_1=1$ $a_7=64\to v=q^6=64$ $q=\pm2$

$32{,}5$

$t_4=\pm8$ $\boxed{A+B=32{,}5+8=40{,}5}$

$A+B=32{,}5-8=24{,}5$

2

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5) $d=\frac{-95}{4}-(-24)=\frac{-95}{4}+24=\frac{-95+96}{4}=\frac{1}{4}$ $a_{101}=a_1+100d$

$a_8=1\to aq^7\Rightarrow\frac{aq^7}{a}=\frac{1}{128}\Rightarrow \boxed{q=\frac{1}{2}}$ 2 $-24+25=1$

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6) جمله $a_4, a_7, a_9 \to a_1+3d, a_1+6d, a_1+8d \Rightarrow (a_1+6d)^2=(a_1+3d)(a_1+8d)$

2

$a_1^2+36d^2+12ad=a^2+24d^2+11a_1d$

$10d^2+2a_1d=0$

$10d^2+a_1d=0\to \boxed{d=0}$

$d(10d+a_1)=0$

$10d+a_1=0$ $d=-\frac{a}{10}$

عرب [illegible]

۷) $a_2, a_4, a_8 \to \underbrace{a_1+d}_{2a_1}, \underbrace{a_1+3d}_{4a_1}, \underbrace{a_1+7d}_{8a_1} \sim q=2 \to a_{10} = aq^9 = \frac{1}{4} \times 2^9 = 128$

$(a_1+3d)^2 = (a_1+d)(a_1+7d) \Rightarrow a_1^2 + 9d^2 + 6a_1d = a_1^2 + 7d^2 + 8a_1d \sim 2d^2 - 2da_1 = 0 \to d = a_1,\ d = 0 \times$

۲

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۸) $3a_2, 2a_3, a_4 \to 3aq, 2aq^2, a_1q^3$

$2a_1q^2 - 3a_1q = a_1q^3 - 2a_1q^2 \to a_1q(2q-3) \to a_1q(q^2-2q)$

$2q-3 = q^2-2q \Rightarrow q^2 - 4q + 3 = 0$

$(q-1)(q-3) = 0 \to q = 1$ یا 3

$q=1$ غلط چون دنباله ثابت میشه

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۹) $2, \frac{7}{4}, \dots \sim d = -\frac{1}{4}$

$a_4 = 2 + \frac{-3}{4} = \frac{5}{4},\ a_8 = 2 + \frac{-7}{4} = \frac{1}{4}$

$a_{13} = 2 + \frac{-12}{4} = -1$

$a_4+k, a_8+k, a_{13}+k \sim \frac{5}{4}+k, \frac{1}{4}+k, -1+k \sim \left(\frac{1}{4}+k\right)^2 = \left(\frac{5}{4}+k\right)(k-1)$

$\frac{1}{16} + k^2 + \frac{k}{2} = k^2 - \frac{5}{4} + \frac{k}{4} \sim \frac{k}{4} = \frac{-21}{16} \Rightarrow k = -\frac{21}{4}$

۳

$-4, -5, \frac{-25}{4} \Rightarrow q = \frac{5}{4}$

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۱۰) $a_1, a_4, a_7,\quad a_1 + a_4 + a_7 = 73$

$a_1 = t_1,\ a_4 = t_2,\ a_7 = t_{10}$

$a_4 - a_1 = \frac{a_7 - a_4}{8} \to a_1(q^3-1)$

$\frac{a_1q^3(q^3-1)}{8} = 1 \Rightarrow \frac{q^3}{8}$

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$a_1 + a_1q^3 + a_1q^6 = a_1(1+q^3+q^6) = a_1(8+1+64) \to 73a_1 = 73,\ a_1 = 1$

$q = 2$

$a_1 = t_1 = 1 \quad a_4 = t_2 = 8$

$t_2 - t_1 = 8 - 1 = 7$

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

$d = aq^3 - a \to \frac{73}{3} - \frac{73}{3} = 0$