

$$\frac{a}{q} + a + aq = 21 \Rightarrow \left(\frac{1}{q} + 1 + q \right) \cdot 21 \Rightarrow \frac{1}{q} + 1 + q = \frac{21}{4} \quad 1 + q + q^2 = \frac{21}{4} q$$

$$\frac{a}{q} \times a \times aq = 44 \Rightarrow a = 4$$

$$q^2 - \frac{17}{4}q + 1 = 0 \quad 4q^2 - 17q + 4 = 0 \quad q^2 - 17q + 19 = 0$$

$$(q-14)(q-1) = 0 \quad q = \frac{14}{4} = \frac{7}{2}$$

$$\boxed{q = \frac{7}{2}}$$

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

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

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

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

$$x^2 = 4 \quad \boxed{x = \pm 2}$$

$$x^2 = -2 \quad \text{X}$$

$$1, 4, 2 \Rightarrow q = \frac{1}{4} \checkmark$$

$$1, -4, 2 \Rightarrow q = -\frac{1}{4} \text{ X} \quad \Rightarrow q < 0$$

$$S_n = a_1 \left(\frac{q^n - 1}{q - 1} \right) = 1 \left(\frac{1 - \left(\frac{1}{4}\right)^n}{1 - \frac{1}{4}} \right) = \frac{1 - \left(\frac{1}{4}\right)^n}{\frac{3}{4}} = \frac{4}{3} \left(1 - \left(\frac{1}{4}\right)^n \right)$$

$$\frac{128 - 1}{2^3} = \frac{127}{8}$$

$$2^4 \cdot 3 + 2^4 \cdot 3q + 2^4 \cdot 3q^2 + 2^4 \cdot 3q^3 + 2^4 \cdot 3q^4 = \frac{121}{4} \times 2^4 \cdot 3$$

$$\boxed{S_{\omega} = 393}$$

$$d = \frac{q^4 - 1}{q} = 10, \omega$$

$$q^4 = \frac{q^4 - 1}{q} \Rightarrow \boxed{q = 2}$$

$$1 + 3^{\omega}(1, \omega) = 3^{\omega}, \omega$$

$$1 \times (2)^{\omega} = 1$$

$$3^{\omega}, \omega + 1 = 4, \omega$$

$$1 \times (-2)^{\omega} = -1$$

$$3^{\omega}, \omega - 1 = 2, \omega$$

$$d = \frac{1}{4}$$

$$q_{\text{total}} = -2^{\omega} + \frac{2^{\omega}}{4} = 1$$

$$128 \times q^{\omega} = 1$$

$$q^{\omega} = \frac{1}{128}$$

$$\boxed{q = \frac{1}{2}}$$

$$\frac{-2^{\omega}}{4} + \frac{2^{\omega}}{4} = \frac{1}{4}$$

$\begin{array}{ccc} a + rd & a + 4d & a + 11d \\ b_1 & b_4 & b_{10} \end{array}$ $(a + rd)(a + 11d) = (a + 4d)^2$ $a^2 + 10ad + 11d^2 = a^2 + 8ad + 16d^2$ $2ad = 5d^2$ $a = -10d$ $d = -\frac{a}{10}$	6
$\begin{array}{ccc} a + d & a + rd & a + vd \\ b_1 & b_r & b_v \end{array}$ $(a + d)(a + vd) = (a + rd)^2$ $a^2 + 11ad + vd^2 = a^2 + 2rd + r^2d$ $rd = vad \quad \boxed{d = a}$ $q = \frac{rd}{r^2d} = \frac{r}{r^2}$ $b_{10} = b_1 \times q^9 = \frac{1}{r^9} \times r^9 = 1$	7
$raq \quad raq^r \quad aq^r$ $\frac{raq + aq^r}{r} = raq^r$ $raq + aq^r = r^2aq^r$ $r + q^r = rq$ $q^r - rq + r = 0 \Rightarrow (q - r)(q - 1) = 0 \Rightarrow \boxed{q = r}$ دنباله غیر صاف است $\rightarrow$ غ ق ق $\rightarrow q = 1$	8
$d = -\frac{1}{r}$ $a_1 = r - r \times \frac{1}{r} = \frac{\omega}{r} + n$ $a_2 = r - r \times \frac{1}{r} = \frac{1}{r} + n$ $a_{12} = r - 12 \times \frac{1}{r} = -1 + n$ $b_1 = -\frac{12}{r} \quad b_r = -\frac{r_0}{r}$ $q = \frac{b_r}{b_1} = \frac{-\frac{r_0}{r}}{-\frac{12}{r}} = \frac{\omega}{r}$ $(n - 1)(n + \frac{\omega}{r}) = (n + \frac{1}{r})^2$ $\cancel{n} + \frac{1}{r}\cancel{n} - \frac{\omega}{r} = \cancel{n} + \frac{1}{r} + \frac{r}{r^2}$ $\frac{1}{r}n = \frac{1}{r} - \frac{r_0}{r} \Rightarrow \frac{1}{r}n = -\frac{r_1}{r} \Rightarrow n = -\frac{r_1}{r}$	9
$\begin{array}{ccc} a & aq^r & aq^q \\ a & a + d & a + 9d \end{array}$ $a(a + 9d) = (a + d)^2$ $a^2 + 9ad = a^2 + 2d + d^2$ $9a = d$ $a = \frac{1}{9}a \quad , \quad 1 \frac{1}{9}a \quad , \quad 9 \frac{1}{9}a$ $q = \frac{1 \frac{1}{9}a}{\frac{1}{9}a} = 10$ $q = 10$ $a(1 + q^r + q^q) = vr$ $a = 1$ $1 + 1 + d + 1 + 9d = vr$ $10d = vr \quad \boxed{d = v}$	10