

آزمایش کیمی گوده هم شعبه

⑤

$$a_n = \frac{1}{4} \times 2^{n-1} = 2^{n-2} \quad a_1 = 2^{1-2} = 2^{-1} = \frac{1}{2} \quad (الف)$$

$$\frac{a_{12}}{a_2} = \frac{a_4}{a_{12}} = 4^4 = 2^8 = 16 \quad (ب)$$

$$10, 8, 6, 4, 2, 0 : \sqrt{a_4 a_1} = \sqrt{a_2 q^3} = a_2 q^{\frac{3}{2}} = \frac{1}{2} \times 2^{\frac{3}{2}} = \sqrt{2} \quad (ج)$$

$$2^{n-2} \times 12n \times 2^{\frac{1}{2}} \rightarrow n-2 \times \frac{1}{2} \rightarrow n-2 \quad (د)$$

$$\frac{a_1}{a_8} = \frac{a_4}{a_8} = q^4 = \frac{q^4}{12} = n \rightarrow q = 2 \quad (ه)$$

$$a_4 q^4 = 12 \rightarrow a = \frac{12}{16} = \frac{3}{4} \quad a_4 = \frac{3}{4} \times 2^4 = 12 \quad (10)$$

$a_1 = 3/4$

$$a_1 \times a_5 = a_2 \times a_4 = a_3 \times a_3 \rightarrow a_3^2 = 2 \times 2 = 4 \rightarrow a_3 = 2 \quad (الف)$$

$$a_1 \times a_5 = a_3^2 = 2^2 = 4 \quad (ب)$$

بها

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$$2^a \times 2^b = (4\sqrt{2})^2 = 2^4 \times 2^1 = 2^5 \rightarrow 2^a \times 2^b = 2^5 \rightarrow a+b=5 \quad (ج)$$

$$\left(\frac{a}{b}\right)^2 : b, a \text{ اعداد صحیح}$$

$$n^2 = (n+1)(1-n) \rightarrow n^2 = n - n^2 + 1 - n \rightarrow n^2 = 1 \rightarrow n = \pm \frac{\sqrt{2}}{2}$$

منفی 6 قبل قبول نیست:

$$\frac{a_6}{a_n} \rightarrow q^6 = \frac{-\frac{\sqrt{2}}{2} + 1}{-\frac{\sqrt{2}}{2}} = \frac{-\sqrt{2} + 2}{-\sqrt{2}} = \frac{(-\sqrt{2} + 2)(-\sqrt{2})}{2}$$

$$= \frac{2 - 2\sqrt{2}}{2} = 1 - \sqrt{2} < 0 \rightarrow q^6 < 0$$

غلط

$$\rightarrow n = \frac{+\sqrt{2}}{2}$$

$$\left. \begin{array}{l} a + a_r \leq r \wedge \rightarrow a + a q^r = r \wedge \\ a_r + a_r \leq r \rightarrow a q^r + a q = r \end{array} \right\} \rightarrow \frac{a(1+q^r)}{a q(1+q)} = \frac{a(1+q)(1-q+q^r)}{a q(1+q)} = \frac{r}{r} \quad (4)$$

$$\rightarrow V q = r - r q + r q^r \rightarrow r q^r - 1 \cdot q + r = 0 \rightarrow (r q - 1)(q - r) = 0$$

$$\rightarrow q = \frac{1}{r}, a = r V \rightarrow (r V, q, r, 1)$$

$$q = r, a = 1 \rightarrow 1, r, q, (r V) \quad 25$$

$$\frac{n}{q}, n, n q \rightarrow n^r \leq r V \quad n \leq r \quad (V)$$

$$\frac{r}{q} + r + r q \leq r \rightarrow \frac{r + r q^r}{q} = 1 \rightarrow 1 \cdot q \leq r + r q^r \rightarrow r q^r - 1 \cdot q + r = 0$$

$$\rightarrow (r q - 1)(q - r) = 0 \rightarrow q = \frac{1}{r} \rightarrow r n + n + \frac{1}{r} n \leq r \rightarrow \frac{1}{r} n \leq r \rightarrow n \leq r \rightarrow 1, r, 1$$

Parsian

$$q = r \rightarrow \frac{n}{r}, n, r q = r \rightarrow n \leq r \rightarrow (1, r, q)$$

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$$S_n = a \left(\frac{r^n - 1}{r - 1} \right) \Rightarrow S_1 = r \frac{r^1 - 1}{r - 1} = \frac{r^2 - 1}{r - 1} \quad \text{الف) 11}$$

$$a_1 \cdot r \cdot r^2 \rightarrow \sqrt{(a_1 \cdot a_1)^2} = (a_1 \cdot a_1)^2 \cdot (r^2 \cdot r^2)^2 = (r^4 \cdot r^4)^2 \quad \text{ب) 12}$$

$$\begin{aligned} & \overset{\times 4}{a}, aq, aq^2, \dots \\ & (aq - a), (aq^2 - aq), (aq^3 - aq^2), \dots \\ & a(q-1), aq(q-1), aq^2(q-1) \quad \text{قربت: } \frac{aq(q-1)}{a(q-1)} = q \quad \text{4} \end{aligned}$$

$$\begin{aligned} & a_1 + a_2 + \dots + a_n \rightarrow a_1 + a_n, a_2 + a_{n-1}, a_3 + a_{n-2}, \dots \quad \text{الف) 13} \\ & S_n = \frac{n}{2} (a_1 + a_n) = \frac{n}{2} (a_1 + a_1 + (n-1)d) \quad \frac{n}{2} \text{ عدد} \\ & = \frac{n}{2} (2a_1 + (n-1)d) \end{aligned}$$

$$\begin{aligned} & S = a + aq + aq^2 + \dots + aq^{n-1} \quad \text{ب) 14} \\ & \xrightarrow{\times q} qS = aq + aq^2 + \dots + aq^{n-1} + aq^n \\ & \underline{qS - S = aq^n - a} \rightarrow S(q-1) = a(q^n - 1) \rightarrow S = a \frac{q^n - 1}{q - 1} \quad 15 \end{aligned}$$

$$\begin{aligned} & \text{مجموع} = \frac{a_1 + a_n}{2} = \frac{n(a_1 + a_n)}{2} = \frac{n}{2} (a_1 + a_1 + (n-1)d) \quad \text{الف) 16} \\ & = \frac{n}{2} (2a_1 + (n-1)d) \end{aligned}$$