

کیمیاء امتحانی - تالیف ۱۷ - دهم دفتر C

① $\{1\}, \{2, 3, 4\}, \{5, 6, 7, 8, 9\}, \dots, \{0 \quad 11\}$

تکامل $1, 2, 3, 4, 5, \dots$
 $\begin{matrix} & & +1 & & \\ & +1 & & +1 & \\ & & +1 & & \\ +1 & & & & \end{matrix}$

$n^2 + bn + r \rightsquigarrow n^2 - rn + r$

$11 = 11 + r = 95$

استخرجي : $\frac{11 + 95}{2} = \boxed{53}$

② $\{1, 2, 3\}, \{4, 5, \dots, 12\}, \{13, \dots, \frac{39}{3 \times 13}\}, \{14, \dots, 15\}, \{16, \dots, 17\}$

درسته $a, a+1, a+2, \dots, 3a$

میانگین $\frac{a+3a}{2} = 2a$ (چون اعداد شش سرهم) $\rightsquigarrow$ درسته $2 \times 121 = 242$

③ $r^k, n = 2k \rightarrow 2, 3, 4$
 $a_1 + a_2 + a_3 + \dots + a_{10} = 19$
 $2a + 3a = 19$
 $a = \frac{19-2}{3} = \boxed{-2}$

$-2k + r, n = 2k+1 \rightarrow 1, 2, 3, \dots$

$\left(\frac{n}{k-r}\right) + a \Rightarrow n = 2k+r, 2, 3, 4, \dots$
 $a_1 + \dots + a_{10} = 10a + (1+1+2+\dots+9)$
 $\downarrow$
 $10(-2) + 18 = \boxed{-2}$

④ $a_n = An^r + Bn + C \rightarrow A = -\frac{1}{v_0} \frac{a}{n^r} \rightsquigarrow -\frac{1f}{v_0} = -\frac{1}{v_0}$
 $-\frac{1}{v_0} \times \frac{1}{n^r} + B + C = 1f \rightarrow -\frac{1}{v_0} B + C = 19$
 $-\frac{1}{v_0} \times \frac{1}{n^r} + B + C = 14, 2 \rightarrow B + C = 2v$
 $2B = 1 \rightarrow B = \frac{1}{2}$
 $C = -1$
 $a_n = -\frac{1}{v_0} n^r + Bn + C$
 $a_{10} = \frac{10^r}{v_0} + 5 - 1 = 1f$
 $a_1 = -\frac{1}{v_0} + \frac{1}{2} - 1 = \frac{1f}{v_0}$
 $\frac{a_{10}}{a_1} = \boxed{5}$



$$\textcircled{3} \quad \frac{t}{1} - \frac{t}{r} = \frac{a}{1} - \frac{a}{r} \rightarrow \frac{d'}{d} = \frac{r}{a}$$

$$a \rightarrow 0 \sim a + rd' = 0 \rightarrow a = -rd'$$

$$\frac{a_{10}}{d} = \frac{a_1 + 1fd'}{d} = \frac{-rd' + 1fd'}{d} = \frac{rd'}{d} = d \times \frac{r}{a} = \boxed{r}$$

$$\textcircled{4} \quad a, \overbrace{a+d}^{a_r}, \overbrace{a+rd}^{a_r}, \dots$$

$$4(a+d)^r = 3(a+rd)a + r(a+d)a$$

$$4a^r + 12ad^r + 4d^r = 3a^r + 3rad + r^2a^r + rad$$

$$ra^r + ad - 4d^r = 0 \sim \frac{a}{d} = x \rightarrow a = dx$$

$$rd^r x^r - 4d^r + d^r x = 0 \sim d^r (rx^r + x - 4) = 0 \rightarrow \begin{cases} x = \frac{r}{r} \\ x = -r \end{cases}$$

$$\frac{a_r}{d} = \frac{a+rd}{d} = \frac{a}{d} + \frac{rd}{d} \xrightarrow{x=\frac{r}{r}} x+r = \boxed{r+1}$$

$$\xrightarrow{x=-r} x+r = \boxed{1}$$

$$\textcircled{5} \quad a, b, c \rightarrow \overbrace{b-d}^a, b, \overbrace{b+d}^c \sim b, \frac{1}{r}(b-d), \frac{1}{r}(b+d)$$

$$\text{Given} \rightarrow \left(\frac{1}{r}(b-d)\right)^r = b \times \frac{1}{r}(b+d)$$

$$\frac{1}{r}(b^r - rbd + d^r) = \frac{1}{r}(b^r + bd) \sim \frac{b^r}{r} - \frac{rbd}{r} + \frac{d^r}{r} = \frac{b^r}{r} + \frac{bd}{r}$$

$$d^r - rbd = bd \rightarrow d^r - rbd = 0 \sim d(\overbrace{d - rb}^0) = 0 \rightarrow d = rb$$

$$b, \frac{1}{r}(b - rb), \frac{1}{r}(b + rb) \rightarrow b, -b, b$$

$$\boxed{-r} = rx - 1 \quad \text{فرصت}$$

1 ① هندسي $\rightarrow \frac{a}{a}, \frac{b}{aq}, \frac{c}{aq^2}$
 2 حسابي $\rightarrow \frac{r^3 b}{r^3 aq}, \frac{r^3 a}{r^3 a}, \frac{r^3 c}{aq^2} \rightsquigarrow \frac{r^3 aq}{a} + \frac{aq^2}{a} = \frac{r^3 a}{a} \rightarrow r^3 q + q^2 = r^3$
 3 $q(r+q) = r^3 \rightarrow \boxed{q=1} \times$
 $q = -r^3 \checkmark$
 4 $\frac{a_q}{a_r} = \frac{aq^4}{aq^3} = q^r = (-r^3)^r = -r^{3r}$ چون لغتہ طالب صغیر غیر قابل قبول!

6 ④ $\frac{aq^4}{(aq)^r} + \frac{aq}{a^r} = r \rightarrow \frac{q^r}{a^r} + \frac{aq}{a^r} = r \rightarrow ra^r - q^r + aq$
 7 $\rightarrow ra^r - aq - q^r = 0 \rightsquigarrow (q-a)(q+ra) = 0$
 8 $q = a \quad q = -ra$

10 $\frac{a_r}{a_r} = \frac{a_r}{-ra_r} \rightarrow \begin{cases} -\frac{1}{r} \\ 1 \end{cases}$

13 ⑩ $a_r = \sqrt{a_r} \rightarrow \frac{(aq^r)^r}{a_r^r} = a_r \rightarrow a_r^r q^r = a_r q^r \rightarrow a_r q = 1$

15 $a_r = rv \rightarrow a_r q^r = rv \xrightarrow{*} 1 \times q^r = rv \begin{cases} q^r = rv \\ q = r \end{cases} \rightarrow a_r = \frac{1}{r}$

17 $\frac{1}{r} - \frac{1}{r} = \frac{r-r}{r} = \frac{1}{r}$