

عسل رضائی

14

تکلیف ۱۷

هم دختران A

عدد اول هر دسته $\rightarrow (n-1)^2 + 1 \rightarrow$ در دسته ۹ $= 8^2 + 1 = 65$
 عدد آخر هر دسته $\rightarrow n^2 \rightarrow$ در دسته ۹ $= 9^2 = 81$ $\rightarrow$ واسطه حسابی $\rightarrow \frac{65+81}{2} = \boxed{73}$
 ✓ (۲)

دنباله اعداد اول هر دسته $\rightarrow 1, 4, 13, 40, 121, \dots$ میانگین
 دنباله اعداد آخر هر دسته $\rightarrow 3, 12, 39, 120, 363, \dots$ دسته پنجم $\rightarrow$ مجموع $= \frac{121+363}{2}$ تعداد $= \frac{2}{\text{تعداد}}$
 $\boxed{= 242}$
 ✓ (۲)

$$a_1 = -2 \times 0 + 4 = 4 \quad / \quad a_2 = \left[\frac{2}{0+2} \right] + a = 1+a \quad / \quad a_3 = 2^1 = 2 \quad / \quad a_4 = \frac{8}{1} + 4 = 12$$

$$a_5 = \left[\frac{5}{1+2} \right] + a = 1+a \quad / \quad a_6 = 2^2 = 4 \quad / \quad a_7 = -2 \times 2 + 4 = 0 \quad / \quad a_8 = \left[\frac{1}{2+2} \right] + a = \frac{1}{4} + a$$

$$a_9 = 2^3 = 8 \quad / \quad a_{10} = -2 \times 3 + 4 = -2$$

از سه تا a_9 ← اجماع داریم

$$a_2 + a_5 + a_8 + \dots + a_{29} = \left[\frac{2}{0+2} \right] - 1 + \left[\frac{5}{1+2} \right] - 1 + \left[\frac{1}{2+2} \right] - 1 + \dots + \left[\frac{29}{9+2} \right] - 1$$

بافت به فرض سوال محبات از سه شروع می شود. ①

ضابطه اول

$$\begin{cases} a_0 = 1 \\ a_3 = 2 \\ a_4 = 4 \\ a_9 = 8 \end{cases}$$

ضابطه دوم

$$\begin{cases} a_1 = 4 \\ a_6 = 2 \\ a_7 = 0 \end{cases}$$

ضابطه سوم

$$\begin{cases} a_2 = a+1 \\ a_5 = a+1 \\ a_8 = a+2 \end{cases}$$

$$+ = 19 \quad a = -2$$

$$a_n \cdot \left[\frac{n}{n+r} \right] + a \rightarrow \sum_{k=0}^{\infty} \left[\frac{k-r}{k-k} \right] = -1 + -1 + 0 + 0 + \dots + 0 = -2$$

$$4nr + b n + c = t_n \quad \left. \begin{aligned} t_0 &= -\frac{r}{10} \times 1a + 0b + c = 1^r \Rightarrow 0b + c = 1^r + \frac{r}{10} \Rightarrow r b = 1 \Rightarrow b = \frac{1}{r} \\ a &= -1^r \times \frac{1}{r} = -\frac{r}{10} \Rightarrow t_r = -\frac{r}{10} \times r^r + r b + c = 1^r, r \Rightarrow r b + c = \frac{1^r r + 91}{10} \end{aligned} \right\}$$

$$t_0 = -\frac{r}{10} \times 1a + 10 + c = 1^r \Rightarrow c = -1 \Rightarrow t_n = -\frac{r}{10} n^r + \frac{1}{r} n - 1$$

$$t_{10} = -\frac{r}{10} \times 10^r + 90 - 1 = 1^r \quad \left. \begin{aligned} t_1 &= -\frac{r}{10} + \frac{1}{r} - 1 = \frac{r-1}{10} \Rightarrow \frac{t_{10}}{t_1} = \frac{1^r}{-\frac{r-1}{10}} = \boxed{\omega} \end{aligned} \right\}$$

$$\begin{aligned} \text{ذباله ضل} &= a_n + b = a_n \Rightarrow t_r = a_r \Rightarrow t_r + r d = r a + b \rightarrow r d = \omega a \\ \text{ذباله حسابي} &= t_1 + (n-1)d = t_n \quad t_n = a_n \Rightarrow t_r + r d = r a + b \rightarrow r d = \omega a \end{aligned}$$

$$a_{10} = 0 \Rightarrow 10a + b = 0 \Rightarrow a_{10} = 10a + b = \boxed{\omega a} \rightarrow \frac{a_{10}}{d} = \frac{\omega a}{d} = \frac{r d}{d} = \boxed{r}$$

$$\begin{aligned} 9a^r &= \omega a_r a + r a_r a \Rightarrow 9(a+d)^r = \omega a(a+r d) + r a(a+d) \Rightarrow 9a^r + 9d^r + 12a d = 10a^r + 12a d \\ \Rightarrow 9d^r a d - 12a^r &= 0 \Rightarrow d^r a d - 12a^r = 0 \Rightarrow (d \neq a)(d \neq a) = 0 \Rightarrow d = \frac{r a}{r} \Rightarrow a = \frac{r}{r} d \\ \frac{a_f}{d} &= \frac{a+r d}{d} = \frac{\frac{r}{r} d + r d}{d} = \boxed{\frac{9}{r}} \quad \left. \begin{aligned} &\frac{-r d + d}{d} = 1 \\ &d = \frac{-9}{r} \Rightarrow a = r d \end{aligned} \right\} \end{aligned}$$

$$a + c = r b \Rightarrow a = r b - c$$

$$\begin{aligned} \frac{b c}{r} &= \frac{a^r}{r} \Rightarrow a^r = b c \Rightarrow (r b - c)^r = b c \Rightarrow r^r b^r + c^r - r^r b c = b c \Rightarrow r^r b^r + c^r - \omega b c = 0 \Rightarrow (c - r b)(c - b) = 0 \\ \Rightarrow c &= r b, c = b \rightarrow a = r b - c = -r b \rightarrow \text{ذباله هندسي} = b, -b, b \Rightarrow q = -1 \Rightarrow r q = -r \end{aligned}$$

$$c + r b = r a \Rightarrow c = r a - r b$$

$$a c = b^r \Rightarrow a(r a - r b) = b^r \Rightarrow r a^2 - r^2 b a = b^r \Rightarrow r a^2 - r^2 b a - b^r = 0$$

$$\Rightarrow -(b-a)(b+r a) = 0 \quad \left. \begin{aligned} &b = a \\ &b = -r a \end{aligned} \right\}$$

$$\text{ذباله هندسي} \rightarrow 1, r a, -r a, a, \dots \rightarrow q = -\frac{1}{r} \quad \left. \begin{aligned} \frac{a_9}{a_5} &= q^r = \frac{-1}{r} \end{aligned} \right\}$$

✓

a,

$$\frac{a_q}{(a_r)^w} + \frac{a_r}{(a)^v} = \mu \rightarrow \frac{a q^w}{a^r q^w} \frac{a^r q^f}{a^r q^w} \mu \Rightarrow \frac{q^r + a q}{a^r} = \mu \Rightarrow q^r + a q = \mu a^r$$

$$\Rightarrow q^r + a q - \mu a^r = 0 \quad \Rightarrow (q + \mu a)(q - a) = 0 \Rightarrow \begin{cases} q = a \\ q = \mu a \end{cases} \quad \left/ \quad \frac{a_q^r}{a_r^r} = \frac{a_q^r}{a_q^f} = \frac{q}{\mu} = \boxed{\frac{1}{\mu}, 1} \right.$$

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$$a_\mu = \sqrt{a_\nu} \rightarrow a q^r = \sqrt{a q^w} \rightarrow \frac{a_\mu}{(a_r)^r} = 1 \Rightarrow \frac{a q^r}{a_q^r} = 1 \Rightarrow \frac{1}{a q} = 1 \Rightarrow a q = 1$$

$$a_\omega = \mu \nu \rightarrow a q \times q^w = \mu \nu \Rightarrow q^w = \mu \nu \Rightarrow q = \mu \Rightarrow a = \frac{1}{\mu}$$

$$\frac{1}{\mu} - a = \frac{1}{\mu} - \frac{1}{\mu} = \boxed{\frac{1}{\mu}}$$

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