

تلفیق شماره ۱۷

آواحاتی - هم تجربی 3

$$[1], [2, 3, 4], [5, 6, 7, 8, 9]$$

سوال ۱

$$n^2 - [(n-1)^2 + 1] + 1 \Rightarrow \cancel{n^2} - \cancel{(n-1)^2} - 1 + 1 + 1 = 2n - 1 \rightarrow \text{تعداد عدد هر دسته}$$

$$9 \text{ دسته} \Rightarrow 2(9) - 1 = 17 \rightarrow [45, 44, \dots, 11]$$

۱۱ - ۱۷ = ۶۴
عدد دسته هفتم ← اولین عدد دسته ششم
۴۵

$$\frac{45 + 11}{2} = \frac{144}{2} = 72 \checkmark$$

سوال ۲

$$a_k = \frac{1}{k} b_k \rightarrow k a_k = b_k$$

$$a_{k+1} = 1 + b_k \Rightarrow b_{k+1} = k a_{k+1}$$

$$\Rightarrow \begin{matrix} 1, 2, 3 \\ a_1 \end{matrix}, \begin{matrix} 4, 5, 6, 7 \\ a_2 \end{matrix}, \begin{matrix} 8, 9, 10, 11, 12 \\ a_3 \end{matrix}, \begin{matrix} 13, 14, 15, 16, 17, 18, 19, 20 \\ a_4 \end{matrix}, \begin{matrix} 21, 22, 23, 24, 25, 26, 27, 28, 29, 30 \\ a_5 \end{matrix}$$

آخرین عدد هر دسته

$$\text{اعضای دسته } n \Rightarrow [121, 122, \dots, 364] \rightarrow \frac{364 + 121}{2} = 242 \checkmark$$

* سوال ۳

محاسبه است

$$a_0 + a_1 + a_2 + \dots + a_9$$

$$\begin{cases} k^k : n = k^k (0, 1, 4, 9, 16, \dots) \rightarrow a_0 = 0 & a_4 = 2 & a_9 = 4 & a_{16} = 8 \\ -k^k + k : n = k^k + 1 (1, 8, 27, 64, \dots) \rightarrow a_1 = 4 & a_8 = 2 & a_{27} = 0 \\ \left\lceil \frac{n}{k+1} \right\rceil + a : n = k^k + 2 (2, 5, 10, 17, \dots) \end{cases}$$

$$\rightarrow a_2 = 1 + a \quad a_5 = 1 + a \quad a_{10} = 2 + a$$

$$1 + 2 + 4 + 8 + 4 + 2 + 0 + 1 + a + 1 + a + 2 + a = 20 + 3a$$

● dotnote

$$20 + 3a = 19 \rightarrow 3a = -1 \Rightarrow a = -\frac{1}{3}$$

$$a_1^1 + a_2^1 + a_3^2 + a_4^2 + \dots + a_{10}^2$$

$$k=9 \rightarrow 2$$

مسألة ١٣

$$\hookrightarrow k=0, 1, 2, \dots, 9 \Rightarrow \text{مطلوب} \Rightarrow 1 \cdot a + [1 + 1 + \underbrace{2 + 2 + \dots + 2}_{L=1}]$$

$$1 \cdot a + 1 \cdot 1 \rightarrow 1 \cdot (-2) + 1 \cdot 1 = -1$$

$$\downarrow$$

$$1 \times 2 = 2$$

سوال ۱۰

$$\Rightarrow an^2 + bn + c$$

$$t_w = 12 \quad t_v = \frac{14}{\omega}$$

$$\Rightarrow 22a + \omega b + c = 12$$

$$19a + vb + c = \frac{14}{\omega}$$

$$a = \frac{1}{v} \times \frac{12}{\omega} = \frac{12}{v\omega} = \frac{1}{\omega} \Rightarrow \begin{cases} -a + \omega b + c = 12 \\ \frac{-19}{\omega} + vb + c = \frac{14}{\omega} \end{cases}$$

$$\Rightarrow \begin{cases} \omega b + c = 19 \\ vb + c = \frac{14}{\omega} = v \end{cases} \quad \begin{cases} \omega b + c = 19 \\ vb + c = v \end{cases}$$

$$vb = +1 \rightarrow b = +1$$

$$\omega(1) + c = 19 \Rightarrow 10 - 19 = -c \Rightarrow c = -1$$

$$T_n = -\frac{1}{\omega} n^2 + 1n - 1 \rightarrow t_1 \Rightarrow \frac{-1}{\omega} + 1 - 1 = \frac{-1 + 1\omega}{\omega} = \frac{12}{\omega}$$

$$\rightarrow t_w \Rightarrow \frac{-1}{\omega} (22\omega) + 1(1\omega) - 1 = -22 + 10 - 1 = -12$$

$$\frac{t(w)}{t_1} = \frac{12}{\frac{12}{\omega}} = \frac{12 \times \omega}{12} = \omega \quad \checkmark$$

$$\begin{aligned} t_r = t_v &\rightarrow A_1 + 13d = B_1 + 1r \quad \textcircled{1} \\ t_n = t_v &\rightarrow A_1 + vd = B_1 + 4r \end{aligned} \quad \text{سوال ۵}$$

$$(A_1 + vd) - (A_1 + 13d) = (B_1 + r) - (B_1 + 4r) \quad B_1 \Rightarrow 9r + B_1 = 0$$

$$B_1 = -9r$$

$$\textcircled{1} A_1 + 13d = -9r + r \rightarrow A_1 + 13d = -8r \times \frac{\varepsilon}{\omega} d$$

$$A_1 + 13d = \frac{-8r}{\omega} d$$

$$\Rightarrow A_1 = \frac{-13r}{\omega} d + \left(\frac{-8r}{\omega} d \right) = \frac{-21r}{\omega} d$$

$$B_{1\omega} = B_1 + 12v \rightarrow -9r + 12v = 2r \rightarrow B_{1\omega} = 2 \times \frac{\varepsilon}{\omega} d = 2d$$

$$\frac{B_{1\omega}}{d} = \frac{2d}{d} = 2 \quad \checkmark$$



$$a, b, c \rightarrow b - a = c - b \rightarrow 2b = a + c$$

$$c = 2b - a$$

سوال ۷

$$b, \frac{a}{r}, \frac{c}{s} \rightarrow \frac{a^2}{s} = \frac{c}{r} \times b \Rightarrow \frac{a^2}{s} = \frac{cb}{s} \Rightarrow a^2 = bc$$

$$a^2 = (2b - a)b \rightarrow a^2 = 2b^2 - ab \rightarrow a^2 - 2b^2 + ab = 0$$

$$a = \frac{-b \pm \sqrt{b^2 + 16b^2}}{2} = \frac{-b \pm 4b}{2} \rightarrow a = b \text{ یا } a = -2b$$

(متناهی نیستند) درجی شود $\times$ $c + b = 2b \leftarrow$
 $b = c = a$

$$a = -2b \text{ یا } b = b/c = 2b$$

$$\frac{a}{r} = \frac{-2b}{2} = -b$$

$$\frac{c}{s} = \frac{2b}{2} = b$$

$$\Rightarrow \frac{-b}{b} = -1 = q \xrightarrow{\times 2} q = -2$$

$$a_1 = a + d \quad a_2 = a + 2d \quad a_3 = a + 3d$$

سوال ۹ *

$$(a + 3d)^2 = \omega(a + 2d) \times a + 3(a + d) \times a$$

$$\omega a(a + 2d) + 3a(a + d) = \omega a^2 + 2\omega ad + 3a^2 + 3ad$$

$$\Rightarrow 1a^2 + 13ad$$

$$(a + 3d)^2 = 1a^2 + 13ad \rightarrow a^2 + 6ad^2 + 9ad = 1a^2 + 13ad$$

$$a^2 + 6ad^2 + 9ad - 1a^2 - 13ad = 0 \rightarrow 6ad^2 - 4ad = 0$$

$$\downarrow$$

$$6d^2 + 3d - 2a = 0$$

$$\rightarrow \frac{-3 \pm \sqrt{4 + (4 \times 6 \times 2a)}}{2 \times 6} = \frac{-3 \pm \sqrt{4 + 48a}}{12} = \frac{-3 \pm \sqrt{48a}}{12}$$

اما سوال ۹ در صحنه دیگری

Date

No

$$a_\varepsilon = a + \mu d \rightarrow \frac{a_\varepsilon}{d} = \frac{a}{d} + \mu = t + \mu$$

از این سوال 4

$$\frac{a_\varepsilon}{d} = \mu + \frac{-\mu \pm \sqrt{V_0 a}}{1 \varepsilon}$$

$$\Rightarrow \textcircled{1} \text{ جواب: } \mu + \left(\frac{-\mu + \sqrt{V_0 a}}{1 \varepsilon} \right) = \frac{\varepsilon t - \mu + \sqrt{V_0 a}}{1 \varepsilon} = \frac{\mu a + \sqrt{V_0 a}}{1 \varepsilon}$$

$$\textcircled{2} \text{ جواب: } \mu + \left(\frac{-\mu - \sqrt{V_0 a}}{1 \varepsilon} \right) = \frac{\varepsilon t - \mu - \sqrt{V_0 a}}{1 \varepsilon} = \frac{\mu a - \sqrt{V_0 a}}{1 \varepsilon}$$

$$\Rightarrow \text{جواب 2: } \frac{\mu a + \sqrt{V_0 a}}{1 \varepsilon} / \frac{\mu a - \sqrt{V_0 a}}{1 \varepsilon}$$

برای $\frac{a_\varepsilon}{d}$ می توانیم بگوییم

تقریباً 4,5 تقریباً 1

از این

$a, b, c \Rightarrow b^2 = ac \quad / \quad \frac{b}{a} = \frac{c}{b} = r \rightarrow b = ar \quad \text{سوال 1}$
 $c = ar^2$
 $C, P_a, P_b \Rightarrow P_a - C = P_b - P_a$
 $P_a - C = P_b - P_a \rightarrow P_a - C = P_b$

$$P_a - ar^2 = P_a r \rightarrow a \neq 0 \Rightarrow r - r^2 = P_a$$

$$r - r^2 + P_a = 0 \rightarrow (r + \varepsilon)(r - 1) = 0$$

$$\downarrow \quad \downarrow$$

$$r = -\varepsilon \quad r = 1$$

که اگر $r = 1$ است $a = c, a = b, a = ar^2$ می توان فرض نمود

$$\frac{t_9}{t_4} = \frac{ar^1}{ar^0} = r^1 = (-\varepsilon)^1 = -\varepsilon \quad \checkmark$$

$t_p = ar^p \quad ar^2 = \sqrt{ar^4}$
 $t_r = ar^r \quad (ar^p)^r = ar^{pr} \rightarrow ar^r = ar^{pr} \xrightarrow{r \neq 0} ar^r = r^{pr}$
 $ar = 1 \rightarrow r = \frac{1}{a}$

$$ar^r = PV \rightarrow a \times \frac{1}{a^r} = PV \rightarrow \frac{1}{a^r} = PV \rightarrow a = \frac{1}{P^V}$$

$$\frac{1}{r} - a = \frac{1}{r} - \frac{1}{P^V} = \frac{P^V - r}{r} = \frac{1}{r} \quad \checkmark$$

سوال 9 *

$$\frac{a_4}{a_r^4} + \frac{a_r}{a_r^r (a_r^1)} = P \Rightarrow \left[\frac{ar^4}{(ar)^4} = \frac{r^4}{ar^4} \right] + \left[\frac{ar^1}{ar^1} = \frac{ar}{ar} = \frac{r}{a} \right]$$

$$\Rightarrow \frac{r^4}{ar^4} + \frac{r}{a} = P \xrightarrow{t = \frac{r}{a}} t^4 + t = P$$

$$t^4 + t - P = 0 \rightarrow (t + r)(t - 1) = 0 \Rightarrow \left. \begin{matrix} t = 1 \\ t = -r \end{matrix} \right\}$$

$$\frac{a_r^1}{ar} = \frac{ar}{ar} = \frac{a}{r} \xrightarrow{t=1} \frac{1}{r} \quad \checkmark$$

$$\xrightarrow{t=-r} \frac{-1}{r} \quad \checkmark$$