

۱۳، ۵

سایمادادی تکلیف ۱۷ مهم و مختصر

(۱) $\rightarrow$ اعداد مربع $\underbrace{1}_1, \underbrace{4}_2, \underbrace{9}_3, \underbrace{16}_4, \underbrace{25}_5, \dots, \underbrace{49}_{7^2}, \underbrace{64}_{8^2}, \dots$ واسطه $V_3 = 13$

$a_9 \rightarrow \{45, \dots, 11\}$ $b = \frac{a+c}{2} \Rightarrow \frac{45+11}{2} = \underline{V_3}$

(۲) $\{2, \dots, 32\}$ میانگین 13.5

$\{2, 3, \dots, 12\}$ و $\{4, \dots, 20\}$ و $\{6, \dots, 28\}$ و $\{8, \dots, 32\}$

$a_5 \rightarrow \{47, \dots, 201\}$ میانگین $= \frac{47+201}{2} = 13.5$

$an^2 + bn + c \leftarrow$ معلوم

$a = \frac{1}{v} \cdot (-12) = -\frac{1}{5}$ $\begin{cases} -\frac{1}{5}(5)^2 + 5b + c = 12 \rightarrow 5b + c = 19 & (1) \\ -\frac{1}{5}(7)^2 + 7b + c = 17 \rightarrow 7b + c = 27 & (2) \end{cases}$

$\Rightarrow b = 2, c = -1$ $\frac{a_{15}}{a} = \frac{12}{-\frac{1}{5}} = -60$ است a_{15} و a_{10}

$a_1 = -\frac{1}{5} + 2 - 1 = \frac{12}{5}$

$a_2 = a + 2d = a' + d' \rightarrow a + 2d = a' + d' \rightarrow a + 3d = -1d' \quad (1)$

$a_8 = a + 7d = a' + 4d' \rightarrow a + 7d = a' + 4d' \rightarrow a + 7d = -3d' \quad (2)$

$a'_{10} = a' + 9d' = 0 \rightarrow a' = -9d'$

$a + 7d - a - 3d = -3d' + 1d' \rightarrow 4d = -2d' \rightarrow d' = -2d$

$a'_{15} = a' + 14d' = -9d' + 14d' = 5d' = 5(-2d) = -10d$

$a_{15} = a + 14d = \frac{12}{5} + 14d = -10d \rightarrow 14d + 10d = -\frac{12}{5} \rightarrow 24d = -\frac{12}{5} \rightarrow d = -\frac{1}{10}$

a_{15} خطی $\rightarrow$ برای قدرنسبت حسابی است

$$4(a+d)^2 = a(a+rd) + r(a+d) \quad \left| \frac{a}{d} \right| \text{ می تواند } \frac{a_2}{d} \quad (4)$$

$$\lambda a^r + \mu ad - \gamma a^r - \mu ad - \gamma d^r = \gamma a^r + ad - \gamma d^r = 0 \Rightarrow \gamma + a - \gamma a^r = 0$$

$$q = \frac{d}{a} \in \left\{ -\frac{1}{v}, \frac{v}{w} \right\} \rightarrow d = -\frac{a}{v} \vee d = \frac{va}{w}$$

$$\rightarrow \cancel{\gamma} d^r = \gamma a^r + \gamma a d^r + \epsilon d^r \rightarrow \frac{\gamma a d^r}{\cancel{\gamma} d^r} + \frac{\epsilon d^r}{\cancel{\gamma} d^r} = 0 \rightarrow \gamma a = -\epsilon d$$

$$\rightarrow a = \frac{-v}{r} d$$

$$\Rightarrow \left(-\frac{1}{\sqrt{2}}\right)d + d, \frac{\left(\frac{-1}{\sqrt{2}}\right)d}{\sqrt{2}}, \frac{\left(\frac{-1}{\sqrt{2}}\right)d + 2d}{2} \rightarrow \frac{d}{\sqrt{2}}, \frac{-d}{\sqrt{2}}, \frac{d}{\sqrt{2}}$$

$$q = -1$$

$$r_q = -r$$

دوم: این قدر نسبت متری ۲- است

$$\psi_a - \psi_b = c - \psi_a \rightarrow \psi_a - \psi_a q = a q^Y - \psi_a \quad (1)$$

$$\rightarrow -aq^r + \cancel{ra} + \cancel{ra} - \cancel{raq} = -aq^r + \epsilon a - \cancel{raq} = \underline{\epsilon a - \cancel{raq} (r + q) = 0}$$

$$\rightarrow \xi - q_r(\gamma + q_r) = 0 \rightarrow \xi = q^r + \gamma q_r \rightarrow q^r + \gamma q_r - \xi = 0$$

$$(q + \varepsilon)(q - 1) = 0 \quad q = -1, -\varepsilon$$

$$\frac{a_9}{a_4} = q^{9-4} = q^5 \begin{cases} q=1 \rightarrow q^5 = 1 \\ q=2 \rightarrow q^5 = 32 \end{cases}$$

$$\frac{a_9}{a_4} = 1$$

$$\frac{a_9}{a_4} = -48$$

$$\{1, 2, 3\}, \{4, 5, 6, \dots, 12\}, \{13, 14, \dots, 39\}, \{40, 41, \dots, 120\} \quad \underline{2}$$

$$\boxed{\text{دسته پنجم}} \rightarrow \{121, 122, \dots, 343\}$$

$$\text{میانین حساب} \rightarrow \bar{x} = \frac{121 + 343}{2} = \frac{464}{2} = \boxed{232}$$

* حسابات دسته پنجم دنباده ای صحیح با قدر نسبت 1 هست پس میانین با میانین صعبه اول را آخر برای مرکز!

$$a_0, a_3, a_4, a_9 \rightarrow (2^k) \text{ ضابطه اول}$$

$$a_1, a_6, a_{11} \rightarrow (-2k+6) \text{ ضابطه دوم}$$

$$a_2, a_5, a_8 \rightarrow \left[\frac{n}{k+2}\right] + a \text{ ضابطه سوم}$$

$a_0 = 2^0$ $a_0 = 1$	$a_3 = 2^1$ $a_3 = 2$	$a_4 = 2^2$ $a_4 = 4$	$a_9 = 2^3$ $a_9 = 8$
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$a_1 = -2(0) + 6$ $a_1 = 6$	$a_6 = -2(1) + 6$ $a_6 = 4$	$a_{11} = -2(2) + 6$ $a_{11} = 2$
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$$S_{10} = 1 + 4 + a_2 + 2 + 2 + a_5 + 4 + 0 + a_8 + 8 = 19$$

$$a_2 + a_5 + a_8 = -2 \rightarrow 3a + 4 = -2 \rightarrow \boxed{a = -2}$$

مجموع حسابات $a_2 + a_5 + \dots$ از ضابطه سوم بدست می آید

$$a_n = \left[\frac{2k+2}{k+2}\right] + (-2)$$

$$a_n = \left[\frac{2k+4 + k-2}{k+2}\right] - 2 = \left[2 + \frac{k-2}{k+2}\right] - 2 = \boxed{\left[\frac{k+2}{k-2}\right]}$$

مقایسه یون

عبارت $\left[\frac{k+2}{k-2}\right]$ به ازای $k=0$ و $k=1$ برابر 1- است و به ازای سایر مقادیر k برابر 0 است پس داریم:

$$S = a_2 + a_5 + a_8 + \dots + a_{24}$$

$$S = (-1) + (-1) + 0 + \dots + 0 = \boxed{-2}$$

$$\frac{aq^{\omega}}{(aq)^r} = \frac{a \times q^{\omega}}{a^r \times q^r} = \frac{q^r}{a^r} \quad \left. \begin{array}{l} \\ \\ \end{array} \right\} \rightarrow \left(\frac{q}{a}\right)^r + \frac{q}{a} - r = 0$$

$$\frac{ar}{a^r} = \frac{aq}{a^r} = \frac{q}{a}$$

$$\left(\frac{q}{a} + r\right) \left(\frac{q}{a} - 1\right) = 0 \quad \rightarrow \frac{q}{a} = 1 \rightarrow \frac{a}{q} = 1 \quad \checkmark$$

$$\hookrightarrow \frac{q}{a} = -r \rightarrow \frac{a}{q} = -\frac{1}{r} \quad \checkmark$$

$$ar = \sqrt{ar} \rightarrow (aq)^{r,r} = aq^r \rightarrow aq^{\varepsilon} = aq^r \rightarrow \underline{aq = 1}$$

$$a\omega = rv \rightarrow aq^{\varepsilon} = rv \rightarrow (\cancel{a}^1) q^r = rv \rightarrow q^r = rv \rightarrow \underline{q = r}$$

$$|\frac{1}{r} - a| = |\frac{1}{r} - \frac{1}{r}| = \frac{1}{4}$$

$$\underline{a = \frac{1}{r}}$$