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آرمینا کیسری کوره دهم نجف

الف) $t_1 = 3, 1, 2, t_2 = 5, 2, 4, 1 = 11, t_3 = 3, 9, 1, 2, 4, t_4 = 3, 1, 4, 1, 2, 4, 5$

$t_5 = 3, 2, 5, 1, 2, 4, 5 \rightarrow t_n = 2, 11, 24, 41, 64, \dots$

ب) $t_1 = \frac{4+1}{1+4} = \frac{5}{5} = 1, t_2 = \frac{5+1}{2+4} = \frac{6}{6} = 1, t_3 = \frac{6+1}{3+4} = \frac{7}{7} = 1, t_4 = \frac{7+1}{4+4} = \frac{8}{8} = 1, t_5 = \frac{8+1}{5+4} = \frac{9}{9} = 1$

$t_n = \frac{5}{5}, 1, \frac{9}{9}, 1, \frac{9}{9}, 1$

الف) $t_{13} = \frac{(-1)^{13}}{\sqrt{13+3}} = \frac{-1}{4}$

ب) $t_{13} = 2 \times 13 - \left[\frac{13}{4} \right] = 26 - 3 = 23$

الف) $2n - 10 < 0 \rightarrow n < 5$

ب) $n^2 - 14n + 40 < 0 \rightarrow (n-10)(n-4) < 0 \rightarrow n = 5, 6, 7, 8, 9$

الف) $2n - 16 < 0 \rightarrow n < 8$

ب) $n^2 - 14n + 40 < 0 \rightarrow (n-4)(n-10) < 0 \rightarrow n = 5, 6, 7, 8, 9$

$t_n = an + b \rightarrow \begin{cases} 5a + b = 1 \\ 9a + b = 12 \end{cases}$

$4a = 11 \rightarrow a = \frac{11}{4}, b = -\frac{11}{4}$

$\rightarrow t_n = \frac{11}{4}n - \frac{11}{4}$

Parsian

الف) $n_{\min} = \frac{-b}{2a} = \frac{4}{2} = 2$ $t_{\min} = 9 - 18 + 4 = -5$ (✓) (4)

ب) $n_{\min} = \frac{-4}{2} = -2$ $t_1 = 1 + 4 + 1 = 6$ (✓) (4)
نقش باشد

$$t_n = -4, -1, 0, 1, 4$$

$$\begin{array}{ccccccc} & -4 & -1 & 0 & 1 & 4 \\ & \xrightarrow{+4} & \xrightarrow{+1} & \xrightarrow{+1} & \xrightarrow{+1} & \xrightarrow{+4} \end{array}$$

$$t_n = an^2 + bn + c$$

$$a = \frac{4}{2} = 2, C = \text{پیشوند} \Rightarrow C - a = -4 \Rightarrow C = 1$$

$$n=1 \rightarrow a + b + C = -4 \rightarrow 1 + b + 1 = -4 \rightarrow b = -6$$

$$t_n = n^2 - 6n + 1 \rightarrow t_{1,3,11} - 4n + 1 = 1$$

$$t_n = -4, -1, 0, 1, 4$$

$$\begin{array}{ccccccc} & -4 & -1 & 0 & 1 & 4 \\ & \xrightarrow{+4} & \xrightarrow{+1} & \xrightarrow{+1} & \xrightarrow{+1} & \xrightarrow{+4} \end{array}$$

$$t_n = an^2 + bn + c$$

$$a = \frac{4}{2} = 2, C = \text{پیشوند} \rightarrow C + 1 = -4 \rightarrow C = -5$$

$$n=1 \rightarrow a + b + C = -4 \rightarrow 2 + b - 5 = -4 \rightarrow b = -1$$

$$t_n = 2n^2 - n - 5$$

$$a + 5 \leq 2a + 1 \rightarrow 4 \leq a \rightarrow a = [4, +\infty)$$

10) الف) $2, 9, 9, \dots, 99, a_n = 3n \rightarrow 2n \leq 99 \rightarrow n \leq 49 \rightarrow \lfloor \frac{100}{3} \rfloor = 33$ عدد 33

ب) $0, 1, 1, 1, \dots, 100, a_n = 5n \rightarrow 5n \leq 100 \rightarrow n \leq 20 \rightarrow \lfloor \frac{100}{5} \rfloor = 20$ عدد 20

ج) $10, 20, 30, \dots, 90, a_n = 10n \rightarrow 10n \leq 90 \rightarrow n \leq 9 \rightarrow \lfloor \frac{100}{10} \rfloor = 10$ عدد 9

د) A و B اعداد غیر زوجی و زوجی

$$n(A \cup B) = n(A) + n(B) - n(A \cap B) = 33 + 20 - 9 = 44$$