

۱۴۰۲/۶/۲۶ «آواحاتی - دهم تیر»

سوال ۱
۲

$$t_n = 5, 9, 13, 17, \dots \quad t_n = 4n + 1 \quad (\text{الف})$$

$$t_0 = 4(1) + 1 = 5 \quad (\text{ب})$$

سوال ۲

$$t_n = 4, 10, 16, 22, \dots \quad t_n = 6n + 4$$

$$t_n = 4, 10, 16, 22, 28, 34, 40, 46, 52, 58, 64 \quad (\text{الف})$$

$$\frac{4+64}{2} \times 10 = \frac{68 \times 10}{2} = 340 \quad t_n = 6n + 4$$

$$t_1 + t_9 + t_{10} + t_{11} = 6 + 58 + 64 + 70 = 198 \quad (\text{ب})$$

سوال ۳

$$t_9 + t_{10} + t_{11} + t_{12} = 2(t_1 + t_{11}) = 2(6 + 70) = 152$$

$$a_n = a_1 + (n-1)d$$

سوال ۳

$$1 + \sqrt{3}, 2, 3 + \sqrt{3}$$

$$\begin{cases} a_{13} = 1 + \sqrt{3} + (13-1)(1-\sqrt{3}) \\ a_{13} = 1 + \sqrt{3} + 12 - 12\sqrt{3} = 13 - 11\sqrt{3} \end{cases}$$

$$\begin{cases} a_{15} = 1 + \sqrt{3} + (15-1)(1-\sqrt{3}) \\ a_{15} = 1 + \sqrt{3} + 14 - 14\sqrt{3} = 15 - 13\sqrt{3} \end{cases}$$

$$t_{15} - t_{13} = 15 - 13\sqrt{3} - (13 - 11\sqrt{3}) = 15 - 13\sqrt{3} - 13 + 11\sqrt{3} = 2 - 2\sqrt{3}$$

۱۴۰۴/۶/۲۵

$$a_n = \Delta^{2n}, \quad 3 \times \Delta^{2n}, \quad \Delta^y$$

$$a_7 - a_1 = a_6 - a_5$$

$$b_n = x, y, y$$

$$(3 \times \Delta^{2n}) - \Delta^{2n} = \Delta^y - (3 \times \Delta^{2n})$$

$$b_7 - b_1 = b_6 - b_5$$

$$y - x = y - y$$

$$y = x - x$$

$$\begin{cases} 2x+1=y \\ 1-x=y \end{cases} \Rightarrow \begin{cases} 2x+1=y \\ 1-x=y \end{cases} \Rightarrow \begin{cases} 2x+1=y \\ 1-x=y \end{cases}$$

$$\Delta^2 \Delta^{2n} = \Delta^y$$

$$\Delta^{2n+1} = \Delta^y \Rightarrow 2n+1=y$$

$$9 = 3y \Rightarrow y = 3, x = 1$$

$$\Rightarrow y \times x = 1 \times 3 = 3$$

$$\frac{2x - 4 + 4x}{2} = 2x - 1$$

سوال ۵

$$2x + 4x - 4 = 2x - 1 \Rightarrow 12x - 4 = -1 + 4$$

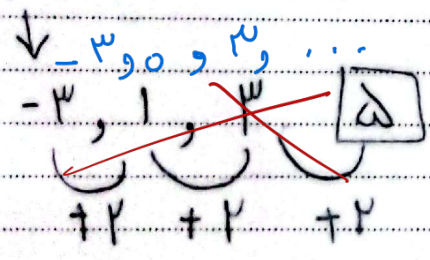
$$4x = 3 \Rightarrow x = \frac{3}{4}$$

۱/۲

$$2\left(\frac{1}{4}\right) - 4, 2\left(\frac{1}{4}\right), 4\left(\frac{1}{4}\right), \dots$$

$$a_1 = -3, d = 3$$

$$a_4 = -3 + 3 = 0$$



$$E_r = \Delta$$

سوال ۶

$$a_n = 3, \Delta, V, \dots$$

$$a_n = 2n + 1$$

$$b_n = 2, \Delta, \Lambda, \dots$$

$$b_n = 3n - 1$$

$$2 \times 3 + 3$$

(۴۱, ۳۵, ۱۹, ۱۷, ۱۱, ۵) > ۱۳, ۱۱, ۵, ۱, ۳, ۵, ۱۷, ۳۱, ۳۳, ۳۵, ۳۷, ۳۹, ۴۱

$$\Rightarrow \begin{cases} a_n = 3, \Delta, V, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41 \\ b_n = 2, \Delta, \Lambda, 11, 14, 17, 20, 23, 26, 29, 32, 35, 38, 41, 44, 47, 50, 53, 56, 59 \end{cases}$$

$$C_n = 4n - 1$$

$$4n - 1 \leq \epsilon_1$$

$$n \leq V$$

$$\begin{aligned} 1) \quad a_1 + a_2 + a_3 &= 21 \Rightarrow a + a + d + a + 2d = 21 \rightarrow 3a + 3d = 21 \\ &\quad a + d = 7 \\ 2) \quad a_1 + a_3 + a_5 &= 105 \Rightarrow a + a + 2d + a + 4d = 105 \rightarrow 3a + 6d = 105 \\ &\quad 3(a + 2d) = 105 \\ &\quad a + 2d = 35 \\ 3) \quad \begin{cases} a + d = 7 \\ a + 2d = 35 \end{cases} \quad \begin{cases} -a - d = 7 \\ a + 2d = 35 \end{cases} \Rightarrow d = 24 \end{aligned}$$

$$V = 21 + a \Rightarrow a = -21$$

$$\begin{aligned} 4) \quad a_3 - a_2 + a_1 &= a + 2d - (a + d + a) = 3d - V - 21 = V \\ a_1 &= -21 \\ \Rightarrow \frac{a_3 - a_2 + a_1}{a_1} &= \frac{V}{-21} = \frac{-1}{21} \end{aligned}$$

$$\begin{aligned} 1) \quad a_1 + a_2 + a_3 &= 15 \quad a + a + d + a + 2d = 15 \rightarrow 3a + 3d = 15 \\ &\quad a + d = 5 \\ 2) \quad a_2 + a_4 &= 25 \quad a + 2d + a + 4d = 25 \rightarrow 2a + 6d = 25 \\ 3) \quad \begin{cases} a + d = 5 \\ 2a + 6d = 25 \end{cases} \quad \begin{cases} -2a - 2d = -10 \\ 2a + 6d = 25 \end{cases} \Rightarrow \begin{matrix} 4d = 15 \\ d = \frac{15}{4} \\ a = \frac{5}{4} \end{matrix} \end{aligned}$$

$$\begin{aligned} 4) \quad a_1 &= 2 \quad a_2 = 5 \quad a_3 = 1 \quad a_n = 3n - 1 \rightarrow 3(1) - 1 = 2 \end{aligned}$$

$$S_n = \frac{n}{2} (2a_1 + (n-1)d)$$

$$S_{13} = \frac{13}{2} (2a_1 + 12d) = 13(a_1 + d) \quad S_9 = \frac{9}{2} (2a_1 + 18d) = 9(a_1 + 3d)$$

$$9(a_1 + 3d) = 13(a_1 + d) \rightarrow a_1 + 3d = \frac{13}{9}a_1 + \frac{13}{9}d$$

$$9d - \frac{13}{9}d = \frac{13}{9}a_1 - a_1$$

$$\frac{a_9}{a_1} = \frac{a_1 + 8d}{a_1 + d} = \frac{a_1 + 8(2a_1)}{a_1 + 4(2a_1)} = \frac{17a_1}{9a_1} = \frac{17}{9}$$

$$a_n \rightarrow t_1 = 11$$

$$t_7 = 13$$

$$\begin{cases} a_1 = 11 \\ a_1 + 6d = 13 \end{cases}$$

$$b_n \rightarrow t_1 = 11$$

$$6d = 2 \rightarrow d = \frac{1}{3}$$

سوال 10

$$a_k = a_1 + (k-1)d = 11 + (13-1)\left(\frac{1}{3}\right) = 11 + 12 \cdot \frac{1}{3} = 15$$

$$b_1 = 11 \quad b_{k+1} = 13 \Rightarrow b_{k+1} = b_1 + (k+1)d_b$$

$$13 = 11 + (k+1)d_b$$

$$(k+1)d_b = 2 \rightarrow d_b = \frac{2}{k+1}$$

$$b_k = b_1 + (k-1)d_b = 11 + (k-1)\frac{2}{k+1} = 13 \rightarrow \frac{2(k-1)}{k+1} = 2 \rightarrow 2k - 2 = 2k + 2 \rightarrow -4 = 0$$

$$\frac{-2}{k+1} = -2 \rightarrow -2 = -2k - 2 \rightarrow -2 = -2k \Rightarrow k = 1$$

تعداد با استفاده از

$$\boxed{+11} + \frac{1}{3} + \boxed{+11} + \frac{1}{3} + \boxed{+11} + \frac{1}{3} + \boxed{+11} + \frac{1}{3} + \boxed{+11} + \frac{1}{3}$$