

$$t_n = 5, 9, 13, 17, \dots$$

(۱) الف t_{n+1} ✓
(۲) ب $t_{10} + 1 = 41$ ✓

$$t_n = 6, 10, 14, 18, \dots \quad t_n = 4n + 2 \Rightarrow t_1 = 4 \times 1 + 2 = 6$$

$$s = \frac{1}{2} (4 \times 6 + 6) = 15$$

الف 240 ✓

ب $t_{11} + t_{12} + t_{13} + t_{14} = 118 + 122 + 126 + 130 = 496$ ✓
 $t_n = 4n + 2 \Rightarrow$

$$a_n = 1 + \sqrt{3}, 2, 3 - \sqrt{3}, \dots \quad a_n = (1 - \sqrt{3})n + 2\sqrt{3}$$

$$\Rightarrow a_{15} - a_{13} = ((1 - \sqrt{3}) \times 15 + 2\sqrt{3}) - ((1 - \sqrt{3}) \times 13 + 2\sqrt{3}) = 2 - 2\sqrt{3}$$

$$a_n = 5^{2x}, 3 \times 5^x, 5^y \Rightarrow a_n = 5^{2x}, 3 \times 5^{2x}, 5^y \Rightarrow 3 \times 5^{2x} + 2 \times 5^{2x} = 5^y \Rightarrow 5 \times 5^{2x} = 5^y \Rightarrow y = 2x + 1 \Rightarrow y - 2x = 1$$

$$b_n = x, 2, y \Rightarrow \frac{x+y}{2} = 2 \Rightarrow x+y = 4$$

$$\begin{cases} x+y=4 \\ y-2x=1 \end{cases} \Rightarrow 3x=3 \Rightarrow x=1, y=3 \Rightarrow xy=1 \times 3=3$$

$$\begin{matrix} 2x-4 & 2x-1 & 9x & ? \\ (1) & (2) & (3) & (4) \end{matrix} \quad \frac{2x-4+9x}{2} = 2x-1 \Rightarrow 11x-4=4x-2 \Rightarrow 7x=2 \Rightarrow x=\frac{2}{7}$$

$$\begin{matrix} -3 & 0 & 3 \\ (1) & (2) & (3) \end{matrix} \Rightarrow a_4 = 3 + 3 = 6$$

$$a_n = 3, 5, 7, \dots \Rightarrow a_n = 2n + 1 \Rightarrow a_n = 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, \dots, 41$$

$$b_n = 2, 5, 8, \dots \Rightarrow b_n = 3n - 1 \Rightarrow b_n = 2, 5, 8, 11, 14, 17, 20, 23, \dots, 59$$



$$5, 11, 17, \dots \Rightarrow t_n = 6n - 1 \Rightarrow 6n - 1 \leq 41 \Rightarrow 6n \leq 42 \Rightarrow n = 7$$

$$\frac{a_p - a_r + a_1}{a_1} = ? \quad \frac{(a_1 + 1d) - (a_1 + d) + a_1}{a_1} = \frac{r\omega - V + (-r1)}{-r1} = \frac{V}{-r1} = -\frac{1}{r} \quad \checkmark$$

$$a_i + a_r + a_p = 1\omega \Rightarrow \frac{a_i + a_r}{r} = a_r \Rightarrow a_i + a_p = r a_r \Rightarrow r a_r = 1\omega \Rightarrow a_r = \omega \quad (r) \text{ (1)}$$

$$a_r + a_d = r\omega \Rightarrow a_r + r d + a_r + r d = r\omega \Rightarrow 2a_r + \omega d = r\omega \Rightarrow 10 + \omega d = r\omega \Rightarrow d = r$$

$$a_1 = a_r - d = 5 - 3 = 2$$

$$\Rightarrow a_n = r^d - 1 \Rightarrow a_1 = r^1 - 1 = 29 \checkmark$$

$$S_9 = 9S_r \Rightarrow a_1 + (a_1 + d) + (a_1 + 2d) + (a_1 + 3d) + \dots + (a_1 + 8d) = 9(a_1 + (a_1 + d) + (a_1 + 2d)) \quad (9)$$

$$\Rightarrow 9a_1 + \frac{1+1}{2} \times 8d = 9(3a_1 + 3d) \Rightarrow 9a_1 + 4d = 27a_1 + 27d$$

$$\Rightarrow 9d = 18a_1 \Rightarrow d = 2a_1$$

$$\frac{a_r}{a_v} \Rightarrow \frac{a_1 + 19d}{a_1 + 9d} = \frac{a_1 + 19(\overbrace{ra_1})}{a_1 + 9(ra_1)} = \frac{19ra_1}{11ra_1} = r \quad \checkmark$$

$$\left. \begin{array}{l} a_1 = 11 \\ a_n = 25 \end{array} \right\} \Rightarrow d = \frac{a_m - a_n}{m - n} = \frac{25 - 11}{5 - 1} = \frac{14}{4} = \frac{7}{2} \Rightarrow a_7 = 22$$

$$b_n = \underset{(1)}{r^n} - \underset{(2)}{r^{n-1}} - \underset{(3)}{r^{n-2}} + \underset{(4)}{r^{n-3}} \Rightarrow d = \frac{a_m - a_n}{m-n} = \frac{r^m - r^n}{r-1} = \frac{r^3 - r}{r-1} = r = d$$

$$d = \frac{13-38}{\frac{\text{تعداد}}{\text{واسطه}} + 1} \Rightarrow -5 = \frac{13-38}{\frac{\text{تعداد}}{\text{واسطه}} + 1} \Rightarrow \frac{\text{تعداد}}{\text{واسطه}} + 1 = 5 \quad \frac{\text{تعداد}}{\text{واسطه}} = 4 \quad \checkmark$$