

$$\begin{cases} t_1 = 40 \\ t_2 = t_1 + 10d = 41 \end{cases} \Rightarrow 10d = 1 \Rightarrow d = 0.1$$

$$t_n = 40 + (n-1)(0.1) = 40.1$$

$$v(n-1) = 191$$

$$n-1 = 191$$

$$n = 192$$

۱

$$100 \leq 7n+10 \leq 999$$

$$90 \leq 7n \leq 989$$

$$\frac{90}{7} \leq n \leq \frac{989}{7}$$

$$12.8 \leq n \leq 141.2$$

$$141 - 12 + 1 = 129$$

۲

$$a_n + a_{n+2} + a_{n+4} = 12a_n + 40d = -4n + 12 \xrightarrow{\div 3} a_n + 2d = -\frac{4}{3}n + 4$$

$$a_{n+2} = -\frac{4}{3}n + 4 \Rightarrow n+2 = t \Rightarrow n = t-2$$

$$a_n = -\frac{4}{3}n + 4$$

$$\begin{cases} a_1 = -\frac{4}{3} + 4 = \frac{8}{3} \\ a_{14} = -\frac{4}{3} \cdot 14 + 4 = -\frac{20}{3} \end{cases}$$

$$a_1 + a_{14} = \frac{8}{3} - \frac{20}{3} = -\frac{12}{3} = -4$$

$$a_t = (-\frac{4}{3}(t-2) + 4) + t = -\frac{4}{3}t + \frac{8}{3} + t = \frac{2}{3}t + \frac{8}{3}$$

۳

$$t_1 = 2^0 - 1$$

$$t_2 = 2^1 - 1$$

$$t_3 = 2^2 - 1$$

$$\Rightarrow \begin{cases} t_1 = 2^0 - 1 \\ t_2 = 2^1 - 1 \\ t_3 = 2^2 - 1 \end{cases} \Rightarrow \begin{cases} 2^0 - 1 + 2^1 - 1 + 2^2 - 1 = 2^3 - 1 \\ 2^1 - 1 + 2^2 - 1 + 2^3 - 1 = 2^4 - 1 \\ 2^2 - 1 + 2^3 - 1 + 2^4 - 1 = 2^5 - 1 \end{cases}$$

$$\begin{cases} 2^0 - 1 = 1 - 1 = 0 \\ 2^1 - 1 = 2 - 1 = 1 \\ 2^2 - 1 = 4 - 1 = 3 \end{cases}$$

$$2^3 - 1 = 8 - 1 = 7$$

$$2^4 - 1 = 16 - 1 = 15$$

$$\begin{cases} t_{11} - t_{10} = 10 \\ t_{11} + t_{10} = 20 \end{cases} \Rightarrow \begin{cases} 2t_{11} = 30 \Rightarrow t_{11} = 15 \\ t_{10} = 5 \end{cases}$$

$$d = \frac{t_{11} - t_{10}}{11 - 10} = \frac{15 - 5}{1} = 10$$

$$t_{11} = t_{10} + 11d = 5 + 11 \cdot 10 = 115$$

۵

$$\frac{\omega}{r}(rt_1 + \varepsilon d) = \frac{1}{r} \times \frac{\omega}{r}(rt_1 + r\varepsilon d)$$

$$\omega t_1 + \varepsilon d = \frac{\omega}{r} t_1 + \frac{r\omega}{r} \varepsilon d \Rightarrow \frac{1}{r} t_1 = \frac{\omega}{r} \varepsilon d \Rightarrow \boxed{\varepsilon = r t_1}$$

$$\frac{t_1 + d}{t_1} = \frac{r t_1}{t_1} = \boxed{r}$$

6

$$t_q^r - t_a^r = \overset{r t_1}{(t_q - t_a)} = r_0 \times r t_1 = \boxed{r_0 + r} \rightarrow \boxed{r_0}^{r_0}$$

$r_0 d = r_0$

$$t_n = t_{n-r} + \varepsilon d \Rightarrow t_n - t_{n-r} = \varepsilon d \Rightarrow r_0 d = \varepsilon d \Rightarrow d = \varepsilon$$

7

$$\frac{r_0 + \sqrt{r} - r + r\sqrt{r}}{11^0} = \frac{+11\sqrt{r}}{11^0} = \boxed{+ \sqrt{r}}$$

8

$$d = \frac{r_0 r - r}{r_{n-r}} = \frac{r_0}{r_{n-r}} = \frac{\varepsilon d}{r_{n-1}}$$

$$\Rightarrow \frac{\varepsilon d}{r_{n-1}} = \frac{q}{n} \Rightarrow \varepsilon d n = 11n - 9$$

$-r_0 n = -9$

$$d = \frac{11 - r}{n+1-1} = \frac{q}{n}$$

$$\boxed{n=10}$$

9

$$t_n + t_{n+2} = t_0 + t_{10}$$

$$r t_n + r_0 d = r t_0 \Rightarrow t_n + r_0 d = t_0$$

$$\boxed{n=1}$$

$$t_1 = r t_r \Rightarrow t_2 + r_0 d = r t_r$$

$$r t_r = r_0 d = t_r = r_0 d$$

$$t_1 + r_0 d = r_0 d \Rightarrow \boxed{t_1 = -d}$$

$$t_1 + (n-1)d = 0$$

$$-d + (n-1)d = 0$$

$$(n-1)d = 0$$

$$\boxed{n=2} \rightarrow \text{بجواب}$$

10