

۲۰ آفرین!

$$a = 10$$

$$a + 3d = 91 \rightarrow 3d = 81 \rightarrow d = 27$$

$$a_n = 10 + (n-1) \cdot 27 = 208$$

$$(n-1) \cdot 27 = 198$$

$$n = \frac{198}{27} + 1 = 25 \quad \checkmark$$

(۱)

$$100 \leq V_n + 3 \leq 999 \rightarrow 97 \leq V_n \leq 996 \rightarrow 13/100 \leq n \leq 142/100 \rightarrow 14 \leq n \leq 142$$

$$142 - 13 = 129$$

۱۲۹ عدد صحیح  $\checkmark$

(۲)

$$ra + 3nd + 3d = -9n + 12 \xrightarrow{+3} a + nd + d = -3n + 4$$

$$nd = -3n \rightarrow d = -3$$

$$a = 4$$

(۳)

$$a_1 + a_{11} = 2a + 3d = 12 + 4 \cdot 3 = 24 \quad \checkmark$$

$$r^x - 1 + r - r^x = r \rightarrow (r^x)^r + r - r^{x+r} - r = 0 \rightarrow (r^x)^r - r(r^x) - r = 0 \rightarrow (r^x - r)(r^x + 1) = 0$$

$$x = 2 \quad \text{خارج می شود}$$

$$a_r + a_1 + a_{11} = 3 + 1 + 12 = 16 \quad \checkmark$$

(۴)

$$\begin{cases} a_{11} - a_1 = 5 \\ a_{11} + a_1 = 20 \end{cases} \rightarrow \begin{cases} rd = 5 \rightarrow d = r/5 \\ r(a_{11}) = 20 \\ a_{11} = 15 \end{cases}$$

$$a_{11} = a_1 + 10d = 15 + 20 = 35 \quad \checkmark$$

(۵)

$$5a + 10d = \frac{1}{5}(5a + 30d) \Rightarrow 5a + 10d = 5a + 30d \rightarrow 10a = 20d \rightarrow a = 2d$$

$$\frac{a_r}{a} = \frac{a+d}{a} = \frac{r}{a} = 2 \quad \checkmark$$

(۶)

$$t_n = t_{n-1} + 1a \rightarrow a_n - a_{n-1} = 1a = 3d \rightarrow d = 5$$

$$\frac{t_4 - t_0}{t_4} = \frac{(t_4 - t_0)(t_4 + t_0)}{t_4} = r \frac{(t_4 - t_0)}{t_4} \Rightarrow$$

$$\Rightarrow 10d = 50 \quad \checkmark$$

(۷)

$$\frac{r + \sqrt{r} - r + 12\sqrt{r}}{13} = \sqrt{r} \cdot d = \frac{b-a}{n+1}$$

(۸)

$$\frac{r-r}{t_n-r} = d \rightarrow 10 = 3nd - d \Rightarrow 10 = 11d \rightarrow d = 10$$

$$11 = a_{n+1} = \frac{a}{p} + nd \rightarrow nd = 9$$

$$r-r = n \cdot 3 \rightarrow n = 10 \rightarrow 9 = \text{عدد صحیح}$$

$$t_n - r = 9$$

$$t_n = 19 \quad n = 10 \quad \checkmark$$

(۹)

$$a_r + a_{11} = a_n + a_{n+r} \rightarrow r + 11 = n + n + 1 \Rightarrow n = 10$$

(۱۰)

$$a_1 = ra_f \rightarrow a + 10d = ra + 9d \rightarrow a = -d$$

$$a_{k+1} = a_k + (k-1)d \rightarrow k-1 = 1 \rightarrow k = 2 \quad \checkmark$$