

$$S_{\text{مجموعه}} \rightarrow a + a + d + a + r d + a + r d + a + f d = 8a + 10d$$

$$S_{\text{مجموعه}} \rightarrow a + 2d + a + r d + a + r d + a + r d + a + r d = 5a + 3rd$$

$$\frac{8a + 10d}{5a + 3rd} = \frac{1}{r} \Rightarrow 10a + r d = 5a + 3rd \Rightarrow 10a = 2d \Rightarrow a = \frac{1}{5}d$$

$$a_1 = \frac{1}{5}d$$

$$a_r = \frac{1}{5}d \rightarrow \frac{a_r}{a_1} = \frac{\frac{1}{5}d}{\frac{1}{5}d} = r \checkmark$$

$$(t_9^r - t_0^r) = (t_9 - t_0)(t_9 + t_0) = (t_v + r d - t_v + r d)(t_v + r d + t_v - r d) = 4d \times 2t_v$$

$$\rightarrow t_v = t_v - r d + 10 \Rightarrow r d = 10 \Rightarrow d = 5$$

$$\frac{t_9^r - t_0^r}{t_v} = \frac{r t_v \times r_0}{t_v} = f_0 \checkmark$$

$$d = \frac{b-a}{n+1} \rightarrow \frac{r + \sqrt{13} - (r(1 - 4\sqrt{13}))}{12+1} = \frac{13\sqrt{13}}{13} = \sqrt{13} \checkmark$$

$$d = \frac{b-a}{c+1} \rightarrow \frac{r_0 - r}{(r_n - r) + 1} \Rightarrow d = \frac{r_0}{r_n - r} = \frac{10}{r_n - 1}$$

$$a_n = 11 \Rightarrow r + nd = 11 \rightarrow r + n \left(\frac{10}{r_n - 1} \right) = 11$$

$$\Rightarrow \frac{10n}{r_n - 1} = 9 \Rightarrow 10n - 9 = 10n \Rightarrow n = 9 \checkmark$$

$$\rightarrow d = \frac{r_0}{(r_n - r) - r} = \frac{r_0}{9} \quad r_0 = 11 \quad r_n = 20$$

$$t_r + t_v = t_n + t_n + f \rightarrow n + n + f = r + 1v \Rightarrow r_n = 14 \Rightarrow n = 1$$

$$\frac{t_1}{t_f} = r \rightarrow \frac{t_f + f d}{t_f} = r \Rightarrow r t_f = t_f + f d \Rightarrow r t_f = f d \Rightarrow t_f = r d$$

$$\rightarrow t_1 + r d = r d \rightarrow t_1 = -d \rightarrow t_r = -d + d = 0 \rightarrow t_r \checkmark$$

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$$t_1 = 40, t_4 = 91$$

$$\Rightarrow t_n = t_1 + (n-1)d \Rightarrow t_n = 40 + (n-1)V \Rightarrow t_n = Vn + 33$$

$$Vn + 33 = 201 \Rightarrow Vn = 168 \Rightarrow n = \frac{168}{V} = 24 \checkmark$$

$$\begin{aligned} a+b &= 40 \\ a+b &= 41 \end{aligned} \Rightarrow \begin{aligned} a &= V \\ b &= 33 \end{aligned} \Rightarrow t_n = Vn + 33$$

لغوی اعداد که تقسیم ۳, ۵, ۷ می باشد $\Rightarrow 3, 10, 17, 24, \dots \Rightarrow a_n = Vn - 4$

n	10	14	15	...	16	17	18
a _n	44	94	101	...	997	997	1004

$$\Rightarrow 142 - 15 + 1 = 129$$

$$\Rightarrow 91 < Vn - 4 < 101 \rightarrow 102 < Vn < 105 \rightarrow 142 < n < 143, 2 \rightarrow 15 < n < 143 \rightarrow n = 129 \checkmark$$

$$a_{n+1} + a_{n+2} + a_{n+3} = -9n + 12$$

$$n=1 \rightarrow a_2 + a_3 + a_4 = 4$$

$$n=2 \rightarrow a_3 + a_4 + a_5 = 0$$

$$\Rightarrow a_5 - a_3 = -4 \Rightarrow d = -2$$

$$a_1 = -2, d = -2$$

$$\Rightarrow (1) \quad (2) \quad (3) \quad (4) \quad (5) \quad \dots$$

$$a \quad 4 \quad 2 \quad 0 \quad -2 \quad \dots$$

$$\Rightarrow a_n = -2n + 1$$

$$\begin{aligned} a_{11} &\rightarrow (-2 \times 11) + 1 = -21 \\ a_{17} &\rightarrow (-2 \times 17) + 1 = -33 \end{aligned}$$

$$a_2 + a_{17} = 2a_n \rightarrow a_n = \frac{a_2 + a_{17}}{2} = \frac{2^m - 1 + 2^{17m} - 3}{2}$$

$$2^m - 1 + 2^{17m} - 3 = 2^{m+17}$$

$$2^m + 2^{17m} - 2^2 = 2 \times 2^m$$

$$2^m + 2^{17m} - 2^2 = 2^{m+1}$$

$$2^m + 2^{17m} - 2^2 = 2^{m+1}$$

$$2^m + 2^{17m} - 2^2 = 2^{m+1}$$

$$جواب: 2, 8, 12 \rightarrow (24)$$

$$a_{17} - a_{10} = 5 = 7d \rightarrow d = \frac{5}{7}$$

$$a_{17} + a_{10} = 20$$

$$2a_{17} = 30$$

$$a_{17} = 15$$

$$a_{10} = 10$$

$$a_n = \frac{5}{7}n - 15 \xrightarrow{n=11} \left\{ \frac{5}{7} \times 11 \right\} - 15 = 21, 5 \checkmark$$