

Subject:

Date:

18, 5

امیرعلی میرزائی

"سفرنامه"

۱۳ - A دم پلک

$$a_1 = 4 \text{ و } a_4 = 91$$

سوال ۱ - (۲)

$$a + 3d - a = 91 - 4 \rightarrow 3d = 87 \rightarrow d = 29 \rightarrow a_n = 29n + 4$$

$$\rightarrow 2011 \leq 29n + 4 \rightarrow 29n \geq 2007 \rightarrow n \geq 69 \rightarrow \boxed{n = 69} \checkmark$$

$$\overset{+7}{10}, \overset{+7}{17}, \overset{+7}{24}, \dots \rightarrow a_n = 29n + 4$$

سوال ۲ - (۲)

$$99 < 29n + 4 < 1000 \begin{cases} 29n > 95 \rightarrow n > 329/29 \\ 29n < 996 \rightarrow n < 343.48 \end{cases}$$

$$\rightarrow n \in [329, 343] \rightarrow \text{تعداد: } (343 - 329) + 1 = \boxed{15} \checkmark$$

$$n=1 \rightarrow a_1 + a_2 + a_3 = 9 \rightarrow a_1 + d + a_1 + d + a_1 + d = 9 \rightarrow a_1 = 1 \text{ سوال ۳}$$

$$n=2 \rightarrow a_1 + a_2 + a_3 + a_4 = 0 \rightarrow a_1 + a_1 + d + a_1 + d + a_1 + d = 0 \rightarrow 4a_1 + 3d = 0 \rightarrow d = -4/3$$

$$\rightarrow t_{14} + t_1 = t_3 + 14d + t_3 + 0d \rightarrow 15 + 14d = 4(14x - 1) \rightarrow \boxed{34} \checkmark$$

$$a_{1r} + a_{1r} = 2a_n \rightarrow r^n - 1 + r^n - r = r^{n+r}$$

$$r^n + r^n - r^r = r \times r^n \quad \underline{r^n = t} \quad t^r - r t - r = 0 \quad \begin{cases} t = r \rightarrow \boxed{n=r} \\ t = -1 \quad \times \end{cases}$$

$$a_r = r^n - 1, a_n = r^{n-1}, a_{1r} = r^n - r$$

$$a_r = r^n - 1, a_n = r^{n-1} \times r, a_{1r} = r^n - r$$

$$2a_n = a_{1r} + a_r \rightarrow a_{1r} + a_r + a_n = 3a_n \quad \checkmark$$

$$r \times (r^{n-1} \times r) = r(r^{n-1}) + r \quad \underline{n=r} \rightarrow \boxed{r^r}$$

$$\left. \begin{aligned} a_{1r} - a_{10} &= \Delta \\ a_{1r} + a_{10} &= 2\Delta \end{aligned} \right\} \begin{aligned} r a_{1r} &= r_0 \rightarrow a_{1r} = 1\Delta \\ a_{1r} &= 1\Delta \end{aligned}$$

$$a + 14d - (a + 9d) = 5d = \Delta \rightarrow d = 1/5 \Delta$$

$$a_n = a_{1r} + 9d = 1\Delta + 14/5 \Delta = \boxed{19/5 \Delta} \quad \checkmark$$

$$\sum_{j=1}^5 a_j = a + a + d + a + 4d + a + 9d + a + 14d = 5a + 10d \quad \sim \text{سؤال 4}$$

$$\sum_{j=1}^5 a_j = a + d + a + 4d + a + 9d + a + 14d + a + 19d = 5a + 30d$$

$$\frac{5a + 10d}{5a + 30d} = \frac{1}{r} \rightarrow 10a + 20d = 5a + 30d \rightarrow 5a = 10d \rightarrow a = 2/5 d$$

$$a_1 = 2/5 d, a_r = 1/5 d \rightarrow \frac{a_r}{a_1} = \frac{1/5}{2/5} = \boxed{1/2} \quad \checkmark$$

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$$(t_a - t_0) = (t_a - t_0)(t_a + t_0) = (t_{v+d} - t_{v-d})(t_{v+d} + t_{v-d}) \quad \leftarrow \text{سؤال ٢}$$

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$$\Rightarrow (t_d) \times t_v \rightarrow t_v + t_v - t_d + t_d \rightarrow t_d = t_d \rightarrow d = 0$$

$$\frac{t_a - t_0}{t_v} = \frac{t_d \times t_v}{t_v} = \boxed{t_d} \quad \checkmark$$

$$d = \frac{b-a}{n+1} \rightarrow d = \frac{t + \sqrt{t} - (t - 10\sqrt{t})}{12} = \frac{11\sqrt{t}}{12} = \boxed{\sqrt{t}} \quad \checkmark \quad \leftarrow \text{سؤال ٨}$$

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$$d = \frac{b-a}{n+1} \rightarrow d = \frac{t - t}{(t_n - t) + 1} = \dots \rightarrow \quad \leftarrow \text{سؤال ٩}$$

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$$\frac{t_0}{t_n - t} = \dots \rightarrow \frac{10}{t_n - 1} = \dots$$

$$a_n = 11 \rightarrow t + nd = 1 \rightarrow t + n\left(\frac{10}{t_n - 1}\right) = 1 \rightarrow \frac{10n}{t_n - 1} = 9 \rightarrow t_n = 9 \rightarrow \boxed{n = 3} \quad \checkmark$$

$$t_r + t_{14} = t_n + t_{n+1} \rightarrow n + n + 1 = t + 14 \rightarrow 2n + 1 = t + 14 \rightarrow n = 12 \quad \leftarrow \text{سؤال ١٠}$$

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$$\frac{t_1}{t_r} = r \rightarrow \frac{t_r + t_d}{t_r} = r \rightarrow t_r + t_d = r t_r \rightarrow t_d = r t_r - t_r = t_r(r - 1)$$

$$\rightarrow t_r = t_d \rightarrow t_r + t_d = t_d \rightarrow t_r = t_d \rightarrow t_r = t_d + d = 0$$

$$\rightarrow t_r = 0$$

مستقيم $\checkmark$