

۱۹, ۲۵

نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره ۱۷ کلاس Δ

رابطه اعداد
آهسته آهسته $\rightarrow 1, 4, 9, \dots \rightarrow a_n = n^2 \xrightarrow{n=9} a_9 = 81$

رابطه اعداد
هر دو به هر دو $\rightarrow a_n = (n-1)^2 + 1 \rightarrow a_9 = 4^2 + 1 = 17$

میانگین = $\frac{81+17}{2} = \frac{98}{2} = 49$ ✓

$\{1, 2, 3\}, \{4, 5, 6, 7, 8, 9, 10, 11, 12\}, \{13, \dots, 29\}, \{30, \dots, 12\}$
 $\{121, \dots, 343\}$

میانگین اعداد = $\frac{343+121}{2} = \frac{464}{2} = 232$ ✓

$S_{10} = \frac{1}{2} (2a_1 + 9d) = 19 \rightarrow 2a_1 + 9d = 38 \rightarrow 2a_3 - 4d + 9d = 38$

$\rightarrow 2a_3 + 5d = 38 \rightarrow 5d = 38 - 2a_3 \rightarrow d = \frac{38 - 2a_3}{5}$ جواب صحیح اخذ...

$a_3 = 2^1$ زیرا $3 = 3 \times 1$ (سپارک) $\rightarrow a_3 + a_4 + \dots + a_{10} = 5 \times (a_3 + a_{10})$

$\rightarrow 5 \times (a_3 + a_{10}) = 5 \times \left(\frac{38 - 2a_3}{5} + \frac{38 - 2a_3}{5} \right) = 38 - 2a_3 + 38 - 2a_3 = 76 - 4a_3$

$t_n = an^2 + bn + c \rightarrow a = \frac{-14}{10} = -\frac{7}{5}$ ✓ $\{a_{10} = a_1 + 9d = (13 \times \frac{7}{5})\}$

جواب صحیح اخذ... $\frac{a_{10} - a_1}{9} = \frac{13 \times \frac{7}{5} - a_1}{9} = \frac{91}{5} - \frac{a_1}{9}$

$14 \xrightarrow{+d} 15, 12 \xrightarrow{+d-\frac{7}{5}} 17, 12 \xrightarrow{+d-\frac{7}{5}} 18, 12 \xrightarrow{+d-\frac{7}{5}} 19, 12 \xrightarrow{+d-\frac{7}{5}} 20, 12 \xrightarrow{+d-\frac{7}{5}} 21, 12 \xrightarrow{+d-\frac{7}{5}} 22, 12 \xrightarrow{+d-\frac{7}{5}} 23, 12 \xrightarrow{+d-\frac{7}{5}} 24, 12 \xrightarrow{+d-\frac{7}{5}} 25, 12 \xrightarrow{+d-\frac{7}{5}} 26, 12 \xrightarrow{+d-\frac{7}{5}} 27, 12 \xrightarrow{+d-\frac{7}{5}} 28, 12 \xrightarrow{+d-\frac{7}{5}} 29, 12 \xrightarrow{+d-\frac{7}{5}} 30, 12 \xrightarrow{+d-\frac{7}{5}} 31, 12 \xrightarrow{+d-\frac{7}{5}} 32, 12 \xrightarrow{+d-\frac{7}{5}} 33, 12 \xrightarrow{+d-\frac{7}{5}} 34, 12 \xrightarrow{+d-\frac{7}{5}} 35, 12 \xrightarrow{+d-\frac{7}{5}} 36, 12 \xrightarrow{+d-\frac{7}{5}} 37, 12 \xrightarrow{+d-\frac{7}{5}} 38, 12 \xrightarrow{+d-\frac{7}{5}} 39, 12 \xrightarrow{+d-\frac{7}{5}} 40, 12 \xrightarrow{+d-\frac{7}{5}} 41, 12 \xrightarrow{+d-\frac{7}{5}} 42, 12 \xrightarrow{+d-\frac{7}{5}} 43, 12 \xrightarrow{+d-\frac{7}{5}} 44, 12 \xrightarrow{+d-\frac{7}{5}} 45, 12 \xrightarrow{+d-\frac{7}{5}} 46, 12 \xrightarrow{+d-\frac{7}{5}} 47, 12 \xrightarrow{+d-\frac{7}{5}} 48, 12 \xrightarrow{+d-\frac{7}{5}} 49, 12 \xrightarrow{+d-\frac{7}{5}} 50, 12 \xrightarrow{+d-\frac{7}{5}} 51, 12 \xrightarrow{+d-\frac{7}{5}} 52, 12 \xrightarrow{+d-\frac{7}{5}} 53, 12 \xrightarrow{+d-\frac{7}{5}} 54, 12 \xrightarrow{+d-\frac{7}{5}} 55, 12 \xrightarrow{+d-\frac{7}{5}} 56, 12 \xrightarrow{+d-\frac{7}{5}} 57, 12 \xrightarrow{+d-\frac{7}{5}} 58, 12 \xrightarrow{+d-\frac{7}{5}} 59, 12 \xrightarrow{+d-\frac{7}{5}} 60, 12 \xrightarrow{+d-\frac{7}{5}} 61, 12 \xrightarrow{+d-\frac{7}{5}} 62, 12 \xrightarrow{+d-\frac{7}{5}} 63, 12 \xrightarrow{+d-\frac{7}{5}} 64, 12 \xrightarrow{+d-\frac{7}{5}} 65, 12 \xrightarrow{+d-\frac{7}{5}} 66, 12 \xrightarrow{+d-\frac{7}{5}} 67, 12 \xrightarrow{+d-\frac{7}{5}} 68, 12 \xrightarrow{+d-\frac{7}{5}} 69, 12 \xrightarrow{+d-\frac{7}{5}} 70, 12 \xrightarrow{+d-\frac{7}{5}} 71, 12 \xrightarrow{+d-\frac{7}{5}} 72, 12 \xrightarrow{+d-\frac{7}{5}} 73, 12 \xrightarrow{+d-\frac{7}{5}} 74, 12 \xrightarrow{+d-\frac{7}{5}} 75, 12 \xrightarrow{+d-\frac{7}{5}} 76, 12 \xrightarrow{+d-\frac{7}{5}} 77, 12 \xrightarrow{+d-\frac{7}{5}} 78, 12 \xrightarrow{+d-\frac{7}{5}} 79, 12 \xrightarrow{+d-\frac{7}{5}} 80, 12 \xrightarrow{+d-\frac{7}{5}} 81, 12 \xrightarrow{+d-\frac{7}{5}} 82, 12 \xrightarrow{+d-\frac{7}{5}} 83, 12 \xrightarrow{+d-\frac{7}{5}} 84, 12 \xrightarrow{+d-\frac{7}{5}} 85, 12 \xrightarrow{+d-\frac{7}{5}} 86, 12 \xrightarrow{+d-\frac{7}{5}} 87, 12 \xrightarrow{+d-\frac{7}{5}} 88, 12 \xrightarrow{+d-\frac{7}{5}} 89, 12 \xrightarrow{+d-\frac{7}{5}} 90, 12 \xrightarrow{+d-\frac{7}{5}} 91, 12 \xrightarrow{+d-\frac{7}{5}} 92, 12 \xrightarrow{+d-\frac{7}{5}} 93, 12 \xrightarrow{+d-\frac{7}{5}} 94, 12 \xrightarrow{+d-\frac{7}{5}} 95, 12 \xrightarrow{+d-\frac{7}{5}} 96, 12 \xrightarrow{+d-\frac{7}{5}} 97, 12 \xrightarrow{+d-\frac{7}{5}} 98, 12 \xrightarrow{+d-\frac{7}{5}} 99, 12 \xrightarrow{+d-\frac{7}{5}} 100$

$a_1, a_2, a_3, a_4, a_5 \rightarrow a_1 = a_5 - 4d \rightarrow 12 - 4d = 12 - 4d$

$a_1 + 3d, a_1 + 7d \rightarrow a_1 + 7d - a_1 - 3d = 4d = 5y$

$\rightarrow d = \frac{5}{4}y$

$t_{10} = t_2 + 8y = a_1 + 3d + 8 \times \frac{5}{4}d = a_1 + 13d = 0 \rightarrow a_1 = -13d$

$$r(a+d)^r = d(a+rd)a + r(a+d)a$$

(2)

$$\frac{r(a+d)^r}{a} = d(a+rd) + r(a+d) \rightarrow \frac{ra^r + rd^r + 1rad}{a} = da + 1.d.r + r$$

$$ra^r + ad - rd^r = 0 \rightarrow (a+rd)(ra-rd) = 0 \rightarrow \begin{cases} a = -rd \\ ra = rd \rightarrow a = \frac{rd}{r} \end{cases}$$

$$\frac{a+rd}{d} \rightarrow \begin{cases} \frac{-rd+rd}{d} = 1 \\ \frac{rd+rd}{d} = 2 \end{cases}$$

$$b = \frac{a+c}{r}$$

$$\frac{c}{r} = \frac{a}{a} \rightarrow c = \frac{ra}{a}$$

$$b = \frac{a}{r}q$$

$$\frac{a}{r}q = \frac{a + \frac{ra}{a}}{r} \rightarrow aq = a + \frac{ra}{a}$$

$$\rightarrow aq = a(1 + \frac{r}{a})$$

$$\rightarrow q^r = a + r$$

$$\rightarrow q^r - q - r = 0 \rightarrow (q-1)(q+1) = 0 \rightarrow \begin{cases} q = -1 \\ q = 1 \end{cases}$$

$$\frac{c+rb}{r} = ra \rightarrow \frac{c+rcq}{r} = rcq^r \rightarrow \frac{1+rq}{r} = rq^r \rightarrow \begin{cases} q^r - rq - 1 = 0 \end{cases}$$

$$rb = rcq$$

$$ra = rcq^r$$

$$\rightarrow q = \frac{r \pm \sqrt{r^2 + 4}}{2} \rightarrow \begin{cases} q = 1 \\ q = -\frac{1}{2} \end{cases}$$

$$\frac{a_q}{a_r} = q^r = -\frac{1}{4f}$$

$$\frac{aq^d}{(aq)^r} + \frac{aq}{a^r} = r \rightarrow \frac{q^r}{a^r} + \frac{q}{a} = r \rightarrow \left(\frac{q}{a}\right)^r + \frac{q}{a} - r = 0$$

$$\rightarrow \left(\frac{q}{a} + r\right)\left(\frac{q}{a} - 1\right) = 0 \rightarrow \frac{q}{a} = -r, \frac{q}{a} = 1 \rightarrow \frac{a}{q} = -\frac{1}{r}, 1$$

$$\frac{a^r}{a_r} = \frac{a \times a}{a \times q} = \frac{a}{q}$$

$$a_1q^r, a_1q^r, a_1q^r \rightarrow \frac{rv}{q^r}, \frac{rv}{q}, rv$$

$$a_1q^r = rv \rightarrow a_1 \times 11 = rv$$

$$\frac{\frac{rv}{q}}{\frac{rv}{q^r}} = \frac{rv}{q^r} \rightarrow q^r = rv \rightarrow q = r$$

$$a_1 = \frac{1}{r}$$

$$\frac{1}{r} - \frac{1}{r} = \frac{1}{r}$$

ضابطه اول $a_0, a_3, a_4, a_9 \rightarrow$

ضابطه دوم $a_1, a_4, a_7 \rightarrow$

ضابطه سوم $a_2, a_5, a_8 \rightarrow$

$$S_{11} = 1 + 4 + (1+a) + 2 + (1+a) + 4 + 0 + (2+a) + 8 = 19 \rightarrow a = -2$$

جمع جملات خواسته شده از ضابطه سوم به دست میاد :

$$a_n = \left[\frac{n}{K+2} \right] - 2 \xrightarrow{n=3K+2} \left[\frac{3K+2}{K+2} \right] - 2 = \left[\overset{\text{میاد بیرون}}{2} + \frac{K-2}{K+2} \right] - 2 = \left[\frac{K-2}{K+2} \right]$$

این عبارت به ازای $K=0$ برابر ۱- و به ازای بقیه اعداد صحفه پس جواب خواسته شده ۲-.

$$t_n = an^r + bn + c \rightarrow \begin{cases} t_5 = 25a + 5b + c = 14 \\ t_7 = 49a + 7b + c = 17,2 \end{cases} \rightarrow 12a + b = 1,4$$

$$a = \frac{1}{12} (-14) \rightarrow a = -\frac{1}{5}$$

ضریب بزرگترین درجه جمله مجهول a است.

$$12a + b = 1,4 \xrightarrow{a = -\frac{1}{5}} b = 4$$

$$t_5 = 14 \xrightarrow{a \text{ و } b \text{ وارد کنیم}} c = -1$$

$$t_{15} = 14 \quad t_1 = 2,8 \rightarrow \frac{14}{2,8} = 5$$

$$\text{واحد صابر: } b = \frac{a+c}{2} \rightarrow a = 2b - c$$

✓

$$\rightarrow (2b-c)^2 = bc$$

$$\text{واحد هندس: } \frac{a^2}{4} = \frac{bc}{4} \rightarrow a^2 = bc$$

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متمایزه!

$$4b^2 - 4bc + c^2 = 0 \rightarrow (b-c)(2b-c) = 0 \rightarrow \begin{cases} b = c \\ 2b = c \end{cases}$$

$$\text{واحد صابر: } \frac{a+2b}{2} = b \rightarrow a = -2b$$

$$\text{دو برابر: } b, -b, b \rightarrow q_r = -1 \rightarrow 2q_r = -2$$