

گروه: دهم / شنبه

سری: ۱۷

نام و نام خانوادگی: تانیا ترک تری

$$9^2 = 81 = \text{عدد آخر در دسته نهم}$$

اعداد اول در دهه ها
 ۱ ۲ ۵ ۱۰ ۱۷ ۲۶ ۳۷ ۵۰ ۶۵
 (۱) (۲) (۳) (۴) (۵) (۶) (۷) (۸) (۹)

$$65 = \text{عدد اول در دسته نهم}$$

$$\frac{81 + 65}{2} = 73 \leftarrow \text{وسط حسابی بین دو عدد}$$

$$a_n = \frac{1}{r} b_n \quad \text{تقریباً اعضای دسته} \quad T_n = b_n - a_{n+1} \xrightarrow{a_n = \frac{1}{r} b_n} T_n = b_n - \frac{1}{r} b_{n+1} + 1 = \frac{r}{r} b_n + 1$$

$$a_1 = 1 \quad b_1 = 3a_1 = 3 \rightarrow \text{دسته اول تا ۳} \quad a_2 = 4 \Rightarrow b_2 = 3a_2 = 12 \rightarrow \text{دسته دوم از ۱۲ تا ۱۳}$$

$$a_3 = 13 \quad b_3 = 39 \rightarrow \text{دسته سوم از ۳۹ تا ۴۰} \quad a_4 = 40 \quad b_4 = 120 \rightarrow \text{دسته چهارم از ۱۲۰ تا ۱۲۱}$$

$$a_5 = 121 \quad b_5 = 363 \rightarrow \text{دسته پنجم از ۳۶۳ تا ۳۶۴} \quad \text{میانگین} = \frac{a_5 + b_5}{2} = \frac{121 + 363}{2} = 242$$

$$S_{10} = \frac{1}{r}(a_1 + a_{10}) = 19 \Rightarrow S_{10} \Rightarrow 18 + 3a_1 = 19 \Rightarrow a_1 = \frac{1}{3}$$

$$a_n = \begin{cases} r^k; & n = 3k \\ -2k + 4; & n = 3k + 1 \\ \left\lfloor \frac{n}{k+2} \right\rfloor + a; & n = 3k + 2 \end{cases}$$

$$a_1 + a_2 + \dots + a_{10} = \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} = \frac{10}{3}$$

$$a_n = an^r + bn + c$$

$$a = -\frac{a_5}{V_0} = -\frac{14}{V_0} = -0.12$$

$$\frac{a_{10}}{a_1} = \frac{14}{18} = \frac{7}{9}$$

$$a_5 = 14$$

$$a_7 = 17/2$$

$$\begin{aligned} n=5 &\rightarrow -0.12(25) + 5b + c = 14 \Rightarrow 5b + c = 19 \\ n=7 &\rightarrow -0.12(49) + 7b + c = 17/2 \Rightarrow 7b + c = 27 \end{aligned} \Rightarrow$$

$$5b + c = 19 \xrightarrow{b=4} c = -1$$

$$a_n = -0.12n^2 + 4n - 1$$

$$\begin{aligned} a_1 &= -0.12(1) + 4(1) - 1 = -0.12 + 4 - 1 = 2.88 \\ a_5 &= -0.12(25) + 4(5) - 1 = -3 + 20 - 1 = 14 \end{aligned}$$

$$\begin{aligned} a_r &= L_r \Rightarrow a_1 + rd = L_1 + r \Rightarrow a_1 + rd = (-9r) + r \Rightarrow a_1 + rd = -8r \\ a_1 &= L_1 \Rightarrow a_1 + rd = L_1 + 4r \Rightarrow a_1 + rd = (-9r) + 4r \Rightarrow a_1 + rd = -5r \\ \Rightarrow rd &= -8r \Rightarrow d = -8 \\ L_1 + 4r &= 0 \Rightarrow L_1 = -4r \end{aligned}$$

$$L_{10} = (-4r) + 14r = 10r$$

$$\frac{L_{10}}{d} = \frac{10r}{-8} \xrightarrow{r \neq 0} \frac{L_{10}}{d} = -\frac{5}{4}$$

$$\left. \begin{aligned} a_r &= a + d \\ a_r &= a + rd \end{aligned} \right\} \Rightarrow 4(a+d)^r = 4(a+rd)a + r(a+d)a \Rightarrow$$

$$\frac{a_f}{d} = r/a \quad \underline{1}$$

$$\frac{a_f}{d} = 1$$

$$4(a^r + rad + d^r) = (4a^r + 4rad) + (4a^r + rad) \Rightarrow 4a^r + rad + 4d^r = 4a^r + rad$$

$$\Rightarrow ra^r + ad - 4d^r = 0 \quad r\left(\frac{a}{d}\right)^r + \left(\frac{a}{d}\right) - 4 = 0 \rightarrow rx^r + x - 4 = 0 \Rightarrow \begin{cases} x = \frac{r}{r} \\ x = -r \end{cases}$$

$$\frac{a_f}{d} = \frac{a+rd}{d} = \frac{a}{d} + r = x + r \quad \textcircled{1} x = \frac{r}{r} \Rightarrow \frac{a_f}{d} = \frac{r}{r} + r = r/a \quad \textcircled{2} x = -r \Rightarrow \frac{a_f}{d} = -r + r = 1$$

$$b = a + d \quad G_1 = \frac{b}{a} \quad G_r = \frac{a}{r} \quad G_r = \frac{c}{r} \quad (G_r)^r = G_1 \times G_r \Rightarrow \left(\frac{a}{r}\right)^r = \left(\frac{b}{a}\right)\left(\frac{c}{r}\right) \Rightarrow \frac{a^r}{r^r} = \frac{bc}{ra} \Rightarrow$$

$$c = b + d = (a + d) + d = a + rd$$

$$q = \frac{\frac{a}{r}}{\frac{b}{a}} \Rightarrow q = -a \quad G_r = G_r q \Rightarrow -\frac{1}{r} a = \frac{a}{r} \times a \quad a^r = \frac{bc}{a}$$

$$\left. \begin{aligned} rb &= a + c \\ a^r &= bc \end{aligned} \right\} \xrightarrow{c = rb - a} a^r = b(rb - a) \Rightarrow a^r = rb^r - ab \Rightarrow r\left(\frac{b}{a}\right)^r - \left(\frac{b}{a}\right) - 1 = 0 \quad \frac{b}{a} = y$$

$$ry^r - y - 1 = 0 \Rightarrow \begin{cases} y = 1 \Rightarrow \frac{b}{a} = 1 \Rightarrow b = a \\ y = -\frac{1}{r} \Rightarrow \frac{b}{a} = -\frac{1}{r} \Rightarrow b = -\frac{1}{r}a \end{cases}$$

$$r\left(-\frac{1}{r}a\right) = a + c \Rightarrow c = -ra \quad \begin{cases} a \\ -\frac{1}{r}a \\ -ra \end{cases}$$

$$d = b - a = -\frac{r}{r}a$$

$$\left. \begin{aligned} b &= ar \\ c &= ar^r \end{aligned} \right\} \xrightarrow{G_1 \rightarrow rB_r = B_1 + B_r} r(ar) = B_1 + B_r \Rightarrow r(2a) = r d + c \quad c = ar^r = ra$$

$$\left. \begin{aligned} B_1 &= rd \\ B_r &= ra \\ B_r &= c \end{aligned} \right\} \xrightarrow{B_1 = rd = 0} \begin{aligned} B_r &= ra \\ B_r &= c (=ra) \end{aligned}$$

$$ra = rd + c \Rightarrow ra = rd + ra \Rightarrow d = 0$$

$$B_4 = ra(4-1) = 1 \cdot a \quad B_9 = ra(9-1) = 18a \quad \frac{B_9}{B_4} = \frac{18a}{1 \cdot a} = \frac{18}{1}$$

$$\frac{a^4}{(a^r)^r} + \frac{a^r}{a^r} = r \Rightarrow \frac{a^4}{a^r} + \frac{a^r}{a^r} = r \rightarrow a \neq 0$$

$$G_r = ar \quad \frac{a^r}{G_r} = \frac{a^r}{ar} = \frac{a}{r} \quad \left\{ \frac{a}{r} \in \mathbb{R} - \{0\} \right\}$$

$$G_r = \sqrt{G_f} \quad G_a = rv \quad ar^r = \sqrt{ar^r}$$

$$G_r = ar^r \quad G_f = ar^r \quad G_a = ar^r = rv$$

$$\frac{a^r r^r}{ar^r} = \frac{ar^r}{ar^r} \Rightarrow ar = 1 \quad \left. \begin{aligned} ar^r &= rv \end{aligned} \right\} \Rightarrow r^r = rv \Rightarrow r = \frac{1}{r}$$

$$(ar^r)^r = ar^r \Rightarrow ar^r = ar^r$$

$$\text{اختلاف} = \frac{1}{r} - a \Rightarrow \frac{1}{r} - \frac{1}{r} = \left(\frac{1}{r}\right)$$