

(۱)  $45 + 1 = 46 \Rightarrow$  یکی عدد از آخرین عدد شده ۱۱ ام = اولین عدد شده ۴۶

$11 + 45 = 56$   
آخرین عدد شده ۱۱  $\rightarrow$

(۲) ✓

$u_k = \frac{1}{3} y_k$

(۲) کوچکترین عضو:  $u_k$

بزرگترین عضو:  $y_k$

$u_{k+1} = \frac{1}{3} y_{k+1} \rightarrow \frac{1}{3} b_{k+1} = b_{k+1} \Rightarrow b_{k+1} = 3(b_k + 1)$

$\Rightarrow u_1 = 1 \rightarrow u_1 = \frac{1}{3} y_1 \rightarrow 1 = \frac{1}{3} y_1 \Rightarrow y_1 = 3$

$\Rightarrow$  دسته اول:  $\{1, 2, 3\}$  (۲) ✓

$y_2 = 3(y_1 + 1) = 12 \rightarrow$  دسته دوم:  $\{4, \dots, 12\}$

$y_3 = 3(y_2 + 1) = 39 \rightarrow$  دسته سوم:  $\{13, \dots, 39\}$

$y_4 = 3(y_3 + 1) = 120 \rightarrow$  دسته چهارم:  $\{40, \dots, 120\}$

$y_5 = 3(y_4 + 1) = 363 \rightarrow$  دسته پنجم:  $\{121, \dots, 363\}$

میانگین گرفته ام  $\rightarrow \frac{u_5 + y_5}{2} = \frac{121 + 363}{2} = 242$

(۳)

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

$$n=0 \rightarrow k=0 \rightarrow a_0 = r^0 = 1$$

$$n=1 \rightarrow k=0 \rightarrow a_1 = \varepsilon$$

$$n=2 \rightarrow k=0 \rightarrow a_2 = \left[\frac{r}{r}\right] + a = 1 + a$$

$$n=3 \rightarrow k=1 \rightarrow a_3 = r^1 = r$$

$$n=4 \rightarrow k=1 \rightarrow a_4 = r$$

$$n=5 \rightarrow k=1 \rightarrow a_5 = \left[\frac{a}{r}\right] + a = 1 + a \quad n=6 \rightarrow k=2 \rightarrow a_6 = r^2 = \varepsilon$$

$$n=7 \rightarrow k=2 \rightarrow a_7 = 0 \quad n=8 \rightarrow k=2 \rightarrow a_8 = \left[\frac{\Lambda}{\varepsilon}\right] + a = r + a$$

$$n=9 \rightarrow k=3 \rightarrow a_9 = r^3 = \Lambda$$

$$a_0 + a_1 + a_2 + \dots + a_9 = 1 + \varepsilon + 1 + a + r + r + 1 + a + \varepsilon + 0 + r + a + \Lambda$$

$$= r^2 + r^3 \Rightarrow r^2 + r^3 = 19 \rightarrow r^3 = -4 \rightarrow a = (-r)$$

$$a_1 + a_3 + a_5 + \dots + a_{pq} = 1 + a + 1 + a + \dots + \Lambda(r + a) = 1\Lambda + 1a = 1\Lambda - r_0$$

$$= -r$$

$$\left[\frac{rk+r}{k+r}\right] = \left[\frac{k+r+rk}{k+r} \cdot \frac{rk}{k+r}\right]$$

$$= \left[1 + \frac{rk}{k+r}\right] = 1 + \left[\frac{rk}{k+r}\right] \Rightarrow$$

$$\frac{rk}{k+r} \rightarrow \frac{rk}{k+r} \geq 0 \rightarrow rk \geq 0 \rightarrow k \geq 0$$

$$\left[\frac{rk+r}{k+r}\right] = \begin{cases} 1+0=1 & \rightarrow n=1, n=2 \\ 1+1=r & \rightarrow n=3, n=4, n=5 \end{cases}$$

$$\frac{rk}{k+r} \geq 1 \rightarrow rk \geq k+r \rightarrow k \geq r$$

$$\frac{rk}{k+r} \geq r \rightarrow rk \geq rk + \varepsilon \rightarrow 0 \geq \varepsilon$$

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$$a_d = 1\text{r}$$

$$a_v = 1\text{V, r}$$

$$an^r + bn + c$$

$$a = \frac{1}{V_0} \times (-1\text{E}) = -\frac{1}{\omega}$$

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$$a_d = 1\text{E} \rightarrow -\frac{1}{\omega} \times 1\text{r} + \omega b + c = 1\text{E} \rightarrow \omega b + c = 1\text{E}$$

$$a_v = 1\text{V, r} \rightarrow -\frac{1}{\omega} \times 1\text{E} + \omega b + c = 1\text{V, r} \rightarrow \omega b + c = 1\text{V, r}$$

$$\begin{cases} \omega b + c = 1\text{V} \\ -(\omega b + c = 1\text{E}) \end{cases} \rightarrow \begin{cases} \omega b + c = 1\text{V} \\ -\omega b - c = -1\text{E} \end{cases}$$

$$2b = 1$$

$$b = \frac{1}{2}$$

$$\omega b + c = 1\text{E} \xrightarrow{b=\frac{1}{2}} c = -1$$

$$\omega a_d = -\frac{1}{\omega} \times 1\text{r} + 1\text{E} \times \frac{1}{2} - 1 = 1\text{E}$$

$$a_1 = -\frac{1}{\omega} \times 1 + 1\text{E} \times \frac{1}{2} - 1 = \frac{1\text{E}}{\omega}$$

$$\frac{a_{1d}}{a_1} = \left( \frac{\frac{1\text{E}}{\omega}}{\frac{1\text{E}}{\omega}} \right) = 1$$

$$A_E = B_r$$

$$A_n = B_v$$

$$B_o = 0 \rightarrow b_1 + 9d' = 0$$

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$$b_1 = -9d'$$

$$a_1 + 1d = b_1 + d'$$

$$a_1 + 1d = b_1 + 9d'$$

$$a_1 + 1d - (a_1 + 1d) = b_1 + 9d' - (b_1 + d')$$

$$fd = 8d' \Rightarrow d' = \frac{f}{8} d$$

$$b_1 = -9\left(\frac{f}{8} d\right) = -\frac{9fd}{8}$$

$$a_1 + 1d = \left(-\frac{9fd}{8}\right) + \frac{f}{8} d$$

$$a_1 + 1d = -\frac{8fd}{8}$$

$$\Rightarrow d = -\frac{8V}{\omega} d$$

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$$B_{1\omega} = b_1 + (1\omega - 1)d' = b_1 + 1\omega d'$$

$$B_{1\omega} = \frac{-r\omega d}{\omega} + 1\omega \left( \frac{\epsilon}{\omega} d \right) = \frac{r\omega d}{\omega} = \epsilon d$$

$$\frac{B_{1\omega}}{d} = \frac{r\omega d}{d} \quad (\epsilon) \quad (r) \quad \checkmark$$

$$4a_r' = \omega a_r a + r a_r a \quad (4)$$

$$4a_r' - r a_r a = \omega a_r a \quad \checkmark$$

$$r a_r (r a_r - a) = \omega a_r a$$

$$r a_r (a_1 + r d) = \omega (a_1 + r d) a_1 \Rightarrow (P) a_1 + r d = 0 \rightarrow a_1 = -r d$$

$$\hookrightarrow (1) r a_r = \omega a_1 \rightarrow r (a_1 + r d) = \omega a_1$$

$$r a_1 + r^2 d = \omega a_1 \rightarrow r d = r a_1$$

$$\frac{a_r}{d} = \frac{a_1 + r d}{d} \xrightarrow{r d = r a_1} \frac{a_1 + r a_1}{\frac{r}{r} a_1} = \boxed{\frac{q}{r}}$$

(P)

$$a_1 = -r d$$

$$\frac{-r d + r d}{d} = \boxed{1}$$

$$c, b, a \xrightarrow{G_{1\omega}} c, c + d, c + r d \quad (\checkmark)$$

$$\frac{c}{r}, \frac{a}{r}, b \xrightarrow{G_{1\omega}} \frac{c}{r}, \frac{c q}{r}, \frac{c q^r}{\epsilon}$$

$$c + d = \frac{c q^r}{r} \rightarrow \frac{c q^r}{r} - c = d \rightarrow c \left( \frac{q^r}{r} - 1 \right) = d$$

$$c + r d = \frac{c q}{r} \rightarrow \frac{c q}{r} - c = d \rightarrow c \left( \frac{q}{r} - 1 \right) = d$$

$$\frac{c \left( \frac{q}{r} - 1 \right)}{\frac{c \left( \frac{q^r}{r} - 1 \right)}{\epsilon}} = \frac{r d}{d} \rightarrow \frac{1}{\frac{q}{r} - 1} = r \rightarrow 1 = q + r \rightarrow q = -1$$

HashTag  $(P) \quad \checkmark \quad r q \rightarrow \boxed{-r}$

$$c, b, a \xrightarrow{\text{G.L.}} c, cq, cq^r$$

(1)

$$c, ra, rb \xrightarrow{\text{G.L.}} c, c+d, c+rd$$

(P) ✓

$$rcq = c+rd \rightarrow rcq - c = rd \rightarrow c(rq-1) = rd$$

$$rcq^r = c+d \rightarrow rcq^r - c = d \rightarrow c(rq^r-1) = d$$

$$\frac{c(rq-1)}{c(rq^r-1)} = \frac{rd}{d} \rightarrow \frac{rq-1}{rq^r-1} = r \rightarrow rq^r - r = rq - 1$$

$$rq^r - rq - 1 = 0$$

$$\Delta = 9 + 14 = 23 \rightarrow q = \frac{r \pm \sqrt{\Delta}}{2} \Rightarrow$$

$$\boxed{\frac{1}{2}}$$

$$\frac{a_q}{a_r} \rightarrow \frac{a_1 q^1}{a_1 q^a} = q^r = \left(-\frac{1}{2}\right)^r = \frac{-1}{4^r} \therefore \text{سویق متناهی است معلوم}$$

$$\frac{a_q}{(a_r)^r} + \frac{a_r}{(a)^r} = r \rightarrow \frac{a_1 q^a}{a_1^r q^r} + \frac{a_1 q}{a_1^r} \quad (9)$$

$$\frac{q^r}{a_1^r} + \frac{q}{a_1} - r = 0 \rightarrow \frac{q}{a_1} = 1$$

$$\frac{q}{a_1} = -r$$

(P) ✓

$$\frac{a^r}{a_r} = \frac{a^r}{a q} = \frac{a}{q} \rightarrow \boxed{\frac{1}{-r}}$$

$$a_r = \sqrt{a_\varepsilon}$$

$$a_a = r\sqrt{a} \rightarrow a q^r = (a q^r)' q^r = r\sqrt{a} \quad (10)$$

$$q^r = r^r \rightarrow \boxed{q=r}$$

$$(a q^r)' = (\sqrt{a q^r})^r \rightarrow a^r q^r = a q^r \rightarrow \frac{a^r q^r}{a q^r} = 1$$

$$a q = 1 \Rightarrow a_r = 1$$

$$\frac{1}{r} - a_1 = \frac{1}{r} - \frac{1}{r} = \frac{1}{4}$$

(P) ✓

$$a q = 1 \xrightarrow{q=r} \frac{1}{ra} = 1 \rightarrow a_r = \frac{1}{r}$$

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