

نام و نام خانوادگی: فاطمه زهرا جمال زاده شماره کتبی: ۱۵ کلاس: (هم در دفتر)

$$a_1 + a_r + a_r = 21 \Rightarrow a_1 + a_r = 21 - \varepsilon \quad (1)$$

$$a_1 + a_r = 14 \xrightarrow{*b} a_1 + \frac{14}{a_1} = 14 \Rightarrow a_1^2 - 14a_1 + 14 = 0$$

$$a_1 + a_1 q + a_1 q^2 = 21$$

$$(a_1 - 1)(a_1 - 14) = 0$$

$$a_1 a_r a_r = 4\varepsilon \Rightarrow a_1 a_1 q a_1 q^2 = 4\varepsilon \Rightarrow a_1^3 q^3 = 4\varepsilon$$

$$(a_1 q)^3 = r^3$$

$$a_1 = 1$$

$$a_1 a_r = 14$$

$$a_1 q = \varepsilon \Rightarrow a_r$$

$$a_1 \times a_1 q^2 = 14 \Rightarrow a_1 q^2 = \frac{14}{a_1}$$

$$\text{if } a_1 = 1 \Rightarrow a_r = r \Rightarrow q = \varepsilon \quad \text{فقط}$$

$$\text{if } a_1 = 14 \Rightarrow a_r = \varepsilon \Rightarrow q = \frac{1}{\varepsilon} \quad \checkmark$$

$$n^2 + r, r m, n^2 - r \quad (2)$$

$$b^2 = ac \Rightarrow r m^2 = (n^2 + \varepsilon)(n^2 - r)$$

$$r m^2 = n^2 + r a^2 - 1$$

$$n^2 - r m^2 - 1 = 0 \Rightarrow (n^2 - \varepsilon)(n^2 + r) = 0$$

$$\downarrow \quad \quad \quad \downarrow$$

موردی برقرار
 $n^2 + r$

$$\text{if } n = r \rightarrow 1, r, r \Rightarrow q = \frac{1}{r} \quad \checkmark$$

$$(n - r)(n + r) = 0 \Rightarrow \boxed{n \rightarrow \pm r}$$

$$\text{if } n = -r \rightarrow 1, -\varepsilon, r \Rightarrow q = \frac{1}{r} \rightarrow \text{با به بزرگتر از صفر باشد غلط}$$

$$S_n = a_1 \left(\frac{q^n - 1}{q - 1} \right) \rightarrow S_{14} = 1 \left(\frac{\left(\frac{1}{r} \right)^{14} - 1}{\frac{1}{r} - 1} \right) = 1 \times \left(\frac{\frac{1}{r^{14}} - \frac{1}{r^{14}}}{\frac{1}{r} - 1} \right)$$

$$= 1 \times \frac{-\frac{1}{r^{14}}}{\frac{1}{r} - 1} = \frac{1}{r^{14}} \times \frac{1}{\frac{1}{r} - 1} = \frac{1}{r^{14}} \times \frac{r}{1 - r} = \frac{1}{r^{13}(1 - r)}$$

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(۳) اگر فرض کنیم a_1 برابر ۱۲۱ باشد،
مجموع پنج جمله اول به دست می آید

$$a_1(1 + q + q^2 + q^3 + q^4) = \frac{121}{11}$$

$$S_5 = a_1 + a_1q + a_1q^2 + a_1q^3 + a_1q^4 = \frac{121a_1}{11} \Rightarrow \frac{121}{11} \times 242$$

$$\Rightarrow S_5 = 242$$

(۴)

$$d = \frac{b-a}{h+1} \Rightarrow d = \frac{q^4 - 1}{5+1} = \frac{q^4}{6} = 10, d \rightarrow a_5 = 1 + 3(10, d) = 31, d$$

در اینجا فرض می کنیم $a_5 = a_1q^4 = 44 \rightarrow 44 = 1 \times q^4 \rightarrow q^4 = 44 \Rightarrow a_5 = \pm 11 = 13$

$$\boxed{q = \pm 2}$$

$$A + B \rightarrow \begin{cases} 31, d + 11 = 42, d \\ 31, d - 11 = 20, d \end{cases}$$

(۵)

$$\textcircled{1} -24, \frac{-9d}{4}, \dots \Rightarrow d = \frac{-9d}{4} - (-24) = \frac{-9d + 96}{4} = \frac{1}{2}$$

$$a_{101} = a + 100d \rightarrow a_{101} = -24 + 100\left(\frac{1}{2}\right) = +1$$

$\textcircled{2} 121, ar, \dots$

$$a_n = 1 \rightarrow a_n = a_1q^n$$

$$1 = 121q^n \Rightarrow q = \frac{1}{11}$$

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$$a_r, a_v, a_q$$

(۴)

$$a_1 + rd, a_1 + qd, a_1 + nd$$

$$(a_1 + qd)^r = (a_1 + rd)(a_1 + nd)$$

$$a_1^r + r q d^r + 1 r a d = a_1^r + 1 n a d + 1 q d^r$$

$$r q d^r - r a d = 0 \quad r d (1 n d - a) = 0 \rightarrow r d = 0$$

$$d = 0$$

غلط چون دنباله غیر ثابت است

$$1 n d = a$$

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

$$a_r, a_v, a_n$$

(۵)

$$a_1 + d, a_1 + rd, a_1 + vd \xrightarrow{\text{دنباله هندسی با r}} rd, rd, nd$$

$$(a_1 + rd)^r = (a_1 + d)(a_1 + vd)$$

$$a_1^r + r d^r + r a d = a_1^r + 1 n d a + 1 v d^r$$

$$\Rightarrow q = \frac{nd}{rd} = r$$

$$a_{10} = a_1 q^9 = \frac{1}{r} \times r^9 = 128$$

$$rd^r - r a d = 0$$

$$rd(d - a) = 0 \rightarrow rd = 0 \rightarrow d = 0$$

غلط چون دنباله غیر ثابت است

$$d - a = 0$$

$$d = a_1$$

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$$r a_r, r a_r, a_\varepsilon$$

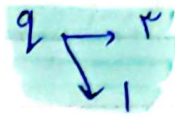
(1)

$$r a_q, r a_{q^r}, a_{q^r}$$

$$r a_{q^r} = \frac{r a_q + a_{q^r}}{r} \rightsquigarrow r a_{q^r} = r a_q + a_{q^r}$$

$$(q^r - r q + r) = 0$$

$$(q - r)(q - 1) = 0$$



$$r, \frac{r}{\varepsilon} \rightsquigarrow d = \frac{r}{\varepsilon} - r = \frac{-1}{\varepsilon}$$

(4)

$$a_r = q_1 + r d \rightsquigarrow a_\varepsilon = +r + \left(\frac{-r}{\varepsilon}\right) = \frac{\omega}{\varepsilon}$$

$$a_n = q_1 + n d \rightsquigarrow a_n = r + \left(\frac{-r}{\varepsilon}\right) = \frac{1}{\varepsilon}$$

$$a_{1r} = a_n + \omega d \rightsquigarrow a_{1r} = \frac{1}{\varepsilon} + \left(\frac{-\omega}{\varepsilon}\right) = \frac{-\varepsilon}{\varepsilon} = -1$$

$$a_{r+n}, a_{n+n}, a_{1r+n}$$

$$\frac{\omega}{\varepsilon} + n, \frac{1}{\varepsilon} + n, -1 + n$$

$$\left(\frac{1}{\varepsilon} + n\right)^p = \left(\frac{\omega}{\varepsilon} + n\right)(n-1) \rightsquigarrow \frac{1}{14} + n^p + \frac{n}{r} = n^p + \frac{1}{\varepsilon} n - \frac{\omega}{\varepsilon}$$

$$\omega = -r, -\omega, -\frac{r\omega}{\varepsilon}$$

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

$$+\frac{1}{14} + \frac{r\omega}{14} = -\frac{1}{\varepsilon} n$$

$$\frac{r\omega}{14} = -\frac{1}{\varepsilon} n$$

$$\Leftarrow n = \frac{-r\omega}{\varepsilon}$$

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$$\text{Ques: } a_1 + a_r + a_n = V^r \quad (1)$$

$$a_1 + a_1 q^r + a_1 q^n = V^r \rightarrow a_1 (1 + q^r + q^n) = V^r$$

$$q=1 \rightarrow a_1 (1+1+1) = V^r$$

$$a_1 = \frac{V^r}{3}$$

$$q=r \rightarrow a_1 (1+n+q^n) = V^r$$

$$\boxed{a_1 = 1}$$

$$\text{Ques: } t_1, t_r, t_n \rightarrow t_1, t_1 + d, t_1 + nd$$

$$a_1, a_1 + d, a_1 + nd$$

$$\boxed{t_1 = a_1}$$

$$\Downarrow$$

$$a_1 + d = a_1 q^r \rightarrow d = a_1 q^r - a_1$$

$$* d = a_1 (q^r - 1)$$

$$a_1 + nd = a_1 q^n \rightarrow nd = a_1 q^n - a_1$$

$$\boxed{nd = a_1 (q^n - 1)}$$

$$n a_1 (q^r - 1) = a_1 (q^n - 1)$$

$$* \cdot b \rightarrow d = a_1 (q^r - 1)$$

$$\rightarrow d = \frac{V^r}{3} (1 - 1) = 0$$

$$d = \frac{V^r}{3} (1 - 1) = 0$$

$$n q^r - n = q^n - 1$$

$$q^n - n q^r + n = 0$$

$$(q^r - 1)(q^n - n) = 0$$

$$q^r \rightarrow 1 \Rightarrow \boxed{q=1}$$

$$n \Rightarrow \boxed{q=r}$$

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