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$$\frac{a_1 (1+q^2)}{a_1 (1+q)} = \frac{1}{1} = 1$$

$$\frac{1+q^2}{q(1+q)} = \frac{1}{q} \rightarrow \frac{(1+q)(1-q+q^2)}{q(1+q)} = \frac{1-q+q^2}{q} = \frac{1}{q}$$

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$$\mu(1-q+q^2) = \nu q \rightarrow \mu q^2 - 1 \cdot q + \mu = 0$$

$$\Delta = 1 - 4\mu$$

$$b^2 - 4ac = \sqrt{1-4\mu}$$

$$q = \frac{1 \pm \sqrt{1-4\mu}}{2} = \frac{1 - \sqrt{1-4\mu}}{2} \quad a = 1$$

$$a_1 \xrightarrow{q=\mu} 1$$

$$a_1 \rightarrow \mu$$

$$a_1 \rightarrow q$$

$$a_1 = \sqrt{1-4\mu}$$

$$\hookrightarrow \mu$$

نیز داریم

$$a_1 + a_2 + a_3 = 1$$

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$$\hookrightarrow (a_1 \mu)^\mu = 1 \Rightarrow a_1 \mu = 1$$

$$a_1 + a_2 + a_3 = 1$$

$$a_1^\mu q^\mu = 1 \rightarrow a_1 = \frac{1}{q}$$

$$\frac{\mu}{q} (1+q+q^2) = 1$$

$$\mu(1+q+q^2) = 1 \rightarrow \mu q^2 - 1 \cdot q + \mu = 0$$

$$\Delta = 1 - 4\mu = 1 - 4\mu = 1 - 4\mu$$

$$r = \mu / r = \frac{1}{\mu} \rightarrow r = \frac{1}{\mu}$$

$$a_1 q^{n-1} = q \cdot r$$

الف) $a_{10} = \frac{1}{r} (r)^9 = \boxed{r^8}$

1n, v, d

معمولی بودی!

ب) $\frac{a_1 q^{10}}{a_1 q^{10}} = q^k \rightarrow r^k = 1q$

ج) $a_1 = a_1 q^{10} = \frac{1}{r^{10}} r^{10} = 1$

$$a_{10} = r^8 = r^{10} q$$

$$\frac{r^{10} q}{r^k} = r^{10+1}$$

$$r^{10} = r^{11}$$

$$r = \frac{1}{r} \Rightarrow r^2 = 1 \Rightarrow r = \pm 1$$

د) $a_1 q^{(n-1)} = 128$

$$\frac{1}{r} \times r^{(n-1)} = 128 \times r^{n-1}$$

$$r^{n-1} = r^{n-1}$$

$$\boxed{r=1}$$

$$a_{10} = 128 \quad a_1 = 256$$

$$\frac{a_1 q^n}{a_1 q^k} = q^{n-k} \quad q^{10} = \frac{256}{128} = 2$$

$$q = 2$$

الف) $a_1, r, a_1 r, a_1 r^2, a_1 r^3, a_1 r^4 = r + r^2$ $(a_1 r)^4 = r + r^2$

$$\Rightarrow r^4 = r$$

ب) $a_1 r^4 = r$

$$a_1 \times a_4 = a_1 \times r^3 = r$$

$$1 + 2 = 3 + 2$$

$$r^b, r^5 r, r^a \quad (r^5 r)^r = r^a \times r^b \quad r^5 r^r = r^a \times r^b$$

د) $r^c = b + c \rightarrow \frac{b + \Delta + b}{r} = \frac{b + \Delta + b}{r}$

$$a_1 r = 1 - r$$

$$\frac{a_1 q}{a_1 q} = q^k = \frac{1}{1-r}$$

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

1n, v, d

$$\frac{-\sqrt{r}}{1+\sqrt{r}} = q^2 \quad x = -\sqrt{\frac{1}{r}}$$

$$x = \pm \frac{1}{\sqrt{r}}$$

$$S_n = a_1 \left(\frac{q^n - 1}{q - 1} \right) r \left(\frac{r^n - 1}{r - 1} \right) = r^n - 1 = 59049 - 1 = \boxed{59048}$$

ضرب ۱۰ بعد $\sum_{i=1}^n (a_i \times a_i) = (1 \times 1 \times 1)^n = 1 \times 1 \times 1$ ب؟

$a_1 / a_1 q / a_1 q^2 - -$
 $(a_1 q - a_1) و (a_1 q^2 - a_1 q) , (a_1 q^3 - a_1 q^2)$
 $\underbrace{a_1 (q-1)}_{t_1} , \underbrace{a_1 q (q-1)}_{t_2} , \underbrace{a_1 q^2 (q-1)}_{t_3}$
 $\frac{t_2}{t_1} = \frac{a_1 q (q-1)}{a_1 (q-1)} = q$
 $\frac{t_3}{t_2} = \frac{a_1 q^2 (q-1)}{a_1 q (q-1)} = q$
 فاصله های مجاری به نسبت ۱ به ۱ در دنباله حسابی و ۱ به ۱ در دنباله هندسی

$S_n = \frac{n}{2} (r_n + (n-1)d)$
 مجموع مجاری (از ۱ تا ۴۰)
 $\frac{n}{2} (r_n + (n-1)d)$

$S_n = a \left[\frac{q^n - 1}{q - 1} \right]$
 $a_1, a_1 q, a_1 q^2, a_1 q^3, a_1 q^4, \dots, a_1 q^{n-1}$ (ب)

۱) $S_n = a_1 + a_1 q + a_1 q^2 + \dots + a_1 q^{n-1}$
 ۲) $S_n q = a_1 q + a_1 q^2 + \dots + a_1 q^n$
 طیفین را در ۲ ضرب کردیم

این ۲ منهای
 $S_n - S_n q = a_1 - a_1 q^n \rightarrow S_n (1 - q) = a_1 (1 - q^n)$
 $S_n = a_1 \cdot \frac{(1 - q^n)}{(1 - q)} = a_1 \cdot \frac{(q^n - 1)}{q - 1}$