

$$a_1 = \frac{1}{r} \frac{dr}{dt} = \frac{1}{24}$$

$$a_n = \frac{1}{r}, 1, r, \dots$$

$$a_n = \frac{1}{r} \times r^{n-1}$$

$$\frac{a_{iv}}{a_{ir}} = ? \quad (-)$$

$a_8 = \frac{1}{x}, n = 8$ $a_1 = \frac{1}{x}, r = 2, 204 a_1, a_8$ (ج) دایره جنسی بین $\frac{a_{17}}{a_{13}} = \frac{x^{17}}{x^{13}} = r^4 = 14$
 $r^{n+1} = \frac{b}{a} \rightarrow r^{n+1} = \frac{204}{2} \rightarrow r^{n+1} = 102 \rightarrow n+1 = 4 \rightarrow n = 3$ $r_2 \Delta, \frac{14}{2}, \frac{32}{2}, \frac{48}{2}, \frac{128}{2}, 204$
n-1

$$n = ? \leftarrow a_n = 1 \text{ K}$$

$$\frac{1}{r} \times r^{n-1} = 1 \text{ A}$$

$$r^{n-1} = r \rightarrow n = 2$$

$a_1 = 94$, $a_5 = 12$: سوال ۲ :
 $a_1 = 94$, $a_5 = 12$ → $a = \frac{12}{14} \rightarrow a = \frac{6}{7}$ } $\frac{6}{7} \times 94 = 78 \frac{2}{7}$
 $q^2 \cdot a = a \cdot q = 2$ } $a_1 \cdot a_n \cdot q = 94 \cdot 12 = 1128$

⑨ $a_1, a_2 = ?$ (-)
 $\hookrightarrow a_1, a_2 : (a_r)^r \rightarrow a_1, a_2 = 9$

سوال ۳: $a_1, a_2, a_3, a_4, a_5, a_6, a_7, a_8, a_9, a_{10}$ are in A.P. $a_1 + a_3 + a_5 + a_7 + a_9 = 10$ and $a_2 + a_4 + a_6 + a_8 + a_{10} = 30$. Find the value of a_3 .

$$a_1 + a_3 + a_5 + a_7 + a_9 = 10$$

$$a_2 + a_4 + a_6 + a_8 + a_{10} = 30$$

$$(a_1 + a_9) + (a_3 + a_7) + (a_5 + a_5) = 10$$

$$(a_2 + a_{10}) + (a_4 + a_8) + (a_6 + a_6) = 30$$

$$2a_5 = 10 \Rightarrow a_5 = 5$$

$$2a_6 = 30 \Rightarrow a_6 = 15$$

$$a_6 - a_5 = d = 15 - 5 = 10$$

$$a_3 = a_5 - 2d = 5 - 2(10) = 5 - 20 = -15$$

$$\frac{a \cdot b}{r} = \frac{a}{\frac{r}{b}} \rightarrow \frac{a}{r/a}$$

سؤال ٤: $2^b, 2^c, 2^d$ حتمی، دالة احتمالي بين $a, b = \frac{1}{5}$.

$av: ar \cdot q^t \rightarrow (1-x)q^t = x \Rightarrow q^t = \frac{x}{1-x}, \frac{x+1}{x} \quad x = ? \leftarrow a_{t+1} = x+1, av = x, ar = 1-x$: سوال
 $an: av \cdot q^t \rightarrow x \cdot q^t = x+1 \quad 1-xr \cdot x^t \rightarrow 1, rx^t \rightarrow x = 1 - \frac{1}{x^t} \rightarrow \pm \frac{\sqrt{r}}{r}$
 $x = -\frac{\sqrt{r}}{r} \rightarrow q^t = \frac{-\frac{\sqrt{r}}{r} + 1}{-\frac{\sqrt{r}}{r}} = \frac{-\sqrt{r} + r}{r} \cdot \frac{r}{-\sqrt{r}} = \frac{-\sqrt{r} + r}{-\sqrt{r}} = \frac{(-\sqrt{r} + r)(-\sqrt{r})}{r} = \frac{r - r\sqrt{r}}{r} \rightarrow q^t = 1 - \sqrt{r} \rightarrow 1 - \sqrt{r} < 0, q^t > 0 \rightarrow x = -\frac{\sqrt{r}}{r}$

$\frac{a_1 + a_8}{a_1 \cdot a_8} = \frac{r_1}{12} - \frac{a \cdot a q^7}{a q + a q^7} : \frac{r_1}{12} \rightarrow \frac{r(1+q^8)}{aq(1+q)}, \frac{v}{n} \Rightarrow \frac{(1+q)(1-q+q^2)}{q(1+q)} = \frac{v}{n} \Rightarrow 3-3q+3q^2=v$

① $q = \frac{1}{3} \rightarrow \frac{1}{3}a + \frac{1}{9}a = 12 \rightarrow a(\frac{1}{3} + \frac{1}{9}) = 12 \rightarrow a = \frac{12 \times 9}{\frac{4}{3}} = a = 27 \rightarrow (27) \quad 9, 3, 1$

② $q = 3 \rightarrow a(12) = 12 \rightarrow a = 1 \rightarrow 1, 3, 9, (27)$

مسئله ۲:

$$\begin{aligned} & \cancel{a} + \cancel{a} + \overset{r}{\underset{q}{a}} = 1r \\ & \cancel{a} + \cancel{a} + 1 \rightarrow a + a = 1 \rightarrow a = 1 \end{aligned} \quad \begin{aligned} & a \cdot \overset{r}{\underset{q}{a}} = r \cdot \cancel{a} \rightarrow a \cdot q = r \rightarrow \boxed{a = r} \quad \boxed{a = q} \\ & \rightarrow a + a = 1 \rightarrow a = 1 \end{aligned}$$

$a_1 \cdot a_r \cdot a_r = r v$, $a_1 + a_r + a_r = 1 r$
 $a_1 \cdot a_r = a_r^2 \rightarrow a_r^2 = r v \rightarrow a_r = r \rightarrow a_1 \cdot a_r = r$

$$S_n = a_1 \left(\frac{q^n - 1}{q - 1} \right) \rightarrow r \left(\frac{r^n - 1}{r - 1} \right) = \boxed{r^n - 1} \quad (\text{اف})$$

مسئله ۱: $\Delta 90^\circ 48' 51'' \dots$ (الف) $a_n = 2, 4, 12, \dots$ سوال ۸:

$$P_n = \sqrt[n]{(a_1 \cdot a_n)^n} \Rightarrow P_n = \sqrt[n]{(r \times r \times r^n)^{1+\Delta}} = (r^r \times r^n)^{\frac{1+\Delta}{n}} = \boxed{r^{\frac{1+\Delta}{n}} \times r^{\Delta}}$$

$P_1 = r$
 $a_n = r \times (r)^{n-1}$
 $a_1 = r \times r^0$

سوال ۹

$$a, aq, aq^2, aq^3, aq^4 \rightarrow aq - a, aq^2 - aq, aq^3 - aq^2, aq^4 - aq^3$$

$$\underbrace{a(q-1)}_{\times q}, \underbrace{a(q)(q-1)}_{\times q}, \underbrace{a(q^2)(q-1)}_{\times q}, \underbrace{a(q^3)(q-1)}_{\times q}$$

$$\frac{aq(q-1)}{a(q-1)} = q \text{ - ثابت}$$

سوال ۱۰: (الف) مجموع جملات در تراز حسابی

$$a, a+d, a+2d, \dots, a+(n-1)d$$

$$S_n = a + (a+d) + (a+2d) + \dots + (a+(n-1)d)$$

$$S_n = (a+(n-1)d) + (a+(n-2)d) + \dots + a \xrightarrow{+} rS_n = (ra+(n-1)d) + (ra+(n-2)d) + \dots + (ra+(n-1)d)$$

$$rS_n = n(ra+(n-1)d) \rightarrow \boxed{\frac{n}{r}(ra+(n-1)d) = S_n}$$

(ب) مجموع جملات در تراز هندسی:

$$a, aq, aq^2, \dots, aq^{n-1}$$

$$S_n = a + aq + aq^2 + \dots + aq^{n-1}$$

$$aqS_n = aq + aq^2 + aq^3 + \dots + aq^n$$

$$\xrightarrow{-} qS_n - S_n = aq^n - a$$

$$\rightarrow S_n(q-1) = a(q^n - 1)$$

$$\boxed{S_n = a \left(\frac{q^n - 1}{q - 1} \right)}$$