

نام و نام خانوادگی: شماره: کلاس: درس:

$$q + a_r + a_r = \frac{a_r}{q} + a_r + a_r q = 11 \rightarrow a_r \left(\frac{q^2 + q + 1}{q} \right) = 11 \rightarrow \frac{q^2 + q + 1}{q} = \frac{11}{4} \rightarrow 4q^2 + 4q + 4 = 11q$$

$$a_1 a_r a_r = \frac{a_r}{q} \times a_r \times a_r q = a_r^3 = 94 \rightarrow a_r = 4$$

$$\rightarrow 4q^2 - 11q + 4 = 0$$

$$q = \frac{1}{4}$$

$$\rightarrow q^2 - 11q + 4 = 0 \rightarrow (q-1)(q-14) = 0$$

$$\rightarrow \begin{cases} q = 14 \rightarrow 4 \notin \mathbb{N} \\ q = 1 \rightarrow q = \frac{1}{4} \rightarrow \frac{1}{4} \notin \mathbb{N} \end{cases}$$

$$(a_1^2 + 4)(a_1^2 - 2) = 4a_1^2 \rightarrow a_1^4 + 2a_1^2 - 1 = 4a_1^2 \rightarrow a_1^4 - 2a_1^2 - 1 = 0 \rightarrow (a_1^2 - 2a_1 + 1) - 9 = 0$$

$$(a_1^2 - 1)^2 - 3^2 = 0$$

$$(a_1^2 - 4)(a_1^2 + 2) = 0$$

$$\rightarrow a_1^2 = 4 \rightarrow a_1 = \pm 2$$

$$a_1 = 2 \rightarrow 1, 4, 2, \dots \leftarrow a_1 = 2$$

$$a_1 = -2 \rightarrow 1, -4, 2, \dots \leftarrow a_1 = -2$$

$$\rightarrow S_n = a_1 \left(\frac{1 - q^n}{1 - q} \right) \Rightarrow S_v = 1 \left(\frac{1 - \left(\frac{1}{4} \right)^v}{1 - \frac{1}{4}} \right) = \frac{17V}{1}$$

$$1 + q + q^2 + q^3 + q^4 = \frac{11}{11} \xrightarrow{\text{مجموع اول 5 جمله}} a + aq + aq^2 + aq^3 + aq^4 = S_5 = \frac{11}{11} \times \frac{1 - q^5}{1 - q} = \frac{11}{11} \times \frac{1 - \left(\frac{1}{4} \right)^5}{1 - \frac{1}{4}} = \frac{11}{11} \times \frac{1 - \frac{1}{1024}}{\frac{3}{4}} = \frac{11}{11} \times \frac{1023}{1024} \times \frac{4}{3} = \frac{11}{11} \times \frac{1023}{256} = \frac{11 \times 1023}{256}$$

$$1, a_r, a_r, \boxed{a_r}, a_r, a_r, 94 \rightarrow A = \frac{94+1}{4} = 23.5$$

$$\Rightarrow A+B \begin{cases} 23.5 + 1 = 24.5 \\ 23.5 - 1 = 22.5 \end{cases}$$

$$1, b_r, b_r, \boxed{b_r}, b_r, b_r, 94 \rightarrow B^2 = 94 \times 1 \rightarrow B = \pm \sqrt{94} = \pm 1$$

(چون $\frac{b_r}{b_1} = q^3$ عبارت از توان یکسان است)

$$a'_n = \frac{-94}{4}, \frac{-94}{4}, \dots \rightarrow a'_n = a'_1 + (n-1)d \rightarrow a'_n = -23.5 + \frac{1}{4}(n-1) \rightarrow a'_{101} = -23.5 + (100) \times \frac{1}{4} = 1$$

$$+ \frac{1}{4} = d$$

$$a_n = 121, a_r, \dots \Rightarrow a_r = 121q \rightarrow a_n = a_1 q^{n-1} \rightarrow a_1 = 121 \times q = 1 \rightarrow q^v = \frac{1}{121} = \left(\frac{1}{11} \right)^2$$

$$\Rightarrow q = \frac{1}{11}$$

$$\begin{aligned} a_w &= a + rd \\ a_v &= a + rd \\ a_d &= a + 1d \end{aligned} \rightarrow \begin{cases} a_w q^s + a_v + rd = a_v \xrightarrow{\times w} r a_w q^s = r a_w + 1rd \\ a_w q^r = a_d = a + rd \xrightarrow{\times v} r a_w q^r = r a_w + 1rd \end{cases}$$

$$\xrightarrow{\text{sub}} \beta \rightarrow q = 1 \rightarrow a_w = a_v = a_d \Rightarrow rd + a_w = a_w \rightarrow \underline{d = 0}$$

$$\xrightarrow{\text{sub}} \alpha \rightarrow \frac{1}{r} a_w = a_v \rightarrow \frac{a}{r} + d = a + rd \rightarrow \frac{a}{r} - rd \rightarrow d = -1 \cdot d \rightarrow d = \underline{\frac{-a}{10}}$$

$$\begin{aligned} a_r &= a + d \\ a_f &= a + r d \\ a_n &= a + v d \end{aligned} \rightarrow \begin{cases} a_r q = a_f = a_r + r d \xrightarrow{\times r} r a_r q = r a_r + r^2 d \\ a_r q^r, a_n = a_r + r d \end{cases} \xrightarrow{-} \frac{r a_r q - a_r q^r}{r(q - q^r)} = r \cancel{a_r} \rightarrow q^r - r q + r = 0$$

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

$$\rightarrow \begin{cases} q=1 & \text{غیر صحیح} \\ q=r & \text{صحیح} \end{cases}$$

نتیجہ

$3a_r, 2a_r, a_r \rightarrow 3a_r, 2a_r q, a_r q^2 \xrightarrow{\text{بسط مساوی}} \frac{3a_r + a_r q^2}{r} = 2a_r q \rightarrow q^2 (3 + q^2) = 4q$
 $\rightarrow q^2 - 4q + 3 = 0 \rightarrow (q-1)(q-3) = 0 \rightarrow \begin{cases} q=3 \\ q=1 \end{cases} \rightarrow \underline{q=3}$
 زیرا با این فرضی "نریست" است

[illegible]

$a, aq^r, aq^s \rightarrow aq^r - a = d, a(q^r - 1)$
 $\downarrow$
 $a, a+d, a+qd \xrightarrow{a=a} aq^r = a + a(q^r - 1)$
 $aq^s = a + qd(q^r - 1) \xrightarrow{\text{نقل جمله ها به سمت راست}} q^s = 1 + qd(q^r - 1)$
 $\rightarrow q^s - qd(q^r - 1) = 1 \rightarrow (q^r - 1)(q^s - d) = 0 \rightarrow \begin{cases} q^r = 1 \text{ (A)} \\ q^s = d \text{ (B)} \end{cases}$
 $\xrightarrow{\text{حالت A}} a = aq^r \rightarrow aq^r - a = \underline{d = 0}$
 $\xrightarrow{\text{حالت B}} a + aq^r + aq^s = a(1 + q^r + q^s) = vr \rightarrow a = 1 \rightarrow 1, 1, \dots, 1$
 $\rightarrow aq^r - a = 1 - 1 = \underline{vd}$