

۱۱۵, ۱۷۵

دوم دستر

تکلیف سری ۱۵

ناتین زهرا شیری

$$\frac{4}{9} \cdot 2 \cdot 49 = 21$$

$$2 + 49 + 49^2 = 119$$

$$49^2 - 119 + 2 = 0 \rightarrow 49^2 - 119 + 2 = 0$$

$$(49-1)(49-2) \rightarrow \frac{1}{2}, 49$$

q = ? = $\frac{1}{2}$

$$a_1 \cdot a_2 \cdot a_3 = 48$$

$$a^2 q^2 = 48$$

$$a q = 4 \rightarrow a = \frac{4}{q}$$

$$a_1 + a_2 + a_3 = 21$$

سوال ۱: ۱۱۵

$$(x^2)^2 = (x^2-1)(x^2+1)$$

$$x^4 = x^2 + x^2 - 1$$

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

$$x^2 = 1 \rightarrow x = \pm 1$$

(q > 0) $S_n = ?$, x^2-1, x^2+1

(199) 0

$$x=2 \rightarrow 2, 4, 8$$

$$x=2 \rightarrow 2, 4, 8$$

$$q=2$$

$$S_n = a \left(\frac{q^n - 1}{q - 1} \right) \rightarrow 2 \left(\frac{2^n - 1}{2 - 1} \right) = 152$$

سوال ۲: ۱۱۵

$$a_1 \cdot a_2 \cdot a_3 \cdot a_4 \cdot a_5 = 121$$

$$x \cdot x^2 \cdot (1 \cdot q \cdot q^2 \cdot q^3 \cdot q^4) = 121$$

$$\frac{121}{x^5} = 121$$

$S_n = ?$, $a_1 = 252$, $1 + q + q^2 + q^3 + q^4 = \frac{121}{x^5}$

سوال ۳: ۱۱۵

48, 24, 12, 6, 3, 1

$d = \frac{b-a}{n+1} \rightarrow \frac{-48}{4} = -12$

$r = \frac{b}{a} = \frac{1}{48} \rightarrow r = \frac{1}{48}$

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سوال ۴: $A+B = ?$

$$32, 16, 8, 4, 2, 1$$

$q = -2$, $B = 1$, $A+B = 2 \leq 10$

$q = ?$

$a_1 \cdot 1 = b_n$

$a_{1000} = a q^9$

$-26 + 26 = 128 q^9$

$q^9 = \frac{1}{128} \rightarrow q = \frac{1}{2}$

$a_n = 256 - \frac{95}{2}$

$d = \frac{95}{2} - 256 = -\frac{417}{2}$

سوال ۵: ۱۱۵

$$(a+rd)^2 = (a+rd)(a+rd)$$

$$a^2 + 2ard + r^2 d^2 = a^2 + a r d + a r d + r^2 d^2$$

$$r d^2 = -r a d$$

$$-1 \cdot d = a$$

① $d=0 \rightarrow a = a_1 = a_2 = a_3 = \dots$

② $d \neq 0 \rightarrow \frac{d}{a} = -\frac{1}{n}$

$d = 0, -\frac{1}{11}$

a_2, a_3, a_4

$a_2 d, a_3 d, a_4 d$

$-ad, -2ad, -3ad$

$$(a+rd)^2 = (a+rd)(a+rd)$$

$$a^2 + 2ard + r^2 d^2 = a^2 + a r d + a r d + r^2 d^2$$

$$r d^2 = -r a d$$

$$d = -a$$

① $d = 0$

② $d \neq 0 \rightarrow a = d \rightarrow 2d, 3d, 4d$

$q = 2$

$a_1 = ?$, $a_1 = \frac{1}{2}$

$a q^9 = \frac{1}{2^9} \rightarrow \frac{1}{128}$

a_2, a_3, a_4

$a_2 d, a_3 d, a_4 d$

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$$\div ar^2 \quad 4ar^2 = ar^2 + ar^2$$

$$\varepsilon r = r^2 + 1 \rightarrow r^2 - \varepsilon r + 1 = 0 \quad \Delta = 14 - \varepsilon = 12 \rightarrow$$

$$r = \frac{\varepsilon \pm \sqrt{\Delta}}{2} = \frac{\varepsilon \pm \sqrt{12}}{2} = \frac{\varepsilon \pm 2\sqrt{3}}{2} = \frac{\varepsilon \pm \sqrt{3}}{1}$$

سوال ۸: a_1, a_2, a_3 حسابی
 $a_1, 2ar^2, ar^3$ حسابی؟

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سوال ۹: $q = ?$ حسابی

افزون شدت به a_1, a_2, a_3 حسابی
 $\frac{1}{\varepsilon}, \frac{1}{\varepsilon}, \frac{1}{\varepsilon}$ و $\frac{1}{\varepsilon}, \frac{1}{\varepsilon}, \frac{1}{\varepsilon}$

$$a_n = \frac{1}{\varepsilon} - \frac{1}{\varepsilon} n$$

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$$\frac{1}{\varepsilon} + a, \frac{1}{\varepsilon} + a, 1 + a$$

$$\left(\frac{1}{\varepsilon} + a\right)^2 = \left(\frac{1}{\varepsilon} + a\right)(1 + a) \Rightarrow \frac{1}{\varepsilon^2} + \frac{2a}{\varepsilon} + a^2 = \frac{1}{\varepsilon} + a + \frac{a}{\varepsilon} + a^2$$

$$\frac{1}{\varepsilon^2} - \frac{1}{\varepsilon} = \frac{1}{\varepsilon} a - \frac{2a}{\varepsilon}$$

$$\frac{1 - \varepsilon}{\varepsilon^2} = -\frac{1}{\varepsilon} a \Rightarrow -\frac{1 - \varepsilon}{\varepsilon} = a$$

$$\begin{array}{r} -\varepsilon, -5, -4, 25 \\ \hline q = \frac{\Delta}{\varepsilon} \\ \hline 11, 25 \end{array} \Rightarrow q = 1, 25$$

سوال ۱۰: $d = ?$ حسابی

a_1, a_2, a_3 حسابی
 a and $a, 9d$

$$a + d = aq^3$$

$$a + 9d = aq^4$$

$$-9a - 9d = -9aq^3$$

$$a + 9d = aq^4$$

$$-8a = -9aq^3 + aq^4$$

$$-8a = a(-9q^3 + q^4)$$

$$9q^3 + 8 - q^4 = 0$$

$$q = 1 \rightarrow 1 + 8 - 9 = 0 \checkmark \rightarrow d = 0$$

حسابی و دنباله ثابت

$$a(1 + 9q^3 + q^4) = 10a$$

$$1 + 9q^3 + q^4 = 10$$

$$q^4 + 9q^3 - 9 = 0$$

$$(q^4 + 9q^3 - 9) = 0$$

$$q^4 + 9q^3 - 9 = 0$$

$$q^4 + 9q^3 - 9 = 0$$

$$q^4 + 9q^3 - 9 = 0$$

$$q^4 + 9q^3 - 9 = 0$$

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