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①

آخرین عدد گروه $n = n^2$

اولین عدد گروه ۹ = آخرین ۸ $+1 = 65$

آخرین ۹ $= 9^2 = 81$

$$\frac{81+65}{2} = \frac{146}{2} = 73$$

②

$\{1, 2, 3\}, \{4, 5, 6, 7, 8, 9, 10, 11, 12\}, \{13, \ldots, 39\}$

$\{40, \ldots, 120\}, \{121, \ldots, 363\}$

$$\frac{121+363}{2} = \frac{484}{2} = 242$$

③

$a_2 + a_5 + a_8 + a_{11} + \ldots + a_{29} = 5 \times \left(\frac{a_2 + a_{29}}{2}\right) =$

$$\frac{29-2}{3} + 1 = 10$$

$\left[\frac{2}{3}\right] + 4$

$1 + 4 = 5$

$n = 3k+1$, $k = 0 \Rightarrow a_1 = 4$

$29 = 3k+2$

$27 = 3k$

$9 = k$

$\left[\frac{29}{11}\right] + 4$

$2 + 4 = 6$

۵

جمله a ، جمله t

$t_{10} = 0$

$t_1 + 9d' = 0$

$a_4 = t_2$

$a_8 = t_7$

$$a_1 + 3d = t_1 + d'$$
$$a_1 + 7d = t_1 + 6d'$$

$4d = 5d'$

$d = \frac{5d'}{4}$

$t_{15} = t_{10} + 5d'$

$t_{15} = \frac{5d'}{\frac{5d'}{4}} = 4$

$\frac{5d'}{\frac{5d'}{4}}$

(۶)

$6a_2^2 = 5a_3 a + 3a_2 a$

$6(a^2 + d^2 + 2ad) = 5(a+2d)a + 3(a+d)a =$

$5a^2 + 10ad + 3a^2 + 3ad \Rightarrow$

~~$6a^2 + 6d^2 + 12ad$~~

$2a^2 - 6d^2 + ad = 0 \div 2$

$a^2 + \frac{ad}{2} - 3d^2 = 0 \Rightarrow$

$(a+2d)(a - \frac{3}{2}d) = 0$

$\frac{a_4}{d} = \frac{a+3d}{d} = \frac{-2d+3d}{d} \Rightarrow$

۲ جواب

$a = -2d$

یا

$a = \frac{3}{2}d$

$\frac{a_4}{d} = \frac{a+3d}{d} = \ldots$ ۴/۵ یا ۱

(7)

$a + c = 2b$

$bc = a^2 = 4b^2 + c^2 - 4bc = bc$

$\Rightarrow 4b^2 + c^2 - 5bc = 0$

$(c - 4b)(c - b) = 0$

$c = 4b \Rightarrow a = -2b$

✗ $c = b$

$\dfrac{\frac{a}{2}}{\frac{c}{4}} = \dfrac{-b}{b} = (-1)$

$\times 2 = (-2)$

(8)

3) $b + c = 4a$

$ac = b^2$

↳ $a(4a - 2b) = b^2 \Rightarrow 4a^2 - b^2 - 2ab = 0$

$(2a - 2b)(2a + \frac{1}{2}b) = 0$

$\Rightarrow a = b$

✗

$a = \frac{1}{2}b$

$\dfrac{q_9}{q_4} = q^3 = \dfrac{1}{64}$

$1 \Leftarrow \begin{cases} q = \dfrac{a}{b} = 1 \\ \checkmark \; \dfrac{\frac{1}{4}b}{b} = \left(\dfrac{1}{4}\right) \end{cases}$

۹

$$\frac{aq^{\omega}}{\frac{a^{\omega}}{aq^{\omega}}} = \frac{aq}{a^{\omega}} \quad -\omega\omega$$

$$\frac{q^{\omega}}{a^{\omega}} + \frac{q}{a} = \omega \Rightarrow q + qq - \omega a^{\omega} = 0.$$

$$(q + \omega a)(q - a) = 0$$

$$\frac{a^{\omega}}{a^{\omega}} = \frac{q^{\omega}}{q^{\omega}} = -1$$

$$q = -\omega a$$

$$q = a$$

$$\frac{a^{\omega}}{a^{\omega}} = \frac{-1}{\omega}$$

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$(a_3)^2 = a_4$

$a^2 q^4 = a q^3$

$aq = 1$

$aq^4 = 27$ $\Rightarrow 27 = q^3 \Rightarrow q = 3$

$a_1 = \frac{a_8}{q^4} = \frac{27}{81}$

$\frac{1}{3}$

$\frac{1}{2} - a_1 = \frac{1}{2} - \frac{1}{3} = \frac{1}{6}$

Soroush

$a = \frac{-1}{7} \times 14 = \frac{-1}{5}$ (۲)

$a_n = \frac{-1}{5} n^2 + bn + c$

$a_{10} = \frac{-1}{5} \times 10^2 + 9 \cdot -1$

$a_{-1} \quad \frac{-1}{5} + 4 = -1$

$\frac{14}{\frac{14}{5}} = 5$

$a_3 = -5 + 5b + c = 14 \Rightarrow 5b + c = 19$

$a_7 = \frac{-49}{5} + 7b + c = 17/2 \Rightarrow 7b + c = 17$

$2b = 8$

$b = 4$

$c = -1$

Soroush