

۱- $1 = 98 \Rightarrow$ اعداد $95, 94, \dots, 11 \rightarrow b = \frac{a+c}{2} = \frac{95+11}{2} = \frac{106}{2} = 53$ (۲) ✓

۲- $(1, 2, 3), (2, 5, 8, \dots, 12), (13, 14, 15, \dots, 34), (2, 5, 8, \dots, 12), (121, 122, \dots, 323)$
 میانگین $\rightarrow$ $\frac{121+323}{2} = 222$ (۲) ✓

۳- $n = 3k \rightarrow 0, 3, 6, 9, \dots \rightarrow a_0 = 1, a_3 = 2, a_6 = 3, a_9 = 4, \dots$
 $n = 3k+1 \rightarrow 1, 4, 7, 10, \dots \rightarrow a_1 = 2, a_4 = 3, a_7 = 4, \dots$
 $n = 3k+2 \rightarrow 2, 5, 8, 11, \dots \rightarrow a_2 = 1+a, a_5 = 1+a, a_8 = 2+a, \dots$
 $\Rightarrow a = -2$ (۲) ✓

۴- n^2 ضریب $a = \frac{1}{V_0} \times (-14) = -\frac{1}{5} \rightarrow t_n = \frac{n^2}{5} + bn + c$
 $\begin{cases} t_5 = \frac{25}{5} + 5b + c = 14 \rightarrow 5b + c = 19 \\ t_{15} = \frac{225}{5} + 15b + c = 14 \rightarrow 15b + c = 29 \end{cases}$
 $2b = 10 \rightarrow b = 5, c = -11$ (۲) ✓

۵- $t_n - t_k = a_n - a_k \rightarrow 4d = 5d' - \frac{d'}{d} = \frac{4}{5}, a_1 = 2 \rightarrow a_1 + 4d' = 2 \rightarrow a_1 = -4d'$
 $\rightarrow \frac{a_{15}}{d} = \frac{a_1 + 14d'}{d} = \frac{-4d' + 14d'}{d} = \frac{10d'}{d} = 5 \times \frac{4}{5} = 4$ (۲) ✓

۶- $4a_7 = 5a_6 + a + 3a_7 \Rightarrow 4(a+d)^7 = 5(a+d)^6 + a + 3(a+d)$
 $\rightarrow 4a^7 + 28a^6d + 84a^5d^2 + 140a^4d^3 + 140a^3d^4 + 84a^2d^5 + 28ad^6 + 4d^7 = 5a^6 + 15a^5d + 15a^4d^2 + 10a^3d^3 + 10a^2d^4 + 5ad^5 + d^6 + a + 3a + 3d$
 $\rightarrow 4a^7 + 28a^6d - 5a^6 - 15a^5d - 15a^4d^2 - 10a^3d^3 - 10a^2d^4 - 5ad^5 - d^6 = a + 3d$
 $\rightarrow \frac{a_7}{d} = \frac{a + 3d}{d} \rightarrow ① \frac{4}{5}d + 3, \frac{4}{5} \rightarrow 4, 5$ (۲) ✓

② $\frac{-2d + 3d}{d} = 1$

$$a, b, c \rightarrow b-d, b, b+d \rightarrow a, b-d, c, b+d \rightarrow b, \frac{a}{r}, \frac{c}{\varepsilon} = b, \frac{b-d}{r}, \frac{b+d}{r}$$

$$\Rightarrow \left(\frac{b-d}{r}\right)^r = b \times \left(\frac{b+d}{\varepsilon}\right) \rightarrow \frac{1}{r}(b^r + d^r - 2bd) \cdot \frac{1}{r}(b^r + bd) \xrightarrow{b \neq 0} d^r - 2bd = bd \rightarrow d^r - 3db = 0$$

$$\Rightarrow d(d-3b) = 0 \xrightarrow{d \neq 0} d = 3b \rightarrow b, \frac{1}{r}(b-3b), \frac{1}{r}(b+3b) \Rightarrow b, -b, b$$

(۲) ✓

مدرست دبانه هندسی ۱۱۰ ← دو برابرش = (-۲)

$$r_a, \frac{r_b+c}{r} \xrightarrow{x^r} r_a, r_b+c$$

$$\hookrightarrow r_a = r ar + ar^r \xrightarrow{\div a} r, r_r + r^r \rightarrow r^r + r_r - r = 0 \rightarrow (r+1)(r-1)$$

چنان مستقیم $r=1$

$$r = (-1) \checkmark$$

$$\Rightarrow \frac{a_9}{a_4} = \frac{ar^9}{ar^4} = r^5 \rightarrow (-1)^5 = (-1)$$

(۲) ✓

$$\rightarrow \frac{ar^6}{ar^3} + \frac{ar}{ar} = 2 \rightarrow \frac{r^3}{a^2} + \frac{r}{a} = 2 \xrightarrow{x=\frac{r}{a}} x^2 + x - 2 = 0 \rightarrow (x+2)(x-1) = 0$$

(-۲) = ۴ $r=1$

$$\Rightarrow \frac{a^r}{a_r} = \frac{a^r}{ar} = \frac{a}{r} = \frac{1}{x} \rightarrow \left(\frac{1}{x}\right)$$

(۲) ✓

$$a_p, \sqrt{a_\varepsilon} \rightarrow a_2^r, \sqrt{a_2^r} \xrightarrow{\text{مربع}} a_2^r, a_2^r \rightarrow a_2 = 1$$

$$a_\Delta = 2V = a_2^r = 1 \times a_2^r = 2V \rightarrow a_2^r = 2V \rightarrow a_2 = 3$$

$$\Rightarrow a, \frac{a_\Delta}{a_2^r} = \frac{2V}{r^r} = \frac{1}{r} \rightarrow \frac{1}{r} = a, \frac{1}{r} = \frac{1}{r} \rightarrow \left(\frac{1}{r}\right)$$

(۲) ✓