

$$\{1\} \quad \{2, 3, 4\} \quad \{5, 6, 7, 8, 9\}, \dots, \{(n-1)^2 + 1, \dots, n^2\}$$

(۱) (۲) (۳)

$$r = \frac{95 + 11}{2} = 73 \leftarrow \{4, 5, \dots, 11\} \leftarrow n=9$$

$$\{1, 2, 3\}, \{4, 5, 6, 7, 8, 9, 10, 11, 12\}, \{13, \dots, 24\}, \{25, \dots, 36\}, \{37, \dots, 48\}$$

(۱) (۲) (۳) (۴) (۵)

$$\frac{121 + 362}{2} = 242 \leftarrow \text{میانگین دو اعداد صحیح بین دو عدد صحیح}$$

$$a_8 = 14, a_{11} = 17, 2$$

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

$$\begin{cases} 14 = a + 8b + c \Rightarrow 9 = 8b + c \\ 17, 2 = a + 11b + c \Rightarrow 14 = 11b + c \end{cases} \Rightarrow b = -\frac{1}{3}, c = 13$$

$$\Rightarrow \frac{a_{10}}{a_1} = \frac{\frac{10^2}{9} - (\frac{1}{3} \times 10) + 13}{\frac{1^2}{9} - \frac{1}{3} + 13} = \frac{440}{122} = \frac{11}{3}$$

$$\begin{cases} a_8 = b_8 \Rightarrow a + 8d_1 = b + 8d_2 \\ a_{11} = b_{11} \Rightarrow a + 11d_1 = b + 11d_2 \end{cases} \Rightarrow 1 \cdot d_1 = 3d_2 \Rightarrow d_1 = 3d_2$$

$$b_1 = 0 \Rightarrow b = -9d_1$$

$$b_{10} = b + 10d_1 \Rightarrow b_{10} = d_1$$

$$\frac{b_{10}}{d_1} = \frac{d_1}{d_1} = 1$$

$q(a+d)^r = da^r + 1 \cdot ad + ra^r + rad \Rightarrow qd^r = ra^r + ad$ $\frac{a^r}{d} = \frac{a+rd}{d} = \frac{a}{d} + r \Rightarrow \frac{a}{d} + r = t \Rightarrow r t^r + t = q \Rightarrow r t^r + t - q = 0$ $t = \frac{-1 \pm \sqrt{19}}{r} \begin{cases} \rightarrow t = \frac{r}{2} \\ \rightarrow t = -r \end{cases}$	8
$b-d, b, b+d \quad b, \frac{b-d}{r}, \frac{b+d}{r} \quad \frac{b^r+b^r d}{r} = \frac{b^r r d b + d^r}{r} \Rightarrow d^r - r b d = 0$ $\Rightarrow d(d - r b) = 0 \Rightarrow d - r b = 0 \Rightarrow d = r b$ $b, \frac{b-rb}{r}, \frac{b+rb}{r}$ $b, -b, b \Rightarrow q = -1, r q = -r$	9
$a, aq, aq^r \quad raq, ra, aq^r \Rightarrow aq^r + raq - r = 0$ $raq + aq^r = r \Rightarrow r q + q^r = r$ $q = \frac{-r \pm \sqrt{r^2}}{r} \begin{cases} \rightarrow q = -1 \text{ OK} \\ \rightarrow q = 1 \text{ X} \end{cases} \Rightarrow \frac{aq^r}{aq^0} = q^r = (-1)^r = -q$	A
$\frac{aq^0}{ar^r} + \frac{aq}{ar} = r \Rightarrow \frac{q^r}{ar} + \frac{q}{a} = r \quad \frac{a^r}{aq} = \frac{a}{q} \quad \frac{q^r}{a^r} + \frac{q}{a} - r = 0$ $\left(\frac{q}{a}\right)^r + \frac{q}{a} - r = 0 \Rightarrow \frac{q}{a} = \frac{-1 \pm \sqrt{19}}{r} \begin{cases} \rightarrow \frac{q}{a} = 1 \\ \rightarrow \frac{q}{a} = -r \end{cases} \Rightarrow \frac{a}{q} = \begin{cases} \rightarrow 1 \\ \rightarrow -\frac{1}{r} \end{cases}$	9
$(aq^r)^r = aq^r \times aq^r \Rightarrow a^r q^r = aq^r \times aq^r \Rightarrow aq^r = q^r \Rightarrow q^r = r \vee \Rightarrow q = \sqrt[r]{r}$ $\Rightarrow aq^r = r \vee \Rightarrow \sqrt[r]{r} q = r \vee \Rightarrow a = \frac{1}{\sqrt[r]{r}}$ $\frac{r \vee}{0 \vee} - \frac{r}{0 \vee} = \frac{r \vee}{0 \vee}$	1.