

1A

$$a_n = (1, d, 1r, \dots)$$

$$\Rightarrow a_n = \frac{n}{4} n^2 b_n \Rightarrow b_n = \frac{1}{4} \Rightarrow a_n = \frac{n}{4} n^2 = \frac{1}{4} n$$

$$\rightarrow a_1 = \frac{r}{r} \times 100 = \frac{1}{r} \times 100 = 100 - 25 = 75 \quad \checkmark \text{ (5)}$$

$a_n = 0, 1, 2, 3, \dots$ $\Rightarrow a_n = \frac{n(n-1)}{2}$ -2

$$\Rightarrow a_n = \frac{n(n-1)}{r}, \text{ and}$$

5) $n(n-1) = 11 \rightarrow n^2 - n - 11 = 0 \rightarrow (n+1)(n-11) = 0$

$\rightarrow n = \begin{cases} -1 \cdot \cancel{2} \\ 11 \end{cases} \rightarrow \boxed{n = 11}$ ✓

$a_n = 2, 13, 21, \dots \rightarrow S_n = \frac{n}{2} (2a + (n-1)d) = \frac{11 \times 90}{2} = 495$

$$a_{11} = \frac{1}{r} (r(a) + (11-1)f) = \frac{11 \times 20}{r} = \boxed{220}$$

$$b_{11} = f \omega \quad a_{11} + b_{11} = 13$$

۴- هر چند n را بزرگ کنیم مخرج بزرگتر می شود پس قدر مطلق کسر کمتر می شود. پس بیشترین و کمترین مقادیر کسر و دنباله عبارتند از:

$$\left. \begin{array}{l} \text{لکڑی مقدار} \rightarrow n \leq 1 \rightarrow a_n = \frac{-1}{1} \cdot -1 \\ \text{بیشتر مقدار} \rightarrow n \leq 2 \rightarrow a_n = \frac{1}{2} \end{array} \right\} a_1 - a_1 = \frac{1}{2} - (-\frac{1}{1}) = \left[\frac{3}{2} \right] \checkmark \textcircled{2}$$

$$h_r = (-r)^r - V(r) \quad r = 1, 2, \dots, N$$

$$a_{n+1} - f(a_n) = a_{n+1} - (a_n + 1) = -1 \Rightarrow -1 = a_n \Rightarrow \boxed{n \leq 1} \Rightarrow \boxed{1 \leq 1}$$

$$a_1 - a_1 + a_1 + d - a_1 + d + \dots + d \Rightarrow d \neq$$

$$a_4 - a_1 + a_1 + d - a_1 + d + \dots + d \Rightarrow d \neq \boxed{20} \checkmark$$

$$a_1 - a_1 + d + \dots + d \Rightarrow d \neq \Rightarrow a_1 \neq 1, a_2 \neq 11$$

$$b_n = \underbrace{1, 1, 1, \dots}_{+n} \Rightarrow \boxed{b_n = 1, n = 1} \checkmark$$

$$a_{\text{odd}} = 1, 4, 10, 14, \dots \Rightarrow a_{\text{odd}} \neq n - 2$$

$$a_{\text{even}} = 2, 7, 9, 11, \dots \Rightarrow a_{\text{even}} \neq 2n + 3$$

$$\Rightarrow \frac{n-2}{2n+3} < \frac{1}{2} \Rightarrow 1n-2 < 4n+9 \Rightarrow 2n < 11 \Rightarrow n < 4, 1$$

$$\Rightarrow \boxed{n = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20} \checkmark$$

$$a_n = 4, 9, 9, 4, 0 \Rightarrow 2A \neq 3 \Rightarrow A = \frac{-1}{2}$$

$$\Rightarrow a_n = \frac{-1}{2}n^2 + Bn \Rightarrow B \neq 1, 1$$

$$\Rightarrow 2A + dB = 2\left(\frac{-1}{2}\right) + d(1, 1) \neq 3 \checkmark$$

$$a_n = a_1, 1, a_2, 1 \Rightarrow d \neq 1 - 1 \Rightarrow d = 1$$

$$\Rightarrow a_n = 1n + 1$$

$$b_n = -4, -1, 0, \dots \Rightarrow b_n = an^2 + bn + c \Rightarrow a = 1, c = -4$$

$$\Rightarrow b_n = n^2 + bn - 4 \Rightarrow b = -1$$

$$\Rightarrow b_n = n^2 - n - 4$$

$$b_n = a_n \Rightarrow n^2 - n - 4 = 1n + 1 \Rightarrow n^2 - 4n - 5 = 0 \Rightarrow (n+1)(n-5) = 0$$

$$\Rightarrow n = \begin{cases} -1 \\ 5 \end{cases} \Rightarrow \boxed{n = 5} \checkmark$$