

$$1, 5, 12, 22, \dots$$

$\begin{array}{ccc} \xrightarrow{+4} & \xrightarrow{+7} & \xrightarrow{+10} \\ \xrightarrow{+3} & \xrightarrow{+3} & \end{array}$

$$r = 2a$$

$$a = \frac{r}{2}$$

$$c = 0$$

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

$$\frac{r}{2}n^2 - \frac{1}{2}n = t_n$$

$$t_{10} = \frac{r}{2} \times 100 - \frac{1}{2} \times 10 = 145$$

-1

$$\begin{array}{cccc} (1) & (2) & (3) & (4) \\ 0 & 1 & 2 & 3 \end{array}$$

$$\frac{n \times (n-1)}{2} = 55 \quad n(n-1) = 110$$

$$n = 11$$

-2

$$\begin{array}{ccc} (1) & (2) & (3) \\ 5 & 12 & 21 \end{array}$$

$\xrightarrow{+7} \quad \xrightarrow{+9}$

$$d = 2$$

$$t_1 = 5$$

$$t_n = 5 + (n-1)2$$

$$t_{11} = 5 + 10 = 15 \rightarrow \text{جواب}$$

-3

$$\begin{array}{ccc} (1) & (2) & (3) \\ 5 & 9 & 13 \end{array}$$

$\xrightarrow{+4} \quad \xrightarrow{+4}$

$$d = 4$$

$$t_1 = 5$$

$$t_n = 5 + (n-1)4$$

$$t_{11} = 5 + 40 = 45 \rightarrow \text{نتیجه}$$

-4

$$a_n = \frac{(-1)^n}{n} \quad n=1 \rightarrow -1 \Rightarrow \text{کوچک ترین}$$

$\searrow$
 $n=2 \rightarrow \frac{1}{2} \Rightarrow \text{بزرگ ترین}$

$$\frac{1}{2} - (-1) = \frac{3}{2}$$

$$b_n = (-3)^n - V_n \quad b_3 = (-3)^3 - 21 = -27 - 21 = -48$$

-5

$$a_k = -5k + 22$$

$$-5k + 22 = -48$$

$$-5k = -70 \Rightarrow k = 14$$

$$t_{10} - t_5 = 12$$

$$t_{10} = t_5 + 5d$$

$$t_5 - t_1 = 4 + 5d - 4 = 5d = 2$$

$$t_5 + 5d$$

$$t_5 + 5d - t_5 = 12 \Rightarrow 5d = 12 \rightarrow d = 2.4$$

-6

$$t_1 = 7 \quad t_5 = 15$$

$$t_5 = \frac{t_1 + 4d}{5}$$

$$15 = \frac{7 + 4d}{5} \Rightarrow d = 2$$

$$a_n = 7 + (n-1)2$$

-7

$$\frac{t_1 + d}{2}$$

$$t_1 = 7$$

$$t_1 = 7$$

$$t_5 = 15$$

$$b_1 = 7$$

$$b_5 = 11 \rightarrow b_1 + d = 11$$

$$b_n = 7 + (n-1)4$$

-1

$$t_n = \frac{2}{5}, \frac{9}{11}, \frac{10}{9}, \frac{14}{11}, \dots$$

$$صورت = 2 + (n-1) \cdot 7$$

$$مخرج = 5 + (n-1) \cdot 2$$

$$\frac{2 + 7n - 7}{5 + 2n - 2} < \frac{3}{2}$$

$$\frac{7n - 5}{2n + 3} < \frac{3}{2}$$

$$11n - 5 = 9n + 9$$

$$2n = 14 \quad n = 7, 5 \rightarrow n < 7, 5 \rightarrow n \neq 7$$

$$t_n = 9, 9, 9, 9$$

$$\begin{array}{cccc} & \swarrow & \searrow & \\ -3 & 0 & +3 & \\ \swarrow & \searrow & & \\ +3 & +3 & & \end{array}$$

$$2a = 3$$

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

$$C = 0$$

$$b = 1, 5$$

$$\underbrace{3 \left(\frac{3}{2} \right)}_{1, 5} + \underbrace{5 \left(\frac{3 \cdot 5}{2 \cdot 5} \right)}_{22, 5} = 27$$

-9

$$t_n = -9, -1, 0, \dots$$

$$\begin{array}{ccc} & \swarrow & \searrow \\ +2 & & +2 \\ & \swarrow & \searrow \\ & +2 & \end{array}$$

$$2a = 2$$

$$a = 1$$

$$C = -9$$

$$b = -1$$

$$n^2 - 1n - 9$$

-10

$$t_4 = 31$$

$$t_{15} = 11$$

$$t_n = t_1 + (n-1)d$$

$$\begin{array}{c} \underbrace{t_1}_{11} \quad \searrow \Delta \\ t_1 = 19 \end{array}$$

$$t_n = 19 + (n-1) \cdot 5$$

$$t_n = 11 + 5n$$

$$11 + 5n = n^2 - n - 9$$

$$11 + 9n = n^2 - 9$$

$$n^2 - 9n - 20 = 0$$

$$\underbrace{(n+5)}_n \underbrace{(n-4)}_9 = 0$$