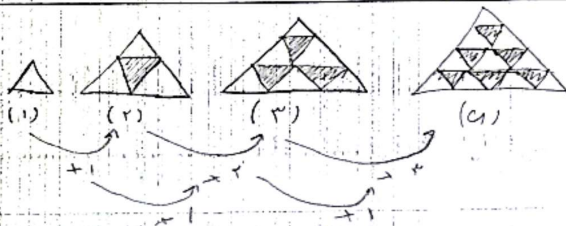


$$\text{فرمول عمومی} = \frac{n^2 + n(n+1)}{2}$$

$$q_{10} = 10^2 + \frac{10 \times 9}{2} = 145$$

(۲)



$$\text{فرمول عمومی} = \frac{n(n-1)}{2}$$

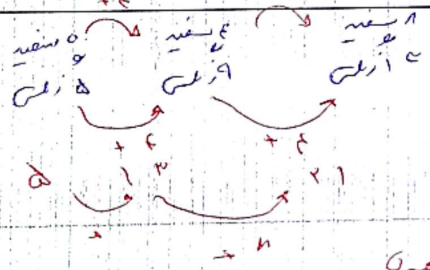
$$a_n = \frac{n(n-1)}{2} = 55$$

$$n(n-1) = 110 \rightarrow n = 11$$

(۲)

$$a = 1 \rightarrow a = \frac{1}{r} \quad t_n = an^2 + bn + c \rightarrow$$

$$\begin{cases} n=1 \rightarrow \frac{1}{r} + b = 0 \\ n=2 \rightarrow 2 + 2b = 1 \end{cases} \Rightarrow b = -\frac{1}{r}$$



$$\text{فرمول عمومی} = \epsilon n - \epsilon \rightarrow q_{11} = \epsilon \epsilon - \epsilon = \epsilon$$

$$\text{فرمول عمومی} = \epsilon n + 1 \rightarrow q_{11} = \epsilon \epsilon + 1 = \epsilon \epsilon$$

$$\text{فرمول عمومی} = 11n - 3 \rightarrow a_{11} = 11 \epsilon - 3 = 11 \epsilon$$

(۲)

$$\left. \begin{aligned} a_{\max} &= a_4 = \frac{1}{r} \\ a_{\min} &= a_1 = -\frac{1}{r} = -1 \end{aligned} \right\}$$

$$\text{اختلاف: } \frac{1}{r} - (-1) = \frac{r}{r}$$

(۲)

$$b_n = (-2)^n \rightarrow 7n \rightarrow b^* = -27 - 21 = -48$$

$$a_n = -2n + 22$$

(۲)

$$-48 = -2n + 22 \rightarrow 2n = 70 \quad n = 35 \rightarrow k = 35$$

$$a_{10} - a_7 = 12 \rightarrow 3d = 12 \rightarrow d = 4$$

المسألة

$$a_4 - a_1 = 3d = 3 \times 4 = 12$$

(2)

6

$$\left. \begin{array}{l} a_1 = 7 \\ a_8 = 14 \end{array} \right\} a_8 - a_1 = 7d = 7 \rightarrow d = 1$$

$$a_8 = a_1 + 7d$$

$$7 = 7 + 7d \rightarrow a_1 = 7$$

$$a_8 = 14$$

$$d = 1 \rightarrow b = -1$$

$$b_n = a_n + d$$

$$b_1 = 7$$

$$b_8 = 14$$

$$b_n = 1n - 1 = n - 1$$

(2)

7

$$t_n = \frac{1}{2}n^2 + \frac{1}{2}n + \frac{1}{2}n = \frac{1}{2}n^2 + n = \frac{1}{2}n(n+2)$$

$$n \leq 4 \rightarrow \frac{1}{2}n(n+2) \leq 12$$

$$t_n = \frac{1}{2}n(n+2) < \frac{1}{2}n^2 + n \rightarrow 1n - 1 < 4n + 9$$

(2)

8

$$t_n = 4, 9, 16, 25, \dots \quad t_n = An^2 + Bn \rightarrow A = -\frac{1}{2}$$

$$t_1 = -\frac{1}{2} + B = 4 \rightarrow B = \frac{9}{2}$$

$$t_n = -\frac{1}{2}n^2 + \frac{9}{2}n$$

$$-1 = 2a \rightarrow a = -\frac{1}{2}$$

$$4A + 2B = 4 \times -\frac{1}{2} + 2 \times \frac{9}{2} = -2 + 9 = 7$$

(2)

9

$$t_n = -4, -1, 2, 5, \dots \rightarrow 2a = 2 \rightarrow a = 1$$

$$t_1 = a + b + c = 0$$

$$t_n = n^2 - n - 2 = 1 - 1 - 2 = -2$$

(2)

10

$$t_1 = 1, t_2 = 4 \rightarrow d = \frac{t_2 - t_1}{2 - 1} = \frac{4 - 1}{1} = 3$$

$$a + 3 = 1 \rightarrow a = -2 \rightarrow t_n = n^2 - 2n + 1 = (n-1)^2$$